ENCLOSURE 1

SEMIANNUAL EFFLUENT RELEASE REPORT

FOR THE PERIOD OF JULY 1 TO DECEMBER 31, 1992

(S58 920219 800)

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1992

1. REGULATORY LIMITS

A. Gaseous Effluents

1. Dose rates due to radioactivity released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to the following:

a. Noble gases:- Less than or equal to 500 mrem/year to the total body.

- Less than or equal to 3000 mrem/year to the skin.

b. Iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days:

- Less than or equal to 1500 mrem/year to any organ.

2. Air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:

a. Less than or equal 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation during any calendar quarter.

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

3. Dose to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

a. Less than or equal to 7.5 mrem to any organ during any calendar quarter.

b. Less than or equal to 15 mrem to any organ during any calendar year.

B. Liquid Effluents

1. The concentration of radioactivity released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in Title 10 of the Code of Federal Regulations, Part 20 (Standards for Protection Against Radiation), Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/milliliter (uCi/ml) total activity.

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2. The dose or dose commitment to a member of the public from radioactivity in liquid effluents released to unrestricted areas shall be limited to:

   a. Less than or equal to 1.5 mrem to the total body and less than or equal to 5 mrem to any organ during any calendar quarter.

   b. Less than or equal to 3 mrem to the total body and less than or equal to 10 mrem to any organ during any calendar year.

2. MAXIMUM PERMISSIBLE CONCENTRATION

A. Liquids

*1. The maximum permissible concentrations (MPC) for liquids are those listed in 10 CFR 20, Appendix B, Table II, Column 2, with the most restrictive MPC being used in all cases. For dissolved and entrained gases the MPC of 2.0E-04 uCi/ml is applied. This MPC is based on the Xe-135 MPC in air (submersion dose) converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP), Publication 2.

B. Gaseous

*1. The maximum permissible dose rates for gaseous releases are defined in plant Offsite Dose Calculation Manual (ODCM).

   a. Noble gas dose rate at the site boundary:

      - Less than or equal to 500 mrem/year to the total body,
      - Less than or equal to 3000 mrem/year to skin.

   b. Iodine-131, iodine-133, tritium, and particulates with half-lives greater than eight days dose rate at the site boundary:

      - Less than or equal to 1500 mrem/year to any organ.

3. AVERAGE ENERGY

Sequoyah's ODCM limits the dose equivalent rates due to the release of fission and activation products to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. Therefore, the average beta and gamma energies (E) for gaseous effluents as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," are not applicable.

*These values are used as applicable limits for liquid and gaseous effluents.

4. Measurements and Approximations of Total Radioactivity

NOTE: Every effort is made to ensure that effluent releases from Sequoyah are conducted such that all Offsite Dose Calculation Manual (ODCM) Lower Limit of Detection (LLD) values are met. Whenever an analysis does not identify a radioisotope, a "0.00E-01 Ci" is recorded for the release. This does not necessarily mean that no activity was released for that particular radionuclide, but that the concentration was below the ODCM and analysis LLD. Refer to Tables A and B for estimates of these typical LLD values.

a. Fission and Activation Gases

Airborne effluent gaseous activity is continuously monitored and recorded. Additional grab samples from the shield building, auxiliary building, service building, and condenser vacuum exhausts are taken and analyzed at least monthly to determine the quantity of noble gas activity released for the month based on the average vent flowrates recorded for the sample period. Also, noble gas samples are collected and evaluated for the shield and auxiliary buildings following startup, shutdown, or rated thermal power change exceeding 15 percent within one hour (sampling only required if dose equivalent I-131 concentration in the primary coolant or the noble gas activity monitor shows that the containment activity has increased more than a factor of 3).

The quantity of noble gases released through the shield and auxiliary building exhausts due to purging or venting of containment and releases of waste gas decay tanks are also determined.

The total noble gas activity released for the month is then determined by summing all of the activity released from each vent for all sampling periods.

b. Iodines and Particulates

Iodine and particulate activity is continuously sampled. Charcoal and particulate samples are taken from the shield and auxiliary building exhausts and analyzed at least weekly to determine the total activity released from the plant based on the average vent flowrates recorded for sampling period.

Also, particulate and charcoal samples are taken from the auxiliary and shield building exhausts once per 24 hours for 2 days following startup, shutdown, or a rated thermal power change exceeding 15 percent within one hour. The quantity of iodine and particulate released from each vent during each sampling period is then determined using the average vent flowrates recorded for the sampling period and activity concentration.

The total particulate and iodine activity released for the month is then determined by summing all of the activity released from the shield and auxiliary building exhausts for all sampling periods.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1992

4. Measurements and Approximation of Total Radioactivity (continued)

c. Liquid Effluents

Batch (Radwaste and during periods of primary to secondary leakage, condensate regenerants to cooling tower blowdown)

Total gamma isotopic activity concentrations are determined on each batch of liquid effluent prior to release. The total activity of a released batch is determined by summing each nuclide's concentration and multiplying by the total volume discharged. The total activity released during a month is then determined by summing the activity content of each batch discharged during the month.

Continuous Releases and Periodic Continuous Releases (Condensate regenerants, turbine building sump and steam generator blowdown)

Total gamma isotopic activity concentration is determined daily on a composite sample from the condensate system and turbine building sump and weekly for steam generator blowdown. The total activity of the continuous release is determined by summing each nuclide's concentration and multiplying by the total volume discharged. The total activity released during the month is then determined by summing the activity content of each daily and weekly composite for the month.

5. Batch

	Value		Units
	Quarter 3rd	Quarter 4th	
a. Liquid (Radwaste only)			
1. Number of releases	85	62	Each
2. Total time period of releases	11,881	7,887	Minutes
3. Maximum time period of release	169	163	Minutes
4. Average time period of releases	140	127	Minutes
5. Minimum time period for release	37	59	Minutes
6. Average dilution stream flow during release periods cubic feet/second (CFS)	27,977	31,468	CFS
b. Gaseous (Batches only)			
1. Number of releases	187	202	Each
2. Total time period of releases	15,814	16,777	Minutes
3. Maximum time period for release	1,788	505	Minutes
4. Average time period for releases	85	83	Minutes
5. Minimum time period for release	18	19	Minutes

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
SUPPLEMENTAL INFORMATION
2nd HALF 1992

6. Abnormal Releases	Value		Units
	Quarter 1st	Quarter 2nd	
a. Liquid			
Number of Releases	0	0	
Total Activity Released	0.00E-01	0.00E-01	Ci
b. Gaseous			
Number of Releases	0	0	
Total Activity Released	0.00E-01	0.00E-01	Ci

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

			3rd Qtr	%Error	4th Qtr	%Error
A.	Fission and Activation Products					
	1. Total Released	Curies	2.78E-01	±1.8E+01	1.34E-01	±1.8E+01
	2. Average Diluted Conc. During Period of All Identified Isotopes	uCi/ml	2.17E-07		1.16E-07	
	3. Percent of Applicable Limit (ΣMPC≤1)	%	4.16E-01		6.35E-01	
	NOTE: Percent of applicable limit is based on identified isotope concentration after dilution, related to their appropriate MPC concentration and sum of all the isotope fractions compared to 1.0.					
B.	Tritium					
	1. Total Released	Curies	2.97E+02	±1.8E+01	5.64E+02	±1.8E+01
	2. Average Diluted Conc. During Period	uCi/ml	2.32E-04		4.89E-04	
	3. Percent of Applicable Limit (3.0E-03 uCi/ml)	%	7.73E+00		1.63E+01	
C.	Dissolved and Entrained Gases					
	1. Total Released	Curies	9.42E-03	±3.9E+01	1.59E-02	±3.9E+01
	2. Average Diluted Conc. During Period	uCi/ml	7.35E-09		1.38E-08	
	3. Percent of Applicable Limit (2.0E-04 uCi/ml)	%	3.68E-03		6.89E-03	
D.	Gross Alpha Radioactivity					
	1. Total Released	Curies	0.00E-01	±2.0E+01	0.00E-01	±2.0E+01
E.	Volume of Waste Released	Liters	4.14E+07	±4.0E+00	3.41E+07	±4.0E+00
F.	Volume of Dilution Water for Period	Liters	1.24E+09	±1.1E+01	1.12E+09	±1.1E+01

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE

G. Nuclide Summary (Note: Refer to Table A for ODCM nuclides reported as 0.00E-01)

Required by ODCM/Others

Fission and Activation Products

Nuclide	Unit	Continuous Mode		Batch Mode	
		Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
1. Strontium-89	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
2. Strontium-90	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
3. Iron-55	Ci	0.00E-01	0.00E-01	5.31E-02	6.37E-02
4. Manganese-54	Ci	0.00E-01	0.00E-01	2.70E-03	6.27E-04
5. Cobalt-58	Ci	0.00E-01	5.02E-07	1.15E-01	3.05E-02
6. Iron-59	Ci	0.00E-01	0.00E-01	8.49E-04	3.84E-05
7. Cobalt-60	Ci	0.00E-01	1.79E-06	3.91E-02	1.84E-02
8. Zinc-65	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
9. Molybdenum-99	Ci	0.00E-01	0.00E-01	0.00E-01	3.21E-05
10. Iodine-131	Ci	0.00E-01	0.00E-01	4.13E-04	4.32E-04
11. Cesium-134	Ci	0.00E-01	0.00E-01	1.52E-03	8.13E-04
12. Cesium-137	Ci	3.48E-06	2.62E-05	2.12E-03	1.07E-03
13. Cerium-141	Ci	0.00E-01	0.00E-01	5.65E-06	0.00E-01
14. Cerium-144	Ci	0.00E-01	2.51E-06	2.37E-03	1.06E-03
15. Antimony-125	Ci	0.00E-01	0.00E-01	3.73E-02	1.59E-02
16. Cobalt-57	Ci	0.00E-01	0.00E-01	1.11E-03	4.71E-04
17. Chromium-51	Ci	0.00E-01	0.00E-01	6.31E-03	1.78E-04
18. Niobium-95	Ci	0.00E-01	0.00E-01	7.90E-03	4.51E-04

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE
(CONTINUED)

Nuclide	Unit	Continuous Mode		Batch Mode	
		Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
19. Iodine-133	Ci	0.00E-01	0.00E-01	7.90E-05	1.15E-04
20. Zirconium-95	Ci	0.00E-01	0.00E-01	4.05E-03	7.71E-05
21. Technetium-99m	Ci	0.00E-01	0.00E-01	0.00E-01	3.21E-05
22. Ruthenium-103	Ci	0.00E-01	0.00E-01	2.42E-05	0.00E-01
23. Tellurium-132	Ci	0.00E-01	0.00E-01	1.00E-05	0.00E-01
24. Antimony-124	Ci	0.00E-01	0.00E-01	1.78E-03	1.58E-04
25. Lanthanum-140	Ci	0.00E-01	0.00E-01	0.00E-01	6.20E-05
26. Copper-64	Ci	0.00E-01	0.00E-01	3.43E-04	0.00E-01
27. Sodium-24	Ci	0.00E-01	0.00E-01	4.07E-06	0.00E-01
28. Iodine-135	Ci	0.00E-01	0.00E 01	4.05E-05	3.01E-05
29. Strontium-92	Ci	0.00E-01	0.00E-01	1.09E-11	0.00E-01
30. Strontium-91	Ci	0.00E-01	0.00E-01	0.00E-01	2.15E-05
31. Zirconium-97	Ci	0.00E-01	0.00E-01	8.65E-05	0.00E-01
32. Silver-110m	Ci	0.00E-01	0.00E-01	1.35E-03	2.79E-06
33. Manganese-56	Ci	0.00E-01	0.00E-01	0.00E-01	1.12E-05
Total for Period	Ci	3.48E-06	3.10E-05	2.78E-01	1.34E-01

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
LIQUID EFFLUENTS - TOTAL PLANT DISCHARGE
(CONTINUED)

G. Nuclide Summary (NOTE: Refer to Table A for ODCM nuclides reported as 0.00E-01)

Required by ODCM/Others

Dissolved and Entrained Noble Gases

Nuclide	Unit	Continuous Mode		Batch Mode	
		Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
1. Krypton-87	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
2. Krypton-88	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
3. Xenon-133	Ci	0.00E-01	0.00E-01	9.11E-03	1.55E-02
4. Xenon-133m	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
5. Xenon-135	Ci	0.00E-01	0.00E-01	3.06E-04	3.54E-04
6. Xenon-138	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
7. Krypton-85m	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
8. Xenon-131m	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
9. Xenon-135m	Ci	0.00E-01	0.00E-01	0.00E-01	1.25E-05
10. Krypton-85	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
11. Argon-41	Ci	0.00E-01	0.00E-01	7.80E-06	0.00E-01
Total for Period	Ci	0.00E-01	0.00E-01	9.42E-03	1.59E-02

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
TABLE A
LIQUID "TYPICAL LLD" EVALUATION (1)

Nuclide	ODCM LLD	Δt (2) 15 min	30 min	1 hr	2 hr
Manganese-54	5.0E-07	9.12E-09	9.12E-09	9.12E-09	9.12E-09
Cobalt-58	5.0E-07	8.21E-09	8.21E-09	8.21E-09	8.21E-09
Iron-59	5.0E-07	1.62E-08	1.62E-08	1.62E-08	1.62E-08
Cobalt-60	5.0E-07	1.08E-08	1.08E-08	1.08E-08	1.08E-08
Zinc-65	5.0E-07	2.14E-08	2.14E-08	2.14E-08	2.14E-08
Molybdenum-99	5.0E-07	5.24E-08	5.25E-08	5.28E-08	5.34E-08
Cesium-134	5.0E-07	9.82E-09	9.82E-09	9.82E-09	9.82E-09
Cesium-137	5.0E-07	9.31E-09	9.31E-09	9.31E-09	9.31E-09
Cerium-141	5.0E-07	1.06E-08	1.06E-08	1.07E-08	1.07E-08
Cerium-144	5.0E-06	4.03E-08	4.03E-08	4.03E-08	4.03E-08
Iodine-131	1.0E-06	7.28E-09	7.28E-09	7.30E-09	7.32E-09
Krypton-87	1.0E-05	1.62E-08	1.85E-08	2.43E-08	4.20E-08
Krypton-88	1.0E-05	2.13E-08	2.27E-08	2.56E-08	3.27E-08
Xenon-133	1.0E-05	2.03E-08	2.04E-08	2.04E-08	2.05E-08
Xenon-133m	1.0E-05	5.05E-08	5.07E-08	5.10E-08	5.17E-08
Xenon-135	1.0E-05	5.60E-09	5.70E-09	5.93E-09	6.40E-09
Xenon-138	1.0E-05	2.82E-08	5.87E-08	2.55E-07	4.79E-06

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
TABLE A
LIQUID "TYPICAL LLD" EVALUATION (1)
(Continued)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-05	1.0E-06
Gross Alpha	1.0E-07	2.0E-08
Strontium-89	5.0E-08	2.0E-08
Strontium-90	5.0E-08	1.0E-08
Iron-55	1.0E-06	3.0E-07

NOTES: (1) LLD values are in uCi/ml. Sample analyses are performed to ensure that ODCM LLD limits are met. These are typical LLD values.

