REFERENCE:
10CFR50.36a(a)(2)

WNP-2 RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY THROUGH DECEMBER 1997

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

LICENSE NO. NPF-21

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1.0 Introduction

This report is submitted in compliance with 10CFR50.36a(a)(2) and Technical Specification 5.6.3. It includes a summary of the quantities of radioactive liquid and gaseous effluents and solid radwaste released from WNP-2 during the previous twelve months of operation. Effluent data is summarized on a quarterly basis.

2.0 Liquid Effluents

The radwaste liquid effluents were released in "batch mode" during the reporting period. Table 2-0 summarizes the number and duration of batch releases, dilution flow and calculated maximum individual doses. The liquid batch releases were recirculated before sampling. A representative sample was obtained and analyzed for each batch release. A composite of the batch samples for each month was analyzed for tritium, and a composite sample for each quarter in which liquids were discharged was analyzed for strontium 89, strontium 90, and iron 55. The methods used for measuring the total radioactivity were gamma spectroscopy, liquid scintillation and proportional counting. Table 2-1 provides a summation of all liquid releases during this reporting period.

The average flow rate of the Columbia River during January through December 1997 was 1.65E+05 cubic feet per second.

The percentage of MPC limit in Table 2-1 is based on the total of the MPC fractions using the nuclides in Table 2-2 and the concentrations listed in the former 10CFR20, Appendix B, Table 2, Column 2.

Doses were calculated using the LADTAP II computer code, NUREG/CR-4013.

Estimated total errors are listed in Table 2-1, and are propagated from individual error estimates of sample activity, sample volume, tank volume, and tank homogeneity. The estimated total errors were calculated by obtaining the square root of the sum of the squares of the individual error contributions and multiplying by 1.96 for a 95 percent confidence level.

There were no liquid effluent monitors which were out of service for more than 30 days.

There were no abnormal releases.

Liquid Effluent Tables

Table 2-0 WNP-2 Liquid Effluents -- Dose

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year
Number of Batch Releases	2.00E+00	1.00E+01	0.00E+00	1.00E+00	1.30E+01
Discharge Duration in Hours					
Total	6.67E-01	1.73E+01	N/A	1.58E+00	1.95E+01
Average	3.33E-01	1.73E+00	N/A	1.58E+00	1.21E+00
Minimum	3.33E-01	2.50E-01	N/A	1.58E+00	2.50E-01
Maximum	3.33E-01	2.80E+00	N/A	1.58E+00	2.80E+00
Dilution Flow					
Gallons	3.40E+04	9.68E+05	N/A	1.76E+05	1.18E+06
Maximum Individual Dose (mrem)					
Whole Body (Adult)	4.35E-06	8.79E-06	0.00E+00	2.51E-07	1.33E-05
ODCM Limit	1.5	1.5	1.5	1.5	3.0
% of Limit	2.90E-04	5.86E-04	0.00E+00	1.68E-05	4.42E-04
Organ	6.88E-06	3.59E-05	0.00E+00	4.63E-07	4.32E-05
ODCM Limit	5	5	5	5	10
% of Limit	1.38E-04	7.18E-04	0.00E+00	9.26E-06	4.32E-04

ODCM Limits	
Batch	Less than the concentration specified in 10 CFR 20, Appendix B, Table II, Column 2, and less than 2.0E-04 µCi/cc dissolved or entrained noble gases.
Calendar Quarter	Less than or equal to 1.5 mrem to the total body, and less than or equal to 5 mrem to any organ.
Calendar Year	Less than or equal to 3 mrem to the total body, and less than or equal to 10 mrem to any organ.

Table 2-1 WNP-2 Liquid Effluents -- Summation of all Releases

Report Period: January -- December 1997

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year	Est Total Error* %
A. Fission and activation products						
Total release (not including tritium, gases, alpha) (Ci)	3.80E-05	7.59E-05	NA	7.90E-06	1.22E-04	2.20E+01
Average diluted concentration during period (µCi/ml)	2.30E-07	1.67E-08	NA	1.05E-08	2.23E-08	
Percent of MPC limit (%)	7.70E-01	4.77E-02	NA	1.83E-02	6.56E-02	
B. Tritium						
Total release (Ci)	9.32E-03	4.03E-01	NA	5.04E-02	4.63E-01	2.20E+01
Average diluted concentration during period (µCi/ml)	5.63E-05	8.88E-05	NA	6.71E-05	8.48E-05	
Percent of MPC limit (%)	1.88E+00	2.96E+00	NA	2.24E+00	2.83E+00	
C. Dissolved and entrained gases						
Total release (Ci)	<LLD	<LLD	NA	<LLD	<LLD	N/A
Average diluted concentration during period (µCi/ml)	<LLD	<LLD	NA	<LLD	<LLD	
Percent of limit (%)	<LLD	<LLD	NA	<LLD	<LLD	
D. Gross alpha radioactivity						
Total release (Ci)	3.06E-08	<LLD	N/A	3.57E-07	3.88E-07	5.00E+01
E.						
Volume of waste prior to dilution (liters)	1.83E+04	4.37E+05	0.00E+00	4.31E+04	4.99E+05	1.50E+01
F.						
Volume of dilution water used during period (liters)	1.47E+05	4.10E+06	0.00E+00	7.08E+05	4.95E+06	1.50E+01

* At 95% confidence level

See Table 2-3 for LLD values.

Table 2-2 WNP-2 Liquid Effluents -- Source Terms

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
A. Fission and activation products					
strontium-89	<LLD	<LLD	N/A	<LLD	<LLD
strontium-90	<LLD	<LLD	N/A	<LLD	<LLD
cesium-134	<LLD	<LLD	N/A	<LLD	<LLD
cesium-137	1.22E-06	2.19E-06	N/A	<LLD	3.42E-06
iodine-131	<LLD	<LLD	N/A	<LLD	<LLD
cobalt-58	<LLD	<LLD	N/A	<LLD	<LLD
cobalt-60	3.64E-05	6.12E-05	N/A	3.97E-06	1.02E-04
iron-59	<LLD	<LLD	N/A	<LLD	<LLD
zinc-65	<LLD	<LLD	N/A	<LLD	<LLD
manganese-54	<LLD	<LLD	N/A	<LLD	<LLD
chromium-51	<LLD	<LLD	N/A	<LLD	<LLD
zirconium-niobium-95	<LLD	<LLD	N/A	<LLD	<LLD
molybdenum-99	<LLD	<LLD	N/A	<LLD	<LLD
technetium-99m	<LLD	<LLD	N/A	<LLD	<LLD
barium-lanthanum-140	<LLD	<LLD	N/A	<LLD	<LLD
cerium-141	<LLD	<LLD	N/A	<LLD	<LLD
cerium-144	<LLD	<LLD	N/A	<LLD	<LLD
iron-55	3.98E-07	1.25E-05	N/A	3.93E-06	1.68E-05
Others					
None	No other nuclides were identified.				
Total for period above*	3.80E-05	7.59E-05	N/A	7.90E-06	1.22E-04
B. Dissolved and entrained gases					
xenon-133	<LLD	<LLD	N/A	<LLD	<LLD
xenon-135	<LLD	<LLD	N/A	<LLD	<LLD
C. Tritium					
tritium	9.32E-03	4.03E-01	N/A	5.04E-02	4.63E-01

* Less than (<) values are not included in the totals.
See Table 2-3 for LLD values.

Table 2-3 WNP-2 Liquid Effluents -- LLD

Report Period: January -- December 1997

Fission and Activation Products

Nuclide	LLD(μCi/cc)
strontium-89	2.00E-10
strontium-90	3.60E-09
cesium-134	8.60E-09
cesium-137	9.70E-09
barium-lanthanum-140	7.60E-09
molybdenum-99	1.20E-07
cerium-141	6.10E-09
cerium-144	1.00E-07
cobalt-58	2.50E-09
cobalt-60	5.20E-09
iron-59	8.10E-09
chromium-51	4.70E-08
manganese-54	3.40E-09
zinc-65	6.20E-09
iodine-131	6.00E-09
iodine-133	2.10E-09
OTHERS	LLD(μCi/cc)
sodium-24	3.70E-09
copper-64	7.40E-07
antimony-124	8.80E-09
antimony-125	4.30E-08

Dissolved and entrained gasses

Nuclide	LLD(μCi/cc)
xenon-133	2.10E-08
xenon-135	5.10E-09

3.0 Gaseous Effluents

The gaseous radwaste effluents from WNP-2 were released from three (3) release points:

1. Main Plant Vent -- mixed mode release
2. Turbine building -- ground level release
3. Radwaste building -- ground level release

The gaseous source terms from each release point are listed in Tables 3-1, 3-2, and 3-3. Table 3-4 provides a summation of the total activity released, the average release rate, the percentage of ODCM Requirement For Operability limit, gross alpha radioactivity and the estimated total error associated with the measurements of radioactivity in the gaseous effluents.

Radioactivity measurements for gaseous effluent releases are performed for fission and activation gases by collecting the samples in a marinelli beaker and analyzing them using gamma spectroscopy. Tritium is analyzed by collecting the sample on a desiccant, distillation, and liquid scintillation counting. Particulates and iodines are sampled using particulate filters and charcoal cartridges. Both are analyzed using gamma spectroscopy. E bar was 4.30E-02 meV per disintegration.

Noble gas activities are commonly below detection limits in the building effluent ducts. Where possible, noble gas concentrations in the effluent have been calculated from plant process data. Reactor building noble gas concentrations were calculated from offgas post treatment data.

Calculations were performed for releases using the NRC GASPAR II computer program and parameters as outlined in the ODCM. Quarterly doses to a member of the public were determined at the locations identified in the Annual Land Use Census and at the site boundary.

Table 3-0 summarizes the results of these calculations.

Total error estimates are propagated from individual error estimates of sample volume, sample activity and effluent flow rate measurements. The overriding uncertainty in all cases is in the measurement of the effluent activity and sample volumes. The estimated error was determined to be 36 percent at the 95 percent confidence level.

The percent of ODCM limit for fission and activation gases (air dose) was determined for locations identified in the annual land use census, and was based on quarterly limits of ten (10) millirads for beta and five (5) millirads for gamma. These locations were used to determine the most restrictive value to be used in Table 3-4 for each quarter.

The ODCM limits are listed in Table 3-0.

In addition to the reactor facility, WNP-2 has a permanent laundry facility located approximately 0.75 miles from the reactor building. Its ventilation system contains HEPA filters on the discharge, and is continuously monitored for particulates. Also, the backup chemistry laboratory within the Emergency Operations Facility (EOF) is located near the laundry facility. The radiochemical hood within the backup chemistry lab contains HEPA filters and is monitored for radioactive releases when in operation. Gamma spectrometry indicated no radioactive materials present other than that attributable to natural background.

There were no abnormal releases of gaseous effluent during this reporting period.

The Radwaste building Intermediate Range noble gas monitor was out of service for 31 days between March 18 and April 18, 1997. The reason for the extended outage was that the calibration procedure contained inadequate guidance for correcting a decrease in monitor efficiency. Additional guidance for correcting this type of failure has been added to the calibration procedure for this and the one other similar monitor. This should prevent recurrence of this event. (Reference PER 297-0221-11.)

