DRESDEN NUCLEAR POWER STATION

RADIOACTIVE WASTE, ENVIRONMENTAL MONITORING AND

OCCUPATIONAL PERSONNEL RADIATION EXPOSURE

JANUARY THROUGH JUNE 1977

Rec'd w/ltr 8/31/77

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# INTRODUCTION

The Dresden Nuclear Power Station is located approximately twelve miles southwest of Joliet, Illinois, at the confluence of the Des Plaines and Kankakee Rivers where they form the Illinois River. This station uses three boiling water reactors (GE design) to generate electricity. Unit 1 began operating in 1960 and has a rated power output of 200 megawatts electrical (MWe). Units 2 and 3 began operating in 1970 and 1971, respectively, each with a rated power output of 800 MWe. The General Electric Morris Operation Plant (GEMO) is located adjacent to Dresden.

Liquid effluents from Dresden are released to the Illinois River in controlled batches after radioassay of each batch. Gaseous effluents are released to the atmosphere after delay to permit decay of short half-life gases. Releases to the atmosphere are calculated on the basis of analyses of daily grab samples of noble gases and continuously collected composite samples of iodine and particulate matter. The results of effluent analyses are summarized on a monthly basis and reported semiannually to the Nuclear Regulatory Commission as required per Technical Specifications. Airborne concentrations of noble gases, I-131 and particulate radioactivity in off-site areas are calculated using effluent and meteorological data and data on isotopic composition of effluents.

Environmental monitoring is conducted by sampling at indicator and reference (background) stations in the vicinity of the Dresden plant to measure changes in radiation or radioactivity levels that may be attributable to plant operation. If significant changes attributable to Dresden are measured, these changes are correlated with effluent releases. External gamma radiation exposure from noble gases and I-131 in milk are the critical pathways at this site; however, a comprehensive environmental monitoring program is conducted which includes many other pathways of less importance.

Radiation dose to individuals and to population groups is calculated when effluent and environmental monitoring data for the six month period indicate a likelihood of public intakes in excess of those that could result from continuous exposure to concentration values listed in Appendix B, Table II, Part 20, Title 10, Code of Federal Regulations (10CFR20).

## SUMMARY

Gaseous and liquid effluents for the period remained below the Technical Specification limits. Calculations of environmental concentrations based on effluent, Illinois River flow, and meteorological data for the period indicate that consumption by the public of radioactive materials attributable to the plant are unlikely to exceed one percent of intake that could result from continuous exposure to the concentration value listed in Appendix B, Table II of 10CFR20. Gamma radiation exposure from noble gases released to the atmosphere represented the critical pathway for the period with a maximum individual dose estimated to be 2.8 mrem for the six month period, when a shielding and occupancy factor of two is assumed. Environmental monitoring results confirm that dose via other pathways was not significant.

## 1.0 EFFLUENTS

### 1.1 GASEOUS EFFLUENTS TO THE ATMOSPHERE

Measured concentrations and isotopic composition of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the period 1 January through 30 June 1977, are listed in Tables 1.1-1 and 1.1-2. A six-month total of 6.0 E+05 curies of noble gases was released during the period. Release rates during any one month of the period did not exceed 14.3% of the Technical Specification limit.

A total of 5.7 curies of I-131 was released during the six-month period. The highest monthly radioiodine release was 32.9% of the Technical Specification limit.

A six-month total of 3.0 curies of beta-gamma emitters and non-detectable amounts of alpha emitters was released as airborne particulate matter. The highest monthly release of beta-gamma particulate activity was 18.7 of the Technical Specification limit.

### 1.2 LIQUIDS RELEASED TO ILLINOIS RIVER

A total of 7.8 E+05 liters of radioactive liquid wastes containing 0.3 curies (excluding tritium) were discharged from the station. These wastes were released at a maximum monthly average concentration of 4.8 E-09 µCi/ml from Unit 1 which is 4.8% of the Technical Specification release limit for unidentified radioactivity. During the same period, 0.01 curies of tritium and .002 curies of alpha radioactivity were released. No releases were made during the period from Units 2 and 3. Monthly release estimates and principal radionuclides in liquid effluents are given in Tables 1.2-1 and 1.2-2.

## 2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped in a total of 189 shipments to Nuclear Engineering Company, at either Sheffield, Illinois or Morehead KY. The record of waste shipments is summarized in Table 2.0-1.

TABLE 1.1-1

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: DRESDEN NUCLEAR POWER STATION - UNIT 1 DOCKET NOS.: 50 - 10 YEAR: 1977

| I. Gaseous Effluents | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Gross Radioactivity Releases | | | | | | | | | |
| a) Total Release | curies | 2.3E+04 | 3.5E+04 | 4.8E+04 | 9.7E+04 | 9.0E+04 | 4.7E+04 | 3.4E+05 | |
| b) Maximum Release Rate | uCi/sec | 3.2E+04 | 2.1E+04 | 3.7E+04 | 5.1E+04 | 5.9E+04 | 6.2E+04 | 6.2E+04 | |
| c) Isotopes Released | | | | | | | | | |
| Kr-85m | curies | 7.1E02 | 4.6E02 | 8.6E02 | 2.1E03 | 5.1E04 | 2.5E04 | 8.0E04 | |
| Kr-87 | curies | 2.3E03 | 2.1E03 | 4.0E03 | 7.9E03 | 1.3E04 | 7.2E03 | 3.7E04 | |
| Kr-88 | curies | 2.2E03 | 1.5E03 | 2.7E03 | 6.5E03 | 7.0E03 | 3.5E03 | 2.3E04 | |
| Xe-133 | curies | 1.2E03 | 4.6E02 | 7.7E02 | 3.1E03 | 5.8E03 | 3.3E03 | 1.5E04 | |
| Xe-135 | curies | 4.9E03 | 2.5E03 | 4.5E03 | 1.3E04 | 1.6E03 | 1.0E03 | 2.8E04 | |
| Xe-135m | curies | 3.6E03 | 5.2E03 | 6.4E03 | 1.7E04 | 9.3E03 | 5.5E03 | 4.7E04 | |
| Xe-138 | curies | 8.1E03 | 2.3E04 | 2.9E04 | 4.7E04 | 2.0E03 | 1.1E03 | 1.1E05 | |
| d) Percent of Chimney Limit | % | 1.55 | 2.60 | 3.20 | 6.67 | 6.01 | 3.21 | 3.87 | |
| e) Average Release Rate | uCi/sec | 8.7E+03 | 1.5E+04 | 1.8E+04 | 3.7E+04 | 3.4E+04 | 1.8E+04 | 2.2E+04 | |
| 2. Iodine Releases | | | | | | | | | |
| a) Isotopes Released | | | | | | | | | |
| I-131 | curies | 2.8E-01 | 1.9E-02 | 2.8E-01 | 1.8E+00 | 9.0E-01 | 9.1E-01 | 4.2E+00 | |
| I-133 | curies | 8.4E-01 | 3.8E-02 | 1.0E+00 | 6.7E00 | 3.5E00 | 4.5E00 | 1.7E01 | |
| I-135 | curies | 1.2E+01 | 3.6E-02 | 1.0E+00 | 7.4E00 | 5.7E00 | 5.6E00 | 3.2E01 | |
| b) Percent of Chimney Limit | % | 4.30 | 0.33 | 4.29 | 29.01 | 13.97 | 14.55 | 11.08 | |
| c) [illegible]rage Release Rate | uCi/sec | 1.0E-01 | 8.0E-03 | [illegible].0E-01 | 7.0E-01 | 3.4E-01 | 3.5E-01 | 2.7E-01 | |

TABLE 1.1-1 (Cont'd)

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: DRESDEN NUCLEAR POWER STATION - UNIT 1 DOCKET NOS.: 50-10 YEAR: 1977

| I. Gaseous Effluents (continued) | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 3. Particulate Releases<br>a) Gross Radioactivity ($\beta\gamma$) | curies | 6.2E-02 | 2.7E-02 | 2.0E-02 | 3.3E-02 | 6.8E-02 | 3.5E-02 | 2.5E-01 | |
| b) Gross Alpha Radioactivity | curies | | | | | | | | |
| c) Isotopes Released | curies | | | | | | | | |
| Cs-136 | curies | 1.5E-04 | --- | --- | --- | --- | ---- | 1.5E-04 | |
| Co-60 | curies | 3.8E-04 | 1.9E-04 | 1.3E-04 | 2.2E-04 | 2.4E-04 | 1.2E-03 | 2.4E-03 | |
| Sr-89 | curies | 5.1E-02 | 2.2E-02 | 1.7E-02 | 2.9E-02 | 4.0E-02 | 3.1E-02 | 1.9E-01 | |
| Sr-90 | curies | 2.2E-05 | 5.7E-05 | 2.1E-05 | 1.7E-05 | 2.4E-05 | 1.9E-05 | 1.6E-04 | |
| Ru-103 | curies | 1.7E-05 | --- | --- | --- | --- | -- | 1.7E-05 | |
| I-131 | curies | 3.0E-03 | 5.7E-04 | 1.1E-03 | 3.9E-04 | 6.1E-04 | 5.9E-04 | 6.3E-03 | |
| Cs-134 | curies | 1.4E-03 | 2.8E-04 | 2.6E-04 | 6.0E-05 | 1.4E-04 | 6.4E-05 | 2.2E-03 | |
| Cs-137 | curies | 2.6E-03 | 7.9E-04 | 6.5E-04 | 5.2E-04 | 7.2E-04 | 3.4E-04 | 5.6E-03 | |
| Ba-140 | curies | 3.0E-03 | 2.9E-03 | 1.2E-03 | 2.9E-03 | 2.5E-02 | 2.0E-03 | 3.7E-02 | |
| Ce-141 | curies | 5.4E-05 | --- | --- | 4.2E-05 | 9.3E-05 | --- | 1.9E-04 | |
| Ce-144 | curies | 3.1E-04 | --- | --- | --- | 1.4E-03 | --- | 1.7E-03 | |
| Nb-95 | curies | 2.6E-05 | --- | --- | --- | --- | --- | 2.6E-05 | |
| Co 58 | curies | 3.8E-04 | 2.7E-04 | 1.7E-04 | 2.2E-04 | 1.7E-04 | 1.3E-04 | 1.3E-03 | |
| Mn 54 | curies | 3.0E-06 | 5.2E-05 | --- | --- | --- | --- | 5.5E-05 | |
| d) Percent of Chimney Limit | % | 0.97 | 0.47 | 0.32 | 0.54 | 1.06 | 0.56 | 0.65 | |
| e) Average Release | uCi/sec | 2.3E-02 | 1.1E-02 | 7.6E-03 | 1.3E-02 | 2.5E-02 | 1.3E-02 | 1.5E-02 | |
| | | | | | | | | | |
| 4. Sum of Iodines & Particulates | | | | | | | | | |
| a) Percent of Chimney Limit | % | 5.27 | 0.47 | 4.61 | 29.54 | 15.03 | 15.11 | 11.67 | |
| 5. Gaseous Tritium | | | | | | | | | |
| a) Total Release | curies | 7.1E-01 | 6.6E-01 | 9.9E-02 | 2.4E-01 | 2.0E-01 | 7.0E-02 | 2.0E00 | |
| b) Average Release Rate | uCi/sec | 2.7E-01 | 2.7E-01 | 3.7E-02 | 9.2E-02 | 7.5E-02 | 2.7E-02 | 1.3E-01 | |

TABLE 1.1-2

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station-Units 2/3 DOCKET NOS.: 50-237, 50-249 YEAR: 1977

| I. Gaseous Effluents | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Gross Radioactivity Releases<br>a) Total Release | curies | 1.9E+02 | 1.3E+03 | 6.4E+02 | 3.0E+03 | 2.0E+05 | 5.8E+04 | 2.6E+05 | 6.6D.1.f.(1) |
| b) Maximum Release Rate | uCi/sec | 7.6E+01 | 6.0E+03 | 4.0E+03 | 1.8E+04 | 1.0E+05 | 9.5E+04 | 1.0E+05 | 6.6D.1.f.(2) |
| c) Isotopes Released | | | | | | | | | 6.6D.1.f.(4) |
| Kr-85m | curies | 2.1E01 | 2.1E02 | 4.9E01 | 6.9E02 | 2.7E03 | 6.2E02 | 4.3E03 | |
| Kr-87 | curies | ------ | ------ | ------ | --- | 1.4E04 | 2.8E03 | 1.7E04 | |
| Kr-88 | curies | ------ | ------ | 1.1E01 | --- | 1.1E04 | 2.1E03 | 1.3E04 | |
| Xe-133 | curies | 1.6E02 | 1.1E03 | 5.4E02 | 2.3E03 | 1.9E03 | 8.8E02 | 6.9E03 | |
| Xe-135 | curies | 1.3E01 | 1.4E01 | 3.9E01 | --- | 1.8E04 | 3.8E03 | 2.2E04 | |
| Xe-135m | curies | ------ | ------ | ------- | --- | 2.3E04 | 7.5E03 | 3.1E04 | |
| Xe-138 | curies | ------ | ------ | ------- | --- | 1.3E05 | 4.0E04 | 1.7E05 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| d) Percent of Chimney Limit | % | 0.01 | 0.06 | 0.03 | 0.13 | 8.29 | 2.48 | 1.83 | 6.6D.1.f.(3) |
| e) Percent of Vent Stack Limit | % | | | | | | | | 6.6D.1.f.(3) |
| f) Average Release Rate | uCi/sec | 7.0E+01 | 5.4E+02 | 2.4E+02 | 1.2E03 | 7.5E+04 | 2.2E+04 | 1.7E04 | |
| 2. Chimney Iodine Releases | | | | | | | | | 6.6D.1.f.(1) |
| a) Isotopes Released | | | | | | | | | |
| I-131 | curies | 6.3E-02 | 1.1E-01 | 8.3E-02 | 1.3E-01 | 8.0E-01 | 2.8E-01 | 1.5E+00 | |
| I-133 | curies | 3.8E-01 | 2.0E-01 | 4.5E-01 | 1.0E00 | 8.6E00 | 2.9E00 | 1.4E01 | |
| I-135 | curies | 4.1E-01 | 9.8E-02 | 5.9E-01 | 1.5E00 | 2.0E01 | 4.6E00 | 2.7E01 | |
| b) Percent of Chimney Limit | % | 0.55 | 1.08 | 0.75 | 1.31 | 7.03 | 2.58 | 2.22 | 6.6D.1.f.(3) |
| c) Average Release Rate | uCi/sec | 2.4E-02 | 4.6E-02 | 3.1E-02 | 5.0E-02 | 3.0E-01 | 1.1E-01 | 2.6E-01 | |
| | | | | | | | | | |

TABLE 1.1-2 (Cont'd)

