

UNITS 1, 2 AND 3

SEMIANNUAL RADIOACTIVE  
EFFLUENT RELEASE REPORT

JULY 1, 1992, THROUGH DECEMBER 31, 1992

USNRC Docket No. STN 50-528/529/530

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## INTRODUCTION

This report summarizes meteorological data and doses from radioactive effluents for the Palo Verde Nuclear Generating Station (PVNGS) for the period of July through December 1992. The data presented meets the reporting requirements of Regulatory Guide 1.21 (Revision 1, June 1974) of the U.S. Nuclear Regulatory Commission and the PVNGS Technical Specifications.

The report is organized into seven parts. Appendix A presents the effluent and waste disposal source term data. Appendix B presents a summary of onsite meteorological data for the report period. Appendix C presents the radiological doses from gaseous radioactive effluents. Appendix D contains revisions to fission gas curies released from Unit 3 for the period of January 1991 through June 1992. Air inleakage to the containment radiation monitor, 3JSQBRU0001 was the reason for the revised curie totals. Appendix E contains the revised dose calculations as a result of the revisions presented in appendix D. Appendix F contains the Offsite Dose Calculation Manual (ODCM) Revision 5. Revision 5 incorporated Generic Letter 89-01, Supplement No. 1 (NUREG-1301), "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors." Appendix G contains the Process Control Program, Revision 2.00. This revision was also required as part of the implementation of Generic Letter 89-01.



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- Generation Engineering, "Geotechnical Exploration for Evaporation Pond #2," Oct. 1986
- Letter No. 212-00789-WFQ/RHM, "1989 PVNGS Evaporation Pan Data," Jan. 1989.
- "Offsite Dose Calculation Manual Palo Verde Nuclear Generating Station Units 1, 2 and 3", Rev. 5.

**APPENDIX A**  
**SOURCE TERMS**  
**AND**  
**EFFLUENT AND WASTE DISPOSAL REPORTS**

## Supplemental Information

### 1.0 REGULATORY LIMITS

#### 1.1 Liquid Releases

##### 1.1.1 PVNGS ODCM Requirement 3.2

The concentration of radioactive material discharged from the secondary system liquid waste to the onsite evaporation ponds shall be limited to the Lower Limit of Detectability (LLD) defined as  $5 \times 10^{-7}$   $\mu\text{Ci/ml}$  for the principal gamma emitters or  $1 \times 10^{-6}$   $\mu\text{Ci/ml}$  for I-131.

##### 1.1.2 PVNGS ODCM Requirement 4.4

The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited:

- a. During any calendar quarter to less than or equal to 1.5 mrem to the total body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mrem to the total body and to less than or equal to 10 mrem to any organ.

#### 1.2 Gaseous Releases

##### 1.2.1 PVNGS ODCM Requirement 3.1

The dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to the following:

- a. For noble gases: Less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin, and
- b. For I-131 and I-133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

#### 1.2.2 PVNGS ODCM Requirement 4.1

The air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation and,
- b. During any calendar year: Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

#### 1.2.3 PVNGS ODCM Requirement 4.2

The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ and,
- b. During any calendar year: Less than or equal to 15 mrem to any organ.

#### 1.2.4 PVNGS ODCM Requirement 4.3

The GASEOUS RADWASTE SYSTEM and the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent air doses due to gaseous effluent releases, from each reactor unit, from the site, when averaged over 31 days, would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation. The VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases, from each reactor unit, to areas at and beyond the SITE BOUNDARY when averaged over 31 days, would exceed 0.3 mrem to any organ of a MEMBER OF THE PUBLIC.

### 1.3 Total Dose

#### 1.3.1 PVNGS ODCM Requirement 5.1

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

## 2.0 MAXIMUM PERMISSIBLE CONCENTRATIONS

Air: Release Concentrations are limited to dose rate limits described in section 1.2.1 of this report.

## 3.0 AVERAGE ENERGY

The average energy ( $\bar{E}$ ) of the radionuclide mixture in releases of fission and activation gases is not applicable to PVNGS.

## 4.0 MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY IN GASEOUS EFFLUENTS

For continuous releases, sampling is in accordance with PVNGS ODCM Table 3-1. Particulate and iodine radionuclides are sampled continuously at the three exhaust points. The particulate filters and charcoal cartridges are exchanged for analysis four times per month. Noble gas and tritium are sampled at least once per 31 days. The hourly average Radiation Monitoring System (RMS) effluent monitor readings are used, when available, to account for increases and decreases in noble gas concentrations between noble gas grab samples. The tritium concentration is assumed constant between sampling periods.

For batch releases, sampling is also in accordance with PVNGS ODCM Table 3-1. For containment purges, the noble gas concentration is adjusted to account for decreases or increases in concentration during the purge using RMS readings. The volume of air released during the purge is determined using the exhaust fan rated flow rate. For Waste Gas Decay Tank releases, the volume released is corrected to standard pressure.

The Lower Limit of Detection (LLD) of a measurement system is defined in Table 3-1 of the PVNGS ODCM. An average LLD for each radionuclide is provided in Table A1.

## 5.0 BATCH RELEASES

All times are in hours

5.1	Gaseous	<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 3</u>
	Number of batch releases:	50	43	48
	Total time period for batch releases:	1649.22	1097.06	2594.12
	Maximum time period for a batch release:	168.00	168.00	168.00
	Average time period for a batch release:	32.98	25.51	54.04
	Minimum time period for a batch release:	0.03	0.05	0.02
5.2	Liquid			
	None.			

## 6.0 ABNORMAL RELEASES

None.

## 7.0 OFFSITE DOSE CALCULATION MANUAL (ODCM) AND PROCESS CONTROL PROGRAM (PCP) REVISIONS

Revision 5.00 of the ODCM was effective September 16, 1992, and is included as Appendix F.

Revision 2.00 of the PCP (76PR-9RW01) was effective September 15, 1992, and is included as Appendix G.

## 8.0 EFFLUENTS AND SOLID WASTES

### 8.1 Gaseous Effluents

Gaseous effluent information is presented in Tables A2 through A10. Included in these tables are summaries of the effluents and estimated total error.

### 8.2 Liquid Effluents

There were no liquid effluents from the PVNGS site.

### 8.3 Solid Waste

Solid waste shipments are summarized in Table A12.

## 9.0 MISCELLANEOUS INFORMATION

Releases made to the Evaporation Ponds have been limited, at the Chemical Waste Neutralizer tank, to the concentrations specified in PVNGS ODCM Requirement 3.2. In addition, PVNGS has imposed a limit of  $3.00\text{E-}03 \mu\text{Ci/ml}$  for tritium in tanks released to the Evaporation Ponds. This is the maximum permissible concentration for unrestricted areas for tritium in water from 10 CFR 20, Appendix B, Table II, Column 2. The Evaporation Ponds were monitored in accordance with PVNGS ODCM Requirement 6.1.

The average historical evaporation is approximately 12 inches, per pond, for each of the first and fourth quarters, and 33 inches, per pond, for each of the second and third quarters. This equates to  $3.09\text{E+}11$  cc evaporated from Pond 1 for each of the first and fourth quarters and  $8.50\text{E+}11$  cc evaporated from Pond 1 for each of the second and third quarters. The amount evaporated from Pond 2 is  $2.89\text{E+}11$  cc for each of the first and fourth quarters and  $7.96\text{E+}11$  cc for each of the second and third quarters. Using a  $X/Q$  of  $5.0\text{E-}05 \text{ sec/m}^3$  for the evaporation ponds and equation 4-3 from the ODCM, the dose contribution from the evaporation ponds is summarized below.

### 1992 Evaporation Pond Data

Tritium Concentration ( $\mu\text{Ci/cc}$ )				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Pond 1	< LLD	1.24E-06	8.22E-07	5.69E-07
Pond 2	< LLD	9.34E-07	9.55E-07	< LLD

  

Dose (mRem)					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Year
Pond 1	< LLD	1.46E-02	9.69E-03	2.44E-03	2.67E-02
Pond 2	< LLD	1.03E-02	1.05E-02	< LLD	2.09E-02

The results of the second quarter 1992 Strontium-89 and Strontium-90 analysis for continuous releases, which were not available at the time the January - June 1992 Semiannual Report was written, are summarized below. This additional data does not affect doses reported previously in Appendix C.

	Curies	
	Sr-89	Sr-90
Unit 1	4.00E-06	1.21E-06
Unit 2	6.65E-06	< LLD
Unit 3	< LLD	7.85E-08

The second quarter 1991 Strontium-90 results for Unit 3 were incorrectly reported in the July - December 1991 Semiannual Report. The correct value was < LLD. This was a typographical error. The correct value was used for calculating the doses in Appendix C.

The third quarter 1991 Strontium-89 and Strontium-90 results were inadvertently omitted from the January - June 1992 Semiannual Report. The results are summarized below. This additional data does not affect doses reported previously in Appendix C of the July - December 1991 Semiannual Report.

	Curies	
	Sr-89	Sr-90
Unit 1	2.15E-07	2.58E-07
Unit 2	1.47E-07	< LLD
Unit 3	< LLD	< LLD

A summary of the 1991 Strontium results is included in Appendix D.



Table A1

UNITS 1, 2 AND 3

GASEOUS EFFLUENTS - AVERAGE LOWER LIMIT OF DETECTION

 $\mu\text{Ci/cc}$ 

<u>NUCLIDE</u>	<u>CONTINUOUS</u>	<u>BATCH</u>
Argon-41	4.50E-08	4.50E-08
Krypton-85	7.40E-06	7.40E-06
Krypton-85m	2.20E-08	2.20E-08
Krypton-87	5.70E-08	5.70E-08
Krypton-88	7.40E-08	7.40E-08
Xenon-131m	9.10E-07	9.10E-07
Xenon-133	6.30E-08	6.30E-08
Xenon-133m	1.90E-07	1.90E-07
Xenon-135	2.00E-08	2.00E-08
Xenon-135m	8.90E-08	8.90E-08
Xenon-138	2.00E-07	2.00E-07
Iodine-131	8.00E-14	7.00E-12
Iodine-132	6.60E-12	1.90E-11
Iodine-133	4.70E-13	1.10E-11
Iodine-134	5.90E-11	8.20E-11
Iodine-135	7.00E-12	5.50E-11
Antimony-122	2.20E-13	1.90E-11
Antimony-124	8.40E-14	1.70E-11
Barium-140	3.40E-13	5.70E-11
Bromine-82	3.30E-13	1.40E-11
Cerium-141	8.70E-14	3.10E-11
Cerium-144	3.60E-13	6.50E-11
Cesium-134	1.00E-13	2.60E-11
Cesium-137	8.10E-14	1.70E-11
Cesium-138	5.20E-10	7.30E-10
Chromium-51	6.90E-13	1.40E-10
Cobalt-58	8.50E-14	1.70E-11
Cobalt-60	1.00E-13	1.90E-11
Iron-59	1.70E-13	3.20E-11
Lanthanum-140	2.80E-13	2.10E-11
Manganese-54	8.30E-14	1.70E-11
Molybdenum-99	2.40E-13	2.80E-11
Niobium-95	8.70E-14	1.80E-11
Rubidium-88	1.90E-08	1.90E-08
Ruthenium-103	7.40E-14	1.50E-11
Strontium-89	2.15E-15	(1)
Strontium-90	5.60E-16	(1)
Tellurium-123m	6.60E-14	1.50E-11
Tritium	3.80E-07	3.80E-07
Zinc-65	1.90E-13	3.80E-11
Zirconium-95	1.80E-13	4.10E-11
Gross Alpha	3.60E-15	(1)

(1) Not required for batch releases.



Table A2  
UNIT 1 1992  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER #3	QUARTER #4	EST. TOTAL ERROR % (1)
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A. Fission & activation gases

1. Total release	Ci	1.66E+02	1.90E+02	3.54E+01
2. Average release rate for period	$\mu\text{Ci/sec}$	2.09E+01	2.39E+01	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

B. Iodine 131

1. Total Iodine 131	Ci	5.69E-04	3.95E-04	3.32E+01
2. Average release rate for period	$\mu\text{Ci/sec}$	7.16E-05	4.97E-05	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

C. Particulates

1. Particulates with half-lives > 8 days	Ci	3.40E-05	3.86E-05	3.43E+01
2. Average release rate for period	$\mu\text{Ci/sec}$	4.28E-06	4.86E-06	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	
4. Gross Alpha radio-activity	Ci	< LLD	< LLD	

D. Tritium

1. Total release	Ci	7.97E+01	1.63E+02	3.85E+01
2. Average release rate for period	$\mu\text{Ci/sec}$	1.00E+01	2.05E+01	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

(1) Estimated total error methodology is presented in Table A11.

(2) See Table A4 for percent of ODCM Requirement limits.