Gaseous Effluent Tables

Table 3-0 Dose

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year

Noble Gas
(mrem)

Gamma Air Dose	9.95E-04	0.00E+00	4.14E-04	6.90E-04	2.10E-03
ODCM Limit	5	5	5	5	10
% of Limit	1.99E-02	0.00E+00	8.28E-03	1.38E-02	2.10E-02
Beta Air Dose	3.57E-04	0.00E+00	1.49E-04	2.45E-04	7.51E-04
ODCM Limit	10	10	10	10	20
% of Limit	3.57E-03	0.00E+00	1.49E-03	2.45E-03	3.76E-03

Iodine-131, Iodine-133, Tritium, and Particulates with half-lives greater than eight days.
(mrem)

Organ Dose	7.14E-04	4.99E-04	6.40E-04	1.08E-03	2.93E-03
ODCM Limit	7.5	7.5	7.5	7.5	15
% of Limit	9.52E-03	6.65E-03	8.53E-03	1.44E-02	1.96E-02

Table 3-1A Source Terms Mixed Mode Releases -- Main Plant Vent

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
A. Fission gases					
krypton-85	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-85m	2.84E-01	<LLD	1.54E-01	1.16E-01	5.54E-01
krypton-87	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-88	2.24E-01	<LLD	4.71E-02	9.79E-02	3.69E-01
xenon-133	3.06E-01	<LLD	1.28E-01	1.44E-01	5.78E-01
xenon-133m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-135	7.39E-02	<LLD	<LLD	<LLD	7.39E-02
xenon-135m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-138	<LLD	<LLD	<LLD	<LLD	<LLD
Others					
argon-41	5.20E+00	<LLD	3.82E+00	4.43E+00	1.35E+01
Total for period *	6.09E+00	<LLD	4.15E+00	4.79E+00	1.50E+01
B. Iodines					
iodine-131	2.73E-05	<LLD	<LLD	4.82E-06	3.22E-05
iodine-132	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-133	<LLD	<LLD	2.45E-04	<LLD	2.45E-04
iodine-134	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-135	<LLD	<LLD	<LLD	<LLD	<LLD
Total for period *	2.73E-05	<LLD	2.45E-04	4.82E-06	2.77E-04

* Less than (<) values are not included in the totals.
See Table 3-6 for LLD values.

Table 3-1B Mixed Mode Releases -- Main Plant Vent

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
C. Particulates					
strontium-89	7.86E-06	4.03E-05	6.33E-06	3.81E-06	5.83E-05
strontium-90	7.36E-07	4.70E-06	<LLD	<LLD	5.44E-06
cesium-134	<LLD	<LLD	<LLD	<LLD	<LLD
cesium-137	3.47E-05	<LLD	<LLD	<LLD	3.47E-05
barium-lanthanum-140	2.86E-05	<LLD	<LLD	<LLD	2.86E-05
molybdenum-99	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-141	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-144	<LLD	<LLD	<LLD	<LLD	<LLD
cobalt-58	<LLD	<LLD	1.41E-04	<LLD	1.41E-04
cobalt-60	4.63E-05	6.33E-04	2.05E-04	1.77E-05	9.02E-04
iron-59	<LLD	3.20E-05	<LLD	<LLD	3.20E-05
manganese-54	<LLD	3.94E-05	<LLD	<LLD	3.94E-05
zinc-65	<LLD	1.50E-04	2.09E-04	1.39E-05	3.72E-04
Others					
chromium-51	<LLD	2.98E-04	<LLD	<LLD	2.98E-04
Total for period*	1.18E-04	1.20E-03	5.60E-04	3.54E-05	1.91E-03
Others with T 1/2 < 8 days					
arsenic-76	<LLD	<LLD	2.18E-04	<LLD	2.18E-04
copper-64	<LLD	<LLD	7.10E-02	<LLD	7.10E-02
sodium-24	<LLD	<LLD	7.88E-04	<LLD	7.88E-04
technetium-99m	<LLD	<LLD	5.97E-03	<LLD	5.97E-03
zinc-69m	<LLD	<LLD	5.38E-04	<LLD	5.38E-04
Total with T 1/2 < 8 days*	<LLD	<LLD	7.85E-02	<LLD	7.85E-02

D. Tritium

tritium	9.43E-01	9.06E-01	1.07E+00	5.61E-01	3.48E+00

* Less than (<) values are not included in the totals.

See Table 3-6 for LLD values.

Table 3-2A Source Terms Ground Level Releases -- Turbine Building

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
A. Fission gases					
krypton-85	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-85m	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-87	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-88	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-133	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-133m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-135	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-135m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-138	<LLD	<LLD	<LLD	<LLD	<LLD
Others					
argon-41	<LLD	<LLD	<LLD	<LLD	<LLD
Total for period *	<LLD	<LLD	<LLD	<LLD	<LLD
B. Iodines					
iodine-131	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-132	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-133	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-134	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-135	<LLD	<LLD	<LLD	<LLD	<LLD
Total for period *	<LLD	<LLD	<LLD	<LLD	<LLD

* Less than (<) values are not included in the totals.
See Table 3-6 for LLD values.

Table 3-2B Ground Level Releases -- Turbine Building

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
C. Particulates					
strontium-89	1.15E-05	2.39E-05	6.45E-06	5.93E-06	4.77E-05
strontium-90	<LLD	<LLD	<LLD	<LLD	<LLD
cesium-134	<LLD	<LLD	<LLD	<LLD	<LLD
cesium-137	<LLD	<LLD	<LLD	<LLD	<LLD
barium-lanthanum-140	<LLD	<LLD	<LLD	<LLD	<LLD
molybdenum-99	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-141	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-144	<LLD	<LLD	<LLD	<LLD	<LLD
cobalt-58	<LLD	<LLD	<LLD	<LLD	<LLD
cobalt-60	<LLD	<LLD	<LLD	<LLD	<LLD
iron-59	<LLD	<LLD	<LLD	<LLD	<LLD
manganese-54	<LLD	<LLD	<LLD	<LLD	<LLD
zinc-65	<LLD	<LLD	<LLD	<LLD	<LLD
Others					
chromium-51	<LLD	<LLD	<LLD	<LLD	<LLD
Total for period*	1.15E-05	2.39E-05	6.45E-06	5.93E-06	4.77E-05
Others with T 1/2 < 8 days					
NONE	No nuclides with half-lives less than 8 days were identified				
Total with T 1/2 < 8 days*	No nuclides with half-lives less than 8 days were identified				
D. Tritium					
tritium	7.31E-01	1.32E-01	8.41E-01	1.54E+00	3.24E+00

* Less than (<) values are not included in the totals.
See Table 3-6 for LLD values.

Table 3-3A Source Terms Ground Level Releases -- Radwaste Building

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
A. Fission gases					
krypton-85	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-85m	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-87	<LLD	<LLD	<LLD	<LLD	<LLD
krypton-88	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-133	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-133m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-135	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-135m	<LLD	<LLD	<LLD	<LLD	<LLD
xenon-138	<LLD	<LLD	<LLD	<LLD	<LLD
Others					
NONE					
Total for period *	<LLD	<LLD	<LLD	<LLD	<LLD
B. Iodines					
iodine-131	2.60E-06	<LLD	<LLD	3.16E-06	5.76E-06
iodine-132	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-133	<LLD	<LLD	2.69E-05	7.08E-05	9.77E-05
iodine-134	<LLD	<LLD	<LLD	<LLD	<LLD
iodine-135	<LLD	<LLD	<LLD	<LLD	<LLD
Total for period *	2.60E-06	<LLD	2.69E-05	7.40E-05	1.03E-04

* Less than (<) values are not included in the totals.
See Table 3-6 for LLD values.

Table 3-3B Ground Level Releases -- Radwaste Building

Report Period: January -- December 1997

Nuclides Released	1st Quarter (Ci)	2nd Quarter (Ci)	3rd Quarter (Ci)	4th Quarter (Ci)	Year (Ci)
C. Particulates					
strontium-89	5.87E-06	1.24E-06	1.25E-06	<LLD	8.36E-06
strontium-90	<LLD	<LLD	<LLD	<LLD	<LLD
cesium-134	<LLD	<LLD	<LLD	<LLD	<LLD
cesium-137	<LLD	<LLD	<LLD	<LLD	<LLD
barium-lanthanum-140	<LLD	<LLD	<LLD	<LLD	<LLD
molybdenum-99	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-141	<LLD	<LLD	<LLD	<LLD	<LLD
cerium-144	<LLD	<LLD	<LLD	<LLD	<LLD
cobalt-58	<LLD	<LLD	<LLD	<LLD	<LLD
cobalt-60	<LLD	<LLD	<LLD	<LLD	<LLD
iron-59	<LLD	<LLD	<LLD	<LLD	<LLD
manganese-54	<LLD	<LLD	<LLD	<LLD	<LLD
zinc-65	<LLD	<LLD	<LLD	<LLD	<LLD
Others					
NONE	No other nuclides were identified				
Total for period*	5.87E-06	1.24E-06	1.25E-06	<LLD	8.36E-06

Others with T 1/2 < 8 days					
NONE	No other nuclides were identified				
Total with T 1/2 < 8 days*	No nuclides with half-lives less than 8 days were identified				

D. Tritium					
tritium	2.75E-01	8.79E-02	1.08E-01	1.05E-01	5.76E-01

* Less than (<) values are not included in the totals.
See Table 3-6 for LLD values.

Table 3-4 Summation of all Gaseous Releases

Report Period: January -- December 1997

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Year	Est Total Error*%
A. Fission and activation gases						
Total release (Ci)	6.09E+00	<LLD	4.15E+00	4.79E+00	1.50E+01	3.60E+01
Average release rate (μCi/s)	7.83E-01	0.00E+00	5.22E-01	6.03E-01	4.77E-01	
Percent of ODCM limit (%)	**	**	**	**	**	
B. Iodines						
Total I-131 (Ci)	2.99E-05	<LLD	<LLD	7.98E-06	3.79E-05	3.60E+01
Average release rate (μCi/s)	3.81E-06	<LLD	<LLD	1.00E-06	1.20E-06	
Percent of ODCM limit (%)	**	**	**	**	**	
C. Particulates						
Particulates with half-lives >8 days (Ci)	1.36E-04	1.22E-03	5.68E-04	4.14E-05	1.97E-03	3.60E+01
Average release rate (μCi/s)	1.72E-05	1.56E-04	7.15E-05	5.21E-06	6.24E-05	
Percent of ODCM limit (%)	**	**	**	**	**	
Gross alpha radioactivity	6.39E-06	3.28E-06	3.11E-06	2.71E-06	1.55E-05	
D. Tritium						
Total release (Ci)	1.95E+00	1.13E+00	2.02E+00	2.20E+00	7.30E+00	3.60E+01
Average release rate (μCi/s)	2.48E-01	1.43E-01	2.54E-01	2.77E-01	2.32E-01	
Percent of ODCM limit (%)	**	**	**	**	**	

* At 95% confidence level
** ODCM limits are based on dose.
See Table 3-0 for percent of ODCM limits.

Table 3-5 Gaseous Batch Releases

Report Period: January -- December 1997

Type	Number	Total Time (hr.)	Maximum Time (hr.)	Minimum Time (hr.)	Mean Time (hr.)
Purge	3.00E+00	5.59E+01	2.93E+01	3.95E+00	1.86E+01
Vent	3.80E+01	3.65E+01	2.50E+00	3.33E-01	9.61E-01

Table 3-6 Gaseous Lower Limit of Detection

Reporting Period: January -- December 1997

Fission Gases

Nuclide	LLD (μCi/cc)
krypton-85	2.60E-07
krypton-85m	3.70E-07
krypton-87	3.00E-09
krypton-88	1.30E-08
xenon-133	1.10E-08
xenon-135	1.32E-09
xenon-135m	4.00E-09
xenon-138	1.20E-08
argon-41	2.60E-09
xenon-137	6.70E-08

Iodines

Nuclide	LLD (μCi/cc)
iodine-131	2.40E-13
iodine-132	3.90E-13
iodine-133	3.50E-13
iodine-134	5.60E-13
iodine-135	1.60E-12

Particulates

Nuclide	LLD (μCi/cc)
strontium-89	5.50E-15
strontium-90	4.20E-15
cesium-134	5.30E-13
cesium-137	3.20E-13
barium-lanthanum-140	1.10E-12
molybdenum-99	3.20E-12
cerium-141	2.30E-13
cerium-144	1.60E-12
cobalt-58	3.20E-13
cobalt-60	6.00E-13
iron-59	1.10E-12
manganese-54	3.70E-13
zinc-65	1.10E-12
Gross Alpha	4.30E-16

4.0 Solid Radwaste:

Required by ODCM

These values are based on a combination of measurements and values derived in accordance with 10CFR61.