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station - Unit 2/3 DOCKET NOS.: 50-237, 50-249 YEAR: 1977

| I. Gaseous Effluents(continued) | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 3. Chimney Particulate Release | | | | | | | | | |
| a) Gross Radioactivity(β-γ) | curies | 6.2E-01 | 5.1E-01 | 4.7E-01 | 3.6E-01 | 2.9E-01 | 2.2E-01 | 2.5E+00 | 6.6D.1.f.(1) |
| b) Gross Alpha Radioactivity | curies | | | | | | | | |
| c) Isotopes Released | | | | | | | | | 6.6D.1.f.(1) |
| Mn-54 | curies | ------- | 3.2E-03 | 3.2E-03 | 1.7E-03 | 5.7E-04 | --- | 8.7E-03 | |
| Co-60 | curies | 5.3E-03 | 5.1E-02 | 5.1E-02 | 1.5E-02 | 7.3E-03 | 5.8E-03 | 1.4E-01 | |
| Sr-89 | curies | 3.2E-01 | 1.8E-01 | 2.1E-01 | 2.0E-01 | 1.8E-01 | 1.2E-01 | 1.2E00 | |
| Sr-90 | curies | 6.8E-04 | 7.7E-04 | 7.2E-04 | 3.5E-04 | 3.2E-04 | 2.2E-04 | 3.1E-03 | |
| Mo-99 | curies | ------- | --- | --- | --- | --- | --- | --- | |
| I-131 | curies | 3.8E-02 | 8.7E-02 | 2.7E-02 | 1.2E-02 | 6.0E-03 | 1.1E-02 | 1.8E-01 | |
| Cs-134 | curies | 6.8E-04 | 1.9E-03 | 1.7E-04 | 1.5E-04 | --- | --- | 2.9E-03 | |
| Cs-137 | curies | 4.2E-03 | 4.3E-03 | 3.5E-03 | 3.1E-03 | 2.4E-03 | 5.8E-04 | 1.8E-02 | |
| Ba-140 | curies | 2.5E-01 | 1.7E-01 | 1.7E-01 | 1.3E-01 | 9.5E-02 | 8.2E-02 | 9.0E-01 | |
| Ce-141 | curies | 1.4E-03 | 6.2E-03 | 1.6E-03 | --- | 7.3E-04 | --- | 9.9E-03 | |
| Ce-144 | curies | ------- | --- | 2.5E-03 | --- | ---- | ---- | 2.5E-03 | |
| Co-58 | curies | 1.6E-03 | 9.7E-04 | ---- | ---- | ---- | ---- | 2.6E-03 | |
| | | | | | | | | | |
| d) Percent of Chimney Limit | % | 5.36 | 4.91 | 4.19 | 3.44 | 2.58 | 1.98 | 3.74 | 6.6D.1.f.(3) |
| e) Average Release Rate | uCi/sec | 2.3E-01 | 2.1E-01 | 1.8E-01 | 1.4E-01 | 1.1E-01 | 8.4E-02 | 1.6E-02 | |
| 4. Vent Stack Iodine Release | | | | | | | | | 6.6D.1.f.(1) |
| a) Isotopes Released | | | | | | | | | |
| I-131 | curies | 5.4E-03 | 6.7E-03 | 1.3E-02 | 8.0E-03 | 5.6E-03 | 4.3E-03 | 4.3E-02 | |
| I-133 | curies | 1.2E-02 | 1.3E-02 | 2.3E-02 | 2.6E-02 | 1.3E-02 | 2.1E-02 | 1.1E-01 | |
| I-135 | curies | ------- | 6.8E-03 | 2.8E-02 | 3.2E-02 | 2.4E-02 | 4.4E-02 | 1.3E-01 | |
| b) Percent of Vent Stack Limit | % | 1.67 | 2.29 | 4.17 | 2.58 | 1.75 | 1.39 | 2.31 | 6.6D.1.f.(3) |
| c) Average Release Rate | uCi/sec | 2.0E-03 | 2.8E-03 | 5.0E-03 | 3.1E-03 | 2.1E-03 | 1.7E-03 | 2.8E-03 | |

TABLE 1.1-2 (Cont'd)

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station - Unit 2/3 DOCKET NOS.: 50-237, 50-249 YEAR: 1977

| I. Gaseous Effluents (Continued) | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 5. Vent Stack Particulate Release (a) Gross Radioactivity (B-γ) | curies | 2.3E-02 | 2.8E-02 | 3.2E-02 | 4.6E-02 | 4.4E-02 | 3.8E-02 | 2.1E-01 | |
| (b) Gross Alpha Radioactivity | curies | | | | | | | | 6.6D.1.f.(1) |
| (c) Isotopes Released Mn-54 | | 5.3E-04 | 4.8E-04 | 3.6E-04 | 1.5E-03 | 4.6E-04 | 5.5E-04 | 3.9E-03 | |
| Cr-51 | curies | 2.1E-03 | 5.1E-03 | 1.8E-03 | 5.8E-03 | 3.9E-03 | 4.8E-03 | 2.4E-02 | 6.6D.1.f(1) |
| Co-60 | curies | 6.6 E-03 | 3.3E-03 | 1.1E-02 | 1.2E-02 | 3.3E-03 | 6.8E-03 | 4.3E-02 | |
| Sr-89 | curies | 2.1E-03 | 1.0E-03 | 2.4E-03 | 5.9E-03 | 3.1E-03 | 5.6E-03 | 2.0E-02 | |
| Sr-90 | curies | 2.5E-05 | 3.0E-05 | 3.3E-05 | 5.4E-05 | 4.2E-05 | 5.5E-05 | 2.4E-04 | |
| Nb-95 | curies | 1.2E-04 | 5.4E-05 | --- | --- | 8.8E-05 | 1.1E-04 | 3.7E-04 | |
| I-131 | curies | 3.9E-03 | 8.6E-03 | 6.4E-03 | 7.4E-03 | 4.1E-03 | 8.7E-03 | 3.9E-02 | |
| Cs-134 | curies | 2.6E-04 | 4.8E-04 | 5.7E-04 | 6.3E-04 | 3.6E-04 | 6.6E-04 | 3.0E-03 | |
| Cs-137 | curies | 9.2E-04 | 1.1E-03 | 3.4E-03 | 9.2E-04 | 7.1E-04 | 1.1E-03 | 8.2E-03 | |
| Ba-140 | curies | 2.6E-03 | 3.3E-03 | 2.8E-03 | 5.4E-03 | 1.3E-02 | 4.3E-03 | 3.1E-02 | |
| La-140 | curies | 2.3E-03 | 4.0E-03 | 2.9E-03 | 5.4E-03 | 1.4E-02 | 4.8E-03 | 3.3E-02 | |
| Ce-144 | curies | 3.4E-04 | --- | --- | --- | 5.6E-04 | --- | 9.0E-04 | |
| Ru-103 (Continued on next sheet) | curies | 8.6E-05 | 4.8E-05 | --- | --- | 6.0E-05 | --- | 1.9E-04 | |
| (d) Percent Vent Stack Limit | % | 7.31 | 9.70 | 9.97 | 14.81 | 13.77 | 12.01 | 11.26 | 6.6D.1.f.(3) |
| (e) Average Release Rate | uCi/sec | 8.8E-03 | 1.2E-02 | 1.2E-02 | 1.8E-02 | 1.7E-02 | 1.4E-02 | 1.4E-02 | |
| 6. Sum of Iodine and Particulate | | | | | | | | | |
| a) Percent of Chimney Limit | % | 5.91 | 5.99 | 4.95 | 4.75 | 9.61 | 4.56 | 5.96 | 6.6D.1.f.(3) |
| b) Percent of Vent Stack Limit | % | 8.98 | 11.99 | 14.10 | 17.39 | 15.52 | 13.40 | 13.73 | |
| 7. Gaseous Tritium | | | | | | | | | |
| a) Release | curies | 7.8E+01 | 4.5E01 | 7.1E+01 | 3.4E+01 | 4.0E+01 | 5.4E+01 | 3.2E+02 | |
| b) Average Release Rate | uCi/sec | 2.9E+01 | 1.8E+01 | 2.7E+01 | 1.3E+01 | 1.5E+01 | 2.1E+01 | 2.1E+01 | |
| c) Percent Tech Spec Limit | | NA | NA | NA | NA | NA | NA | NA | |

TABLE 1.1-2 (Cont'd)

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station - Unit 2/3 DOCKET NOS.: 50-237, 50-249 YEAR: 1977

| I. Gaseous Effluents (continued) | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REP. |
|---|---|---|---|---|---|---|---|---|---|
| 5. Isotopes Released (Continued) Vent Stack Particulates | Curies | | | | | | | | |
| | | | | | | | | | |
| Ce-141 | curies | 1.2E-04 | 3.0E-05 | --- | --- | 9.8E-05 | --- | 2.5E-04 | |
| Ag-110m | curies | --- | --- | --- | --- | 1.2E-04 | --- | 1.2E-04 | |
| Zr-95 | curies | --- | --- | --- | --- | 3.4E-04 | --- | 3.4E-04 | |
| Zn-65 | curies | 1.6E-04 | 2.7E-05 | --- | --- | --- | --- | 1.9E-04 | |
| Fe-59 | curies | 3.3E-04 | 1.5E-04 | --- | --- | --- | --- | 4.8E-04 | |
| Co-58 | curies | 3.4E-04 | 2.4E-04 | 2.2E-04 | 5.5E-04 | 3.2E-04 | 1.2E-04 | 1.8E-03 | |

TABLE 1.2-1

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: DRESDEN NUCLEAR POWER STATION - UNIT 1 DOCKET NOS.: 50-10 YEAR: 1977

| II. Liquid Effluents | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Gross Radioactivity ($\beta$-$\gamma$) | | | | | | | | | |
| a) Total Release | Curies | 1.9E-02 | 4.1E-02 | 3.1E-02 | 1.3E-01 | 1.8E-02 | 4.1E-02 | 2.8E-01 | |
| b) Average Concentration Released | uci/ml | 8.9E-10 | 2.1E-09 | 1.4E-09 | 4.8E-09 | 6.5E-10 | 1.6E-09 | 1.9E-09 | 6.6D.1.e.(1) |
| c) Maximum Concentration Released | uci/ml | 3.1E-08 | 4.0E-08 | 3.3E-08 | 6.5E-08 | 2.5E-08 | 2.6E-08 | 6.5E-08 | 6.6D.1.e.(4) |
| d) Percent of Tech Spec Limit | % | 0.9 | 2.1 | 1.4 | 4.8 | 0.6 | 1.6 | 1.9 | 6.6D.1.e.(5) |
| based on average Conc. Released | | | | | | | | | 6.6D.1.e.(6) |
| 2. Tritium | | | | | | | | | |
| a) Total Release | Curies | 1.9E-03 | 1.6E-03 | 4.6E-03 | 3.0E-03 | 1.3E-03 | 9.9E-04 | 1.4E-02 | 6.6D.1.e.(8) |
| b) Average Concentration Released | uci/ml | 8.5E-11 | 7.8E-11 | 2.1E-10 | 1.2E-10 | 4.8E-11 | 3.8E-11 | 1.0E-10 | |
| c) Percent of Tech Spec Limit | % | NA | NA | NA | NA | NA | NA | NA | |
| 3. Dissolved Noble Gases | | | | | | | | | |
| a) Total Release | Curies | NONE | NONE | NONE | NONE | NONE | NONE | NONE | |
| b) Average Concentration Released | uci/ml | --- | --- | --- | --- | --- | --- | --- | |
| c) Percent of Tech Spec Limit | % | --- | --- | --- | --- | --- | --- | --- | |
| 4. Gross Alpha Radioactivity | | | | | | | | | |
| a) Total Release | Curies | 2.8E-05 | 1.1E-05 | 1.7E-05 | 1.9E-04 | 1.8E-03 | 3.1E-05 | 2.1E-03 | |
| b) Average Concentration Released | uci/ml | 8.9E-10 | 5.7E-13 | 7.9E-13 | 7.2E-12 | 6.5E-11 | 1.2E-12 | 1.6E-10 | |
| 5. Volume of Liquid Waste to Discharge Canal | Liters | 8.2E+04 | 1.0E+05 | 1.3E+05 | 1.5E+05 | 1.0E+05 | 2.2E+05 | 7.8E+05 | 6.6D.1.e.(2) |
| 6. Volume of Dilution Water | Liters | 2.2E+10 | 2.0E+10 | 2.2E+10 | 2.6E+10 | 2.7E+10 | 2.6E+10 | 1.4E+11 | 6.6D.1.e.(3) |

TABLE 1.2-1 (Cont'd)

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station - Unit 1 DOCKET NOS.: 50 - 10 YEAR: 1977

| II. Liquid Effluents (continued) | UNITS | January | February | March | April | May | June | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 7. Isotopes Released | Milli-Curies | | | | | | | | |
| Cr-51 | Milli Curies | ---- | ---- | ---- | 1.31 | ---- | 1.83 | 3.14 | |
| Mn-54 | Milli-Curies | 1.28 | 1.51 | 0.66 | 5.42 | 2.18 | 2.27 | 13.32 | |
| CO-58 | Milli-Curies | 0.35 | 4.22 | 1.09 | 3.62 | 1.04 | 0.98 | 11.30 | |
| CO-60 | Milli-Curies | 14.19 | 27.12 | 8.75 | 56.42 | 12.53 | 25.08 | 144.09 | |
| MO-99 | Milli-Curies | 0.61 | --- | ---- | ---- | ---- | ---- | 0.61 | |
| Tc-99m | Milli-Curies | 0.66 | --- | --- | --- | ---- | ---- | 0.66 | |
| I-131 | Milli-Curies | 0.19 | 0.41 | 0.88 | 0.49 | --- | 1.21 | 3.18 | |
| I-133 | Milli-Curies | 0.35 | 0.10 | --- | --- | --- | 0.56 | 1.01 | |
| Cs-134 | Milli-Curies | 0.45 | 1.96 | 4.93 | 7.68 | 0.23 | 1.27 | 16.52 | |
| Cs-137 | Milli-Curies | 1.13 | 3.92 | 9.85 | 45.15 | 0.47 | 2.83 | 63.35 | |
| Fe-59 | Milli-Curies | --- | 0.11 | --- | 0.50 | 0.47 | 0.32 | 1.40 | |
| Sr-89 | Milli-Curies | 0.09 | 1.18 | 1.59 | 1.03 | 0.16 | 1.36 | 5.41 | |
| Sr-90 | Milli-Curies | 0.01 | 0.05 | 0.82 | 0.11 | 0.02 | 0.15 | 1.16 | |
| Nb-95 | Milli-Curies | --- | 0.11 | --- | 0.40 | 0.15 | 0.25 | 0.91 | |
| Ru-103 | Milli-Curies | --- | 0.19 | 0.38 | --- | 0.16 | 0.21 | 0.94 | |
| Ce-141 | Milli-Curies | --- | 0.14 | --- | --- | --- | 0.25 | 0.39 | |
| Sr-91 | Milli-Curies | --- | 0.39 | --- | --- | --- | --- | 0.39 | |
| Na-24 | Milli-Curies | --- | --- | 1.59 | --- | --- | --- | 1.59 | |
| Ag-110m | Milli-Curies | --- | --- | --- | --- | --- | 0.22 | 0.22 | |
| Ba-140 | Milli-Curies | --- | --- | --- | 0.01 | --- | 0.95 | 0.96 | |
| La-140 | Milli-Curies | --- | --- | --- | 0.03 | 0.11 | 1.74 | 1.88 | |
| Ce-144 | Milli-Curies | --- | --- | --- | 2.93 | --- | --- | 2.93 | |
| Zn-65 | Milli-Curies | --- | --- | --- | 0.79 | --- | --- | 0.79 | |