(2) Δt is the time between sample collection and counting time.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

Summation of All Releases	Unit	3rd Qtr	%Error	4th Qtr	%Error
A. Noble Gases					
1. Total Released	Ci	3.82E+01	±1.1E+01	6.81E+01	±1.1E+01
2. Average Release Rate of Period	uCi/sec	4.81E+00		8.57E+00	
3. Percent of Applicable Limit	%	2.48E-03		7.11E-03	
B. Iodines					
1. Total Iodine-131	Ci	1.76E-08	±1.3E+01	3.05E-07	±1.3E+01
2. Average Release Rate for Period	uCi/sec	2.21E-09		3.86E-08	
3. Percent of Applicable Limit (1.50E-01 µCi/sec)	%	1.38E-06		2.41E-05	
C. Particulates					
1. Particulates with half-lives >8 days	Ci	3.18E-05	±1.6E+01	3.79E-05	±1.6E+01
2. Average Release Rate for Period	uCi/sec	4.01E-06		4.78E-06	
3. Percent of Applicable Limit	%	2.06E-05		1.65E-05	
4. Gross Alpha Radio-activity	Ci	0.00E-01	±2.1E+01	0.00E-01	±2.1E+01
D. Tritium					
1. Total Release	Ci	1.08E+01	±1.5E+01	1.89E+01	±1.5E+01
2. Average Release Rate for Period	uCi/sec	1.36E-00		2.38E+00	
3. Percent of Applicable Limit (8.47E+04 µCi/sec)		1.60E-03		2.81E-03	

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

	Unit	Continuous Mode		Batch Mode	
		Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
F. Noble Gases					
Required by ODCM/Others					
1. Krypton-87	Ci	0.00E-01	1.21E-04	0.00E-01	1.18E-03
2. Krypton-88	Ci	2.14E-03	2.59E-04	4.25E-03	3.19E-02
3. Xenon-133	Ci	1.53E-02	6.93E-01	3.59E+01	5.79E+01
4. Xenon-133m	Ci	0.00E-01	0.00E-01	3.93E-01	9.14E-01
5. Xenon-135	Ci	2.48E-02	1.97E-01	1.00E+00	3.58E+00
6. Xenon-138	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
7. Krypton-85	Ci	0.00E-01	0.00E-01	0.00E-01	0.00E-01
8. Argon-41	Ci	0.00E-01	0.00E-01	7.37E-01	3.37E+00
9. Krypton-85m	Ci	1.92E-03	1.32E-03	2.01E-02	3.04E-01
10. Xenon-131m	Ci	0.00E-01	1.01E+00	5.67E-02	1.84E-02
11. Xenon-135m	Ci	1.31E-02	8.57E-03	0.00E-01	0.00E-01
Total for Period	Ci	5.73E-02	1.91E+00	3.81E+01	6.62E+01
G. Iodines					
1. Iodine-131	Ci	1.76E-08	3.05E-07		
2. Iodine-133	Ci	2.25E-08	2.54E-07		
3. Iodine-135	Ci	0.00E-01	0.00E-01		
Total for Period	Ci	4.01E-08	5.59E-07		

NOTE: Refer to Table B for ODCM nuclides reported as 0.00E-01.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
(GROUND LEVEL RELEASES)

H. Particulates

Required by ODCM/Others

Nuclide	Unit	Continuous Mode Quarter 3rd	Continuous Mode Quarter 4th
1. Strontium-89	Ci	0.00E-01	0.00E-01
2. Strontium-90	Ci	0.00E-01	0.00E-01
3. Iron-59	Ci	0.00E-01	0.00E-01
4. Cobalt-60	Ci	0.00E-01	7.85E-06
5. Zinc-65	Ci	0.00E-01	0.00E-01
6. Manganese-54	Ci	0.00E-01	0.00E-01
7. Cobalt-58	Ci	0.00E-01	0.00E-01
8. Molybdenum-99	Ci	8.42E-07	0.00E-01
9. Cesium-134	Ci	0.00E-01	0.00E-01
10. Cesium-137	Ci	0.00E-01	3.00E-05
11. Cerium-141	Ci	0.00E-01	0.00E-01
12. Cerium-144 Others (Specify)	Ci	0.00E-01	0.00E-01
13. Technetium-99m	Ci	8.42E-07	0.00E-01
14. Sodium-24	Ci	3.01E-05	0.00E-01
Total for Period	Ci	3.18E-05	3.79E-05

NOTE: Refer to Table B for ODCM nuclides reported as 0.00E-01.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
TABLE B
GASEOUS "TYPICAL" LLD EVALUATION (1)

Noble Gas

		Δt (2)	
Nuclide	ODCM LLD	1 hr	1.5 hr
Krypton-87	1.0E-04	1.19E-06	2.69E-06
Krypton-88	1.0E-04	1.22E-06	1.76E-06
Xenon-133	1.0E-04	5.51E-07	5.56E-07
Xenon-133m	1.0E-04	1.99E-06	2.02E-06
Xenon-135	1.0E-04	2.59E-07	2.90E-07
Xenon-138	1.0E-04	5.38E-05	8.55E-05

Particulate Sample		2.02 da	2.79 da	5.79 da
Manganese-54	1.0E-10	1.83E-12	7.65E-14	1.10E-14
Cobalt-58	1.0E-10	1.60E-12	4.79E-14	9.99E-15
Iron-59	1.0E-10	3.21E-12	1.36E-13	2.03E-14
Cobalt-60	1.0E-10	1.79E-12	7.46E-14	1.07E-14
Zinc-65	1.0E-10	4.08E-12	1.71E-13	2.46E-14
Molybdenum-99	1.0E-10	2.08E-12	1.05E-13	3.18E-14
Cesium-134	1.0E-10	2.03E-12	8.45E-14	1.21E-14
Cesium-137	1.0E-10	1.85E-12	7.71E-14	1.10E-14
Cerium-141	1.0E-10	2.32E-12	9.82E-14	1.50E-14
Cerium-144	1.0E-10	1.03E-12	4.28E-13	6.16E-14
Iodine-131	1.0E-10	1.85E-12	8.22E-14	1.52E-14

Charcoal Sample		2.0 da	2.5 da	5.5 da
Iodine-131	1.0E-11	2.53E-12	1.10E-13	2.00E-14

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
TABLE B
GASEOUS "TYPICAL" LLD EVALUATION (1)
(continued)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-06	1.0E-11
Gross Alpha	1.0E-11	1.5E-14
Strontium-89	1.0E-11	1.0E-14
Strontium-90	1.0E-11	1.0E-15

NOTES: (1) LLD values are in μCi/cc.

(2) Δt for noble gases is the time from sampling to analysis. Δt for charcoal and particulate samples is the midpoint of sampling to analysis.

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
SOLID WASTE (RADIOACTIVE SHIPMENTS)

A. Solid Waste Shipped Offsite for Burial or Disposal (not Irradiated Fuel)

1. Type of Waste	Unit	6 Month Period	Est. Tot. Error %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	9.23E+0	±1.00E-1
	Ci	3.37E+2	±1.50E+1
b. Dry Active Waste, Compressible Waste Contaminated Equipment, etc.	m^3	3.94E+1	±1.00E-1
	Ci	1.54E+1	±1.50E+1
c. Irradiated Components, Control Rods, etc.	m^3	None	N/A
	Ci	None	N/A
d. Other: Mechanical Filters	m^3	3.18E+0	±1.00E-1
	Ci	1.74E+1	±1.50E+1

2. Estimate of Major Nuclide Composition (by type of waste)

a. Spent resins, filter sludges, evaporator bottoms, etc. (nuclides determined by measurement)

	Curies	Percent
1. Manganese-54	6.08E+0	1.80E+0
2. Iron-55	3.13E+1	9.28E+0
3. Cobalt-58	9.35E+1	2.77E+1
4. Cobalt-60	5.21E+1	1.54E+1
5. Nickel-63	9.35E+1	2.77E+1
6. Cesium-134	2.98E+1	8.83E+0
7. Cesium-137	2.74E+1	8.14E+0

b. Dry active waste, compressible waste, contaminated equipment, etc. (nuclides determined by estimate)

1. Chromium-51	9.76E-1	6.32E+0
2. Manganese-54	2.78E-1	1.80E+0
3. Iron -55	3.59E+0	2.33E+1
4. Cobalt-58	3.56E+0	2.30E+1
5. Cobalt-60	4.30E+0	2.79E+1
6. Nickel-63	7.31E-1	4.74E+0
7. Beryllium-7	1.93E-1	1.25E+0
8. Niobium-95	4.85E-1	3.14E+0
9. Zirconium-95	2.79E-1	1.81E+0
10 Cesium-134	1.99E-1	1.29E+0
11. Cesium-137	2.83E-1	1.84E+0

c. Irradiated Components N/A N/A

d. Other: Mechanical Filters (nuclides determined by estimate)

1. Manganese-54	7.54E-1	4.33E+0
2. Iron-55	8.86E+0	5.08E+1
3. Cobalt-58	2.86E+0	1.64E+1
4. Cobalt-60	2.73E+0	1.57E+1
5. Nickel-63	1.42E+0	8.15E+0

419/1/1

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
2nd HALF 1992
SOLID WASTE (RADIOACTIVE SHIPMENTS)

3. Solid Waste Disposition

Number of Shipments	Type Quantity	Mode of Transportation	Destination
a) Spent resins, filter sludges, evaporator bottoms, etc.			
2	B-LSA	Motor Freight	Barnwell, SC
Number of Shipments	**Type Quantity**	**Mode of Transportation**	**Destination**
b) Dry active waste, compressible waste, contaminated equipment, etc.			
60	A-LSA	Motor Freight	Barnwell, SC
1	B-LSA	Motor Freight	Barnwell, SC
Number of Shipments	**Type Quantity**	**Mode of Transportation**	**Destination**
c) Irradiated components, control rods, etc.			
None			
Number of Shipments	**Type Quantity**	**Mode of Transportation**	**Destination**
d) Other: Mechanical Filters			
1	B-LSA	Motor Freight	Barnwell, SC

4. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Type Quantity	Mode of Transportation	Destination
None	N/A	N/A	N/A

5. Solidification of Waste

Was solidification performed? _____ No _____

If yes, solidification media: N/A

419/1/2

ENCLOSURE 2

SEQUOYAH NUCLEAR PLANT

RADIOLOGICAL IMPACT ASSESSMENT REPORT

(S58 920219 800)

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

INTRODUCTION

Potential doses to maximum individuals and the population around Sequoyah are calculated for each quarter as required in Section 5.2 of the Offsite Dose Calculation Manual (ODCM). Measured plant releases for the reporting period are used to estimate these doses. Dispersion of radioactive effluents in the environment is estimated using meteorological data and riverflow data measured during the period. In this report, the doses resulting from releases are described and compared to limits established for Sequoyah.

DOSE LIMITS

The ODCM specifies limits for the release of radioactive effluents, as well as limits for doses to the general public from the release of radioactive effluents. These limits are set well below the NRC 10CFR20 limits which govern the concentrations of radioactivity and exposures permissible in unrestricted areas. This ensures that radioactive effluent releases are ALARA.

The limits for doses at or beyond the site boundary from airborne noble gases releases are:

> Less than or equal to 5 mrad per quarter and 10 mrad per year (per reactor unit) for gamma radiation,
>
> - and -
>
> Less than or equal to 10 mrad per quarter and 20 mrad per year (per reactor unit) for beta radiation.

The limit for the dose to a member of the general public at or beyond the site boundary from iodines and particulates released in airborne effluents is:

> Less than or equal to 7.5 mrem per quarter and 15 mrem per year (per reactor unit) to any organ.

The limit for doses to a member of the general public from radioactive material in liquid effluents released to unrestricted areas, is:

> Less than or equal to 1.5 mrem per quarter and 3 mrem per year (per reactor unit) to the total body,
>
> - and -
>
> Less than or equal to 5 mrem per quarter and 10 mrem per year (per reactor unit) to any organ

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

The EPA limits for total dose to the public in the vicinity of a nuclear power plant, established in the Environmental Dose Standard of 40 CFR 190, are:

Less than or equal to 25 mrem per year to the total body,

Less than or equal to 75 mrem per year to the thyroid,

- and -

Less than or equal to 25 mrem per year to any other organ.

DOSE CALCULATIONS

Estimated doses to the public are determined using computer models (the Gaseous Effluent Licensing Code, GELC, and the Quarterly Water Dose Assessment Code, QWATA). These models are based on guidance provided by the NRC (in Regulatory Guides 1.109, 1.111 and 1.113) for determining the potential dose to individuals and populations living in the vicinity of the plant. The area around the plant is analyzed to determine the pathways through which the public may receive a dose. The doses calculated are a representation of the dose to a "maximum exposed individual." Some of the factors used in these calculations (such as ingestion rates) are maximum values. Many of these factors are obtained from NUREG/CR-1004. The values chosen will tend to overestimate the dose to this "maximum" person. The expected dose to actual individuals is lower. The calculated doses are presented in Tables 1 through 3.

DOSES FROM AIRBORNE EFFLUENTS

For airborne effluents, the public can be exposed to radiation from several sources: direct radiation from the radioactivity in the air, direct radiation from radioactivity deposited on the ground, inhalation of airborne radioactivity, ingestion of vegetation which contains radioactivity deposited from the atmosphere, and ingestion of milk and beef which contains radioactivity deposited from the atmosphere onto vegetation which is then eaten by milk and beef animals.

Airborne Release Points and Meteorological Data

Meteorological data at Sequoyah are measured continuously. Measurements collected include the wind speed, wind direction, and the temperature at heights of 10, 46 and 91 meters above the ground. Average quarterly joint frequency distributions (JFDs) are calculated for each release point using the appropriate levels of meteorological data. A joint frequency distribution gives the percentage of the time in a quarter that the wind is blowing out of a particular upwind compass sector in a

particular range of wind speeds for a given stability class A through G. The wind speeds are divided into nine wind speed ranges. For calculational purposes, calms are distributed into the lowest windspeed range (0-0.5 mph) according to the directional probabilities in the 0.6-1.4 mph range. Stability classes are determined from the vertical temperature gradient between two measurement levels.

All releases from Sequoyah are considered ground-level releases to determine the dispersion of the airborne effluents. The ground-level JFD is derived from windspeeds and directions measured 10 meters above ground and from the vertical temperature gradient between 10 and 46 meters. The ground level JFDs are listed in Tables 4 through 7.

External Exposure Dose

Dose estimates for maximum external air exposures (gamma-air and beta-air doses) are made for points at and beyond the site boundary as described in the SQN ODCM.

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

Submersion Dose

External doses to the skin and total body, due to submersion in a cloud of noble gases, are estimated for the nearest residence in each sector.

Organ Dose

Doses to organs due to releases of airborne effluents are estimated for the inhalation, ground contamination, and ingestion pathways. The ingestion pathway is further divided into four possible contributing pathways: ingestion of cow/goat milk, ingestion of beef, and ingestion of vegetables. Doses from applicable pathways are calculated for each real receptor location identified in the most recent land use survey. To determine the maximum organ dose, the doses from the pathways are summed for each receptor. For the ingestion dose, however, only those pathways that exist for each receptor are considered in the sum, i.e., milk ingestion doses are included only for locations where milk is consumed without commercial preparation and vegetable ingestion is included only for those locations where a garden is identified. To conservatively account for beef ingestion, a beef ingestion dose equal to that for the highest site boundary location is added to each identified receptor. For ground contamination, the dose added to the organ dose being calculated is the total body dose calculated for that location, i.e., it is assumed that the dose to an individual organ is equal to the total body dose.

Doses from airborne effluents are presented in Table 1.

DOSES FROM LIQUID EFFLUENTS

For liquid effluents, the public can be exposed to radiation from three sources: the ingestion of water from the Tennessee River, the ingestion of fish caught in the Tennessee River, and direct exposure from radioactive material deposited on the river shoreline sediment (recreation).

The concentrations of radioactivity in the Tennessee River are estimated by a computer model which uses measured hydraulic data downstream of Sequoyah. Parameters used to determine the doses are based on guidance given by the NRC (in Regulatory Guides 1.109) for maximum ingestion rates, exposure times, etc. Wherever possible, parameters used in the dose calculation are site specific use factors determined by TVA. The models that are used to estimate doses, as well as the parameters input to the models, are described in detail in the Sequoyah Nuclear Plant ODCM.

Liquid Release Points and River Data

Radioactivity concentrations in the Tennessee River are calculated assuming that releases in liquid effluents are continuous. All routine liquid releases from Sequoyah, located at Tennessee River Mile 484, are made through diffusers which extend into the Tennessee River. It is

assumed that releases to the river through these diffusers will initially be entrained in one-sixth of the water which flows past the plant. The QWATA code makes the assumption that this mixing condition holds true until the water is completely mixed at the first downstream dam, at Tennessee River Mile 471.0.

Doses are calculated for locations between the plant site and the mouth of the Tennessee River. The maximum potential recreation dose is calculated for a location immediately downstream from the plant outfall. The maximum individual dose from ingestion of fish is assumed to be that calculated for the consumption of fish caught anywhere between the plant and the first downstream dam (Chickamauga Dam). The maximum individual dose from drinking water is assumed to be that calculated at the nearest downstream public water supply. This could be interpreted as indicating that the maximum individual, as assumed for liquid releases from Sequoyah, is an individual who obtains all of his drinking water at the first water supply, consumes fish caught from the Tennessee River between SQN and Chickamauga Dam, and spends 500 hours per year on the shoreline just below the outfall from Sequoyah. Dose estimates for the maximum individual due to liquid effluents for each quarter in the period are presented in Table 2, along with the average river flows past the plant site for the periods.

POPULATION DOSES

Population doses for highest exposed organ due to airborne effluents are calculated for an estimated 1,060,000 persons living within a 50-mile radius of the plant site. Ingestion population doses are calculated assuming that each individual consumes milk, vegetables, and meat produced with the sector annulus in which he resides. Doses from external pathways and inhalation are based on the 50-mile human population distribution.

Population doses for total body and the maximum exposed organ due to liquid effluents are calculated for the Tennessee River Population within 50 miles of the plant. Water ingestion population doses are calculated using actual population figures for downstream public water supplies. Fish ingestion population doses are calculated assuming that all sport fish caught in the Tennessee River are consumed by the Tennessee River population. Recreation population doses are calculated using actual recreational data on the number of shoreline visits at downstream locations.

Population dose estimates for airborne and liquid effluents are presented in Tables 1 and 2.

DIRECT RADIATION

External gamma radiation levels were measured by thermoluminescent dosimeters (TLDs) deployed around SQN. The quarterly gamma radiation levels determined from these TLDs during this reporting period averaged

approximately 15.4 mR/quarter at onsite stations and approximately 13.4 mR/quarter at offsite stations. This is consistent with levels reported at TVA's nonoperating nuclear power plant construction sites where the average radiation levels onsite are generally 2-6 mR/quarter higher than the levels offsite. This may be attributable to natural variations in environmental radiation levels, earth moving activities onsite, the mass of concrete employed in the construction of the plants, or other undetermined influences. Fluctuations in natural background dose rates and in TLD readings tend to mask any small increments which may be due to plant operations. Thus, there was no identifiable increase in dose rate levels attributable to direct radiation from plant equipment and/or gaseous effluents.

DOSE TO MEMBERS OF THE PUBLIC INSIDE THE SITE BOUNDARY

No routine activities within the site boundary by members of the public have been identified which would lead to their radiation exposure.

TOTAL DOSE

To determine compliance with 40 CFR 190, annual total dose contributions to the maximum individual from SQN radioactive effluents and all other nearby uranium fuel cycle sources are considered.

