



# **SAN ONOFRE NUCLEAR GENERATING STATION SEMIANNUAL EFFLUENT REPORT**

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## *Southern California Edison Company*

SAN ONOFRE NUCLEAR GENERATING STATION

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### PREFACE

San Onofre Nuclear Generating Station is located next to San Onofre State Beach, adjoining Camp Pendleton Marine Corps Base, in San Diego County, 64 miles south of Los Angeles, California. There are three Pressurized Water Reactors with a total rated capacity of 2664 net megawatts electrical.

Unit 1 was supplied by Westinghouse Electric Company and began commercial operation on January 1, 1968. It is currently rated at 410 net megawatts electrical. It is owned by Southern California Edison (80%) and San Diego Gas and Electric (20%).

Unit 2 and Unit 3 were supplied by Combustion Engineering, Inc., with turbine generators supplied by G.E.C. Turbine Generators, Ltd., of England. The Units began commercial operation on August 18, 1983, and April 1, 1984, respectively and are rated at 1127 net megawatts electrical each. The twin Units are owned by Southern California Edison (75.05%), San Diego Gas and Electric (20%), City of Anaheim (3.16%), and the City of Riverside (1.79%).



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## SEMIANNUAL EFFLUENT REPORT

January - June 1985

### SECTION A. INTRODUCTION

This Semiannual Report summarizes the gaseous and liquid radioactive effluent releases and radwaste shipments made from the San Onofre Nuclear Generating Station Unit 1. This report is prepared in the general format of USNRC Regulatory Guide 1.21 and includes:

1. Quarterly summaries of liquid and gaseous effluents for "batch" and "continuous" modes of release;
2. Percent of Technical Specification Limits;
3. Percent of applicable limits;
4. Estimated total percent error;
5. Lower limit of detection concentrations;
6. Previous Semiannual Report addendum;
7. Radwaste shipments;
8. 10 CFR 50 Appendix I requirements;
9. Changes to Offsite Dose Calculation Manual.

## SECTION B. GASEOUS EFFLUENTS

Table 1A, "Gaseous Effluents-Summation of All Releases," provides a detailed listing of gaseous effluents released quarterly in four categories: fission and activation gases, iodine-131, particulates with half-lives greater than eight days, and tritium. Listed for each of the four categories are: (1) the total curies released, (2) the average release rate, (3) the percent of Technical Specification Limit (TSL), and (4) the estimated total error. In addition, the particulate category lists the gross alpha radioactivity released for each quarter.

The methodology used in Table 1A to calculate the estimated total error is presented in Section G of this report.

Table 1B, "Gaseous Effluents-Elevated Release," has not been included in this report since San Onofre Nuclear Generating Station Unit 1 does not conduct elevated releases.

Table 1C, "Gaseous Effluents-Ground-Level Releases," provides the systematic listing by radionuclide for the quantity of radioactivity released in three categories: fission gases, iodines, and particulates. The total radioactivity for each radionuclide is listed for each quarterly period by both "continuous" and "batch" modes of release.

Waste gas decay tank and calibration releases are considered to be "batch" releases. Containment sphere purges and plant stack releases are considered to be "continuous" releases.

Table 1D, "Gaseous Effluents-Lower Limit of Detection," provides a listing of lower limit of detection concentrations for radionuclides not detected in Table 1A and Table 1C.

Table 1E, "Gaseous Effluent-Radiation Doses at Site Boundary," provides a quarterly summary of doses at the site boundary for this report period.

Table 1A

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1985)  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Estimated Total Error, %
<b>A. Fission and activation gases</b>				
1. Total release	Ci	1.61E+3	8.74E+2	2.20E+1
2. Average release rate for period	uCi/sec	2.07E+2	1.11E+2	
3. Percent of technical specification limit	%	5.82E+0	2.43E+0	
<b>B. Iodines</b>				
1. Total iodine-131	Ci	7.88E-5	3.73E-5	1.90E+1
2. Average release rate for period	uCi/sec	1.01E-5	4.74E-6	
3. Percent of technical specification limit	%	6.18E-4	2.89E-4	
<b>C. Particulates</b>				
1. Particulates with half-lives > 8 days	Ci	1.08E-5	6.34E-6	1.60E+1
2. Average release rate for period	uCi/sec	1.39E-6	8.06E-7	
3. Percent of technical specification limit	%	1.42E-5	1.98E-5	
4. Gross alpha radioactivity	Ci	8.45E-8	*	5.00E+1
<b>D. Tritium</b>				
1. Total release	Ci	1.51E+1	<LLD	2.50E+1
2. Average release rate for period	uCi/sec	1.94E+0	0.00	
3. Percent of technical specification limit	%	5.92E-2	0.00	

LLD - Lower Limit of Detection; see Table 1D

\* - Second quarter analyses not available at report time; values will be included in the following Semiannual Report.

Table 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
1. Fission gases					
argon-41	Ci	5.51E-2	<LLD	7.48E-3	1.09E-2
krypton-85	Ci	8.46E+0	<LLD	3.20E-1	5.13E-1
krypton-85m	Ci	7.78E+0	<LLD	3.89E-1	2.41E-1
krypton-87	Ci	2.51E+0	<LLD	6.76E-2	1.49E-2
krypton-88	Ci	9.47E+0	<LLD	1.98E-1	1.90E-1
xenon-131m	Ci	2.75E-2	<LLD	1.10E+0	9.77E-1
xenon-133	Ci	1.30E+3	6.61E+2	1.28E+2	1.78E+2
xenon-133m	Ci	1.03E+1	<LLD	1.83E+0	2.41E+0
xenon-135	Ci	1.17E+2	2.54E+1	6.58E+0	5.80E+0
xenon-135m	Ci	1.92E+1	<LLD	1.81E-2	9.70E-4
xenon-138	Ci	<LLD	<LLD	<LLD	<LLD
Total for period	Ci	1.47E+3	6.86E+2	1.39E+2	1.88E+2
=====					
2. Iodines					
iodine-131	Ci	7.88E-5	3.73E-5	NA	NA
iodine-133	Ci	<LLD	6.68E-6	NA	NA
iodine-135	Ci	<LLD	<LLD	NA	NA
Total for period	Ci	7.88E-5	4.40E-5	NA	NA
=====					
3. Particulates					
barium-lanthanum-140	Ci	<LLD	<LLD	NA	NA
bromine-82	Ci	1.02E-5	2.05E-5	NA	NA
cerium-141	Ci	1.29E-6	<LLD	NA	NA
cerium-144	Ci	2.56E-6	4.28E-6	NA	NA
cesium-134	Ci	<LLD	<LLD	NA	NA
cesium-137	Ci	1.04E-6	2.06E-6	NA	NA
niobium-95	Ci	4.42E-6	<LLD	NA	NA
strontium-89	Ci	<LLD	*	NA	NA
strontium-90	Ci	<LLD	*	NA	NA
zirconium-95	Ci	1.46E-6	<LLD	NA	NA
=====					

LLD - Lower Limit of Detection; see Table 1D.

NA - Iodines and particulates are not analysed prior to release via batch mode.

\* - Second quarter analyses not available at report time; values will be included in the following Semiannual Report.

TABLE 1D

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE LLD (uCi/cc)	BATCH MODE LLD (uCi/cc)
<u>1. Fission gases</u>		
argon-41	<9.00E-8	*
krypton-85	<2.00E-5	*
krypton-85m	<6.00E-8	*
krypton-87	<2.00E-7	*
krypton-88	<2.00E-7	*
xenon-131m	<3.00E-6	*
xenon-133m	<6.00E-7	*
xenon-135m	<7.00E-8	*
xenon-138	<2.00E-7	<3.00E-5
<u>2. Iodines</u>		
iodine-133	<2.00E-13	NA
iodine-135	<6.00E-13	NA
<u>3. Particulates</u>		
barium-140	<3.00E-13	NA
cerium-141	<3.00E-13	NA
cesium-134	<2.00E-13	NA
lanthanum-140	<3.00E-13	NA
niobium-95	<2.00E-13	NA
strontium-89	<1.07E-16	NA
strontium-90	<3.57E-17	NA
tritium	<9.00E-8	NA
zirconium-95	<3.00E-13	NA

\* - Nuclides were detected Table 1C.

NA - Iodines, particulates and tritium are not analysed prior to release via batch mode.



TABLE 1E

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
 GASEOUS EFFLUENTS - RADIATION DOSES AT THE SITE BOUNDARY

	Unit	First Quarter	Second Quarter
A. Noble Gas			
1. Gamma air dose	mrads	1.90E+0	6.53E-1
2. Percent Technical Specification Limit	%	3.80E+1	1.31E+1
3. Beta air dose	mrads	3.72E+0	1.75E+0
4. Percent Technical Specification Limit	%	3.72E+1	1.75E+1
B. Tritium, Iodine, Particulate (at the nearest receptor)			
1. Organ dose	mrem	5.86E-3	1.07E-4
2. Percent Technical Specification Limit	%	7.81E-2	1.43E-3

NOTE: Calculations performed in accordance with the ODCM utilizing the historical X/Q.

## SECTION C. LIQUID EFFLUENTS

Table 2A, "Liquid Effluents - Summation of All Releases," provides a detailed listing of liquid effluents released quarterly in three categories: fission and activation products, tritium, and dissolved and entrained gases. Listed for each of the three categories are: (1) the total curies released, (2) the average diluted concentration, (3) the percent of applicable limit, and (4) the estimated total error. In addition, Table 2A lists: (1) the gross alpha radioactivity released, (2) the volume of waste released (prior to dilution), and (3) the volume of dilution water.

The methodology used to calculate the percent of applicable limit is presented in Section F of this report. The methodology used to calculate the estimated total error in Table 2A is presented in Section G of this report.

Table 2B, "Liquid Effluents," provides the systematic listing by radionuclide for the quantity of radioactivity released in each category. The total radioactivity of each radionuclide released is listed for each quarterly period by both "continuous" and "batch" modes of release.

Table 2C, "Liquid Effluents - Lower Limit of Detection," provides a listing of lower limit of detection concentrations for radionuclides not detected in Table 2B.

Table 2D, "Liquid Effluents - Radiation Doses at the Liquid Site Boundary," provides a quarterly summary of doses at the liquid site boundary for this report period.

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Estimated Total Error %
A. Fission & activation products				
1. Total release (not including tritium, gases, alpha)	Ci	2.99E+0	1.22E+0	1.90E+1
2. Average diluted concentration during period	uCi/ml	6.67E-8	3.80E-9	
3. Percent of applicable limit	%	3.35E+0	3.91E-2	
=====				
B. Tritium				
1. Total release	Ci	4.98E+2	5.86E+2	1.90E+1
2. Average diluted concentration during period	uCi/ml	1.11E-5	1.83E-6	
3. Percent of applicable limit	%	3.70E-1	6.10E-2	
=====				
C. Dissolved and entrained gases				
1. Total release	Ci	6.28E+0	4.31E+0	1.90E+1
2. Average diluted concentration during period	uCi/ml	1.40E-7	1.34E-8	
3. Percent of applicable limit	%	7.00E-2	6.70E-3	
=====				
D. Gross alpha radioactivity				
1. Total release	Ci	3.58E-3	*	5.00E+1
=====				
E. Volume of waste released (prior to dilution)				
	liters	6.51E+7	3.15E+8	5.00E+0
=====				
F. Volume of dilution water used during period				
	liters	4.48E+10	3.21E+11	5.00E+0
=====				

\* - Second quarter analyses not available at report time; values will be included in the following Semiannual Report.

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
antimony-124	Ci	<LLD	<LLD	4.64E-2	<LLD
barium-140	Ci	<LLD	<LLD	<LLD	<LLD
cerium-141	Ci	<LLD	<LLD	<LLD	<LLD
cesium-134	Ci	3.65E-3	3.60E-3	1.19E-1	9.51E-2
cesium-136	Ci	<LLD	<LLD	1.93E-2	1.04E-3
cesium-137	Ci	2.36E-2	2.89E-2	3.30E-1	3.00E-1
chromium-51	Ci	<LLD	<LLD	6.74E-2	4.59E-2
cobalt-57	Ci	<LLD	<LLD	<LLD	4.14E-4
cobalt-58	Ci	<LLD	3.45E-3	1.38E+0	3.76E-1
cobalt-60	Ci	9.63E-4	4.32E-2	4.56E-1	2.87E-1
iodine-131	Ci	<LLD	1.81E-3	4.29E-1	2.25E-2
iodine-133	Ci	<LLD	1.15E-4	4.67E-3	1.49E-3
iron-55	Ci	<LLD	*	7.41E-2	*
iron-59	Ci	<LLD	<LLD	2.50E-3	5.23E-3
lanthanum-140	Ci	<LLD	<LLD	2.88E-3	7.83E-5
manganese-54	Ci	<LLD	<LLD	2.19E-2	5.33E-3
molybdenum-99	Ci	<LLD	<LLD	<LLD	<LLD
niobium-95	Ci	<LLD	<LLD	<LLD	1.06E-3
ruthenium-103	Ci	<LLD	<LLD	<LLD	4.58E-4
sodium-24	Ci	<LLD	<LLD	1.61E-4	<LLD
strontium-89	Ci	8.18E-4	*	1.24E-3	*
strontium-90	Ci	1.92E-3	*	5.48E-4	*
technetium-99m	Ci	3.37E-6	<LLD	2.43E-3	<LLD
zinc-65	Ci	<LLD	<LLD	<LLD	<LLD
zirconium-95	Ci	<LLD	<LLD	<LLD	<LLD
Total for period (above)	Ci	3.10E-2	8.11E-2	2.96E+0	1.14E+0
=====					
krypton-85m	Ci	<LLD	<LLD	6.52E-3	<LLD
xenon-131m	Ci	<LLD	<LLD	4.59E-2	3.48E-2
xenon-133	Ci	2.59E-3	3.61E-3	6.09E+0	4.25E+0
xenon-133m	Ci	<LLD	<LLD	3.97E-2	1.81E-2
xenon-135	Ci	<LLD	<LLD	9.98E-2	2.37E-3
=====					

LLD - Lower Limit of Detection; see Table 2C.

\* - Second quarter analyses not available at report time; values will be included in the following Semiannual Report.

TABLE 2C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE (uCi/ml)	BATCH MODE (uCi/ml)
<u>(1) Particulates</u>		
antimony-124	8.00E-8	3.00E-6
barium-140	2.00E-7	5.00E-6
cerium-141	1.00E-7	2.00E-6
cesium-136	6.00E-8	*
chromium-51	5.00E-7	*
cobalt-57	6.00E-8	8.00E-7
cobalt-58	5.00E-8	*
iodine-131	6.00E-8	*
iodine-133	6.00E-8	*
iron-55	5.00E-8	*
iron-59	9.00E-8	*
lanthanum-140	7.00E-8	*
manganese-54	5.00E-8	*
molybdenum-99	5.00E-7	8.00E-6
niobium-95	7.00E-8	1.00E-6
ruthenium-103	6.00E-8	2.00E-6
sodium-24	7.00E-8	7.00E-7
technetium-99m	7.00E-8	1.00E-6
zinc-65	1.00E-7	3.00E-6
zirconium-95	9.00E-8	2.00E-6

TABLE 2C (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE (uCi/ml)	BATCH MODE (uCi/ml)
<u>(2) Dissolved and entrained gases</u>		
krypton-85m	4.00E-8	2.00E-6
xenon-131m	2.00E-6	*
xenon-133m	3.00E-7	*
xenon-135	4.00E-8	*

\* - Nuclide detected in Table 2B.

TABLE 2D

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS-RADIATION DOSES AT THE LIQUID SITE BOUNDARY

	Unit	First Quarter	Second Quarter
A.			
1. Total body dose	mrem	2.26E-1	1.60E-1
2. Percent of Technical Specification Limits	%	1.51E+1	1.07E+1
B.			
1. Limiting organ dose	mrem	1.25E+0	3.14E-1
2. Percent of Technical Specification Limits	%	2.50E+1	6.28E+0

NOTE: The limiting organ for the first quarter is the thyroid. The limiting organ for the second quarter is the GI-LLI.