Table A3

UNIT 1 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
1. Fission gases					
Argon-41	Ci	< LLD	< LLD	1.58E-01	1.89E-01
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	6.19E-02	< LLD
Krypton-85m	Ci	5.07E-01	2.04E-01	1.73E-04	9.32E-04
Krypton-87	Ci	1.52E-02	2.86E-01	< LLD	< LLD
Krypton-88	Ci	3.48E-02	5.14E-01	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	< LLD	< LLD	3.11E-02	5.28E-03
Xenon-133	Ci	1.46E+02	1.67E+02	2.29E+00	2.15E+00
Xenon-133m	Ci	< LLD	< LLD	1.85E-01	1.15E-02
Xenon-135	Ci	1.64E+01	1.82E+01	2.76E-02	3.40E-02
Xenon-135m	Ci	< LLD	1.28E+00	< LLD	8.74E-06
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	1.63E+02	1.88E+02	2.76E+00	2.39E+00
2. Iodines					
Iodine-131	Ci	5.42E-04	3.87E-04	2.74E-05	8.11E-06
Iodine-132	Ci	< LLD	4.08E-05	< LLD	5.13E-06
Iodine-133	Ci	8.16E-06	1.46E-04	1.00E-05	6.60E-06
Iodine-134	Ci	< LLD	< LLD	< LLD	3.37E-07
Iodine-135	Ci	< LLD	1.10E-04	9.68E-07	8.99E-07
Total for period	Ci	5.50E-04	6.84E-04	3.84E-05	2.11E-05

Table A3 (Continued)

UNIT 1 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
3. Particulates					
Antimony-124	Ci	6.36E-07	< LLD	< LLD	< LLD
Barium-140	Ci	< LLD	< LLD	< LLD	< LLD
Bromine-82	Ci	< LLD	< LLD	1.57E-05	1.60E-05
Cerium-141	Ci	< LLD	< LLD	< LLD	< LLD
Cerium-144	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-134	Ci	2.75E-06	5.74E-06	< LLD	1.55E-08
Cesium-137	Ci	1.98E-06	3.89E-06	1.58E-08	2.52E-08
Cesium-138	Ci	< LLD	2.89E-03	2.00E-06	< LLD
Chromium-51	Ci	< LLD	< LLD	< LLD	< LLD
Cobalt-58	Ci	3.48E-06	5.59E-07	< LLD	< LLD
Cobalt-60	Ci	< LLD	6.20E-07	< LLD	< LLD
Iron-59	Ci	< LLD	< LLD	< LLD	< LLD
Lanthanum-140	Ci	< LLD	< LLD	< LLD	< LLD
Manganese-54	Ci	< LLD	< LLD	< LLD	< LLD
Molybdenum-99	Ci	< LLD	< LLD	< LLD	< LLD
Niobium-95	Ci	1.09E-06	< LLD	< LLD	< LLD
Rubidium-88	Ci	< LLD	1.51E-02	2.04E-05	2.43E-05
Ruthenium-103	Ci	1.03E-06	< LLD	< LLD	< LLD
Selenium-75	Ci	1.14E-05	2.60E-05	< LLD	< LLD
Silver-110m	Ci	2.53E-07	< LLD	< LLD	< LLD
Strontium-89	Ci	(1)	(1)	(2)	(2)
Strontium-90	Ci	(1)	(1)	(2)	(2)
Tellurium-123m	Ci	1.13E-05	1.79E-06	< LLD	< LLD
Tritium	Ci	< LLD	< LLD	7.97E+01	1.63E+02
Zinc-65	Ci	< LLD	< LLD	< LLD	< LLD
Zirconium-95	Ci	< LLD	< LLD	4.17E-08	< LLD
Total for period	Ci	3.39E-05	1.80E-02	7.97E+01	1.63E+02

(1) Analysis not yet completed. Additional information will be included in the next Semiannual Report.

(2) Not required for batch releases.

Table A4

PVNGS UNIT 1  
RADIATION DOSES AT AND BEYOND THE SITE BOUNDARY<sup>(1)</sup> FOR 1992

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1992
Gamma Air Dose	mrad	1.91E-01	8.62E-04	2.45E-02	3.13E-02	2.48E-01
ODCM Req. 4.1 Limit	mrad	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
% ODCM Limit	%	3.83E+00	1.72E-02	4.89E-01	6.25E-01	2.48E+00
Beta Air Dose	mrad	5.75E-01	2.06E-03	5.60E-02	6.47E-02	6.98E-01
ODCM Req. 4.1 Limit	mrad	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
% ODCM Limit	%	5.75E+00	2.06E-02	5.60E-01	6.47E-01	3.49E+00
Maximum Organ Dose (excluding skin)	mrem	Infant Thyroid	Child Thyroid	Child(2) Thyroid	Child(3) Thyroid	Child (2,3) Thyroid
ODCM Req. 4.2 Limit	mrem	3.98E-01	6.23E-02	2.08E-01	4.10E-01	1.06E+00
% ODCM Limit	%	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
		5.30E+00	8.31E-01	2.78E+00	5.47E+00	7.07E+00

- (1) Calculations are based on parameters and methodologies of the ODCM using historical meteorology.
- (2) Does not include 3rd quarter Sr-89, 90 results.
- (3) Does not include 4th quarter Sr-89, 90 results.

Table A5  
UNIT 2 1992  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER #3	QUARTER #4	EST. TOTAL ERROR % (1)
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A. Fission & activation gases

1. Total release	Ci	5.73E+01	1.43E+02	3.54E+01
2. Average release rate for period	μCi/sec	7.20E+00	1.80E+01	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

B. Iodine 131

1. Total Iodine 131	Ci	2.73E-07	3.89E-06	3.32E+01
2. Average release rate for period	μCi/sec	3.44E-08	4.89E-07	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

C. Particulates

1. Particulates with half-lives > 8 days	Ci	2.85E-06	< LLD	3.43E+01
2. Average release rate for period	μCi/sec	3.59E-07	< LLD	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	
4. Gross Alpha radio-activity	Ci	< LLD	< LLD	

D. Tritium

1. Total release	Ci	6.84E+01	1.46E+02	3.85E+01
2. Average release rate for period	μCi/sec	8.60E+00	1.83E+01	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

(1) Estimated total error methodology is presented in Table A11.

(2) See Table A7 for percent of ODCM Requirement limits.

Table A6

UNIT 2 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
1. Fission gases					
Argon-41	Ci	8.65E-01	< LLD	1.71E-01	1.65E-01
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	3.61E-02	1.31E-01
Krypton-85m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-87	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-88	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	< LLD	< LLD	1.96E-02	1.54E-01
Xenon-133	Ci	5.25E+01	1.31E+02	1.77E+00	8.24E+00
Xenon-133m	Ci	< LLD	< LLD	7.71E-03	5.82E-02
Xenon-135	Ci	1.88E+00	3.62E+00	7.09E-03	2.26E-02
Xenon-135m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	5.52E+01	1.34E+02	2.01E+00	8.77E+00
2. Iodines					
Iodine-131	Ci	< LLD	2.42E-06	2.73E-07	1.47E-06
Iodine-132	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-133	Ci	< LLD	5.83E-08	< LLD	1.52E-07
Iodine-134	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-135	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	< LLD	2.48E-06	2.73E-07	1.62E-06

Table A6 (Continued)

UNIT 2 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
3. Particulates					
Antimony-124	Ci	< LLD	< LLD	< LLD	< LLD
Barium-140	Ci	< LLD	< LLD	< LLD	< LLD
Bromine-82	Ci	< LLD	< LLD	1.86E-05	1.50E-05
Cerium-141	Ci	< LLD	< LLD	< LLD	< LLD
Cerium-144	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-134	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-137	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-138	Ci	< LLD	< LLD	< LLD	< LLD
Chromium-51	Ci	< LLD	< LLD	< LLD	< LLD
Cobalt-58	Ci	< LLD	< LLD	< LLD	< LLD
Cobalt-60	Ci	< LLD	< LLD	< LLD	< LLD
Iron-59	Ci	< LLD	< LLD	< LLD	< LLD
Lanthanum-140	Ci	< LLD	< LLD	< LLD	< LLD
Manganese-54	Ci	< LLD	< LLD	< LLD	< LLD
Molybdenum-99	Ci	< LLD	< LLD	< LLD	< LLD
Niobium-95	Ci	< LLD	< LLD	< LLD	< LLD
Rubidium-88	Ci	< LLD	< LLD	4.66E-06	2.97E-07
Ruthenium-103	Ci	< LLD	< LLD	< LLD	< LLD
Strontium-89	Ci	(1)	(1)	(2)	(2)
Strontium-90	Ci	(1)	(1)	(2)	(2)
Tellurium-123m	Ci	2.85E-06	< LLD	< LLD	< LLD
Tritium	Ci	< LLD	< LLD	6.84E+01	1.46E+02
Zinc-65	Ci	< LLD	< LLD	< LLD	< LLD
Zirconium-95	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	2.85E-06	< LLD	6.84E+01	1.46E+02

(1) Analysis not yet completed. Additional information will be included in the next Semiannual Report.

(2) Not required for batch releases.

Table A7

PVNGS UNIT 2  
RADIATION DOSES AT AND BEYOND THE SITE BOUNDARY<sup>(1)</sup> FOR 1992

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1992
Gamma Air Dose	mrad	2.26E-04	4.44E-04	9.16E-03	1.63E-02	2.61E-02
ODCM Req. 4.1 Limit	mrad	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
% ODCM Limit	%	4.52E-03	8.89E-03	1.83E-01	3.26E-01	2.61E-01
Beta Air Dose	mrad	8.91E-05	1.77E-04	1.84E-02	4.40E-02	6.27E-02
ODCM Req. 4.1 Limit	mrad	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
% ODCM Limit	%	8.91E-04	1.77E-03	1.84E-01	4.40E-01	3.13E-01
Maximum Organ Dose		Child	Child	Child(2)	Child(3)	Child (2,3)
(excluding skin)		Thyroid	Thyroid	Thyroid	Thyroid	Thyroid
ODCM Req. 4.2 Limit	mrem	2.16E-01	1.31E-01	1.69E-01	3.60E-01	8.75E-01
% ODCM Limit	mrem	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
	%	2.88E+00	1.74E+00	2.25E+00	4.80E+00	5.84E+00

- (1) Calculations are based on parameters and methodologies of the ODCM using historical meteorology.
- (2) Does not include 3rd quarter Sr-89, 90 results.
- (3) Does not include 4th quarter Sr-89, 90 results.



Table A8  
UNIT 3 1992  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT	QUARTER #3	QUARTER #4	EST. TOTAL ERROR % (1)
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A. Fission & activation gases

1. Total release	Ci	3.93E+01	2.18E+00	3.54E+01
2. Average release rate for period	μCi/sec	4.94E+00	2.74E-01	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

B. Iodine 131

1. Total Iodine 131	Ci	9.55E-04	5.52E-04	3.32E+01
2. Average release rate for period	μCi/sec	1.20E-04	6.94E-05	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

C. Particulates

1. Particulates with half-lives > 8 days	Ci	8.41E-06	3.96E-04	3.43E+01
2. Average release rate for period	μCi/sec	1.06E-06	4.98E-05	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	
4. Gross Alpha radio-activity	Ci	< LLD	5.31E-11	

D. Tritium

1. Total release	Ci	5.60E+01	6.76E+01	3.85E+01
2. Average release rate for period	μCi/sec	7.04E+00	8.50E+00	
3. Percent of ODCM Requirement limit	%	NA (2)	NA (2)	

(1) Estimated total error methodology is presented in Table A11.

(2) See Table A10 for percent of ODCM Requirement limits.

Table A9

UNIT 3 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
1. Fission gases					
Argon-41	Ci	< LLD	< LLD	6.35E-01	3.69E-02
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	1.40E-02	6.79E-01
Krypton-85m	Ci	< LLD	< LLD	2.80E-03	< LLD
Krypton-87	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-88	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	< LLD	< LLD	4.17E-03	3.35E-02
Xenon-133	Ci	2.04E+01	1.31E+00	1.56E+01	1.17E-01
Xenon-133m	Ci	< LLD	< LLD	3.81E-01	< LLD
Xenon-135	Ci	1.48E+00	< LLD	7.34E-01	6.49E-04
Xenon-135m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	2.19E+01	1.31E+00	1.74E+01	8.67E-01
2. Iodines					
Iodine-131	Ci	1.26E-04	4.46E-04	8.28E-04	1.06E-04
Iodine-132	Ci	2.39E-05	< LLD	< LLD	< LLD
Iodine-133	Ci	5.71E-06	8.80E-05	4.44E-04	6.71E-07
Iodine-134	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-135	Ci	< LLD	2.78E-04	4.83E-07	8.87E-05
Total for period	Ci	1.56E-04	8.12E-04	1.27E-03	1.95E-04

Table A9 (Continued)

UNIT 3 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #3	Quarter #4	Quarter #3	Quarter #4
3. Particulates					
Antimony-124	Ci	1.36E-06	1.50E-05	< LLD	< LLD
Barium-140	Ci	< LLD	< LLD	< LLD	< LLD
Bromine-82	Ci	< LLD	< LLD	6.55E-04	4.77E-06
Cerium-141	Ci	< LLD	< LLD	< LLD	< LLD
Cerium-144	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-134	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-137	Ci	< LLD	< LLD	< LLD	< LLD
Cesium-138	Ci	< LLD	< LLD	< LLD	< LLD
Chromium-51	Ci	< LLD	7.00E-05	< LLD	< LLD
Cobalt-58	Ci	5.28E-06	1.56E-04	< LLD	< LLD
Cobalt-60	Ci	< LLD	5.08E-05	< LLD	< LLD
Iron-59	Ci	< LLD	< LLD	< LLD	< LLD
Lanthanum-140	Ci	< LLD	< LLD	< LLD	< LLD
Manganese-54	Ci	< LLD	1.31E-05	< LLD	< LLD
Molybdenum-99	Ci	< LLD	< LLD	< LLD	< LLD
Niobium-95	Ci	< LLD	1.98E-05	< LLD	< LLD
Rubidium-88	Ci	< LLD	< LLD	7.28E-04	< LLD
Ruthenium-103	Ci	1.77E-06	5.96E-05	< LLD	< LLD
Selenium-75	Ci	< LLD	1.97E-06	< LLD	< LLD
Strontium-89	Ci	(1)	(1)	(2)	(2)
Strontium-90	Ci	(1)	(1)	(2)	(2)
Tritium	Ci	< LLD	< LLD	5.60E+01	6.76E+01
Zinc-65	Ci	< LLD	< LLD	< LLD	< LLD
Zirconium-95	Ci	< LLD	9.24E-06	< LLD	< LLD
Total for period	Ci	8.41E-06	3.96E-04	5.60E+01	6.76E+01

(1) Analysis not yet completed. Additional information will be included in the next Semiannual Report.

