

EFFLUENT AND WASTE DISPOSAL
SEMI-ANNUAL ENVIRONMENTAL REPORT

JANUARY TO JUNE 1980

RANCHO SECO UNIT 1
CLAY STATION, CALIFORNIA

LICENSE NUMBER DPR-54

8009050344

E. RADIOLOGICAL IMPACT ON MAN (Continued)

The dose was computed for the individual who lives 1340 meters west northwest of the site near Clay Creek, fishes in the creek, and spends 100 hours per year swimming in an irrigation sump in the creek. In addition, it was assumed that undiluted water from Clay Creek (plant effluent water) was used to irrigate his vegetable garden and pasture land from which he received his milk, vegetables and meat. Studies conducted of the downstream water course show no indication of present or planned usage as a domestic water supply within five (5) miles downstream. Therefore, the drinking pathway was ignored in arriving at the total dose.

The maximum cumulative total body and organ doses to an exposed individual due to the radioactive liquid releases was 0.112 and 0.153 (liver) millirem respectively. Greater than 98% of this hypothetical exposure comes from the consumption of fish. Table 5C shows all the organ doses.

All liquid release related total body and organ manrem doses for the population within 50 miles of the plant for the first six months of 1980 are also provided on Table 5C. The total body and thyroid manrem were 7.78 E-01 and 5.01 E-02 respectively.

It can be seen that this controlled release of radioactive liquid resulted in dose values well below the guideline values of 10 CFR 50 Appendix I.

Gaseous Releases

Potential doses to individuals and populations were calculated using measured plant gaseous effluent and meteorological data. The following doses were calculated:

1. Total body and skin doses to individuals exposed at the point of maximum offsite ground-level concentrations of radioactive materials in gaseous effluents.
2. Organ doses to individuals in unrestricted areas from radioactive iodine and radioactive material in particulate form from all pathways of exposure.
3. Total body doses to the population and average dose to individuals in the population from gaseous effluents to a distance of 50 miles from the site.

Measured plant gaseous effluent data was used to calculate estimates of doses to individuals and populations. Included in the source term were eight (8) waste gas batch releases, fourteen (14) containment purges, and twenty-six (26) weekly continuous plant releases. The total curies released are presented in Section B. Doses were computed for airborne noble gas, iodine, and particulate releases.

The dispersion of the airborne radioactive effluents was calculated on the basis of measured plant meteorological data consistent with the time period over which a given release was conducted. Measured meteorological data is presented and discussed in Section F. The dispersion model was based on the "straight-line airflow model" of NRC Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors", including appropriate corrections for terrain factor, plume depletion and deposition. All releases were assumed to be conducted at ground level from a single release point. (The meteorological model is discussed in detail in the "Appendix 1 Evaluation Report - Rancho Seco Nuclear Generating Station".)

E. RADIOLOGICAL IMPACT ON MAN (Continued)

"Maximum Individual" and "Population" doses were calculated for a variety of gaseous effluent exposure pathways representative of actual or potential usage conditions within a five (5) mile radius of the plant. These pathways included plume, ground and inhalation exposures as well as meat, vegetable and milk consumption.

Whenever possible, calculations were based on existing data for the plant and its regional environmental characteristics. Where insufficient data existed to substantiate plant/site dependent assumptions, the parameters and models recommended 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 50, Appendix I", were used. Specific data and models for these calculations are presented in the "Appendix I Evaluation Report", as are the locations of the maximum exposed individuals.

Table 5B presents the calculated total body and organ doses to maximum exposed individuals due to measured plant gaseous effluent releases. The maximum total body dose 0.33 millirem to an individual residing 1150 meters from the plant in the south southwest sector. The maximum skin dose was 0.56 millirem to an individual residing 990 meters from the plant in the south sector. (All doses were calculated for the nearest existing residents in each sector within 5 miles of the plant.) Due to the relatively large magnitude of the noble gas source term in comparison to the airborne iodine and particulate source terms, the total body and organ doses were dominated by the plume pathway. Approximately 60% of each calculated dose resulted from continuous releases. Waste gas batch releases contributed a negligible component to the calculated total doses.

It is apparent that the calculated total body and organ doses continue to be below the guideline values of 10 CFR 50, Appendix I.

The calculated total body dose for the (interpolated) 1980 population within 50 miles of the plant is 0.17 manrem. The total body dose to the average exposed individual within 50 miles of the plant is 7.08×10^{-5} millirem.

The calculated population doses are based on the ALARA procedure of the GASPARE dose factor code. This procedure assumes that the 50-mile population is eating the maximum amount of food produced within 50 miles of the plant and that no food is exported out of the 50-mile area.

These doses are based on straight line projections of the actual 1970 U. S. Census population data and the 1985 estimated population as given in the Rancho Seco Unit 1 FSAR.

F. METEOROLOGY

The meteorological data acquisition system for Rancho Seco consists of a permanent meteorological tower installed at the site, instrumentation and on-line computer. The main purpose of the system is to measure and compile the meteorological data necessary to define the atmospheric diffusion at the site. The system is designed to continue in operation indefinitely so that a broad statistical base for meteorological conditions at the site can be assembled.

The 200-foot meteorological tower is located on a hill approximately 3000 feet east of the Reactor Building. The location is unobstructed by trees, buildings, or topographical features. A Rohn SSV tower, open lattice construction, is used to support the instrumentation. The tower has sufficient rigidity so that measurement errors are not introduced by tower vibrations. Also the open lattice design of the tower does not significantly obstruct the air flow near the tower.

F. METEOROLOGY (Continued)

After the hourly and monthly tables for each month are compiled, the reduced data is added to a history tape which contains the hourly and monthly data from the months previously reduced. This tape is then used to compile seasonal and yearly tables and plots similar to those described in this report.

The hourly data for a period of six months was compiled into a joint frequency distribution of stability index, wind speed, and wind direction which is used for atmospheric dispersion at the Rancho Seco site.