SECTION D. PREVIOUS SEMIANNUAL REPORT ADDENDUM

The July - December 1984 Semiannual Report values for composite gross alpha, Sr-89, Sr-90, (Table 1A and Table 1C, Gaseous Effluents, Table 2A and Table 2B, Liquid Effluents) were incomplete due to data unavailable prior to report time. The values not reported were for the fourth quarter of 1984. The values are as follows:

GASEOUS EFFLUENTS

Fourth Quarter			
Nuclides Released	Unit	Continuous Mode	Batch Mode
strontium-89	Ci	<LLD	*
strontium-90	Ci	<LLD	*
gross alpha	Ci	2.38E-8**	

Sr-89 LLD = <1.58E-16 uCi/cc

Sr-90 LLD = <1.58E-16 uCi/cc

LIQUID EFFLUENTS

Fourth Quarter			
Nuclides Released	Unit	Continuous Mode	Batch Mode
strontium-89	Ci	<LLD	5.34E-6
strontium-90	Ci	<LLD	3.50E-3
gross alpha	Ci	<LLD**	

Sr-89 LLD = <2.50E-8 uCi/ml

Sr-90 LLD = <1.00E-8 uCi/ml

Gross alpha LLD = <1.00E-7 uCi/ml

\* - All gaseous releases made from SONGS-1 are vented through the Plant Stack, therefore, Sr-89 and Sr-90 are analyzed by "continuous" mode only.

\*\* - Gross alpha is reported as total activity released per quarter. See Tables 1A & 2A.



SECTION E. RADWASTE SHIPMENTS

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

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

1.	Type of waste	Unit	6-month Period	Est. Total Error, %
a.	Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup> Ci	0.00 0.00	
b.	Dry compressible waste, contaminated equip. etc.	m <sup>3</sup> Ci	1.15E+2* 2.89E+0	3.00E+1
c.	Irradiated components, control rods, etc.	m <sup>3</sup> Ci	0.00 0.00	
d.	Other (filters, sludge, sand/rubble wet trash)	m <sup>3</sup> Ci	1.91E+1* 6.70E-1	3.00E+1

\* Material packaged in 55-gallon DOT 7A Type A drums (7.5 ft<sup>3</sup> each) and steel boxes (strong tight containers - 98 ft<sup>3</sup> each).

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

a.	Not Applicable	%	0.00
b.	carbon-14	%	1.00E-2
	cesium-134	%	4.79E+0
	cesium-137	%	3.75E+1
	cobalt-60	%	3.99E+1
	hydrogen-3	%	4.00E-1
	iodine-129	%	6.00E-2
	manganese-54	%	4.60E-1
	nickel-63	%	1.47E+1
	plutonium-241	%	2.17E+0
	technetium-99	%	2.00E-2
c.	Not Applicable	%	0.00

SECTION E. RADWASTE SHIPMENTS (Continued)

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

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

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

d.

carbon-14	%	6.40E-1
cerium-144	%	7.00E-2
cesium-134	%	2.46E+0
cesium-137	%	1.73E+1
cobalt-57	%	1.00E-2
cobalt-58	%	2.00E-2
cobalt-60	%	6.52E+1
iodine-129	%	2.00E-2
manganese-54	%	2.00E-1
nickel-63	%	1.12E+1
plutonium-241	%	1.52E+0
ruthenium-106	%	8.00E-2
silver-110m	%	2.00E-2
strontium-90	%	6.00E-2
technetium-99	%	1.00E-2
tritium	%	1.19E+0
zinc-65	%	3.00E-2

3. Solid Waste Disposition

See COMMON section of this report.

B. IRRADIATED FUEL SHIPMENTS (Disposition)

See COMMON section of this report.

SECTION F. TECHNICAL SPECIFICATION LIMITS AND APPLICABLE LIMITS

Gaseous Effluents - Technical Specification Limits

The percent of Technical Specification Limit, tabulated in Table 1A, was determined by calculation of the following parameter:

$$\% \text{ TSL} = \frac{(\text{Rel Rate}) (X/Q) (100)}{\text{MPC}_{\text{eff}}}$$

Where:

Rel Rate = total curies released in each category and each quarter, divided by the seconds in a quarter; this is the value in Parts A.2, B.2, C.2 and D.2 of Table 1A, converted to microcuries.

$X/Q = 6.1\text{E-}5 \text{ sec/m}^3$  and is the annual average atmospheric dispersion defined in the ODCM, Rev. 1.

The  $\text{MPC}_{\text{eff}}$  is defined as:

$$\frac{1}{\sum_{i=1}^n \frac{F_i}{\text{MPC}_i}}$$

Where:  $F_i$  = fractional abundance of the  $i$ th radionuclide obtained by dividing the activity in curies for each radionuclide,  $C_i$ , by the sum of all such activities,  $C_T$ .

$n$  = total number of radionuclides identified

$\text{MPC}_i$  = MPC of the  $i$ th radionuclide

The % TSL is placed in Parts A.3, B.3, C.3 and D.3 of Table 1A.

## SECTION F. TECHNICAL SPECIFICATION LIMITS AND APPLICABLE LIMITS

### Liquid Effluents - Applicable Limits

The percent of applicable limit, tabulated in Table 2A, was determined by calculation of the following parameter:

$$\% \text{ Applicable Limit} = \frac{(\text{Dil Conc}) (100)}{\text{MPC}_{\text{eff}}}$$

Where: Dil Conc = total curies released in each category and each quarter, converted to microcuries, divided by the total volume released (sum of Parts E and F in Table 2A) converted to milliliters. This number is the value in Part A.2, B.2 and C.2 of Table 2A.

The  $\text{MPC}_{\text{eff}}$  is defined in the ODCM, Rev 1 as:

$$\sum_{i=1}^n \frac{F_i}{\text{MPC}_i}$$

Where:  $F_i$  = fractional abundance of the  $i$ th radionuclide obtained by dividing the activity in curies for each radionuclide,  $C_i$ , by the sum of all such activities,  $C_T$ .

$n$  = total number of radionuclides identified

$\text{MPC}_i$  = MPC of the  $i$ th radionuclide

The % of applicable limit is placed in Parts A.3, B.3 and C.3 of Table 2A.

## SECTION G. ESTIMATION OF ERROR

Estimation of the error in reported values of gaseous and liquid effluent releases have been made. Sources of error considered for gaseous effluents - batch releases are: (1) tank volumes, (2) sampling errors, (3) counting errors, and (4) calibration errors. Sources of error for gaseous effluents - continuous releases are: (1) fan flow rate, (2) sampling, (3) counting, (4) calibration and (5) differential pressure drop.

Sources of error for liquid effluents - batch releases are: (1) tank volumes, (2) sampling, (3) counting and (4) calibration. Sources of error for liquid effluents - continuous releases are: (1) dilution water flow rate, (2) sampling, (3) counting and (4) calibration.

These sources of error are independent, and thus, the total error is calculated according to the following formula:

$$\text{Total Error} = \sqrt{\sigma_1^2 + \sigma_2^2 + \sigma_3^2 + \dots + \sigma_i^2}$$

Where:  $\sigma_i$  = Error associated with each component.

## SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS

Table 1 in Section H presents the quarterly maximum dose to an individual. Six different categories are presented: (1) Liquid Effluents - Whole Body, (2) Liquid Effluents - Organ, (3) Airborne Effluents - Tritium, Iodines and Particulates, (4) Noble Gases - Gamma, (5) Noble Gases - Beta, and (6) Direct Radiation.

The doses for categories 1 and 2 were calculated using the methodology of the ODCM, this data is also presented in Table 2D for the first and second quarters. Categories 3, 4, and 5 were calculated utilizing RRRGS (Radioactive Release Report Generating System) software, Regulatory Guide 1.109 methodology, and concurrent meteorology. Table 1E of gaseous effluents previously presented, however, lists data similar to categories 3, 4 and 5 using methods described in the ODCM and the historical meteorology (X/Q). Category 6 presents direct dose data measured by TLD dosimeters. Each portion of each category is footnoted to briefly describe each maximum individual dose presented.

Table 2 in Section H presents the percent of Technical Specification Limits for each dose presented in Table 1.

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

TABLE 1

SOURCE	Dose* (millirems)	
	1st Q	2nd Q
Liquid Effluents	1)	2)
WHOLE BODY	2.26E-1	1.60E-1
ORGAN	3)	4)
	1.25E+0	3.14E-1
Airborne Effluents	5)	6)
TRITIUM, IODINES, and PARTICULATES	4.36E-4	3.78E-5
Noble Gases**	7)	8)
GAMMA	3.32E-1	1.73E-1
BETA	9)	10)
	6.54E-1	4.67E-1
Direct Radiation	11)	12)
	2.37E-1	2.26E-1

\* - The numbered footnotes below briefly explain how each maximum dose was calculated, including the organ and the predominant pathway(s).

\*\* - Noble gas doses due to airborne effluents are in units of mrad reflecting the air dose.

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

1. This data was calculated using the methodology of the ODCM.
2. This data was calculated using the methodology of the ODCM.
3. This data was calculated using the methodology of the ODCM; the thyroid received the maximum dose primarily by the saltwater fish pathway.
4. This data was calculated using the methodology of the ODCM; the GI-LLI received the maximum dose primarily by the saltwater fish pathway.
5. This maximum organ dose was to a child's thyroid and was located in the NW sector. This was calculated using the activity reported in the January - June 1985 Semiannual Report with the assumptions of USNRC Regulatory Guide 1.109.
6. This maximum organ dose was to a child's thyroid and was located in the NNW sector. This was calculated using the activity reported in the January - June 1985 Semiannual Report with the assumptions of USNRC Regulatory Guide 1.109.
7. A maximum air dose of  $1.46E+0$  mrad for gamma radiation was located in the SSW sector, a seaward direction. The reported maximum air dose for gamma radiation was located in the NW sector, a landward sector, at the exclusion area boundary and calculated with the assumptions of USNRC Regulatory Guide 1.109.
8. The maximum air dose for gamma radiation was located in the NNW sector at the exclusion area boundary and calculated with the assumptions of USNRC Regulatory Guide 1.109.
9. A maximum air dose of  $2.84E+0$  mrad for beta radiation was located in the SSW sector, a seaward direction. The reported maximum air dose for beta radiation was located in the NW sector, a landward sector, at the exclusion area boundary and calculated with the assumptions of the USNRC Regulatory Guide 1.109.
10. The maximum air dose for beta radiation was located in the NNW sector at the exclusion area boundary and calculated with the assumptions of the USNRC Regulatory Guide 1.109.
11. Measurements were made using TLD dosimeters; values are presented as site wide dose and are prorated to 300 hours per year; highest dose was measured at the San Onofre State Beach (Unit 1 North location).
12. Measurements were made using TLD dosimeters; values are presented as site wide dose and are prorated to 300 hours per year; highest dose was measured at the San Onofre State Beach (Unit 1 North location).



SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

TABLE 2

SOURCE	% TSL	
	1st Q	2nd Q
Liquid Effluents		
WHOLE BODY	1.51E+1	1.07E+1
ORGAN	2.50E+1	6.28E+0
Airborne Effluents		
TRITIUM, IODINES, and PARTICULATES	5.81E-3	5.04E-4
Noble Gases		
GAMMA	6.64E+0	3.46E+0
BETA	6.54E+0	4.67E+0
Direct Radiation	*	*

\* The percent of Technical Specification Limit for direct radiation is on a per year basis.

## SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL

### UNIT 1 REVISION 1 EFFECTIVE DATE: JANUARY 2, 1985

The changes made in producing Revision 1 of the Unit 1 ODCM from Revision 0 are primarily to provide consistency with the Units 2/3 ODCM and to provide for variable administrative factors. The changes in Revision 1 do not alter any results obtained in Revision 0 for limiting concentrations or monitor setpoints (when using the same administrative factor). All Technical Specification requirements are met in both revisions.

The changes made to the Unit 1 ODCM Revision 0 to produce Revision 1 (1-2-85) are detailed as follows (page numbers relate to Revision 0):

1. On pages i thru iv, page numbers in Table of Contents, List of Figures and List of Tables are changed appropriately to represent the correct page numbers in Revision 1.
2. Page (1-1); " $C_{MPC}$ " (the MPC concentration) in equation (1-1) (Revision 0) is changed to " $MPC_{eff}$ " in equation (1-1) (Revision 1). This change is only a change in the name of a variable and is made to make the Unit 1 ODCM consistent with the Units 2/3 ODCM.
- 2a. Page (1-1); a definition of " $MPC_{eff}$ " is added in Revision 1 as equation (1-2) (Revision 1) replacing the definition of  $C_{MPC}$  in Revision 0. The reason is the same as for item 2.
3. Page (1-3); " $C_T$ " is changed to "C" in equation (1-2); the definition remains the same. This change was made to make the Unit 1 ODCM consistent with the Units 2/3 ODCM.
4. Page (1-4); equation (1-3) (Revision 0) is changed and becomes equation (1-4) (Revision 1) and the wording of Step 2 is changed to reflect the use of " $MPC_{eff}$ " in Revision 1 instead of "A" as in Revision 0. The expression given for "A" in Revision 0 is closely related to the " $MPC_{eff}$ " used in Revision 1 in that the " $MPC_{eff}$ " is just the total concentration "C" (Revision 1) divided by "A". This change was made to be consistent with the Units 2/3 ODCM and no change in the limiting concentration that is calculated occurs. In addition, the use of the term "A" in Revision 0 as an "adjustment factor" is confusing and is not used in Revision 1.
5. Page (1-4); equation (1-4) (Revision 0) has been replaced by equation 1-5 (Revision 1). A variable administrative factor, "RW", has been added to equation (1-5) (Revision 1) which when added to an administrative factor for the steam generator blowdown monitor (see item 7 below), cannot exceed 0.8. In equation (1-5) (Revision 1), " $MPC_{eff}$ " is used

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 1  
EFFECTIVE DATE: JANUARY 2, 1985

5. (cont.)  
instead of the "A" value in Revision 0. The new equation (1-5) (Revision 1) gives exactly the same result (when the same administrative factor is used) as equation (1-4) of Revision 0. The change is made to be consistent with the Units 2/3 ODCM and to provide a variable administrative factor for Unit 1 Monitors as is done for Units 2/3 monitors.
6. Page (1-5); equation (1-5) (Revision 0) has been changed to equation (1-6) (Revision 1), with no changes.
7. Page (1-6); a paragraph has been added on page (1-7) of Revision 1 describing the administrative factors "RW" and "SG<sub>1216</sub>" the sum of which must be less than or equal to 0.8. This change is made to permit variable administrative factors in Revision 1 instead of the fixed values in Revision 0. The total of these two administrative factors in Revision 1 cannot be greater than the sum in Revision 0. The use of variable administrative factors is consistent with the Units 2/3 ODCM. Also see Item 15a below.
8. Page (1-7); equation (1-6) (Revision 0) becomes equation (1-7) (Revision 1) and the Revision 1 equation contains "MPC<sub>eff</sub>" and a variable administrative factor "SG<sub>1216</sub>". Equation (1-7) of Revision 1 gives exactly the same result as equation (1-6) of Revision 0 (when the same Revision 0 administrative factor is used). The change is made for the same reason discussed above in Item 5.
9. Page (1-8); equation (1-7) (Revision 0) becomes equation (1-8) (Revision 1) with no changes.
10. Page (1-9); step 2 (Revision 0) and equation (1-8) (Revision 0) are changed to remove the symbol "B" and to include "MPC<sub>eff</sub>". The expression given for "B" in Revision 0 is closely related to the "MPC<sub>eff</sub>" used in Revision 1 in that the "MPC<sub>eff</sub>" is just the total concentration "C" (Revision 1) divided by "B". The change is made to be consistent with the Units 2/3 ODCM. In addition, the use of the term "B" in Revision 0 as an "adjustment factor" is confusing and is not used in Revision 1.
11. Page (1-10); equation (1-9) (Revision 0) becomes equation (1-10) (Revision 1) and is changed to include the variable administrative factor "SG<sub>1216</sub>" and to use "MPC<sub>eff</sub>". The use of equation (1-10) (Revision 1) gives exactly the same result as equation (1-9) (Revision 0) (when the same Revision 0 administrative factor is used). The change is made to be consistent with the Units 2/3 ODCM and to permit

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 1  
EFFECTIVE DATE: JANUARY 2, 1985