Class A

1. Container Volumes

   * EL-142 Poly HIC 132.4 ft^3
   * ES-190 Steel Liner 170.2 ft^3

2. Total Curies

   * 8.14E+01 Ci

3. Principal Radionuclides

Nuclide	Percent	Curies
Co-60	5.62E+01	4.57E+01
Fe-55	1.26E+01	1.02E+01
Cr-51	1.16E+01	9.43E+00
Zn-65	6.25E+00	5.08E+00
Cs-137	2.99E+00	2.43E+00
Mn-54	2.45E+00	1.99E+00
Co-58	2.26E+00	1.84E+00
C-14	1.69E+00	1.37E+00
Ni-63	1.53E+00	1.25E+00
Sb-125	1.35E+00	1.10E+00
H-3	5.69E-01	4.63E-01
Cs-134	3.33E-01	2.71E-01
Nb-95	1.01E-01	8.24E-02

4. Source

*	Resins	7.97E+01 Ci
*	DAW	1.69E+00 Ci
*	Irradiated Components	None
*	Other	None

5. Type of Container

* All containers shipped as LSA or SCO in STC, IP-2 and Type A or Type B cask where appropriate.

6. Solidification Agent

* None

Class B

1. Container Volumes

   * EL-142 132.4 ft^3

2. Total Curies

   * 3.39E+02 Ci

3. Principal Radionuclides

Nuclide	Percent	Curies
Co-60	4.73E+01	1.60E+02
Zn-65	1.41E+01	4.76E+01
Fe-55	1.08E+01	3.65E+01
Cr-51	7.16E+00	2.43E+01
Cs-137	6.22E+00	2.11E+01
Co-58	5.19E+00	1.76E+01
Mn-54	2.93E+00	9.92E+00
Nb-95	2.91E+00	9.87E+00
Zr-95	1.95E+00	6.60E+00
Ni-63	6.89E-01	2.33E+00
Sb-125	4.02E-01	1.36E+00
Ce-144	1.35E-01	4.58E-01
Ag-110m	1.30E-01	4.40E-01

4. Source
   * Resins, Filters

5. Type of Container
   * All containers shipped as LSA in EL-142 HIC's and Type A or Type B Cask as appropriate.

6. Solidification Agent
   * None

Class C

1. Container Volumes

   * EA-50 Enviralloy HIC 49.9 ft^3

2. Total Curies

   * 6.14E+01 Ci

3. Principal Radionuclides

Nuclide	Percent	Curies
Co-60	3.65E+01	2.24E+01
Cr-51	2.87E+01	1.76E+01
Zn-65	1.56E+01	9.60E+00
Fe-55	8.34E+00	5.12E+00
Co-58	4.33E+00	2.66E+00
Mn-54	2.39E+00	1.47E+00
Ni-63	1.17E+00	7.17E-01
Cs-137	9.91E-01	6.08E-01
Sb-125	9.15E-01	5.62E-01
H-3	8.71E-01	5.35E-01
Ce-144	1.07E-01	6.55E-02

4. Source

   * Filters

5. Type of Container

   * Shipped as LSA in EA-50 HIC and Type A Cask.

6. Solidification Agent

   * None

Required by Reg. Guide 1.21

Table 4-1, WNP-2 Solid Waste Shipments, January -- December, 1997.
Solid waste shipped offsite for burial or disposal.

Type of Waste

Waste Stream	Unit	Annual Cumulative	Est. Total Error %
Spent resins, filter sludges, evaporator bottoms, etc.	m^3	8.99E+01	
	Ci	3.98E+02	2.5E+01%
Dry Active Waste	m^3	5.48E+01	
	Ci	8.35E+01	2.5E+01%

Irradiated Components -- None

Other Waste -- None

Estimate of major nuclide composition (by type of waste):

a. Dewatered Spent Resins -- All Classes

Nuclide	%	Curies
Co-60	4.97E+01	1.98E+02
Zn-65	1.24E+01	4.92E+01
Fe-55	1.13E+01	4.49E+01
Cr-51	6.87E+00	2.73E+01
Cs-137	5.85E+00	2.33E+01
Co-58	4.63E+00	1.84E+01
Mn-54	2.86E+00	1.14E+01
Nb-95	2.50E+00	9.95E+00
Zr-95	1.66E+00	6.62E+00
Ni-63	8.35E-01	3.32E+00
Sb-125	5.67E-01	2.26E+00
C-14	3.58E-01	1.43E+00
H-3	1.49E-01	5.94E-01
Ce-144	1.21E-01	4.83E-01
Ag-110m	1.17E-01	4.65E-01

b. Dry Active Waste (DAW) -- All Classes

Nuclide	%	Curies
Co-60	3.65E+01	3.04E+01
Cr-51	2.87E+01	2.40E+01
Zn-65	1.56E+01	1.31E+01
Fe-55	8.34E+00	6.96E+00
Co-58	4.33E+00	3.62E+00
Mn-54	2.39E+00	2.00E+00
Ni-63	1.17E+00	9.75E-01
Cs-137	9.90E-01	8.27E-01

Sb-125	9.15E-01	7.64E-01
H-3	8.72E-01	7.28E-01
Ce-144	1.07E-01	8.98E-02

c. Irradiated Components -- None

d. Other Waste -- None

Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
19	Tractor - Trailer via Public Highway	US Ecology, Inc. P.O. Box 638 Hanford Res. Richland, WA. 99352
11*	Tractor - Trailer via Public Highway	ATG, Inc. 2025 Battelle Blvd. Richland, WA. 99352

*Eleven radioactive materials shipments were made to ATG, portions of which were sent to US Ecology as waste shipments after the completion of volume reduction activities.

5.0 Meteorology

The meteorological data contained in Tables 5-1 through 5-10 were obtained from the WNP-2 meteorological tower located 2500 ft west of WNP-2. Data was recovered from instruments at the 33 ft and 245 ft levels. The meteorological data is a composite file from the automated data recovery systems for the calendar year 1997. Data is archived on Supply System Local Area Network.

Precipitation was slightly above normal in 1997. Total precipitation measured at the Hanford Meteorology Station was 6.39 inches, which is 102% of the normal 6.26 inches. Snowfall for January through March of the year was 6 inches, 96% of the normal 6.2 inches. The total snowfall for the November-December period was 24% of the normal 7.5 inches at 1.8 inches.

Calendar year 1997 was warmer than normal, averaging 54.8°F or 1.3° above normal. The occurrence of fog and haze and blowing dust in 1997 was similar to that observed in previous years. In summary, the dispersive environment for WNP-2 for 1997 was near normal.

Joint data recovery for 1997 was 92.2%. Scheduled power outages at WNP-2 coincided with the outages of the data recovery system. Lightning strikes and thunderstorms were of minor concern and had no significant effect on meteorological tower operations

Tables 5-1 through 5-8 list the joint frequency distributions at the 33 ft and 245 ft levels by quarter for 1997. Table 5-9 and 5-10 list the annual joint frequency distributions for those levels for 1997. The NRC stability classes A through G and seven wind categories along with the 16 wind sectors were used to prepare each joint frequency table. The annual joint frequency tables should be used to evaluate any vents and purges during 1997 as the releases were random in time.

Calibrations performed in 1997 produced no values exceeding WNP-2 FSAR meteorological equipment tolerances and required no corrections be applied to the raw data. Data below 0.07 MPH has been determined to result from system malfunction and is not included in the results.

Joint Frequency Distribution Tables

Table 5-1 1st Quarter, 33 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 01/01/97 TO HOUR 23 ON 03/31/97

The total hours are 2160, 2015 hours read and 145 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	6	5	4	5	0	0
11.25	1	5	6	1	1	0	0
33.75	0	2	7	2	2	2	0
56.25	0	3	0	0	0	0	0
78.75	0	1	0	0	0	0	0
101.25	1	0	2	0	0	0	0
123.75	0	5	6	6	1	0	0
146.25	0	1	10	6	0	0	0
168.75	0	4	2	3	3	0	0
191.25	0	2	3	1	1	0	0
213.75	0	1	1	0	1	0	0
236.25	0	2	1	0	0	0	0
258.75	1	2	1	1	1	0	0
281.25	0	0	4	0	0	0	0
303.75	0	1	9	4	0	0	0
326.25	0	3	19	12	9	0	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	1	2	0	1	0
11.25	0	0	2	0	0	0	0
33.75	0	1	0	3	0	0	0
56.25	0	0	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	1	0	0	0	0	0
146.25	0	0	0	1	1	0	0
168.75	1	1	6	3	2	0	0
191.25	0	1	3	1	0	4	0
213.75	0	0	1	0	2	1	0
236.25	0	0	1	0	1	0	0
258.75	0	0	0	1	2	0	0
281.25	0	0	0	1	2	0	0
303.75	0	0	1	3	0	0	0
326.25	0	1	3	1	1	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	6	4	1	0	0
11.25	0	2	2	0	1	0	0
33.75	0	2	0	1	0	0	0
56.25	0	0	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	0	0	1	1	0	0
146.25	0	3	1	3	1	0	0
168.75	0	1	2	3	0	0	0
191.25	0	1	1	2	1	1	0
213.75	0	1	1	1	3	1	0
236.25	0	1	0	0	1	3	0
258.75	0	1	0	1	0	2	0
281.25	0	0	1	0	0	2	0
303.75	0	0	3	0	0	0	0
326.25	0	0	2	2	3	1	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	5	16	14	6	0	0
11.25	1	2	13	2	1	1	0
33.75	0	1	2	3	1	3	3
56.25	1	3	0	1	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	2	2	0	0	0	0
123.75	1	1	3	4	0	0	0
146.25	1	4	6	10	4	0	0
168.75	1	4	10	11	13	0	0
191.25	1	2	3	9	16	10	5
213.75	0	1	4	8	6	5	3
236.25	0	4	1	2	10	8	1
258.75	0	3	3	2	7	3	0
281.25	1	4	9	4	11	4	0
303.75	0	8	26	8	6	1	2
326.25	0	4	34	23	12	3	0

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	2	14	5	0	2	0
11.25	0	1	12	3	0	0	0
33.75	0	5	6	4	1	0	1
56.25	0	0	3	0	0	0	0
78.75	0	1	1	0	0	0	0
101.25	0	2	1	3	0	0	0
123.75	0	2	7	10	4	0	0
146.25	0	4	18	28	14	0	0
168.75	0	5	7	17	15	7	0
191.25	0	6	7	19	22	27	7
213.75	0	4	6	18	12	7	3
236.25	0	5	7	3	9	5	0
258.75	0	4	4	5	2	4	1
281.25	0	5	14	9	2	3	2
303.75	0	8	28	16	4	0	1
326.25	0	7	30	28	10	0	0

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	13	18	0	0	0	0
11.25	0	12	17	0	0	0	0
33.75	0	6	9	3	0	0	0
56.25	0	3	1	1	0	0	0
78.75	0	4	1	0	0	0	0
101.25	0	2	2	0	0	0	0
123.75	0	0	6	7	1	0	0
146.25	0	9	20	43	7	1	0
168.75	0	7	30	16	7	1	0
191.25	1	8	13	10	9	5	0
213.75	0	10	7	3	2	1	0
236.25	0	5	8	6	3	0	1
258.75	0	9	3	4	3	0	0
281.25	0	15	8	12	6	0	0
303.75	0	8	25	12	5	0	0
326.25	0	15	14	10	0	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	1	10	10	0	0	0	0
11.25	0	2	4	0	0	0	0
33.75	2	1	3	1	0	0	0
56.25	0	0	0	0	0	0	0
78.75	0	1	0	0	0	0	0
101.25	0	1	0	0	0	0	0
123.75	1	5	0	0	0	0	0
146.25	0	6	2	12	3	1	0
168.75	1	7	12	11	3	1	0
191.25	1	7	7	3	0	0	1
213.75	0	8	8	0	0	0	0
236.25	0	6	2	2	1	0	0
258.75	1	8	3	3	0	0	0
281.25	1	8	4	2	0	0	0
303.75	1	4	14	2	0	0	0
326.25	1	8	13	3	0	0	0

Table 5-2 1st Quarter, 245 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 01/01/97 TO HOUR 23 ON 03/31/97