The tower instrumentation consists of:

1. Wind speed measurements - 3 Weather Measure W103 anemometers (1 sensor at the 200' level and 2 sensors at the 33' level)

Starting threshold	.9 mph
Distance constant	14.3 ft
Accuracy	+1% or .15 mph whichever is greater

2. Wind direction measurements - 3 Weather Measure W104 light weight vanes (1 sensor at the 200' level and 2 sensors at the 33' level)

Threshold	.75 mph
Damping ration	.4
Distance constant	3.5 ft
Accuracy	.5% of full scale

3. Temperature measurements - 3 Litton Model ESL-310 with Climet Model 016-2 motor aspirated shield (temperature at 200', 33' and 6' levels)

Range	-20 C to 45 C
Accuracy	+0.25 C
Resolution	0.01 C
Time Constant	10 seconds

4. Temperature difference measurements 200' to 33' (3 measurements) one Litton Thermistor system described in 3 above and two Rosemount RTD systems with Model 442A temperature transmitter and Model 414L linear bridge mounted in Weather Measure Model 1S-6 motor aspirated temperature shields.

Range	-5 F to +5 F
Accuracy	+ .1 F

5. Relative Humidity Measurement - Beckman Model 5412 (Sensor at the 6' level)

Range	10 to 100% r.h.
Accuracy	+ 2% r.h.

Beginning in 1974 and continuing through the first half of 1980, data recovery has been in excess of 97%. The meteorological data is summarized in Table 4A, which shows the joint frequency distributions of wind direction and wind speed by atmospheric stability class for the first two quarters of 1980. Table 4A also provides this same information for those hours during each quarter in which batch gaseous releases were occurring.

Table 4B presents the bases for Pasquill classification of atmospheric stability indexes.

TABLE 1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
1ST AND 2ND QUARTERS, 1980
SUPPLEMENTAL INFORMATION

Facility: Rancho Seco Unit #1 Licensee: Sacramento Municipal Utility District

1. Regulatory Limits

a. Noble Gases

$$\text{Limit} \quad \sum_{i \rightarrow n} Q_{iv} (62 \bar{E}_{i\gamma} + 110 \bar{E}_{i\beta}) \leq 1$$

$$\text{Qrtly Avg. Limit} \quad \sum_{i \rightarrow n} Q_{iv} (390 \bar{E}_{i\gamma} + 350 \bar{E}_{i\beta}) \leq 1$$

$$\text{12 Month Avg. Limit} \quad \sum_{i \rightarrow n} Q_{iv} (780 \bar{E}_{i\gamma} + 700 \bar{E}_{i\beta}) \leq 1$$

b. Iodines and Particulates with Half Lives >8 days

$$\text{Limit} \quad 1.7 \times 10^5 Q_v \leq 1$$

$$\text{Qrtly Avg. Limit} \quad 2.14 \times 10^6 Q_v \leq 1$$

$$\text{12 month Avg. Limit} \quad 4.28 \times 10^6 Q_v \leq 1$$

c. Iodine - 131

$$\text{Qrtly Limit} \quad 2 \text{ Ci}$$

$$\text{12 Month Limit} \quad 4 \text{ Ci}$$

d. Liquid Effluents

Limits: Meet 10 CFR 20 App. B Table II Column 2

$$\begin{aligned} &\leq 10 \text{ Ci/reactor/Qtr} \\ &\leq 20 \text{ Ci/reactor/12 months} \end{aligned}$$

2. Maximum Permissible Concentrations

- a. Fission and Activation Gases: Defined by 1a. above.
- b. Iodines: Defined by 1b. above.
- c. Particulates, half lives >8 days: Defined by 1b. above.
- d. Liquid Effluents: Defined by 1d. above.

TABLE 1 - (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
1ST AND 2ND QUARTERS. 1980
SUPPLEMENTAL INFORMATION

3. Average Energy:

The following list of average gamma and beta energies per disintegration have been used to calculate isotopic release rate limitations for fission and activation gases.

AVERAGE ENERGY PER DISINTEGRATION

Isotope	\bar{E}_γ , mev/dis	\bar{E}_β , mev/dis
Kr-83m	0.00248	0.0371
Kr-85	0.0022	0.250
Kr-85m	0.159	0.253
K-87	0.793	1.32
Kr-88	1.95	0.377
Kr-89	2.22	1.37
Kr-90	2.10	1.01
Xe-131m	0.0201	0.143
Xe-133	0.0454	0.135
Xe-133m	0.042	0.19
Xe-135	0.247	0.317
Xe-135m	0.432	0.095
Xe-137	0.194	1.64
Xe-138	1.18	0.611

4. Measurements and Approximations of Total Radioactivity

- a. Fission and Activation Gases: Gamma spectrometry (GeLi) and liquid scintillation (for H-3).
- b. Iodines: Gamma spectrometry (GeLi).
- c. Particulates: Gamma spectrometry (GeLi) and beta proportional counting (for Sr-89 and 90) and alpha proportional counting (for gross alpha).
- d. Liquid Effluents: Gamma spectrometry (GeLi) and liquid scintillation (for H-3) and beta proportional counting (for Sr-89 and 90 and gross beta) and alpha proportional counting (for gross alpha).