11. (cont.)  
the use of a variable administrative factor rather than a fixed factor. See Item 12 below and Item 15a.
12. Page (1-10); the discussion of the 0.1 administrative factor (Revision 0) is changed to permit use of variable administrative factors, "SG<sub>1216</sub>" and "RW" such that  $(RW) + (SG_{1216}) \leq 0.8$ . This is done to permit adjusting the total administrative factor of 0.8 between the radwaste discharge line monitor and the steam generator blowdown line monitor both of which discharge to the ocean outfall. The use of variable administrative factors is consistent with the Units 2/3 ODCM. See Item 15a.
13. Page (1-11); equation (1-10) (Revision 0) becomes equation (1-11) (Revision 1) and is changed to include a variable administrative factor "S<sub>2100</sub>" and to make use of "MPC<sub>eff</sub>" from equation (1-9) (Revision 1). The use of equation (1-11) (Revision 1) gives exactly the same result as equation (1-10) (Revision 0) (when the same Revision 0 administrative factor is used). The changes are made to permit variable administrative factors and to be consistent with the Units 2/3 ODCM. See Item 15a.
14. Page (1-11); equation (1-11) (Revision 0) becomes equation (1-12) (Revision 1) and is changed to include a variable administrative factor "S<sub>2101</sub>" and to make use of "MPC<sub>eff</sub>" from equation (1-9) (Revision 1). The use of equation (1-12) (Revision 1) gives exactly the same result as equation (1-11) (Revision 0) (when the same Revision 0 administrative factor is used). The changes are made for the same reasons as discussed in Item 13. See Item 15a.
15. Page (1-12); the 0.1 administrative factor is changed to permit the use of variable administrative factors (S<sub>2100</sub>) and (S<sub>2101</sub>) with the condition that  $(S_{2100}) + (S_{2101}) \leq 0.2$ .
- 15a. Note that the sum of all administrative factors for liquid discharge line monitors is controlled to be  $\leq 1.0$  in the Revision 1 ODCM, just as it was fixed in Revision 0 to be equal to 1.0.
16. Page (1-13); Table (1-1) (Revision 0) has been changed for Revision 1 to include current values for monitor RT-2101 and new values for monitor RT-2100.
17. Page (1-14); equation (1-12) (Revision 0) becomes equation (1-13) (Revision 1) with no changes except for inserting an upper index "n" for the "i" summation and upper index "m"

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 1  
EFFECTIVE DATE: JANUARY 2, 1985

17. (cont.)  
for the "j" summation with the definitions for "n" and "m" being given. This change is made for completeness and to clarify the two summations.
18. Page (2-1); the entire paragraph in Section 2.1 referring to administrative factors is removed since there are no Unit 1 gaseous administrative factors as a result of the fact that all gaseous discharges are made by way of a single vent stack.
19. Page (2-1); Section 2.1.1 has been separated into two parts, part (a) for monitors RT-1214 and RT-1219 and part (b) for monitor RT-1254. This was done since the setpoint for the part (a) monitors is based on concentration expressed as counts per minute and for the part (b) monitor is based on concentration and flowrate expressed as a release rate. See also Item 21 below.
20. Pages (2-1) and (2-2); equation (2-1) (Revision 0) is replaced by equations (2-1) (Revision 1) and (2-2) (Revision 1). The definitions following the equations (Revision 1) are changed appropriately to be consistent. Note that Revision 0 made use of a quantity "MCB" which was taken as the lower of the two values in equation (2-1a) (Revision 0). In Revision 1, these expressions for "MCB" are each inserted into the Revision 0 equation (2-1), giving the two equations (2-1) and (2-2) in Revision 1. The equations in Revision 1 give exactly the same results but are rewritten to be consistent with the Units 2/3 ODCM.
21. Page (2-2); Note that Revision 0 did not give a calculation for the setpoint for RT-1254 and that equation (2-3) (Revision 1) has been added to Revision 1 to include this monitor (Section 2.1.1.b).
22. Page (2-3); equation (2-2) (Revision 0) is replaced by equation (2-4) (Revision 1) and (2-5) (Revision 1) with the same changes as discussed above in Item (20). The use of the Revision 1 equations gives exactly the same result as the Revision 0 equation. The change is made to be consistent with the Units 2/3 ODCM.
23. Page (2-4); equation (2-3) (Revision 0) becomes equation (2-6) (Revision 1). The only changes involve removal of the 0.9 administrative factor (which is not required for Unit 1) and the redesignation of "C" (Revision 0) to "C<sub>det</sub>" (Revision 1) for clarification. The two equations give the same result when the administrative factor is removed from

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 1  
EFFECTIVE DATE: JANUARY 2, 1985

23. (cont.)  
equation (2-3) (Revision 0). The change in the "C" to "C<sub>det</sub>" is made to be consistent with the Revision 1 designation in equation (2-4) (Revision 1) and (2-5) (Revision 1).
24. Page (2-5); Table 2-1 of Revision 1 has current values for monitor RT-1219 in place of the values in Revision 0.
25. Pages (2-6) (Revision 0) thru (2-15) (Revision 0); equation numbers (2-4) (Revision 0) thru (2-12) (Revision 0) are renumbered (2-7) (Revision 1) thru (2-15) (Revision 1). The equations remain identical with the exception noted in Item 26 below.
26. Page (2-14); equation (2-12) (Revision 0) has been rewritten in equation (2-15) (Revision 1) with all the summation signs outside the parentheses. This has been done to avoid some confusion that has resulted in the use of the Revision 0 equation. The results from the two equations are identical (for the same input parameters).

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 2  
EFFECTIVE DATE: JUNE 18, 1985

The changes made in producing Revision 2 of the Unit 1 ODCM from Revision 1 are primary alterations to Liquid Dose Commitment Factors (Table 1-2) and Gaseous Dose Parameters (Tables 2-2 thru 2-15). Changes to these tables resulted from: (1) adding and subtracting radionuclides listed, (2) altering the bioaccumulation factor for Niobium, (3) recalculating the historical X/Q, (4) and recalculating Gaseous Dose Parameters utilizing true plant to receptor distances.

The changes made to the Unit 1 ODCM Revision 1 to produce Revision 2 (6-18-85) are detailed as follows:

1. On Pages i to v, page numbers in Table of Contents, List of Figures and List of Tables are changed appropriately to represent the correct page numbers in Revision 2.
2. Page (1-6); in definition of  $MPC_{eff}$  reference to equation (1-5) (Revision 1) corrected to equation (1-4) (Revision 2).
3. Page (1-8); definition of variable "R" (blowdown flow rate) inserted.
4. Page (1-11); definition of "R" clarified as a variable.
5. Page (1-17); "Liquid Dose Commitment Factors ( $A_i$ )" Table 1-2; radionuclides deleted: P-32, Rb-86, Y-91, Te-125m, Te-127m, Te-131m; radionuclides added: Na-24, Mn-56, Co-57, Co-64, Br-84, Rb-88, Y-90, Y-91m, Y-92, Sr-91, Sr-92, Nb-95m, Nb-97, Tc-99m, Sn-113, I-132, I-134, I-135, Cs-138, Ba-139, Nd-147, W-187.
- 5a. Pages (1-17 & 1-18); "Liquid Dose Commitment Factors ( $A_i$ )" for Niobium were altered from NUREG-0133 and Regulatory Guide 1.109 published values by virtue of changing the saltwater fish bioaccumulation factor from the published value of 30,000 to 100. References for this change are:
  - (1) Letter dated 4/3/85 to Ken Helm, Southern California Edison, from B. G. Blaylock, Oak Ridge National Lab
  - (2) EPRI NP-3840

Environmental Radiation Doses from Difficult to Measure Nuclides

January 1985

SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 2  
EFFECTIVE DATE: JUNE 18, 1985

(3) D.O.E./TIC - 11468

Models and Parameters for Environmental Radiological Assessments

C. W. Moller, Editor

1984

Note: This report contains other reference for the 100 value for niobium, also.

6. Page (2-3); Historical Atmospheric Dispersion Factor (X/Q) changed from  $6.1E-5 \text{ sec/m}^3$  to  $1.3E-5 \text{ sec/m}^3$ . Dames and Moore of Atlanta were commissioned to re-evaluate the historical X/Q utilizing more current data (1979 - 1983), more accurate measurement of site boundary distances, as well as utilizing site specific Terrain Recirculation Factors rather than default values as was previously the case.
7. Page (2-9) Table 2-1, "Gaseous Effluent Radiation Monitor Calibration Constants," Monitor RT-1212 has had more recent calibration constants installed.
8. Pages (2-11, 2-12 and 2-13); definition of historical X/Q value has been changed, see # 6.
9. Page (2-20) Table 2-2, "Dose Factors for Noble Gases and Daughters"; radionuclides that were deleted were Kr-89, Kr-90 and Xe-137.
10. Page (2-21), Table 2-3 "Dose Parameter  $P_{ik}$ , Child Age Group Critical Organ"; radionuclides that were added were Cr-51 and Co-57. Radionuclides that were deleted were: C-14, Na-24, P-32, Cr-54, Mn-56, Fe-59, Ni-63, Ni-65, Cu-64, Zn-65, Zn-69, Br-83, Br-84, Br-85, Rb-86, Rb-88, Rb-89, Sr-91, Sr-92, Y-90, Y-91m, Y-91, Y-92, Y-93, Zr-97, Mo-99, Tc-99m, Tc-101, Ru-103, Ru-105, Ru-106, Ag-110m, Te-125m, Te-127m, Te-127, Te-129, Te-131m, Te-131, Te-132, I-130, Cs-138, Ba-139, Ba-141, Ba-142, La-140, La-142, Ce-143, Pr-143, Pr-144, Nd-147, W-187, Np-239. These radionuclides were deleted since either they have half-lives less than eight days, or they are not identified at SONGS in gaseous releases.
11. Pages (2-22 thru 2-46) Tables 2-4 thru 2-15 "Dose Parameters"; radionuclides that was added: Co-57. Radionuclides that were deleted: P-32, Fe-55, Fe-59, Ni-63,



SECTION I. CHANGES TO OFFSITE DOSE CALCULATION MANUAL (Continued)

UNIT 1 REVISION 2  
EFFECTIVE DATE: JUNE 18, 1985

11. (cont.)  
Zn-65, Rb-86, Y-91, Mo-99, Ru-103, Ru-106, Ag-110m, Cd-115m, Sn-123, Sn-126, Sb-124, Sb-125 and Te-127m. These radionuclides were deleted since either they have half-lives less than eight days, or they are not identified at SONGS in gaseous releases.
- 11a. Pages (2-22 thru 2-46), Tables 2-4 thru 2-15. The values in these tables were generated utilizing the USNRC "PARTS" code based upon 1984 Land Use Census data as presented in Table 2-15.
12. Pages (2-48 thru 2-54), Table 2-15 "'PARTS" Parameters used to calculate  $R_i$ "; Information contained in this table based upon the 1984 Land Use Census.
13. Page (3-1); "Projected Dose" Technical Specification number citations were corrected.
14. Page (4-3), Figure 4-2; "Radiation Gaseous Waste System" filter arrangement drawings were clarified.
15. Page (4-4), Figure 4-3; "Solid Waste Handling Drawing" altered to reflect current practices.

JANUARY 1, 1985 - JUNE 31, 1985

EFFLUENT RADIATION MONITORS OUT OF SERVICE FOR GREATER THAN 30 DAYS

UNIT 1

MONITOR	INOPERABILITY DATE	INOPERABILITY CAUSE	EXPLANATION
1215	05/23 - Current	Perform 92 Day Surveillance	Surveillance to be performed in conjunction with work order to acquire the necessary data for performing electronic, transfer and isotopic calibration procedures
1218	04/84 - Current	Incorporate DCP 3082	DCP exists to jumper out and replace monitor
1220	01/14 - 02/22	Checksource sticking; corrective maintenance required	Freed and lubricated solenoid linkage; calibrated ratemeter and performed complete isotopic and electronic calibrations. Also calibrated FS-1220 and PS-1220 and performed work to investigate and acquire data for performing electronic, transfer and isotopic calibration procedures

## SECTION J. SONGS 1 CONCLUSIONS

- o Gaseous effluent releases totaled  $2.50\text{E}+3$  curies with Xe-133 90.7% of the total.
- o The radiation doses from gaseous releases are: (a) gamma air dose:  $2.55\text{E}+0$  mrad at the site boundary, (b) beta air dose:  $5.47\text{E}+0$  mrad at the site boundary, (c) organ dose:  $5.97\text{E}-3$  mrem at the nearest receptor.
- o Liquid effluent releases totaled  $1.10\text{E}+3$  curies with tritium 98.7% of the total.
- o The radiation doses from liquid releases are: (a) total body:  $3.86\text{E}-1$  mrem, (b) limiting organ: first quarter thyroid  $1.25\text{E}+0$  mrem and second quarter GI-LLI  $3.14\text{E}-1$  mrem.
- o The radioactive releases and resulting doses generated were below the Technical Specification Limits for both gaseous and liquid effluents.

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## SEMIANNUAL EFFLUENT REPORT

January - June 1985

### SECTION A. INTRODUCTION

This Semiannual Report summarizes the gaseous and liquid radioactive effluent releases and radwaste shipments made from the San Onofre Nuclear Generating Station, Units 2 and 3. This report is prepared in the general format of USNRC Regulatory Guide 1.21 and includes:

1. Quarterly summaries of liquid and gaseous effluents for "batch" and "continuous" modes of release;
2. Percent of Technical Specification Limits;
3. Percent of Applicable Limits;
4. Estimated total percent error;
5. Lower limit of detection concentrations;
6. Previous semiannual report addendum;
7. Radwaste shipments;
8. 10 CFR 50 Appendix I requirements.

## SECTION B. GASEOUS EFFLUENTS

Table 1A, "Gaseous Effluents-Summation of All Releases," provides a detailed listing of gaseous effluents released quarterly in four categories: fission and activation gases, iodine-131, particulates with half-lives greater than eight days, and tritium. Listed for each of the four categories are: (1) the total curies released, (2) the average release rate, (3) the percent of Technical Specification Limit (TSL), and (4) the estimated total error. In addition, the particulate category lists the gross alpha radioactivity released for each quarter.

The methodology used in Table 1A to calculate the estimated total error is presented in Section G of this report.

Table 1B, "Gaseous Effluents-Elevated Release," has not been included in this report since San Onofre Nuclear Generating Station Units 2 and 3 do not conduct elevated releases.

Table 1C, "Gaseous Effluents-Ground-Level Releases," provides the systematic listing by radionuclide for the quantity of radioactivity released in three categories: fission gases, iodines, and particulates. The total radioactivity for each radionuclide is listed for each quarterly period by both "continuous" and "batch" modes of release.

Waste gas decay tank and calibration releases are considered to be "batch" releases. Containment purges, steam jet air ejector and plant stack releases are considered to be "continuous" releases.

Table 1D, "Gaseous Effluents-Lower Limit of Detection," provides a listing of lower limit of detection concentrations for radionuclides not detected in Table 1C.

Table 1E, "Gaseous Effluents - Radiation Doses at the Site Boundary," provides a quarterly summary of doses at the site boundary for this report period.

Table 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Estimated Total Error, %
A. Fission and activation gases				
1. Total release	Ci	8.34E+3	1.08E+4	2.50E+1
2. Average release rate for period	uCi/sec	1.07E+3	1.37E+3	
3. Percent of technical specification limit	%	9.86E+0	1.18E+1	
=====				
B. Iodines				
1. Total iodine-131	Ci	2.88E-1	9.62E-2	1.90E+1
2. Average release rate for period	uCi/sec	3.70E-2	1.22E-2	
3. Percent of technical specification limit	%	8.89E-1	2.94E-1	
=====				
C. Particulates				
1. Particulates with half-lives > 8 days	Ci	3.55E-3	3.35E-4	1.60E+1
2. Average release rate for period	uCi/sec	4.57E-4	4.26E-5	
3. Percent of technical specification limit	%	1.07E-3	1.88E-4	
4. Gross alpha radioactivity	Ci	1.68E-7	*	5.00E+1
=====				
D. Tritium				
1. Total release	Ci	2.04E+0	2.42E-2	2.50E+1
2. Average release rate for period	uCi/sec	2.62E-1	3.08E-3	
3. Percent of technical specification limit	%	3.15E-3	3.69E-5	
=====				

\* Second quarter analyses unavailable at report time; values will be included in the following Semiannual Report.