The total hours are 2160, 2015 hours read and 145 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	17	10	12	0	0
11.25	0	1	5	0	2	0	0
33.75	0	2	5	1	1	5	0
56.25	0	2	4	1	0	0	0
78.75	0	2	1	0	0	0	0
101.25	0	2	0	0	0	0	0
123.75	0	3	0	1	0	0	0
146.25	0	2	5	6	2	0	0
168.75	0	3	5	10	2	0	0
191.25	0	3	4	3	2	0	0
213.75	0	3	3	3	0	1	0
236.25	0	2	2	0	0	1	0
258.75	0	2	1	1	0	1	0
281.25	0	0	3	0	0	0	0
303.75	0	2	5	1	0	0	0
326.25	0	2	9	9	4	1	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0.	2	2	1	1	0
11.25	0	0	1	0	0	0	0
33.75	0	0	1	2	1	0	0
56.25	0	1	0	0	0	0	0
78.75	0	1	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	0	0	0	0	0	0
146.25	0	1	0	0	0	0	0
168.75	0	0	2	1	0	1	0
191.25	0	0	7	5	1	1	1
213.75	1	0	0	0	1	4	0
236.25	0	1	1	0	1	1	0
258.75	0	0	1	0	1	2	0
281.25	0	0	0	0	2	0	0
303.75	0	1	0	1	1	0	0
326.25	0	1	1	2	1	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	4	3	2	1	0
11.25	0	2	3	2	0	0	0
33.75	0	0	0	0	0	1	0
56.25	0	0	0	1	0	0	0
78.75	0	0	1	0	0	0	0
101.25	0	1	0	0	0	0	0
123.75	0	0	0	0	0	0	0
146.25	0	0	0	0	0	0	0
168.75	0	0	2	5	0	2	0
191.25	0	1	2	4	1	0	0
213.75	0	0	2	1	3	0	1
236.25	0	0	2	0	1	3	1
258.75	0	0	1	0	1	2	2
281.25	0	0	0	1	0	2	0
303.75	0	1	0	1	0	0	0
326.25	0	1	1	4	1	1	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	3	14	19	17	5	0
11.25	2	3	10	10	2	0	0
33.75	1	2	6	4	3	0	7
56.25	0	1	0	0	2	0	0
78.75	0	1	0	0	0	0	0
101.25	0	1	0	0	0	0	0
123.75	0	3	0	2	0	0	0
146.25	0	1	2	8	0	0	0
168.75	0	0	4	11	6	1	2
191.25	0	2	9	11	10	9	0
213.75	0	4	1	7	15	10	14
236.25	0	3	1	5	7	9	10
258.75	0	2	0	5	1	10	0
281.25	0	3	2	4	10	9	2
303.75	0	5	8	19	7	0	0
326.25	0	7	23	22	4	8	2

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	5	17	24	17	0	1
11.25	0	6	9	15	1	0	0
33.75	0	0	5	4	2	0	2
56.25	0	2	2	3	3	0	0
78.75	0	1	0	1	0	0	0
101.25	0	2	1	0	0	0	0
123.75	0	1	1	1	2	0	0
146.25	0	2	3	12	8	0	0
168.75	0	1	7	17	14	4	0
191.25	0	2	5	11	28	12	13
213.75	0	4	5	10	22	22	43
236.25	1	1	4	7	8	10	16
258.75	0	2	3	5	5	2	5
281.25	0	1	2	4	12	1	4
303.75	0	4	9	19	7	4	4
326.25	0	2	12	15	7	9	1

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	11	12	9	8	0	0
11.25	0	3	14	9	0	0	0
33.75	0	1	13	6	2	0	0
56.25	0	1	2	5	1	0	0
78.75	0	3	4	0	0	0	0
101.25	0	2	0	0	0	0	0
123.75	0	3	6	4	0	0	0
146.25	0	1	5	5	8	1	0
168.75	0	5	6	12	23	2	0
191.25	0	1	22	23	15	9	3
213.75	0	6	11	12	11	5	9
236.25	0	3	13	8	2	2	3
258.75	1	3	6	4	9	2	0
281.25	2	5	4	4	3	5	0
303.75	0	1	12	10	16	13	1
326.25	0	1	13	14	6	7	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	2	4	2	2	0	0
11.25	0	2	9	1	0	0	0
33.75	0	0	4	2	0	0	0
56.25	0	2	5	0	0	0	0
78.75	0	3	1	0	0	0	0
101.25	0	0	1	0	0	0	0
123.75	1	3	5	0	0	0	0
146.25	1	3	4	3	0	1	0
168.75	0	2	5	9	3	1	0
191.25	0	3	14	8	8	4	2
213.75	0	4	10	10	3	1	1
236.25	0	4	3	2	0	1	0
258.75	0	4	5	2	3	0	0
281.25	0	1	4	2	2	1	0
303.75	0	4	4	5	4	3	0
326.25	0	4	7	6	3	0	0

Table 5-3 2nd Quarter, 33 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 04/01/97 TO HOUR 23 ON 06/30/97

The total hours are 2184, 1822 read and 362 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	9	0	0	0	0
11.25	1	2	8	3	2	0	0
33.75	1	1	5	5	3	0	0
56.25	0	5	7	0	1	0	0
78.75	1	8	1	1	0	0	0
101.25	0	2	5	1	0	0	0
123.75	2	9	8	4	0	0	0
146.25	1	12	12	2	0	0	0
168.75	0	17	8	3	0	0	0
191.25	0	3	11	12	7	0	0
213.75	0	3	6	8	8	2	1
236.25	0	5	3	3	2	0	0
258.75	0	4	6	2	2	0	2
281.25	1	6	3	2	3	0	4
303.75	1	4	8	1	1	0	0
326.25	0	6	7	8	0	0	2

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	1	0	1	0	1	0	0
11.25	0	2	1	1	1	0	0
33.75	1	2	2	0	1	0	0
56.25	0	2	1	1	1	0	0
78.75	0	2	1	0	0	0	0
101.25	0	0	1	1	0	0	0
123.75	0	5	3	0	0	0	0
146.25	0	2	5	4	0	0	0
168.75	0	0	4	0	0	0	0
191.25	0	2	3	2	0	0	0
213.75	0	3	1	2	1	0	1
236.25	1	1	2	3	0	0	0
258.75	0	0	0	1	1	0	2
281.25	0	2	2	1	3	1	1
303.75	0	0	2	4	0	0	0
326.25	0	0	1	1	0	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	1	0	1	0	0
11.25	0	0	1	3	0	0	0
33.75	0	0	1	2	2	0	0
56.25	0	0	4	0	0	0	0
78.75	0	2	1	0	0	0	0
101.25	0	1	0	0	0	0	0
123.75	0	2	2	0	0	0	0
146.25	0	1	6	0	0	0	0
168.75	0	1	3	0	0	0	0
191.25	0	2	1	3	0	0	0
213.75	0	0	1	4	2	3	0
236.25	0	1	1	4	1	1	0
258.75	0	2	1	3	2	0	0
281.25	0	0	2	2	0	3	0
303.75	0	0	3	0	3	0	0
326.25	0	0	2	1	0	0	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	1	8	7	4	0	1
11.25	0	5	4	5	0	0	0
33.75	0	2	5	7	2	0	0
56.25	1	2	8	5	2	0	0
78.75	0	4	9	4	0	0	0
101.25	1	2	9	2	0	0	0
123.75	0	6	6	1	0	0	0
146.25	0	3	14	12	1	0	0
168.75	1	3	23	17	2	0	0
191.25	0	5	14	16	6	0	0
213.75	0	1	8	19	8	3	0
236.25	0	3	8	7	12	5	1
258.75	0	2	8	5	8	3	6
281.25	1	0	7	10	20	4	1
303.75	0	0	9	12	13	2	0
326.25	0	1	4	24	12	4	3

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	7	12	13	4	0	0
11.25	0	4	8	3	3	0	0
33.75	0	1	4	0	1	0	0
56.25	0	2	13	2	1	0	0
78.75	0	2	6	2	0	0	0
101.25	1	3	2	0	0	0	0
123.75	1	3	4	1	0	0	0
146.25	1	4	9	4	0	0	0
168.75	0	11	24	10	1	0	0
191.25	0	10	19	9	0	0	0
213.75	0	5	4	6	1	1	0
236.25	0	7	8	1	3	0	0
258.75	0	5	8	3	6	1	2
281.25	0	4	12	18	7	3	2
303.75	0	2	9	37	23	3	0
326.25	0	8	19	26	18	10	0

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	7	13	0	1	0	0
11.25	0	3	8	0	0	0	0
33.75	0	5	9	0	0	0	0
56.25	1	4	9	0	0	0	0
78.75	1	2	7	0	0	0	0
101.25	1	2	1	0	0	0	0
123.75	0	1	0	0	0	0	0
146.25	0	7	15	5	1	0	0
168.75	0	16	16	11	0	0	0
191.25	0	5	18	6	0	0	0
213.75	0	4	11	3	0	1	0
236.25	2	9	6	1	0	0	0
258.75	0	1	2	0	0	0	0
281.25	0	2	7	1	1	0	0
303.75	0	2	7	11	0	0	0
326.25	1	2	12	11	0	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	11	1	0	0	0
11.25	0	6	10	0	0	0	0
33.75	0	4	0	0	0	0	0
56.25	0	7	3	0	0	0	0
78.75	0	2	1	0	0	0	0
101.25	0	3	0	0	0	0	0
123.75	0	3	1	0	0	0	0
146.25	0	3	1	2	0	0	0
168.75	0	4	20	3	1	0	0
191.25	0	4	5	6	1	0	0
213.75	0	2	8	1	0	0	0
236.25	2	2	5	0	0	0	0
258.75	0	1	3	0	0	0	0
281.25	0	1	1	0	0	0	0
303.75	0	1	0	1	0	0	0
326.25	0	2	7	1	0	0	0

Table 5-4 2nd Quarter, 245 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 04/01/97 TO HOUR 23 ON 06/30/97

The total hours are 2184, 1821 read and 363 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	2	4	8	1	1	0	0
11.25	0	2	6	3	2	4	0
33.75	0	1	4	4	2	0	0
56.25	0	1	8	1	1	0	0
78.75	0	1	1	1	0	0	0
101.25	0	3	5	0	0	0	0
123.75	0	5	7	7	0	0	0
146.25	0	7	10	6	0	0	0
168.75	0	11	8	7	0	0	0
191.25	1	7	9	8	3	1	0
213.75	0	5	8	15	11	2	1
236.25	0	4	5	3	2	1	0
258.75	0	4	3	2	1	1	2
281.25	0	3	4	2	4	1	4
303.75	0	3	3	7	1	0	0
326.25	2	6	13	8	4	0	2

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	2	0	1	0	0
11.25	1	0	1	1	0	1	0
33.75	0	0	0	2	0	1	0
56.25	0	3	2	0	1	0	0
78.75	0	0	1	0	0	0	0
101.25	0	3	2	1	0	0	0
123.75	0	1	4	1	0	0	0
146.25	0	1	5	2	1	0	0
168.75	0	1	4	3	0	0	0
191.25	0	4	3	1	0	0	0
213.75	0	1	0	2	2	1	1
236.25	0	0	3	2	1	0	0
258.75	0	0	1	2	1	0	2
281.25	0	0	3	2	1	3	1
303.75	0	2	0	4	1	0	0
326.25	0	0	1	0	0	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	2	1	1	0	0
11.25	0	0	1	2	0	0	0
33.75	0	0	1	1	1	1	0
56.25	0	2	4	1	0	0	0
78.75	0	1	1	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	1	1	0	0	0	0
146.25	0	0	5	3	0	0	0
168.75	0	1	2	1	0	0	0
191.25	0	2	0	1	1	0	0
213.75	1	0	3	4	2	3	0
236.25	0	2	1	4	0	2	1
258.75	0	0	3	3	2	0	0
281.25	0	0	0	1	2	1	2
303.75	0	0	4	0	1	1	0
326.25	2	0	0	1	1	0	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	2	6	5	5	0	1
11.25	0	4	5	3	2	0	0
33.75	0	0	5	6	3	1	0
56.25	0	1	4	9	1	1	0
78.75	0	2	4	7	0	0	0
101.25	0	0	6	6	0	0	0
123.75	0	1	5	2	0	0	0
146.25	1	5	13	8	4	0	0
168.75	1	3	18	14	3	0	0
191.25	0	3	11	22	6	1	0
213.75	0	3	8	22	10	3	3
236.25	0	3	3	7	10	9	4
258.75	0	0	9	4	8	6	6
281.25	1	1	6	15	13	12	4
303.75	0	2	6	8	11	6	1
326.25	0	1	22	7	8	6	5