TABLE 1 - (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
1ST AND 2ND QUARTERS, 1980
SUPPLEMENTAL INFORMATION

5. Batch Releases

a. Liquid

1. Number of batch releases: 5
2. Total time period for batch release: 47.8 hours
3. Maximum time period for a batch release: 17.75 hours
4. Average time period for a batch release: 9.6 hours
5. Minimum time period for a batch release: 6.8 hours
6. Average stream flow during period of release of effluent into a flowing stream: 3900 gpm.

b. Gaseous

1. Number of batch releases: 22
2. Total time period for batch releases: 1981.5 hours
3. Maximum time period for a batch release: 168.8 hours
4. Average time period for a batch release: 94.4 hours
5. Minimum time period for a batch release: 15.6 hours

6. Abnormal Releases

a. Liquid

1. Number of releases: None
2. Total activity released: None

b. Gaseous

1. Number of releases: None
2. Total activity released: None

TABLE 1A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1980

GASEOUS EFFLUENTS SUMMATION OF ALL RELEASES REPORTING PERIOD: 1ST AND 2ND QUARTER

	<u>UNITS</u>	<u>1ST QTR SUMMARY</u>	<u>2ND QTR SUMMARY</u>	<u>EST. TOTAL % ERROR</u>
<u>A. FISSION & ACTIVATION GASES</u>				
1. Total Release	Ci	2.22E+02	1.66E+01	+ 4.82 E00
2. Average Release Rate	μCi/sec	2.81E+01	2.1E00	
3. % of Technical Specification Limit	%	8.58E-01	5.5E-02	
<u>B. IODINES</u>				
1. Total I-131	Ci	6.35E-03	1.88E-05	+4.84E00
2. Average Release Rate	μCi/sec	8.05E-04	2.38E-06	
3. % of Technical Specification Limit	%	1.27E00	3.8E-03	
<u>C. PARTICULATES</u>				
1. Particulates (τ > 8 days)	Ci	2.69E-03	2.15E-04	+6.33E00
2. Average Release Rate	μCi/sec	3.41E-04	2.79E-04	
3. % of Technical Specification Limit	%	2.92E-01	2.38E-02	
4. Gross Alpha Radioactivity (3)	Ci	0.00E00	0.00E00	0.00E00
<u>D. TRITIUM</u>				
1. Total Release	Ci	1.76E+01	2.88E+01	+3.91E00
2. Average Release Rate	μCi/sec	2.23E00	3.66E00	
3. % of Technical Specification Limit	%	(1)	(1)	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT 1980

REPORTING PERIOD: 1ST AND 2ND QUARTER

GASEOUS EFFLUENTS - ELEVATED RELEASE

NOT APPLICABLE

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT 1980
 REPORTING PERIOD: 1ST AND 2ND QUARTER

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES
 CONTINUOUS MODE

	<u>UNITS</u>	<u>1ST QTR SUMMARY</u>	<u>2ND QTR SUMMARY</u>
1. <u>FISSION GASES</u>			
Krypton-85	Ci	0.00E00(2)*	0.00E00(2)*
Krypton-85m	Ci	0.00E00(2)*	0.00E00(2)*
Krypton-87	Ci	0.00E00(2)*	0.00E00(2)*
Krypton-88	Ci	0.00E00(2)*	0.00E00(2)*
Xenon-133	Ci	1.48E+02	1.64E+01
Xenon-135	Ci	1.69E+01	0.00E00(2)*
Xenon-135m	Ci	0.00E00(2)*	0.00E00(2)*
Xenon-138	Ci	0.00E00(2)*	0.00E00(2)*
Unidentified	Ci	0.00E00	0.00E00
Total for Period	Ci	1.65E+02	1.64E+01
2. <u>IODINE</u>			
Iodine-131	Ci	1.07E-03	6.07E-06
Iodine-133	Ci	1.4E-04	0.00E00(2)*
Iodine-135	Ci	0.00E00(2)*	0.00E00(2)*
Total for Period	Ci	1.21E-03	6.07E-06
3. <u>PARTICULATES</u>			
Strontium-89	Ci	0.00E00	0.00E00
Strontium-90	Ci	0.00E00	0.00E00
Cesium-134	Ci	0.00E00	0.00E00
Cesium-137	Ci	3.86E-06	0.00E00
Barium-Lanthium-140	Ci	0.00E00	0.00E00
Cobalt-58	Ci	2.14E-05	5.97E-06
Co-60	Ci	6.6E-06	6.87E-06
Unidentified	Ci	0.00E00	0.00E00

TABLE 1C (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1980
 REPORTING PERIOD: 1ST AND 2ND QUARTER

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES
 BATCH MODE

	<u>UNITS</u>	<u>1ST QTR SUMMARY</u>	<u>2ND QTR SUMMARY</u>
1. <u>FISSION GASES</u>			
Krypton-85	Ci	1.37E00	1.58E-01
Krypton-85m	Ci	0.00E00	0.00E00
Krypton-87	Ci	0.00E00(2)*	0.00E00(2)*
Krypton-88	Ci	0.00E00(2)*	0.00E00(2)*
Xenon-133	Ci	5.47E+01	7.9E-04
Xenon-135	Ci	8.0E-02	0.00E00(2)*
Xenon-135m	Ci	0.00E00(2)*	0.00E00(2)*
Xenon-138	Ci	0.00E00(2)*	0.00E00(2)*
Xenon-133m	Ci	3.5E-01	0.00E00(2)*
Argon-41	Ci	0.00E00	0.00E00(2)*
Xenon-131m	Ci	6.2E-01	5.7E-03
Unidentified	Ci	0.00E00	0.00E00
Total for Period	Ci	5.71E+01	1.64E-01
2. <u>IODINE</u>			
Iodine-131	Ci	5.14E-03	1.27E-05
Iodine-133	Ci	0.00E00(2)*	0.00E00(2)*
Iodine-135	Ci	0.00E00(2)*	0.00E00(2)*
Total for period	Ci	5.14E-03	1.27E-05
3. <u>PARTICULATES</u>			
Strontium-89	Ci	0.00E00	0.00E00
Strontium-90	Ci	0.00E00	0.00E00
Cesium-134	Ci	1.01E-04	8.04E-05
Cesium-137	Ci	1.87E-04	1.79E-05
Co-58	Ci	2.14E-03	8.52E-05
Co-60	Ci	1.79E-04	1.84E-05

TABLE 1C (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1980
REPORTING PERIOD: 1ST AND 2ND QUARTERGASEOUS EFFLUENTS - GROUND-LEVEL RELEASES
BATCH MODE

	<u>UNITS</u>	<u>1ST QTR SUMMARY</u>	<u>2ND QTR SUMMARY</u>
3. <u>PARTICULATES</u> (Continued)			
Mn-54	Ci	5.34E-05	0.00E00
Nb-95	Ci	2.60E-05	0.00E00
Barium-Lanthanum-140	Ci	0.00E00	0.00E00
Unidentified	Ci	0.00E00	0.00E00

*Parentheses numbers indicate the respective footnotes in Table 5A rather than exponentials.