The annual dose to any organ other than thyroid for the maximum individual is conservatively estimated by summing the following doses: the total body air submersion dose for each quarter, the critical organ dose (for any organ other than the thyroid) from airborne effluents for each quarter from ground contamination, inhalation and ingestion, the total body dose from liquid effluents for each quarter, the maximum organ dose (for any organ other than the thyroid) from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the environmental monitoring program. This dose is compared to the 40 CFR 190 limit for total body or any organ dose (other than thyroid) to determine compliance.

The annual thyroid dose to the maximum individual is conservatively estimated by summing the following doses: the total body air submersion dose for each quarter, the thyroid dose from airborne effluents for each quarter, the total body dose from liquid effluents for each quarter, the thyroid dose from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the environmental monitoring program. This dose is compared to the 40 CFR 190 limit for thyroid dose to determine compliance.

Cumulative annual total doses are presented in Table 3.

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 1A

Doses from Airborne Effluents
First Quarter 1992

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma air	1.8E-02 mrad	5 mrad	< 1 %	NW/660 meters
Beta air	8.7E-03 mrad	10 mrad	< 1 %	NW/660 meters
Submersion				
Total Body	6.2E-02 mrem	10 mrad	< 1 %	SSW/2019 meters
Skin	1.3E-02 mrem	10 mrad	< 1 %	SSW/2019 meters
Organ Doses				
Child/Thyroid	7.3E-03 mrem	7.5 mrem	< 1 %	SSW/2686 meters
Child/Thyroid	7.3E-03 mrem	7.5 mrem	< 1 %	SSW/2686 meters
Child/Total Body	7.3E-03 mrem	7.5 mrem	< 1 %	SSW/2686 meters

Population Doses

Total Body Dose	9.8E-02 man-rem
Maximum Organ Dose (organ)	9.8E-02 man-rem (thyroid)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 1B

Doses from Airborne Effluents
Second Quarter 1992

Indivudual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma air	3.8E-03 mrad	5 mrad	< 1 %	N/950 meters
Beta air	8.3E-03 mrad	10 mrad	< 1 %	N/950 meters
Submersion				
Total Body	2.2E-03 mrem	10 mrad	< 1 %	SSW/2019 meters
Skin	4.9E-03 mrem	10 mrad	< 1 %	SSW/2019 meters
Organ Doses				
Child/Thyroid	9.6E-03 mrem	7.5 mrem	< 1 %	NNW/991 meters
Child/Thyroid	9.6E-03 mrem	7.5 mrem	< 1 %	NNW/991 meters
Child/Total Body	9.6E-03 mrem	7.5 mrem	< 1 %	NNW/991 meters

Population Doses

Total Body Dose	7.9E-02 man-rem
Maximum Organ Dose (organ)	8.0E-02 man-rem (thyroid)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

8/0482v

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 1C

Doses from Airborne Effluents
Third Quarter 1992

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma air	4.2E-03 mrad	5 mrad	< 1 %	N/950 meters
Beta air	8.6E-03 mrad	10 mrad	< 1 %	N/950 meters
Submersion				
Total Body	2.2E-03 mrem	10 mrad	< 1 %	SSW/2019 meters
Skin	4.7E-03 mrem	10 mrad	< 1 %	SSW/2019 meters
Organ Doses				
Child/Thyroid	7.4E-03 mrem	7.5 mrem	< 1 %	S/2362 meters
Child/Thyroid	7.4E-03 mrem	7.5 mrem	< 1 %	S/2362 meters
Child/Total Body	7.4E-03 mrem	7.5 mrem	< 1 %	S/2362 meters

Population Doses

Total Body Dose	5.3E-02 man-rem
Maximum Organ Dose (organ)	5.3E-02 man-rem (thyroid)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 1D

Doses from Airborne Effluents
Fourth Quarter 1992

Indivudual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma air	9.9E-03 mrad	5 mrad	< 1 %	SSW/1840 meters
Beta air	1.6E-02 mrad	10 mrad	< 1 %	SSW/1840 meters
Submersion				
Total Body	7.7E-03 mrem	10 mrad	< 1 %	SSW/2019 meters
Skin	1.5E-02 mrem	10 mrad	< 1 %	SSW/2019 meters
Organ Doses				
Child/Bone	1.6E-02 mrem	7.5 mrem	< 1 %	SSW/2686 meters
Child/Thyroid	1.4E-02 mrem	7.5 mrem	< 1 %	SSW/2686 meters
Child/Total Body	1.4E-02 mrem	7.5 mrem	< 1 %	SSW/2686 meters

Population Doses

Total Body Dose 1.4E-01 man-rem

Maximum Organ Dose (organ) 1.4E-01 man-rem (bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

10/0482v

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 2A

Doses from Liquid Effluents
First Quarter 1992

Individual Dose (mrem)

Age Group	Organ	Dose (mrem)	Quarterly Limit	Percent of Limit
Adult	Total Body	6.8E-03	1.5 mrem	< 1 %
Adult	Liver	8.5E-05	5 mrem	< 1 %
Child	Thyroid	2.3E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 37,040

Population Doses

Total Body Dose	1.3E-01 man-rem
Maximum Organ Dose (organ)	1.4E-01 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 2B

Doses from Liquid Effluents
Second Quarter 1992

Individual Dose (mrem)

Age Group	Organ	Dose (mrem)	Quarterly Limit	Percent of Limit
Adult	Total Body	1.8E-02	1.5 mrem	2 %
Adult	Liver	2.2E-02	5 mrem	< 1 %
Child	Thyroid	4.8E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 18,814

Population Doses

Total Body Dose	3.7E-01 man-rem
Maximum Organ Dose (organ)	3.9E-01 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 2C

Doses from Liquid Effluents
Third Quarter 1992

Individual Dose (mrem)

Age Group	Organ	Dose (mrem)	Quarterly Limit	Percent of Limit
Adult	Total Body	3.1E-03	1.5 mrem	< 1 %
Child	GIT	1.5E-02	5 mrem	< 1 %
Child	Thyroid	2.6E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 29,874

Population Doses

Total Body Dose	2.3E-01 man-rem
Maximum Organ Dose (organ)	2.6E-01 man-rem (GIT)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 2D

Doses from Liquid Effluents
Fourth Quarter 1992

Individual Dose (mrem)

Age Group	Organ	Dose (mrem)	Quarterly Limit	Percent of Limit
Child	Total Body	1.8E-03	1.5 mrem	2 %
Child	Liver	2.1E-03	5 mrem	< 1 %
Child	Thyroid	1.8E-03	5 mrem	< 1 %

Average Riverflow past BFN (cubic feet per second): 47,954

Population Doses

Total Body Dose	1.4E-01 man-rem
Maximum Organ Dose (organ)	1.4E-01 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 159,000 man-rem/yr (based on 150 mrem/year for natural background).

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 3

Total Dose from Fuel Cycle

Dose	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
Total Body or any Organ (except thyroid)					
Total body air submersion	6.2E-02	2.2E-03	2.2E-03	7.7E-03	
Critical organ dose (air)	7.3E-03	9.6E-03	7.4E-03	1.6E-02	
Total body dose (liquid)	6.8E-03	1.8E-02	3.1E-03	1.4E-02	
Maximum organ dose (liquid)	8.5E-03	2.2E-02	3.6E-03	2.1E-03	
Direct radiation dose	0.0E-00	0.0E-00	0.0E-00	0.0E-00	
Total	8.5E-02	5.2E-02	1.6E-02	4.0E-02	
Cumulative Total Dose (Total Body or other organ) mrem					1.9E-01
		Annual Limit mrem			2.5E+01
		Percentage of Limit			< 1 %
Thyroid Dose (mrem)					
Total body air submersion	6.2E-02	2.2E-03	2.2E-03	7.7E-03	
Thyroid dose (airborne)	7.3E-03	9.6E-03	7.4E-03	1.4E-02	
Total body dose (liquid)	6.8E-03	1.8E-02	3.1E-03	1.8E-03	
Thyroid dose (liquid)	2.3E-03	4.8E-03	2.6E-03	1.8E-03	
Direct radiation dose	0.0E-00	0.0E-00	0.0E-00	0.0E-00	
Total (Thyroid)	7.8E-02	3.5E-02	1.5E-02	2.5E-02	
Cumulative Total Dose (Thyroid) mrem					1.5E-01
		Annual Limit mrem			7.5E+01
		Percentage of Limit			< 1 %

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 4

Joint Frequency Distribution in Percent
for Ground Level Releases
First Quarter 1992

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.049	0.098	0.049	0.0	0.0	0.0	0.196
NNE	0.0	0.0	0.049	0.343	0.687	0.490	0.0	0.0	0.0	1.569
NE	0.0	0.0	0.0	0.294	0.392	0.343	0.0	0.0	0.0	1.030
ENE	0.0	0.0	0.0	0.196	0.0	0.0	0.0	0.0	0.0	0.196
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.049	0.049	0.049	0.0	0.0	0.0	0.147
SSW	0.0	0.0	0.049	0.049	0.294	0.589	0.0	0.0	0.0	0.981
SW	0.0	0.0	0.0	0.098	0.147	0.147	0.0	0.0	0.0	0.392
WSW	0.0	0.0	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.049
W	0.0	0.0	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.049
WNW	0.0	0.0	0.0	0.0	0.0	0.147	0.0	0.0	0.0	0.147
NW	0.0	0.0	0.0	0.049	0.147	0.392	0.0	0.0	0.0	0.589
NNW	0.0	0.0	0.0	0.0	0.196	0.441	0.0	0.0	0.0	0.638
SUBTOTAL	0.0	0.0	0.098	1.177	2.011	2.746	0.0	0.0	0.0	6.032

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2057
TOTAL HOURS OF STABILITY CLASS A	127
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	123
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2039
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 7.2 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-1.	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.098	0.098	0.0	0.0	0.0	0.196
NNE	0.0	0.0	0.147	0.245	0.441	0.098	0.0	0.0	0.0	0.932
NE	0.0	0.0	0.196	0.392	0.196	0.049	0.0	0.0	0.0	0.834
ENE	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.049
E	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.049
ESE	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
SE	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
SSE	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
S	0.0	0.0	0.0	0.049	0.049	0.049	0.0	0.0	0.0	0.147
SSW	0.0	0.0	0.0	0.049	0.343	0.147	0.0	0.0	0.0	0.539
SW	0.0	0.0	0.049	0.098	0.343	0.098	0.049	0.0	0.0	0.638
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.049
WNW	0.0	0.0	0.0	0.0	0.147	0.098	0.0	0.0	0.0	0.245
NW	0.0	0.0	0.0	0.0	0.098	0.098	0.0	0.0	0.0	0.196
NNW	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
SUBTOTAL	0.0	0.049	0.441	1.030	1.766	0.736	0.049	0.0	0.0	4.071

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2057
TOTAL HOURS OF STABILITY CLASS B 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2039
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 6.2 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA-T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0:0	0.049	0.049	0.049	0.0	0.0	0.0	0.147
NNE	0.0	0.0	0.0	0.147	0.196	0.147	0.0	0.0	0.0	0.490
NE	0.0	0.0	0.245	0.147	0.049	0.049	0.0	0.0	0.0	0.490
ENE	0.0	0.0	0.245	0.0	0.0	0.0	0.0	0.0	0.0	0.245
E	0.0	0.049	0.098	0.0	0.0	0.0	0.0	0.0	0.0	0.147
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.049	0.049	0.0	0.0	0.0	0.0	0.0	0.098
SSE	0.0	0.0	0.0	0.098	0.0	0.049	0.0	0.0	0.0	0.147
S	0.0	0.0	0.049	0.098	0.049	0.0	0.0	0.0	0.0	0.196
SSW	0.0	0.0	0.147	0.245	0.441	0.049	0.0	0.0	0.0	0.883
SW	0.0	0.0	0.0	0.147	0.147	0.049	0.0	0.0	0.0	0.343
WSW	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.049
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.049	0.0	0.0	0.0	0.049
NW	0.0	0.0	0.0	0.0	0.147	0.049	0.0	0.0	0.0	0.196
NNW	0.0	0.0	0.0	0.0	0.049	0.049	0.0	0.0	0.0	0.098
SUBTOTAL	0.0	0.049	0.834	1.030	1.128	0.539	0.0	0.0	0.0	3.580

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2057
TOTAL HOURS OF STABILITY CLASS C	73
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	73
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2039
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 5.3 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.004	0.245	0.490	1.324	1.422	1.324	0.0	0.0	0.0	4.810
NNE	0.007	0.245	1.177	1.177	1.324	1.618	0.049	0.0	0.0	5.598
NE	0.004	0.098	0.589	0.490	0.147	0.0	0.0	0.0	0.0	1.328
ENE	0.002	0.098	0.196	0.0	0.0	0.0	0.0	0.0	0.0	0.296
E	0.001	0.098	0.147	0.0	0.0	0.0	0.0	0.0	0.0	0.247
ESE	0.001	0.049	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.099
SE	0.002	0.098	0.196	0.049	0.0	0.0	0.0	0.0	0.0	0.345
SSE	0.002	0.147	0.196	0.049	0.049	0.049	0.0	0.0	0.0	0.492
S	0.005	0.196	0.785	0.638	0.098	0.245	0.0	0.0	0.0	1.967
SSW	0.008	0.294	1.275	2.109	0.736	0.294	0.0	0.0	0.0	4.716
SW	0.008	0.0	1.471	1.373	0.490	0.294	0.098	0.0	0.0	3.735
WSW	0.002	0.0	0.343	0.098	0.049	0.196	0.0	0.0	0.0	0.688
W	0.002	0.147	0.196	0.0	0.049	0.441	0.0	0.0	0.0	0.836
WNW	0.001	0.098	0.0	0.0	0.638	0.147	0.0	0.0	0.0	0.883
NW	0.001	0.0	0.147	0.638	0.834	1.128	0.0	0.0	0.0	2.747
NNW	0.002	0.049	0.245	0.687	1.422	0.392	0.0	0.0	0.0	2.797
SUBTOTAL	0.049	1.864	7.504	8.632	7.258	6.130	0.147	0.0	0.0	31.584

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2057
TOTAL HOURS OF STABILITY CLASS D	651
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	644
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2039
TOTAL HOURS CALM	1

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 5.1 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.084	0.539	1.913	1.373	0.539	0.147	0.0	0.0	0.0	4.596
NNE	0.094	0.343	2.403	2.011	0.539	0.147	0.0	0.0	0.0	5.538
NE	0.027	0.245	0.539	0.098	0.0	0.0	0.0	0.0	0.0	0.910
ENE	0.008	0.196	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.254
E	0.005	0.147	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.152
ESE	0.005	0.049	0.098	0.0	0.0	0.0	0.0	0.0	0.0	0.152
SE	0.008	0.245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.254
SSE	0.007	0.147	0.049	0.0	0.098	0.049	0.0	0.0	0.0	0.350
S	0.039	0.343	0.785	0.687	0.343	0.490	0.0	0.0	0.0	2.687
SSW	0.080	0.638	1.717	1.667	0.343	0.0	0.0	0.0	0.0	4.445
SW	0.080	0.294	2.060	1.324	0.392	0.539	0.0	0.0	0.0	4.691
WSW	0.027	0.049	0.736	0.343	0.098	0.245	0.098	0.0	0.0	1.596
W	0.012	0.049	0.294	0.441	0.245	0.196	0.0	0.0	0.0	1.238
WNW	0.015	0.147	0.294	0.539	0.147	0.049	0.0	0.0	0.0	1.192
NW	0.027	0.049	0.736	0.687	0.245	0.147	0.0	0.0	0.0	1.890
NNW	0.022	0.196	0.441	0.834	0.245	0.196	0.0	0.0	0.0	1.934
SUBTOTAL	0.539	3.678	12.114	10.005	3.237	2.207	0.098	0.0	0.0	31.878

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2057
TOTAL HOURS OF STABILITY CLASS E	654
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	650
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2039
TOTAL HOURS CALM	11

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 5.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 3.7 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.045	0.098	1.030	0.245	0.0	0.0	0.0	0.0	0.0	1.418
NNE	0.174	0.589	3.776	0.490	0.0	0.0	0.0	0.0	0.0	5.029
NE	0.062	0.490	1.079	0.049	0.0	0.0	0.0	0.0	0.0	1.681
ENE	0.006	0.147	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.153
E	0.002	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.051
ESE	0.004	0.049	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.102
SE	0.004	0.098	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.102
SSE	0.016	0.294	0.098	0.0	0.0	0.0	0.0	0.0	0.0	0.408
S	0.033	0.392	0.441	0.049	0.0	0.0	0.0	0.0	0.0	0.916
SSW	0.049	0.196	1.030	0.0	0.0	0.0	0.0	0.0	0.0	1.275
SW	0.025	0.098	0.539	0.294	0.0	0.049	0.0	0.0	0.0	1.006
WSW	0.006	0.0	0.147	0.196	0.0	0.0	0.0	0.0	0.0	0.349
W	0.002	0.0	0.049	0.098	0.0	0.0	0.0	0.0	0.0	0.149
WNW	0.002	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.051
NW	0.008	0.0	0.196	0.049	0.0	0.0	0.0	0.0	0.0	0.253
NNW	0.004	0.0	0.098	0.098	0.0	0.0	0.0	0.0	0.0	0.200
SUBTOTAL	0.441	2.550	8.534	1.569	0.0	0.049	0.0	0.0	0.0	13.144