(2) Not required for batch releases.

Table A10

PVNGS UNIT 3  
RADIATION DOSES AT AND BEYOND THE SITE BOUNDARY<sup>(1)</sup> FOR 1992

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1992
Gamma Air Dose	mrad	4.14E-04	8.71E-04	6.50E-03	2.45E-04	8.03E-03
ODCM Req. 4.1 Limit	mrad	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
% ODCM Limit	%	8.28E-03	1.74E-02	1.30E-01	4.89E-03	8.03E-02
Beta Air Dose	mrad	3.38E-04	8.42E-04	1.30E-02	8.43E-04	1.50E-02
ODCM Req. 4.1 Limit	mrad	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
% ODCM Limit	%	3.38E-03	8.42E-03	1.30E-01	8.43E-03	7.50E-02
Maximum Organ Dose		Child	Child	Child(2)	Child(3)	Child (2,3)
(excluding skin)	mrem	Thyroid	Thyroid	Thyroid	Thyroid	Thyroid
ODCM Req. 4.2 Limit	mrem	2.68E-01	1.35E-01	1.58E-01	1.78E-01	7.39E-01
% ODCM Limit	%	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
		3.57E+00	1.80E+00	2.10E+00	2.38E+00	4.92E+00

- (1) Calculations are based on parameters and methodologies of the ODCM using historical meteorology.
- (2) Does not include 3rd quarter Sr-89, 90 results.
- (3) Does not include 4th quarter Sr-89, 90 results.

Table A11

## Estimation of Total Percent Error

The estimated total error is calculated as follows:

$$\text{Total Percent Error} = (E_1^2 + E_2^2 + E_3^2 + \dots + E_n^2)^{1/2}$$

Where  $E_n$  = Percent error associated with each contributing parameter.

Parameters contributing to errors in the measurement of gaseous effluents are; process flow rates, sample collection, analytical counting and tank volumes.

The following values (%) were used for error calculations.

Fission & Act. gases	I-131	Partic- ulates	Tritium	
25	25	25	25	Sample counting error
10	10	10	10	Counting system calibration error
5	5	5	5	Counting system source error
20	N/A	N/A	N/A	Temperature/volume correction error
10	10	10	10	Process flow measuring device
N/A	15	15	15	Sample flow measuring device
N/A	5	N/A	N/A	Iodine collection efficiency error
N/A	N/A	10	N/A	Plateout error
N/A	N/A	N/A	20	Bubbler collection efficiency error
N/A	N/A	N/A	2	Sample volume transfer error (pipette)
N/A	N/A	N/A	2	Sample volume error (graduate)

TABLE A12

## SOLID WASTE SUMMARY FOR PERIOD JULY 1992 - DECEMBER 1992

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

1.0 Type of Waste	Unit	6-month period	estimated total error %
1.a) spent resin, filters, sludges, evaporator bottoms, etc.	M <sup>3</sup> Ci	1.28E+02 9.56E+02	N/A ± 25%
1.b) dry compressible waste, contaminated equipment, etc.	M <sup>3</sup> Ci	1.62E+02 3.74E+00	N/A ± 25%
1.c) irradiated components, fuel rods, etc.	M <sup>3</sup> Ci	0.00E+00 0.00E+00	N/A N/A
1.d) other (activated carbon, absorbed liquid)	M <sup>3</sup> Ci	1.72E+01 6.91E-02	N/A ± 25%

NOTE

Volume and activity for dry compressible waste, contaminated equipment, etc., include PVNGS waste disposed of after being processed by a volume reduction facility.

## 2.0 Principal Radionuclides

- 2.a) Estimate of major nuclide concentration for spent resins, filter sludges, evaporator bottoms, etc.

WASTE CLASS	NUCLIDE NAME	PERCENT ABUNDANCE	CURIES
A	CS-137	58.898%	2.318E+02
A	CS-134	16.985%	6.685E+01
A	FE-55	9.756%	3.840E+01
A	CO-60	8.635%	3.399E+01
A	NI-63	2.930%	1.153E+01
A	CO-58	0.737%	2.901E+00
A	MN-54	0.599%	2.358E+00
A	C-14	0.555%	2.184E+00
A	H-3	0.531%	2.092E+00
A	SB-124	0.190%	7.479E-01
A	SR-90	0.156%	6.135E-01
A	RU-106	0.032	1.260E-01

TABLE A12 (CONTINUED)

2.b) Estimate of major nuclide concentration for spent resins, filter sludges, evaporator bottoms, etc.

WASTE CLASS	NUCLIDE NAME	PERCENT ABUNDANCE	CURIES
B	CS-137	38.210%	1.469E+02
B	FE-55	21.681%	8.336E+01
B	CS-134	16.715%	6.427E+01
B	CO-60	7.650%	2.941E+01
B	NI-63	6.388%	2.456E+01
B	CO-58	4.225%	1.625E+01
B	SB-124	2.032%	7.813E+00
B	MN-54	1.192%	4.583E+00
B	SB-125	0.991%	3.810E+00
B	C-14	0.536%	2.061E+00
B	SR-90	0.190%	7.306E-01
B	H-3	0.160%	6.152E-01
B	PU-241	0.031%	1.192E-01

2.c) Estimate of major nuclide concentration for spent resins, filter sludges, evaporator bottoms, etc.

WASTE CLASS	NUCLIDE NAME	PERCENT ABUNDANCE	CURIES
C	FE-55	60.495%	9.770E+01
C	CO-60	23.839%	3.850E+01
C	NI-63	8.656%	1.398E+01
C	C-14	2.155%	3.480E+00
C	CO-58	2.136%	3.450E+00
C	FE-59	1.331%	2.150E+00
C	BE-7	0.573%	9.260E-01
C	CS-137	0.440%	7.110E-01
C	PU-241	0.220%	3.550E-01
C	H-3	0.104%	1.680E-01
C	SR-90	0.035%	5.610E-02
C	TC-99	0.000%	2.580E-04

TABLE A12 (CONTINUED)

2.d) Estimate of major nuclide concentration for dry compressible waste, contaminated equipment, etc.

WASTE CLASS	NUCLIDE NAME	PERCENT ABUNDANCE	CURIES
A	FE-55	28.90%	1.08E+00
A	CS-137	20.53%	7.70E-01
A	CO-60	16.70%	6.26E-01
A	CS-134	8.65%	3.24E-01
A	CO-58	7.65%	2.87E-01
A	NI-63	6.51%	2.44E-01
A	SB-124	6.43%	2.41E-01
A	NB-95	1.20%	4.50E-02
A	H-3	0.72%	2.68E-02
A	SB-125	0.59%	2.21E-02
A	FE-59	0.50%	1.86E-02
A	CR-51	0.43%	1.62E-02
A	MN-54	0.41%	1.53E-02
A	C-14	0.27%	1.02E-02
A	RU-103	0.24%	8.92E-03
A	AG-110m	0.15%	5.69E-03

2.e) Estimate of major nuclide concentration for solidified carbon and absorbed liquid waste.

WASTE CLASS	NUCLIDE NAME	PERCENT ABUNDANCE	CURIES
A	FE-55	34.395%	2.37E-02
A	CO-60	23.767%	1.64E-02
A	NI-63	10.792%	7.45E-03
A	RU-106	5.203%	3.59E-03
A	CS-137	4.154%	2.87E-03
A	H-3	4.075%	2.81E-03
A	C-14	3.024%	2.09E-03
A	CO-58	2.841%	1.96E-03
A	Ce-144	2.362%	1.63E-03
A	AG-110m	2.090%	1.44E-03
A	CO-57	1.970%	1.36E-03
A	CS-134	1.961%	1.35E-03
A	SB-125	1.550%	1.07E-03



TABLE A12 (CONTINUED)

**3.0 Solid Waste Disposition****3.a)**

<u>SHIPMENTS</u>	<u>SHIPPER</u>	<u>MODE OF TRANSPORTATION</u>	<u>DESTINATION</u>
17	ATG	TRUCK	HANFORD
5	CNSI	TRUCK	BARNWELL
43	SEG	TRUCK	BEATTY
5	QUADREX	TRUCK	BARNWELL
40	APS	TRUCK	HANFORD
22	APS	TRUCK	BEATTY

**3.b) Irradiated Fuel Shipments:** None**3.c) Supplemental Information** - This Section includes PVNGS and vendor provided containers.

<u>NUMBER OF CONTAINERS</u>	<u>CONTAINER VOLUME FT<sup>3</sup></u>	<u>TYPE OF WASTE</u>	<u>CONTAINER TYPE</u>	<u>SOLIDIFICATION AGENT</u>
124	7.5	COMPACTED DAW	STRONG TIGHT	NONE
137	7.5	RVR EVAP BOTTOMS	STRONG TIGHT	NONE
101	11.5	COMPACTED DAW	STRONG TIGHT	NONE
31	14.0	SOLIDIFIED LIQUID	STRONG TIGHT	AQUASET
46	46.0	COMPACTED DAW	STRONG TIGHT	NONE
4	49.9	CART. FILTERS	STRONG TIGHT	NONE
4	49.9	CART. FILTERS	TYPE B	NONE
6	54.3	NONCOMPACTED DAW	STRONG TIGHT	NONE
3	96.0	DEWATERED RESIN	STRONG TIGHT	NONE
8	102.1	NONCOMPACTED DAW	STRONG TIGHT	NONE
1	117.5	ABSORBED LIQUID	TYPE A	AQUASET
7	130.8	DEWATERED RESIN	STRONG TIGHT	NONE
2	132.4	DEWATERED RESIN	STRONG TIGHT	NONE
1	132.4	NONCOMPACTED DAW	STRONG TIGHT	NONE
2	132.4	DEWATERED RESIN	STRONG TIGHT	NONE
2	199.4	SOLIDIFIED CARBON	STRONG TIGHT	ENVIROSTONE
1	199.4	CONCENTRATES	STRONG TIGHT	PORTLAND
1	199.4	NONCOMPACTED DAW	STRONG TIGHT	NONE
2	199.4	DEWATERED RESIN	STRONG TIGHT	NONE

TABLE A12 (CONTINUED)

4.0 Changes to Processes and/or Equipment

- 4.a) The Process Control Program has been revised in compliance with Generic Letter 89-01/NUREG 1301. The PCP revision relocates process details found in the Technical Specification to Nuclear Administrative and Technical Manual. The revision was carried out as part of PVNGS Licensing Change Request 90-015. The revised PCP has been reviewed and approved by the Plant Review Board and the NRC.
- 4.b) No major changes were made to installed plant equipment.
- 4.c) No major changes were made to installed plant equipment. Therefore, predicted release or quantity of solid waste generated, remain unchanged as addressed in the UFSAR.
- 4.d) No major changes were made to installed plant equipment. Therefore, predicted exposure to the public and general population, remain unchanged as addressed in the UFSAR.

Table A13

Units 1, 2 and 3

EFFLUENT MONITORING INSTRUMENTATION OUT OF SERVICE GREATER THAN  
30 DAYS

Instrument	Date Span of Inoperability	Cause of Inoperability	Explanation
1JGRNFIT0033 WGDТ flow rate monitor	09/30/92 - 11/09/92	Failed Surveillance test 74ST-9SQ06	Unable to procure a replacement flow transmitter (due to parts availability) and perform required surveillance test once the transmitter was replaced.

APPENDIX B  
METEOROLOGY

## JOINT FREQUENCY DISTRIBUTION TABLES

The tables presented in this section are results obtained from processing the hourly meteorological data collected at the Palo Verde Nuclear Generating Station for 1992. The joint frequency distribution (JFD) tables represent the frequency, in terms of the number of observations, that a particular wind speed, wind direction, and stability category occurred simultaneously. On a quarterly, semiannual and annual basis, the JFDs were produced for 35-foot wind speed and wind direction by atmospheric stability class corresponding to the seven Pasquill stability categories, and for wind speed and wind direction for all stability classes combined. Atmospheric stability was classified per Regulatory Guide 1.23, using the 200-foot to 35-foot temperature difference ( $\Delta T$ ).

In accordance with NUREG-0133, the batch releases for the third and fourth quarters for 1992 were considered as "long term," since for each quarter, the sum of the batch release periods for each unit exceeded 150 hours. Consequently, the JFDs for the batch releases for both quarters are the same as for the continuous releases.