Table 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
1. Fission gases					
argon-41	Ci	4.68E-1	2.47E+0	<LLD	<LLD
krypton-85	Ci	<LLD	<LLD	5.39E+1	1.60E+1
krypton-85m	Ci	7.59E+0	2.88E+1	5.49E-2	4.29E-2
krypton-87	Ci	5.65E-2	9.92E-1	<LLD	<LLD
krypton-88	Ci	4.51E-1	<LLD	<LLD	<LLD
xenon-131m	Ci	4.82E+1	1.50E-1	7.92E+0	1.34E+1
xenon-133	Ci	7.56E+3	9.00E+3	1.64E+1	1.35E+3
xenon-133m	Ci	2.46E+1	4.71E+1	7.04E-2	3.46E+0
xenon-135	Ci	6.15E+2	3.44E+2	4.99E-1	5.38E-1
xenon-135m	Ci	4.89E-2	7.99E-4	<LLD	<LLD
xenon-138	Ci	<LLD	<LLD	<LLD	<LLD
Total for period	Ci	8.26E+3	9.42E+3	7.88E+1	1.38E+3
=====					
2. Iodines					
iodine-131	Ci	2.88E-1	9.62E-2	NA	NA
iodine-132	Ci	1.59E-4	9.04E-4	NA	NA
iodine-133	Ci	1.09E-2	3.38E-2	NA	NA
iodine-134	Ci	<LLD	3.62E-6	NA	NA
iodine-135	Ci	1.84E-4	8.79E-3	NA	NA
Total for period	Ci	2.99E-1	1.40E-1	NA	NA
=====					



TABLE 1C (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
3. Particulates					
antimony-124	Ci	<LLD	1.16E-7	NA	NA
barium-140	Ci	2.13E-6	<LLD	NA	NA
bromine-82	Ci	2.26E-6	1.88E-5	NA	NA
cesium-134	Ci	2.12E-4	3.19E-5	NA	NA
cesium-136	Ci	2.70E-5	4.17E-7	NA	NA
cesium-137	Ci	4.52E-4	2.35E-4	NA	NA
cesium-138	Ci	2.26E-4	7.83E-3	NA	NA
chromium-51	Ci	3.26E-5	<LLD	NA	NA
cobalt-58	Ci	3.73E-4	5.67E-5	NA	NA
cobalt-60	Ci	1.80E-4	1.08E-5	NA	NA
iron-55	Ci	1.90E-3	*	NA	NA
lanthanum-140	Ci	5.70E-7	<LLD	NA	NA
manganese-54	Ci	6.89E-5	1.16E-8	NA	NA
molybdenum-99	Ci	1.35E-5	2.84E-5	NA	NA
niobium-95	Ci	1.80E-5	<LLD	NA	NA
rubidium-88	Ci	2.07E-3	3.91E-2	NA	NA
ruthenium-103	Ci	1.37E-6	<LLD	NA	NA
sodium-24	Ci	2.99E-5	7.57E-5	NA	NA
strontium-89	Ci	2.81E-4	*	NA	NA
strontium-90	Ci	4.46E-6	*	NA	NA
strontium-92	Ci	9.84E-7	<LLD	NA	NA
technetium-99m	Ci	1.34E-5	2.89E-5	NA	NA
yttrium-92	Ci	LLD	1.25E-5	NA	NA

LLD = Lower Limit of Detection; See Table 1D.

NA = Iodines and particulates are not analysed prior to release via batch mode.

\* Second quarter analyses unavailable at report time; values will be included in the following Semiannual Report.

TABLE 1D

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE LLD (uCi/cc)	BATCH MODE LLD (uCi/cc)
<u>1. Fission gases</u>		
argon-41	*	3.00E-5
krypton-85	3.00E-5	*
krypton-87	*	2.00E-5
krypton-88	3.00E-7	3.00E-5
xenon-135m	*	6.00E-5
xenon-138	4.00E-7	1.00E-4
<u>2. Iodines</u>		
iodine-134	2.00E-12	NA
<u>3. Particulates</u>		
antimony-124	3.00E-13	NA
barium-140	8.00E-13	NA
chromium-51	4.00E-12	NA
lanthanum-140	3.00E-13	NA
niobium-95	2.00E-13	NA
ruthenium-103	3.00E-13	NA
strontium-92	3.00E-13	NA
yttrium-92	2.00E-12	NA

\* - Nuclides were detected Table 1C.

NA - Iodines and particulates are not analysed prior to the release via batch mode.

TABLE 1E

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
GASEOUS EFFLUENTS--RADIATION DOSES AT THE SITE BOUNDARY

	Unit	First Quarter	Second Quarter
A. Noble Gas			
1. Gamma air dose	mrad	2.96E+0	3.36E+0
2. Percent Technical Specification Limit	%	2.96E+1	3.36E+1
3. Beta air dose	mrad	7.38E+0	8.69E+0
4. Percent Technical Specification Limit	%	3.69E+1	4.34E+1
B. Tritium, Iodine, Particulate (at the nearest receptor)			
1. Organ dose	mrem	5.30E+0	1.74E+0
2. Percent Technical Specification Limit	%	3.53E+1	1.16E+1

NOTE: Calculations performed in accordance with the ODCM utilizing the historical X/Q.

## SECTION C. LIQUID EFFLUENTS

Table 2A, "Liquid Effluents - Summation of All Releases," provides a detailed summary of liquid effluents released quarterly in three categories: fission and activation products, tritium, and dissolved and entrained gases. Listed for each of the three categories are: (1) the total curies released, (2) the average diluted concentration, (3) the percent of applicable limit and (4) the estimated total error. In addition, Table 2A lists: (1) the gross alpha radioactivity, (2) the volume of waste released (prior to dilution), and (3) the volume of the dilution water.

The methodology used to calculate the percent of applicable limit is presented in Section F of this report. The methodology used to calculate the estimated total error in Table 2A is presented in Section G of this report.

Table 2B, "Liquid Effluents," provides the systematic listing by radionuclide for the quantity of radioactivity released in each category. The total radioactivity of each radionuclide released is listed for each quarterly period by both "continuous" and "batch" modes of release.

Table 2C, "Liquid Effluents - Lower Limit of Detection," provides a listing of lower limit of detection concentrations for radionuclides not detected in Tables 2A and Table 2B.

Table 2D, "Liquid Effluents - Radiation Doses at the Liquid Site Boundary," presents a quarterly summary of doses at the liquid site Boundary for this report period.

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	First Quarter	Second Quarter	Estimated Total Error, %
A. Fission & activation products				
1. Total release (not including tritium, gases, alpha)	Ci	4.15E+0	2.76E+0	1.90E+1
2. Average diluted concentration during period	uCi/ml	1.30E-8	6.45E-9	
3. Percent of applicable limit	%	4.16E-1	1.29E-1	
=====				
B. Tritium				
1. Total release	Ci	3.85E+1	1.41E+2	1.90E+1
2. Average diluted concentration during period	uCi/ml	1.20E-7	3.29E-7	
3. Percent of applicable limit	%	4.00E-3	1.10E-2	
=====				
C. Dissolved and entrained gases				
1. Total release	Ci	2.67E+1	5.42E+1	1.90E+1
2. Average diluted concentration during period	uCi/ml	8.34E-8	1.27E-7	
3. Percent of applicable limit	%	4.17E-2	6.35E-2	
=====				
D. Gross alpha radioactivity				
1. Total release	Ci	LLD	*	5.00E+1
=====				
E. Volume of waste released (prior to dilution)				
	liters	5.76E+7	8.62E+7	5.00E+0
=====				
F. Volume of dilution water used during period				
	liters	3.20E+11	4.28E+11	5.00E+0
=====				

\* - Second quarter analyses unavailable at report time; values will be included in the following Semiannual Report.

LLD - Lower Limit of Detection; see Table 2C.

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
antimony-124	Ci	LLD	LLD	2.00E-2	3.20E-3
antimony-125	Ci	LLD	LLD	3.50E-2	2.11E-2
barium-140	Ci	LLD	LLD	4.21E-4	3.86E-4
cerium-141	Ci	LLD	LLD	1.34E-2	4.40E-3
cerium-144	Ci	LLD	LLD	3.27E-2	1.87E-2
cesium-134	Ci	LLD	LLD	4.80E-1	2.79E-1
cesium-136	Ci	LLD	LLD	8.80E-2	8.09E-3
cesium-137	Ci	1.95E-4	5.24E-4	9.39E-1	5.72E-1
chromium-51	Ci	LLD	LLD	5.39E-1	2.17E-1
cobalt-57	Ci	LLD	LLD	1.61E-3	3.16E-4
cobalt-58	Ci	3.18E-4	5.16E-1	5.27E-1	1.41E-1
cobalt-60	Ci	2.03E-4	4.09E-1	2.19E-1	9.01E-2
iodine-131	Ci	LLD	3.44E-3	3.60E-1	1.36E-1
iodine-133	Ci	LLD	LLD	5.57E-3	1.15E-2
iron-55	Ci	LLD	LLD	2.21E-1	*
iron-59	Ci	LLD	LLD	5.58E-2	1.00E-2
lanthanum-140	Ci	LLD	LLD	2.83E-2	9.10E-3
manganese-54	Ci	1.04E-4	LLD	9.33E-2	3.32E-2
molybdenum-99	Ci	LLD	LLD	1.92E-2	3.15E-2
neptunium-239	Ci	LLD	LLD	9.11E-3	2.20E-2
niobium-95	Ci	LLD	LLD	2.30E-1	7.31E-2
niobium-97	Ci	LLD	LLD	LLD	2.63E-3
rubidium-88	Ci	LLD	LLD	1.08E-2	3.42E-2
ruthenium-103	Ci	LLD	LLD	2.59E-2	9.09E-3
ruthenium-106	Ci	LLD	LLD	7.72E-3	7.36E-4
silver-110m	Ci	LLD	LLD	4.80E-5	3.77E-4
sodium-24	Ci	LLD	LLD	2.02E-4	1.09E-2
strontium-89	Ci	LLD	LLD	2.44E-3	*
strontium-90	Ci	LLD	LLD	9.73E-5	*
strontium-92	Ci	LLD	LLD	6.32E-6	LLD
technetium-99m	Ci	LLD	LLD	1.96E-2	3.20E-2
tellurium-132	Ci	LLD	LLD	LLD	1.26E-4
tin-113	Ci	LLD	LLD	1.49E-2	4.83E-3
tungsten-187	Ci	LLD	LLD	LLD	4.27E-3
zinc-65	Ci	LLD	LLD	5.41E-3	1.18E-3
zirconium-95	Ci	LLD	LLD	1.46E-1	5.13E-2
zirconium-97	Ci	LLD	LLD	4.87E-4	1.28E-3
Total for period	Ci	8.20E-4	9.29E-1	4.15E+0	1.83E+0

TABLE 2B (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		First Quarter	Second Quarter	First Quarter	Second Quarter
argon-41	Ci	LLD	LLD	LLD	2.69E-4
krypton-85	Ci	LLD	LLD	5.47E-2	1.36E-2
krypton-85m	Ci	LLD	LLD	3.78E-3	1.57E-2
krypton-88	Ci	LLD	LLD	3.66E-3	3.18E-3
xenon-131m	Ci	LLD	LLD	9.01E-1	2.87E-1
xenon-133	Ci	2.12E-4	6.52E-1	2.51E+1	5.13E+1
xenon-133m	Ci	LLD	LLD	3.79E-1	8.93E-1
xenon-135	Ci	LLD	LLD	2.53E-1	1.06E+0

\* - Second quarter analyses unavailable at report time; values will be included in the following Semiannual Report.

LLD - Lower Limit of Detection; see Table 2C.

TABLE 2C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE (uCi/ml)	BATCH MODE (uCi/ml)
<u>(1) Particulate</u>		
antimony-124	4.00E-7	*
antimony-125	3.00E-7	*
barium-140	4.00E-7	*
cerium-141	2.00E-7	*
cerium-144	5.00E-7	*
cesium-134	2.00E-7	*
cesium-136	3.00E-7	*
chromium-51	6.00E-7	*
cobalt-57	7.00E-8	*
iodine-131	1.00E-7	*
iodine-133	2.00E-7	*
iron-55	3.00E-7	*
iron-59	4.00E-7	*
lanthanum-140	4.00E-7	*
manganese-54	2.00E-7	*
molybdenum-99	7.00E-8	*
neptunium-239	3.00E-7	*
niobium-95	1.00E-7	*
niobium-97	**	2.00E-6
rubidium-88	**	*
ruthenium-103	1.00E-7	*
ruthenium-106	7.00E-7	*



TABLE 2C (Continued)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS - LOWER LIMIT OF DETECTION

RADIONUCLIDES	CONTINUOUS MODE (uCi/ml)	BATCH MODE (uCi/ml)
silver-110m	1.00E-7	*
sodium-24	6.00E-7	*
strontium-89	1.00E-8	*
strontium-90	5.00E-9	*
strontium-92	7.00E-5	2.00E-7
technetium-99m	7.00E-8	*
tellurium-132	1.00E-7	5.00E-7
tin-113	1.00E-7	*
tungsten-187	6.00E-7	3.00E-6
zinc-65	3.00E-7	*
zirconium-95	2.00E-7	*
zirconium-97	3.00E-7	*
Gross alpha	1.00E-7	5.00E-9

## (2) Dissolved and entrained gases

argon-41	4.00E-7	4.00E-7
krypton-85	2.00E-5	*
krypton-85m	8.00E-8	*
krypton-88	4.00E-7	*
xenon-131m	3.00E-6	*
xenon-133m	6.00E-7	*
xenon-135	9.00E-8	*

\* - Nuclide detected in Table 2B.

\*\* - Weekly composite analysis will not detect this isotope.

TABLE 2D

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
LIQUID EFFLUENTS-RADIATION DOSES AT THE LIQUID SITE BOUNDARY

	Unit	First Quarter	Second Quarter
A.			
1. Total body dose	mrem	2.25E-1	6.70E-2
2. Percent Technical Specification Limit	%	7.50E+0	2.23E+0
B.			
1. Limiting organ dose	mrem	3.86E+0	8.00E-1
2. Percent Technical Specification Limit	%	3.86E+1	8.00E+0

NOTE: The limiting organ for this report period is GI-LLI.

#### SECTION D. PREVIOUS SEMIANNUAL REPORT ADDENDUM

The July - December 1984 Semiannual Report values for composite Gross alpha, Sr-89, Sr-90, and Fe-55 (Tables 1A and 1C, Gaseous Effluents, Tables 2A and 2B, Liquid Effluents) were incomplete due to unavailable data at report time. The values not reported were for the fourth quarter of 1984. The values are as follows:

##### GASEOUS EFFLUENTS

Nuclides Released	Unit	Fourth Quarter	
		Continuous Mode	Batch Mode
strontium-89	Ci	2.16E-5	*
strontium-90	Ci	7.93E-8	*
iron-55	Ci	3.51E-4	*
Gross alpha	Ci	4.60E-7**	

##### LIQUID EFFLUENTS

Nuclides Released	Unit	Fourth Quarter	
		Continuous Mode	Batch Mode
strontium-89	Ci	LLD	LLD
strontium-90	Ci	LLD	LLD
iron-55	Ci	1.26E-1	LLD
Gross alpha	Ci	LLD**	

Gross alpha LLD =  $<1.50E-5$  uCi/ml

Fe-55 LLD =  $<5.00E-7$  uCi/ml

Sr-89 LLD =  $<2.00E-8$  uCi/ml

Sr-90 LLD =  $<5.00E-8$  uCi/ml

\* - All gaseous releases made from SONGS Units 2 and 3 are vented through continuous discharge pathways, therefore, Sr-89, Sr-90, and Fe-55 are analyzed by "continuous" mode only.

\*\* - Gross alpha is reported as total activity released per quarter. See Tables 1A & 2A.

SECTION D. PREVIOUS SEMIANNUAL REPORT ADDENDUM (Continued)

Section E, item A.1.a, of Radwaste Shipments of the previous Semiannual Effluent Report failed to include: types of containers, volume and solidification agent for Type 1.a radwaste. This material was shipped in eight separate carbon steel containers, one in a Type A 120 ft<sup>3</sup> shipping cask, one in a Type B 120 ft<sup>3</sup> shipping cask and six in Type A 170 ft<sup>3</sup> shipping casks. The solidification agent used in all the eight shipments was cement. The asterisked footnote at the bottom of item A. referred to shipments of A.1.b and A.1.d.