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	1	4	8	4	3	0
11.25	0	1	2	8	6	0	0
33.75	0	0	3	5	2	1	0
56.25	0	0	5	3	1	2	0
78.75	1	0	5	6	0	0	0
101.25	0	0	8	1	1	1	0
123.75	0	2	2	1	0	0	0
146.25	0	3	7	1	3	0	0
168.75	1	1	8	6	5	1	0
191.25	0	6	10	13	3	0	0
213.75	0	2	10	14	4	0	2
236.25	1	3	6	6	0	1	2
258.75	0	5	5	3	1	3	6
281.25	0	2	8	13	19	3	11
303.75	1	0	8	22	36	27	12
326.25	0	3	8	22	18	14	10

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	4	4	7	3	0	0
11.25	0	4	4	2	0	0	0
33.75	0	1	9	4	1	0	0
56.25	0	1	5	2	0	0	0
78.75	1	1	4	7	1	0	0
101.25	0	3	3	3	0	0	0
123.75	0	1	3	1	0	0	0
146.25	0	0	5	0	1	1	0
168.75	0	3	5	6	4	1	1
191.25	0	3	11	8	6	0	0
213.75	0	3	6	6	4	1	1
236.25	0	5	6	5	2	0	0
258.75	0	6	5	4	0	0	0
281.25	1	3	3	6	0	1	0
303.75	1	1	8	5	19	7	2
326.25	2	0	5	10	7	2	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	6	8	1	0	0
11.25	0	3	4	3	0	0	0
33.75	0	0	2	3	0	0	0
56.25	0	0	3	3	0	0	0
78.75	0	1	2	0	0	0	0
101.25	1	0	1	0	0	0	0
123.75	1	1	0	0	0	0	0
146.25	0	2	3	0	0	0	0
168.75	3	1	2	1	2	0	0
191.25	1	2	9	6	2	2	0
213.75	1	6	5	5	2	2	0
236.25	0	4	7	1	1	0	0
258.75	0	1	4	3	0	0	0
281.25	0	3	3	2	1	0	0
303.75	0	0	0	1	0	1	1
326.25	0	3	1	4	2	0	0

Table 5-5 3rd Quarter, 33 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 07/01/97 TO HOUR 23 ON 09/30/97

The total hours are 2208, 2092 read and 116 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	7	9	1	0	0	0
11.25	0	6	4	3	0	0	0
33.75	0	9	15	5	1	0	0
56.25	0	5	11	2	0	0	0
78.75	0	7	8	0	0	0	0
101.25	0	7	4	0	0	0	0
123.75	0	3	7	1	0	0	0
146.25	0	3	6	1	0	0	0
168.75	0	2	10	8	1	0	0
191.25	0	3	10	13	0	2	0
213.75	0	0	10	7	4	2	0
236.25	0	1	4	4	0	1	0
258.75	0	2	3	2	0	0	0
281.25	1	6	5	0	0	0	0
303.75	0	2	2	0	0	0	0
326.25	0	4	9	0	0	0	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	7	2	0	0	0
11.25	0	5	3	11	0	0	0
33.75	0	1	7	6	1	0	0
56.25	0	1	2	1	1	0	0
78.75	0	0	0	1	0	0	0
101.25	0	2	4	0	0	0	0
123.75	0	0	1	0	0	0	0
146.25	0	0	2	3	0	0	0
168.75	0	2	4	0	0	0	0
191.25	0	0	7	3	0	1	0
213.75	0	0	4	5	4	0	0
236.25	1	1	1	2	0	2	0
258.75	0	3	1	4	1	0	0
281.25	0	3	1	0	1	1	0
303.75	0	1	1	0	1	0	0
326.25	0	2	6	0	0	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	5	4	1	0	0
11.25	0	0	4	5	1	0	0
33.75	0	0	3	2	1	0	0
56.25	0	0	1	0	0	0	0
78.75	0	3	4	1	0	0	0
101.25	0	1	1	0	0	0	0
123.75	0	1	1	0	0	0	0
146.25	0	1	2	1	0	0	0
168.75	0	0	6	0	0	0	0
191.25	0	2	5	1	1	1	0
213.75	0	4	3	3	3	1	0
236.25	0	2	3	4	1	1	0
258.75	0	0	1	6	0	0	0
281.25	0	1	0	1	1	0	1
303.75	0	1	1	0	1	0	0
326.25	0	0	3	1	2	0	1

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	7	13	4	1	0	0
11.25	0	2	15	21	4	2	0
33.75	0	5	11	17	2	1	0
56.25	0	3	13	7	0	0	0
78.75	0	2	12	2	0	0	0
101.25	0	3	7	7	0	0	0
123.75	0	3	12	6	0	0	0
146.25	0	4	12	15	1	0	0
168.75	1	2	10	11	0	0	0
191.25	0	3	7	16	4	4	1
213.75	0	4	6	9	7	3	0
236.25	0	2	1	5	1	3	1
258.75	0	2	3	12	5	0	0
281.25	0	3	5	6	6	1	0
303.75	0	3	7	7	3	3	1
326.25	0	2	9	9	5	8	4

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	2	14	8	0	0	0
11.25	0	4	22	7	1	0	0
33.75	0	4	8	1	1	0	0
56.25	0	5	6	5	0	0	0
78.75	0	3	3	0	0	0	0
101.25	0	3	1	2	0	0	0
123.75	0	7	2	0	1	0	0
146.25	0	2	7	11	3	0	0
168.75	0	5	16	19	4	0	0
191.25	0	2	10	14	15	2	0
213.75	1	1	10	9	8	1	0
236.25	0	2	6	5	4	3	0
258.75	0	7	6	6	3	0	0
281.25	1	2	8	6	8	1	0
303.75	0	3	9	21	18	3	1
326.25	0	7	18	29	27	9	1

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	6	21	3	0	0	0
11.25	0	9	20	2	0	0	0
33.75	1	6	9	2	0	0	0
56.25	0	5	14	6	0	0	0
78.75	0	3	5	1	0	0	0
101.25	0	4	0	0	0	0	0
123.75	0	2	2	2	1	0	0
146.25	0	4	7	13	1	0	0
168.75	1	9	23	24	0	0	0
191.25	0	5	21	14	6	0	0
213.75	1	3	16	2	0	0	1
236.25	0	3	12	2	1	0	0
258.75	0	7	6	3	0	0	0
281.25	0	7	8	8	0	0	0
303.75	0	7	10	15	0	0	0
326.25	0	5	17	11	0	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	1	11	28	2	0	0	0
11.25	0	21	36	1	0	0	0
33.75	1	17	26	1	0	0	0
56.25	1	9	16	6	0	0	0
78.75	0	5	2	1	0	0	0
101.25	1	8	0	0	0	0	0
123.75	1	1	1	0	0	0	0
146.25	1	6	4	4	0	0	0
168.75	0	7	16	5	0	0	0
191.25	1	5	8	16	0	0	0
213.75	0	6	3	4	0	0	0
236.25	0	3	1	0	0	0	0
258.75	1	4	0	0	0	0	0
281.25	1	2	5	0	0	0	0
303.75	0	4	7	2	0	0	0
326.25	0	10	16	1	0	0	0

Table 5-6 3rd Quarter, 245 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 07/01/97 TO HOUR 23 ON 09/30/97

The total hours are 2208, 2092 read and 116 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	4	5	1	0	0	0
11.25	0	3	6	5	3	0	0
33.75	0	2	13	8	1	0	0
56.25	0	4	7	6	0	0	0
78.75	0	4	10	2	0	0	0
101.25	0	3	7	0	0	0	0
123.75	1	5	7	3	0	0	0
146.25	0	5	8	1	0	0	0
168.75	0	1	6	6	2	0	0
191.25	0	2	9	8	1	0	0
213.75	0	2	9	10	6	4	0
236.25	0	1	6	5	2	1	1
258.75	0	1	4	3	0	0	0
281.25	1	5	5	0	0	0	0
303.75	0	1	2	0	0	0	0
326.25	0	1	13	1	0	0	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	1	6	9	0	0	0
11.25	0	2	2	8	1	0	0
33.75	0	0	6	4	1	0	0
56.25	0	0	0	1	1	0	0
78.75	0	0	4	1	0	0	0
101.25	0	3	4	0	0	0	0
123.75	0	0	2	0	0	0	0
146.25	0	1	3	2	1	0	0
168.75	0	0	2	0	0	0	0
191.25	0	1	4	4	1	0	1
213.75	0	0	4	4	4	1	0
236.25	0	0	0	5	0	0	2
258.75	0	3	3	2	1	1	0
281.25	0	2	2	0	2	0	1
303.75	0	0	2	0	0	0	0
326.25	0	2	5	2	0	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	3	5	2	0	0
11.25	0	0	2	5	2	0	0
33.75	0	0	1	0	1	0	0
56.25	0	0	3	1	0	0	0
78.75	0	1	1	2	0	0	0
101.25	0	0	0	2	0	0	0
123.75	0	2	1	0	0	0	0
146.25	0	1	4	2	0	0	0
168.75	0	5	4	0	0	0	0
191.25	0	0	5	0	1	2	0
213.75	0	1	3	3	3	2	1
236.25	0	1	2	1	4	0	0
258.75	0	1	3	4	2	0	0
281.25	0	2	1	1	1	0	1
303.75	0	0	1	0	1	0	0
326.25	0	0	2	3	2	0	1

NRC CATEGORY D

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	2	12	16	2	2	0
11.25	0	2	6	20	3	2	2
33.75	0	5	8	13	3	1	0
56.25	0	2	8	2	0	0	0
78.75	0	2	14	7	0	0	0
101.25	1	1	6	8	0	0	0
123.75	0	3	5	10	1	0	0
146.25	0	3	8	13	2	0	0
168.75	0	3	11	10	3	0	0
191.25	0	1	10	11	2	4	3
213.75	0	3	4	14	9	4	3
236.25	0	1	2	5	4	1	4
258.75	0	3	3	8	5	3	0
281.25	1	2	5	7	6	5	0
303.75	0	1	7	8	1	5	3
326.25	2	3	8	9	4	3	10

NRC CATEGORY E

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	5	12	4	0	0
11.25	0	1	9	13	4	1	0
33.75	0	0	4	4	1	1	0
56.25	0	2	4	3	1	2	0
78.75	0	4	5	1	0	0	0
101.25	0	2	3	1	0	0	0
123.75	0	2	2	3	1	0	0
146.25	0	3	3	5	6	1	0
168.75	0	3	5	13	4	3	0
191.25	0	3	9	8	10	10	5
213.75	1	2	9	6	13	9	5
236.25	0	2	7	3	4	5	3
258.75	0	0	1	3	3	3	2
281.25	0	1	7	7	6	7	5
303.75	0	1	12	22	15	25	15
326.25	0	1	9	13	12	27	12

NRC CATEGORY F

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	9	16	3	0	0
11.25	0	0	6	11	1	0	0
33.75	0	2	8	4	1	0	0
56.25	0	6	10	5	5	3	0
78.75	0	2	9	1	1	1	0
101.25	0	2	1	3	0	0	0
123.75	0	3	5	0	0	0	0
146.25	0	2	5	4	4	1	3
168.75	0	4	9	10	10	0	0
191.25	0	0	4	20	11	5	2
213.75	0	1	8	8	10	1	1
236.25	1	3	10	8	2	2	0
258.75	1	2	10	2	0	0	0
281.25	0	1	4	10	5	8	0
303.75	0	3	9	8	15	11	0
326.25	0	2	9	15	10	2	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	6	20	14	2	0	0
11.25	0	3	20	5	3	0	0
33.75	0	2	16	6	0	0	0
56.25	0	0	11	4	2	4	1
78.75	0	3	1	4	3	2	0
101.25	1	4	5	0	0	0	0
123.75	0	1	4	1	0	0	0
146.25	0	2	4	1	1	0	0
168.75	0	9	9	3	3	0	0
191.25	0	3	12	13	4	0	0
213.75	0	3	9	9	4	0	0
236.25	0	2	9	4	1	0	0
258.75	0	4	3	1	0	0	0
281.25	0	2	2	3	2	0	0
303.75	0	2	2	9	7	0	0
326.25	0	3	14	24	9	0	0