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2057
TOTAL HOURS OF STABILITY CLASS F 270
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 268
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2039
TOTAL HOURS CALM 9

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 2.2 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 92 - MAR 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.008	0.049	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.106
NNE	0.180	0.294	1.864	0.049	0.0	0.0	0.0	0.0	0.0	2.387
NE	0.139	0.834	0.834	0.0	0.0	0.0	0.0	0.0	0.0	1.806
ENE	0.041	0.441	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.531
E	0.016	0.196	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.213
ESE	0.020	0.196	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.266
SE	0.053	0.638	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.691
SSE	0.057	0.392	0.294	0.0	0.0	0.0	0.0	0.0	0.0	0.744
S	0.049	0.343	0.245	0.0	0.0	0.0	0.0	0.0	0.0	0.638
SSW	0.053	0.343	0.294	0.0	0.0	0.0	0.0	0.0	0.0	0.691
SW	0.082	0.245	0.736	0.098	0.0	0.0	0.0	0.0	0.0	1.161
WSW	0.012	0.0	0.147	0.0	0.0	0.0	0.0	0.0	0.0	0.159
W	0.016	0.049	0.147	0.0	0.0	0.0	0.0	0.0	0.0	0.213
WNW	0.004	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.053
NW	0.004	0.0	0.049	0.0	0.0	0.0	0.0	0.0	0.0	0.053
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.736	4.022	4.806	0.147	0.0	0.0	0.0	0.0	0.0	9.711

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2057
TOTAL HOURS OF STABILITY CLASS G	199
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	198
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2039
TOTAL HOURS CALM	15

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 04/24/92

MEAN WIND SPEED = 1.6 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 5

Joint Frequency Distribution in Percent
for Ground Level Releases
Second Quarter 1992

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.047	0.282	0.094	0.0	0.0	0.0	0.424
NNE	0.0	0.0	0.047	0.565	0.518	0.565	0.0	0.0	0.0	1.695
NE	0.0	0.0	0.188	0.282	0.424	0.141	0.0	0.0	0.0	1.036
ENE	0.0	0.0	0.188	0.094	0.0	0.0	0.0	0.0	0.0	0.282
E	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.047
ESE	0.0	0.047	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.094
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.047	0.047	0.0	0.0	0.094
S	0.0	0.0	0.0	0.0	0.141	0.0	0.0	0.0	0.0	0.141
SSW	0.0	0.0	0.0	0.094	0.424	0.377	0.0	0.0	0.0	0.895
SW	0.0	0.0	0.0	0.047	0.330	0.235	0.0	0.0	0.0	0.612
WSW	0.0	0.0	0.0	0.0	0.141	0.0	0.0	0.0	0.0	0.141
W	0.0	0.0	0.0	0.0	0.0	0.094	0.0	0.0	0.0	0.094
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.094	0.0	0.0	0.094
NW	0.0	0.0	0.0	0.0	0.0	0.047	0.047	0.0	0.0	0.094
NNW	0.0	0.0	0.0	0.0	0.0	0.518	0.0	0.0	0.0	0.518
SUBTOTAL	0.0	0.047	0.518	1.130	2.260	2.119	0.188	0.0	0.0	6.262

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS A 133
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 133
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 6.8 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.188	0.0	0.0	0.0	0.0	0.188
NNE	0.0	0.0	0.141	0.235	0.235	0.094	0.0	0.0	0.0	0.706
NE	0.0	0.0	0.330	0.377	0.0	0.047	0.0	0.0	0.0	0.753
ENE	0.0	0.0	0.094	0.047	0.0	0.0	0.0	0.0	0.0	0.141
E	0.0	0.0	0.094	0.047	0.0	0.0	0.0	0.0	0.0	0.141
ESE	0.0	0.0	0.141	0.047	0.0	0.0	0.0	0.0	0.0	0.188
SE	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.047
SSE	0.0	0.0	0.0	0.047	0.0	0.0	0.047	0.0	0.0	0.094
S	0.0	0.0	0.047	0.094	0.094	0.094	0.0	0.0	0.0	0.330
SSW	0.0	0.0	0.0	0.282	0.518	0.047	0.0	0.0	0.0	0.847
SW	0.0	0.0	0.047	0.377	0.235	0.235	0.0	0.0	0.0	0.895
WSW	0.0	0.0	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.047
W	0.0	0.0	0.0	0.0	0.141	0.0	0.0	0.0	0.0	0.141
WNW	0.0	0.0	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.047
NW	0.0	0.0	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.047
NNW	0.0	0.0	0.0	0.0	0.0	0.141	0.047	0.0	0.0	0.188
SUBTOTAL	0.0	0.0	0.942	1.554	1.554	0.659	0.094	0.0	0.0	4.802

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS B 102
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 102
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 5.4 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA-T(=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.047	0.282	0.094	0.0	0.0	0.0	0.424
NNE	0.0	0.0	0.235	0.235	0.235	0.282	0.0	0.0	0.0	0.989
NE	0.0	0.0	0.094	0.047	0.047	0.0	0.0	0.0	0.0	0.188
ENE	0.0	0.0	0.094	0.0	0.0	0.0	0.0	0.0	0.0	0.094
E	0.0	0.0	0.141	0.0	0.0	0.0	0.0	0.0	0.0	0.141
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.141	0.047	0.0	0.0	0.0	0.0	0.0	0.188
SSE	0.0	0.0	0.047	0.235	0.047	0.047	0.0	0.0	0.0	0.377
S	0.0	0.0	0.094	0.188	0.094	0.0	0.0	0.0	0.0	0.377
SSW	0.0	0.0	0.235	0.565	0.847	0.0	0.0	0.0	0.0	1.648
SW	0.0	0.0	0.094	0.706	0.424	0.094	0.0	0.0	0.0	1.318
WSW	0.0	0.0	0.094	0.141	0.047	0.047	0.0	0.0	0.0	0.330
W	0.0	0.0	0.047	0.0	0.047	0.0	0.0	0.0	0.0	0.094
WNW	0.0	0.0	0.0	0.0	0.047	0.0	0.0	0.0	0.0	0.047
NW	0.0	0.0	0.0	0.047	0.047	0.047	0.0	0.0	0.0	0.141
NNW	0.0	0.0	0.0	0.0	0.094	0.282	0.0	0.0	0.0	0.377
SUBTOTAL	0.0	0.0	1.318	2.260	2.260	0.895	0.0	0.0	0.0	6.733

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS C 143
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 143
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 5.3 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.048	0.094	1.177	1.271	0.659	0.330	0.0	0.0	0.0	3.579
NNE	0.069	0.377	1.460	1.318	1.365	0.847	0.0	0.0	0.0	5.436
NE	0.066	0.377	1.365	0.188	0.141	0.094	0.0	0.0	0.0	2.231
ENE	0.011	0.0	0.282	0.0	0.0	0.0	0.0	0.0	0.0	0.293
E	0.002	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.049
ESE	0.007	0.0	0.188	0.0	0.0	0.0	0.0	0.0	0.0	0.195
SE	0.012	0.094	0.235	0.0	0.0	0.0	0.0	0.0	0.0	0.342
SSE	0.034	0.141	0.753	0.282	0.094	0.188	0.0	0.0	0.0	1.493
S	0.055	0.141	1.318	1.130	0.565	0.235	0.0	0.0	0.0	3.445
SSW	0.071	0.141	1.742	3.060	0.659	0.047	0.0	0.0	0.0	5.721
SW	0.060	0.094	1.507	3.154	0.753	0.141	0.0	0.0	0.0	5.710
WSW	0.016	0.047	0.377	0.047	0.141	0.047	0.0	0.0	0.0	0.675
W	0.018	0.141	0.330	0.0	0.047	0.0	0.0	0.0	0.0	0.536
WNW	0.007	0.094	0.094	0.0	0.047	0.0	0.0	0.0	0.0	0.242
NW	0.021	0.330	0.235	0.518	0.235	0.094	0.0	0.0	0.0	1.434
NNW	0.021	0.188	0.377	0.800	0.424	0.424	0.0	0.0	0.0	2.234
SUBTOTAL	0.518	2.307	11.441	11.770	5.132	2.448	0.0	0.0	0.0	33.616

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS D 719
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 714
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 11

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 4.1 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.251	0.847	2.307	1.460	0.424	0.047	0.0	0.0	0.0	5.335
NNE	0.228	0.706	2.166	0.800	0.330	0.235	0.0	0.0	0.0	4.466
NE	0.037	0.188	0.282	0.141	0.0	0.047	0.0	0.0	0.0	0.697
ENE	0.011	0.094	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.152
E	0.019	0.141	0.094	0.0	0.0	0.0	0.0	0.0	0.0	0.254
ESE	0.015	0.094	0.094	0.0	0.0	0.0	0.0	0.0	0.0	0.203
SE	0.022	0.141	0.141	0.094	0.0	0.0	0.0	0.0	0.0	0.399
SSE	0.026	0.141	0.188	0.094	0.330	0.0	0.0	0.0	0.0	0.779
S	0.101	0.424	0.847	0.518	0.330	0.0	0.0	0.0	0.0	2.220
SSW	0.228	0.800	2.072	0.659	0.188	0.047	0.0	0.0	0.0	3.995
SW	0.187	0.471	1.883	1.365	0.377	0.047	0.0	0.0	0.0	4.330
WSW	0.086	0.235	0.847	0.282	0.0	0.0	0.0	0.0	0.0	1.451
W	0.030	0.282	0.094	0.047	0.047	0.0	0.0	0.0	0.0	0.501
WNW	0.030	0.188	0.188	0.094	0.047	0.0	0.0	0.0	0.0	0.548
NW	0.082	0.330	0.706	0.377	0.094	0.0	0.0	0.0	0.0	1.589
NNW	0.105	0.282	1.036	0.565	0.188	0.047	0.0	0.0	0.0	2.223
SUBTOTAL	1.460	5.367	12.994	6.497	2.354	0.471	0.0	0.0	0.0	29.143

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2172
TOTAL HOURS OF STABILITY CLASS E	645
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	619
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2124
TOTAL HOURS CALM	31

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 2.9 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.219	0.330	2.166	0.235	0.0	0.0	0.0	0.0	0.0	2.949
NNE	0.252	1.036	1.836	0.047	0.0	0.0	0.0	0.0	0.0	3.171
NE	0.099	0.565	0.565	0.0	0.0	0.0	0.0	0.0	0.0	1.229
ENE	0.016	0.094	0.094	0.0	0.0	0.0	0.0	0.0	0.0	0.205
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.016	0.141	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.205
SSE	0.029	0.282	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.358
S	0.078	0.424	0.471	0.0	0.0	0.0	0.0	0.0	0.0	0.973
SSW	0.157	0.518	1.271	0.0	0.047	0.0	0.0	0.0	0.0	1.993
SW	0.165	0.235	1.648	0.282	0.0	0.0	0.0	0.0	0.0	2.331
WSW	0.025	0.094	0.188	0.047	0.0	0.0	0.0	0.0	0.0	0.354
W	0.004	0.0	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.051
WNW	0.008	0.0	0.094	0.0	0.0	0.0	0.0	0.0	0.0	0.102
NW	0.016	0.094	0.094	0.094	0.0	0.0	0.0	0.0	0.0	0.299
NNW	0.045	0.094	0.424	0.377	0.047	0.0	0.0	0.0	0.0	0.987
SUBTOTAL	1.130	3.908	8.992	1.083	0.094	0.0	0.0	0.0	0.0	15.207

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS F 337
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 323
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 24

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 2.0 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 92 - JUN 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.019	0.047	0.141	0.0	0.0	0.0	0.0	0.0	0.0	0.207
NNE	0.047	0.282	0.188	0.0	0.0	0.0	0.0	0.0	0.0	0.518
NE	0.028	0.235	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.311
ENE	0.028	0.141	0.141	0.0	0.0	0.0	0.0	0.0	0.0	0.311
E	0.019	0.188	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.207
ESE	0.005	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.052
SE	0.024	0.188	0.047	0.0	0.0	0.0	0.0	0.0	0.0	0.259
SSE	0.038	0.377	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.414
S	0.033	0.188	0.141	0.0	0.0	0.0	0.0	0.0	0.0	0.363
SSW	0.089	0.094	0.800	0.0	0.0	0.0	0.0	0.0	0.0	0.984
SW	0.042	0.0	0.424	0.047	0.0	0.0	0.0	0.0	0.0	0.513
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.005	0.0	0.047	0.0	0.047	0.0	0.0	0.0	0.0	0.099
SUBTOTAL	0.377	1.789	1.977	0.047	0.047	0.0	0.0	0.0	0.0	4.237

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2172
TOTAL HOURS OF STABILITY CLASS G 93
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 90
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2124
TOTAL HOURS CALM 8

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 08/03/92

MEAN WIND SPEED = 1.6 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 6

Joint Frequency Distribution in Percent
for Ground Level Releases
Third Quarter 1992

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.046
NNE	0.0	0.0	0.0	0.138	0.321	0.275	0.0	0.0	0.0	0.734
NE	0.0	0.0	0.046	0.367	0.183	0.046	0.0	0.0	0.0	0.642
ENE	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.046
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.046	0.046	0.0	0.0	0.0	0.0	0.0	0.092
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.138	0.046	0.138	0.0	0.0	0.0	0.321
SSW	0.0	0.0	0.092	0.275	0.321	0.0	0.0	0.0	0.0	0.688
SW	0.0	0.0	0.046	0.275	0.138	0.046	0.0	0.0	0.0	0.504
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	0.0	0.229	1.330	1.009	0.504	0.0	0.0	0.0	3.072

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS A 67
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 67
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2181
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 5.6 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.183	0.596	0.046	0.0	0.0	0.0	0.0	0.825
NE	0.0	0.0	0.229	0.413	0.092	0.092	0.0	0.0	0.0	0.825
ENE	0.0	0.0	0.092	0.092	0.0	0.0	0.0	0.0	0.0	0.183
E	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
ESE	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
SE	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.046
SSE	0.0	0.0	0.0	0.046	0.046	0.0	0.0	0.0	0.0	0.092
S	0.0	0.0	0.046	0.275	0.092	0.0	0.0	0.0	0.0	0.413
SSW	0.0	0.0	0.046	0.321	0.459	0.0	0.0	0.0	0.0	0.825
SW	0.0	0.0	0.138	0.413	0.138	0.046	0.0	0.0	0.0	0.734
WSW	0.0	0.0	0.046	0.092	0.0	0.0	0.0	0.0	0.0	0.138
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	0.0	0.871	2.293	0.871	0.138	0.0	0.0	0.0	4.172

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS B 91
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 91
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2181
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 4.6 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA-T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 SEP 30, 92

WIND DIRECTION	WIND SPEED (MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.046	0.275	0.0	0.0	0.0	0.0	0.0	0.321
NNE	0.0	0.0	0.183	0.596	0.0	0.046	0.0	0.0	0.0	0.825
NE	0.0	0.0	0.550	0.183	0.0	0.046	0.0	0.0	0.0	0.779
ENE	0.0	0.0	0.321	0.092	0.0	0.0	0.0	0.0	0.0	0.413
E	0.0	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.092
ESE	0.0	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.092
SE	0.0	0.0	0.275	0.0	0.0	0.0	0.0	0.0	0.0	0.275
SSE	0.0	0.0	0.138	0.046	0.046	0.0	0.0	0.0	0.0	0.229
S	0.0	0.0	0.046	0.459	0.046	0.0	0.0	0.0	0.0	0.550
SSW	0.0	0.0	0.138	1.009	0.183	0.0	0.0	0.0	0.0	1.330
SW	0.0	0.0	0.183	0.734	0.092	0.046	0.0	0.0	0.0	1.055
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.092	0.046	0.0	0.0	0.0	0.0	0.0	0.138
NW	0.0	0.0	0.0	0.0	0.092	0.0	0.0	0.0	0.0	0.092
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	0.0	2.155	3.439	0.459	0.138	0.0	0.0	0.0	6.190

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS C	135
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	135
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2181
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 4.0 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 °C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.003	0.183	1.192	0.504	0.229	0.0	0.0	0.0	0.0	2.112
NNE	0.005	0.138	2.201	1.834	1.055	0.321	0.0	0.0	0.0	5.553
NE	0.005	0.092	2.017	0.413	0.138	0.0	0.0	0.0	0.0	2.664
ENE	0.001	0.046	0.550	0.138	0.0	0.0	0.0	0.0	0.0	0.735
E	0.001	0.046	0.321	0.092	0.046	0.0	0.0	0.0	0.0	0.505
ESE	0.001	0.0	0.229	0.0	0.0	0.0	0.0	0.0	0.0	0.230
SE	0.001	0.0	0.413	0.046	0.046	0.0	0.0	0.0	0.0	0.505
SSE	0.002	0.138	0.734	0.413	0.046	0.0	0.0	0.0	0.0	1.332
S	0.007	0.229	2.705	2.247	0.596	0.046	0.0	0.0	0.0	5.830
SSW	0.010	0.183	4.127	5.273	0.917	0.0	0.0	0.0	0.0	10.510
SW	0.005	0.229	2.155	2.201	0.642	0.046	0.0	0.0	0.0	5.278
WSW	0.002	0.092	0.734	0.046	0.046	0.0	0.0	0.0	0.0	0.919
W	0.001	0.183	0.275	0.138	0.092	0.0	0.0	0.0	0.0	0.689
WNW	0.000	0.046	0.138	0.046	0.138	0.0	0.0	0.0	0.0	0.367
NW	0.000	0.0	0.183	0.0	0.046	0.046	0.0	0.0	0.0	0.276
NNW	0.001	0.092	0.321	0.092	0.092	0.0	0.0	0.0	0.0	0.597
SUBTOTAL	0.046	1.696	18.294	13.480	4.127	0.459	0.0	0.0	0.0	38.102