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1980
 REPORTING PERIOD: 1ST AND 2ND QUARTERS

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	<u>UNITS</u>	<u>1ST QTR SUMMARY</u>	<u>2ND QTR SUMMARY</u>	<u>EST. TOTAL % ERROR</u>
<u>A. FISSION & ACTIVATION PRODUCTS</u>				
1. Total Release (not including tritium gases, alpha)	Ci	3.78E-03	0.00E00	+1.31E+01
2. Average diluted concentration during period	µCi/ml	1.28E-08	0.00E00	
3. Percent of applicable limit	%	7.20E00	0.00E00	
<u>B. TRITIUM</u>				
1. Total Release	Ci	1.47E-02	0.00E00	+1.27E+01
2. Average diluted concentration during period	µCi/ml	1.28E-08	0.00E00	
3. Percent of applicable limit	%	2.3E00	0.00E00	
<u>C. DISSOLVED & ENTRAINED GASES</u>				
1. Total Release	Ci	0.00E00	0.00E00	
2. Average diluted concentration during period	µCi/ml	0.00E00	0.00E00	
3. Percent of applicable limit	%	0.00E00	0.00E00	
<u>D. GROSS ALPHA RADIOACTIVITY</u>				
1. Total Release	Ci	0.00E00	0.00E00	
<u>E. VOLUME OF WASTE RELEASED (prior to dilution)</u>				
	liters	1.76E+06	0.00E00	+1.00E+01
<u>F. VOLUME OF DILUTION WATER USED DURING PERIOD OF RADIOACTIVE LIQUID RELEASES</u>				
	liters	2.52E+08	0.00E00	+2.00E+00

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT, 1980

QUARTERLY RESULTS REPORTING PERIOD - 1ST and 2ND QUARTER

LIQUID EFFLUENTS BATCH MODE

<u>NUCLIDES RELEASED</u>	<u>UNIT</u>	<u>1ST QUARTER</u>	<u>2ND QUARTER</u>
Strontium-89	Ci	0.00E00	0.00E00
Strontium-90	Ci	0.00E00	0.00E00
Cesium-134	Ci	1.34E-03	0.00E00
Cesium-137	Ci	2.43E-03	0.00E00
Iodine-131	Ci	0.00E00	0.00E00
Cobalt-58	Ci	0.00E00	0.00E00
Cobalt-60	Ci	0.00E00	0.00E00
Iron-59	Ci	0.00E00	0.00E00
Zinc-65	Ci	0.00E00	0.00E00
Manganese-54	Ci	0.00E00	0.00E00
Chromium-51	Ci	0.00E00	0.00E00
Zirconium-Niobium-95	Ci	0.00E00	0.00E00
Molybdenum-99	Ci	0.00E00	0.00E00
Technetium-99m	Ci	0.00E00	0.00E00
Barium-Lanthanum-140	Ci	0.00E00	0.00E00
Cerium-141	Ci	0.00E00	0.00E00
Other (Specify)			
1. Tritium (H-3)	Ci	1.47E-02	0.00E00
2. Xenon-133	Ci	0.00E00	0.00E00
3. Xenon-135	Ci	0.00E00	0.00E00
Unidentified	Ci	0.00E00	0.00E00
Total for period (above)	Ci	1.85E-02	0.00E00

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
1ST AND 2ND QUARTERS, 1980

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

1. Type of Waste	Unit	6-Month Period	Est. Total Errors
a. Spent resins, filter sludges, evaporator bottoms, etc.	m ³ Ci	0.00E00 0.00E00	0.00E00
b. Dry compressible waste, contaminated equip., etc.	m ³ Ci	0.00E00 0.00E00	0.00E00
c. Irradiated components, control rods, etc.	m ³ Ci	0.00E00 0.00E00	0.00E00
d. Other (describe) Noncompressible piping components	m ³ Ci	0.00E00 0.00E00	0.00E00

2. Estimate of major nuclide composition (by type of waste)

a. Not Applicable		
b. Co-58	%	0.00E00
Co-60	%	0.00E00
Mn-54	%	0.00E00
Cr-51 + Ag-110m	%	0.00E00
c. Not Applicable		
d. Co-58	%	0.00E00
Co-60	%	0.00E00
Mn-54	%	0.00E00
Cr-51 + AG-110m	%	0.00E00

3. Solid Waste Disposition

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

B. IRRADIATED FUEL SHIPMENTS (Disposition)

None

TABLE 4A (Section 1)
FIRST QUARTER
CONTINUOUS RELEASE METEOROLOGY

DELTA-T STD STABILITY INDEX 8 HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	1	1
WSW	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	1
SSW	1	2	0	0	1	0	4
S	2	2	1	0	0	0	5
SSE	6	3	0	0	0	0	9
SE	5	0	2	0	0	0	7
ESE	2	0	0	0	0	0	2
E	0	0	0	0	0	0	0
ENE	1	1	0	0	0	0	2
NE	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
TOTAL CALM	19	9	3	0	1	1	33

DELTA-T STD STABILITY INDEX 9 HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	1	0	0	1
W	0	0	0	0	0	1	1
WSW	0	0	0	0	0	0	0
SW	2	1	0	0	0	0	3
SSW	4	3	0	1	0	0	8
S	3	3	1	1	0	0	8
SSE	2	4	2	0	0	0	8
SE	0	1	0	0	0	0	1
ESE	1	3	0	0	0	0	4
E	3	0	0	0	0	0	3
ENE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL CALM	16	15	3	3	0	1	38