Table B1  
JFDs of 35-Foot Wind Versus Delta T  
July - September 1992

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: CVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 9/30/92

\*\*\*3RD QTR 92\*\*\*

STABILITY CLASS A  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.51- 5.50	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	4
5.51- 6.50	0	0	0	0	1	1	1	1	1	1	1	3	1	0	1	0	12
6.51- 8.50	0	0	0	1	2	0	2	7	6	13	8	9	1	1	0	0	50
8.51-11.50	0	0	0	0	2	1	0	1	5	16	30	13	7	0	0	0	75
11.51-14.50	0	0	0	0	2	0	0	0	0	7	11	4	1	0	1	0	26
14.51-20.50	0	0	0	1	2	0	0	0	0	2	5	2	0	0	0	0	12
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	2	9	2	4	9	12	40	55	33	10	1	2	0	179

STABILITY CLASS B  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	0	0	0	0	2	1	1	0	1	1	0	0	0	0	5
4.51- 5.50	0	0	1	0	0	0	0	1	1	7	1	2	0	0	1	0	14
5.51- 6.50	0	2	3	2	0	2	1	5	14	13	5	4	1	0	2	0	54
6.51- 8.50	0	0	0	4	7	13	4	5	8	11	10	6	3	1	0	0	72
8.51-11.50	0	0	0	0	4	2	0	2	2	4	6	5	2	1	0	0	28
11.51-14.50	0	0	0	2	4	2	0	0	0	1	3	2	0	0	0	0	14
14.51-20.50	0	0	0	0	4	0	0	0	0	0	2	1	0	0	0	0	7
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	2	4	8	19	19	7	13	26	36	28	21	6	2	3	0	194

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 9/30/92

\*\*\*3RD QTR 92\*\*\*

STABILITY CLASS C  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	2	1	1	0	1	0	0	0	2	0	0	3	0	1	11
4.51- 5.50	1	0	0	0	1	1	0	3	14	9	7	4	2	1	0	0	43
5.51- 6.50	0	1	4	4	5	2	2	13	18	11	10	4	1	0	0	0	75
6.51- 8.50	0	0	2	4	6	7	5	6	11	5	7	6	1	1	0	0	61
8.51-11.50	0	0	0	0	4	5	3	1	1	3	4	1	2	2	0	0	26
11.51-14.50	0	0	0	0	3	0	1	0	2	1	2	1	0	0	0	0	10
14.51-20.50	0	0	0	0	5	0	0	0	0	0	2	0	1	0	0	0	8
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	1	8	9	25	15	12	23	46	29	34	16	7	7	0	1	234

STABILITY CLASS D  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	3	2	1	0	1	0	0	3	0	1	1	1	0	0	1	2	16
2.51- 3.50	4	2	0	1	1	5	1	2	8	3	3	5	1	2	2	3	43
3.51- 4.50	3	8	7	1	0	1	7	3	6	6	8	4	3	1	0	0	58
4.51- 5.50	1	2	6	0	2	4	4	5	16	11	9	4	3	1	0	0	68
5.51- 6.50	1	3	6	4	0	2	4	6	8	15	7	6	4	0	1	0	67
6.51- 8.50	1	1	4	3	6	7	6	4	9	7	22	10	2	0	0	1	83
8.51-11.50	0	2	4	4	7	10	6	0	3	8	19	9	3	2	0	0	77
11.51-14.50	3	0	3	1	11	3	2	0	2	5	22	7	0	0	0	0	59
14.51-20.50	0	1	0	3	20	2	0	0	0	2	11	1	1	0	0	0	41
>20.50	0	0	0	1	1	0	0	0	0	0	2	0	1	0	0	0	5
TOTAL	16	21	31	18	49	34	30	23	52	58	104	47	18	6	4	6	517



JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 9/30/92

\*\*\*3RD QTR 92\*\*\*

STABILITY CLASS E  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
1.51- 2.50	1	0	0	0	1	0	1	1	1	1	1	1	2	2	2	1	15
2.51- 3.50	4	1	0	1	0	0	2	0	1	1	3	5	9	4	6	2	39
3.51- 4.50	4	4	0	2	1	1	2	1	3	2	7	7	3	5	2	3	47
4.51- 5.50	1	3	6	1	0	2	0	1	6	5	12	8	2	1	0	0	48
5.51- 6.50	2	2	5	1	1	0	0	1	5	5	12	12	2	4	0	0	52
6.51- 8.50	0	1	8	3	0	3	1	3	3	18	32	22	6	2	0	0	102
8.51-11.50	0	1	2	7	5	12	1	2	4	6	31	20	5	1	0	0	97
11.51-14.50	0	0	0	4	12	6	1	1	0	4	8	5	0	0	1	0	42
14.51-20.50	1	0	0	4	21	3	1	0	1	2	5	0	0	0	0	0	38
>20.50	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	3
TOTAL	13	12	21	23	42	27	9	10	24	44	112	81	30	19	11	6	484

STABILITY CLASS F  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	4
1.51- 2.50	1	1	1	0	1	0	1	1	1	2	0	1	2	5	3	3	23
2.51- 3.50	5	2	2	0	1	1	0	1	2	1	4	1	4	6	7	5	42
3.51- 4.50	9	3	1	2	1	0	2	0	2	0	10	4	4	2	3	5	48
4.51- 5.50	3	2	5	0	0	2	0	0	4	3	8	1	2	2	1	4	37
5.51- 6.50	1	5	2	0	0	0	1	0	0	3	6	4	0	1	3	1	27
6.51- 8.50	0	3	10	2	0	0	0	2	1	8	23	9	3	1	2	1	65
8.51-11.50	0	2	1	1	0	0	1	0	1	1	6	1	0	0	1	0	15
11.51-14.50	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
14.51-20.50	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	19	19	23	6	3	3	5	4	11	18	57	22	17	17	21	19	264

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 9/30/92

\*\*\*3RD QTR 92\*\*\*

STABILITY CLASS G  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	3
1.51- 2.50	6	2	1	1	0	0	0	0	1	0	0	0	2	8	3	3	27
2.51- 3.50	17	7	0	2	0	1	0	0	1	0	1	0	2	3	10	23	67
3.51- 4.50	36	9	3	1	0	0	0	0	1	1	1	2	1	6	7	29	97
4.51- 5.50	32	9	4	0	0	0	0	0	1	0	2	0	1	1	7	11	68
5.51- 6.50	15	8	4	0	0	0	0	0	0	0	1	2	0	0	1	3	34
6.51- 8.50	0	11	5	3	0	0	0	0	0	2	4	0	0	0	0	0	25
8.51-11.50	0	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	8
11.51-14.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.51-20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	106	51	19	8	1	1	0	0	4	3	9	4	6	18	29	70	329

STABILITY CLASS ALL  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	1	0	0	0	0	0	0	2	2	0	2	1	8
1.51- 2.50	11	5	3	1	3	0	2	5	3	4	2	3	6	15	9	9	81
2.51- 3.50	30	12	2	4	2	7	3	3	12	5	11	11	16	15	25	33	191
3.51- 4.50	52	24	13	7	3	2	14	4	13	9	29	18	11	17	12	38	266
4.51- 5.50	38	16	22	1	3	9	5	10	42	36	39	21	10	6	9	15	282
5.51- 6.50	19	21	24	11	7	7	9	26	46	48	42	35	9	5	8	4	321
6.51- 8.50	1	16	29	20	21	30	18	27	38	64	106	62	16	6	2	2	458
8.51-11.50	0	10	9	13	22	30	11	6	16	38	96	49	19	6	1	0	326
11.51-14.50	3	1	3	8	32	11	4	1	4	18	46	19	1	0	2	0	153
14.51-20.50	1	1	1	8	52	5	1	0	1	6	25	4	2	0	0	0	107
>20.50	0	0	0	1	2	0	0	0	0	0	3	0	2	0	0	0	8
TOTAL	155	106	106	74	148	101	67	82	175	228	399	224	94	70	70	102	2201

## JOINT FREQUENCY DISTRIBUTION ANALYSIS

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 7/ 1/92 - 9/30/92

\*\*\*3RD QTR 92\*\*\*

STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

TOTAL NUMBER OF OBSERVATIONS: 2208

TOTAL NUMBER OF VALID OBSERVATIONS: 2201

TOTAL NUMBER OF MISSING OBSERVATIONS: 7

PERCENT DATA RECOVERY FOR THIS PERIOD: 99.7 %

MEAN WIND SPEED FOR THIS PERIOD: 7.2 MPH

TOTAL NUMBER OF OBSERVATIONS WITH BACKUP DATA: 0

## PERCENTAGE OCCURRENCE OF STABILITY CLASSES

A	B	C	D	E	F	G
8.13	8.81	10.63	23.49	21.99	11.99	14.95

## DISTRIBUTION OF WIND DIRECTION VS STABILITY

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
A	0	0	0	2	9	2	4	9	12	40	55	33	10	1	2	0	0
B	0	2	4	8	19	19	7	13	26	36	28	21	6	2	3	0	0
C	1	1	8	9	25	15	12	23	46	29	34	16	7	7	0	1	0
D	16	21	31	18	49	34	30	23	52	58	104	47	18	6	4	6	0
E	13	12	21	23	42	27	9	10	24	44	112	81	30	19	11	6	0
F	19	19	23	6	3	3	5	4	11	18	57	22	17	17	21	19	0
G	106	51	19	8	1	1	0	0	4	3	9	4	6	18	29	70	0
TOTAL	155	106	106	74	148	101	67	82	175	228	399	224	94	70	70	102	0

Table B2

JFDs of 35-Foot Wind Versus Delta T

October - December 1992

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 10/ 1/92 - 12/31/92

\*\*\*4TH QTR 92\*\*\*

STABILITY CLASS A  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.51- 5.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.51- 6.50	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6.51- 8.50	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
8.51-11.50	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
11.51-14.50	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
14.51-20.50	1	2	0	0	0	0	0	0	0	0	0	0	0	3	1	0	7
>20.50	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	4
TOTAL	2	3	0	1	0	0	0	0	1	1	2	0	0	5	2	0	17

STABILITY CLASS B  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH  
 JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	4
4.51- 5.50	0	1	1	0	0	0	0	0	1	0	0	1	1	0	0	0	5
5.51- 6.50	0	0	0	2	4	0	0	1	0	0	0	0	0	0	0	0	7
6.51- 8.50	0	1	1	2	2	2	4	0	0	2	1	0	0	0	0	0	15
8.51-11.50	0	1	1	0	3	1	0	0	2	2	4	0	0	0	0	0	14
11.51-14.50	0	0	0	0	2	0	0	0	0	0	0	1	1	2	0	0	6
14.51-20.50	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3
>20.50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	1	3	5	4	12	3	4	1	4	4	5	3	2	3	1	0	55

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 10/ 1/92 - 12/31/92

\*\*\*4TH QTR 92\*\*\*

STABILITY CLASS C  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
3.51- 4.50	2	0	4	0	2	0	1	2	1	1	0	2	1	1	1	2	20
4.51- 5.50	1	1	1	1	1	1	0	3	2	2	2	1	1	2	0	1	20
5.51- 6.50	0	5	2	1	2	1	1	2	1	2	1	1	0	1	0	0	20
6.51- 8.50	0	1	1	1	2	1	1	5	6	3	1	0	0	0	2	1	25
8.51-11.50	1	1	0	1	7	1	1	0	0	2	5	0	2	0	0	2	23
11.51-14.50	0	0	1	1	1	0	0	0	0	1	0	0	1	0	0	0	5
14.51-20.50	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	6
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
TOTAL	4	9	9	5	16	6	4	12	10	11	9	4	10	5	3	6	123

STABILITY CLASS D  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
1.51- 2.50	1	2	2	1	3	5	4	3	1	6	7	4	5	5	4	1	54
2.51- 3.50	8	11	5	1	4	6	5	9	12	19	19	17	9	8	3	4	140
3.51- 4.50	11	10	5	3	1	6	4	14	18	23	13	9	8	4	6	2	137
4.51- 5.50	6	5	3	4	3	1	2	3	10	9	8	4	1	1	0	4	64
5.51- 6.50	6	5	3	0	1	0	2	4	4	7	6	2	0	3	1	3	47
6.51- 8.50	1	2	2	3	2	1	4	3	1	5	3	1	2	2	1	2	35
8.51-11.50	0	1	1	10	6	2	2	2	1	2	5	2	2	8	3	0	47
11.51-14.50	0	0	0	0	3	0	0	0	0	1	2	1	1	2	1	0	11
14.51-20.50	0	0	1	0	4	0	0	0	0	0	0	0	1	2	3	0	11
>20.50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	34	36	22	22	27	21	23	38	47	72	64	41	29	35	22	16	550

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 10/ 1/92 - 12/31/92

\*\*\*4TH QTR 92\*\*\*

STABILITY CLASS E  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
1.51- 2.50	3	1	0	2	0	0	0	3	2	2	3	14	4	6	7	4	51
2.51- 3.50	4	2	3	0	2	2	0	1	4	4	6	2	5	4	6	3	48
3.51- 4.50	3	0	1	1	1	0	2	2	2	4	6	3	5	5	7	6	48
4.51- 5.50	0	2	1	0	0	1	0	1	1	6	3	1	1	6	1	2	26
5.51- 6.50	1	2	1	0	0	0	0	0	2	4	3	5	0	0	0	2	20
6.51- 8.50	2	2	2	1	0	1	0	2	2	3	7	11	5	4	1	3	46
8.51-11.50	2	0	2	2	0	3	0	3	0	3	3	4	4	3	3	2	34
11.51-14.50	0	2	0	1	1	3	2	2	0	1	0	0	1	2	2	2	19
14.51-20.50	2	0	2	0	0	0	1	0	0	0	0	0	0	3	6	3	17
>20.50	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	18	11	12	7	5	10	5	14	13	27	31	40	25	34	33	28	313

STABILITY CLASS F  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3
1.51- 2.50	3	1	0	2	1	0	1	0	0	0	1	2	1	6	10	5	33
2.51- 3.50	13	4	1	1	2	0	2	1	4	4	6	7	13	12	13	20	103
3.51- 4.50	6	3	3	1	0	0	0	2	1	2	2	6	6	3	10	12	57
4.51- 5.50	2	5	1	1	1	0	0	0	1	4	1	6	2	7	4	11	46
5.51- 6.50	4	4	0	1	1	0	1	0	1	4	2	3	3	2	3	5	34
6.51- 8.50	5	2	2	0	0	0	0	0	0	0	6	3	3	2	2	6	31
8.51-11.50	4	3	1	0	1	0	0	0	0	1	1	0	2	1	2	4	20
11.51-14.50	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
14.51-20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	39	24	9	6	6	1	4	3	7	15	19	27	30	33	46	63	332

JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 10/ 1/92 - 12/31/92

\*\*\*4TH QTR 92\*\*\*

STABILITY CLASS G  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0	4
1.51- 2.50	17	9	5	4	1	1	0	1	5	2	2	4	15	7	21	15	109
2.51- 3.50	60	10	9	4	10	3	2	1	2	2	3	8	15	18	29	49	225
3.51- 4.50	76	29	7	1	1	1	1	0	2	3	0	0	2	4	20	68	215
4.51- 5.50	49	28	1	4	0	0	0	1	0	1	1	2	2	2	10	27	128
5.51- 6.50	29	25	4	1	0	1	0	1	0	0	0	0	1	0	0	9	71
6.51- 8.50	23	14	5	0	0	0	0	0	0	0	0	0	0	0	0	7	49
8.51-11.50	4	8	1	0	0	0	0	0	0	0	0	0	0	0	0	3	16
11.51-14.50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
14.51-20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	259	123	32	14	13	6	4	5	9	8	6	14	36	31	80	178	818

STABILITY CLASS ALL  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	1	0	0	0	1	1	1	1	0	0	1	1	1	1	2	1	12
1.51- 2.50	24	13	7	9	5	6	5	7	8	10	13	24	25	24	42	25	247
2.51- 3.50	85	28	18	6	18	13	9	12	22	29	34	34	42	42	51	76	519
3.51- 4.50	98	42	22	6	5	7	8	20	25	33	21	21	22	17	44	90	481
4.51- 5.50	58	42	8	10	5	3	2	8	15	22	15	15	8	18	15	45	289
5.51- 6.50	40	41	10	6	8	2	4	8	8	17	12	11	4	6	4	19	200
6.51- 8.50	31	22	13	7	6	5	9	10	9	14	19	15	10	8	6	19	203
8.51-11.50	11	15	6	13	17	7	3	5	3	10	19	6	10	12	8	11	156
11.51-14.50	3	4	2	2	7	3	2	2	1	3	2	2	4	6	3	2	48
14.51-20.50	3	2	3	0	6	0	1	0	0	0	0	0	6	9	11	3	44
>20.50	3	0	0	0	1	0	0	0	0	0	0	0	0	3	1	0	8
TOTAL	357	209	89	59	79	47	44	73	91	138	136	129	132	146	187	291	2209



JOINT FREQUENCY DISTRIBUTION ANALYSIS  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 10/ 1/92 - 12/31/92

\*\*\*4TH QTR 92\*\*\*

STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

TOTAL NUMBER OF OBSERVATIONS: 2208  
 TOTAL NUMBER OF VALID OBSERVATIONS: 2208  
 TOTAL NUMBER OF MISSING OBSERVATIONS: 0  
 PERCENT DATA RECOVERY FOR THIS PERIOD: 100.0 %  
 MEAN WIND SPEED FOR THIS PERIOD: 5.1 MPH  
 TOTAL NUMBER OF OBSERVATIONS WITH BACKUP DATA: 0

PERCENTAGE OCCURRENCE OF STABILITY CLASSES

A	B	C	D	E	F	G
.77	2.49	5.57	24.91	14.18	15.04	37.05

DISTRIBUTION OF WIND DIRECTION VS STABILITY

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
A	2	3	0	1	0	0	0	0	1	1	2	0	0	5	2	0	0
B	1	3	5	4	12	3	4	1	4	4	5	3	2	3	1	0	0
C	4	9	9	5	16	6	4	12	10	11	9	4	10	5	3	6	0
D	34	36	22	22	27	21	23	38	47	72	64	41	29	35	22	16	1
E	18	11	12	7	5	10	5	14	13	27	31	40	25	34	33	28	0
F	39	24	9	6	6	1	4	3	7	15	19	27	30	33	46	63	0
G	259	123	32	14	13	6	4	5	9	8	6	14	36	31	80	178	0
TOTAL	357	209	89	59	79	47	44	73	91	138	136	129	132	146	187	291	1

Table B3

JFDs of 35-Foot Wind Versus Delta T

July - December 1992

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 12/31/92

\*2ND SEMI-ANNUAL\*

STABILITY CLASS A  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.51- 5.50	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	4
5.51- 6.50	0	0	0	1	1	1	1	1	1	1	1	3	1	0	1	0	13
6.51- 8.50	0	0	0	1	2	0	2	7	6	14	9	9	1	1	0	0	52
8.51-11.50	0	1	0	0	2	1	0	1	5	16	31	13	7	0	0	0	77
11.51-14.50	0	0	0	0	2	0	0	0	1	7	11	4	1	0	1	0	27
14.51-20.50	1	2	0	1	2	0	0	0	0	2	5	2	0	3	1	0	19
>20.50	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	4
TOTAL	2	3	0	3	9	2	4	9	13	41	57	33	10	6	4	0	196

STABILITY CLASS B  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	2	0	0	0	2	0	2	0	1	2	0	0	0	0	9
4.51- 5.50	0	1	2	0	0	0	0	1	2	7	1	3	1	0	1	0	19
5.51- 6.50	0	2	3	4	4	2	1	6	14	13	5	4	1	0	2	0	61
6.51- 8.50	0	1	1	6	9	15	8	5	8	13	11	6	3	1	0	0	87
8.51-11.50	0	1	1	0	7	3	0	2	4	6	10	5	2	1	0	0	42
11.51-14.50	0	0	0	2	6	2	0	0	0	1	3	3	1	2	0	0	20
14.51-20.50	0	0	0	0	5	0	0	0	0	0	2	1	0	1	1	0	10
>20.50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	1	5	9	12	31	22	11	14	30	40	33	24	8	5	4	0	249

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 12/31/92

\*2ND SEMIANNUAL\*

STABILITY CLASS C  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
3.51- 4.50	2	0	6	1	3	0	2	2	1	1	2	2	1	4	1	3	31
4.51- 5.50	2	1	1	1	2	2	0	6	16	11	9	5	3	3	0	1	63
5.51- 6.50	0	6	6	5	7	3	3	15	19	13	11	5	1	1	0	0	95
6.51- 8.50	0	1	3	5	8	8	6	11	17	8	8	6	1	1	2	1	86
8.51-11.50	1	1	0	1	11	6	4	1	1	5	9	1	4	2	0	2	49
11.51-14.50	0	0	1	1	4	0	1	0	2	2	2	1	1	0	0	0	15
14.51-20.50	0	0	0	0	6	0	0	0	0	0	2	0	6	0	0	0	14
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
TOTAL	5	10	17	14	41	21	16	35	56	40	43	20	17	12	3	7	357

STABILITY CLASS D  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
1.51- 2.50	4	4	3	1	4	5	4	6	1	7	8	5	5	5	5	3	70
2.51- 3.50	12	13	5	2	5	11	6	11	20	22	22	22	10	10	5	7	183
3.51- 4.50	14	18	12	4	1	7	11	17	24	29	21	13	11	5	6	2	195
4.51- 5.50	7	7	9	4	5	5	6	8	26	20	17	8	4	2	0	4	132
5.51- 6.50	7	8	9	4	1	2	6	10	12	22	13	8	4	3	2	3	114
6.51- 8.50	2	3	6	6	8	8	10	7	10	12	25	11	4	2	1	3	118
8.51-11.50	0	3	5	14	13	12	8	2	4	10	24	11	5	10	3	0	124
11.51-14.50	3	0	3	1	14	3	2	0	2	6	24	8	1	2	1	0	70
14.51-20.50	0	1	1	3	24	2	0	0	0	2	11	1	2	2	3	0	52
>20.50	1	0	0	1	1	0	0	0	0	0	2	0	1	0	0	0	6
TOTAL	50	57	53	40	76	55	53	61	99	130	168	88	47	41	26	22	1067

## JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 7/ 1/92 - 12/31/92

\*2ND SEMIANNUAL\*

STABILITY CLASS E  
STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	4
1.51- 2.50	4	1	0	2	1	0	1	4	3	3	4	15	6	8	9	5	66
2.51- 3.50	8	3	3	1	2	2	2	1	5	5	9	7	14	8	12	5	87
3.51- 4.50	7	4	1	3	2	1	4	3	5	6	13	10	8	10	9	9	95
4.51- 5.50	1	5	7	1	0	3	0	2	7	11	15	9	3	7	1	2	74
5.51- 6.50	3	4	6	1	1	0	0	1	7	9	15	17	2	4	0	2	72
6.51- 8.50	2	3	10	4	0	4	1	5	5	21	39	33	11	6	1	3	148
8.51-11.50	2	1	4	9	5	15	1	5	4	9	34	24	9	4	3	2	131
11.51-14.50	0	2	0	5	13	9	3	3	0	5	8	5	1	2	3	2	61
14.51-20.50	3	0	2	4	21	3	2	0	1	2	5	0	0	3	6	3	55
>20.50	0	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	4
TOTAL	31	23	37	30	47	37	14	24	37	71	143	121	55	53	44	34	797

STABILITY CLASS F  
STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	1	0	0	0	0	0	1	2	0	3	0	7
1.51- 2.50	4	2	1	2	2	0	2	1	1	2	1	3	3	11	13	8	56
2.51- 3.50	18	6	3	1	3	1	2	2	6	5	10	8	17	18	20	25	145
3.51- 4.50	15	6	4	3	1	0	2	2	3	2	12	10	10	5	13	17	105
4.51- 5.50	5	7	6	1	1	2	0	0	5	7	9	7	4	9	5	15	83
5.51- 6.50	5	9	2	1	1	0	2	0	1	7	8	7	3	3	6	6	61
6.51- 8.50	5	5	12	2	0	0	0	2	1	8	29	12	6	3	4	7	96
8.51-11.50	4	5	2	1	1	0	1	0	1	2	7	1	2	1	3	4	35
11.51-14.50	2	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	7
14.51-20.50	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	58	43	32	12	9	4	9	7	18	33	76	49	47	50	67	82	596

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 7/ 1/92 - 12/31/92

\*2ND SEMIANNUAL\*

STABILITY CLASS G  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	2	0	1	1	0	0	0	0	1	0	1	1	7
1.51- 2.50	23	11	6	5	1	1	0	1	6	2	2	4	17	15	24	18	136
2.51- 3.50	77	17	9	6	10	4	2	1	3	2	4	8	17	21	39	72	292
3.51- 4.50	112	38	10	2	1	1	1	0	3	4	1	2	3	10	27	97	312
4.51- 5.50	81	37	5	4	0	0	0	1	1	1	3	2	3	3	17	38	196
5.51- 6.50	44	33	8	1	0	1	0	1	0	0	1	2	1	0	1	12	105
6.51- 8.50	23	25	10	3	0	0	0	0	0	2	4	0	0	0	0	7	74
8.51-11.50	4	13	3	1	0	0	0	0	0	0	0	0	0	0	0	3	24
11.51-14.50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
14.51-20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	365	174	51	22	14	7	4	5	13	11	15	18	42	49	109	248	1147

STABILITY CLASS ALL  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	1	0	0	0	2	1	1	1	0	0	1	3	3	1	4	2	20
1.51- 2.50	35	18	10	10	8	6	7	12	11	14	15	27	31	39	51	34	328
2.51- 3.50	115	40	20	10	20	20	12	15	34	34	45	45	58	57	76	109	710
3.51- 4.50	150	66	35	13	8	9	22	24	38	42	50	39	33	34	56	128	747
4.51- 5.50	96	58	30	11	8	12	7	18	57	58	54	36	18	24	24	60	571
5.51- 6.50	59	62	34	17	15	9	13	34	54	65	54	46	13	11	12	23	521
6.51- 8.50	32	38	42	27	27	35	27	37	47	78	125	77	26	14	8	21	661
8.51-11.50	11	25	15	26	39	37	14	11	19	48	115	55	29	18	9	11	482
11.51-14.50	6	5	5	10	39	14	6	3	5	21	48	21	5	6	5	2	201
14.51-20.50	4	3	4	8	58	5	2	0	1	6	25	4	8	9	11	3	151
>20.50	3	0	0	1	3	0	0	0	0	0	3	0	2	3	1	0	16
TOTAL	512	315	195	133	227	148	111	155	266	366	535	353	226	216	257	393	4409

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 7/ 1/92 - 12/31/92

\*2ND SEMIANNUAL\*

STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

TOTAL NUMBER OF OBSERVATIONS: 4416

TOTAL NUMBER OF VALID OBSERVATIONS: 4409

TOTAL NUMBER OF MISSING OBSERVATIONS: 7

PERCENT DATA RECOVERY FOR THIS PERIOD: 99.8 %

MEAN WIND SPEED FOR THIS PERIOD: 6.1 MPH

TOTAL NUMBER OF OBSERVATIONS WITH BACKUP DATA: 0

PERCENTAGE OCCURRENCE OF STABILITY CLASSES						
A	B	C	D	E	F	G
4.45	5.65	8.10	24.20	18.08	13.52	26.01

	DISTRIBUTION OF WIND DIRECTION VS STABILITY																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
A	2	3	0	3	9	2	4	9	13	41	57	33	10	6	4	0	0
B	1	5	9	12	31	22	11	14	30	40	33	24	8	5	4	0	0
C	5	10	17	14	41	21	16	35	56	40	43	20	17	12	3	7	0
D	50	57	53	40	76	55	53	61	99	130	168	88	47	41	26	22	1
E	31	23	33	30	47	37	14	24	37	71	143	121	55	53	44	34	0
F	58	43	32	12	9	4	9	7	18	33	76	49	47	50	67	82	0
G	365	174	51	22	14	7	4	5	13	11	15	18	42	49	109	248	0
TOTAL	512	315	195	133	227	148	111	155	266	366	535	353	226	216	257	393	1

Table B4

JFDs of 35-Foot Wind Versus Delta T

January - December 1992



## JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 1/ 1/92 - 12/31/92

\*\*\* ANNUAL \*\*\*

STABILITY CLASS A  
STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.51- 5.50	0	0	0	0	0	0	1	0	0	1	2	2	1	0	0	0	7
5.51- 6.50	0	0	0	1	1	1	1	3	2	3	3	3	1	0	1	0	20
6.51- 8.50	0	0	0	1	5	1	3	9	17	29	18	13	3	1	0	0	100
8.51-11.50	1	1	0	1	4	4	0	2	9	30	71	32	12	2	1	2	172
11.51-14.50	0	0	1	1	2	0	0	0	4	12	28	8	1	0	2	1	60
14.51-20.50	1	3	2	2	2	0	0	1	0	5	21	6	0	4	1	1	49
>20.50	1	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	8
TOTAL	3	4	3	6	14	6	5	15	32	83	143	64	18	10	6	4	416