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS D	838
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	831
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2181
TOTAL HOURS CALM	1

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 3.6 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.197	1.238	5.456	1.055	0.321	0.0	0.0	0.0	0.0	8.267
NNE	0.149	1.651	3.393	1.055	0.367	0.0	0.0	0.0	0.0	6.614
NE	0.022	0.459	0.275	0.092	0.046	0.0	0.0	0.0	0.0	0.893
ENE	0.004	0.092	0.046	0.046	0.0	0.0	0.0	0.0	0.0	0.187
E	0.003	0.046	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.094
ESE	0.011	0.229	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.378
SE	0.016	0.413	0.138	0.092	0.0	0.0	0.0	0.0	0.0	0.658
SSE	0.027	0.734	0.183	0.092	0.0	0.046	0.0	0.0	0.0	1.082
S	0.064	0.688	1.467	0.275	0.0	0.0	0.0	0.0	0.0	2.494
SSW	0.134	0.871	3.668	0.596	0.092	0.0	0.0	0.0	0.0	5.361
SW	0.108	0.779	2.889	1.100	0.275	0.046	0.0	0.0	0.0	5.198
WSW	0.061	0.459	1.605	0.367	0.0	0.046	0.0	0.0	0.0	2.537
W	0.028	0.413	0.550	0.092	0.046	0.0	0.0	0.0	0.0	1.129
WNW	0.016	0.138	0.413	0.183	0.0	0.046	0.0	0.0	0.0	0.796
NW	0.014	0.275	0.183	0.229	0.046	0.0	0.0	0.0	0.0	0.747
NNW	0.064	0.734	1.421	0.183	0.0	0.046	0.046	0.0	0.0	2.494
SUBTOTAL	0.917	9.216	21.871	5.456	1.192	0.229	0.046	0.0	0.0	38.927

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS E 850
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 849
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2181
TOTAL HOURS CALM 20

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 2.4 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.070	0.413	2.201	0.229	0.0	0.0	0.0	0.0	0.0	2.913
NNE	0.054	0.917	1.100	0.229	0.0	0.0	0.0	0.0	0.0	2.301
NE	0.007	0.138	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.282
ENE	0.001	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.047
E	0.001	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.047
ESE	0.005	0.183	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.188
SE	0.010	0.367	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.377
SSE	0.010	0.275	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.377
S	0.016	0.275	0.321	0.0	0.0	0.0	0.0	0.0	0.0	0.612
SSW	0.009	0.046	0.275	0.046	0.0	0.0	0.0	0.0	0.0	0.375
SW	0.009	0.0	0.321	0.046	0.0	0.0	0.0	0.0	0.0	0.375
WSW	0.001	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.047
W	0.006	0.092	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.235
WNW	0.002	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.094
NW	0.011	0.046	0.367	0.0	0.0	0.0	0.0	0.0	0.0	0.424
NNW	0.017	0.092	0.550	0.0	0.0	0.0	0.0	0.0	0.0	0.659
SUBTOTAL	0.229	2.980	5.594	0.550	0.0	0.0	0.0	0.0	0.0	9.353

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS F	204
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	204
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2181
TOTAL HOURS CALM	5

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 1.9 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JUL 1, 92 - SEP 30, 9?

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.046
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	0.046	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.183

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS G 4
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 4
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2181
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 10/23/92

MEAN WIND SPEED = 2.1 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

Radiological Impact Assessment
Sequoyah Nuclear Plant
January-December 1992

TABLE 7

Joint Frequency Distribution in Percent
for Ground Level Releases
Fourth Quarter 1992

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.046	0.092	0.276	0.0	0.0	0.0	0.413
NE	0.0	0.0	0.046	0.276	0.230	0.046	0.0	0.0	0.0	0.597
ENE	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.046
SSW	0.0	0.0	0.0	0.184	0.184	0.138	0.0	0.0	0.0	0.505
SW	0.0	0.0	0.0	0.230	0.046	0.0	0.0	0.0	0.0	0.276
WSW	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
W	0.0	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.046
WNW	0.0	0.0	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.046
NW	0.0	0.0	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.046
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	0.0	0.184	0.781	0.597	0.551	0.0	0.0	0.0	2.113

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2183
TOTAL HOURS OF STABILITY CLASS A	46
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	46
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2177
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 6.1 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.046	0.046	0.0	0.0	0.0	0.0	0.092
NNE	0.0	0.0	0.046	0.092	0.184	0.230	0.0	0.0	0.0	0.551
NE	0.0	0.0	0.0	0.184	0.322	0.0	0.0	0.0	0.0	0.505
ENE	0.0	0.0	0.046	0.138	0.0	0.0	0.0	0.0	0.0	0.184
E	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.092	0.046	0.0	0.0	0.0	0.0	0.0	0.138
S	0.0	0.0	0.046	0.046	0.0	0.0	0.0	0.0	0.0	0.092
SSW	0.0	0.0	0.092	0.184	0.092	0.046	0.0	0.0	0.0	0.413
SW	0.0	0.0	0.046	0.276	0.046	0.0	0.0	0.0	0.0	0.367
WSW	0.0	0.0	0.138	0.0	0.092	0.0	0.0	0.0	0.0	0.230
W	0.0	0.0	0.046	0.0	0.0	0.092	0.0	0.0	0.0	0.138
WNW	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.045
SUBTOTAL	0.0	0.0	0.643	1.011	0.827	0.367	0.0	0.0	0.0	2.848

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2183
TOTAL HOURS OF STABILITY CLASS B	62
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	62
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2177
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 5.3 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA-T(=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.046	0.0	0.046	0.046	0.0	0.0	0.0	0.138
NNE	0.0	0.0	0.046	0.276	0.138	0.367	0.0	0.0	0.0	0.827
NE	0.0	0.0	0.092	0.230	0.184	0.138	0.0	0.0	0.0	0.643
ENE	0.0	0.0	0.138	0.092	0.0	0.0	0.0	0.0	0.0	0.230
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.092
SE	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.092	0.046	0.046	0.046	0.0	0.0	0.0	0.230
SSW	0.0	0.0	0.184	0.322	0.046	0.0	0.0	0.0	0.0	0.551
SW	0.0	0.0	0.0	0.505	0.0	0.0	0.0	0.0	0.0	0.505
WSW	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
W	0.0	0.0	0.0	0.0	0.046	0.046	0.0	0.0	0.0	0.092
WNW	0.0	0.0	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.046
NW	0.0	0.0	0.0	0.0	0.0	0.092	0.0	0.0	0.0	0.092
NNW	0.0	0.0	0.0	0.184	0.046	0.046	0.0	0.0	0.0	0.276
SUBTOTAL	0.0	0.0	0.781	1.654	0.597	0.781	0.0	0.0	0.0	3.813

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2183
TOTAL HOURS OF STABILITY CLASS C 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2177
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 5.3 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH)									
	CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.019	0.138	1.011	2.710	2.480	0.873	0.0	0.0	0.0	7.231
NNE	0.043	0.0	2.618	2.664	1.975	1.424	0.0	0.0	0.0	8.725
NE	0.018	0.0	1.102	0.781	0.413	1.056	0.046	0.0	0.0	3.417
ENE	0.013	0.092	0.689	0.0	0.0	0.0	0.0	0.0	0.0	0.794
E	0.005	0.092	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.280
ESE	0.004	0.184	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.233
SE	0.004	0.092	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.233
SSE	0.005	0.0	0.276	0.0	0.0	0.092	0.0	0.0	0.0	0.372
S	0.019	0.092	1.056	0.551	0.689	0.643	0.0	0.0	0.0	3.051
SSW	0.034	0.138	1.929	2.940	1.746	0.459	0.0	0.0	0.0	7.246
SW	0.029	0.184	1.562	1.746	0.505	0.597	0.0	0.0	0.0	4.622
WSW	0.014	0.092	0.781	0.184	0.092	0.0	0.0	0.0	0.0	1.163
W	0.005	0.092	0.184	0.138	0.092	0.0	0.0	0.0	0.0	0.510
WNW	0.005	0.184	0.138	0.0	0.092	0.138	0.0	0.0	0.0	0.556
NW	0.005	0.138	0.138	0.459	0.322	0.046	0.0	0.0	0.0	1.107
NNW	0.011	0.046	0.597	0.873	0.919	0.276	0.0	0.0	0.0	2.721
SUBTOTAL	0.230	1.562	12.448	13.045	9.325	5.604	0.046	0.0	0.0	42.260

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2183
TOTAL HOURS OF STABILITY CLASS D 926
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 920
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2177
TOTAL HOURS CALM 5

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 4.8 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.201	0.459	2.756	0.919	0.367	0.092	0.0	0.0	0.0	4.794
NNE	0.247	0.735	3.215	2.435	0.413	0.092	0.0	0.0	0.0	7.137
NE	0.086	0.505	0.873	0.138	0.092	0.0	0.0	0.0	0.0	1.694
ENE	0.014	0.138	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.244
E	0.009	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.146
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.026	0.322	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.439
SSE	0.017	0.184	0.092	0.0	0.0	0.046	0.046	0.0	0.0	0.385
S	0.063	0.367	0.643	0.551	0.230	0.322	0.046	0.0	0.0	2.222
SSW	0.207	0.367	2.940	1.608	0.735	0.322	0.0	0.0	0.0	6.178
SW	0.149	0.459	1.929	1.240	0.735	0.322	0.0	0.0	0.0	4.835
WSW	0.086	0.413	0.965	0.643	0.092	0.046	0.0	0.0	0.0	2.245
W	0.017	0.046	0.230	0.230	0.0	0.0	0.0	0.0	0.0	0.523
WNW	0.037	0.230	0.367	0.230	0.046	0.046	0.0	0.0	0.0	0.956
NW	0.032	0.184	0.322	0.230	0.046	0.046	0.0	0.0	0.0	0.858
NNW	0.049	0.276	0.505	0.459	0.184	0.138	0.0	0.0	0.0	1.611
SUBTOTAL	1.240	4.823	15.021	8.682	2.940	1.470	0.092	0.0	0.0	34.267

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2183
TOTAL HOURS OF STABILITY CLASS E 746
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 746
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2177
TOTAL HOURS CALM 27

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 3.2 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.087	1.367	1.654	0.138	0.0	0.0	0.0	0.0	0.0	2.246
NNE	0.174	0.781	3.261	0.276	0.0	0.0	0.0	0.0	0.0	4.492
NE	0.051	0.643	0.551	0.046	0.0	0.0	0.0	0.0	0.0	1.292
ENE	0.006	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.144
E	0.002	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.048
ESE	0.008	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.192
SE	0.012	0.184	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.287
SSE	0.006	0.0	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.144
S	0.018	0.046	0.367	0.0	0.0	0.0	0.0	0.0	0.0	0.431
SSW	0.024	0.184	0.367	0.046	0.0	0.0	0.0	0.0	0.0	0.621
SW	0.026	0.046	0.551	0.092	0.046	0.0	0.0	0.0	0.0	0.761
WSW	0.012	0.046	0.230	0.046	0.0	0.0	0.0	0.0	0.0	0.333
W	0.002	0.0	0.046	0.046	0.0	0.0	0.0	0.0	0.0	0.094
WNW	0.010	0.046	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.240
NW	0.004	0.0	0.092	0.092	0.0	0.0	0.0	0.0	0.0	0.188
NNW	0.018	0.092	0.322	0.184	0.0	0.0	0.0	0.0	0.0	0.615
SUBTOTAL	0.459	2.802	7.855	0.965	0.046	0.0	0.0	0.0	0.0	12.127

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2183
TOTAL HOURS OF STABILITY CLASS F	264
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	264
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2177
TOTAL HOURS CALM	10

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 2.1 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 92 - DEC 31, 92

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.092	0.505	0.0	0.0	0.0	0.0	0.0	0.0	0.597
NE	0.0	0.092	0.689	0.0	0.0	0.0	0.0	0.0	0.0	0.781
ENE	0.0	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.184
E	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.092
ESE	0.0	0.138	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.138
SE	0.0	0.230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.230
SSE	0.0	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.092
S	0.0	0.092	0.184	0.0	0.0	0.0	0.0	0.0	0.0	0.276
SSW	0.0	0.046	0.092	0.0	0.0	0.0	0.0	0.0	0.0	0.138
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.046	0.0	0.0	0.0	0.0	0.0	0.0	0.046
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL	0.0	1.056	1.516	0.0	0.0	0.0	0.0	0.0	0.0	2.572

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2183
TOTAL HOURS OF STABILITY CLASS G	56
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	56
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2177
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 9.73 METER LEVEL

DATE PRINTED: 01/26/93

MEAN WIND SPEED = 1.8 MPH

NOTE: TOTALS AND SUBTOTALS ABOVE ARE OBTAINED FROM UNROUNDED NUMBERS

ENCLOSURE 3

SEQUOYAH NUCLEAR PLANT

OFFSITE DOSE CALCULATION MANUAL

(REVISION 28)

SEQUOYAH NUCLEAR PLANT

OFFSITE DOSE CALCULATION MANUAL

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT
OFFSITE DOSE CALCULATION MANUAL
DATES OF REVISIONS

Original ODCM	02/29/80[1]
Revision 1	04/15/80[2]
Revision 2	10/07/80[2]
Revision 3	11/03/80, 02/10/81 04/08/81, 06/04/81[2]
Revision 4	11/22/82 10/22/81, 11/28/81, 04/29/82[2]
Revision 5	10/21/82[2]
Revision 6	01/20/83[2]
Revision 7	03/23/83[2]
Revision 8	12/16/83[2]
Revision 9	03/07/84[2]
Revision 10	04/24/84[2]
Revision 11	08/21/84[2]
Revision 12	02/19/85[2]
Revision 13	12/02/85[3]
Revision 14	04/14/86[3]
Revision 15	11/05/86[3]
Revision 16	01/16/87[2]
Revision 17	10/28/87[2]
Revision 18	01/05/88[2]
Revision 19	03/30/88[2]
Revision 20	07/19/88[2]
Revision 20A	12/14/88[2]
Revision 21	02/15/89[2]
Revision 22	06/01/89[2]
Revision 22	06/01/89[2]
Revision 23	06/28/89, 09/15/89[4]
Revision 24	02/15/90[2]
Revision 25	11/02/90, 04/24/91[2]
Revision 26	01/17/92[5]
Revision 27	04/15/92[2]
Revision 28	09/22/92[6]

Recommended by _____ Date 9/22/92
RARC Chairman

Approved by _____ Date 9/25/92
Manager, Technical Programs

1 Low Power license for Sequoyah Unit 1
2 RARC Meeting date
3 Date approved by RARC Chairman
4 Revision 23 implements the Nuclear Data Effluent Management Software. This ODCM revision and the software will be implemented concurrently on October 9, 1989. Releases made during the month of October prior to the software implementation will be backfitted to comply with this revision.
5 Revision 26 was recommended for approval by the SQN RARC at the October 2, 1991 meeting. The revision date is January 17, 1992. The final implementation date for Revision 26 will be March 17, 1992.
6 The implementation date for Revision 28 will be December 1, 1992.

0316v

SEQUOYAH NUCLEAR PLANT
OFFSITE DOSE CALCULATION MANUAL
EFFECTIVE PAGE LISTING
Revision 28

Page(s)	Revision
TOC 1	Revision 26
TOC 2-4	Revision 28
TOC 5-8	Revision 26
1	Revision 27
2-3	Revision 26
4	Revision 28
5	Revision 26
6	Revision 27
7-8	Revision 26
9	Revision 27
10-11	Revision 26
12	Revision 27
13	Revision 26
14-15	Revision 27
16-17	Revision 26
18	Revision 27
19-22	Revision 26
23	Revision 27
24-27	Revision 26
28-29	Revision 27
30-34	Revision 26
35	Revision 27
36	Revision 28
37-51	Revision 26
52-55	Revision 27
56-61	Revision 26
62	Revision 27
63-65	Revision 26
66	Revision 27
67	Revision 26
68-69	Revision 27
70-101	Revision 26
102-105	Revision 27
106	Revision 26
107	Revision 27
108	Revision 26
109-110	Revision 27
111-112	Revision 26
113-114	Revision 27
115	Revision 26
116-117	Revision 27
118-140	Revision 26
141	Revision 27

SEQUOYAH NUCLEAR PLANT
OFFSITE DOSE CALCULATION MANUAL
EFFECTIVE PAGE LISTING
Revision 28

Page(s)	Revision
142-153	Revision 26
154-156	Revision 27
157-162	Revision 26
163	Revision 27
164-171	Revision 28
172	Revision 27
173-174	Revision 28

SQN ODCM
TABLE OF CONTENTS
Revision 26

OFFSITE DOSE CALCULATION/ENVIRONMENTAL MONITORING METHODOLOGIES

OFFSITE DOSE CALCULATION/ENVIRONMENTAL MONITORING METHODOLOGIES

OFFSITE DOSE CALCULATION/ENVIRONMENTAL MONITORING METHODOLOGIES
7.0 GASEOUS EFFLUENTS

OFFSITE DOSE CALCULATION/ENVIRONMENTAL MONITORING METHODOLOGIES

SQN ODCM
TABLE OF CONTENTS
Revision 26

List of Tables

List of Figures

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

INTRODUCTION

The Sequoyah Nuclear Plant (SQN) Offsite Dose Calculation Manual (ODCM) is a supporting document of the SQN Technical Specifications. The ODCM is divided into two major parts. The first part of the ODCM contains: 1) Radioactive Effluent Controls required by Section 6.8.5.f of the SQN Technical Specifications; 2) Radiological Environmental Monitoring Controls required in Section 6.8.5.g of the SQN Technical Specifications; 3) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Semiannual Radioactive Effluent Release Reports required by SQN Technical Specifications 6.9.1.6 and 6.9.1.8; and, 4) Administrative Controls for the ODCM requirements. The second part of the ODCM contains the methodologies used to: 1) calculate offsite doses resulting from radioactive gaseous and liquid effluents; 2) calculate gaseous and liquid effluent monitor Alarm/Trip setpoints; and, 3) conduct the Environmental Radiological Monitoring Program. R27 R27 R27 R27

The SQN ODCM will be maintained for use as a reference guide on accepted methodologies and calculations. Changes in the calculation methods or parameters will be incorporated into the ODCM in order to assure that the ODCM represents the present methodology in all applicable areas. Any licensee initiated ODCM changes will be implemented in accordance with SQN Technical Specification 6.14 and ODCM Administrative Control 5.3. R27

SECTIONS 1.0 AND 2.0

CONTROLS AND

SURVEILLANCE REQUIREMENTS

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1.2.0 APPLICABILITY

CONTROLS

1.0.1 Compliance with the Controls contained in the succeeding controls is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Control, the associated ACTION requirements shall be met.