# SECTION E. RADWASTE SHIPMENTS

TABLE 3

## EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985) SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

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

1. Type of waste	Unit	6-month Period	Est. Total Error, %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup> Ci	9.53E+0* 3.60E+2	3.00E+1
b. Dry compressible waste, contaminated equip. etc.	m <sup>3</sup> Ci	2.18E+2** 2.46E+1	3.00E+1
c. Irradiated components, control rods, etc.	m <sup>3</sup> Ci	1.49E+0** 9.56E-1	3.00E+1
d. Other (filters, sludge sand/rubble, wet trash)	m <sup>3</sup> Ci	7.54E+1** 1.96E+2	3.00E+1

\* Shipped in Type A cask, 3-170 ft<sup>3</sup> and 1-120 ft<sup>3</sup> steel liners.

\*\* Material shipped in 55 gal. D.O.T. 7A Type A Drums (7.5 ft<sup>3</sup> each) and steel boxes (strong tight containers - 98 ft<sup>3</sup> each).

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

a. carbon-14	%	7.00E-2
cesium-134	%	1.23E+1
cesium-137	%	5.15E+1
cobalt-57	%	6.00E-2
cobalt-58	%	1.67E+1
cobalt-60	%	3.84E+0
chromium-51	%	2.00E-1
iron-59	%	4.36E+0
manganese-54	%	7.76E+0
nickel-63	%	2.81E+0
niobium-95	%	1.90E-1
plutonium-241	%	1.00E-2
strontium-90	%	2.00E-2
zirconium-95	%	9.00E-2
zinc-65	%	5.00E-2

SECTION E. RADWASTE SHIPMENTS (Continued)

TABLE 3

b. carbon-14	%	5.00E-2
cesium-134	%	2.97E+0
cesium-137	%	1.53E+1
cobalt-58	%	3.40E+1
cobalt-60	%	9.37E+0
chromium-51	%	1.35E+1
iron-59	%	2.44E+0
iodine-129	%	4.00E-2
iodine-131	%	6.42E+0
manganese-54	%	3.80E+0
nickel-63	%	2.29E+0
niobium-95	%	6.01E+0
technetium-99	%	7.00E-2
tritium	%	2.00E-1
zirconium-95	%	3.65E+0

c. antimony-125	%	7.00E-1
carbon-14	%	2.00E-2
cesium-137	%	1.00E-1
cobalt-57	%	2.20E-1
cobalt-58	%	5.99E+1
cobalt-60	%	1.60E+1
chromium-51	%	8.17E+0
iron-59	%	1.11E+0
manganese-54	%	1.13E+1
nickel-63	%	3.30E-1
niobium-95	%	8.80E-1
tritium	%	1.00E-2
zinc-65	%	6.60E-1
zirconium-95	%	5.50E-1

d. antimony-124	%	8.00E-2
carbon-14	%	4.70E-1
cerium-144	%	1.00E-2
cesium-134	%	1.10E-1
cesium-137	%	3.20E-1
cobalt-57	%	8.00E-2
cobalt-58	%	3.64E+1
cobalt-60	%	9.58E+0
chromium-51	%	3.32E+1
iron-59	%	2.62E+0
iodine-131	%	1.10E-1
manganese-54	%	3.85E+0
nickel-63	%	3.91E+0
niobium-95	%	5.47E+0
tritium	%	6.00E-2
zinc-65	%	4.30E-1
zirconium-95	%	3.37E+0

SECTION E. RADWASTE SHIPMENTS (Continued)

TABLE 3

3. Solid Waste Disposition

See COMMON section of this report

B. IRRADIATED FUEL SHIPMENTS (Disposition)

See COMMON section of this report

## SECTION F. TECHNICAL SPECIFICATION LIMITS AND APPLICABLE LIMITS

### Gaseous Effluents - Technical Specification Limits

The percent of Technical Specification Limit, tabulated in Table 1A, was determined by calculation of the following parameter:

$$\% \text{ TSL} = \frac{(\text{Rel Rate}) (X/Q) (100)}{\text{MPC}_{\text{eff}}}$$

Where: Rel Rate = total curies released in each category and each quarter, divided by the seconds in a quarter; this is the value in Parts A.2, B.2, C.2 and D.2 of Table 1A, converted to microcuries.

$X/Q = 2.4E-5 \text{ sec/m}^3$  and is the annual average atmospheric dispersion defined in the ODCM, Rev. 13.

The  $\text{MPC}_{\text{eff}}$  is defined as:

$$\sum_{i=1}^n \frac{F_i}{\text{MPC}_i}$$

Where:  $F_i$  = fractional abundance of the  $i$ th radionuclide obtained by dividing the activity in curies for each radionuclide,  $C_i$ , by the sum of all such activities,  $C_T$ .

$n$  = total number of radionuclides identified

$\text{MPC}_i$  = MPC of the  $i$ th radionuclide

The % TSL is placed in Parts A.3, B.3, C.3 and D.3 of Table 1A.



## SECTION F. TECHNICAL SPECIFICATION LIMITS AND APPLICABLE LIMITS

### Liquid Effluents - Applicable Limits

The percent of applicable limit, tabulated in Table 2A, was determined by calculation of the following parameter:

$$\% \text{ Applicable Limit} = \frac{(\text{Dil Conc}) (100)}{\text{MPC}_{\text{eff}}}$$

Where: Dil Conc = total curies released in each category and each quarter, converted to microcuries, divided by the total volume released (sum of Parts E and F in Table 2A) converted to milliliters. This number is the value in Part A.2, B.2 and C.2 of Table 2A.

The  $\text{MPC}_{\text{eff}}$  is defined in the ODCM, Rev 14 as:

$$\sum_{i=1}^n \frac{F_i}{\text{MPC}_i}$$

Where:  $F_i$  = fractional abundance of the  $i$ th radionuclide obtained by dividing the activity in curies for each radionuclide,  $C_i$ , by the sum of all such activities,  $C_T$ .

$n$  = total number of radionuclides identified

$\text{MPC}_i$  = MPC of the  $i$ th radionuclide

The % Applicable Limit is placed in Parts A.3, B.3 and C.3 of Table 2A.

## SECTION G. ESTIMATION OF ERROR

Estimations of the error in reported values of gaseous and liquid effluents releases have been made. Sources of error considered for gaseous effluents - batch releases are: (1) tank volumes, (2) sampling errors, (3) counting errors, and (4) calibration errors. Sources of error for gaseous effluents - continuous releases are: (1) fan flow rate, (2) sampling, (3) counting, (4) calibration and (5) differential pressure drop.

Sources of error for liquid effluents - batch releases are: (1) tank volumes, (2) sampling, (3) counting and (4) calibration. Sources of error for liquid effluents - continuous releases are: (1) dilution water flow rate, (2) sampling, (3) counting and (4) calibration.

These sources of error are independent, and thus, the total error is calculated according to the following formula:

$$\text{Total Error} = \sqrt{\sigma_1^2 + \sigma_2^2 + \sigma_3^2 + \dots + \sigma_i^2}$$

Where:  $\sigma_i$  = Error associated with each component.

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS

Table 1 in Section H presents the quarterly maximum dose to an individual. Six different categories are presented: (1) Liquid Effluents - Whole Body, (2) Liquid Effluents - Organ, (3) Airborne Effluents - Tritium, Iodines and Particulates, (4) Noble Gases - Gamma, (5) Noble Gases - Beta, and (6) Direct Radiation.

The doses for categories 1 and 2 were calculated using the methodology of the ODCM, this data is also presented in Table 2D for the first and second quarters. Categories 3, 4, and 5 were calculated utilizing RRRGS (Radioactive Release Report Generating System) software, Regulatory Guide 1.109 methodology, and concurrent meteorology. Table 1E of gaseous effluents previously presented, however, lists data similar to categories 3, 4 and 5 using methods described in the ODCM and the historical meteorology (X/Q). Category 6 presents direct dose data measured by TLD dosimeters. Each portion of each category is footnoted to briefly describe each maximum individual dose presented.

Table 2 in Section H presents the percent of Technical Specification Limits for each dose presented in Table 1.

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

TABLE 1

SOURCE	Dose* (millirems)	
	1st Q	2nd Q
Liquid Effluents	1)	2)
WHOLE BODY	2.25E-1	6.70E-2
ORGAN	3) 3.86E+0	4) 8.00E-1
Airborne Effluents	5)	6)
TRITIUM, IODINES, and PARTICULATES	1.95E-1	1.56E-1
Noble Gases**	7)	8)
GAMMA	2.84E-1	4.14E-1
BETA	9) 7.97E-1	10) 1.13E+0
Direct Radiation	11) 2.37E-1	12) 2.26E-1

\* - The numbered footnotes below briefly explain how each maximum dose was calculated, including the organ and the predominant pathway(s).

\*\* - Noble gas doses due to airborne effluents are in units of mrad reflecting the air dose.

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

1. This data was calculated using the methodology of the ODCM.
2. This data was calculated using the methodology of the ODCM.
3. This data was calculated using the methodology of the ODCM; the GI-LLI received the maximum dose primarily by the saltwater fish pathway.
4. This data was calculated using the methodology of the ODCM; the GI-LLI received the maximum dose primarily by the saltwater fish pathway.
5. This maximum organ dose was to a child's thyroid and was located in the NNW sector. This was calculated using the activity reported in the January - June 1985 Semiannual Report with the assumptions of USNRC Regulatory Guide 1.109.
6. This maximum organ dose was to a child's thyroid and was located in the NNW sector. This was calculated using the activity reported in the January - June 1985 Semiannual Report with the assumptions of USNRC Regulatory Guide 1.109.
7. A maximum air dose of  $7.75E-1$  mrad for gamma radiation was located in the SSW sector, a seaward direction. The reported maximum air dose for gamma radiation was located in the ENE sector, a landward sector, at the exclusion area boundary and calculated with the assumptions of USNRC Regulatory Guide 1.109.
8. The maximum air dose for gamma radiation was located in the ENE sector at the exclusion area boundary and calculated with the assumptions of USNRC Regulatory Guide 1.109.
9. A maximum air dose of  $1.96E+0$  mrad for beta radiation was located in the SSW sector a seaward direction. The reported maximum air dose for beta radiation was located in the ENE sector, a landward sector, at the exclusion area boundary and calculated with the assumptions of the USNRC Regulatory Guide 1.109.
10. The maximum air dose for beta radiation was located in the NNW sector at the exclusion area boundary and calculated with the assumptions of the USNRC Regulatory Guide 1.109.
11. Measurements were made using TLD dosimeters; values are presented as site wide dose and are prorated to 300 hours per year; highest dose was measured at the San Onofre State Beach (Unit 1 North location).
12. Measurements were made using TLD dosimeters; values are presented as site wide dose and are prorated to 300 hours per years; highest dose was measured at the San Onofre State Beach (Unit 1 North location).

SECTION H. 10 CFR 50 APPENDIX I REQUIREMENTS (Continued)

TABLE 2

SOURCE	% TSL	
	1st Q	2nd Q
Liquid Effluents		
WHOLE BODY	7.50E+0	2.23E+0
ORGAN	3.86E+1	8.00E+0
Airborne Effluents		
TRITIUM, IODINES, and PARTICULATES	1.30E+0	1.04E+0
Noble Gases		
GAMMA	2.84E+0	4.14E+0
BETA	3.99E+0	5.65E+0
Direct Radiation	*	*

\* The percent of Technical Specification Limit for direct radiation is on a per year basis.

## SECTION I. MISCELLANEOUS

### I. UNPLANNED RELEASES

On January 17, 1985, an unplanned but monitored gaseous release occurred via the Plant Vent Stack. A total of 306 curies of Xe-133 equivalent was released as the north gas stripper was being placed in service. This release resulted in approximately 4.4 MPCs at the site boundary and was reported via telephone to the NRC per reporting requirements of 10 CFR 50.72. The release is described in full detail in Unit 2's LER # 85-008.

JANUARY 1, 1985 - JUNE 31, 1985

EFFLUENT RADIATION MONITORS OUT OF SERVICE FOR GREATER THAN 30 DAYS

UNIT 2 & 3

MONITOR	INOPERABILITY DATE	INOPERABILITY CAUSE	EXPLANATION
2-6753	12/04 - 04/04	Plant Conditions	Completion of 92 day surveillance delayed due to plant conditions inhibiting sample flow; temporary flow needed for functional
2-6759	01/07 - 04/02	Plant Conditions	Temporary flow needed to complete 92 day surveillance
2-7807 2-7857	11/15 - 03/17	18 month calibration and DCP incorporations	18 month calibration and implementation of DCPS 911.ON; 1116.OE; 1259N & 1276.ON
2-7818	10/22 - 05/01	18 month calibration and DCP incorporations	18 month calibration and implementation of DCPS 1259N; 911.ON and 911.4N
2-7865	11/09 - 03/13	18 month calibration, DCP incorporations and corrective maintenance	18 month calibration and implementation of DCPS 223J; 6087.OSJ; 1504N and 6160.OJ; concurrent maintenance orders included flow pump replacement
2-7870	10/23 - 03/29	18 month calibration and DCP incorporations	18 month calibration and implementation of DCPS 223J; 1504.ON; 911.4N



JANUARY 1, 1985 - JUNE 31, 1985

EFFLUENT RADIATION MONITORS OUT OF SERVICE FOR GREATER THAN 30 DAYS

UNIT 2 & 3

MONITOR	INOPERABILITY DATE	INOPERABILITY CAUSE	EXPLANATION
2/3-7814	04/84 - Current	DCP incorporations	Implementation of DCPS 1276.ON; 911.ON; 1385N and 911.1N
3-6759	02/04 - 03/21	18 month calibration	18 month calibration
3-7804 A 3-7804 B	01/30 - 03/09	Corrective maintenance	Particulate paper drive replaced for "B" channel; "A" channel OOS for purging operations
3-7817	05/10 - 06/14	18 month calibration and DCP incorporation	18 month calibration implementation of DCP 1276.ON
3-7818	01/22 - 03/09	Corrective maintenance	Meter was sticking; rebuilt "A" detector and performed isotopic calibration and functional

SECTION J. SONGS 2/3 CONCLUSIONS

- o Gaseous effluent releases totaled  $1.91\text{E}+4$  curies with Xe-133 93.6% of the total.
- o The radiation doses from gaseous releases are: (a) gamma air dose:  $6.32\text{E}+0$  mrad at the site boundary, (b) beta air dose:  $1.61\text{E}+1$  mrad at the site boundary, (c) organ dose:  $7.04\text{E}+0$  mrem at the nearest receptor.
- o Liquid releases totaled  $2.67\text{E}+2$  curies with tritium 67.2% of the total.
- o The radiation doses from liquid releases are: (a) total body:  $2.92\text{E}-1$  mrem, (b) limiting organ:  $4.66\text{E}+0$  mrem.
- o The radioactive releases and resulting doses generated from Units 2 and 3 were below the Technical Specification Limits for both gaseous and liquid effluents.

COMMON RADWASTE SHIPMENTS

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

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

1.	Type of waste	Unit	6-month Period	Est. Total Error, %
a.	Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup> Ci	0.00 0.00	
b.	Dry compressible waste, contaminated equip. etc.	m <sup>3</sup> Ci	0.00 0.00	
c.	Irradiated components, control rods, etc.	m <sup>3</sup> Ci	0.00 0.00	
d.	Other (filters, sludge, sand/rubble wet trash	m <sup>3</sup> Ci	1.16E+1* 3.54E-1	3.00E+1

\* Material packaged in 55-gallon DOT 7A Type A drums (7.5 ft<sup>3</sup> each) and steel boxes (strong tight containers - 98 ft<sup>3</sup> each).

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

a.	Not Applicable	%	0.00
b.	Not Applicable	%	0.00
c.	Not Applicable	%	0.00

COMMON RADWASTE SHIPMENTS (Continued)

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

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

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

d.

carbon-14	%	1.33E+0
cerium-144	%	3.00E-2
cesium-137	%	8.16E+0
chromium-51	%	4.49E+0
cobalt-58	%	2.88E+1
cobalt-60	%	3.76E+1
iron-59	%	4.00E-2
manganese-54	%	5.22E+0
nickel-63	%	7.17E+0
niobium-95	%	3.46E+0
plutonium-241	%	2.30E-1
ruthenium-106	%	2.80E-1
tritium	%	1.69E+0
zinc-65	%	3.00E-2
zirconium-95	%	1.45E+0

3. Solid Waste Disposition (SONGS 1, 2, and 3)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
4	Chem-Nuclear Systems, Inc. Cask/Truck	Richland, WA.
5	Tri-State Motor Transit Cask/Truck	Richland, WA.
14	Tri-State Motor Transit Trailer/Truck	Richland, WA.