TABLE 1.2-2

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: DRESDEN NUCLEAR POWER STATION - UNIT 2/3 DOCKET NOS.: 50-237, 50-249 YEAR: 1977

| II. Liquid Effluents | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Gross Radioactivity ($\beta$-$\gamma$) | | | | | | | | | |
| a) Total Release | Curies | * | * | * | * | * | * | * | |
| b) Average Concentration Released | uci/ml | * | * | * | * | * | * | * | |
| c) Maximum Concentration Released | uci/ml | * | * | * | * | * | * | * | |
| d) Percent of Tech Spec Limit | % | | | | | | | | |
| based on Average Conc. Released | | | | | | | | | |
| 2. Tritium | | | | | | | | | |
| a) Total Release | Curies | * | * | * | * | * | * | * | |
| b) Average Concentration Released | uci/ml | * | * | * | * | * | * | * | |
| c) Percent of Tech Spec Limit | % | | | | | | | | |
| | | | | | | | | | |
| 3. Dissolved Noble Gases | | | | | | | | | |
| a) Total Release | Curies | | | | | | | | |
| b) Average Concentration Released | uci/ml | | | | | | | | |
| c) Percent of Tech Spec Limit | % | | | | | | | | |
| | | | | | | | | | |
| 4. Gross Alpha Radioactivity | | | | | | | | | |
| a) Total Release | Curies | * | * | * | * | * | * | * | |
| b) Average Concentration Released | uci/ml | * | * | * | * | * | * | * | |
| | | | | | | | | | |
| 5. Volume of Liquid Waste to | Liters | * | * | * | * | * | * | * | |
| Discharge Canal | | | | | | | | | |
| | | | | | | | | | |
| 6. Volume of Dilution Water | Liters | * | * | * | * | * | * | * | |
| | | | | | | | | | |
| | | | | | | | | | |

* NO DISCHARGE THIS MONTH.

TABLE 2.0-1

REPORT OF RADIOACTIVE EFFLUENTS

FACILITY: Dresden Nuclear Power Station DOCKET NOS.: 50-10, 50-237, 50-549 YEAR: 1977

| I. Solid Waste Shipped Offsite For Burial or Disposal | UNITS | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | 6 MO. TOTAL | TECH. SPEC. REF. |
|---|---|---|---|---|---|---|---|---|---|
| 1. Spent Resins, Filter Sludges, Evaporator Bottoms, etc. | | | | | | | | | |
| a) Quantity Shipped | cubic meters | 6.3E+01 | 9.7E+01 | 5.2E+01 | 6.4E+01 | 7.8E+01 | 1.1E+02 | 4.6E+02 | 6.5.D.g.(1) |
| b) Radioactivity | curies | 9.4E+01 | 1.8E+02 | 1.5E+03 | 1.7E+03 | 4.0E+02 | 2.3E+02 | 4.1E+03 | 6.5.D.g.(2) |
| | | | | | | | | | |
| 2. Dry compressible waste, | | | | | | | | | |
| contaminated equipment, etc. | | | | | | | | | |
| a) Quantity Shipped | cubic meters | 5.7E+01 | 4.4E+01 | 1.4E+01 | 3.2E+01 | 8.0E+01 | 7.6E+01 | 7.0E+02 | 6.5.D.g.(1) |
| b) Radioactivity | curies | 7.5E-01 | 1.3E+00 | 1.2E+00 | 1.3E+00 | 1.9E+00 | 1.8E+00 | 8.3E+00 | 6.5.D.g.(2) |
| | | | | | | | | | |
| II. Solid Waste Shipped Offsite For Burial or Disposal (Processed by contractor) | | | | | | | | | |
| 1. Spent Resins, Filter Sludges, evaporator bottoms, etc. | | | | | | | | | |
| a) Quantity Shipped | cubic meters | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.5.D.g.(1) |
| b) Radioactivity | curies | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.5.D.g.(2) |
| | | | | | | | | | |
| 2. Dry Compressible Waste, | | | | | | | | | |
| contaminated equipment, etc. | | | | | | | | | |
| a) Quantity | cubic meters | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.5.D.g.(1) |
| b) Radioactivity | curies | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.5.D.g.(2) |

TABLE 2.0-1 (Cont'd)

DRESDEN NUCLEAR POWER STATION

SOLID WASTE DISPOSITION

YEAR 1977

| MONTH | NUMBER OF SHIPMENTS | MODE OF TRANSPORTATION | DESTINATION |
|---|---|---|---|
| January | 22 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |
| February | 31 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |
| March | 11 | Motor Freight (Exclusive use only) | Morehead Kentucky |
| March | 19 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |
| April | 30 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |
| April | 9 | Motor Freight (Exclusive use only) | Morehead Kentucky |
| May | 25 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |
| May | 5 | Motor Freight (Exclusive use only) | Morehead Kentucky |
| June | 37 | Motor Freight (Exclusive use only) | Sheffield Nuclear Center |

# 3.0 DOSE TO MAN

## 3.1 GASEOUS EFFLUENT PATHWAYS

### 3.1.1 NOBLE GASES

#### 3.1.1.1 GAMMA DOSE RATES

Gamma dose rates off-site were calculated based on measured release rates, isotopic composition of the noble gases, and meteorological data for the period (Table 3.1-1). Isodose contours are shown in Figure 3.1-1 for the report period. Based on measured effluents and meteorological data, the maximum off-site external radiation exposure over a land area occurred NE of the site. The dose to an individual at that location was 2.8 mrem during the six-month period.

#### 3.1.1.2 BETA AIR DOSE RATES

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. The surface dose, i.e., beta air dose, from beta emitters in the infinite cloud can be approximated; however, the actual dose to sensitive skin tissues is difficult to calculate because this depends on the beta particle energies, thickness of inert skin, and clothing covering sensitive tissues. For purposes of this report the surface dose only is given.

The air concentrations of radioactive noble gases at the off-site receptor locations are given in Figure 3.1-2. The maximum off-site beta air dose for the six-month period was 16.6 mrad.

### 3.1.2 RADIOACTIVE IODINE

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine, and some of the radioiodines, especially I-131 and I-133, released during routine operation of the plany may be made available to man thus resulting in a dose to the thyroid. Studies of environmental radioiodine show that the pathways of interest are inhalations of airborne iodine, and ingestion of iodine in milk or on leafy vegetation.

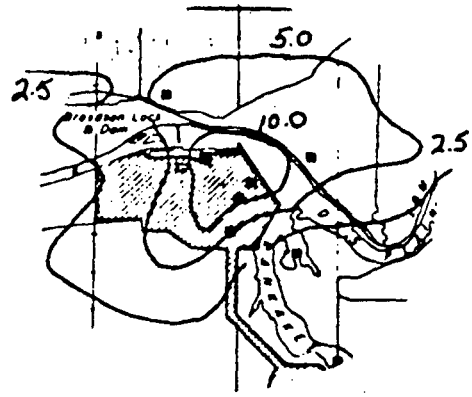
POOR ORIGINAL

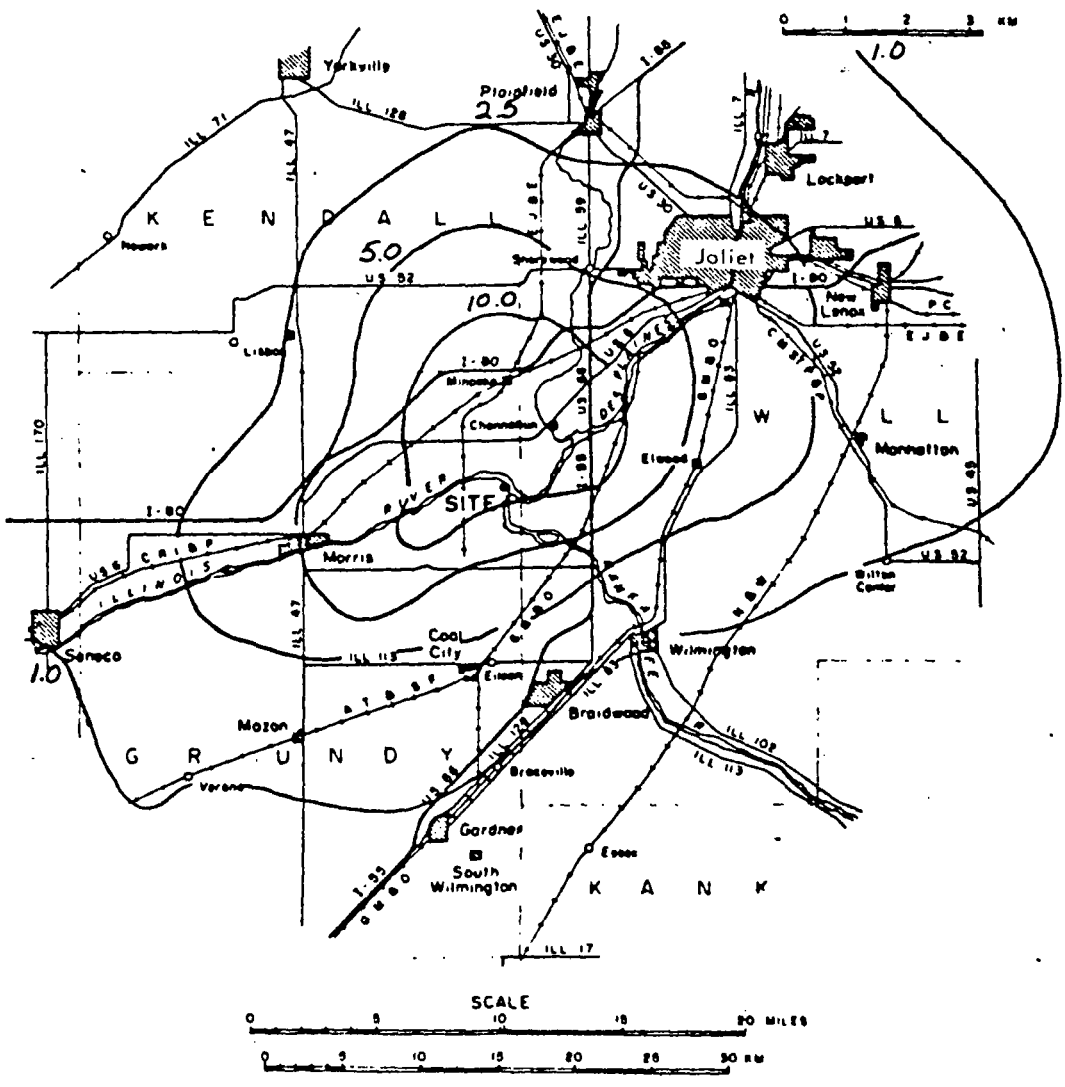
Figure 3.1-1

Estimated Cumulative Gamma Dose (mrem) for the period January-June 1977, from DNPS.

Isopleth Labels

Small Figure - Multiply by $10^0$
Large Figure - Multiply by $10^{-1}$



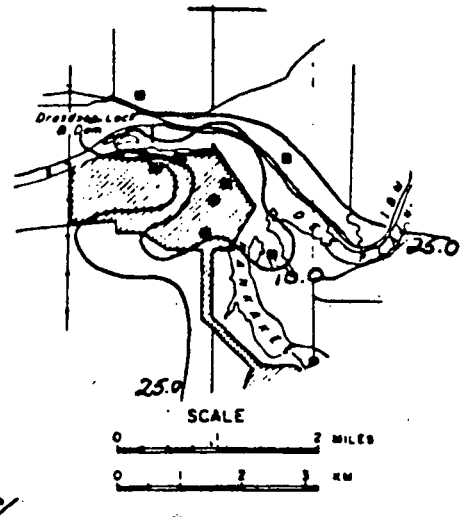
POOR ORIGINAL

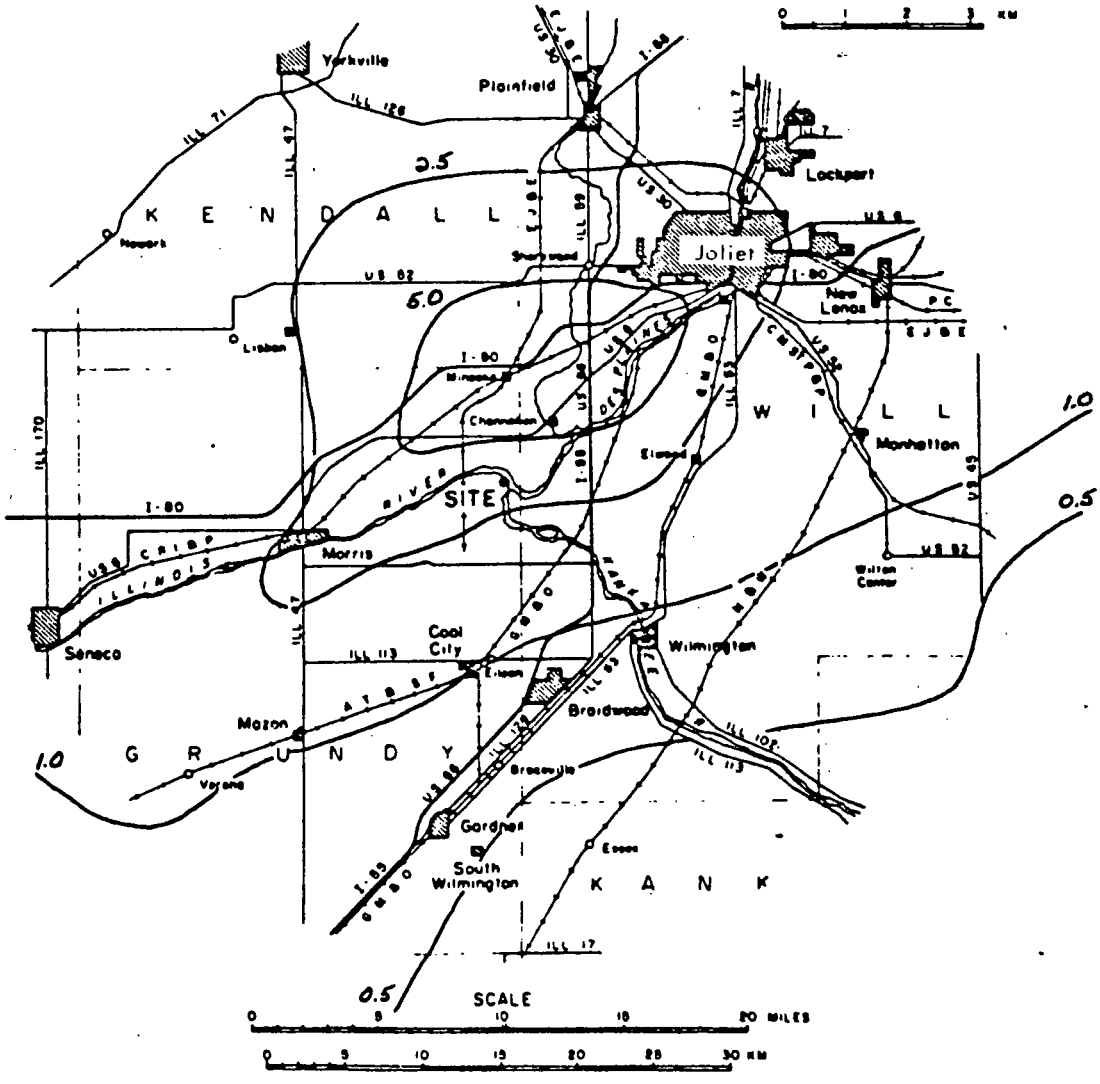
Figure 3.1-2

Estimated Total Concentration (pCi/meter$^3$) of Noble Gases from DNPS for the period January-June 1977.