1.0.2 Noncompliance with a Control shall exist when the requirements of the Control and associated ACTION requirements are not met within the specified time intervals. If the Control is restored prior to the expiration of the specified intervals, completion of the ACTION requirements is not required.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.0 APPLICABILITY

SURVEILLANCE REQUIREMENTS

2.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Controls unless otherwise stated in the individual Surveillance Requirement.

2.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the specified surveillance interval. R28 R28 R28 R28

2.0.3 Failure to perform a Surveillance Requirement within the specified time interval shall constitute a failure to meet the OPERABILITY requirements for a Control. Exceptions to these requirements are stated in the individual Controls. Surveillance Requirements do not have to be performed on inoperable equipment.

2.0.4 Entry into an OPERATIONAL MODE or other specified applicable condition shall not be made unless the Surveillance Requirement(s) associated with the Control has been performed within the applicable surveillance interval or as otherwise specified.

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RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.1 INSTRUMENTATION

1/2.1.1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

1.1.1 In accordance with SQN Technical Specification 6.8.5.f.1, the radioactive liquid effluent monitoring instrumentation channels shown in Table 1.1-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of ODCM Control 1.2.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the methodology and parameters in ODCM Section 6.2.

APPLICABILITY: This requirement is applicable during all releases via these pathways.

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required above, without delay suspend the release of radioactive liquid effluents monitored by the affected channel or declare the channel inoperable, or change the setpoint so that it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the action shown in Table 1.1-1. Exert best effort to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semi-Annual Effluent Release Report why the inoperability could not be corrected within 30 days.

SURVEILLANCE REQUIREMENTS

2.1.1 Each radioactive liquid effluent monitoring channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 2.1-1.

Table 1.1-1 (Page 1 of 3)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels OPERABLE	Action	
1. GROSS RADIOACTIVITY MONITORS PROVIDING AUTOMATIC TERMINATION OF RELEASE			
a. Liquid Radwaste Effluent Line (0-RM-90-122)	1	30	R26
b. Steam Generator Blowdown Effluent Line (1,2-RM-90-120,121)	1	31	R26
c. Condensate Demineralizer Effluent Line (0-RM-90-225)	1	30	R26
2. GROSS RADIOACTIVITY MONITORS NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE			
a. Essential Raw Cooling Water Effluent Header** (0-RM-90-133,-134,-140,-141)	1	32	R26
b. Turbine Building Sump Effluent Line (0-RM-90-212)	1	32	R26
3. FLOW RATE MEASUREMENT DEVICES			
a. Liquid Radwaste Effluent Line (0-FI/FR-77-42)	1	33	R26
b. Condensate Demineralizer Effluent Line (0-FR-14-456)	1	33	R26
c. Steam Generator Blowdown Effluent Line (1,2-FI-15-44, 1,2-FR-15-25, 1,2-FT-15-43)	1	33	R26
d. Cooling Tower Blowdown Effluent Line (0-FT-27-175, 0-LS-27-225))	1	33	R27
4. TANK LEVEL INDICATING DEVICES			
a. Condensate Storage Tank (0-LI-2-230-D)	1	34	R26
b. Steam Generator Layup Tank* (LOCAL FLOAT)	1	34	R26
5. CONTINUOUS COMPOSITE SAMPLER AND SAMPLE FLOW MONITOR			
a. Condensate Demineralizer Regenerant Effluent Line (0-FI-14-466)	1	35	R26

*Required when connected to the secondary system
** Requires minimum of 1 Channel/Header to be OPERABLE.

Reformatting/Renumbering Changes R26

Table 1.1-1 (Page 2 of 3)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
TABLE NOTATION

ACTION 30 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with ODCM Control 2.2.1.1, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge line valving;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 31 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are analyzed for gross radioactivity gamma at a limit of detection of at least 10^{-7} microcuries/gram:

a. At least once per 12 hours when the specific activity of the secondary coolant is greater than or equal to 0.01 microcuries/gram DOSE EQUIVALENT I-131.

b. At least once per 24 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microcuries/gram DOSE EQUIVALENT I-131.

ACTION 32 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that, at least once per 12 hours, grab samples are collected and analyzed for gross radioactivity gamma at a limit of detection of at least 10^{-7} microcuries/ml.

ACTION 33 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continued provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be used to estimate flow.

Table 1.1-1 (Page 3 of 3)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
TABLE NOTATION

ACTION 34 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continued provided the tank liquid level is estimated during all liquid additions to the tank.

ACTION 35 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided representative batch samples of each tank to be released are taken prior to release and composited for analysis according to Table 2.2-1, footnote g.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Table 2.1-1 (Page 1 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Instrument	CHANNEL CHECK	SOURCE/ SENSOR CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	R27 R27
1. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE					
a. Liquid Radwaste Effluent Line (0-RM-90-122)	D	P	R(3)	Q(1)	R26
b. Steam Generator Blowdown Effluent Line (1,2-RM-90-120,121)	D	M	R(3)	Q(5)	R27
c. Condensate Demineralizer Effluent Line (0-RM-90-225)	D	M	R(3)	Q(5)	R26
2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE					
a. Essential Raw Cooling Water Effluent Line (0-RM-90-133,134,140,141)	D	M	R(3)	Q(2)	R27
b. Turbine Building Sump Effluent Line (0-RM-90-212)	D	M	R(3)	Q(2)	R26
3. FLOW RATE MEASUREMENT DEVICES					
a. Liquid Radwaste Effluent Line (0-FI/FR-77-42)	D(4)	N.A.	R	Q	R26
b. Steam Generator Blowdown Effluent Line (0-FR-14-456)	D(4)	N.A.	R	Q	R26
c. Condensate Demineralizer Effluent Line (1,2-FI-15-44, 1,2-FR-15-25, 1,2-FT-15-43)	D(4)	N.A.	R	Q	R26
d. Cooling Tower Blowdown Effluent Line (0-FT-27-175)	D(4)	N.A.	R	Q	R26
4. TANK LEVEL INDICATING DEVICES					
a. Condensate Storage Tank (0-LI-2-230-D)	D*	N.A.	R	Q	R26
b. Steam Generator Layup Tank (LOCAL FLOAT)	D*	N.A.	R	N.A.	R26
5. CONTINUOUS COMPOSITE SAMPLER AND SAMPLE FLOW MONITOR					
a. Condensate Demineralizer Regenerant Effluent Line (0-FI-14-466)	P	N.A.	R	N.A.	R26

Reformatting/Renumbering Changes R26

Table 2.1-1 (Page 2 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS
TABLE NOTATION

* During liquid additions to the tank.

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:
   1. Instrument indicates measured levels above the alarm/trip setpoint.
   2. Circuit failure.
   3. Downscale failure.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
   1. Instrument indicates measured levels above the alarm setpoint.
   2. Circuit failure.
   3. Downscale failure.

(3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used.

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous periodic, or batch releases are made.

(5) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions occur:
   1. Instrument indicates measured levels above the alarm/trip setpoint.
   2. Circuit failure.

   The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room annunciation occurs if the following condition occurs:
   1. Downscale failure.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.1 INSTRUMENTATION

1/2.1.2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

1.1.2 In accordance with SQN Technical Specification 6.8.5.f.1, the radioactive gaseous effluent monitoring instrumentation channels shown in Table 1.1-2 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of ODCM Control 1.2.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the methodology and parameters in ODCM Section 7.1.

APPLICABILITY: As shown in Table 1.1-2.

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required above, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel, declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE take the action shown in Table 1.1-2. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semi-Annual Effluent Report why the inoperability could not be corrected within 30 days.

SURVEILLANCE REQUIREMENTS

2.1.2 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 2.1-2.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Table 1.1-2 (Page 1 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels OPERABLE	Applicability	Action	
1. WASTE GAS DISPOSAL SYSTEM				
a. Noble Gas Activity Monitor (0-RM-90-118)	1	*	40	R26
b. Effluent System Flow Rate Measuring Device (0-PI-77-230)	1	*	41	R26
2. CONDENSER VACUUM EXHAUST SYSTEM				
a. Noble Gas Activity Monitor (1,2-RM-90-99,119)	1	*	42	R27
b. Flow Rate Monitor (1,2-FT-?-256,257)	1	*	41	R27
3. SHIELD BUILDING EXHAUST SYSTEM				
a. Noble Gas Activity Monitor (1,2-RE-90-400)	1	***	42	R27
b. Iodine Sampler (1,2-RE-90-402)	1	***	44	R27
c. Particulate Sampler (1,2-RE-90-402)	1	***	44	R27
d. Flow Rate Monitor (1,2-FI-90-400) (1,2-FT-90-400)	1	***	41	R27 R26
e. Sampler Flow Rate Monitor (1,2-RI-90-400)	1	***	41	R27
4. AUXILIARY BUILDING VENTILATION SYSTEM				
a. Noble Gas Activity Monitor (0-RM-90-101)	1	*	42	R26
b. Iodine Sampler (0-RM-90-101)	1	*	44	R26
c. Particulate Sampler (0-RM-90-101)	1	*	44	R26
d. Flow Rate Monitor (0-FT-30-174)	1	*	41	R26
e. Sampler Flow Rate Monitor (0-FS-90-101A,101B)	1	*	41	R26
5. SERVICE BUILDING VENTILATION SYSTEM				
a. Noble Gas Activity Monitor (0-RM-90-132)	1	*	42	R26
b. Flow Rate Monitor (0-FT-30-132, 0-FI-90-5132B)	1	*	41	R26

Reformatting/Renumbering Changes R26

Table 1.1-2 (Page 2 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
TABLE NOTATION

* At all times.
*** During shield building exhaust system operation.

ACTION 40 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment provided that prior to initiating the release:

a. At least two independent samples of the tank's contents are analyzed, and
b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 41 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 42 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for noble gas gross activity within 24 hours.

ACTION 44 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue provided that within 4 hours after the channel has been declared inoperable samples are continuously collected with auxiliary sampling equipment as required in Table 2.2-2.

Table 2.1-2 (Page 1 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Instrument	CHANNEL CHECK	SOURCE/ SENSOR CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES in Which Surveillance Required	R27 R27
1. WASTE GAS DISPOSAL SYSTEM						
a. Noble Gas Activity Monitor (0-RM-90-118)	P	P	R(3)	Q(1)	*	R26
b. Flow Rate Monitor (0-PI-77-230)	D	N.A.	R	Q	****	R26
2. CONDENSER VACUUM EXHAUST SYSTEM						
a. Noble Gas Activity Monitor (1,2-RM-90-99,119)	D	M(4)	R(3)	Q(2)	*	R27
b. Flow Rate Monitor (1,2-FT-2-256,257)	D	N.A.	R	Q	*	R27
3. SHIELD BUILDING EXHAUST SYSTEM						
a. Noble Gas Activity Monitor (1,2-RE-90-400)	D	M	R(3)	Q(2)	***	R27
b. Iodine Sampler (1,2-RE-90-402)	W	N.A.	N.A.	N.A.	***	R27
c. Particulate Sampler (1,2-RE-90-402)	W	N.A.	N.A.	N.A.	***	R27
d. Flow Rate Monitor (1,2-FI-90-400, 1,2-FT-90-400)	D	N.A.	R	Q	***	R27
e. Sampler Flow Rate Monitor (1,2-RI-90-400)	D	N.A.	R	Q	***	R27
4. AUXILIARY BUILDING VENTILATION SYSTEM						
a. Noble Gas Activity Monitor (0-RM-90-101)	D	M	R(3)	Q(2)	*	R26
b. Iodine Sampler (0-RM-90-101)	W	N.A.	N.A.	N.A.	*	R26
c. Particulate Sampler (0-RM-90-101)	W	N.A.	N.A.	N.A.	*	R26
d. Flow Rate Monitor (0-FT-30-174)	D	N.A.	R	Q	*	R26
e. Sampler Flow Rate Monitor (0-FS-90-101A,101B)	D	N.A.	R	Q	*	R26
5. SERVICE BUILDING VENTILATION SYSTEM						
a. Noble Gas Activity Monitor (0-RM-90-132)	D	M	R(3)	Q(2)	*	R27
b. Flow Rate Monitor (0-FT-90-132,0-FI-90-5132B)	D	N.A.	R	Q	*	R26

Reformatting/Renumbering Changes R26

Table 2.1-2 (Page 2 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS
TABLE NOTATION

* At all times.
*** During shield building exhaust system operation.
**** During waste gas releases.

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:
1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Downscale failure.

(2) The CHANNEL FUNCTION TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Downscale failure.

For the auxiliary building ventilation system, at least once every 18 months, the CHANNEL FUNCTIONAL TEST shall also demonstrate automatic isolation of this pathway if the following condition exists:
Instrument indicates measured levels above the alarm/trip setpoint.

(3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used.

(4) The SOURCE/SENSOR CHECK for the Condenser Vacuum Exhaust Monitor will be accomplished using an LED sensor check source in leiu of a radioactive source. R27 R27 R27

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.1 CONCENTRATION

CONTROLS

1.2.1.1 In accordance with SQN Technical Specifications 6.8.5.f.2 and 3, the concentration of radioactive material released to UNRESTRICTED AREAS (see Figure 3.1) shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to $2X10^{-4}$ microcuries/ml total activity.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of radioactive material released to UNRESTRICTED AREAS exceeding the above limits, without delay, restore the concentration to within the above limits.

SURVEILLANCE REQUIREMENTS

2.2.1.1.1 Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 2.2-1.

2.2.1.1.2 The results of the radioactivity analysis shall be used in accordance with the methods in ODCM Section 6.1 to assure that the concentration at the point of release is maintained within the limits stated above.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Table 2.2-1 (Page 1 of 4)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)[a]
A. Batch Waste Release Tanks[d] 1. Waste Condensate Tanks (3) 2. Cask Decontamination Tank 3. Laundry Tanks (2) 4. Chemical Drain Tank 5. Monitor Tank 6. Distillate Tanks (2) 7. Condensate Demineralizer Waste Evaporator Blowdown Tank (1)	P Each Batch	P Each Batch	Principal Gamma Emitters[f]	5×10^{-7}
			I-131	1×10^{-6}
	P One Batch/M	M	Dissolved/ Entrained Gases (Gamma Emitters)	1×10^{-5}
	P Each Batch	M Composite[b]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	P Each Batch	Q Composite[b]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
B. Continuous Releases[e] 1. Steam Generator[h] Blowdown	D Grab Sample	W Composite[c]	Principal Gamma Emitters[f]	5×10^{-7}
			I-131	1×10^{-6}
2. Turbine Building[h] Sump	M Grab Sample	M	Dissolved/ Entrained Gases (Gamma Emitters)	1×10^{-5}
	D Grab Sample	M Composite[c]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	D Grab Sample	Q Composite[c]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}

Table 2.2-1 (Page 2 of 4)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)[a]
C. Periodic Continuous Releases[e,h]	Continuous[g]	W Composite[c]	Principal Gamma Emitters[f]	$5x10^{-7}$
			I-131	$1x10^{-6}$
1. Non-Reclaimable Waste Tank 2. High Crud Tanks (2)	M[g] Grab Sample	M	Dissolved and Entrained Gases (Gamma Emitters)	$1x10^{-5}$
3. Neutralizer Tank	Continuous[g]	M Composite[c]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	Continuous[g]	Q Composite[c]	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$ R27

Table 2.2-1 (Page 3 of 4)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

a The LLD is defined for the purpose of these specifications as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \quad V \quad 2.22 \times 10^6 \quad Y \quad \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above in microcurie per unit mass or volume,
s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency as counts per disintegration,
V is the sample size in units of mass or volume,
2.22×10^6 is the number of disintegrations per minute per microcurie,
Y is the fractional radiochemical yield (when applicable),
λ is the radioactive decay constant for the particular radionuclide, and
Δt for plant effluents is the elapsed time between midpoint of sample collection and time of counting (midpoint).