COMMON RADWASTE SHIPMENTS (Continued)

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

B. IRRADIATED FUEL SHIPMENTS (Disposition)

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

C. SOLIDIFICATION

<u>Number of Containers</u>	<u>Solidification Agent</u>
4	Cement

D. CHANGES TO THE PROCESS CONTROL PROGRAM AT SAN ONOFRE UNITS 1, 2 AND 3

The Process Control Program (PCP) for SONGS was previously unit and solidification specific. It has become desirable for SONGS to have the flexibility of a generic PCP to allow several process methods. Therefore, a revised PCP was submitted which addresses a variety of process methods and serves as a sitewide Process Control Program (SOL23-VII-8.5.1, Revision 0; "Process Control Program for San Onofre Units 1, 2 and 3").

Technical Specification 6.13 requires approval of the PCP by the Commission. Interim approval of the revised PCP and use of Nupac Inc. for dewatering was received in the letter dated June 11, 1985, from G. W. Knighton (NRC) to K. P. Baskin (SCE) and J. C. Holcomb (SDG&E). The procedure specifically controlling dewatering is SOL23-VII-8.5.5, Revision 0, "Operation of the SONGS Dewatering System."

COMMON RADWASTE SHIPMENTS (Continued)

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1985)  
SOLID WASTE AND IRRADIATED FUEL SHIPMENT

REFERENCES:

1. Units 2 and 3 Technical Specifications, Section 6.13.2
2. Unit 1 Technical Specifications, Section 3.19
3. Letter dated June 11, 1985, from the Nuclear Regulatory Commission to Kenneth P. Baskin of SCE and James C. Holcomb of SDG&E, relating to interim approval of the Units 1, 2 and 3 Process Control Program.
4. Telephone note dated June 14, 1985, between Peter Smith of SCE and Jay Lee of the NRC, relating to discrepancies in the interim approval letter (Reference 3).

### COMMON CONCLUSIONS

- o Radioactive releases from SONGS Units 1, 2 and 3 totaled  $2.16\text{E}+4$  curies for gaseous effluents and  $1.37\text{E}+3$  curies for liquid effluents.
- o Radioactive releases and resulting doses generated from SONGS Units 1, 2 and 3 were below the Technical Specification Limits for both gaseous and liquid effluents.
- o SONGS Units 1, 2 and 3 made 23 radwaste shipments to Richland, Washington, with a volume of 450 cubic meters containing  $5.86\text{E}+2$  curies of radioactivity.
- o Meteorological conditions during this semiannual period were typical of the meteorology at SONGS. Meteorological dispersion was good 35% of the time, fair 40% of the time and poor 25% of the time.
- o The net result from the analysis of these effluent releases indicates that the operation of SONGS Unit 1, 2 and 3 has met all the requirements of the Technical Specifications and other applicable regulatory requirements and therefore has not produced any detrimental effect on the environment.

## METEOROLOGY

The meteorology of the San Onofre Nuclear Generating Station for the first and second quarter, 1985 is described in this section. Meteorological measurements have been made according to the guidance set forth in USNRC Regulatory Guide 1.23, "Onsite Meteorological Programs." A summary report of the meteorological measurements taken during each calendar quarter are presented in Table 4A as joint frequency distribution (JFD) of wind direction and wind speed by atmospheric stability class.

Hourly meteorological data for batch releases have been recorded for the periods of actual release. This data is available, as well as the hourly data for the Semiannual Report, but has not been included in this report because of the bulk of data records.

Table 4A lists the joint frequency distribution for the first and second quarter, 1985. Each page of Table 4A represents the data for the stability Classes: A, B, C, D, E, F, and G; the last page of each table is the JFD with the combined stability classes. Each page is also divided into two parts; the upper part lists the number of hourly periods when each meteorology condition occurred, and the lower part lists the frequency of each classification by percent. The wind speeds have been measured at the 10-meter level, and the stability classes are defined by the temperature differential between the 10- and 40-meter levels.



TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS: #A# (10-40 METERS)  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0	0	0	0	0	0	0	0	0	0	0	4	4	16.10
NE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
ENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
ESE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
SE	0	0	0	0	0	2	0	0	1	0	1	2	6	9.12
SSE	0	0	0	1	3	6	5	4	5	6	2	3	35	7.74
S	0	0	1	4	8	9	7	4	1	2	0	0	36	5.69
SSW	0	0	2	8	9	8	8	3	2	2	0	0	42	5.47
SW	0	0	8	10	10	25	15	3	1	1	0	0	73	5.20
WSW	0	0	3	19	41	27	19	6	6	1	1	5	128	5.71
W	0	0	0	13	23	25	24	14	12	3	3	10	127	6.76
WNW	0	0	0	3	3	3	5	7	5	3	0	6	35	7.97
NW	0	0	0	0	0	3	1	0	1	0	0	0	5	6.00
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
N	0	0	0	1	0	0	0	0	0	0	0	0	1	3.80
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	0	0	14	59	97	108	84	41	34	18	7	30	492	6.32

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	16.10
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.03	0.09	0.03	0.00	0.05	0.00	0.05	0.09	0.28	9.12
SSE	0.00	0.00	0.00	0.05	0.14	0.28	0.23	0.19	0.23	0.28	0.09	0.14	1.63	7.74
S	0.00	0.00	0.05	0.19	0.37	0.42	0.33	0.19	0.05	0.09	0.00	0.00	1.67	5.69
SSW	0.00	0.00	0.09	0.37	0.42	0.37	0.37	0.14	0.09	0.09	0.00	0.00	1.95	5.47
SW	0.00	0.00	0.37	0.46	0.46	1.16	0.70	0.14	0.05	0.05	0.00	0.00	3.39	5.20
WSW	0.00	0.00	0.14	0.88	1.91	1.25	0.88	0.28	0.28	0.05	0.05	0.23	5.95	5.71
W	0.00	0.00	0.00	0.60	1.07	1.16	1.12	0.65	0.56	0.14	0.14	0.46	5.90	6.76
WNW	0.00	0.00	0.00	0.14	0.14	0.14	0.23	0.33	0.23	0.14	0.00	0.28	1.63	7.97
NW	0.00	0.00	0.00	0.00	0.03	0.14	0.05	0.00	0.05	0.00	0.00	0.00	0.23	6.00
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.05	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	3.80
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.00	0.65	2.74	4.51	5.02	3.90	1.91	1.58	0.84	0.33	1.39	22.86	6.32

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS #8 (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11	
NNE	0	0	0	0	0	0	0	0	0	0	0	1	1. 20.80
NE	0	0	0	0	0	0	0	0	0	1	1	1	3. 10.80
ENE	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
E	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
ESE	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
SE	0	0	0	0	0	0	0	1	1	2	0	0	4. 9.23
SSE	0	0	0	0	0	0	0	0	0	1	1	0	2. 10.03
S	0	0	0	2	0	0	1	0	0	0	0	0	3. 4.80
SSW	0	0	1	0	1	0	0	1	0	0	0	0	3. 5.23
SW	0	0	1	1	0	0	0	0	0	0	0	0	2. 3.10
WSW	0	0	0	0	1	0	0	0	0	0	0	0	1. 4.80
W	0	0	2	0	2	0	0	0	0	0	1	0	3. 4.96
WNW	0	0	0	1	0	1	0	2	0	1	0	1	6. 7.63
NW	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
N	0	0	0	0	0	0	0	0	0	0	0	0	0. 0.00
VARIABLE													0. 0.00
CALM													0. 0.00
TOTAL	0	0	4	4	4	1	1	4	1	3	3	3	30. 7.40

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11	
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03 20.80
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.14 10.80
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.09	0.00	0.00	0.19 9.23
SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.09 10.03
S	0.00	0.00	0.00	0.09	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.14 4.80
SSW	0.00	0.00	0.03	0.03	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.14 5.23
SW	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09 3.10
WSW	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03 4.80
W	0.00	0.00	0.09	0.00	0.09	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.23 4.96
WNW	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.09	0.00	0.03	0.00	0.03	0.28 7.63
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.00
VARIABLE													0.00 0.00
CALM													0.00 0.00
TOTAL	0.00	0.00	0.19	0.19	0.19	0.03	0.03	0.19	0.03	0.23	0.14	0.14	1.39 7.40

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS #C# (10-40 METERS)  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.	3.	11.50
NE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	14.30
ENE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
E	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ESE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SE	0.	0.	0.	0.	1.	1.	0.	1.	1.	1.	0.	0.	5.	7.20
SSE	0.	0.	0.	1.	2.	2.	2.	1.	1.	1.	2.	1.	13.	7.81
S	0.	0.	0.	2.	3.	0.	2.	0.	0.	0.	0.	1.	8.	5.84
SSW	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	4.	3.28
SW	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.	0.	0.	2.	6.30
WSW	0.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	1.	4.	6.78
W	0.	0.	0.	0.	1.	0.	0.	1.	0.	0.	0.	1.	3.	9.07
WNW	0.	0.	0.	1.	0.	2.	2.	0.	3.	0.	0.	0.	8.	6.60
NW	0.	0.	0.	0.	0.	1.	1.	1.	0.	1.	0.	0.	4.	7.38
NNW	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.	6.90
N	0.	0.	0.	0.	2.	0.	0.	0.	0.	0.	0.	1.	3.	8.07
VARIABLE													0.	0.00
CALM													0.	0.00
TOTAL	0.	1.	4.	6.	10.	6.	8.	4.	6.	4.	3.	7.	59.	7.23

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.05	0.14	11.50
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	14.30
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.05	0.05	0.05	0.00	0.00	0.23	7.20
SSE	0.00	0.00	0.00	0.05	0.09	0.09	0.09	0.05	0.05	0.05	0.09	0.05	0.60	7.81
S	0.00	0.00	0.00	0.09	0.14	0.00	0.09	0.00	0.00	0.00	0.00	0.05	0.37	5.84
SSW	0.00	0.00	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	3.28
SW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.09	6.30
WSW	0.00	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.19	6.78
W	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.14	9.07
WNW	0.00	0.00	0.00	0.05	0.00	0.09	0.09	0.00	0.14	0.00	0.00	0.00	0.37	6.60
NW	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.00	0.05	0.00	0.00	0.17	7.38
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	6.90
N	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.14	8.07
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.05	0.19	0.28	0.46	0.28	0.37	0.19	0.28	0.19	0.14	0.33	2.74	7.23

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS #0# (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0	0	1	5	5	4	2	0	2	1	0	4	24	6.95
NE	0	0	1	3	0	0	0	1	0	2	0	1	8	6.95
ENE	0	0	1	2	1	0	1	0	0	0	0	0	5	4.28
E	0	0	2	3	3	3	2	0	0	0	0	0	13	4.50
ESE	0	0	0	3	7	4	2	2	2	0	0	0	20	5.55
SE	0	0	1	6	5	10	3	6	7	3	3	6	50	7.17
SSE	0	1	4	5	8	7	2	1	2	1	2	6	39	6.56
S	0	0	2	3	0	0	0	1	0	1	2	8	17	10.08
SSW	0	0	5	3	1	4	2	1	0	2	1	5	24	7.06
SW	0	1	2	1	0	3	0	1	0	0	1	4	13	7.73
WSW	0	1	2	2	2	1	0	0	2	0	2	4	16	7.78
W	0	1	2	5	3	0	0	0	1	0	1	6	19	8.98
WNW	0	1	1	3	7	3	2	2	0	2	1	5	27	7.25
NW	0	1	7	5	4	6	5	3	2	1	0	1	35	5.27
NNW	0	0	4	4	3	3	0	0	0	0	0	0	14	3.90
N	0	0	2	4	4	1	0	1	1	1	1	0	15	5.41
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	0	6	37	57	53	49	21	19	19	14	14	30	339	6.73

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0.00	0.00	0.05	0.23	0.23	0.19	0.09	0.00	0.09	0.05	0.00	0.19	1.12	6.95
NE	0.00	0.00	0.05	0.14	0.00	0.00	0.00	0.05	0.00	0.09	0.00	0.05	0.37	6.95
ENE	0.00	0.00	0.05	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.23	4.28
E	0.00	0.00	0.09	0.14	0.14	0.14	0.09	0.00	0.00	0.00	0.00	0.00	0.60	4.50
ESE	0.00	0.00	0.00	0.14	0.33	0.19	0.09	0.09	0.09	0.00	0.00	0.00	0.93	5.55
SE	0.00	0.00	0.05	0.28	0.23	0.46	0.14	0.28	0.33	0.14	0.14	0.28	2.32	7.17
SSE	0.00	0.05	0.19	0.23	0.37	0.33	0.09	0.05	0.09	0.05	0.09	0.28	1.81	6.56
S	0.00	0.00	0.09	0.14	0.00	0.00	0.00	0.05	0.00	0.05	0.09	0.37	0.79	10.08
SSW	0.00	0.00	0.23	0.14	0.05	0.19	0.09	0.05	0.00	0.09	0.05	0.23	1.12	7.06
SW	0.00	0.05	0.09	0.05	0.00	0.14	0.00	0.05	0.00	0.00	0.05	0.19	0.60	7.73
WSW	0.00	0.05	0.09	0.09	0.09	0.05	0.00	0.00	0.09	0.00	0.09	0.19	0.74	7.78
W	0.00	0.05	0.09	0.23	0.14	0.00	0.00	0.00	0.05	0.00	0.05	0.28	0.88	8.98
WNW	0.00	0.05	0.05	0.14	0.33	0.14	0.09	0.09	0.00	0.09	0.05	0.23	1.25	7.25
NW	0.00	0.05	0.33	0.23	0.19	0.28	0.23	0.14	0.09	0.05	0.00	0.05	1.63	5.27
NNW	0.00	0.00	0.19	0.19	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.65	3.90
N	0.00	0.00	0.05	0.19	0.19	0.05	0.00	0.05	0.05	0.05	0.05	0.00	0.70	5.41
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.28	1.72	2.65	2.46	2.28	0.98	0.88	0.88	0.65	0.65	2.32	15.75	6.73

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE MUNICIPAL GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS NEW (10-40 METERS.)  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	1	2	9	19	25	12	11	6	4	7	0	5	101	5.65
NE	0	1	4	2	2	2	1	1	1	0	1	4	19	6.85
ENE	0	2	3	5	3	1	2	1	0	0	0	0	17	3.98
E	0	1	1	5	3	3	1	5	1	0	0	0	20	5.17
ESE	0	1	1	7	3	4	2	1	2	0	0	0	21	4.83
SE	0	0	7	5	5	3	2	9	1	1	1	3	37	6.10
SSE	0	1	2	5	1	3	1	0	0	0	1	1	15	4.99
S	0	0	2	2	1	1	0	1	0	0	0	0	7	4.36
SSW	0	2	1	1	0	1	1	0	0	0	0	0	6	3.72
SW	0	0	1	0	0	0	0	0	0	1	1	8	11	12.31
WSW	0	0	0	0	0	0	1	2	2	4	0	2	11	9.61
W	0	0	3	2	4	0	0	1	1	0	0	1	12	5.14
WNW	0	1	2	1	2	2	3	2	0	1	2	4	20	8.45
NW	0	0	2	2	3	4	5	1	2	1	0	1	21	6.29
NNW	0	0	3	8	3	2	0	2	0	0	1	0	19	4.61
N	0	1	5	8	14	9	13	5	3	1	1	1	61	5.53
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	1	12	46	72	69	47	43	37	17	16	8	30	398	5.92