Table 5-7 4th Quarter, 33 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 10/1/97 TO HOUR 23 ON 12/31/97

The total hours are 2208, 2148 read and 60 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	2	2	0	0	0	0
11.25	0	3	1	0	0	0	0
33.75	0	3	3	0	0	0	0
56.25	1	1	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	1	1	0	0	0	0
146.25	0	1	3	0	0	0	0
168.75	0	0	0	0	0	0	0
191.25	0	0	1	1	0	0	1
213.75	0	1	0	0	0	0	0
236.25	0	0	0	0	0	0	0
258.75	0	0	0	0	0	0	0
281.25	0	1	0	0	0	0	0
303.75	0	0	0	0	0	0	0
326.25	1	1	0	0	0	0	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	1	0	0	1	0	0
11.25	0	0	1	1	0	0	0
33.75	0	0	0	0	0	0	0
56.25	0	0	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	2	0	0	0	0	0
123.75	0	0	0	0	0	0	0
146.25	0	2	1	1	0	0	0
168.75	0	4	2	5	5	0	0
191.25	0	0	0	2	0	1	0
213.75	1	0	0	0	0	0	2
236.25	0	0	0	0	0	0	0
258.75	0	0	0	0	1	0	0
281.25	0	0	0	0	0	0	0
303.75	0	0	0	0	0	0	0
326.25	0	0	1	1	0	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	1	4	4	0	0	0
11.25	0	0	2	1	0	0	0
33.75	0	0	0	0	0	0	0
56.25	0	0	2	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	0	0	1	0	0	0
146.25	0	0	2	1	1	0	0
168.75	0	0	1	4	1	0	0
191.25	0	0	0	4	1	1	0
213.75	0	1	2	1	0	1	0
236.25	0	0	1	0	0	0	0
258.75	0	0	0	1	3	0	0
281.25	0	0	1	0	1	0	0
303.75	0	0	0	0	1	0	0
326.25	0	0	4	0	2	0	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	6	25	12	3	0	0
11.25	0	7	20	11	1	0	0
33.75	0	10	15	8	0	0	0
56.25	1	3	4	0	0	0	0
78.75	0	4	2	0	0	0	0
101.25	0	2	2	0	0	0	0
123.75	0	0	7	5	0	0	0
146.25	0	6	16	20	2	1	0
168.75	1	3	16	19	1	0	0
191.25	0	3	11	5	7	9	2
213.75	0	1	7	3	4	11	7
236.25	0	3	5	1	0	2	0
258.75	2	1	2	1	3	0	0
281.25	0	1	8	6	1	2	0
303.75	0	6	24	14	4	2	0
326.25	0	11	35	34	1	0	0

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	13	18	4	0	0	0
11.25	2	10	15	3	0	0	0
33.75	1	3	16	7	0	0	0
56.25	2	5	3	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	1	3	1	0	0
123.75	2	7	11	8	6	0	0
146.25	0	7	30	37	23	1	0
168.75	1	12	28	32	11	1	1
191.25	0	9	18	15	21	13	1
213.75	2	17	12	9	11	7	1
236.25	0	5	8	5	1	0	0
258.75	1	15	7	6	2	0	0
281.25	1	8	29	15	6	1	0
303.75	0	12	43	23	5	1	0
326.25	0	17	40	12	1	0	0

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	7	20	0	0	0	0
11.25	0	9	15	0	0	0	0
33.75	0	4	9	3	0	0	0
56.25	0	0	2	0	0	0	0
78.75	2	0	0	0	0	0	0
101.25	0	1	0	0	0	0	0
123.75	0	1	3	1	0	0	0
146.25	0	3	28	20	6	0	0
168.75	0	3	36	15	6	2	0
191.25	2	13	15	14	10	3	0
213.75	1	9	11	4	2	0	0
236.25	0	8	9	1	0	0	0
258.75	2	13	9	4	1	0	0
281.25	3	7	18	6	0	0	0
303.75	0	13	30	18	2	0	0
326.25	0	12	28	7	0	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	1	18	19	0	0	0	0
11.25	1	12	16	0	0	0	0
33.75	1	6	9	4	0	0	0
56.25	1	3	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	2	0	1	0	0	0
146.25	3	7	11	13	0	0	0
168.75	1	9	20	12	2	0	0
191.25	1	10	11	1	0	0	0
213.75	0	11	5	1	0	0	0
236.25	0	14	8	1	0	0	0
258.75	0	6	4	1	0	0	0
281.25	0	20	9	1	0	0	0
303.75	0	12	22	5	0	0	0
326.25	3	15	30	3	0	0	0

Table 5-8 4th Quarter, 245 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 10/1/97 TO HOUR 23 ON 12/31/97

The total hours are 2208, 2147 read and 61 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	4	1	0	0	0	0
11.25	1	2	3	0	0	0	0
33.75	1	1	0	0	0	0	0
56.25	0	1	0	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	2	0	0	0	0	0
146.25	0	0	3	1	0	0	0
168.75	0	0	0	0	0	0	0
191.25	1	0	1	0	1	0	1
213.75	0	0	1	0	0	0	0
236.25	0	0	0	0	0	0	0
258.75	1	0	0	0	0	0	0
281.25	0	0	0	0	0	0	0
303.75	0	0	0	0	0	0	0
326.25	0	1	2	0	0	0	0

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	1	1	0	0	0
11.25	0	1	1	0	0	0	0
33.75	0	1	0	0	0	0	0
56.25	0	0	0	0	0	0	0
78.75	0	1	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	0	0	0	0	0	0
146.25	0	1	2	1	0	0	0
168.75	0	2	0	6	4	1	0
191.25	0	0	0	2	1	0	1
213.75	0	0	0	0	0	0	2
236.25	1	0	0	0	0	0	0
258.75	0	0	0	0	1	0	0
281.25	0	0	0	0	0	0	0
303.75	0	0	0	0	0	0	0
326.25	1	0	1	0	2	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	1	4	0	0	0
11.25	0	1	1	0	0	0	0
33.75	0	0	0	0	0	0	0
56.25	0	0	2	0	0	0	0
78.75	0	0	0	0	0	0	0
101.25	0	0	0	0	0	0	0
123.75	0	0	0	1	0	0	0
146.25	0	0	2	1	1	0	0
168.75	0	0	0	3	2	0	0
191.25	0	0	2	3	2	0	0
213.75	0	0	2	0	0	0	2
236.25	0	0	1	0	0	0	0
258.75	0	0	1	0	3	2	0
281.25	0	1	0	0	0	0	0
303.75	0	0	1	0	1	0	0
326.25	0	0	4	4	2	0	0

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	7	19	12	7	0	0
11.25	0	4	13	18	2	0	0
33.75	0	3	12	6	2	0	0
56.25	0	4	3	0	0	0	0
78.75	0	2	4	0	0	0	0
101.25	0	1	1	0	0	0	0
123.75	0	6	3	2	1	0	0
146.25	1	4	13	19	7	0	0
168.75	0	4	14	21	5	0	2
191.25	0	4	9	10	3	8	7
213.75	0	2	5	2	2	3	21
236.25	0	1	2	3	1	0	1
258.75	0	2	3	1	3	0	0
281.25	0	3	7	9	2	2	4
303.75	0	3	22	21	7	0	0
326.25	0	5	26	39	7	0	0

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	12	24	9	3	0	0
11.25	0	5	15	8	2	0	0
33.75	0	1	11	10	4	0	0
56.25	0	6	5	1	0	0	0
78.75	0	3	1	0	0	0	0
101.25	1	6	1	0	0	0	0
123.75	2	6	6	8	3	3	0
146.25	0	3	24	34	17	7	1
168.75	0	3	17	14	27	16	4
191.25	0	5	10	11	26	16	18
213.75	2	7	5	7	8	11	18
236.25	0	5	3	4	2	2	1
258.75	0	5	14	6	7	2	1
281.25	0	6	7	12	16	16	4
303.75	1	4	22	48	10	4	0
326.25	0	6	24	17	8	0	0

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	4	14	11	1	0	0
11.25	0	7	7	11	0	0	0
33.75	0	2	7	5	4	0	0
56.25	0	0	4	3	0	0	0
78.75	0	4	3	0	0	0	0
101.25	1	1	3	0	0	0	0
123.75	0	3	1	5	0	0	0
146.25	0	3	11	18	4	1	0
168.75	0	6	12	16	15	7	1
191.25	0	8	12	20	10	6	5
213.75	0	4	5	8	5	12	5
236.25	0	3	8	2	2	0	0
258.75	0	4	8	5	7	2	0
281.25	0	4	7	7	12	9	2
303.75	1	5	13	11	22	3	0
326.25	0	2	9	19	9	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	3	16	2	0	0	0
11.25	0	4	13	7	0	0	0
33.75	0	3	5	12	4	0	0
56.25	0	2	6	2	0	0	0
78.75	0	2	1	0	0	0	0
101.25	2	1	2	0	0	0	0
123.75	0	2	12	3	1	0	0
146.25	1	4	25	14	5	0	0
168.75	0	4	18	10	2	2	0
191.25	0	6	15	13	2	1	0
213.75	1	3	11	3	0	0	0
236.25	0	5	12	2	1	0	0
258.75	0	5	5	1	2	1	0
281.25	0	3	3	3	9	2	0
303.75	0	2	9	9	19	0	0
326.25	0	1	7	12	8	0	0

Table 5-9 Year 1997, 33 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 01/01/97 TO HOUR 23 ON 12/31/97

The total hours are 8760, 8077 read and 683 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	18	25	5	5	0	0
11.25	2	16	19	7	3	0	0
33.75	1	15	30	12	6	2	0
56.25	1	14	18	2	1	0	0
78.75	1	16	9	1	0	0	0
101.25	1	9	11	1	0	0	0
123.75	2	18	22	11	1	0	0
146.25	1	17	31	9	0	0	0
168.75	0	23	20	14	4	0	0
191.25	0	8	25	27	8	2	1
213.75	0	5	17	15	13	4	1
236.25	0	8	8	7	2	1	0
258.75	1	8	10	5	3	0	2
281.25	2	13	12	2	3	0	4
303.75	1	7	19	5	1	0	0
326.25	1	14	35	20	9	0	2

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	1	1	9	4	2	1	0
11.25	0	7	7	13	1	0	0
33.75	1	4	9	9	2	0	0
56.25	0	3	3	2	2	0	0
78.75	0	2	1	1	0	0	0
101.25	0	4	5	1	0	0	0
123.75	0	6	4	0	0	0	0
146.25	0	4	8	9	1	0	0
168.75	1	7	16	8	7	0	0
191.25	0	3	13	8	0	6	0
213.75	1	3	6	7	7	1	3
236.25	2	2	4	5	1	2	0
258.75	0	3	1	6	5	0	2
281.25	0	5	3	2	6	2	1
303.75	0	1	4	7	1	0	0
326.25	0	3	11	3	1	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	4	16	12	3	0	0
11.25	0	2	9	9	2	0	0
33.75	0	2	4	5	3	0	0
56.25	0	0	7	0	0	0	0
78.75	0	5	5	1	0	0	0
101.25	0	2	1	0	0	0	0
123.75	0	3	3	2	1	0	0
146.25	0	5	11	5	2	0	0
168.75	0	2	12	7	1	0	0
191.25	0	5	7	10	3	3	0
213.75	0	6	7	9	8	6	0
236.25	0	4	5	8	3	5	0
258.75	0	3	2	11	5	2	0
281.25	0	1	4	3	2	5	1
303.75	0	1	7	0	5	0	0
326.25	0	0	11	4	7	1	1