Isopleth Labels

Small Figure - Multiply by $10^{+2}$
Large Figure - Multiply by $10^{+3}$



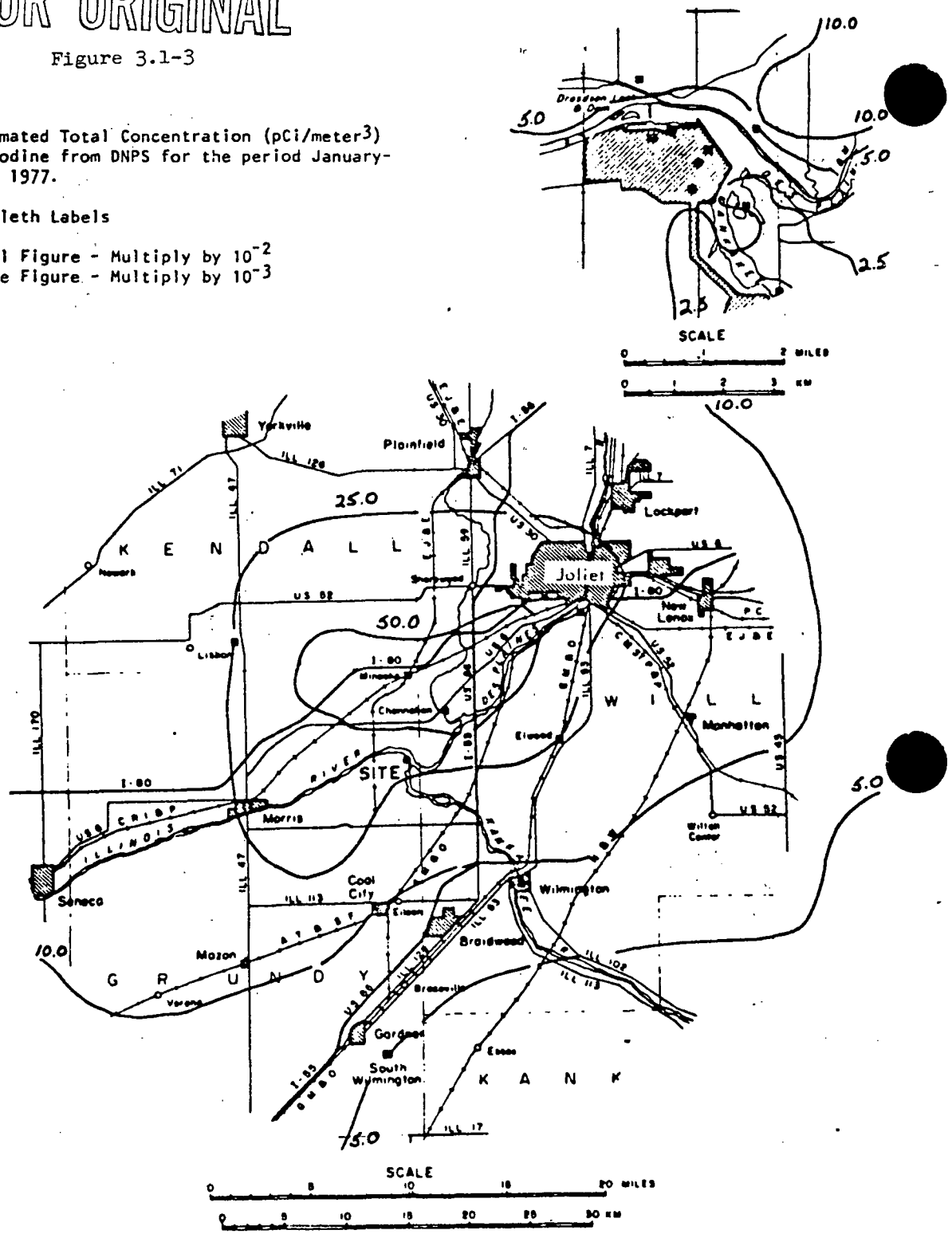
POOR ORIGINAL

Figure 3.1-3

Estimated Total Concentration (pCi/meter$^3$) of Iodine from DNPS for the period January-June 1977.

Isopleth Labels

Small Figure - Multiply by $10^{-2}$
Large Figure - Multiply by $10^{-3}$



### 3.1.2.1 IODINE-131 CONCENTRATION IN AIR

The calculated concentration contours for I-131 in air are shown in Figure 3.1-3. Included in these calculations is an iodine cloud depletion factor which accounts for the phenomenon of elemental iodine deposition on the ground. The maximum off-site six-month average concentration is estimated to 0.14pCi/$m^3$.

### 3.1.2.2 DOSE TO INFANT'S THYROID

The hypothetical thyroid dose to an infant living near the plant via inhalation and ingestion of milk was calculated. The radionuclides considered were I-131 and I-133 and the source of milk was taken to be the nearest dairy farm with the cows pastured from April to September. The infant was assumed to live at the point of maximum off-s concentrations of airborne iodine. Under these conditions the maxi infant's thyroid dose was 6.1 mrem during the six-month reporting period. (Table 3.1-1)

### 3.1.2.3 DOSE TO ADULT'S THYROID

The thyroid dose via inhalation and ingestion of leafy vegetation to an adult living and working nearby was calculated to be 0.09 mrem during the report period. The radionuclides considered are I-131 and I-133 and the source of the leafy vegetables, such as lettuce, harvested during August, September and October, is taken to be a hypothetical farm existing at the point of maximum X/Q. (Table 3.1-1)

### 3.1.3 CONCENTRATION OF "PARTICULATES" IN AIR

Concentration contours of radioactive airborne particulates are shown in Figure 3.1-4. The maximum off-site average level for the six-month period is estimated to be 0.56 pCi/$m^3$ at the site boundary.

### 3.1.4 SUMMARY OF DOSES

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

TABLE 3.1-1

DOSES RESULTING FROM AIRBORNE RELEASES
DRESDEN NUCLEAR POWER STATION
MONTH ENDED JUNE, 1977

| TYPE | UNITS | MAXIMUM DOSE (1) THIS MONTH | LAST 3 MONTHS | LAST 6 MONTHS | JANUARY TO DATE |
|---|---|---|---|---|---|
| WHOLE BODY (2) | MREM | 8.650E-01 | 4.445E 00 | 5.250E 00 | 5.250E 00 |
| NEAREST RESIDENT (2,3) | MREM | 5.250E-01 | 2.280E 00 | 2.800E 00 | 2.800E 00 |
| SKIN | MRAD | 2.160E 00 | 1.230E 01 | 1.660E 01 | 1.660E 01 |
| INFANTS THYROID (4) | MREM | 7.930E-01 | 6.110E 00 | 6.120E 00 | 6.120E 00 |
| ADULTS THYROID (5) | MREM | 1.950E-02 | 8.240E-02 | 9.230E-02 | 9.230E-02 |
| POPULATION (6) | PERSON-REM | 0.166E 02 | 0.904E 02 | 1.068E 02 | 1.068E 02(7) |

(1) DOSES CALCULATED IN ACCORDANCE WITH PROPOSED A.L.A.P. REGULATORY GUIDES AA AND DD.
(2) INCLUDES SHIELDING AND OCCUPANCY FACTOR OF 2.
(3) NEAREST RESIDENT WHOLE BODY DOSES BASED ON:
THIS MONTH DISTANCE OF 1.25 MILES IN NW DIRECTION
LAST 3 MONTHS DISTANCE OF 1.25 MILES IN NW DIRECTION
LAST 6 MONTHS DISTANCE OF 1.50 MILES IN NE DIRECTION
YEAR TO DATE DISTANCE OF 1.50 MILES IN NE DIRECTION
(4) INCLUDES INHALATION DOSE FOR EACH MONTH AND DOSE RECEIVED VIA MILK PATHWAY FROM APRIL THRU SEPTEMBER ONLY.
(5) INCLUDES INHALATION DOSE FOR EACH MONTH AND DOSE RECEIVED VIA LEAFY VEGETABLE PATHWAY DURING AUGUST, SEPTEMBER AND OCTOBER ONLY.
(6) POPULATION DOSE IS DETERMINED BY MULTIPLYING THE POPULATION IN EACH SECTOR BY THE DOSE AT THE MID-POINT OF THE AREA. THE DOSE INTEGRATION EXTENDS TO 50 MILES. INCLUDES SHIELDING AND OCCUPANCY FACTOR OF 2.
(7) THE EQUIVALENT AVERAGE POPULATION DOSE IS 1.741E-05 REM.

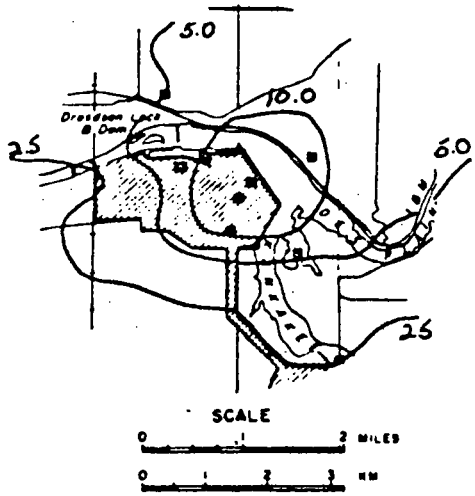
POOR ORIGINAL

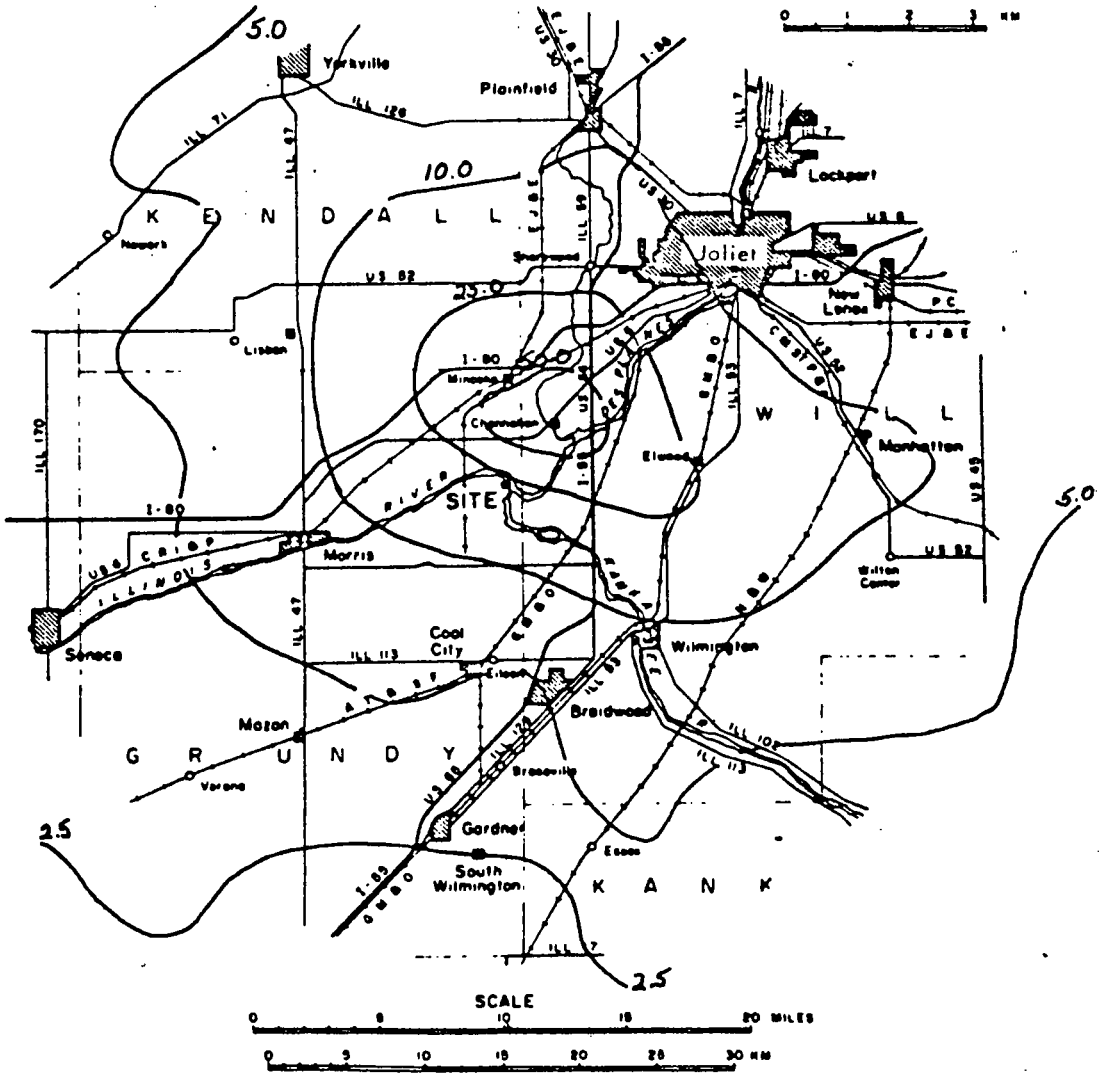
Figure 3.1-4

Estimated Total Concentration (pCi/meter$^3$) of Particulate Matter from DNPS for the period January-June 1977.