STABILITY CLASS B  
STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.51- 4.50	0	0	2	0	0	0	2	0	3	1	2	2	0	0	0	0	12
4.51- 5.50	2	1	2	1	1	0	1	1	6	10	4	5	1	1	1	0	37
5.51- 6.50	0	2	5	5	4	8	2	9	27	27	16	10	3	1	2	0	121
6.51- 8.50	2	2	2	7	20	19	18	10	30	27	30	9	6	2	0	1	185
8.51-11.50	0	1	4	4	12	7	1	2	6	12	19	12	5	2	0	0	87
11.51-14.50	0	0	1	4	8	2	0	0	0	4	9	6	1	2	0	1	38
14.51-20.50	0	0	1	4	5	0	0	0	0	4	6	1	0	1	1	2	28
>20.50	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
TOTAL	5	6	17	25	50	36	24	22	72	85	87	48	16	9	4	4	510

## JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 1/ 1/92 - 12/31/92

\*\*\* ANNUAL \*\*\*

STABILITY CLASS C  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51- 2.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.51- 3.50	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
3.51- 4.50	2	0	7	2	5	0	3	3	4	4	3	2	1	7	1	3	47
4.51- 5.50	3	3	5	10	3	3	2	10	23	27	15	10	5	3	2	1	125
5.51- 6.50	0	6	9	6	8	6	8	24	39	26	20	10	2	2	0	1	167
6.51- 8.50	1	2	7	17	10	11	15	13	24	20	18	11	1	2	3	2	157
8.51-11.50	1	1	3	16	20	12	5	1	2	8	21	6	5	2	0	2	105
11.51-14.50	2	0	1	2	8	2	1	0	2	2	9	5	1	0	2	0	37
14.51-20.50	0	1	0	3	6	0	0	0	0	0	5	0	6	1	0	0	22
>20.50	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
TOTAL	10	14	33	57	60	36	34	51	94	87	91	44	21	18	8	9	667

STABILITY CLASS D  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	2	6
1.51- 2.50	9	9	4	2	6	6	7	8	2	12	13	6	5	12	14	5	120
2.51- 3.50	21	22	13	11	11	17	11	16	26	39	35	33	17	16	12	17	317
3.51- 4.50	25	28	30	13	11	18	14	25	33	50	42	19	17	7	15	8	355
4.51- 5.50	14	16	28	25	7	6	9	11	36	36	30	12	8	2	3	9	252
5.51- 6.50	9	15	37	17	8	6	10	12	22	32	24	16	5	4	3	4	224
6.51- 8.50	4	12	23	22	16	22	15	9	21	23	43	21	7	3	2	4	247
8.51-11.50	1	5	11	41	37	25	12	6	10	15	40	29	10	10	5	2	259
11.51-14.50	3	3	7	12	45	7	2	1	3	10	44	17	3	4	4	1	166
14.51-20.50	0	1	3	12	39	6	1	1	0	6	21	4	4	5	4	1	108
>20.50	1	0	1	3	3	0	0	0	0	0	2	1	1	0	0	0	12
TOTAL	88	111	157	159	183	113	81	89	153	223	295	159	77	63	62	53	2067

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 1/ 1/92 - 12/31/92

\*\*\* ANNUAL \*\*\*

STABILITY CLASS E  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	1	1	0	0	0	0	0	0	0	0	0	1	0	2	1	1	7
1.51- 2.50	9	3	2	4	2	1	1	6	4	4	7	20	15	14	19	18	129
2.51- 3.50	16	12	9	3	3	5	3	1	8	5	17	15	22	18	25	15	177
3.51- 4.50	19	13	5	8	3	3	6	5	9	17	16	16	12	14	13	17	176
4.51- 5.50	8	13	12	5	1	4	3	2	13	20	21	12	7	11	3	2	137
5.51- 6.50	8	13	12	8	5	0	1	2	12	21	24	23	4	7	1	3	144
6.51- 8.50	5	11	22	14	8	5	1	16	16	38	66	55	18	8	4	8	295
8.51-11.50	2	4	11	25	17	27	8	20	10	15	62	48	17	5	6	5	282
11.51-14.50	0	3	4	18	36	14	3	10	2	11	27	13	2	3	5	4	155
14.51-20.50	3	0	3	16	48	9	7	0	2	5	10	1	1	6	11	7	129
>20.50	0	0	0	0	3	0	0	0	0	0	1	0	1	1	0	0	6
TOTAL	71	73	80	101	126	68	33	62	76	136	251	204	99	89	88	80	1637

STABILITY CLASS F  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	0
.76- 1.50	0	0	0	0	0	1	0	0	0	0	0	1	3	0	5	2	12
1.51- 2.50	14	6	3	3	3	1	2	1	4	3	5	6	9	17	21	16	114
2.51- 3.50	48	18	8	4	4	3	3	4	6	10	18	16	30	32	46	51	301
3.51- 4.50	37	15	11	3	1	0	2	2	3	8	19	17	21	18	33	32	222
4.51- 5.50	28	20	14	3	3	2	0	1	9	8	19	19	12	14	10	23	185
5.51- 6.50	15	19	6	3	2	0	3	2	5	12	20	18	12	6	8	10	141
6.51- 8.50	16	14	22	4	1	0	0	4	4	23	58	24	23	5	5	10	213
8.51-11.50	12	8	12	9	1	0	1	0	1	10	22	5	4	2	4	8	99
11.51-14.50	4	3	1	4	1	0	0	0	0	0	3	0	0	0	0	4	20
14.51-20.50	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	174	103	78	33	16	7	11	14	32	74	164	106	114	94	132	157	1309

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992  
 SITE IDENTIFIER: PVNGS  
 DATA PERIOD EXAMINED: 1/ 1/92 - 12/31/92

\*\*\* ANNUAL \*\*\*

STABILITY CLASS G  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	1
.76- 1.50	0	0	0	0	3	0	1	1	0	0	0	0	1	1	1	1	9
1.51- 2.50	34	14	10	5	2	1	0	1	6	3	2	9	20	21	35	37	200
2.51- 3.50	128	38	14	7	12	6	2	1	5	4	7	15	21	34	76	110	480
3.51- 4.50	209	75	16	5	5	2	1	0	5	5	4	5	12	17	51	167	579
4.51- 5.50	168	93	20	8	0	0	0	2	2	2	5	9	9	10	35	80	443
5.51- 6.50	87	60	11	2	0	1	0	1	0	2	3	3	3	4	1	27	205
6.51- 8.50	54	57	21	5	0	0	0	0	1	4	8	2	1	0	3	13	169
8.51-11.50	19	33	7	5	0	0	0	0	0	0	2	0	0	0	0	6	72
11.51-14.50	5	2	1	0	0	0	0	0	0	0	0	0	0	1	0	1	10
14.51-20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>20.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	704	372	100	37	22	10	4	6	19	20	31	43	67	88	202	442	2168

STABILITY CLASS ALL  
 STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET  
 WIND MEASURED AT: 35.0 FEET  
 WIND THRESHOLD AT: .75 MPH

JOINT FREQUENCY DISTRIBUTION OF WIND SPEED AND DIRECTION IN HOURS AT 35.00 FEET

SPEED (MPH)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
CALM																	2
.76- 1.50	2	1	0	1	3	1	1	1	0	0	1	3	4	3	7	6	34
1.51- 2.50	66	32	19	14	13	9	10	16	16	22	27	41	49	64	89	76	563
2.51- 3.50	213	91	45	25	30	33	19	22	45	58	77	79	90	100	159	193	1279
3.51- 4.50	292	131	71	31	25	23	28	35	57	85	86	61	63	63	113	227	1391
4.51- 5.50	223	146	81	52	15	15	16	27	89	104	96	69	43	41	54	115	1186
5.51- 6.50	119	115	80	42	28	22	25	53	107	123	110	83	30	24	16	45	1022
6.51- 8.50	82	98	97	70	60	58	52	61	113	164	241	135	59	21	17	38	1366
8.51-11.50	36	53	48	101	91	75	27	31	38	90	237	132	53	23	16	25	1076
11.51-14.50	14	11	16	41	100	25	6	11	11	39	120	49	8	10	13	12	486
14.51-20.50	4	5	10	37	100	15	8	2	2	20	63	15	11	17	17	12	338
>20.50	4	0	1	4	6	0	0	0	0	3	4	1	2	5	1	0	31
TOTAL	1055	683	468	418	471	276	192	259	478	708	1062	668	412	371	502	749	8774

JOINT FREQUENCY DISTRIBUTION ANALYSIS FOR DECEMBER 1992

SITE IDENTIFIER: PVNGS

DATA PERIOD EXAMINED: 1/ 1/92 - 12/31/92

\*\*\* ANNUAL \*\*\*

STABILITY BASED ON: DELTA T BETWEEN 200.0 AND 35.0 FEET

WIND MEASURED AT: 35.0 FEET

WIND THRESHOLD AT: .75 MPH

TOTAL NUMBER OF OBSERVATIONS: 8784

TOTAL NUMBER OF VALID OBSERVATIONS: 8774

TOTAL NUMBER OF MISSING OBSERVATIONS: 10

PERCENT DATA RECOVERY FOR THIS PERIOD: 99.9 %

MEAN WIND SPEED FOR THIS PERIOD: 6.4 MPH

TOTAL NUMBER OF OBSERVATIONS WITH BACKUP DATA: 0

PERCENTAGE OCCURRENCE OF STABILITY CLASSES

A	B	C	D	E	F	G
4.74	5.81	7.60	23.56	18.66	14.92	24.71

DISTRIBUTION OF WIND DIRECTION VS STABILITY

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
A	3	4	3	6	14	6	5	15	32	83	143	64	18	10	6	4	0
B	5	6	17	25	50	36	24	22	72	85	87	48	16	9	4	4	0
C	10	14	33	57	60	36	34	51	94	87	91	44	21	18	8	9	0
D	88	111	157	159	183	113	81	89	153	223	295	159	77	63	62	53	1
E	71	73	80	101	126	68	33	62	76	136	251	204	99	89	88	80	0
F	174	103	78	33	16	7	11	14	32	74	164	106	114	94	132	157	0
G	704	372	100	37	22	10	4	6	19	20	31	43	67	88	202	442	1
TOTAL	1055	683	468	418	471	276	192	259	478	708	1062	668	412	371	502	749	2

APPENDIX C  
DOSE CALCULATIONS

## GASEOUS EFFLUENT DOSE CALCULATIONS

Doses to the maximum individual and the surrounding population resulting from the release of radioactive material in gaseous effluents from the Palo Verde Nuclear Generating Station were calculated using the GASPARD computer program. The radionuclides considered in the dose calculations were Tritium, Iodine-131, Iodine-132, Iodine-133, Iodine-135, all noble gases, and particulates having a half-life greater than eight days and for which dose factors are contained in NUREG-0172. Locations selected for individual dose calculations included for each sector, the site boundary, and within five miles, if present, the nearest residence, the nearest garden, and the nearest milk animal. GASPARD implements the radiological dose models of Regulatory Guide 1.109 to determine the radiation exposure to man from four principal atmospheric exposure pathways: plume, ground deposition, inhalation, and ingestion. Doses to the maximum individual and the population were calculated as a function of age group and pathway for significant body organs. Assumptions and data sources used for input to the GASPARD code are described on page C8.

Table C1 presents the doses on a quarterly, semiannual and annual basis for the Energy Information Center. An occupancy factor of 1.0 (implying continuous occupancy over the entire year) was considered for the Visitor Center and the exposure pathways considered to calculate its doses were plume, ground deposition, and inhalation.

Table C2 presents the population doses for the year 1992.

Table C3 summarizes the individual doses and compares the result to PVNGS ODCM Requirement limits. The site boundary and residence locations for which data are presented represent the highest annual doses.

Based on results obtained by placing TLDs on the site boundary in each sector, the net annual dose from direct-radiation, plume and ground deposition from all three units was determined to be zero.

There were no liquid effluents associated with the operation of this facility.