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	19	62	37	14	0	1
11.25	1	16	52	39	6	3	0
33.75	0	18	33	35	5	4	3
56.25	3	11	25	13	2	0	0
78.75	0	10	23	6	0	0	0
101.25	1	9	20	9	0	0	0
123.75	1	10	28	16	0	0	0
146.25	1	17	48	57	8	1	0
168.75	4	12	59	58	16	0	0
191.25	1	13	35	46	33	23	8
213.75	0	7	25	39	25	22	10
236.25	0	12	15	15	23	18	3
258.75	2	8	16	20	23	6	6
281.25	2	8	29	26	38	11	1
303.75	0	17	66	41	26	8	3
326.25	0	18	82	90	30	15	7

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	24	58	30	4	2	0
11.25	2	19	57	16	4	0	0
33.75	1	13	34	12	3	0	1
56.25	2	12	25	7	1	0	0
78.75	0	6	10	2	0	0	0
101.25	1	8	5	8	1	0	0
123.75	3	19	24	19	11	0	0
146.25	1	17	64	80	40	1	0
168.75	1	33	75	78	31	8	1
191.25	0	27	54	57	58	42	8
213.75	3	27	32	42	32	16	4
236.25	0	19	29	14	17	8	0
258.75	1	31	25	20	13	5	3
281.25	2	19	63	48	23	8	4
303.75	0	25	89	97	50	7	2
326.25	0	39	107	95	56	19	1

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	33	72	3	1	0	0
11.25	0	33	60	2	0	0	0
33.75	1	21	36	8	0	0	0
56.25	1	12	26	7	0	0	0
78.75	3	9	13	1	0	0	0
101.25	1	9	3	0	0	0	0
123.75	0	4	11	10	2	0	0
146.25	0	23	70	81	15	1	0
168.75	1	35	105	66	13	3	0
191.25	3	31	67	44	25	8	0
213.75	2	26	45	12	4	2	1
236.25	2	25	35	10	4	0	1
258.75	2	30	20	11	4	0	0
281.25	3	31	41	27	7	0	0
303.75	0	30	72	56	7	0	0
326.25	1	34	71	39	0	0	0

NRC CATEGORY G

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	3	42	68	3	0	0	0
11.25	1	41	66	1	0	0	0
33.75	4	28	38	6	0	0	0
56.25	2	19	19	6	0	0	0
78.75	0	8	3	1	0	0	0
101.25	1	12	0	0	0	0	0
123.75	2	11	2	1	0	0	0
146.25	4	22	18	31	3	1	0
168.75	2	27	68	31	6	1	0
191.25	3	26	31	26	1	0	1
213.75	0	27	24	6	0	0	0
236.25	2	25	16	3	1	0	0
258.75	2	19	10	4	0	0	0
281.25	2	31	19	3	0	0	0
303.75	1	21	43	10	0	0	0
326.25	4	35	66	8	0	0	0

Table 5-10 Year 1997, 245 FT AGL.

JOINT FREQUENCY DISTRIBUTION FOR THE TIME PERIOD FROM HOUR 00 ON 01/01/97 TO HOUR 23 ON 12/31/97

The total hours are 8760, 8075 read and 685 missing.

NRC CATEGORY A

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	2	15	31	12	13	0	0
11.25	1	8	20	8	7	4	0
33.75	1	6	22	13	4	5	0
56.25	0	8	19	8	1	0	0
78.75	0	7	12	3	0	0	0
101.25	0	8	12	0	0	0	0
123.75	1	15	14	11	0	0	0
146.25	0	14	26	14	2	0	0
168.75	0	15	19	23	4	0	0
191.25	2	12	23	19	7	1	1
213.75	0	10	21	28	17	7	1
236.25	0	7	13	8	4	3	1
258.75	1	7	8	6	1	2	2
281.25	1	8	12	2	4	1	4
303.75	0	6	10	8	1	0	0
326.25	2	10	37	18	8	1	2

NRC CATEGORY B

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	1	11	12	2	1	0
11.25	1	3	5	9	1	1	0
33.75	0	1	7	8	2	1	0
56.25	0	4	2	1	2	0	0
78.75	0	2	5	1	0	0	0
101.25	0	6	6	1	0	0	0
123.75	0	1	6	1	0	0	0
146.25	0	4	10	5	2	0	0
168.75	0	3	8	10	4	2	0
191.25	0	5	14	12	3	1	3
213.75	1	1	4	6	7	6	3
236.25	1	1	4	7	2	1	2
258.75	0	3	5	4	4	3	2
281.25	0	2	5	2	5	3	2
303.75	0	3	2	5	2	0	0
326.25	1	3	8	4	3	0	0

NRC CATEGORY C

	MPH						
deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
0.00	0	0	10	13	5	1	0
11.25	0	3	7	9	2	0	0
33.75	0	0	2	1	2	2	0
56.25	0	2	9	3	0	0	0
78.75	0	2	3	2	0	0	0
101.25	0	1	0	2	0	0	0
123.75	0	3	2	1	0	0	0
146.25	0	1	11	6	1	0	0
168.75	0	6	8	9	2	2	0
191.25	0	3	9	8	5	2	0
213.75	1	1	10	8	8	5	4
236.25	0	3	6	5	5	5	2
258.75	0	1	8	7	8	4	2
281.25	0	3	1	3	3	3	3
303.75	0	1	6	1	3	1	0
326.25	2	1	7	12	6	1	1

NRC CATEGORY D

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	2	14	51	52	31	7	1
11.25	2	13	34	51	9	2	2
33.75	1	10	31	29	11	2	7
56.25	0	8	15	11	3	1	0
78.75	0	7	22	14	0	0	0
101.25	1	3	13	14	0	0	0
123.75	0	13	13	16	2	0	0
146.25	2	13	36	48	13	0	0
168.75	1	10	47	56	17	1	4
191.25	0	10	39	54	21	22	10
213.75	0	12	18	45	36	20	41
236.25	0	8	8	20	22	19	19
258.75	0	7	15	18	17	19	6
281.25	2	9	20	35	31	28	10
303.75	0	11	43	56	26	11	4
326.25	2	16	79	77	23	17	17

NRC CATEGORY E

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	18	50	53	28	3	1
11.25	0	13	35	44	13	1	0
33.75	0	1	23	23	9	2	2
56.25	0	10	16	10	5	4	0
78.75	1	8	11	8	0	0	0
101.25	1	10	13	2	1	1	0
123.75	2	11	11	13	6	3	0
146.25	0	11	37	52	34	8	1
168.75	1	8	37	50	50	24	4
191.25	0	16	34	43	67	38	36
213.75	3	15	29	37	47	42	68
236.25	2	11	20	20	14	18	22
258.75	0	12	23	17	16	10	14
281.25	0	10	24	36	53	27	24
303.75	2	9	51	111	68	60	31
326.25	0	12	53	67	45	50	23

NRC CATEGORY F

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	1	22	39	43	15	0	0
11.25	0	14	31	33	1	0	0
33.75	0	6	37	19	8	0	0
56.25	0	8	21	15	6	3	0
78.75	1	10	20	8	2	1	0
101.25	1	8	7	6	0	0	0
123.75	0	10	15	10	0	0	0
146.25	0	6	26	27	17	4	3
168.75	0	18	32	44	52	10	2
191.25	0	12	49	71	42	20	10
213.75	0	14	30	34	30	19	16
236.25	1	14	37	23	8	4	3
258.75	2	15	29	15	16	4	0
281.25	3	13	18	27	20	23	2
303.75	2	10	42	34	72	34	3
326.25	2	5	36	58	32	11	0

NRC CATEGORY G

deg	0.07	0.60	3.00	7.00	12.00	18.00	24.00
			MPH				
0.00	0	11	46	26	5	0	0
11.25	0	12	46	16	3	0	0
33.75	0	5	27	23	4	0	0
56.25	0	4	25	9	2	4	1
78.75	0	9	5	4	3	2	0
101.25	4	5	9	0	0	0	0
123.75	2	7	21	4	1	0	0
146.25	2	11	36	18	6	1	0
168.75	3	16	34	23	10	3	0
191.25	1	14	50	40	16	7	2
213.75	2	16	35	27	9	3	1
236.25	0	15	31	9	3	1	0
258.75	0	14	17	7	5	1	0
281.25	0	9	12	10	14	3	0
303.75	0	8	15	24	30	4	1
326.25	0	11	29	46	22	0	0

6.0 DOSE ASSESSMENT -- IMPACT ON MAN

Liquid Effluents - The doses to the maximum individual from WNP-2 liquid effluents were calculated using the NRC LADTAP II computer code and site specific input parameters.

Table 6-1 lists the doses to the maximum individual by calendar quarter, along with the cumulative total body and maximum organ values. Doses by calendar quarters to the average exposed individual are listed in Table 6-2. The 50-mile population doses by calendar quarter are listed in Table 6-3. Table 6-4 provides annual doses to the average individual and 50-mile population doses from liquid effluents. All doses were calculated using the NRC LADTAP II computer code.

Gaseous Effluents - The NRC GASPAR II computer code was used to calculate doses at and beyond the site boundary. Table 6-5 lists the annual 50-mile dose using values obtained from the ALARA annual integrated population dose summary (person-rem). Table 6-5 also provides the annual individual doses associated with each pathway. These values were obtained by dividing the ALARA integrated dose (person-rem) by the 50-mile population (252,356 for year 1987) and converting to mrem. The GASPAR II runs use quarterly and annual meteorological data and site specific input parameters.

Exposure to "A Member of the Public"

The WNP-2 Visitor Center was evaluated for assessment of radiation doses to "Members of the Public" due to their activities within the site boundary. The ODCM assumes an eight (8) hour per year occupancy by "A Member of the Public" at the Visitor Center. The dose assessment resulted in an annual calculated total body dose of 3.81E-05 mrem. The annual thyroid dose was 3.91E-05 mrem and the maximum dose to any other organ was 4.67E-05 mrem. The air dose contribution was as follows; Beta air dose was 4.22E-03 mrad/yr and the Gamma air dose was 1.18E-02 mrad/yr.

The 1997 TLD summary showed no significant change from pre-operational values. Based on one sigma error, the maximum direct radiation exposure to the public for calendar year 1997 was less than 10 mrem.

Table 6-1A Maximum Individual Doses From Liquid Effluents:
First and Second Quarters -- 1997

1st Quarter				
Pathway	Total Body (mrem/qtr)	1997 Cumulative Total Body (mrem/yr)	Max. Organ (mrem/qtr)	1997 Cumulative Max. Organ (mrem/yr)
Fishing	4.24E-06	4.24E-06	6.50E-06	6.50E-06
Drinking	6.64E-09	6.64E-09	4.81E-09	4.81E-09
Shoreline	5.59E-08	5.59E-08	3.11E-07	3.11E-07
Swimming	8.40E-11	8.40E-11	4.67E-10	4.67E-10
Boating	9.33E-09	9.33E-09	9.33E-09	9.33E-09
Vegetables	3.30E-08	3.30E-08	4.44E-08	4.44E-08
Leafy Veg.	4.54E-09	4.54E-09	3.29E-09	3.29E-09
Milk	3.32E-09	3.32E-09	5.00E-09	5.00E-09
Meat	1.52E-09	1.52E-09	7.73E-10	7.73E-10
Total	4.35E-06	4.35E-06	6.88E-06	6.88E-06

2nd Quarter				
Pathway	Total Body (mrem/qtr)	1997 Cumulative Total Body (mrem/yr)	Max. Organ (mrem/qtr)	1997 Cumulative Max. Organ (mrem/yr)
Fishing	8.24E-06	1.25E-05	1.23E-05	1.88E-05
Drinking	1.99E-07	2.06E-07	1.41E-07	1.46E-07
Shoreline	9.49E-08	1.51E-07	5.27E-07	8.38E-07
Swimming	1.42E-10	2.26E-10	7.91E-10	1.26E-09
Boating	1.58E-08	2.51E-08	1.58E-08	2.51E-08
Vegetables	1.57E-07	6.60E-08	2.28E-05	8.88E-08
Leafy Veg.	2.45E-08	9.08E-09	1.71E-08	6.58E-09
Milk	4.58E-08	4.91E-08	6.46E-08	6.96E-08
Meat	1.69E-08	1.84E-08	1.01E-08	1.09E-08
Total	8.79E-06	1.30E-05	3.59E-05	2.00E-05