Isopleth Labels

Small Figure - Multiply by $10^{-2}$
Large Figure - Multiply by $10^{-3}$



## 3.2 LIQUID EFFLUENT PATHWAYS

The five principal pathways through the aquatic environment for potential doses to man from liquid waste are drinking water, eating aquatic foods, immersion in water and exposure while boating or walking on the shoreline. Not all of these pathways are applicable at a given time or station but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC† developed equations were used to calculate the doses to the whole body, lower GI tract, thyroid, bone and skin; specific parameters for use in the equations are given in Table 3.2-1. In general the values of the parameters used were taken from HERMES*, a report which summarizes the living habits of persons in the North Central U.S. Calculated doses are given in Table 3.2-2.

# 4.0 SITE METEOROLOGY

A summary of the site meteorological measurements taken during each calendar quarter of the six-month report period is given in Appendix II. The data are presented as cumulative joint frequency distributions of 35' level wind direction and wind speed class by atmospheric stability class determined from the temperature difference between the 150' and 35' levels.

† Nuclear Regulatory Commission, Proposed A.L.A.P. Regulatory Guides AA through DD, February, 1974.

*JF Fletcher and WL Dotson (compilers), "HERMES-A digital Computer Code for Estimating Regional Radiological Effects from the Nuclear Power Industry," USAEC Report HEDL-TME-71-168, Hanford Engineering Development Laboratory, 1971.

TABLE 3.2-1

VALUES OF PARAMETERS USED TO MAKE DOSE ESTIMATES
RESULTING FROM DRESDEN LIQUID WASTE DISCHARGES

| Pathway | Parameter | Unit | Value or Source |
|---|---|---|---|
| Potable Water | $M_p$ | unitless | -- |
| | $M_p/F$ | $CFS^{-1}$ | $1/1.37 \times 10^4$ (a) |
| | $F$ | CFS | $1.34 \times 10^{-8} F^1$ |
| | $F^1$ | 1/m | Station Report |
| | $U_p$ | 1/m | 36.6 |
| | $Q_i$ | Ci/m | Station Report |
| | $D_{ipr}$ | mrem/pCi | Regulatory Guide |
| | $\lambda_i$ | $hr^{-1}$ | Table of Isotopes or Other Sources |
| | $t_p$ | hr | 106 (b) |
| Aquatic Food | $M_p$ | unitless | 1/4 |
| | $F$ | CFS | $1.34 \times 10^{-8} F^1$ |
| | $F^1$ | 1/m | Station Report |
| | $U_p$ | kg/m | 0.1 (c) |
| | $Q_i, D_{ipr}, \lambda_i$ | -- | See Potable Water |
| | $B_{ip}$ | 1/kg | Regulatory Guide |
| | $t_p$ | hr | 72 (d) |
| Shoreline Deposits | $M_p, F, Q_i, \lambda_i$ | -- | See Aquatic Food |
| | $U_p$ | hr/m | 16.6 (e) |
| | $T_i$ | d | $(.693/\lambda_i) \times 1/24$ d/hr |
| | $W$ | unitless | 0.2 |
| | $t_p$ | hr | 0 |
| | $t$ | hr | $(8.76 \times 10^3 (hr/y) \times 30y = 2.63 \times 10^5$ |
| Swimming | $M_p, F, Q_i, \lambda_i$ | -- | See Aquatic Foods |
| | $U_p$ | hr/m | 0 (f) |
| | $D_{ipr}$ | mrem/hr/pCi/l | Regulatory Guide |
| | $t_p$ | hr | 0 |
| | $K_p$ | unitless | 1 |
| Boating | $M_p, F, Q_i, \lambda_i$ | -- | See Aquatic Foods |
| | $U_p$ | hr/m | 0, Nov. to March:47, April to Oct. (g) |
| | $D_{ipr}$ | mrem/hr/pCi/l | Regulatory Guide |
| | $t_p$ | hr | 0 |
| | $K_p$ | unitless | 2 |

(a) For potable water pathway it is assumed that total mixing in the river has occurred by the time the radioactivity reaches Peoria, 106 miles downstream.
(b) A river flow of 1 mph is assumed; hence t = 106 miles ÷ 1 mph
(c) Based on data from HERMES, pg. 41
(d) HERMES, pg. 118 (e) HERMES, pg. 144
(f) No swimming in Illinois River
(g) HERMES, pg. 144. 29 hr/m =→ 330 hr/yr. 330 hr of boating from April to October is 47 hr/m.

TABLE 3.2-2

DRESDEN 1 NUCLEAR POWER STATION
DOSES RESULTING FROM EXPOSURE
TO RADIOACTIVITY DISCHARGED IN LIQUID WASTE
JUNE 1977 AND JANUARY TO JUNE 1977

| PERIOD | DOSE BY PATHWAY (MREM) INGESTION | | | | SHORELINE | | SWIMMING | | BOATING |
|---|---|---|---|---|---|---|---|---|---|
| | WHOLE BODY | GI-LLI | THYROID | BONE | SKIN | WHOLE BODY | SKIN | WHOLE BODY | WHOLE BODY |
| THIS MONTH | .001 | .000 | .000 | .001 | .001 | .000 | 0.000 | 0.000 | .000 |
| LAST 3 MONTHS | .007 | .001 | .000 | .007 | .002 | .001 | 0.000 | 0.000 | .000 |
| LAST 6 MONTHS | .011 | .002 | .000 | .010 | .002 | .001 | 0.000 | 0.000 | .000 |
| SINCE JANUARY | .011 | .002 | .000 | .010 | .002 | .001 | 0.000 | 0.000 | .000 |

TOTAL ORGAN DOSE SINCE JANUARY

| ORGAN | TOTAL DOSE | MAXIMUM ALLOWABLE | PERCENT OF MAXIMUM |
|---|---|---|---|
| WHOLE BODY | .012 | 500 | .002 |
| GI-LLI | .002 | 1500 | .000 |
| THYROID | .000 | 1500 | .000 |
| BONE | .010 | 500 | .002 |
| SKIN | .002 | 3000 | .000 |

## 5.0 ENVIRONMENTAL MONITORING

Table 5.0-1 provides a summary of the radiological environmental monitoring program as required in the Technical Specifications. Monitoring locations are shown in Figure 5.0-1. The analytical results for each type of measurement and each medium are discussed in the following sections, and listed in Appendix I. Average values for radioactivity in the environment are given in Tables 5.0-2, 5.0-3.

In the Fall of 1976 two nuclear devices were detonated in the atmosphere in the People's Republic of China. Radioactive debris transported by tropospheric processes was detected in milk and air particulates from shortly after the explosions until around the end of the year.

Worldwide meteorological processes in the late winter and early spring of each year provide for higher exchange of stratospheric and tropospheric air (mainly across the tropopause in arctic regions) than occurs during other times of the year. When this phenomenon occurs, radioactive debris from weapons testing in the stratospheric reservoir is injected into the troposphere resulting in the familiar "spring peak" usually observed mainly in air particulates. The "spring peak" for 1977 began in about April and was still present by the end of June in samples collected throughout the Midwest. Radioactivity due to this worldwide fallout was detected mainly in air particulates, field crops, and precipitation. Gamma spectral analyses indicated that the major components were intermediate - halflife nuclides such as Ce-141, Cr-144, Zr-Nb-95, Ru-103, etc., and thus attributable to the Chinese tests in the Fall of 1976 and not operations of nuclear power stations.

TABLE 5.0-1

SUMMARY OF RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
January through June 1977

| Medium | Number of Locations | Number of Samples | No. of Locations Above Background | Radiation Attributable to Plant Operation |
|---|---|---|---|---|
| Direct Radiation - TLD | 17 | 34 | 3 | 3 (a) |
| " " - Ion chamber | 18 | 504 | 14 | 11 (b) |
| Airborne Particulate | 17 | 439 | 0* | 0 |
| Airborne I-131 | 17 | 234 | 1 | 1 (c) |
| Milk | 3 | 78 | 0 | 0 |
| Grass | 4 | 32 | 2 | 0 |
| Cattlefeed | 3 | 23 | 0 | 0 |
| Precipitation | 4 | 32 | 15 | 0 |
| Soil | 4 | 28 | 0 | 0 |
| Water | 22 | 179 | 1 | 0 |
| Fish | 1 | 2 | 0 | 0 |
| Sediment | 3 | 6 | 1 | 0 |
| Vegetables | 0 | 0 | 0 | 0 |
| Other Aquatic Biota | 6 | 14 | 0 | 0 |

*Exclusive of fallout.
(a) See Table 5.1-1.
(b) See Section 5.1.
(c) See Section 8.0.