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0.05	0.09	0.42	0.88	1.16	0.56	0.51	0.28	0.19	0.33	0.00	0.23	4.69	5.65
NE	0.00	0.05	0.19	0.09	0.09	0.09	0.05	0.05	0.05	0.00	0.05	0.19	0.88	6.85
ENE	0.00	0.09	0.14	0.23	0.14	0.05	0.09	0.05	0.00	0.00	0.00	0.00	0.79	3.98
E	0.00	0.05	0.05	0.23	0.14	0.14	0.05	0.23	0.05	0.00	0.00	0.00	0.93	5.17
ESE	0.00	0.05	0.05	0.33	0.14	0.19	0.09	0.05	0.09	0.00	0.00	0.00	0.98	4.83
SE	0.00	0.00	0.33	0.23	0.23	0.14	0.09	0.42	0.05	0.05	0.05	0.14	1.72	6.10
SSE	0.00	0.05	0.09	0.23	0.05	0.14	0.05	0.00	0.00	0.00	0.05	0.05	0.70	4.99
S	0.00	0.00	0.09	0.09	0.05	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.33	4.36
SSW	0.00	0.09	0.05	0.05	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.28	3.72
SW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.37	0.51	12.31
WSW	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.09	0.19	0.00	0.09	0.51	9.61
W	0.00	0.00	0.14	0.09	0.19	0.00	0.00	0.05	0.05	0.00	0.00	0.05	0.56	5.14
WNW	0.00	0.05	0.09	0.05	0.09	0.09	0.14	0.09	0.00	0.05	0.09	0.19	0.93	8.45
NW	0.00	0.00	0.09	0.09	0.14	0.19	0.23	0.05	0.09	0.05	0.00	0.05	0.98	6.29
NNW	0.00	0.00	0.14	0.37	0.14	0.09	0.00	0.09	0.00	0.00	0.05	0.00	0.88	4.61
N	0.00	0.05	0.23	0.37	0.65	0.42	0.60	0.23	0.14	0.05	0.05	0.05	2.83	5.53
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.05	0.56	2.14	3.35	3.21	2.18	2.00	1.72	0.79	0.74	0.37	1.39	18.49	5.92

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO - 00377-097-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS #F# (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED	
	1	2	3	4	5	6	7	8	9	10	11	11		
NNE	0.	2	20	15	34	36	19	12	8	6	5	1	158	5.49
NE	0.	5	4	11	11	5	1	2	0	1	1	2	43	4.84
ENE	0.	2	4	9	1	1	2	1	0	0	0	0	16	3.81
E	1.	0	3	1	0	2	1	0	0	0	0	0	8	3.64
ESE	0.	0	0	0	2	0	0	0	0	0	0	0	2	4.40
SE	0	1	2	1	1	0	0	0	0	0	0	0	5	3.02
SSE	0.	0	2	3	0	0	0	0	0	0	0	0	5	3.06
S	0.	0	0	1	0	0	0	0	0	0	0	0	1	3.40
SSW	0.	0	0	0	0	0	0	0	0	0	0	0	0	0.00
SW	0.	0	1	0	0	0	0	0	0	0	0	0	1	2.80
WSW	0.	0	3	0	0	0	0	0	0	0	0	0	3	2.83
W	0.	0	0	1	1	0	0	0	0	0	0	0	2	3.85
WNW	0	0	1	0	1	1	1	1	1	0	0	0	6	5.98
NW	0.	0	0	0	2	3	1	0	0	0	0	0	6	5.28
NNW	0.	0	0	1	3	5	1	0	0	1	0	0	11	5.55
N	0.	0	3	3	7	13	4	6	5	3	2	1	47	6.36
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	1.	10	43	42	63	66	30	22	14	11	8	4	314	5.27

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED	
	1	2	3	4	5	6	7	8	9	10	11	11		
NNE	0.00	0.09	0.93	0.70	1.58	1.67	0.88	0.56	0.37	0.28	0.23	0.05	7.34	5.49
NE	0.00	0.23	0.19	0.51	0.51	0.23	0.05	0.09	0.00	0.05	0.05	0.09	2.00	4.84
ENE	0.00	0.09	0.19	0.23	0.05	0.05	0.09	0.05	0.00	0.00	0.00	0.00	0.74	3.81
E	0.05	0.00	0.14	0.05	0.00	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.37	3.64
ESE	0.00	0.05	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	4.40
SE	0.00	0.05	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	3.02
SSE	0.00	0.00	0.09	0.14	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.23	3.06
S	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.40
SSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	2.80
WSW	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	2.83
W	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	3.85
WNW	0.00	0.00	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.29	5.98
NW	0.00	0.00	0.00	0.00	0.09	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.28	5.28
NNW	0.00	0.00	0.00	0.05	0.14	0.23	0.05	0.00	0.00	0.05	0.00	0.00	0.51	5.55
N	0.00	0.00	0.14	0.14	0.33	0.60	0.19	0.28	0.23	0.14	0.09	0.05	3.18	6.36
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.05	0.46	2.00	1.95	2.93	3.07	1.39	1.02	0.65	0.51	0.37	0.19	14.52	5.27

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAKES AND MOORE JOB NO - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS 808 (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.	3.	3.	2.	15.	38.	57.	79.	95.	55.	40.	42.	429.	8.19
NE	0.	3.	6.	1.	3.	1.	3.	1.	0.	2.	0.	1.	21.	4.94
ENE	0.	2.	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	5.	2.70
E	0.	1.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	3.	3.93
ESE	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	1.97
SE	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.70
SSE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
S	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.50
SSW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SW	0.	1.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	2.	3.90
WSW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
W	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.90
WNW	0.	0.	0.	0.	0.	0.	1.	0.	1.	0.	0.	0.	2.	7.35
NW	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.	6.40
NNW	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.	3.	6.00
N	0.	1.	2.	1.	2.	3.	7.	8.	8.	7.	4.	5.	48.	7.92
VARIABLE													0.	0.00
CALM													0.	0.00
TOTAL	0.	14.	15.	6.	21.	44.	91.	99.	94.	54.	44.	48.	520.	7.96

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.00	0.14	0.14	0.09	0.70	1.77	3.11	3.67	3.93	2.56	1.86	1.93	19.93	8.19
NE	0.00	0.14	0.28	0.05	0.14	0.05	0.14	0.05	0.00	0.09	0.00	0.05	0.95	4.94
ENE	0.00	0.09	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	2.70
E	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.14	3.93
ESE	0.00	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	1.97
SE	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.70
SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	1.50
SSW	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SW	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.09	3.90
WSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	2.90
WNW	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.09	7.35
NW	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.05	6.40
NNW	0.00	0.00	0.05	0.00	0.00	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.14	6.00
N	0.00	0.05	0.09	0.05	0.09	0.14	0.33	0.37	0.37	0.33	0.19	0.23	2.23	7.92
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.65	0.70	0.28	0.98	2.04	3.76	4.14	4.37	2.97	2.04	2.23	24.15	7.96

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 1ST QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 01/01/85 TO 03/31/85  
 STABILITY CLASS ALL (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	1	7	34	41	79	90	79	97	100	69	46	58	721	7.27
NE	0	9	15	17	16	8	5	5	1	6	3	10	95	5.72
ENE	0	6	9	13	6	2	5	2	0	0	0	0	43	3.80
E	1	2	7	9	6	8	4	6	1	0	0	0	44	4.64
ESE	0	3	2	10	12	8	4	3	4	0	0	0	46	4.93
SE	0	1	10	13	12	16	5	17	11	7	5	11	108	6.77
SSE	0	2	8	15	14	18	10	6	8	9	8	11	109	6.81
S	0	1	5	15	12	12	10	6	1	3	2	9	76	6.42
SSW	0	2	11	13	12	13	11	5	2	4	1	5	79	5.70
SW	0	2	14	14	11	28	16	4	1	3	2	12	107	6.14
WSW	0	2	10	22	44	28	70	8	10	5	3	12	164	6.13
W	0	1	8	21	34	25	24	16	14	3	5	18	169	6.83
WNW	0	2	4	9	13	12	14	14	10	7	3	16	104	7.63
NW	0	1	9	7	9	17	14	5	5	3	0	2	72	5.75
NNW	0	0	7	13	9	12	3	2	0	1	1	0	48	4.75
N	0	2	12	17	29	26	24	20	17	12	8	8	175	6.43
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	2	43	165	249	318	323	268	216	185	132	87	172	2160	6.56

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0.05	0.32	1.57	1.90	3.66	4.17	4.58	4.49	4.63	3.19	2.13	2.69	33.38	7.27
NE	0.00	0.42	0.69	0.79	0.74	0.37	0.23	0.23	0.05	0.28	0.14	0.46	4.40	5.72
ENE	0.00	0.28	0.42	0.60	0.28	0.09	0.23	0.09	0.00	0.00	0.00	0.00	1.99	3.80
E	0.05	0.09	0.32	0.42	0.28	0.37	0.19	0.28	0.05	0.00	0.00	0.00	2.04	4.64
ESE	0.00	0.14	0.09	0.46	0.56	0.37	0.19	0.14	0.19	0.00	0.00	0.00	2.13	4.93
SE	0.00	0.05	0.46	0.60	0.56	0.74	0.23	0.79	0.51	0.32	0.23	0.51	5.00	6.77
SSE	0.00	0.09	0.37	0.69	0.65	0.83	0.46	0.28	0.37	0.42	0.37	0.51	5.05	6.81
S	0.00	0.05	0.23	0.69	0.56	0.56	0.46	0.28	0.05	0.14	0.09	0.42	3.52	6.42
SSW	0.00	0.09	0.51	0.60	0.56	0.60	0.51	0.23	0.09	0.19	0.05	0.23	3.66	5.70
SW	0.00	0.09	0.65	0.65	0.51	1.30	0.74	0.19	0.05	0.14	0.09	0.56	4.95	6.14
WSW	0.00	0.09	0.46	1.02	2.04	1.30	0.93	0.37	0.46	0.23	0.14	0.56	7.59	6.13
W	0.00	0.05	0.37	0.97	1.57	1.16	1.11	0.74	0.65	0.14	0.23	0.83	7.82	6.83
WNW	0.00	0.09	0.19	0.42	0.60	0.56	0.65	0.65	0.46	0.32	0.14	0.74	4.81	7.63
NW	0.00	0.05	0.42	0.32	0.42	0.79	0.65	0.23	0.23	0.14	0.00	0.09	3.33	5.75
NNW	0.00	0.00	0.32	0.60	0.42	0.56	0.14	0.09	0.00	0.05	0.00	0.00	2.22	4.75
N	0.00	0.09	0.56	0.79	1.34	1.20	1.11	0.93	0.79	0.56	0.37	0.37	8.10	6.43
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.09	1.99	7.64	11.53	14.72	14.95	12.41	10.00	8.56	6.11	4.03	7.75	100.00	6.56

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2160

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2152



TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS #A# (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11	
NNE	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	2.	3.10
NE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ENE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
E	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ESE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SE	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.	1.	3.	9.37
SSE	0.	0.	0.	1.	0.	1.	2.	1.	3.	2.	1.	6.	9.81
S	0.	0.	1.	2.	4.	5.	9.	12.	21.	12.	6.	11.	8.39
SSW	0.	0.	0.	6.	7.	18.	14.	19.	26.	11.	10.	7.	7.71
SW	0.	0.	0.	10.	17.	28.	50.	33.	18.	4.	2.	1.	6.56
WSW	0.	0.	1.	13.	49.	45.	57.	24.	8.	2.	2.	1.	5.73
W	0.	0.	0.	11.	19.	37.	30.	18.	17.	7.	0.	7.	6.60
WNW	0.	0.	0.	3.	1.	3.	13.	13.	8.	3.	5.	18.	9.19
NW	0.	0.	0.	1.	2.	0.	1.	0.	0.	0.	0.	0.	4.68
NNW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
N	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
VARIABLE													0.00
CALM													0.00
TOTAL	0.	0.	3.	48.	79.	137.	176.	120.	102.	42.	27.	51.	7.05

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11	
NNE	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05	0.00	9.37
SSE	0.00	0.00	0.00	0.05	0.00	0.05	0.09	0.05	0.14	0.09	0.05	0.28	9.81
S	0.00	0.00	0.05	0.09	0.19	0.24	0.42	0.56	0.99	0.56	0.28	0.52	8.39
SSW	0.00	0.00	0.00	0.28	0.33	0.85	0.66	0.89	1.22	0.52	0.47	0.33	7.71
SW	0.00	0.00	0.00	0.47	0.80	1.32	2.35	1.55	0.85	0.19	0.09	0.05	6.56
WSW	0.00	0.00	0.05	0.61	2.31	2.12	2.68	1.13	0.38	0.09	0.09	0.05	5.73
W	0.00	0.00	0.00	0.52	0.89	1.74	1.41	0.85	0.80	0.33	0.00	0.33	6.60
WNW	0.00	0.00	0.00	0.14	0.05	0.14	0.61	0.61	0.38	0.14	0.24	0.85	9.19
NW	0.00	0.00	0.00	0.05	0.09	0.00	0.05	0.00	0.00	0.00	0.00	0.00	4.68
NNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VARIABLE													0.00
CALM													0.00
TOTAL	0.00	0.00	0.14	2.26	4.66	6.45	8.28	5.65	4.80	1.98	1.27	2.40	7.05

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS #8 (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0	0	0	0	0	1	0	0	0	0	0	0	1	5.40
NE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
ENE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
ESE	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
SE	0	0	0	0	0	0	0	0	0	0	0	1	1	12.50
SSE	0	0	0	0	0	0	0	1	2	1	0	1	5	9.36
S	0	0	1	0	2	1	1	2	1	2	0	0	10	6.50
SSW	0	0	0	0	1	1	2	2	0	0	0	1	7	7.29
SW	0	0	2	1	1	1	2	0	0	0	0	0	7	4.53
WSW	0	0	2	0	0	1	0	0	0	0	1	0	4	5.40
W	0	0	0	0	1	0	0	0	0	0	1	0	2	7.10
WNW	0	0	0	1	0	0	0	0	1	1	0	2	5	10.58
NW	0	0	0	0	0	1	0	0	0	0	0	0	1	5.40
NNW	0	0	0	1	0	0	0	0	0	0	0	0	1	3.70
N	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	0	0	5	3	5	6	5	5	4	5	1	5	44	7.10

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	5.40
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	12.50
SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.05	0.00	0.05	0.24	9.36
S	0.00	0.00	0.05	0.00	0.05	0.05	0.05	0.09	0.05	0.09	0.00	0.00	0.47	6.50
SSW	0.00	0.00	0.00	0.00	0.05	0.05	0.09	0.09	0.00	0.00	0.00	0.05	0.33	7.29
SW	0.00	0.00	0.09	0.05	0.05	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.33	4.53
WSW	0.00	0.00	0.09	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.19	5.40
W	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.09	7.10
WNW	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.09	0.24	10.58
NW	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	5.40
NNW	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.70
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.00	0.24	0.14	0.24	0.28	0.24	0.24	0.19	0.24	0.05	0.24	2.07	7.10

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS #C\* (10-40 METERS)  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	11	
NNE	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.	5.20
NE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ENE	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	1.	4.10
E	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ESE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SE	0.	0.	0.	0.	0.	0.	1.	0.	1.	1.	0.	3.	8.23
SSE	0.	0.	0.	2.	2.	2.	0.	1.	0.	4.	2.	16.	8.23
S	0.	0.	0.	0.	3.	2.	1.	0.	2.	1.	0.	9.	6.53
SSW	0.	0.	1.	1.	3.	2.	1.	2.	0.	0.	0.	10.	5.39
SW	0.	0.	3.	4.	1.	1.	0.	1.	0.	0.	0.	10.	4.03
WSW	0.	0.	1.	1.	0.	1.	0.	1.	0.	0.	0.	4.	4.90
W	0.	0.	3.	2.	0.	0.	0.	1.	1.	0.	0.	7.	4.53
WNW	0.	0.	2.	0.	3.	2.	4.	1.	1.	1.	0.	19.	6.25
NW	0.	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.	4.	7.28
NNW	0.	0.	0.	1.	0.	1.	0.	0.	0.	0.	0.	2.	4.70
N	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
VARIABLE												0.	0.00
CALM												0.	0.00
TOTAL	0.	0.	10.	11.	14.	15.	8.	7.	5.	7.	2.	84.	6.10

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)											TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	11	
NNE	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.14	5.20
NE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENE	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	4.10
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.05	0.00	0.14	8.23
SSE	0.00	0.00	0.00	0.09	0.09	0.09	0.00	0.05	0.00	0.19	0.09	0.14	8.23
S	0.00	0.00	0.00	0.00	0.14	0.09	0.05	0.00	0.09	0.05	0.00	0.42	6.53
SSW	0.00	0.00	0.05	0.05	0.14	0.09	0.05	0.09	0.00	0.00	0.00	0.47	5.39
SW	0.00	0.00	0.14	0.19	0.05	0.05	0.00	0.05	0.00	0.00	0.00	0.47	4.03
WSW	0.00	0.00	0.05	0.05	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.19	4.90
W	0.00	0.00	0.14	0.09	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.33	4.53
WNW	0.00	0.00	0.09	0.00	0.14	0.09	0.19	0.05	0.05	0.05	0.00	0.71	6.25
NW	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00	0.00	0.05	0.19	7.28
NNW	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.09	4.70
N	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VARIABLE												0.00	0.00
CALM												0.00	0.00
TOTAL	0.00	0.00	0.47	0.52	0.66	0.71	0.38	0.33	0.24	0.33	0.09	0.24	6.10