DELTA-T STD STABILITY INDEX C HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	2	1	5	8
W	0	1	2	1	0	1	5
WSW	0	1	2	0	0	0	3
SW	3	1	0	0	0	0	4
SSW	2	1	0	2	0	0	5
S	3	0	2	1	0	0	6
SSE	4	2	1	0	0	0	7
SE	1	4	2	0	0	0	7
ESE	1	1	1	0	0	0	3
E	2	2	0	0	0	0	4
ENE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
TOTAL CALM	17	14	10	6	1	6	54

DELTA-T STD STABILITY INDEX D HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	4	0	2	0	0	0	6
NW	4	4	0	0	0	0	8
NW	9	5	0	0	0	1	15
WNW	2	22	12	9	10	9	73
W	7	24	11	5	1	3	55
WSW	2	9	1	0	0	0	12
SW	4	7	8	2	0	0	23
SSW	4	10	8	6	0	0	28
S	6	4	2	2	1	0	15
SSE	5	16	6	5	2	1	35
SE	5	31	17	5	1	1	61
ESE	7	33	19	18	10	9	96
E	2	11	8	3	1	1	26
ENE	3	5	0	1	0	0	9
NE	5	2	0	0	0	0	7
NNE	4	1	0	0	0	0	5
TOTAL	91	189	94	57	26	25	471
CALM	4						

DELTA-T STD STABILITY INDEX E HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	11	8	1	0	0	0	20
NW	5	8	3	0	0	0	16
NW	11	12	9	1	0	0	33
WNW	10	25	17	7	6	5	70
W	8	12	10	2	1	0	33
WSW	3	12	4	0	4	2	25
SW	11	7	0	1	1	0	20
SSW	9	4	4	9	0	0	26
S	11	10	9	2	1	4	37
SSE	9	13	11	3	2	3	41
SE	7	33	19	13	4	8	84
ESE	15	41	47	37	40	69	249
E	10	35	28	25	10	16	124
ENE	6	10	9	4	0	6	35
NE	8	6	1	0	0	0	15
NNE	11	2	0	0	0	0	13
TOTAL	145	238	172	104	69	113	841
CALM	6						

DELTA-T STD STABILITY INDEX F HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	8	12	0	0	0	0	20
NW	13	6	0	1	0	0	20
NW	11	10	6	3	2	0	32
WNW	8	12	14	5	0	0	39
W	6	14	6	4	0	0	30
WSW	3	7	2	0	0	0	12
SW	1	8	0	0	0	1	10
SSW	3	0	0	0	0	6	9
S	3	6	1	0	0	8	18
SSE	1	7	2	0	0	5	15
SE	4	6	7	0	0	2	19
ESE	3	12	12	1	1	3	32
E	2	16	37	1	0	0	56
ENE	8	29	25	1	0	0	63
NE	10	12	1	0	0	0	23
NNE	11	8	2	0	0	0	21
TOTAL	95	165	115	16	3	25	414
CALM	6						

DELTA-T STD STABILITY INDEX 6 HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	11	37	0	0	0	0	48
NNW	9	9	0	0	0	0	17
NW	4	13	7	3	0	0	27
WNW	3	14	2	5	0	0	24
W	0	2	3	1	0	0	6
WSW	0	3	1	0	0	3	7
SW	1	0	1	0	0	2	4
SSW	3	1	0	0	0	7	11
S	0	0	0	0	0	5	5
SSE	1	4	1	0	0	6	12
SE	2	4	2	0	0	0	8
ESE	0	2	2	0	0	0	4
E	3	4	9	1	0	0	17
ENE	3	4	31	6	0	0	44
NE	12	14	2	0	0	0	28
NNE	17	31	0	0	0	0	48
TOTAL	69	136	61	16	0	23	305
CALM	3						

TABLE 4A (Section 2)
SECOND QUARTER
CONTINUOUS RELEASE METEOROLOGY

DELTA-T STD STABILITY INDEX 5 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
NW	1	0	0	0	0	0	1
W	0	3	8	0	0	0	11
WSW	1	3	12	0	0	0	15
SW	3	44	38	2	0	0	87
SSW	3	50	47	13	0	0	113
S	5	20	37	17	2	0	93
SSE	2	19	15	5	0	0	41
SE	3	6	11	2	1	1	22
ESE	2	5	5	0	1	0	13
E	0	0	2	0	0	0	2
ESE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	22	154	175	39	4	1	397
CALM	0						

DELTA-T STD STABILITY INDEX 4 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NNW	0	1	0	0	0	0	1
NW	0	1	0	0	0	0	1
W	0	1	3	1	0	0	5
WSW	0	3	4	0	0	0	7
SW	2	17	14	3	0	0	31
SSW	5	14	12	4	0	0	35
S	2	2	5	5	0	0	14
SSE	2	6	3	0	0	0	11
SE	0	7	4	1	0	0	12
ESE	3	2	2	0	0	0	7
E	1	1	0	0	0	0	2
ESE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	16	50	47	14	0	0	127
CALM	1						

DELTA-T STD STABILITY INDEX C HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	1	0	0	0	0	1
NNW	0	0	0	1	0	0	1
NNW	0	0	0	0	0	0	0
NW	0	0	0	1	0	0	1
W	1	0	6	4	0	0	11
WSW	1	1	3	1	0	0	6
SW	2	9	14	3	0	0	24
SSW	0	0	15	5	0	0	20
S	0	5	5	4	0	0	14
SSE	0	1	2	0	0	0	5
SE	0	9	2	0	0	0	11
ESE	0	1	2	0	0	0	5
E	1	0	0	0	0	0	1
ESE	1	0	0	0	0	0	1
NE	1	0	0	0	0	0	1
NNE	2	0	0	0	0	0	2
TOTAL	9	20	47	17	0	0	117
CALM	0						