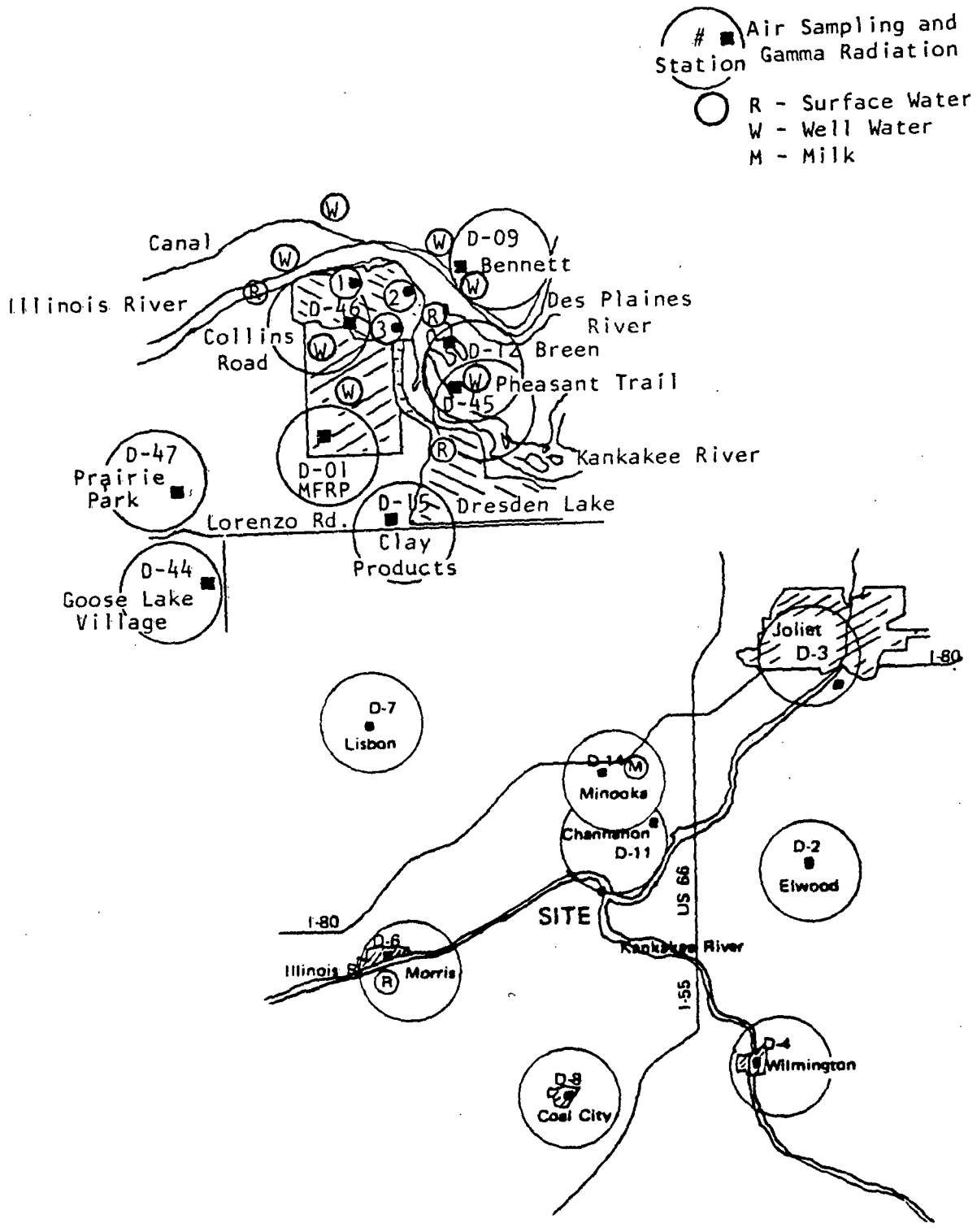



FIGURE 5.0-1 Location of Dresden/MFRP Environmental Monitoring Stations

TABLE 5.0-2

REPORTING OF RADIOACTIVITY IN THE ENVIRONS

Docket No. 50-10, 50-237, 50-249

Facility: DRESDEN

Reporting Period: 1st Quarter 1977

| Sampling/Location | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Units |
|---|---|---|---|---|---|---|---|
| 1.0 Water | Gross α (W/G) | Gross β (W/G) | Sr-89 (Q/C') | Sr-90 (Q/C') | H-3 (Q/C') | I-131 (W/C') | $10^{-9}$ μCi/ml |
| 1a Station Cooling Water | | | | | | | |
| I Discharge Canal-1 | 1 | 6 | < 5 | < 1 | 240 | < 4 | |
| I Discharge Canal-2/3 | 1 | 5 | < 5 | < 1 | 240 | < 4 | |
| B Inlet Canal-1 | 1 | 5 | < 5 | < 1 | 220 | < 4 | |
| 1b Surface | | | | | | | |
| I Illinois River at EJ&E RR Bridge | 1 | 7 | < 5 | < 1 | 230 | < 4 | |
| I Illinois River at Morris | NR | 5 | NR | NR | 210 | NR | |
| I Dresden Lock & Dam | NR | 4 | < 5 | 4 | NR | NR | |
| I Dresden Lake (Pond) | NR | 4 | NR | NR | <200 | NR | |
| 1c Well | | Gross β (Q/G) | | | H-3 (Q/G) | | |
| I Dresden Lock & Dam | | 17 | | | NR | | |
| I Dresden Well #1 | | 34 | | | 220 | | |
| I Dresden Well #2 | | 23 | | | 130 | | |
| I Thorsen Farm | | 6 | | | 450 | | |
| I Anderson Farm | | 6 | | | NR | | |
| B Bennitt Farm | | 3 | | | NR | | |
| B Hansel | | 9 | | | NR | | |
| B Breen | | 15 | | | NR | | |
| B Olson | | 16 | | | NR | | |
| B Drinking Fountain | | 12 | | | NR | | |
| 1d Precipitation | | Gross β (M/C) | | | H-3 (M/C) | | |
| I On-Site #2 | | 60 | | | 380 | | |
| B Davidson Farm | | 45 | | | 465 | | |
| B Mather Farm | | 40 | | | 390 | | |
| B Brandon Lock & Dam | | 68 | | | 345 | | |
| 2.0 Air | Particulate | | | | | | |
| | Gross α (M/C) | Gross β (W/C) | | | GeLi (M/C') | I-131 (B/C) | $10^{-14}$ μCi/cc |
| I Bennitt Farm | <0.4 | 8 | | | | < 3 | |
| I Clay Products | <0.4 | 8 | | | | < 3 | |
| I On-Site #1 | NR | 8 | | | | < 3 | |
| I On-Site #2 | NR | 9 | | | | < 3 | |
| I On-Site #3 | <0.4 | 8 | | | See Text | < 3 | |
| I Pheasant Trail | <0.4 | 9 | | | | < 3 | |
| I Collins Road | <0.4 | 8 | | | 5.2-7 | < 3 | |
| I Prairie Park | NR | 9 | | | | < 3 | |
| B Elwood | NR | 9 | | | | < 3 | |
| B Joliet | <0.4 | 8 | | | | < 3 | |
| B Wilmington | NR | 8 | | | | < 3 | |
| B Morris | <0.4 | 8 | | | | < 3 | |
| B Lisbon | NR | 8 | | | | < 3 | |
| B Coal City | <0.4 | 10 | | | | < 3 | |
| B Channahon | NR | 8 | | | | < 3 | |
| B Minooka | <0.4 | 8 | | | | < 3 | |
| B Goose Lake Village | <0.4 | 8 | | | | < 3 | |
| 3.0 Gamma Background | Ion Chambers | | TLD | | | | mR/Week mR/Quarter |
| | Gamma (W/I) | Gamma (Q/I) | Gamma (Q/I) | | | | |
| I Bennitt Farm | 2.3 | 30 | 14 | | | | |
| I Clay Products | 2.1 | 27 | 14 | | | | |
| I On-Site #1 | 2.4 | 31 | 17 | | | | |
| I On-Site #2 Unshielded | 2.5 | 33 | NA | | | | |
| I On-Site #2 Shielded | 2.3 | 29 | 25 | | | | |
| I On-Site #3 | 2.4 | 31 | 18 | | | | |
| I Pheasant Trail | 2.0 | 26 | 16 | | | | |
| I Prairie Park | 2.1 | 27 | 14 | | | | |
| I Collins Road | 2.4 | 31 | 16 | | | | |
| B Elwood | 1.1 | 14 | 13 | | | | |
| B Joliet | 2.5 | 32 | 14 | | | | |
| B Wilmington | 2.1 | 27 | 16 | | | | |
| B Morris | 2.1 | 27 | 16 | | | | |
| B Lisbon | 2.1 | 27 | 13 | | | | |
| B Coal City | 2.2 | 29 | 12 | | | | |
| B Channahon | 2.3 | 30 | 16 | | | | |
| B Minooka | 2.2 | 29 | 13 | | | | |
| B Goose Lake Village | 1.9 | 24 | 16 | | | | |

(1) Frequency: W-Weekly, M-Monthly, Q-Quarterly, T-Thrice Annually, S-Semi-Annual, A-Annual
Type: G-Grab, C-Continuous, P-Proportional, C'-Composite, I-Integrating.
I-Indicator Stations or Levels. B - Background Stations or Levels.

If all data for a given medium are "<", average is listed as "<" the least sensitive measurement. Where "<" values and finite measurements occur w a series, "<" data are averaged as if they were measured quantities.

0-2 (Cont'd)

REPORTING OF RADIOACTIVITY IN THE ENVIRONS

Docket No. 50-10, 50-237, 50-249

Facility: DRESDEN

Reporting Period: 1st Quarter 1977

| Sampling/Location | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Units |
|---|---|---|---|---|---|---|---|
| 4.0 Milk | | | | | | | |
| | | Sr-89 (M/C') | Sr-90 (M/C') | Cs-137 (M/C') | H-3 (S/G) | I-131 (W/G) | $10^{-9}$ µCi/ml |
| I Davidson Farm | | < 5 | 3 | < 5 | NR | < 4 | |
| I Dorin Farm | | < 5 | 5 | < 5 | NR | < 4 | |
| B Mather Farm | | < 5 | 4 | < 5 | NR | < 4 | |
| 5.0 Sediment | | | | | | | |
| | Gross β (Q/C) | Sr-89 (S/G) | Sr-90 (Q/G) | | GeLi (S/G) | | $10^{-3}$ µCi/kg |
| I Dresden Lock & Dam | 4 | < 2 | < 1 | | < 1 | | |
| B Kankakee River | <2 | < 2 | < 1 | | NR | | |
| B DesPlaines River | 13 | < 2 | < 1 | | NR | | |
| 6.0 Periphyton | | | | | | | |
| | Gross β (T/G) | | | | GeLi (S/G) | | |
| I Dresden Lock & Dam | 3 | | | | NR | | |
| B Kankakee River | 6 | | | | NR | | |
| B DesPlaines River | 3 | | | | NR | | |
| 7.0 Fish | | | | | | | |
| | Gross β (S/G) | Sr-89 (T/G) | Sr-90 (T/G) | | GeLi (T/G) | | |
| I Dresden Lock & Dam | NONE SCHEDULED THIS PERIOD | | | | | | |
| 8.0 Grass | | | | | | | |
| | Gross β (M/G) | Sr-89 (M/G) | Sr-90 (M/G) | | GeLi (M/G) | I-131 (M/G) | |
| I Davidson Farm | 13 | < 2 | < 1 | | < 1 | <0.1 | |
| I Thorsen Farm | 8 | < 2 | < 1 | | < 1 | NR | |
| I Dorin Farm | 12 | < 2 | < 1 | | < 1 | NR | |
| B Mather Farm | 17 | < 2 | < 1 | | < 1 | NR | |
| 9.0 Cattle Feed & Hay | | | | | | | |
| | Gross β (M/S) | Sr-89 (M/S) | Sr-90 (M/S) | | GeLi (M/G) | I-131 (M/G) | $10^{-3}$ µCi/kg |
| Davidson Farm | 6 | < 2 | < 1 | | < 1 | < 0.4 | |
| Dorin Farm | 7 | < 2 | < 1 | | < 1 | NR | |
| B Mather Farm | 9 | < 2 | < 1 | | < 1 | NR | |
| 10.0 Vegetables | | | | | | | |
| | Gross β (M/G) | Sr-89 (A/G) | Sr-90 (A/G) | | GeLi (A/G) | | |
| Glasscock | | | | | | | |
| Girot | | | | | | | |
| Phillips | NONE SCHEDULED THIS PERIOD | | | | | | |
| Dorin | | | | | | | |
| Rousonellis | | | | | | | |
| 11.0 Soil | | | | | | | |
| | Gross β (Q/G) | Sr-89 (Q/G) | Sr-90 (Q/G) | | | | |
| I Davidson Farm | 4 | < 2 | < 1 | | | | |
| I Thorsen Farm | 14 | < 2 | < 1 | | | | |
| B Mather Farm | 6 | < 2 | < 1 | | | | |
| I Dorin Farm | 7 | < 2 | < 1 | | | | |
| 12.0 Aquatic Plants | | | | | | | |
| | Gross β (Q/G) | Sr-89 (Q/G) | Sr-90 (Q/G) | | GeLi (S/G) | | |
| I Discharge Canal-1 | | | | | | | |
| B Inlet Canal | NONE SCHEDULED THIS PERIOD | | | | | | |
| I Discharge Canal-2/3 | | | | | | | |

(1) Frequency: W-Weekly, B-Bi-Weekly, M-Monthly, Q-Quarterly, T-Thrice Annually, S-Semi-Annual, A-Annual
Type: G-Grab, C-Continuous, P-Proportional, C'-Composite, I-Integrating

I - Indicator Stations or Levels.
B - Background Stations or Levels.

If all data for a given medium are "<", average is listed as "<" the least sensitive measurement. Where "<" values and finite measurements occur within a series, "<" data are averaged as if they were measured quantities.

TABLE 5.0-3

REPORTING OF RADIOACTIVITY IN THE ENVIRONS

Docket No. 50-10, 50-237, 50-249

Facility: DRESDEN

Reporting Period: 2nd Quarter 1977

| Sampling/Location | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Units |
|---|---|---|---|---|---|---|---|
| 1.0 Water | Gross α (W/G) | Gross β (W/G) | Sr-89 (Q/C') | Sr-90 (Q/C') | H-3 (Q/C') | I-131 (W/C') | $10^{-9}$ μCi/ml |
| 1a Station Cooling Water | | | | | | | |
| I Discharge Canal-1 | 1.0 | 7 | <5 | <1 | <200 | <4 | |
| I Discharge Canal-2/3 | 1.0 | 6 | <5 | <1 | 220 | <4 | |
| B Inlet Canal-1 | 1.1 | 7 | <5 | <1 | <200 | <4 | |
| 1b Surface | | | | | | | |
| I Illinois River at EJ&E RR Bridge | 1.0 | 7 | <5 | <2 | <200 | <4 | |
| I Illinois River at Morris | NR | 7 | NR | NR | <500 | NR | |
| I Dresden Lock & Dam | NR | 10 | <5 | <1 | NR | NR | |
| I Dresden Lake (Pond) | NR | 7 | NR | NR | 310 | NR | |
| 1c Well | | Gross β (Q/G) | | | H-3 (Q/G) | | |
| I Dresden Lock & Dam | | 13 | | | NR | | |
| I Dresden Well #1 | | 14 | | | 590 | | |
| I Dresden Well #2 | | 15 | | | <200 | | |
| I Thorsen Farm | | 2 | | | 680 | | |
| I Anderson Farm | | 19 | | | NR | | |
| B Bennitt Farm | | 5 | | | NR | | |
| B Hansel | | 12 | | | NR | | |
| B Breen | | 14 | | | NR | | |
| B Olson | | 1 | | | NR | | |
| B Drinking Fountain | | 15 | | | NR | | |
| 1d Precipitation | | Gross β (M/C) | | | H-3 (M/C) | | |
| I On-Site #2 | | 144 | | | 417 | | |
| B Davidson Farm | | 120 | | | 340 | | |
| B Mather Farm | | 159 | | | 310 | | |
| B Brandon Lock & Dam | | 193 | | | 407 | | |
| 2.0 Air | Particulate | | | | | | |
| | Gross α (M/C) | Gross β (W/C) | | | GeLi (M/C') | I-131 (B/C) | $10^{-14}$ μCi/cc |
| I Bennitt Farm | <0.5 | 41 | | | | <3 | |
| I Clay Products | <0.5 | 59 | | | | <3 | |
| I On-Site #1 | NR | 43 | | | | <3 | |
| I On-Site #2 | NR | 41 | | | | <3 | |
| I On-Site #3 | <0.5 | 37 | | | | <3 | |
| I Pheasant Trail | <0.5 | 38 | | | | <3 | |
| I Collins Road | <0.5 | 38 | | | See Text 5.2-7 | <3 | |
| I Prairie Park | NR | 40 | | | | <3 | |
| B Elwood | NR | 40 | | | | <3 | |
| B Joliet | <0.5 | 42 | | | | <3 | |
| B Wilmington | NR | 38 | | | | <3 | |
| B Morris | <0.5 | 40 | | | | <3 | |
| B Lisbon | NR | 31 | | | | <3 | |
| B Coal City | <0.5 | 38 | | | | <3 | |
| B Channahon | NR | 39 | | | | <3 | |
| B Minooka | <0.5 | 38 | | | | <3 | |
| B Goose Lake Village | <0.5 | 40 | | | | <3 | |
| 3.0 Gamma Background | Ion Chambers | | TLD | | | | mR/Week mR/Quarter |
| | Gamma (W/I) | Gamma (Q/I) | Gamma (Q/I) | | | | |
| I Bennitt Farm | 2.1 | 27 | 25 | | | | |
| I Clay Products | 1.7 | 22 | 13 | | | | |
| I On-Site #1 | 2.1 | 27 | 18 | | | | |
| I On-Site #2 Unshielded | 2.1 | 28 | NA | | | | |
| I On-Site #2 Shielded | 2.9 | 37 | 35 | | | | |
| I On-Site #3 | 2.5 | 32 | 35 | | | | |
| I Pheasant Trail | 2.0 | 26 | 20 | | | | |
| I Prairie Park | 1.9 | 24 | 14 | | | | |
| I Collins Road | 1.8 | 23 | 16 | | | | |
| B Elwood | 1.7 | 21 | 22 | | | | |
| B Joliet | 1.9 | 24 | 12 | | | | |
| B Wilmington | 1.5 | 20 | 14 | | | | |
| B Morris | 1.5 | 20 | 14 | | | | |
| B Lisbon | 1.6 | 21 | 13 | | | | |
| B Coal City | 1.7 | 22 | 13 | | | | |
| B Channahon | 1.9 | 24 | 12 | | | | |
| B Minooka | 1.7 | 22 | 14 | | | | |
| B Goose Lake Village | 1.6 | 21 | 13 | | | | |

(1) Frequency: W-Weekly, M-Monthly, Q-Quarterly, T-Thrice Annually, S-Semi-Annual, A-Annual
Type: G-Grab, C-Continuous, P-Proportional, C'-Composite, I-Integrating.
I-Indicator Stations or Levels. B - Background Stations or Levels.

If all data for a given medium are "<", average is listed as "<" the least sensitive measurement. Where "<" values and finite measurements occur wit a series, "<" data are averaged as if they were measured quantities.