TABLE C1

DOSES TO SPECIAL LOCATIONS FOR JANUARY - DECEMBER 1992

ENERGY INFORMATION CENTER LOCATED ONSITE 0.44 MILE S FROM UNIT 1, 0.29 MILE SSE FROM UNIT 2 AND 0.20 MILE ESE FROM UNIT 3

(MREM)	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
1ST QUARTER								
ADULT	5.73E-01	5.73E-01	3.37E-01	5.74E-01	5.74E-01	6.67E-01	5.74E-01	1.25E+00
TEEN	5.75E-01	5.75E-01	3.37E-01	5.75E-01	5.75E-01	6.90E-01	5.76E-01	1.25E+00
CHILD	5.47E-01	5.47E-01	3.37E-01	5.48E-01	5.48E-01	6.75E-01	5.48E-01	1.22E+00
INFANT	4.58E-01	4.58E-01	3.37E-01	4.58E-01	4.58E-01	5.75E-01	4.59E-01	1.13E+00
2ND QUARTER								
ADULT	6.16E-02	6.17E-02	2.70E-03	6.16E-02	6.16E-02	6.32E-02	6.21E-02	6.46E-02
TEEN	6.21E-02	6.22E-02	2.72E-03	6.21E-02	6.21E-02	6.40E-02	6.29E-02	6.51E-02
CHILD	5.52E-02	5.52E-02	2.74E-03	5.53E-02	5.53E-02	5.73E-02	5.59E-02	5.82E-02
INFANT	3.29E-02	3.29E-02	2.67E-03	3.29E-02	3.29E-02	3.48E-02	3.34E-02	3.59E-02
1ST SEMI-ANNUAL								
ADULT	6.35E-01	6.35E-01	3.39E-01	6.35E-01	6.35E-01	7.30E-01	6.36E-01	1.31E+00
TEEN	6.37E-01	6.37E-01	3.39E-01	6.37E-01	6.38E-01	7.54E-01	6.39E-01	1.32E+00
CHILD	6.03E-01	6.02E-01	3.40E-01	6.03E-01	6.03E-01	7.32E-01	6.04E-01	1.28E+00
INFANT	4.90E-01	4.90E-01	3.39E-01	4.91E-01	4.91E-01	6.10E-01	4.92E-01	1.17E+00
3RD QUARTER								
ADULT	1.33E-01	1.33E-01	3.41E-02	1.33E-01	1.33E-01	1.39E-01	1.33E-01	1.88E-01
TEEN	1.33E-01	1.33E-01	3.41E-02	1.33E-01	1.33E-01	1.41E-01	1.33E-01	1.88E-01
CHILD	1.22E-01	1.22E-01	3.41E-02	1.22E-01	1.22E-01	1.30E-01	1.22E-01	1.77E-01
INFANT	8.44E-02	8.44E-02	3.41E-02	8.44E-02	8.44E-02	9.26E-02	8.44E-02	1.40E-01
4TH QUARTER								
ADULT	5.43E-01	5.43E-01	1.03E-01	5.43E-01	5.43E-01	5.51E-01	5.44E-01	7.09E-01
TEEN	5.46E-01	5.46E-01	1.03E-01	5.46E-01	5.46E-01	5.56E-01	5.46E-01	7.11E-01
CHILD	4.94E-01	4.94E-01	1.03E-01	4.94E-01	4.94E-01	5.06E-01	4.95E-01	6.60E-01
INFANT	3.28E-01	3.28E-01	1.03E-01	3.28E-01	3.28E-01	3.39E-01	3.28E-01	4.69E-01
2ND SEMI-ANNUAL								
ADULT	6.76E-01	6.76E-01	1.37E-01	6.76E-01	6.76E-01	6.90E-01	6.76E-01	8.97E-01
TEEN	6.79E-01	6.79E-01	1.37E-01	6.79E-01	6.79E-01	6.97E-01	6.79E-01	9.00E-01
CHILD	6.16E-01	6.16E-01	1.37E-01	6.16E-01	6.16E-01	6.37E-01	6.16E-01	8.37E-01
INFANT	4.13E-01	4.13E-01	1.37E-01	4.13E-01	4.13E-01	4.31E-01	4.13E-01	6.09E-01
ANNUAL								
ADULT	1.31E+00	1.31E+00	4.76E-01	1.31E+00	1.31E+00	1.42E+00	1.31E+00	2.21E+00
TEEN	1.32E+00	1.32E+00	4.76E-01	1.32E+00	1.32E+00	1.45E+00	1.32E+00	2.22E+00
CHILD	1.22E+00	1.22E+00	4.77E-01	1.22E+00	1.22E+00	1.37E+00	1.22E+00	2.12E+00
INFANT	9.03E-01	9.03E-01	4.76E-01	9.03E-01	9.03E-01	1.04E+00	9.05E-01	1.78E+00



TABLE C2  
INTEGRATED POPULATION DOSES FOR JANUARY - DECEMBER 1992  
PERSONREM

JANUARY 1 - JUNE 30, 1992

PATHWAY	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	2.59E-01 7.46%	2.59E-01 7.46%	2.59E-01 99.19%	2.59E-01 7.46%	2.59E-01 7.46%	2.59E-01 6.80%	2.59E-01 7.46%	4.80E-01 23.35%
GROUND	3.62E-04 .01%	3.62E-04 .01%	3.62E-04 .14%	3.62E-04 .01%	3.62E-04 .01%	3.62E-04 .01%	3.62E-04 .01%	4.26E-04 .01%
INHAL	6.13E-01 17.63%	6.13E-01 17.63%	4.13E-04 .16%	6.14E-01 17.64%	6.14E-01 17.64%	7.10E-01 18.59%	6.15E-01 17.67%	6.13E-01 14.61%
VEGET	2.27E+00 65.37%	2.27E+00 65.36%	1.25E-03 .48%	2.27E+00 65.36%	2.27E+00 65.36%	2.50E+00 65.39%	2.27E+00 65.33%	2.27E+00 54.14%
COW MILK	2.27E-01 6.53%	2.27E-01 6.52%	7.27E-05 .03%	2.27E-01 6.53%	2.27E-01 6.53%	2.47E-01 6.47%	2.27E-01 6.52%	2.27E-01 5.41%
MEAT	1.04E-01 3.00%	1.05E-01 3.03%	1.94E-05 .01%	1.04E-01 3.00%	1.05E-01 3.00%	1.05E-01 2.74%	1.04E-01 3.00%	1.04E-01 2.49%
*TOTAL*	3.48E+00	3.48E+00	2.62E-01	3.48E+00	3.48E+00	3.82E+00	3.48E+00	4.20E+00
(a) PER CAPITA DOSE (REM)	1.78E-06	1.78E-06	1.34E-07	1.78E-06	1.78E-06	1.95E-06	1.78E-06	2.14E-06

JULY 1 - SEPTEMBER 30, 1992

PATHWAY	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	3.26E-02 2.87%	3.26E-02 2.87%	3.26E-02 99.49%	3.26E-02 2.87%	3.26E-02 2.87%	3.26E-02 2.75%	3.26E-02 2.87%	1.11E-01 9.12%
GROUND	1.87E-05 .00%	1.87E-05 .00%	1.87E-05 .06%	1.87E-05 .00%	1.87E-05 .00%	1.87E-05 .00%	1.87E-05 .00%	2.19E-05 .00%
INHAL	2.15E-01 18.90%	2.15E-01 18.90%	3.05E-05 .09%	2.15E-01 18.90%	2.15E-01 18.90%	2.27E-01 19.11%	2.15E-01 18.90%	2.15E-01 17.68%
VEGET	7.70E-01 67.80%	7.70E-01 67.81%	1.02E-04 .31%	7.70E-01 67.81%	7.71E-01 67.80%	8.05E-01 67.75%	7.70E-01 67.80%	7.70E-01 63.44%
COW MILK	8.26E-02 7.27%	8.26E-02 7.27%	1.64E-05 .05%	8.26E-02 7.27%	8.26E-02 7.27%	8.75E-02 7.37%	8.26E-02 7.27%	8.26E-02 6.80%
MEAT	3.57E-02 3.15%	3.58E-02 3.15%	1.68E-07 .00%	3.57E-02 3.15%	3.57E-02 3.15%	3.58E-02 3.01%	3.57E-02 3.15%	3.57E-02 2.94%
*TOTAL*	1.14E+00	1.14E+00	3.28E-02	1.14E+00	1.14E+00	1.19E+00	1.14E+00	1.21E+00
(a) PER CAPITA DOSE (REM)	5.82E-07	5.82E-07	1.67E-08	5.82E-07	5.82E-07	6.07E-07	5.82E-07	6.18E-07

TABLE C2 (CONTINUED)

PERSONREM

OCTOBER 1 - DECEMBER 31, 1992

PATHWAY	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.47E-01 2.38%	1.47E-01 2.38%	1.47E-01 99.64%	1.47E-01 2.38%	1.47E-01 2.38%	1.47E-01 2.36%	1.47E-01 2.38%	5.02E-01 7.69%
GROUND	3.27E-04 .01%	3.27E-04 .01%	3.27E-04 .22%	3.27E-04 .01%	3.27E-04 .01%	3.27E-04 .01%	3.27E-04 .01%	3.85E-04 .01%
INHAL	1.47E+00 23.72%	1.47E+00 23.72%	7.69E-05 .05%	1.47E+00 23.72%	1.47E+00 23.72%	1.49E+00 23.95%	1.47E+00 23.73%	1.47E+00 22.43%
VEGET	3.82E+00 61.74%	3.82E+00 61.74%	1.07E-04 .07%	3.82E+00 61.74%	3.82E+00 61.74%	3.84E+00 61.59%	3.81E+00 61.73%	3.81E+00 58.39%
COW MILK	5.78E-01 9.35%	5.78E-01 9.35%	1.73E-05 .01%	5.78E-01 9.35%	5.78E-01 9.35%	5.81E-01 9.32%	5.78E-01 9.35%	5.78E-01 8.85%
MEAT	1.73E-01 2.77%	1.73E-01 2.79%	6.46E-07 .00%	1.73E-01 2.79%	1.73E-01 2.79%	1.73E-01 2.77%	1.73E-01 2.79%	1.73E-01 2.64%
*TOTAL*	6.18E+00	6.18E+00	1.48E-01	6.18E+00	6.18E+00	6.24E+00	6.18E+00	6.53E+00
(a) PER CAPITA DOSE (REM)	3.15E-06	3.15E-06	7.55E-08	3.15E-06	3.15E-06	3.19E-06	3.15E-06	3.33E-06

JULY 1 - DECEMBER 31, 1992

PATHWAY	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	1.80E-01 2.46%	1.80E-01 2.46%	1.80E-01 99.61%	1.80E-01 2.46%	1.80E-01 2.46%	1.80E-01 2.42%	1.80E-01 2.46%	6.13E-01 7.91%
GROUND	3.46E-04 .00%	3.46E-04 .00%	3.46E-04 .19%	3.46E-04 .00%	3.46E-04 .00%	3.46E-04 .00%	3.46E-04 .00%	4.06E-04 .01%
INHAL	1.68E+00 22.97%	1.68E+00 22.97%	1.07E-04 .06%	1.68E+00 22.97%	1.68E+00 22.98%	1.72E+00 23.18%	1.68E+00 22.98%	1.68E+00 21.69%
VEGET	4.59E+00 62.68%	4.59E+00 62.68%	2.09E-04 .12%	4.59E+00 62.68%	4.59E+00 62.68%	4.65E+00 62.58%	4.59E+00 62.68%	4.59E+00 59.18%
COW MILK	6.61E-01 9.03%	6.61E-01 9.03%	3.36E-05 .02%	6.61E-01 9.03%	6.61E-01 9.03%	6.69E-01 9.01%	6.61E-01 9.03%	6.61E-01 8.53%
MEAT	2.08E-01 2.85%	2.08E-01 2.85%	8.14E-07 .00%	2.08E-01 2.85%	2.08E-01 2.85%	2.08E-01 2.81%	2.08E-01 2.85%	2.08E-01 2.69%
*TOTAL*	7.32E+00	7.32E+00	1.80E-01	7.32E+00	7.32E+00	7.42E+00	7.32E+00	7.75E+00
(a) PER CAPITA DOSE (REM)	3.74E-06	3.74E-06	9.19E-08	3.74E-06	3.74E-06	3.79E-06	3.74E-06	3.96E-06

TABLE C2 (CONTINUED)

## PERSONREM

JANUARY 1 - DECEMBER 31, 1992

PATHWAY	T.BODY	GI-TRACT	BONE	LIVER	KIDNEY	THYROID	LUNG	SKIN
PLUME	4.39E-01 4.06%	4.39E-01 4.06%	4.39E-01 99.32%	4.39E-01 4.06%	4.39E-01 4.06%	4.39E-01 3.91%	4.39E-01 4.06%	1.59E+00 13.33%
GROUND	7.08E-04 .01%	7.08E-04 .01%	7.08E-04 .16%	7.08E-04 .01%	7.08E-04 .01%	7.08E-04 .01%	7.08E-04 .01%	8.32E-04 .01%
INHAL	2.29E+00 21.23%	2.29E+00 21.23%	5.20E-04 .12%	2.29E+00 21.24%	2.29E+00 21.24%	2.43E+00 21.62%	2.30E+00 21.25%	2.29E+00 19.19%
VEGET	6.86E+00 63.52%	6.86E+00 63.52%	1.46E-03 .33%	6.86E+00 63.52%	6.86E+00 63.52%	7.15E+00 63.61%	6.86E+00 63.52%	6.86E+00 57.41%
COW MILK	8.88E-01 8.22%	8.88E-01 8.22%	1.06E-04 .02%	8.88E-01 8.22%	8.88E-01 8.22%	9.16E-01 8.15%	8.88E-01 8.22%	8.88E-01 7.43%
MEAT	3.12E-01 2.89%	3.13E-01 2.90%	2.02E-05 .00%	3.12E-01 2.89%	3.13E-01 2.90%	3.13E-01 2.78%	3.12E-01 2.89%	3.12E-01 2.61%
*TOTAL*	1.08E+01	1.08E+01	4.42E-01	1.08E+01	1.08E+01	1.12E+01	1.08E+01	1.20E+01
(a) PER CAPITA DOSE (REM)	5.52E-06	5.52E-06	2.26E-07	5.52E-06	5.52E-06	5.74E-06	5.52E-06	6.10E-06

(a) PERSONREM TOTAL DIVIDED BY 50-MILE POPULATION OF 1,796,000

Table C3

## SUMMARY OF INDIVIDUAL DOSES FOR JANUARY - DECEMBER 1992

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1992
Gamma Air Dose	mrad	1.63E-01	1.13E-03	1.77E-02	4.89E-02	2.30E-01
ODCM Req. 4.1 Limit	mrad	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
% ODCM Limit	%	3.26E+00	2.26E-02	3.54E-01	9.78E-01	2.30E+00
Beta Air Dose	mrad	4.91E-01	1.65E-03	3.93E-02	1.16E-01	6.48E-01
ODCM Req. 4.1 Limit	mrad	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
% ODCM Limit	%	4.91E+00	1.65E-02	3.93E-01	1.16E+00	3.24E+00
Maximum Individual Total Body	mrem	9.57E-02	7.29E-04	1.09E-02	2.99E-02	1.37E-01
Skin	mrem	2.87E-01	1.81E-03	2.86E-02	8.02E-02	3.98E-01
Location						
Unit 1	miles	1.87 S	1.87 S	1.87 S	1.87 S	1.87 S
Unit 2	miles	1.68 S	1.68 S	1.68 S	1.68 S	1.68 S
Unit 3	miles	1.46 S	1.46 S	1.46 S	1.46 S	1.46 S
Maximum Organ Dose		Teen	Child	Child(1)	Teen (1)	Teen (1)
(excluding skin)	mrem	Thyroid	Thyroid	Thyroid	Thyroid	Thyroid
ODCM Req. 4.2 Limit	mrem	9.00E-02	2.00E-02	2.11E-02	7.91E-02	2.01E-01
% ODCM Limit	%	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01
		1.20E+00	2.67E-01	2.81E-01	1.05E+00	1.34E+00
Location						
Unit 1	miles	5.05 S	2.67 ENE	2.67 ENE	5.05 S	5.05 S
Unit 2	miles	4.88 S	2.85 ENE	2.85 ENE	4.88 S	4.88 S
Unit 3	miles	4.67 S	2.99 ENE	2.99 ENE	4.67 S	4.67 S

Note 1 : Does not include 3rd or 4th quarter Sr-89,90 results.