DELTA-T STD STABILITY INDEX D HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	0	0	0	0	0	1
NNW	2	0	0	0	0	0	2
NW	2	2	1	0	0	0	5
NNW	4	3	4	5	1	0	17
N	0	9	11	1	0	0	21
NW	5	13	19	4	0	0	32
SW	10	15	26	6	0	0	57
SSW	5	14	34	13	2	0	68
S	4	9	16	9	0	0	38
SSE	4	13	8	0	1	0	26
SE	8	19	22	2	0	0	51
ESE	3	14	26	6	0	1	50
E	6	11	6	6	2	0	31
ENE	4	1	0	0	0	0	5
NE	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0
TOTAL	58	123	164	52	6	1	404
CALM	3						

DELTA-T STD STABILITY INDEX F HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	11	4	0	0	0	0	15
NNW	8	7	0	0	0	0	15
NW	8	5	2	1	0	0	16
NNW	11	5	1	5	0	0	22
W	12	11	3	0	0	0	26
WSW	10	16	3	0	0	0	29
SW	20	62	27	6	0	0	115
SSW	20	45	41	6	0	0	112
S	21	45	13	3	0	0	82
SSE	15	45	8	0	0	0	68
SE	16	48	8	1	0	0	73
ESE	16	54	24	5	0	1	100
E	9	49	22	3	3	2	88
ENE	6	14	0	0	0	0	20
NE	10	3	0	0	0	0	13
NNE	9	7	0	0	0	0	16
TOTAL	202	420	152	30	3	3	710
CALM	23						

DELTA-T STD STABILITY INDEX F HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	8	5	0	0	0	0	13
NNW	5	5	0	0	0	0	10
NW	4	2	4	0	0	0	10
NNW	5	4	2	0	0	0	11
W	3	4	2	0	0	0	9
WSW	1	0	0	0	0	0	1
SW	2	5	3	0	0	0	10
SSW	10	19	5	0	0	0	34
S	5	5	4	0	0	0	14
SSE	1	4	0	0	0	0	5
SE	4	4	1	0	0	0	9
ESE	7	13	2	0	0	0	22
E	0	17	3	0	0	1	21
ENE	2	5	1	0	0	0	8
NE	1	1	0	0	0	0	2
NNE	4	5	1	0	0	0	10
TOTAL	62	97	30	0	0	1	190
CALM	4						

DELTA-T STD STABILITY INDEX 6 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER CONTINUOUS METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	3	9	0	0	0	0	12
NNW	3	5	0	0	0	0	8
Nx	2	2	0	0	0	0	4
WNW	2	1	0	0	0	0	3
W	0	2	1	0	0	0	3
WSW	1	3	0	0	0	0	4
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	3	4
SSE	0	1	0	0	0	0	1
SE	1	3	0	0	0	0	4
ESE	1	1	1	0	0	0	3
E	1	2	1	0	0	0	4
ENE	1	2	7	0	0	0	10
NE	2	3	0	0	0	0	5
NNE	5	7	0	0	0	0	12
TOTAL	23	41	10	0	0	3	77
CALM	2						

TABLE 4A (Section 3)
FIRST QUARTER
BATCH RELEASE METEOROLOGY

DELTA-T STD STABILITY INDEX A HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	1
SSW	0	0	0	0	0	0	0
S	0	1	0	0	0	0	1
SSE	0	1	0	0	0	0	1
SE	2	0	2	0	0	0	4
ESE	2	0	0	0	0	0	2
E	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
NE	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
TOTAL	7	3	2	0	0	0	12
CALM	0						

DELTA-T STD STABILITY INDEX B HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	1	0	0	1
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	1	1	0	0	0	0	2
SSW	3	1	0	0	0	0	4
S	1	3	0	1	0	0	5
SSE	2	3	1	0	0	0	6
SE	0	0	0	0	0	0	0
ESE	1	2	0	0	0	0	3
E	3	0	0	0	0	0	3
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	11	10	1	2	0	0	24
CALM	0						

DELTA-T STD STABILITY INDEX C HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	1	0	0	0	0	1
WSW	0	0	0	0	0	0	0
SW	1	1	0	0	0	0	2
SSW	2	1	0	1	0	0	4
S	2	0	1	1	0	0	4
SSE	0	1	0	0	0	0	1
SE	0	2	1	0	0	0	3
ESE	1	1	1	0	0	0	3
E	2	2	0	0	0	0	4
ENE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
TOTAL	9	10	3	2	0	0	24
CALM	0						

DELTA-T STD STABILITY INDEX D HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER PATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	2	0	2	0	0	0	4
NNW	3	3	0	0	0	0	6
NW	6	1	0	0	0	1	8
WNW	8	0	4	4	3	5	33
W	4	17	4	0	0	0	25
WSW	1	8	0	0	0	0	9
SW	5	6	0	2	0	0	13
SSW	2	4	6	2	0	0	14
S	5	1	1	1	1	0	9
SSF	5	11	4	5	2	1	28
SF	2	21	9	5	1	1	39
ESE	3	23	12	13	6	9	66
E	1	7	5	2	1	1	17
ENE	0	4	0	1	0	0	5
NE	3	1	0	0	0	0	4
NNE	2	0	0	0	0	0	2
TOTAL	52	116	47	35	14	18	282
CALC	3						

DELTA-T STD STABILITY INDEX F HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER PATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	7	0	0	0	0	15
NNW	5	5	0	0	0	0	10
NW	6	7	7	1	0	0	21
WNW	7	17	13	4	4	1	46
W	6	7	5	0	0	0	18
WSW	2	9	0	0	4	2	17
SW	7	4	0	0	1	0	12
SSW	5	3	1	3	0	0	12
S	3	4	6	1	1	4	19
SSF	4	7	5	1	0	3	20
SF	6	16	10	6	3	5	46
ESE	10	27	29	20	24	53	163
E	7	17	20	13	10	16	83
ENE	4	8	3	4	0	6	25
NE	6	3	0	0	0	0	9
NNE	6	1	0	0	0	0	7
TOTAL	92	142	99	53	47	90	523
CALC	5						