Table 6-1B Maximum Individual Doses From Liquid Effluents:
Third and Fourth Quarters -- 1997

3rd Quarter				
Pathway	Total Body (mrem/qtr)	1997 Cumulative Total Body (mrem/yr)	Max. Organ (mrem/qtr)	1997 Cumulative Max. Organ (mrem/yr)
Fishing	0.00E+00	1.25E-05	0.00E+00	1.88E-05
Drinking	0.00E+00	2.06E-07	0.00E+00	1.46E-07
Shoreline	0.00E+00	1.51E-07	0.00E+00	8.38E-07
Swimming	0.00E+00	2.26E-10	0.00E+00	1.26E-09
Boating	0.00E+00	2.51E-08	0.00E+00	2.51E-08
Vegetables	0.00E+00	6.60E-08	0.00E+00	8.88E-08
Leafy Veg.	0.00E+00	9.08E-09	0.00E+00	6.58E-09
Milk	0.00E+00	4.91E-08	0.00E+00	6.96E-08
Meat	0.00E+00	1.84E-08	0.00E+00	1.09E-08
Total	0.00E+00	1.30E-05	0.00E+00	2.00E-05

4th Quarter				
Pathway	Total Body (mrem/qtr)	1997 Cumulative Total Body (mrem/yr)	Max. Organ (mrem/qtr)	1997 Cumulative Max. Organ (mrem/yr)
Fishing	9.03E-08	1.26E-05	2.14E-07	1.90E-05
Drinking	1.76E-08	2.23E-07	1.83E-08	1.64E-07
Shoreline	3.36E-08	1.84E-07	3.36E-08	8.72E-07
Swimming	5.11E-11	2.77E-10	5.11E-11	1.31E-09
Boating	1.02E-09	2.62E-08	1.02E-09	2.62E-08
Vegetables	8.95E-08	1.56E-07	1.59E-07	2.48E-07
Leafy Veg.	5.58E-09	1.47E-08	1.75E-08	2.41E-08
Milk	9.75E-09	5.89E-08	1.12E-08	8.08E-08
Meat	4.03E-09	2.25E-08	8.52E-09	1.94E-08
Total	2.51E-07	1.33E-05	4.63E-07	2.04E-05

* Age Group - Adult: Maximum individual resides at Richland and fishes near the WNP-2 outfall area

Table 6-2 Average Individual Doses From Liquid Effluents -- 1997

Pathway	1st Quarter		2nd Quarter	
	Total Body (mrem)	Max. Organ (mrem)	Total Body (mrem)	Max. Organ (mrem)
Fishing	1.39E-08	2.05E-08	2.71E-08	3.94E-08
Drinking	3.37E-09	3.17E-09	1.01E-07	1.01E-07
Shoreline	4.23E-09	4.23E-09	7.17E-09	7.17E-09
Swimming	1.87E-11	1.87E-11	3.16E-11	3.16E-11
Boating	4.67E-12	4.67E-12	7.91E-12	7.91E-12
Vegetables*	1.00E-08	3.34E-08	1.14E-07	1.54E-07
Leafy Veg.*	2.17E-09	9.60E-09	1.13E-08	2.39E-08
Milk*	1.84E-09	3.08E-09	2.86E-08	3.09E-08
Meat*	7.30E-10	3.58E-09	7.62E-09	1.25E-08
Total	3.63E-08	7.76E-08	2.97E-07	3.69E-07

Pathway	3rd Quarter		4th Quarter	
	Total Body (mrem)	Max. Organ (mrem)	Total Body (mrem)	Max. Organ (mrem)
Fishing	0.00E+00	0.00E+00	2.84E-10	3.19E-10
Drinking	0.00E+00	0.00E+00	1.73E-08	1.74E-08
Shoreline	0.00E+00	0.00E+00	4.57E-10	4.57E-10
Swimming	0.00E+00	0.00E+00	2.04E-12	2.04E-12
Boating	0.00E+00	0.00E+00	5.11E-13	5.11E-13
Vegetables*	0.00E+00	0.00E+00	1.35E-08	1.65E-08
Leafy Veg.*	0.00E+00	0.00E+00	1.21E-09	2.14E-09
Milk*	0.00E+00	0.00E+00	3.36E-09	3.49E-09
Meat*	0.00E+00	0.00E+00	9.56E-10	8.30E-10
Total	0.00E+00	0.00E+00	3.71E-08	4.11E-08

* Total population ALARA doses divided by the total population served from irrigated production; converted to mrem

Table 6-3 50-Mile Population Doses From Liquid Effluents -- 1997

Pathway	1st Quarter		2nd Quarter	
	Total Body (person-rem)	Max. Organ (person-rem)	Total Body (person-rem)	Max. Organ (person-rem)
Fishing	2.69E-08	4.90E-08	5.26E-08	9.36E-08
Drinking	2.64E-07	5.63E-07	7.75E-06	8.26E-06
Shoreline	7.43E-07	8.74E-07	1.26E-06	1.48E-06
Swimming	3.28E-09	3.28E-09	5.57E-09	5.57E-09
Boating	8.22E-10	8.22E-10	1.39E-09	1.39E-09
Vegetables	1.00E-07	3.34E-07	1.14E-06	1.54E-06
Leafy Veg.	2.17E-08	9.60E-08	1.13E-07	2.39E-07
Milk	1.76E-08	2.94E-08	2.73E-07	2.95E-07
Meat	7.37E-09	3.62E-08	7.70E-08	1.26E-07
Total	1.18E-06	1.99E-06	1.07E-05	1.20E-05

Pathway	3rd Quarter		4th Quarter	
	Total Body (person-rem)	Max. Organ (person-rem)	Total Body (person-rem)	Max. Organ (person-rem)
Fishing	0.00E+00	0.00E+00	7.77E-10	1.95E-09
Drinking	0.00E+00	0.00E+00	9.67E-07	1.00E-06
Shoreline	0.00E+00	0.00E+00	8.04E-08	9.46E-08
Swimming	0.00E+00	0.00E+00	3.60E-10	3.60E-10
Boating	0.00E+00	0.00E+00	9.00E-11	9.00E-11
Vegetables	0.00E+00	0.00E+00	1.35E-07	1.65E-07
Leafy Veg.	0.00E+00	0.00E+00	1.21E-08	2.14E-08
Milk	0.00E+00	0.00E+00	3.21E-08	3.33E-08
Meat	0.00E+00	0.00E+00	9.66E-09	8.38E-09
Total	0.00E+00	0.00E+00	1.24E-06	1.33E-06

Table 6-4 Annual Ladtap II Results for 1997

A. 50-mile population doses from WNP-2 liquid effluents

Pathway	Total Body (person-rem)	Max. Organ (person-rem)
Fishing	8.07E-08	1.44E-07
Drinking	9.04E-06	9.89E-06
Shoreline	2.11E-06	2.48E-06
Swimming	9.31E-09	9.31E-09
Boating	2.33E-09	2.33E-09
Vegetables	1.15E-06	1.70E-06
Leafy Veg.	1.38E-06	2.05E-06
Milk	3.25E-07	3.59E-07
Meat	9.42E-08	1.76E-07
Total	1.42E-05	1.68E-05

B. Average individual doses from WNP-2 liquid effluents

Pathway	Total Body (mrem)	Max. Organ (mrem)
Fishing	4.15E-08	5.48E-08
Drinking	1.18E-07	1.61E-07
Shoreline	1.20E-08	1.20E-08
Swimming	5.29E-11	5.29E-11
Boating	1.32E-11	1.32E-11
Vegetables*	1.15E-07	1.70E-07
Leafy Veg.*	1.38E-07	2.05E-07
Milk*	3.41E-08	3.76E-08
Meat*	9.33E-09	1.74E-08
Total	4.68E-07	6.58E-07

* Total population ALARA doses divided by the total population served from irrigated production; converted to mrem.

Table 6-5A Summary of Doses from WNP-2 Gaseous Effluents, 1997

1 Location: Site Boundary

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Cumulative
Beta air dose (mrad)	1.50E-04	0.00E+00	1.40E-04	1.92E-04	4.82E-04
Gamma air dose	4.04E-04	0.00E+00	3.91E-04	5.44E-04	1.34E-03

2 Location: Beyond Site Boundary

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Cumulative
Beta air dose (mrad)	3.57E-04	0.00E+00	1.49E-04	2.45E-04	7.51E-04
Gamma air dose	9.95E-04	0.00E+00	4.14E-04	6.90E-04	2.10E-03

3 Location: Site Boundary

	Annual Dose
Annual Total Body Dose (mrem)	3.37E-03
Annual Skin Dose (mrem)	4.27E-03

4 Location: Beyond Site Boundary 4.1 miles ENE

	Annual Dose
Annual total Body Dose (mrem)	2.19E-03
Annual Skin Dose (mrem)	2.71E-03

No noble gas released in second quarter

Table 6-5B Summary of Doses from WNP-2 Gaseous Effluents, 1997

5 Location: Site Boundary

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Cumulative
Maximum Organ dose (mrem)	3.12E-03	3.33E-03	2.23E-03	9.79E-04	9.66E-03

6 Location: Beyond Site Boundary

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Cumulative
Maximum Organ dose (mrem)	7.14E-04	4.99E-04	6.40E-04	1.08E-03	2.93E-03

7 Location: Land Use Census; 4.10E+00 Miles ESE

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Cumulative
Maximum Organ dose (mrem)	7.14E-04	4.99E-04	6.40E-04	7.80E-04	2.63E-03

Table 6-6 50-Mile Population Doses From 1997 Gaseous Effluents

A. 50-mile population

Exposure Pathway	Total Body (person-rem)	Max. Organ (person-rem)
Plume	1.99E-03	2.00E-03
Ground	3.48E-03	3.48E-03
Inhalation	2.58E-03	5.61E-03
Vegetables	2.94E-03	2.86E-03
Milk	1.06E-03	9.99E-04
Meat	6.63E-04	6.28E-04
Total	1.27E-02	1.56E-02

Population => 2.50E+05

B. Average individual*

Exposure Pathway	Total Body (mrem)	Max. Organ (mrem)
Plume	7.96E-06	8.00E-06
Ground	1.39E-05	1.39E-05
Inhalation	1.03E-05	2.24E-05
Vegetables	1.18E-05	1.14E-05
Milk	4.24E-06	4.00E-06
Meat	2.65E-06	2.51E-06
Total	5.09E-05	6.23E-05

* The 50-mile population doses are divided by the population within 50 miles of the Plant by direction and radii interval, and converted to mrem.

7.0 REVISIONS TO THE ODCM

This section completes the requirement of Technical Specification 5.5.1. A complete, legible copy of the entire ODCM is included as an enclosure to the letter transmitting this Radioactive Effluent Release Report. ODCM's are sent only to the Nuclear Regulatory Commission (NRC).

8.0 REVISIONS TO THE PROCESS CONTROL PROGRAM (PCP)

There have been no major changes to the Process Control Program (PPM 1.12.2) during the reporting period, however, the procedure was revised effective 8/11/97. The description of dewatering system process controls was expanded to include the basis for concluding that adequate dryness is achieved and the role of the relative humidity endpoint was specified. Various references were added (or updated) including 10CFR61.56, ETSB 11-3, 10CFR20.2001 - 2006, Dewatering System Topical Report TP-02-P-A, IEB 79-19 and the BTP on Waste Form. Words specifying the controls applicable to solidification of oil in excess of 10% were replaced by prohibition of this activity since this waste form is no longer permitted at the US Ecology burial site. Volume based radioactive material characterization was described. The description of radioactive waste and radioactive material storage areas was expanded to reflect current conditions. Controls arising from the implementation of Industrial Packaging requirements were added and words specifying annual reverification of shipping computer codes were removed since code verification is required for each use and following updates. The required reporting of violations of Certificate of Compliance conditions for NRC approved shipping containers was specified. Other changes included minor rewording or format changes.

9.0 NEW OR DELETED LOCATIONS FOR DOSE ASSESSMENTS AND/OR ENVIRONMENTAL MONITORING LOCATIONS

There were no new or deleted locations for dose assessments or environmental monitoring.

10.0 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

No major changes were made to the radioactive waste systems (liquid, gaseous, or solid) during this reporting period.