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not an a posteriori (after the fact) limit for a particulate measurement.

b A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.

c Prior to analyses, all samples taken for the composite shall be throughly mixed in order for the composite sample to be representative of the effluent release.

Table 2.2-1 (Page 4 of 4)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

d A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed, by the method described in ODCM Section 6.1.1, to assure representative sampling.

e A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume or system that has an input flow during the continuous release.

f The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141. Ce-144 shall also be measured with an LLD of 5×10^{-6}. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.

g Releases from these tanks are continuously composited during releases. With the composite sampler or the sampler flow monitor inoperable, the sampling frequency shall be changed to require representative batch samples from each tank to be released to be taken prior to release and manually composite for these analyses.

h Applicable only during periods of primary to secondary leakage or the release of radioactivity as detected by the effluent radiation monitor provided the radiation monitor setpoint is at a LLD of $\leq 1 \times 10^{-6}$ µCi/ml and allowing for background radiation during periods when primary to secondary leakage is not occurring.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.2 DOSE

CONTROLS

1.2.1.2 In accordance with SQN Technical Specification 6.8.5.f.4 and 5, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to UNRESTRICTED AREAS shall be limited from each reactor unit:

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.

APPLICABILITY: At all times.

ACTION:

With the calculated dose from the release of radicactive materials in liquid effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR 141 (applicable only if drinking water supply is taken from the receiving water body within three miles downstream of the plant discharge).

SURVEILLANCE REQUIREMENTS

2.2.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and current calendar year shall be determined in accordance with the methodology and parameters in ODCM Section 6.3 at least once per 31 days.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.3 LIQUID RADWASTE TREATMENT SYSTEM

CONTROLS

1.2.1.3 In accordance with SQN Technical Specification 6.8.5.f.6, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent to UNRESTRICTED AREAS (see Figure 3.1) would exceed 0.06 mrem per reactor unit to the total body or 0.2 mrem per reactor unit to any organ in a 31-day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged without treatment and in excess of the above limits, prepare and submit to the Nuclear Regulatory Commission within 30 days pursuant to ODCM Administrative Control 5.4, a Special Report which includes the following information:

   1. Identification of the inoperable equipment or subsystems and the reason for inoperability,
   2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and
   3. Summary description of action(s) taken to prevent a recurrence.

SURVEILLANCE REQUIREMENTS

2.2.1.3 Doses due to liquid releases from each unit to UNRESTRICTED AREAS shall be projected at least once per 31 days, in accordance with the methodology and parameters in ODCM Section 6.5.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.1 DOSE RATE

CONTROLS

1.2.2.1 In accordance with SQN Technical Specification 6.8.5.f.7, the dose rate due to radioactive materials released in gaseous effluents to areas at or beyond the SITE BOUNDARY (see Figure 3.1) 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 Iodine-131, Iodine-133, 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.

APPLICABILITY: At all times.

ACTION:

With dose rate(s) exceeding the above limits, without delay restore the release rate to within the above limit(s).

SURVEILLANCE REQUIREMENTS

2.2.2.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in ODCM Section 7.2.3, and R27

2.2.2.1.2 The dose rate due to I-131, I-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in ODCM Section 7.2.4 and by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 2.2-2. R27

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Table 2.2-2 (Page 1 of 4)
RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)[a]
A. Waste Gas Storage Tank	P Each Tank Grab	P Each Tank	Principal Gamma Emitters[g]	$1x10^{-4}$
B. Containment 1. PURGE	P[i] Each PURGE Grab Sample	D[i] Each PURGE	Principal Gamma Emitters[g] H-3	$1x10^{-4}$ $1x10^{-6}$
2. Vent	D[j] Each Day Grab Sample	D[j] Each Day	Principal Gamma Emitters[g] H-3	$1x10^{-4}$ $1x10^{-6}$
C. Noble Gases and Tritium 1. Condenser Vacuum Exhaust[h] 2. Auxiliary Building Exhaust[b,e] 3. Service Bldg. Exhaust 4. Shield Bldg. Exhaust[b,c,h]	M Grab Sample	M	Principal Gamma Emitters[g] H-3	$1x10^{-4}$ $1x10^{-6}$

Table 2.2-2 (Page 2 of 4)
RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection -LLD (μCi/ml)[a]
D. Iodine and Particulates	Continuous[f] Sampler	W[d] Charcoal Sample	I-131	$1x10^{-12}$
1. Auxiliary Building Exhaust 2. Shield Building Exhaust	Continuous[f] Sampler	W[d] Particulate Sample	Principal Gamma Emitters[g] (I-131, Others)	$1x10^{-11}$
	Continuous[f] Sampler	M Composite Particulate Sample	Gross Alpha	$1x10^{-11}$
	Continuous[f] Sampler	Q Composite Particulate Sample	Sr-89, Sr-90	$1x10^{-11}$
E. Noble Gases all Release types as listed in C	Continuous[f] Monitor	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	$1x10^{-6}$

Table 2.2-2 (Page 3 of 4)
RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

a The LLD is defined, for the purpose of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \quad V \quad 2.22 \times 10^6 \quad Y \quad \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above in microcurie per unit mass or volume,
s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency as counts per disintegration,
V is the sample size in units of mass or volume,
2.22×10^6 is the number of disintegrations per minute per microcurie,
Y is the fractional radiochemical yield (when applicable),
λ is the radioactive decay constant for the particular radionuclide, and
Δt is the elapsed time between midpoint of sample collection and time of counting (midpoint).

It should be noted that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not an a posteriori (after the fact) limit for a particular measurement.

b Sampling and analysis shall also be performed following shutdown, startup, or a thermal power change exceeding 15% of RATED THERMAL POWER within 1 hour unless (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3 and (2) the containment noble gas activity monitor (RE-90-106 or RE-90-112) shows that the radioactivity has not increased by more than a factor of 3.

c Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.

Table 2.2-2 (Page 4 of 4)
RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

d Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler). Sampling shall also be performed at least once per 24 hours for at least 2 days following each shutdown from ≥15% RATED THERMAL POWER, startup of ≥15% RATED THERMAL POWER or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.

e Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

f The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with ODCM Sections 7.2, 7.3, and 7.4.

g The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for noble gases and Mn-54, Fe-59, I-131, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate principal gamma emitters. This list does not mean that only these nuclides are to be detected and reported. Other gamma peaks which are measurable and identifiable, together with the above nuclides, shall also be analyzed and reported in the Semi-annual Radioactive Effluent Release Report pursuant to ODCM Administrative Control 5.7.

h During releases via this exhaust system.

i PURGING - Applicable in MODES 1, 2, 3 and 4, the upper and lower compartments of the containment shall be sampled prior to PURGING. Prior to breaking containment integrity in MODE 5 or 6, the upper and lower compartments of the containment shall be sampled. The incore instrument room purge sample shall be obtained at the shield building exhaust between 20 and 25 minutes following initiation of the incore instrument room PURGE.

j VENTING - Applicable in MODES 1, 2, 3, and 4; the containment will be VENTED to the containment annulus and then to the auxiliary building via containment annulus fans. The lower containment compartment shall be sampled daily when VENTING is to occur to account for the radioactivity being discharged from the VENTING process.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.2 DOSE - NOBLE GASES

CONTROLS

1.2.2.2 In accordance with SQN Technical Specification 6.8.5.f.8, the air dose due to noble gases released in gaseous effluents from each reactor unit to areas at or beyond the SITE BOUNDARY (see Figure 3.1) shall be limited to the following: R27

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.

APPLICABILITY: At all times.

ACTION:

With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Nuclear Regulatory Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

SURVEILLANCE REQUIREMENTS

2.2.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in ODCM Section 7.3 at least once per 31 days.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GAEOUS EFFLUENTS

1/2.2.2.3 DOSE - I-131, I-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES GREATER THAN EIGHT DAYS

CONTROLS

1.2.2.3 In accordance with SQN Technical Specification 6.8.5.f.9, the dose to a MEMBER OF THE PUBLIC from I-131, I-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at or beyond the SITE BOUNDARY (see Figure 3.1) shall be limited to the following from each reactor unit:

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.

APPLICABILITY: At all times.

ACTION:

With the calculated dose from the release of I-131, I-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Nuclear Regulatory Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. R27

SURVEILLANCE REQUIREMENTS

2.2.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for I-131, I-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days shall be determined in accordance with the methodology and parameters in ODCM Section 7.4 at least once per 31 days. R27

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.4 GASEOUS RADWASTE TREATMENT

CONTROLS

1.2.2.4 In accordance with SQN Technical Specification 6.8.5.f.5 and 6, the GASEOUS RADWASTE TREATMENT 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 doses due to gaseous effluent releases to areas at or beyond The SITE BOUNDARY (see Figure 3.1), when averaged over 31 days, would exceed 0.2 mrad per unit for gamma radiation, and 0.4 mrad per unit for beta radiation. The appropriate portions of 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 effluents to areas at or beyond the SITE BOUNDARY (See Figure 3.1) when averaged over 31 days would exceed 0.3 mrem per unit to any organ.

ACTION:

With the radioactive gaseous waste being discharged without treatment for more than 31 days and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report which includes the following information:

1. Identification of the inoperable equipment or subsystems and the reason for inoperability.
2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

SURVEILLANCE REQUIREMENTS

2.2.2.4 Doses due to gaseous releases from the site shall be projected at least once per 31 days, in accordance with the methodology and parameters in ODCM Section 7.5.

RADIOACTIVE UENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.3 TOTAL DOSE

CONTROLS

1.2.3 In accordance with SQN Technical Specification 6.8.5.f.10, the annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity 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).

APPLICABILITY: At all times.

ACTION:

With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of ODCM Control 1.2.1.2, 1.2.2.2, or 1.2.2.3, calculations should be made to determine whether the above limits have been violated. If such is the case, prepare and submit a Special Report to the Director, Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington D.C. 20555, within 30 days, which defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the limits above. This Special Report, as defined in 10 CFR Part 20.405c, shall include an analysis which estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources (including all effluent pathways and direct radiation) for a calendar year that includes the release(s) covered by this report. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190 and include the specified information of Section 190.11(b). Submittal of tha report is considered a timely request, and a variance is granted until the staff action on the request is complete.

SURVEILLANCE REQUIREMENTS

2.2.3 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with the methodology and parameters in ODCM Sections 6.3, 7.3, and 7.4.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

CONTROLS

1.3.1 In accordance with SQN Technical Specification 6.8.5.g.1, the radiological environmental monitoring program shall be conducted as specified in Table 2.3-1.

APPLICABILITY: At all times.

ACTION:

a. With the radiological environmental monitoring program not being conducted as specified in Table 2.3-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

b. With the level of radioactivity in an environmental sampling medium exceeding the reporting levels of Table 2.3-2 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of the affected quarter, pursuant to ODCM Administrative Control 5.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of ODCM Controls 1.2.1.2, 1.2.2.2 and 1.2.2.3. When one or more of the radionuclides in Table 2.3-2 is detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration(1)}}{\text{limit level(1)}} + \frac{\text{concentration(2)}}{\text{limit level(2)}} + \ldots \geq 1.0$$

When radionuclides other than those in Table 2.3-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to a MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of ODCM Controls 1.2.1.2, 1.2.2.2, and 1.2.2.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

ACTION (CONTINUED):

c. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 2.3-1, identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specified locations from which samples were unavailable may then be deleted from the monitoring program. Pursuant to ODCM Administrative Control 5.1, identify the new locations for obtaining replacement samples in the Annual Radiological Environmental Operating Report. A revised figure(s) and table(s) for the ODCM reflecting the new location(s) shall be included in the next Semi-Annual Effluent Release Report pursuant to ODCM Administrative Control 5.2.

SURVEILLANCE REQUIREMENTS

2.3.1 The radiological environmental monitoring samples shall be collected pursuant to Table 2.3-1 from the locations given in the tables and figures given in ODCM Section 9.0 and shall be analyzed pursuant to the requirements of Table 2.3-1 and the detection capabilities required by Table 2.3-3.

Table 2.3-1 (Page 1 of 3)
MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number and Location of Samples*	Sampling and Collection Frequency	Type and Frequency of Analysis
AIRBORNE			
Radioiodine and Particulates	Minimum of 5 locations	Continuous sampler** W	Radioiodine canister: W I-131.
			Particulate sampler: Analyze for gross beta radioactivity ≥ 24 hours following filter change. Perform gamma isotopic analysis on each sample when gross beta activity is > 10 times the yearly mean of control samples.
			Q Perform gamma isotopic analysis on composite (by location) sample.
DIRECT RADIATION	35 to 40 locations with ≥ 2 dosimeters for continuously measuring and recording dose rate at each location.	Q	Q Gamma Dose

* Sample locations are given in Table 9.1.
** Continuous sampling with sample collection as required by dust loading, but at least once per 7 days.

Table 2.3-1 (Page 2 of 3)
MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number and Location of Samples*	Sampling and Collection Frequency	Type and Frequency of Analysis
WATERBORNE			
Surface	3 locations	M Composite** sample	Gamma isotopic Each composite sample
			Tritium analysis Q
Ground	2 locations	Q	Gamma isotopic and tritium analyses of each sample.
Drinking	Minimum of 1 location	M Composite** sample	Gross beta and gamma isotopic analysis
			Q Tritium analysis
	2 locations	M Grab sample	Gross beta and gamma isotopic analysis
Sediment from Shoreline locations	Minimum of 2 locations.	S	Gamma isotopic analysis of each sample.

* Sample locations are given in Table 9.1. R27
** Composite samples shall be collected by collecting an aliquot at intervals not exceeding 2 hours.

Table 2.3-1 (Page 3 of 3)
MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number and Location of Samples*	Sampling and Collection Frequency	Type and Frequency of Analysis	
INGESTION				
Milk	Milk from 3 locations. Samples of broad leaf vegetation at offsite location of highest D/Q if no milk samples are available.	B**	Gamma isotopic and I-131 analysis of each sample.	R28
Fish and Invertebrates	2 locations	One sample in season, or at least once per 184 days if not seasonal. One sample of each of the following species: Channel Catfish Crappie Smallmouth Buffalo	Gamma isotopic analysis on edible portions.	R28 R28
Food Products	Minimum of 2 locations	At time of harvest One sample of each of the following or similar classes of food products, as available 1. Lettuce and/or cabbage 2. Corn 3. Beans 4. Tomatoes	Gamma isotopic analysis on edible portion.	R28 R28

* Sample locations are given in Table 9.1.
** When animals are on pasture, at least once per 31 days at other times.

Table 2.3-2
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Analysis	Water (pCi/L)	Airborne Particulate or gases (pCi/m³)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg, wet)
H-3	2×10^4(a)	N.A	N.A	N.A.	N.A.
Mn-54	1×10^3	N.A.	3×10^4	N.A.	N.A.
Fe-59	4×10^2	N.A.	1×10^4	N.A.	N.A.
Co-58	1×10^3	N.A.	3×10^4	N.A.	N.A.
Co-60	3×10^2	N.A.	1×10^4	N.A.	N.A.
Zn-65	3×10^2	N.A.	2×10^4	N.A.	N.A.
Zr-Nb-95	4×10^2	N.A.	N.A.	N.A.	N.A.
I-131	2(b)	0.9	N.A.	3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2	N.A.	N.A.	3×10^2	N.A.

(a) For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/L may be used.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Table 2.3-3 (Page 1 of 2)
MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a,b]

Analysis	Water (pCi/L)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg,wet)	Sediment (pCi/kg,dry)
gross beta	4	$1x10^{-2}$	N.A.	N.A	N.A.	N.A.
H-3	2000*	N.A	N.A	N.A	N.A.	N.A.
Mn-54	15	N.A.	130	N.A.	N.A.	N.A.
Fe-59	30	N.A.	260	N.A.	N.A.	N.A.
Co-58,60	15	N.A.	130	N.A.	N.A.	N.A.
Zn-65	30	N.A.	260	N.A.	N.A.	N.A.
Zr-95	30	N.A.	N.A.	N.A.	N.A.	N.A.
Nb-95	15	N.A.	N.A.	N.A.	N.A.	N.A.
I-131	1**	$7x10^{-2}$	N.A.	1	60	N.A.
Cs-134	15	$5x10^{-2}$	130	15	60	150
Cs-137	18	$6x10^{-2}$	150	18	80	180
Ba-140	60	N.A.	N.A.	60	N.A.	N.A.
La-140	15	N.A.	N.A.	15	N.A.	N.A.

* If no drinking water pathway exists, a value of 3000 pCi/L may be used.
** If no drinking water pathway exists, a value of 15 pCi/L may be used.

Table 2.3-3 (Page 2 of 2)
MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a,b]
TABLE NOTATION

a The LLD is defined, for the purpose of these Controls, as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \quad V \quad 2.22 \quad Y \quad \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above in picocurie per unit mass or volume,
s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency as counts per disintegration,
V is the sample size in units of mass or volume,
2.22 is the number of disintegrations per minute per picocurie,
Y is the fractional radiochemical yield (when applicable),
λ is the radioactive decay constant for the particular radionuclide, and
Δt for environmental samples is the elapsed time between sample collection (or end of the sample collection period) and time of counting.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not an a posteriori (after the fact) limit for a particular measurement. Analysis will be performed in such a manner that the stated LLDs will be achieved under routine conditions.

b Other peaks which are measurable and identifiable, together with the radionuclides above, shall be identified and reported.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.2 LAND USE CENSUS

CONTROLS

2.3.2 In accordance with SQN Technical Specification 6.8.5.g.2, a Land Use Census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence, and the nearest garden[a] of greater then 50 m^2 (500 ft^2) producing fresh leafy vegetables.