DELTA-T STD STABILITY INDEX F HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER PATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	3	5	0	0	0	0	8
NNW	7	3	0	0	0	0	10
NW	8	3	3	3	0	0	17
WNW	4	6	5	2	0	0	17
W	4	6	1	2	0	0	13
WSW	2	4	0	0	0	0	6
SW	0	3	0	0	0	1	4
SSW	1	0	0	0	0	6	7
S	0	2	1	0	0	8	11
SSF	1	1	0	0	0	5	7
SF	2	4	2	0	0	2	10
ESE	2	6	4	1	0	0	13
E	1	9	21	1	0	0	32
ENE	6	10	16	1	0	0	42
NE	9	0	0	0	0	0	14
NNE	10	6	0	0	0	0	16
TOTAL	60	86	53	10	0	22	231
CALC	6						

DELTA-T STD STABILITY INDEX 6 HOURS AT EACH WIND SPEED AND DIRECTION

FIRST QUARTER BATCH ONLY METEOROLOGY
 RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	7	19	0	0	0	0	26
NNW	6	3	0	0	0	0	9
NW	3	6	0	1	0	0	10
WNW	0	5	1	0	0	0	6
W	0	1	0	0	0	0	1
WSW	0	0	0	0	0	3	3
SW	0	0	0	0	0	2	2
SSW	3	7	0	0	0	7	10
S	0	0	0	0	0	5	5
SSE	1	3	0	0	0	6	10
SE	2	3	0	0	0	0	5
ESE	0	1	0	0	0	0	1
E	2	3	2	1	0	0	8
ENE	3	2	15	1	0	0	21
NE	9	12	1	0	0	0	22
NNE	12	27	0	0	0	0	39
TOTAL	48	85	19	3	0	23	178
CAL 1	3						

TABLE 4A (Section 4)
SECOND QUARTER
BATCH RELEASE METEOROLOGY

DELTA-T STD STABILITY INDEX A HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	1	3	2	0	0	0	6
SSW	0	4	5	4	0	0	13
S	0	6	3	1	0	0	10
SSE	0	3	0	0	0	0	3
SE	0	0	1	0	0	0	1
ESE	0	1	0	0	0	0	1
E	0	0	1	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	2	17	12	5	0	0	36
CALM	0						

DELTA-T STD STABILITY INDEX B HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	1	0	1	0	0	0	2
SSW	0	2	1	1	0	0	4
S	0	0	1	0	0	0	1
SSE	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	1
ESE	1	0	0	0	0	0	1
E	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	2	4	3	1	0	0	10
CALM	0						

DELTA-T STD STABILITY INDEX C HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

SECTOR	WIND SPEED AT 33 FT (MILES/HOUR)						TOTAL
	1-3	4-7	8-12	13-18	19-24	24+	
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	0	1	1	0	0	0	2
SSW	0	0	1	1	0	0	2
S	0	1	2	0	0	0	3
SSE	0	1	0	0	0	0	1
SE	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	0	2	4	1	0	0	12
CALM	0						

DELTA-T STD STABILITY INDEX 0 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	1	0	0	0	0	0	1
W	0	0	0	0	0	0	0
WSW	1	2	0	0	0	0	3
SW	0	1	2	0	0	0	3
SSW	1	0	6	4	2	0	13
S	1	2	4	1	0	0	8
SSF	0	2	1	0	1	0	4
SE	0	1	1	2	0	0	4
ESE	0	1	7	1	0	0	9
E	0	3	0	2	0	0	5
ENE	1	1	0	0	0	0	2
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	5	13	21	10	3	0	52
CALM	0						

DELTA-T STD STABILITY INDEX 6 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	1	3	0	0	0	0	4
NNW	1	2	0	0	0	0	3
NW	1	2	0	0	0	0	3
WNW	2	3	0	0	0	0	5
W	3	1	0	0	0	0	4
WSW	2	4	1	0	0	0	7
SW	7	25	12	1	0	0	45
SSW	5	10	11	2	0	0	28
S	7	12	4	0	0	0	23
SSF	5	10	3	0	0	0	27
SE	4	16	0	0	0	0	20
ESE	2	12	8	0	0	0	22
E	2	7	9	0	0	0	13
ENE	0	6	0	0	0	0	6
NE	2	0	0	0	0	0	2
NNE	3	1	0	0	0	0	4
TOTAL	47	123	48	3	0	0	221
CALM	11						

DELTA-T STD STABILITY INDEX 9 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH ONLY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTOR	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	1	0	0	0	0	0	1
WSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
SSW	1	3	0	0	0	0	4
S	0	0	0	0	0	0	0
SSF	0	2	0	0	0	0	2
SE	0	0	0	0	0	0	0
ESE	2	2	2	0	0	0	6
E	0	5	2	0	0	0	7
ENE	0	2	0	0	0	0	2
NE	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
TOTAL	5	14	4	0	0	0	23
CALM	0						

DEFIANT STD STABILITY INDEX 6 HOURS AT EACH WIND SPEED AND DIRECTION

SECOND QUARTER BATCH DAILY METEOROLOGY
RELEASE NUMBER 1

1 RELEASES THIS QUARTER

WIND SPEED AT 33 FT (MILES/HOUR)

SECTION	1-3	4-7	8-12	13-18	19-24	24+	TOTAL
N	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
TOTAL	0	1	0	0	0	0	1
CALM	0						

TABLE 4B

CLASSIFICATION OF ATMOSPHERIC STABILITY

Stability Classification	Pasquill Categories	σ_{θ}^a (degrees)	Temperature Change with height ($^{\circ}\text{C}/100\text{m}$)
Extremely unstable	A	25.0	<-1.9
Moderately unstable	B	20.0	-1.9 to - 1.7
Slightly unstable	C	15.0	-1.7 to - 1.5
Neutral	D	10.0	-1.5 to -0.5
Slightly stable	E	5.0	-0.5 to 1.5
Moderately stable	F	2.5	1.5 to 4.0
Extremely stable	G	1.7	>4.0

^aStandard deviation of horizontal wind direction fluctuation over a period of 15 minutes to 1 hour. The values shown are average for each stability classification.