[redacted]-3 (Cont'd)

REPORTING OF RADIOACTIVITY IN THE ENVIRONS

Docket No. 50-10, 50-237, 50-249

Facility: DRESDEN

Reporting Period: 2nd Quarter 1977

| Sampling/Location | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Entity (Freq/Type)(1) Results | Units |
|---|---|---|---|---|---|---|---|
| **4.0 Milk** | | Sr-89 (M/C') | Sr-90 (M/C') | Cs-137 (M/C') | H-3 (S/G) | I-131 (W/G) | $10^{-9}$ µCi/ml |
| I Davidson Farm | | <5 | 1 | <5 | 240 | <0.5 | |
| I Dorin Farm | | <5 | <4 | <5 | 360 | <0.5 | |
| B Mather Farm | | <5 | <4 | <5 | 270 | <0.5 | |
| **5.0 Sediment** | Gross β (Q/C) | Sr-89 (S/G) | Sr-90 (Q/G) | | GeLi (S/G) | | $10^{-3}$ µCi/kg |
| I Dresden Lock & Dam | 5 | <2 | <1 | | <1 | | |
| B Kankakee River | 4 | <2 | <1 | | NR | | |
| B DesPlaines River | 2 | <2 | <1 | | NR | | |
| **6.0 Periphyton** | Gross β (T/G) | | | | GeLi (S/G) | | |
| I Dresden Lock & Dam | 7 | | | | NR | | |
| B Kankakee River | 8 | | | | NR | | |
| B DesPlaines River | 8 | | | | NR | | |
| **7.0 Fish** | Gross β (S/G) | Sr-89 (T/G) | Sr-90 (T/G) | | GeLi (T/G) | | |
| I Dresden Lock & Dam | 2 | <1 | <1 | | <1 | | |
| **8.0 Grass** | Gross β (M/G) | Sr-89 (M/G) | Sr-90 (M/G) | | GeLi (M/G) | I-131 (M/G) | |
| I Davidson Farm | 5 | <2 | <1 | | <1 | <1 | |
| I Thorsen Farm | <8 | <2 | <1 | | <1 | NR | |
| I Dorin Farm | <9 | <2 | <1 | | <1 | <1 | |
| B Mather Farm | <7 | <2 | <1 | | <1 | <1 | |
| **9.0 Cattle Feed & Hay** | Gross β (M/S) | Sr-89 (M/S) | Sr-90 (M/S) | | GeLi (M/G) | I-131 (A/G) | $10^{-3}$ µCi/kg |
| [redacted] Davidson Farm | <4 | <2 | <1 | | <1 | <0.3 | |
| [redacted] Dorin Farm | <6 | <2 | <1 | | <1 | NR | |
| [redacted] Mather Farm | <4 | <2 | <1 | | <1 | NR | |
| **10.0 Vegetables** | Gross β (M/G) | Sr-89 (A/G) | Sr-90 (A/G) | | GeLi (A/G) | | |
| Glasscock | | | | | | | |
| Girot | | | | | | | |
| Phillips | | | | | | | |
| Dorin | NONE SCHEDULED THIS QUARTER | | | | | | |
| Rousonellis | | | | | | | |
| **11.0 Soil** | Gross β (Q/G) | Sr-89 (Q/G) | Sr-90 (Q/G) | | GeLi | | |
| I Davidson Farm* | <4 | <2 | <1 | | <1 | | |
| I Thorsen Farm* | 5 | <2 | <1 | | <1 | | |
| B Mather Farm* | 4 | <2 | <1 | | <1 | | |
| I Dorin Farm* | 5 | <2 | <1 | | <1 | | |
| **12.0 Aquatic Plants** | Gross β (Q/G) | Sr-89 (Q/G) | Sr-90 (Q/G) | | GeLi (S/G) | | |
| I Discharge Canal-1 | 2 | <2 | <1 | | <1 | | |
| B Inlet Canal | 2 | <2 | <1 | | <1 | | |
| I Discharge Canal-2/3 | 2 | <2 | <1 | | <1 | | |

(1) Frequency: W-Weekly, B-Bi-Weekly, M-Monthly, Q-Quarterly, T-Thrice Annually, S-Semi-Annual, A-Annual
Type: G-Grab, C-Continuous, P-Proportional, C'-Composite, I-Integrating

I - Indicator Stations or Levels.
B - Background Stations or Levels.

If all data for a given medium are "<", average is listed as "<" the least sensitive measurement. Where "<" values and finite measurements occur within a series, "<" data are averaged as if they were measured quantities.
*Average includes special collections.

[redacted]

## 5.1 GAMMA RADIATION

External radiation dose from on-site sources and noble gases released to the atmosphere was measured at eight indicator and nine reference (background) locations using 10 mR ionization (ion) chambers and solid lithium fluoride thermoluminescent dosimeters (TLD). Ion chamber readings are used to provide a weekly indication of variations in exposure rates. Interpretation of these measurements is complicated by changes in background radiation due to snow cover, soil moisture and other natural phenomena. Also the ion chamber readings are affected by temperature, atmospheric pressure, humidity and charge leakage. For these reasons, TLD's are believed to provide the most reliable average readings.

A comparison of the TLD results for reference stations with on-site and off-site indicator stations is included in Table 5.1-1. Although a slight difference between the average on-site and off-site values was measured this is mainly due to a higher value from one station (on-site-2) and not a generally elevated level throughout the site. With the exception of this one station, the small changes which may be due to plant operations are difficult to distinguish from natural background variations.

The TLD results from On-Site Station No.2 have tended to show slightly elevated readings when compared to the other on-site stations and off-site stations. On-Site No. 2 is located approximately 1/4 mile northeast of the Unit-1 turbine building resulting in a considerable N-16 gamma shine. To verify this, in April 1969, a second set of paired ion chambers were placed at this location behind a 1/2" lead barrier. This barrier was set approximately 12" from the chambers in the direction of the Unit-1 turbine building. As a result of this shielding the excess dose was reduced by about a factor of 2. These data were discussed with the NRC in Bethesda on January 26, 1971.

## 5.2 AIRBORNE I-131 AND PARTICULATE RADIOACTIVITY

Concentrations of airborne I-131 and particulate radioactivity at monitoring locations are listed in Tables 5.2-1 through 5.2-6 (Appendix I). The locations of these air samplers are the same as for direct radiation measurements, shown in Figure 5.0-1. Airborne I-131 remained below 0.03 $pCi/m^3$, except for the sample collected on 06/18/77 from On-Site No. 3 which had a concentration for I-131 of 0.07 ± 0.02 $pCi/m^3$ as of collection. It is possible this radioactivity was the result of the elevated releases of radioiodine from Dresden Unit 1 during this period. (See Section 8.0).

Concentrations of radionuclides in air particulate filters were affected by fallout from the Chinese nuclear explosions in the Fall of 1976 (See 5.0). Gross alpha concentrations remained below 0.005 $pCi/m^3$, but gross beta values as high as 0.74 $pCi/m^3$ were measured during the middle of the second quarter when fallout was at a maximum. Gamma isotopic analysis of monthly composites indicated the presence of Ce-141, Ce-144, Zr-Nb-95, and Ru-103 during the periods when gross beta concentrations were elevated. These nuclides are characteristic of the fallout as observed throughout the Midwest. No radioactivity attributable to station operations was detected in this type of sample. Average gross beta concentrations for all locations are plotted in Figure 5.2-1. These data are usually presented as three groups: On-Site locations, locations 0 - 5 miles distant, and locations greater than 5 miles distant. During this period, however, there was no significant difference between the three averages.

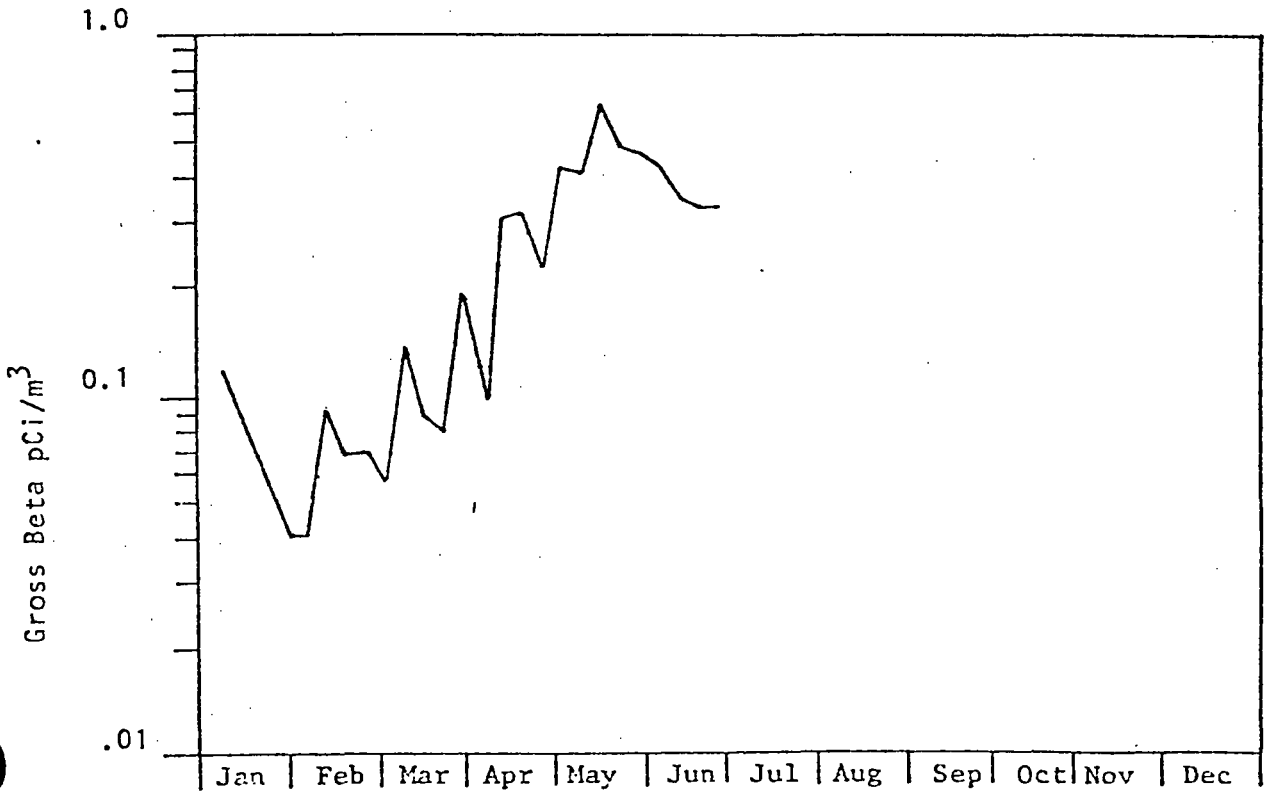



FIGURE 5.2-1 GROSS BETA IN WEEKLY AIR PARTICULATE FILTERS.

(Average for all locations)

## 5.3 AQUATIC RADIOACTIVITY

Surface water samples were collected daily and composited for analysis weekly for the Unit 1 Inlet Canal, Unit 1 Discharge Canal and Units 2 and 3 Discharge Canal. Weekly grab samples were taken from Dresden Lake and the Illinois River at the EJ&E Railroad Bridge. A semi-monthly composite sample made from daily aliquots of Illinois River water was collected at Morris, Illinois. A quarterly grab sample was taken from the Corps of Engineers Goose Lake Pumping Station on the Kankakee River. For gross alpha and beta analysis a 250 ml sample is processed. High dissolved solids in a sample often requires that a smaller volume be analyzed to minimize self-adsorption problems in counting. Analytical results for gross alpha, gross beta, I-131, tritium, gamma emitters, Sr-89 and Sr-90 shown in Tables 5.3-1 through 5.3-5 do not indicate any measurable radioactivity attributable to plant operations. The first quarter water sample from Dresden lock and dam contained 4 pCi/l of Sr-90. To confirm this analysis, an additional water sample was collected on 04/16/77 at Dresden lock and dam and analyzed for Sr-89 and Sr-90. (Table 5.3-4) In addition, the water samples of 02/05 and 02/12/77 from the Illinois River at the EJ and E RR Bridge which is downstream of the lock and dam were analyzed for Sr-89 and Sr-90 (Table 5.3-5). These additional samples contained < 1 pCi/l which indicated that the 4 pCi/l measurement may have been spurious.

The results of analyses of aquatic biota and bottom sediments are given in Tables 5.3-6 to 5.3-9. No radioactivity attributable to plant operation was detected.

## 5.4 MILK, GRASS AND CATTLEFEED

Milk samples were collected weekly from the Davidson Farm located five miles northeast of Dresden, the Dorin Farm located about ten miles south of the station and the Mather Farm (Background station) located more than ten miles N. E. of Dresden. I-131 was determined for each sample. Other gamma emitters were measured by gamma spectrometry (GeLi). For I-131 analysis a four to eight liter sample is processed; for Sr-89, Sr-90 one liter is used, and three liters are analyzed for gamma emitters. Sr-89 and Sr-90 were determined by radiochemistry and low background beta counting, and Cs-137 by radiochemical separation and/or gamma (GeLi) spectrometry. The analytical results are given in Table 5.4-1. The only radionuclides present in measurable amounts were Sr-90 and occasional traces of Cs-137 (Table 5.4-2) from worldwide fallout and natural K-40. The concentrations of Sr-90 were within expected ranges and are not attributable to plant operation.

When milk cows were on pasture, grass samples were collected monthly from the same dairy farms that supply the milk samples. During the winter months, cattlefeed samples were collected instead of pasture grass. These grass and cattlefeed samples were analyzed for gross beta, Sr-90, Sr-90 and gamma emitters (spectrometry by GeLi). Because fallout Sr-90 and Cs-137 are present, the best indicator radionuclides are Sr-89, I-131, Cs-134 and Ba-140. These radionuclides were not detected in any of the samples. Traces of gamma emitters due to fallout (See 5.0) were detected in two grass samples collected in April.

## 5.5 TERRESTIAL DEPOSITION (Rainwater and Soil)

Radioactivity deposited on the surface of the ground was sampled using 6-inch diameter collectors for precipitation and dry deposition. These samples are analyzed for gross beta. Precipitation samples collected during the second quarter of the year displayed elevated gross beta concentrations and were analyzed for gamma emitters. The results of these analyses (Table 5.5-2) revealed the activity to be due to Ce-141, Zr-Nb-95, and Ru-103. These nuclides are characteristic of the debris from the recent atmospheric nuclear explosions (See 5.0). Radioactivity from station operations, if present, was masked by that from fallout and natural sources. The results are summarized in Table 5.5-1 (Appendix I). Radioactivity in soil given in Table 5.5-3 does not indicate a significant difference in the results for indicator and background stations, and except for traces of fallout materials, only naturally occurring radionuclides were detected.

## 5.6 VEGETABLES

Vegetables are not available during the first six-months of the year.

## 5.7 GROUND WATER

Well water samples, collected monthly from the On-Site drinking fountain and quarterly from four other wells, showed no indication of increases in radioactivity attributable to operation of the Dresden Station. The well water data are given in Tables 5.7-1 through 5.7-2.(Appendix I).

# 6.0 ANALYTICAL PROCEDURES

A summary of the procedures used for analyzing radioactivity in environmental samples is given in Appendix III of the report for the period January - June 1975. Procedures used during the period covered by this report remain unchanged.

# 7.0 OCCUPATIONAL PERSONNEL RADIATION EXPOSURES

Occupational personnel radiation exposure data for 1977 will be reported in the July - December, 1977, report.