[a]Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the SITE BOUNDARY in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 2.3-1 shall be followed, including analysis of control samples.

APPLICABILITY: At all times.

ACTION:

a. With a Land Use Census identifying a location(s) that yields a calculated dose or dose commitment 20% greater than at a location from which doses are currently being calculated in ODCM Section 7.3 and 7.4 identify the new location(s) in the next Semi-Annual Effluent Release Report pursuant to ODCM Administrative Control 5.2.

b. With a Land Use Census identifying a location(s) that yields a calculated dose or dose commitment (via the same pathway) 20% greater than at a location from which samples are currently being obtained in accordance with the requirements of ODCM Control 1.3.1, add the new location(s) within 30 days to the radiological environmental monitoring program given in ODCM Section 9.0, if samples are available. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after October 31 of the year in which this Land Use Census was conducted. Pursuant to ODCM Administrative Controls 5.2 and 5.3, submit in the next Semi-Annual Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table(s) for the ODCM reflecting the new location(s) with the information supporting the change in sampling locations.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.2 LAND USE CENSUS

SURVEILLANCE REQUIREMENTS

2.3.2 The Land Use Census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, mail survey, telephone survey, aerial survey, or by consulting local agricultural authorities. The results of the Land Use Census shall be included in the Annual Radiological Environmental Operating Report pursuant to ODCM Administrative Control 5.1.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.3 INTERLABORATORY COMPARISON PROGRAM

CONTROLS

1.3.3 In accordance with SQN Technical Specification 6.8.5.g.3, analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the Commission.

APPLICABILITY: At all times.

ACTION:

With analyses not being performed as required above, report the corrective actions being taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to ODCM Administrative Control 5.1.

SURVEILLANCE REQUIREMENTS

2.3.3 A summary of the results obtained as a part of the above required Interlaboratory Comparison Program and in accordance with the guidance below shall be included in the Annual Radiological Environmental Operating Report pursuant to ODCM Administrative Control 5.1.

BASES FOR

SECTIONS 1.0 AND 2.0

CONTROLS

AND

SURVEILLANCE REQUIREMENTS

NOTE

The BASES contained in succeeding pages summarize the reasons for the Controls in Sections 1.0 and 2.0, but are not part of these Controls.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

INSTRUMENTATION

1/2.1.1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in ODCM Section 6.2 to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

1/2.1.2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in ODCM Section 7.1 to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1.1 CONCENTRATION

This Control is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than the concentration levels specified in 10 CFR Part 20, Appendix B, Table II, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR 50, to a MEMBER OF THE PUBLIC and (2) the limits of 10 CFR 20.106(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission of Radiological Protection (ICRP) Publication 2.

1/2.2.1.2 DOSE

This Control is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I, 10 CFR Part 50. The requirement implements the guide set forth in Section II.A of Appendix I. The action statements provide the required operating flexibility and at the

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1.2 DOSE (continued)

same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in liquid effluents will be kept "as low as reasonable achievable." Also, for fresh water sites with drinking water supplies which can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141. The dose calculations in ODCM Section 6.3 implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data, such that the actual exposure of a MEMBER OF THE PUBLIC through appropriately modeled pathways is unlikely to substantially underestimated. The equations specified in Section 6.3 for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

This Control applies to the release of liquid effluents from each reactor at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared systems are proportioned among the units sharing that system.

1/2.2.1.3 LIQUID RADWASTE TREATMENT SYSTEM

The Control that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as reasonable achievable." This requirement implements the requirements of 10 CFR Part 50.36a, General Design Criteria 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

1/2.2.2.1 DOSE RATE

This Control is provided to ensure that the dose at any time at the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR Part 20. The annual dose

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2.1 DOSE RATE (continued)
limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC, either within or outside the SITE BOUNDARY, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). For MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the SITE BOUNDARY to less than or equal to 500 mrem/yr to the total body or to less than or equal to 3000 mrem/yr to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to less than or equal to 1500 mrem/yr for the nearest cow to the plant. This requirement applies to the release of gaseous effluents from all reactors at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared systems are proportioned among the units sharing that system.

1/2.2.2.2 DOSE - NOBLE GASES
This requirement is provided to implement the requirements of Sections II.B,III.A and IV.A of Appendix I, 10 CFR Part 50. The requirement implements the guides set forth in Section II.B of Appendix I. The action to be taken provide the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low a reasonably achievable." The surveillance implements the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriately modeled pathways is unlikely to be substantially underestimated. The dose calculations established in ODCM Section 7.3 for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in Regulatory Guide 1.109. "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

1/2.3 RADIOACTIVE EFFLUENTS

1/2.2.2.2 DOSE - NOBLE GASES (continued)
Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at the SITE BOUNDARY are based upon the historical average atmospheric conditions.

1/2.2.2.3 DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM WITH HALF-LIFE GREATER THAN EIGHT DAYS
This Control is provided to implement the requirements of Sections II.C,III.A and IV.A of Appendix I, 10 CFR Part 50. The requirement implements the guides set forth in Section II.C of Appendix I. The action to be taken provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as reasonably achievable." Section 7.4 calculational methods implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriately modeled pathways is unlikely to be substantially underestimated. Section 7.4 calculational methods for calculating the doses due to the actual release rates of the subject materials are consistent with the methodologies provided in NUREG/CR-1004, "A Statistical Analysis of Selected Parameters for Predicting Food Chain Transport and Internal Dose of Radionuclides," October 1979 and Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for I-131, I-133 tritium and all radionuclides in particulate form with half-lives greater than 8 days are dependent on the existing radionuclide pathways to man, beyond the SITE BOUNDARY. The pathways which were examined in the development of these calculations were: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

1/2.3 RADIOACTIVE EFFLUENTS

1/2.3.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

This Control that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achievable." This Control implements the requirements of 10 CFR Part 50.36a, General Design Criteria 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Section II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

1/2.2.3 TOTAL DOSE

This Control is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The ACTION requires the preparation and submittal of a Special Report whenever the calculated doses due to releases of radioactivity and to radiation from uranium fuel cycle sources exceed 25 mrem to the total body or any other organ except thyroid, which shall be limited to less than or equal to 75 mrem. For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I and if direct radiation doses from the units and from outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR Part 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered.

If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provide the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in ODCM Controls 1.2.1.1 and 1.2.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which he/she is engaged in carrying out any operation that is a part of the nuclear fuel cycle.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

The radiological environmental monitoring program required by this Control provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and thereby supplements the radiological effluent monitoring program by verifying that the measurable concentration of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 2.3-3 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as a posteriori (after the fact) limit for a particular measurement.

Detailed description of the LLD, and other detection limits can be found in HASL Procedures Manual, HASL-300 (revised annually), Curie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

1/2.3.2 LAND USE CENSUS

This Control is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of that census. The best survey information from the door-to-door, aerial, or consulting with local agricultural authorities shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 500 ft^2 provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to provide the quantity (26 kg/yr) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were used, 1) that 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/m^2.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

BASES

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.3 INTERLABORATORY COMPARISON

The requirement for participation in an Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.

SECTION 3.0

DEFINITIONS

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

3.0 DEFINITIONS

The defined terms in this section appear in capitalized type in the text and are applicable throughout this ODCM.

3.1 CHANNEL CALIBRATION

A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is calibrated.

3.2 CHANNEL CHECK

A channel check shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter. R27

3.3 CHANNEL FUNCTIONAL TEST

A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channel - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip function.

3.4 DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (µCi/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

Reformatting/Renumbering Changes only R26

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

3.0 DEFINITIONS (continued)

3.5 GASEOUS RADWASTE TREATMENT SYSTEM

A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

3.6 MEMBER(S) OF THE PUBLIC

MEMBER(S) OF THE PUBLIC shall include all individuals who are not occupationally associated with the plant. This category shall include non-employees of the licensee who are permitted to use portions of the site for recreational, occupational, or other purposes not associated with plant functions. This category does not include non-employees such as vending machine servicemen or postmen who, as part of their formal job function, occasionally enter an area that is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

3.7 OPERABLE - OPERABILITY

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, a normal and an emergency electrical power source, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function. R27

3.8 MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.1 of the SQN Technical Specifications.

3.9 PURGE - PURGING

PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement. R27

Reformatting/Renumbering Changes only R26

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

3.0 DEFINITIONS (continued)

3.10 RATED THERMAL POWER

RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3411 MWt.

3.11 SITE BOUNDARY

The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee (see Figure 3.1)

3.12 SOURCE/SENSOR CHECK R27

A SOURCE/SENSOR CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source or other channel sensor internal test circuit. R27 R27

3.13 UNRESTRICTED AREA

An UNRESTRICTED AREA shall be any area, at or beyond the SITE BOUNDARY to which access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials or any area within the SITE BOUNDARY used for residential quarters or industrial, commercial, institutional, and/or recreational purposes.

3.14 VENTILATION EXHAUST TREATMENT SYSTEM

A VENTILATION EXHAUST TREATMENT SYSTEM is any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment (such a system is not considered to have any effect on noble gas effluents). Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

3.15 VENTING

VENTING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration, or other operating condition, in such a manner that replacement air gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.

Table 3.1
FREQUENCY NOTATION

P = Completed prior to each release

D = At least once per 24 hours

B = At least once per 15 days R27

M = At least once per 31 days

Q = At least once per 92 days

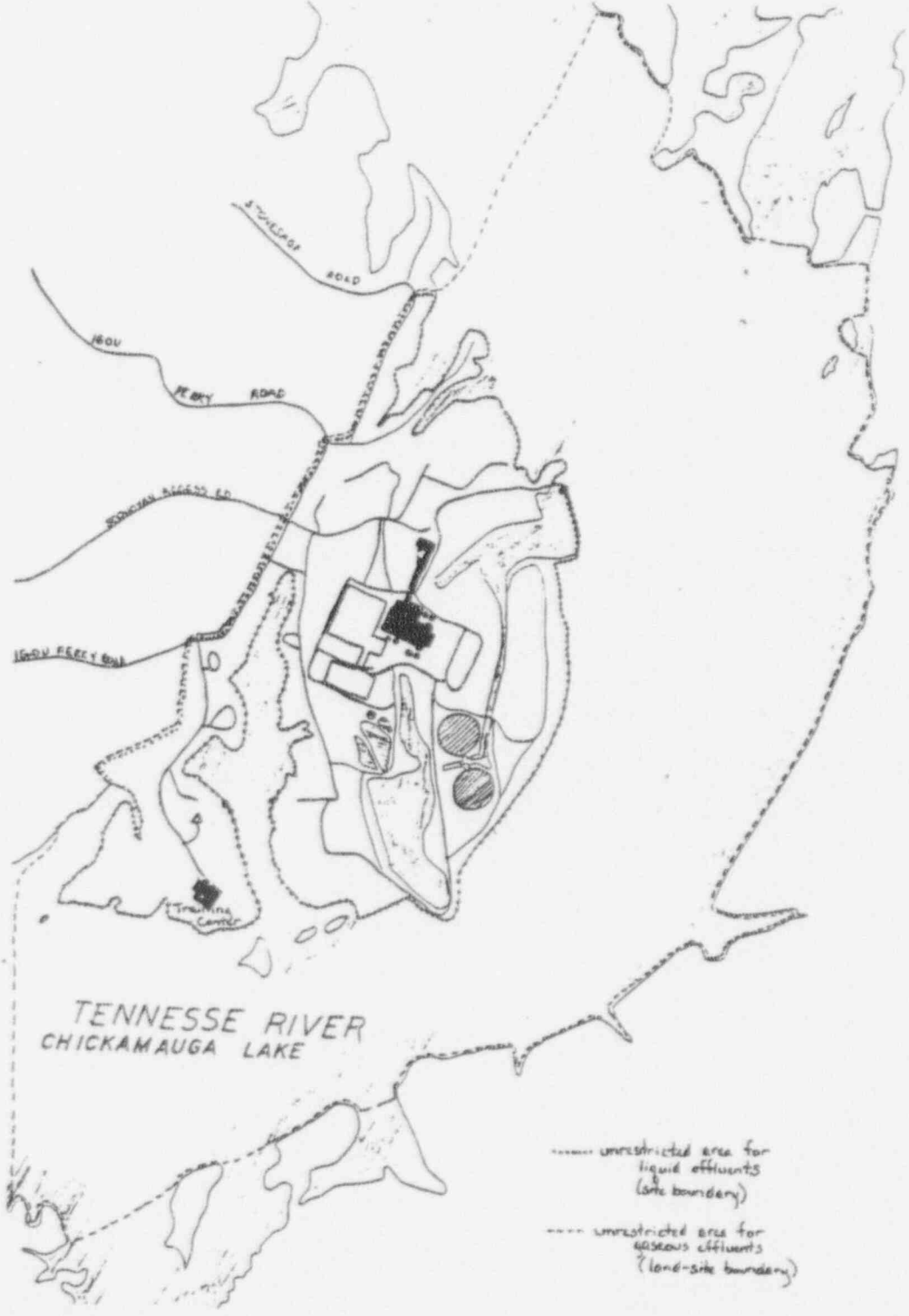
R = At least once per 18 months

N.A. = Not Applicable

Table Added R26

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

Figure 3.1
SITE BOUNDARY/UNRESTRICTED AREA



SECTION 4.0

(NOT USED)

SECTION 5.0

ADMINISTRATIVE CONTROLS

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

5.0 ADMINISTRATIVE CONTROLS

5.1 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

As required by SQN Technical Specification 6.9.1.6, Routine Annual Radiological Environmental Operating Reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

The annual radiological environmental operating reports shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of land use censuses required by ODCM Control 1.3.2 and a listing of the new locations for dose calculations and/or environmental monitoring identified by the land use census. If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problems and a planned course of action to alleviate the problem.

The annual radiological environmental operating reports shall include summarized and tabulated results in the format of Regulatory Guide 4.8, December 1975 of all radiological environmental samples taken during the report period. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; a map of all sampling locations keyed to a table giving distances and directions from one reactor; and the results of licensee participation in the Interlaboratory Comparison Program required by ODCM Control 1.3.3.

5.2 SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

As required by SQN Technical Specification 6.9.1.8, a Semi-Annual Radioactive Effluent Release Report covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

5.0 ADMINISTRATIVE CONTROLS

5.2 SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (continued)

Semiannual radioactive release reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The semiannual radioactive release report shall include unplanned releases from the site to unrestricted areas on a quarterly basis and shall also include any changes made to the ODCM pursuant to ODCM Administrative Control 5.3.

The semiannual radioactive release report shall include information for solid waste as outlined in the Process Control Program, and shall also include any changes made to the PCP during the reporting period.

The semiannual radioactive release report shall include a discussion of any licensee initiated major changes to the radioactive waste systems as required by SQN Technical Specification 6.15.1.1.

The annual radioactive effluent release report (Radiological Impact) to be submitted 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing of wind speed, wind direction, atmospheric stability, and precipitation (if measured) on magnetic tape, or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. In lieu of submission with the annual radioactive effluent release report, this summary of required meteorological data may be retained on site in a file that shall be provided to NRC upon request). This same report shall include an assessment of the radiation doses due to radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (Figure 3.1) during the report period. All assumptions used in making these assessments (i.e., specific activity, exposure time, and location) shall be included in these reports.

RADIOACTIVE EFFLUENT/RADIOLOGICAL ENVIRONMENTAL MONITORING CONTROLS

5.0 ADMINISTRATIVE CONTROLS

5.2 SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (continued)

The meteorological conditions concurrent with the time of release of radioactive materials in gaseous effluents (as determined by sampling frequency and measurement) shall be used for determining the gaseous pathway doses. The assessment of radiation doses shall be performed in accordance with Sections 6.6 and 7.6.

The annual radioactive effluent release report to be submitted after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed MEMBERS OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources (including doses from primary effluent pathways and direct radiation) for the previous calendar year to show conformance with 40 CFR 190, Environmental Radiation Protection Standards for Nuclear Power Operation, in accordance with ODCM Section 8.0. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Revision 1.

5.3 OFFSITE DOSE CALCULATION MANUAL CHANGES

As required by SQN Technical Specification 6.14, changes to the ODCM:

1. Shall be documented and records of reviews performed shall be retained as required by SQN Technical Specification 6.10.2.p. This documentation shall contain:

   a. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the change(s) and

   b. A determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.106, 40 CFR 190, 10 CFR 50.36a, and Appendix I to 10 CFR 50 and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.

2. Shall become effective after review and acceptance by the SQN RARC.

5.0 ADMINISTRATIVE CONTROLS

5.3 OFFSITE DOSE CALCULATION MANUAL CHANGES (continued)

3. Shall be submitted to the Commission in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Semiannual Radioactive Effluent Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month/year) the change was implemented. R27

5.4 SPECIAL REPORTS

Special Reports shall be submitted within the time period specified for each report, in accordance with 10 CFR 50.4.

Page/Text Added R26