TABLE 5A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

REPORTING PERIOD: 1ST AND 2ND QUARTER, 1980

NOTES

- (1) No Technical Specification limit for release of Tritium in gaseous effluents.
- (2) No measurable activity in samples collected during this period. Measurement sensitivity and volumes of air released during the reporting period are as follows:

<u>ISOTOPE</u>	<u>MINIMUM DETECTABLE ACTIVITY $\mu\text{Ci}/\text{m}\ell$</u>	<u>BATCH RELEASE VOLUME (cc)</u>	<u>CONTINUOUS RELEASE VOLUME (cc)</u>
Kr-85	6.42E-06		
Kr-85m	2.23E-08	Gaseous 8.34 E+13	3.38E+14
Kr-87	4.80E-08	Particulate 2.34E+14	
Kr-88	5.93E-08		
Xe-135	3.27E-08		
Xe-135m	4.85E-08		
Xe-138	1.76E-07		
Xe-133	9.59E-08		
Xe-133m	1.26E-07		
Xe-131m	8.53E-07		
Ar-41	2.96E-08		
I-131	2.31E-13		
I-133	2.31E-12		
I-135(4)	1.71E-11		
H-3	3.89E-10		

- (3) Particulate gross alpha due to naturally occurring Radon daughters.
- (4) Based on a 24-hour sample.

TABLE 5B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

REPORTING PERIOD: 1ST AND 2ND QUARTERS, 1980

TOTAL BODY AND ORGAN DOSES TO MAXIMUM EXPOSED INDIVIDUALS (1) (2) (3) (4)
(BY SECTOR) DUE TO GASEOUS EFFLUENT RELEASES

(5), (6) Sector (Distance, Meters)	Total Body	GI Tract	Bone	Liver	Kidney	Thyroid	Lung	Skin
N (-)	--	--	--	--	--	--	--	--
NNE (-)	--	--	--	--	--	--	--	--
NE (1770)	3.06E-02	2.97E-02	1.28E-02	3.11E-02	3.01E-02	1.09E-01	3.00E-02	4.87E-02
ENE (1220)	3.76E-02	3.65E-02	1.22E-02	3.83E-02	3.72E-02	1.62E-01	3.66E-02	5.34E-02
E (-)	--	--	--	--	--	--	--	--
ESE (4820)	3.65E-03	3.47E-03	1.43E-03	3.74E-03	3.60E-03	1.94E-02	3.51E-03	5.42E-03
SE (6550)	1.97E-03	1.91E-03	7.91E-04	2.01E-03	1.95E-03	8.34E-03	1.94E-03	3.08E-03
SSE (5490)	2.53E-03	2.50E-03	9.99E-04	2.54E-03	2.51E-03	5.73E-03	2.54E-03	4.09E-03
S (990)	2.89E-01	2.84E-01	1.73E-01	2.93E-01	2.87E-01	8.71E-01	2.89E-01	5.63E-01
SSW (1150)	3.33E-01	3.19E-01	1.60E-01	3.40E-01	3.28E-01	1.44E-00	3.26E-01	5.54E-01
SW (2130)	3.02E-02	2.85E-02	1.16E-02	3.12E-02	2.95E-02	1.67E-01	2.90E-02	4.25E-02
WSW (1980)	4.22E-02	4.00E-02	2.15E-02	4.35E-02	4.10E-02	2.48E-01	4.05E-02	6.81E-02
W (3050)	2.14E-02	2.01E-02	8.02E-03	2.21E-02	2.07E-02	1.25E-01	2.00E-02	2.85E-02
WNW (1340)	1.89E-01	1.75E-01	6.25E-02	1.97E-01	1.83E-01	1.33E-00	1.74E-01	2.31E-01
NW (6070)	3.68E-03	3.50E-03	1.05E-03	3.78E-03	3.59E-03	1.71E-02	3.49E-03	4.63E-03
NNW (6710)	1.59E-03	1.48E-03	4.37E-04	1.65E-03	1.54E-03	9.56E-03	1.47E-03	1.85E-03
VC (310)	2.78E-01	2.77E-01	1.75E-01	2.79E-01	2.78E-01	5.21E-01	2.84E-01	5.75E-01
REC (2330)	7.74E-03	7.52E-03	2.94E-03	7.86E-03	7.66E-03	2.63E-02	7.69E-03	1.20E-02
Average Percent of Total for Continuous Release = 59.599960								
Average Percent for Total for Purges = 39.946289								
Average Percent of Total for Waste Gas Release = 0.453577								

- NOTES:
- (1) All doses calculated in millirem.
 - (2) Includes waste gas, containment purge and continuous releases.
 - (3) Total body and organ doses are similar due to dominance of noble gas source term.
 - (4) Source terms include noble gases, iodines and airborne particulates.
 - (5) Distance to nearest residence within 5 miles; (-) indicates no residence within 5 miles.
 - (6) Doses are calculated for areas accessible to the public and time weighted:

Visitors Center - Open daily; maximum exposed individual is attendant at 1470 hours/year.

Recreation Area - Open daily; maximum exposed individual is Park Ranger at 2628 hours/year.

TABLE 5C
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

REPORTING PERIOD: 1ST AND 2ND QUARTERS, 1980

TOTAL BODY AND ORGAN DOSES TO MAXIMUM EXPOSED INDIVIDUALS DUE TO LIQUID EFFLUENT RELEASES (MILLIREM)

TOTAL BODY	G.I. TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
1.12E-01	3.13E-03	9.25E-02	1.53E-01	5.17E-02	2.78E-04	1.73E-02	9.54E-05

ALARA TOTAL BODY AND ORGAN DOSES TO POPULATION DUE TO LIQUID EFFLUENT RELEASES (MANREM)

TOTAL BODY	G.I. TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
7.78E-02	6.91E-02	9.60E-01	1.46E-00	4.13E-01	5.01E-02	2.11E-01	6.49E-04