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS #0# (10-40 METERS)  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION:	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.	1	7	4	5	8	3	3	1	0	0	0	32	4.76
NE	0.	0	2	4	1	0	0	0	0	0	1	0	8	4.49
ENE	0.	0	2	2	3	0	0	0	0	0	0	0	7	3.79
E	0.	0	0	5	1	4	4	0	1	0	0	0	19	5.39
ESE	0.	0	1	2	5	6	5	2	3	1	0	0	25	5.88
SE	0.	0	3	9	14	14	15	18	18	7	7	3	108	6.91
SSE	0.	5	12	17	23	15	16	19	12	21	14	8	162	6.69
S	0.	0	8	15	12	15	12	9	12	9	3	3	98	6.25
SSW	0.	1	8	9	2	4	3	3	2	1	0	0	33	4.68
SW	0.	3	8	8	3	0	5	0	0	0	0	0	27	3.72
WSW	0.	5	6	4	3	2	4	1	1	3	0	0	29	4.61
W	0.	3	10	7	1	1	0	2	2	3	1	2	32	5.07
WNW	0.	2	5	11	9	10	6	8	0	0	1	4	56	5.59
NW	0.	2	8	8	9	10	3	6	4	2	0	1	53	5.29
NNW	0.	3	14	9	3	3	3	0	0	2	0	2	39	4.26
N	0.	4	5	11	9	6	5	2	0	1	0	0	43	4.40
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	0.	29	99	125	103	98	84	73	56	50	27	23	767	5.72

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION:	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.00	0.05	0.33	0.19	0.24	0.38	0.14	0.14	0.05	0.00	0.00	0.00	1.51	4.76
NE	0.00	0.00	0.09	0.19	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.38	4.49
ENE	0.00	0.00	0.09	0.09	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	3.79
E	0.00	0.00	0.00	0.24	0.05	0.19	0.19	0.00	0.05	0.00	0.00	0.00	0.71	5.39
ESE	0.00	0.00	0.05	0.09	0.24	0.28	0.24	0.09	0.14	0.05	0.00	0.00	1.18	5.88
SE	0.00	0.00	0.14	0.42	0.66	0.66	0.71	0.85	0.85	0.33	0.33	0.14	5.08	6.91
SSE	0.00	0.24	0.36	0.80	1.08	0.71	0.75	0.89	0.56	0.99	0.66	0.38	7.62	6.69
S	0.00	0.00	0.38	0.71	0.56	0.71	0.56	0.42	0.56	0.42	0.14	0.14	4.61	6.25
SSW	0.00	0.05	0.38	0.42	0.09	0.19	0.14	0.14	0.09	0.05	0.00	0.00	1.55	4.68
SW	0.00	0.14	0.38	0.38	0.14	0.00	0.24	0.00	0.00	0.00	0.00	0.00	1.27	3.72
WSW	0.00	0.24	0.28	0.19	0.14	0.09	0.19	0.05	0.05	0.14	0.00	0.00	1.36	4.61
W	0.00	0.14	0.47	0.33	0.05	0.05	0.00	0.09	0.09	0.14	0.05	0.09	1.51	5.07
WNW	0.00	0.09	0.24	0.52	0.42	0.47	0.28	0.38	0.00	0.00	0.05	0.19	2.64	5.59
NW	0.00	0.09	0.38	0.38	0.42	0.47	0.14	0.28	0.19	0.09	0.00	0.05	2.49	5.29
NNW	0.00	0.14	0.66	0.42	0.14	0.14	0.14	0.00	0.00	0.09	0.00	0.09	1.84	4.26
N	0.00	0.19	0.24	0.52	0.42	0.28	0.24	0.09	0.00	0.05	0.00	0.00	2.02	4.40
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	1.36	4.66	5.88	4.85	4.61	3.95	3.44	2.64	2.35	1.27	1.08	36.09	5.72

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS: #E# (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0	2	3	10	17	10	6	3	1	0	0	0	52	4.03
NE	0	0	3	2	0	1	0	0	0	0	0	0	6	3.50
ENE	0	0	0	0	1	0	0	0	0	0	0	0	1	4.50
E	0	0	3	1	1	0	0	1	0	0	0	0	6	3.73
EE	0	0	1	5	1	1	1	1	1	0	0	0	10	4.48
SE	0	0	2	1	5	5	3	3	2	0	0	0	21	3.69
SGE	0	0	3	4	3	1	1	0	0	0	0	0	12	4.05
S	0	0	0	0	2	0	0	0	0	0	0	0	2	4.50
SGW	0	0	4	1	0	0	0	0	0	0	0	0	5	2.02
SW	0	1	2	1	1	0	0	0	0	0	0	0	5	2.02
WGW	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
W	0	0	0	0	0	0	1	0	0	0	0	0	1	6.00
WNW	0	0	1	1	2	0	0	0	0	1	0	0	5	4.08
NW	0	0	1	5	4	1	0	0	1	0	0	0	12	4.33
NNW	0	1	2	7	2	0	0	0	0	0	0	0	12	3.28
N	0	3	9	13	16	7	4	1	0	0	0	0	53	4.19
VARIABLE													0	0.00
CALM													0	0.00
TOTAL	0	7	34	51	55	26	16	8	5	1	0	0	203	4.41

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	MEAN SPEED
NNE	0.00	0.09	0.14	0.47	0.80	0.47	0.28	0.14	0.05	0.00	0.00	0.00	2.45	4.03
NE	0.00	0.00	0.14	0.09	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.20	3.50
ENE	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	4.50
E	0.00	0.00	0.14	0.05	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.20	3.73
EE	0.00	0.00	0.05	0.24	0.05	0.05	0.05	0.00	0.05	0.00	0.00	0.00	0.47	4.48
SE	0.00	0.00	0.09	0.05	0.24	0.24	0.14	0.14	0.09	0.00	0.00	0.00	0.99	3.69
SGE	0.00	0.00	0.14	0.19	0.14	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.56	4.05
S	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	4.50
SGW	0.00	0.00	0.19	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	2.02
SW	0.00	0.05	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	2.02
WGW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	6.00
WNW	0.00	0.00	0.05	0.05	0.09	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.24	4.08
NW	0.00	0.00	0.05	0.24	0.19	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.56	4.33
NNW	0.00	0.05	0.09	0.33	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	3.28
N	0.00	0.14	0.42	0.61	0.75	0.33	0.19	0.05	0.00	0.00	0.00	0.00	2.47	4.19
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.33	1.60	2.40	2.59	1.22	0.75	0.38	0.24	0.05	0.00	0.00	7.55	4.41

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS BFF (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.	0.	4.	10.	13.	13.	7.	1.	0.	0.	0.	0.	48.	4.91
NE	0.	1.	1.	5.	0.	1.	0.	0.	0.	0.	0.	0.	8.	3.41
ENE	0.	0.	1.	0.	2.	1.	1.	0.	0.	0.	0.	0.	5.	4.50
E	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	1.40
ESE	0.	0.	1.	0.	0.	3.	0.	0.	0.	0.	0.	0.	4.	4.93
SE	0.	0.	3.	0.	0.	0.	1.	0.	0.	0.	0.	0.	4.	3.73
SSE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
S	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SSW	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
SW	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.00
WSW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.00
W	0.	0.	0.	0.	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.00
WNW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.	5.00
NW	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
NNW	0.	0.	1.	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.00
N	0.	0.	0.	2.	7.	2.	6.	1.	0.	0.	0.	0.	18.	5.42
VARIABLE													0.	0.00
CALM													0.	0.00
TOTAL	0.	2.	13.	17.	24.	21.	16.	2.	0.	0.	0.	0.	95.	4.72

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	>11	TOTAL	MEAN SPEED
NNE	0.00	0.00	0.19	0.47	0.61	0.61	0.33	0.05	0.00	0.00	0.00	0.00	2.26	4.91
NE	0.00	0.05	0.05	0.24	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.39	3.41
ENE	0.00	0.00	0.05	0.00	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.24	4.50
E	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	1.40
ESE	0.00	0.00	0.05	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.19	4.93
SE	0.00	0.00	0.14	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.19	3.73
SSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SSW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
SW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.00
WSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.00
W	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.14	5.00
WNW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NNW	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.09	0.00
N	0.00	0.00	0.00	0.09	0.33	0.09	0.28	0.05	0.00	0.00	0.00	0.00	0.85	5.42
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.09	0.61	0.80	1.13	0.99	0.75	0.09	0.00	0.00	0.00	0.00	4.47	4.72

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS #00 (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)												TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11		
NNE	0.	0.	2.	2.	4.	9.	11.	23.	15.	7.	0.	5.	78.	7.63
NE	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.09
ENE	0.	0.	0.	0.	0.	0.	1.	0.	0.	0.	0.	0.	1.	6.40
E	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.00
ESE	0.	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	2.	4.30
SE	0.	0.	1.	0.	0.	1.	0.	0.	0.	0.	0.	0.	2.	3.90
SSE	0.	0.	0.	0.	1.	2.	0.	0.	0.	0.	0.	0.	3.	5.07
S	0.	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.90
SSW	0.	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	1.	3.10
SW	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.90
WSW	0.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.30
W	0.	0.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.	2.	3.19
WNW	0.	0.	0.	0.	1.	0.	1.	0.	1.	0.	0.	0.	3.	6.40
NW	0.	0.	0.	0.	0.	0.	2.	0.	1.	0.	0.	0.	3.	7.17
NNW	0.	0.	1.	0.	1.	0.	1.	0.	0.	1.	0.	0.	4.	5.88
N	0.	0.	0.	0.	0.	2.	5.	10.	3.	2.	0.	0.	22.	7.49
VARIABLE													0.	0.00
CALM													0.	0.00
TOTAL	0.	2.	8.	6.	8.	14.	21.	33.	20.	10.	0.	5.	127.	6.97

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	UPPER CLASS INTERVALS OF WIND SPEED (MPH)												TOTAL	MEAN SPEED
	1	2	3	4	5	6	7	8	9	10	11	>11		
NNE	0.00	0.00	0.09	0.09	0.19	0.42	0.52	1.08	0.71	0.33	0.00	0.24	3.67	7.63
NE	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	2.09
ENE	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	6.40
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ESE	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	4.30
SE	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.09	3.90
SSE	0.00	0.00	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.14	5.07
S	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	2.90
SSW	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.10
SW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	2.90
WSW	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	2.30
W	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	3.19
WNW	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.14	6.40
NW	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.05	0.00	0.00	0.00	0.14	7.17
NNW	0.00	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.19	5.88
N	0.00	0.00	0.00	0.00	0.00	0.09	0.24	0.47	0.14	0.09	0.00	0.00	1.04	7.49
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	0.09	0.38	0.28	0.38	0.66	0.99	1.55	0.94	0.47	0.00	0.24	5.98	6.97

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125

TABLE 4A

SOUTHERN CALIFORNIA EDISON COMPANY  
 SAN ONOFRE NUCLEAR GENERATING STATION  
 2ND QUARTER, 1985  
 DAMES AND MOORE JOB NO. - 00377-087-09  
 DATA PERIOD- 04/01/85 TO 06/30/85  
 STABILITY CLASS ALL (10-40 METERS )  
 WINDS AT 10 METER LEVEL

24-JUL-85

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN NUMBER OF OCCURRENCES)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	11	TOTAL	MEAN SPEED
NNE	0.	3.	17.	27.	40.	43.	27.	30.	17.	7.	0.	5.	216.	5.84
NE	0.	2.	7.	11.	1.	2.	0.	0.	0.	0.	1.	0.	24.	3.68
ENE	0.	0.	3.	2.	7.	1.	2.	0.	0.	0.	0.	0.	13.	4.30
E	0.	1.	3.	7.	2.	4.	4.	1.	1.	0.	0.	0.	23.	4.77
ESE	0.	0.	3.	8.	7.	10.	6.	2.	4.	1.	0.	0.	41.	5.36
SE	0.	0.	9.	10.	19.	20.	20.	21.	22.	9.	8.	4.	142.	6.72
SSE	0.	3.	13.	23.	29.	21.	19.	22.	17.	28.	17.	18.	216.	6.93
S	0.	1.	12.	19.	23.	23.	23.	36.	24.	9.	14.	14.	207.	7.04
SRM	0.	1.	16.	18.	13.	26.	21.	27.	28.	12.	10.	8.	180.	6.74
SW	0.	4.	17.	23.	23.	31.	38.	34.	18.	4.	2.	1.	217.	5.89
WSM	0.	3.	11.	18.	32.	49.	62.	26.	9.	5.	3.	1.	241.	5.73
W	0.	3.	16.	22.	26.	39.	33.	23.	20.	11.	1.	9.	203.	6.17
WSM	0.	2.	9.	17.	16.	16.	24.	22.	12.	8.	6.	23.	157.	7.38
NW	0.	2.	9.	14.	13.	14.	7.	6.	6.	2.	0.	2.	77.	5.28
NNW	0.	4.	18.	19.	7.	4.	3.	0.	0.	3.	0.	2.	62.	4.18
N	0.	7.	15.	26.	33.	17.	20.	14.	3.	3.	0.	0.	138.	4.93
VARIABLE													0.	0.00
CALM													0.	0.00
TOTAL	0.	40.	180.	268.	313.	320.	331.	251.	193.	117.	57.	89.	2159.	6.15

WIND FREQUENCY DISTRIBUTION  
 (FREQUENCY IN PERCENT OF TOTAL)

WIND DIRECTION	1	2	3	4	5	6	7	8	9	10	11	11	TOTAL	MEAN SPEED
NNE	0.00	0.14	0.79	1.25	1.85	1.99	1.25	1.39	0.79	0.32	0.00	0.23	10.00	5.84
NE	0.00	0.09	0.32	0.51	0.03	0.09	0.00	0.00	0.00	0.00	0.05	0.00	1.11	3.68
ENE	0.00	0.00	0.14	0.09	0.32	0.03	0.09	0.00	0.00	0.00	0.00	0.00	0.69	4.30
E	0.00	0.03	0.14	0.32	0.09	0.19	0.19	0.05	0.05	0.00	0.00	0.00	1.07	4.77
ESE	0.00	0.00	0.14	0.37	0.32	0.46	0.28	0.09	0.19	0.09	0.00	0.00	1.90	5.36
SE	0.00	0.00	0.42	0.46	0.88	0.93	0.93	0.97	1.02	0.42	0.37	0.19	6.58	6.72
SSE	0.00	0.23	0.69	1.16	1.34	0.97	0.88	1.02	0.79	1.30	0.79	0.83	10.00	6.93
S	0.00	0.03	0.36	0.88	1.07	1.07	1.07	1.07	1.67	1.11	0.42	0.65	9.59	7.04
SRM	0.00	0.03	0.74	0.83	0.60	1.20	0.97	1.25	1.30	0.56	0.46	0.37	8.34	6.74
SW	0.00	0.19	0.79	1.16	1.07	1.44	2.69	1.57	0.83	0.19	0.09	0.03	10.03	5.89
WSM	0.00	0.23	0.51	0.83	2.41	2.27	2.87	1.20	0.42	0.23	0.14	0.05	11.16	5.73
W	0.00	0.14	0.74	1.02	1.20	1.81	1.33	1.07	0.93	0.51	0.05	0.42	9.40	6.17
WSM	0.00	0.09	0.42	0.79	0.74	0.74	1.11	1.02	0.56	0.37	0.28	1.16	7.27	7.38
NW	0.00	0.09	0.42	0.65	0.69	0.65	0.32	0.28	0.28	0.09	0.00	0.09	3.57	5.28
NNW	0.00	0.19	0.83	0.88	0.32	0.19	0.23	0.00	0.00	0.14	0.00	0.09	2.87	4.18
N	0.00	0.32	0.69	1.20	1.53	0.79	0.93	0.65	0.14	0.14	0.00	0.00	6.39	4.93
VARIABLE													0.00	0.00
CALM													0.00	0.00
TOTAL	0.00	1.85	8.34	12.41	14.50	14.82	15.33	11.63	8.94	5.42	2.64	4.12	100.00	6.15

TOTAL NUMBER OF POSSIBLE OBSERVATIONS - 2184

TOTAL NUMBER OF OBSERVATIONS WITH VALID SPEED, DIRECTION AND STABILITY - 2125