Note 2 : These control location doses are imparted via three principal atmospheric pathways: plume, ground exposure and inhalation. ODCM Requirement 5.1 has higher limits than ODCM Requirement 4.2, therefore the percent of limits are more conservative based on ODCM Requirement 4.2 than on ODCM Requirement 5.1.

## DOSE CALCULATION MODELS

The GASPAR computer code was used to evaluate the radiological consequences of the routine release of gaseous effluents. GASPAR implements the dose calculational methodologies of Regulatory Guide 1.109, Revision 1.

Source terms for each quarter are combined with station-specific demographic data and each quarter's atmospheric diffusion estimates for gaseous dose calculations.

Atmospheric diffusion estimates are generated by the XOQDOQ computer code using onsite meteorological data as input. Doses for the semiannual period are the summation for the quarterly doses. Additional input to GASPAR includes the following site-specific data:

- 0 to 5 mile nearest residence, milk animal and garden in each of the 16 compass sectors, based on the 1991 Land Use Census.

- 0 to 5 mile population distribution based on the Land Use Census conducted during June-August, 1984.

- The population distribution from the PVNGS UFSAR, Figure 2.1-8.

- The population distribution of metropolitan Phoenix greater than 50 miles from PVNGS, based on the 1980 federal census results, is conservatively included in the 40 to 50 mile sectors (NE=123; ENE=140,097; E=621,130; ESE=8,392)

- Absolute humidity of  $6.0 \text{ g/m}^3$  from the PVNGS UFSAR, Table 2.3-16.

- The fraction of the year that vegetables are grown (0.667) from the PVNGS ER-OL, Section 2.1.3.4, Table 2.1-8.

- The fraction of daily feed derived from pasture while on pasture (0.35) and length of grazing season for milk animals beyond 5 miles (0.75) from the PVNGS ER-OL, Section 2.1.3.4.3.

- The fraction of daily feed derived from pasture while on pasture (0.05) and length of grazing season for meat animals (0.25) from the PVNGS ER-OL, Section 2.1.3.4.4.

- There were no milk animals located within 5 miles.

Other values used for input to GASPAR are default values from Regulatory Guide 1.109, Revision 1.

## APPENDIX D

Revised Unit 3 Fission Gas Curies

January 1991 - June 1992

## Introduction

On July 17, 1992, the noble gas channel reading on the Unit 3, Containment atmosphere monitor (3JSQBRU0001) was observed to be lower than expected following a venting of containment. The reason for the low reading was investigated and found to be air inleakage to the radiation monitor. An investigation indicated that this condition may have existed since gaskets were replaced on this monitor during maintenance performed on May 2, 1991. This event is documented in CRDR 320265 and LER 530/92-002-00. The following tables include the revised batch curie totals and changes are denoted by the use of redline printing. The associated revised 1991 dose calculations are included in Appendix E. Revised dose calculations for the first two quarters of 1992 are included in Appendix C.

1991 Strontium results are also summarized in this appendix.

Table A9 (Revised)

UNIT 3 1991

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #1	Quarter #2	Quarter #1	Quarter #2
1. Fission gases					
Argon-41	Ci	< LLD	< LLD	3.35E-01	8.81E-02
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	7.79E+00	5.21E+00
Krypton-85m	Ci	1.66E+00	< LLD	1.96E-04	< LLD
Krypton-87	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-88	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	5.14E+00	4.93E+00	8.05E-01	2.85E-01
Xenon-133	Ci	2.16E+02	8.69E+01	9.03E+01	1.92E+00
Xenon-133m	Ci	< LLD	< LLD	4.82E-01	< LLD
Xenon-135	Ci	1.50E+01	< LLD	3.93E-01	2.30E-03
Xenon-135m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	2.38E+02	9.19E+01	1.00E+02	7.48E+00
2. Iodines					
Iodine-131	Ci	2.06E-04	1.00E-03	2.89E-04	6.73E-04
Iodine-132	Ci	< LLD	3.97E-04	2.15E-06	3.78E-04
Iodine-133	Ci	1.54E-05	< LLD	1.56E-07	< LLD
Iodine-134	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-135	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	2.21E-04	1.40E-03	2.91E-04	1.05E-03



Table A9 (Revised)

UNIT 3 1991

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter	Quarter	Quarter	Quarter
		#3	#4	#3	#4
1. Fission gases					
Argon-41	Ci	< LLD	< LLD	1.34E-01	9.75E-02
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	< LLD	5.38E-02
Krypton-85m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-87	Ci	8.00E-04	< LLD	< LLD	< LLD
Krypton-88	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	< LLD	< LLD	< LLD	3.69E-04
Xenon-133	Ci	< LLD	< LLD	1.24E-01	2.34E-01
Xenon-133m	Ci	< LLD	< LLD	5.55E-04	1.36E-03
Xenon-135	Ci	< LLD	< LLD	1.93E-03	7.40E-03
Xenon-135m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	8.00E-04	0.00E+00	2.60E-01	3.94E-01
2. Iodines					
Iodine-131	Ci	< LLD	< LLD	1.19E-07	1.19E-07
Iodine-132	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-133	Ci	< LLD	< LLD	1.26E-07	6.60E-07
Iodine-134	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-135	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	< LLD	< LLD	2.45E-07	7.79E-07

Table A9 (Revised)

UNIT 3 1992

## GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	Unit	Continuous Mode		Batch Mode	
		Quarter #1	Quarter #2	Quarter #1	Quarter #2
1. Fission gases					
Argon-41	Ci	< LLD	< LLD	1.39E-01	1.37E-01
Krypton-83m	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-85	Ci	< LLD	< LLD	1.38E-01	< LLD
Krypton-85m	Ci	< LLD	< LLD	6.91E-05	< LLD
Krypton-87	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-88	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-89	Ci	< LLD	< LLD	< LLD	< LLD
Krypton-90	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-131m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-133	Ci	2.63E-02	< LLD	3.93E-01	3.58E-01
Xenon-133m	Ci	< LLD	< LLD	5.70E-04	8.25E-04
Xenon-135	Ci	< LLD	8.64E-01	1.22E-02	1.16E-02
Xenon-135m	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-137	Ci	< LLD	< LLD	< LLD	< LLD
Xenon-138	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	2.63E-02	8.64E-01	6.83E-01	5.07E-01
2. Iodines					
Iodine-131	Ci	< LLD	< LLD	2.30E-07	3.98E-07
Iodine-132	Ci	< LLD	< LLD	9.98E-08	< LLD
Iodine-133	Ci	< LLD	< LLD	8.19E-07	1.24E-06
Iodine-134	Ci	< LLD	< LLD	< LLD	< LLD
Iodine-135	Ci	< LLD	< LLD	< LLD	< LLD
Total for period	Ci	< LLD	< LLD	1.15E-06	1.64E-06

# 1991 Strontium curies

Quarter 1	Sr-89	Sr-90
Unit 1	< LLD	< LLD
Unit 2	< LLD	< LLD
Unit 3	2.95E-07	< LLD
Quarter 2		
Unit 1	< LLD	< LLD
Unit 2	< LLD	2.63E-08
Unit 3	1.28E-07	< LLD
Quarter 3		
Unit 1	2.15E-07	2.58E-07
Unit 2	1.47E-07	< LLD
Unit 3	< LLD	< LLD
Quarter 4		
Unit 1	< LLD	< LLD
Unit 2	4.17E-07	4.06E-07
Unit 3	1.54E-06	< LLD

## APPENDIX E

### Revised 1991 Dose Calculations

Table C3 (Revised)  
SUMMARY OF INDIVIDUAL DOSES FOR JANUARY - DECEMBER 1991

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1991
Gamma Air Dose T.S. 3.11.2.2 Limit % T.S. Limit	mrad mrad %	1.40E-01 5.00E+00 2.80E+00	2.80E-02 5.00E+00 5.60E-01	4.96E-02 5.00E+00 9.92E-01	8.40E-02 5.00E+00 1.68E+00	3.00E-01 1.00E+01 3.00E+00
Beta Air Dose T.S. 3.11.2.2 Limit % T.S. Limit	mrad mrad %	4.02E-01 1.00E+01 4.02E+00	8.18E-02 1.00E+01 8.18E-01	1.51E-01 1.00E+01 1.51E+00	2.20E-01 1.00E+01 2.20E+00	8.48E-01 2.00E+01 4.24E+00
Maximum Individual Total Body Skin	mrem mrem	8.26E-02 2.37E-01	1.66E-02 4.94E-02	2.92E-02 8.85E-02	5.06E-02 1.44E-01	1.78E-01 5.17E-01
Location Unit 1 Unit 2 Unit 3	miles miles miles	1.70 SSE 1.88 SSE 1.73 SSE	1.87 S 1.68 S 1.46 S	1.27 SE 1.31 SE 1.40 SE	1.87 S 1.68 S 1.46 S	1.87 S 1.68 S 1.46 S
Maximum Organ Dose (excluding skin) T.S. 3.11.2.3 Limit % T.S. Limit	mrem mrem %	Teen Thyroid 1.10E-01 7.50E+00 1.47E+00	Child Thyroid 7.12E-02 7.50E+00 9.49E-01	Child Thyroid 6.86E-02 7.50E+00 9.15E-01	Child Thyroid 9.44E-02 7.50E+00 1.26E+00	Teen Thyroid 2.76E-01 1.50E+01(1) 1.84E+00
Location Unit 1 Unit 2 Unit 3	miles miles miles	5.05 S 4.88 S 4.67 S	2.67 ENE 2.85 ENE 2.99 ENE	2.67 ENE 2.85 ENE 2.99 ENE	4.48 SSW 4.28 S 4.06 S	5.05 S 4.88 S 4.67 S

Note 1 : 3.68E-01 percent of Technical Specification 3.11.4, organ dose limit of 75 mrem (thyroid).  
Revised values are denoted by redline printing. Refer to appendix D for revised curie totals.

Table C3 (Revised)

## SUMMARY OF INDIVIDUAL DOSES FOR JANUARY - DECEMBER 1991

	Unit	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Total for 1991
Gamma Air Dose	mrad	1.40E-01	2.80E-02	4.96E-02	8.40E-02	3.00E-01
T.S. 3.11.2.2 Limit	mrad	5.00E+00	5.00E+00	5.00E+00	5.00E+00	1.00E+01
% T.S. Limit	%	2.80E+00	5.60E-01	9.92E-01	1.68E+00	3.00E+00
Beta Air Dose	mrad	4.02E-01	8.18E-02	1.51E-01	2.20E-01	8.48E-01
T.S. 3.11.2.2 Limit	mrad	1.00E+01	1.00E+01	1.00E+01	1.00E+01	2.00E+01
% T.S. Limit	%	4.02E+00	8.18E-01	1.51E+00	2.20E+00	4.24E+00
Maximum Individual Total Body Skin	mrem	8.26E-02	1.66E-02	2.92E-02	5.06E-02	1.78E-01
	mrem	2.37E-01	4.94E-02	8.85E-02	1.44E-01	5.17E-01
Location						
Unit 1	miles	1.70 SSE	1.87 S	1.27 SE	1.87 S	1.87 S
Unit 2	miles	1.88 SSE	1.68 S	1.31 SE	1.68 S	1.68 S
Unit 3	miles	1.73 SSE	1.46 S	1.40 SE	1.46 S	1.46 S
Maximum Organ Dose (excluding skin)	mrem	Teen Thyroid 1.10E-01	Child Thyroid 7.12E-02	Child Thyroid 6.86E-02	Child Thyroid 9.44E-02	Teen Thyroid 2.76E-01
T.S. 3.11.2.3 Limit	mrem	7.50E+00	7.50E+00	7.50E+00	7.50E+00	1.50E+01(1)
% T.S. Limit	%	1.47E+00	9.49E-01	9.15E-01	1.26E+00	1.84E+00
Location						
Unit 1	miles	5.05 S	2.67 ENE	2.67 ENE	4.48 SSW	5.05 S
Unit 2	miles	4.88 S	2.85 ENE	2.85 ENE	4.28 S	4.88 S
Unit 3	miles	4.67 S	2.99 ENE	2.99 ENE	4.06 S	4.67 S

Note 1 : 3.68E-01 percent of Technical Specification 3.11.4, organ dose limit of 75 mrem (thyroid).

Revised values are denoted by redline printing. Refer to appendix D for revised curie totals.