## 8.0 SPECIAL COLLECTIONS

On January 12, 18, 19, 1977: March 21 to 29, 1977; April 1 to 7, 9 to 30, 1977; May 2 to 7, 12 to 18, 20 to 31, 1977; June 1 to 10, 12 to 15, 1977, airborne radioiodine plus particulate effluents exceeded 33%, and on April 16, exceeded 100% of the limits in Technical Specification Section 3.8.A.2. Special collections of snow were taken January 30, 1977, and February 5, 1977. Soil and grass samples were taken April 9, 23, 1977; May 7, 28, 1977; and June 26, 1977. Gross beta and gamma isotopic analysis of these snow, soil, and grass samples did not reveal the presence of radioactivity attributable to station operations. (Tables 9.0-1 through 9.0-3). Routine samples (air particulate filters, ion chamber readings, surface water, etc.) collected shortly thereafter revealed normal concentrations of ambient radioactivity except one onsite measurement of airborne radioiodine of 0.07 ± .02 $pCi/m^3$ on June 18, 1977 at onsite No. 3. It is possible this radioactivity was the result of releases from Unit 1.

The 30 foot well installed on the east side of the Unit 1 Radwaste Facility has been sampled on a quarterly basis since 1975. Only slight amounts of Co-60 and Cs-137 have been detected. Sampling results for 1977 are shown in Table 8.0-4. Measurements of radioactivity in this well will continue until the end of this year and then will be discontinued.

## 9.0 ERRATA (APPENDIX III)

9.1 January - June 1976

9.2 July - December 1976

APPENDIX I

TABLE 5.1-1

GAMMA RADIATION

Average mR/Week Using Thermoluminescent Dosimeters

| | | | |
|---|---|---|---|
| Date Annealed: | 12/22/76 | 03/25/77 | |
| Date Read: | 04/04/77 | 07/05/77 | |

| Location | | First Quarter 1977 | Second Quarter 1977 | Six-Month Average Jan - June |
|---|---|---|---|---|
| On-Site Indicator Stations | | | | |
| D-16 On-Site 1 | A | 1.3 ± 0.2 | 1.4 ± 0.1 | 1.4 ± 0.2 |
| D-17 On-Site 2 | B | 1.9 ± 0.2† | 2.7 ± 0.3† | 2.3 ± 0.3 |
| D-18 On-Site 3 | C | 1.4 ± 0.2 | 1.5 ± 0.2 | 1.5 ± 0.2 |
| D-46 Collins Road | CR | 1.2 ± 0.2 | 1.7 ± 0.3 | 1.5 ± 0.3 |
| Average | | 1.5 ± 0.2 | 1.8 ± 0.2 | 1.7 ± 0.3 |
| Off-Site Indicator Stations | | | | |
| D-09 Bennitt Farm | BE | 1.1 ± 0.5 | 1.9 ± 0.3Δ | 1.5 ± 0.4 |
| D-15 Clay Products | J21 | 1.1 ± 0.2 | 1.0 ± 0.1 | 1.1 ± 0.2 |
| D-45 Pheasant Trail | PT | 1.2 ± 0.2 | 1.1 ± 0.2 | 1.2 ± 0.2 |
| D-47 Prairie Park | PP | 1.1 ± 0.3 | 1.2 ± 0.2 | 1.2 ± 0.3 |
| Average | | 1.1 ± 0.3 | 1.3 ± 0.2 | 1.3 ± 0.3 |
| Background Stations | | | | |
| D-02 Elwood | J15 | 1.0 ± 0.2 | 0.9 ± 0.1 | 1.0 ± 0.2 |
| D-03 Joliet Brandon Rd. | J48 | 1.1 ± 0.2 | 1.1 ± 0.1 | 1.1 ± 0.2 |
| D-04 Wilmington | 464 | 1.2 ± 0.2 | 1.1 ± 0.1 | 1.2 ± 0.2 |
| D-06 Morris | J16 | 1.2 ± 0.2 | 1.0 ± 0.2 | 1.1 ± 0.2 |
| D-07 Lisbon | J24 | 1.0 ± 0.2 | 1.0 ± 0.2 | 1.0 ± 0.2 |
| D-08 Coal City | J68 | 0.9 ± 0.2 | 0.9 ± 0.1 | 0.9 ± 0.2 |
| D-11 Channahon | CH | 1.2 ± 0.2 | 1.1 ± 0.1 | 1.2 ± 0.2 |
| D-14 Minooka | J27 | 1.0 ± 0.2 | 1.0 ± 0.1 | 1.0 ± 0.2 |
| D-44 Goose Lake Village | GLV | 1.2 ± 0.2 | 1.2 ± 0.1 | 1.2 ± 0.2 |
| Average | | 1.1 ± 0.2 | 1.0 ± 0.1 | 1.1 ± 0.2 |

† Unusual reading due to direct radiation from the turbine and exposure to airborne noble gases.
Δ Unusual reading possibly due to exposure to airborne noble gases.

TAB[illegible].1-2

IONIZATION CHAMBER READINGS
Indicator Stations

| | D-09 | | BENNITT FARM | | BE | D-15 | | CLAY PRODUCTS | | J21 |
|---|---|---|---|---|---|---|---|---|---|---|
| Week Ending | Serial Number | mR | Serial Number | mR | mR/Week | Serial Number | mR | Serial Number | mR | mR/Week |
| 1/07/77 | 2458 | 5.8 | 2557 | 6.0 | 1.9 | 2728 | 5.3 | 2734 | 5.5 | 1.9 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.5 | " | 3.6 | 1.6 | " | 3.7 | " | 3.8 | 1.7 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 8.6 | " | 10.0 | 2.2 | " | 9.5 | " | 9.2 | 2.4+ |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.2 | " | 3.5 | 1.6 | " | 3.0 | " | 3.0 | 1.5 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 4.1 | " | 4.3 | 2.0 | " | 3.2 | " | 3.2 | 1.6 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 5.1 | " | 6.5 | 1.8 | " | 4.3 | " | 4.5 | 1.5 |
| 4/16/77 | " | 2.3 | " | 2.3 | 2.3 | " | 1.5 | " | 1.5 | 1.5 |
| 4/23/77 | " | 2.0 | " | 2.1 | 2.0 | " | 1.5 | " | 1.6 | 1.5 |
| 4/30/77 | " | 1.8 | " | 1.8 | 1.8 | " | 1.3 | " | 1.6 | 1.3 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 4.0 | " | 4.0 | 2.0 | " | 3.2 | " | 3.0 | 1.5 |
| 5/21/77 | " | 2.2 | " | 2.5 | 2.2 | " | 1.4 | " | 1.4 | 1.4 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 06/04/77 | " | 3.5 | " | 3.6 | 1.8 | " | 3.5 | " | 3.8 | 1.8 |
| 06/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 06/18/77 | " | 4.2 | " | 4.5 | 2.1 | " | 3.6 | " | 3.6 | 1.8 |
| 06/26/77 | " | 2.0 | " | 2.0 | 2.0 | " | 1.8 | " | 2.0 | 1.8 |
| 07/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a) No readings due to weather conditions.
(b) No readings due to minometer malfunction.
(c) No readings due to moisture problems.

+Unusual reading possibly due to exposure to airborne noble gases.

TABLE 5.1-3

IONIZATION CHAMBER READINGS
Indicator Stations

| Week Ending | D-16 Serial Number | ON-SITE STATION 1 mR | Serial Number | mR | A mR/Week | D-18 Serial Number | ON-SITE STATION 3 mR | Serial Number | mR | C mR/Week |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 2613 | 6.0 | 2530 | 6.0 | 2.1 | 2472 | 6.0 | 2436 | 6.0 | 2.1 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 4.0 | " | 4.0 | 1.9 | " | 4.2 | " | 4.2 | 2.0 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.8 | " | 10.0 | 2.5 | " | 9.5 | " | 9.6 | 2.4 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.6 | " | 4.0 | 1.8 | " | 4.0 | " | 4.0 | 2.0 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.5 | " | 3.8 | 1.8 | " | 3.8 | " | 5.5 | 2.0 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 6.0 | " | 6.0 | 2.1 | " | 5.0 | " | 5.5 | 1.8 |
| 4/16/77 | " | 2.0 | " | 2.0 | 2.0 | " | 1.8 | " | 4.0 | 1.8 |
| 4/23/77 | " | 2.0 | " | 2.0 | 2.0 | " | 2.0 | " | 4.0 | 2.0 |
| 4/30/77 | " | 2.0 | " | 2.0 | 2.0 | " | 2.2 | " | 2.2 | 2.2 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 4.0 | " | 4.0 | 2.0 | " | 4.0 | " | 4.0 | 2.0 |
| 5/21/77 | " | 2.3 | " | 2.3 | 2.3 | " | 1.8 | " | 1.8 | 1.8 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 4.4 | " | 4.4 | 2.2 | " | 4.0 | " | 4.0 | 2.0 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 4.0 | " | 4.2 | 2.0 | " | 3.8 | " | 3.8 | 1.9 |
| 6/26/77 | " | 1.9 | " | 2.0 | 1.9 | " | 2.0 | " | 2.0 | 2.0 |
| 7/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a) No readings due to weather conditions.
(b) No readings due to minometer malfunction. (c) No readings due to moisture problems.

TAB[illegible] 1-4

IONIZATION CHAMBER READINGS
Indicator Stations

| | (SHIELDED) | | | | | (UNSHIELDED) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | D-17 | ON-SITE STATION 2 | | | B | D-17 | ON-SITE STATION 2 | | | B |
| Week Ending | Serial Number | mR | Serial Number | mR | mR/Week | Serial Number | mR | Serial Number | mR | mR/Week |
| 1/07/77 | 2628 | 6.0 | 2553 | 6.0 | 2.1 | 2535 | 6.5 | 2479 | 6.5 | 2.3 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 4.6 | " | 4.5 | 2.1 | " | 5.0 | " | 5.1 | 2.3 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.0 | " | 9.0 | 2.3 | " | 10.0 | " | F.S. | 2.5 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.5 | " | 3.7 | 1.8 | " | 3.7 | " | 4.0 | 1.9 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.8 | " | 5.5 | 1.9 | " | 4.0 | " | 4.2 | 2.0 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 6.0 | " | 8.0 | 2.1 | " | 6.2 | " | 8.2 | 2.2 |
| 4/16/77 | " | 3.2 | " | 3.5 | 3.2+ | " | 4.0 | " | 5.0 | 4.0+ |
| 4/23/77 | " | 3.0 | " | 3.1 | 3.0+ | " | 3.6 | " | 3.8 | 3.6+ |
| 4/30/77 | " | 1.8 | " | 1.8 | 1.8 | " | 2.0 | " | 3.7 | 2.0 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 6.0 | " | 6.0 | 3.0+ | " | 7.5 | " | 7.5 | 3.8+ |
| 5/21/77 | " | 4.2 | " | 4.0 | 4.0+ | " | 5.1 | " | 5.0 | 5.0+ |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 10.0 | " | 10.0 | 3.3+ | " | FS | " | FS | - |
| 6/26/77 | " | 2.0 | " | 2.0 | 2.0 | " | 2.0 | " | 7.5 | 1.8 |
| 7/03/77 | " | (d) | " | (d) | - | " | (d) | " | (d) | - |

(a)No readings due to weather conditions. +Unusual reading; see Section 5.1.
(b) No reading due to minometer malfunction. (c) No electricity at station.
FS = Full Scale (d) No readings due to moisture problems.

TABLE 5.1-5

IONIZATION CHAMBER READINGS
Indicator Stations

| Week Ending | D-45 PHEASANT TRAIL PT Serial Number | mR | Serial Number | mR | mR/Week | D-46 COLLINS ROAD CR Serial Number | mR | Serial Number | mR | mR/Week |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 2474 | 6.0 | 2455 | 6.0 | 2.1 | 0775 | 5.0 | 2431 | 5.0 | 1.8 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 4.0 | " | 4.0 | 1.9 | " | 3.8 | " | 4.0 | 1.8 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.8 | " | F.S. | 2.5 | " | 8.5 | " | 9.0 | 2.1 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3.05/77 | " | 3.7 | " | 3.9 | 1.9 | " | 2.8 | " | 3.0 | 1.4 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.5 | " | 3.5 | 1.8 | " | 3.0 | " | 3.0 | 1.5 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 5.2 | " | 5.5 | 1.8 | " | 4.3 | " | 4.6 | 1.5 |
| 4/16/77 | " | 1.5 | " | 1.8 | 1.5 | " | 1.8 | " | 1.9 | 1.8 |
| 4/23/77 | " | 1.6 | " | 1.6 | 1.6 | " | 1.6 | " | 1.6 | 1.6 |
| 4/30/77 | " | 2.2 | " | 2.5 | 2.2 | " | 1.7 | " | 1.8 | 1.7 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 4.2 | " | 4.0 | 2.0 | " | 3.5 | " | 3.5 | 1.8 |
| 5/21/77 | " | 2.0 | " | 2.0 | 2.0 | " | 2.0 | " | 1.8 | 1.8 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.8 | " | 4.0 | 1.9 | " | 4.0 | " | 4.0 | 2.0 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 4.6 | " | 4.5 | 2.3 | " | 4.0 | " | 4.0 | 2.0 |
| 6/26/77 | " | 2.0 | " | 2.0 | 2.0 | " | 1.9 | " | 2.0 | 1.9 |
| 7/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a)No readings due to weather conditions.
(b) No readings due to minometer malfunction. (c) No readings due to moisture problems.
F[illegible] = Full Scale.

TAB[illegible]1-6

IONIZATION CHAMBER READINGS
Indicator Stations

| Week Ending | D-47 Serial Number | mR | PRAIRIE PARK Serial Number | mR | PP mR/Week |
|---|---|---|---|---|---|
| 1/07/77 | 2422 | 5.0 | 2567 | 5.0 | 1.8 |
| 1/15/77 | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.6 | " | 3.7 | 1.7 |
| 1/30/77 | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.0 | " | 9.8 | 2.3 |
| 2/26/77 | " | (a) | " | (a) | - |
| 3/05/77 | " | 6.5 | " | 6.5 | 3.3+ |
| 3/12/77 | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.3 | " | 3.5 | 1.7 |
| 3/26/77 | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - |
| 4/09/77 | " | 5.5 | " | 4.2 | 1.5 |
| 4/16/77 | " | 2.0 | " | 2.1 | 2.0 |
| 4/23/77 | " | 1.5 | " | 2.0 | 1.5 |
| 4/30/77 | " | 1.5 | " | 1.7 | 1.5 |
| 5/07/77 | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.0 | " | 3.0 | 1.5 |
| 5/21/77 | " | 1.7 | " | 1.7 | 1.7 |
| 5/28/77 | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.5 | " | 3.6 | 1.8 |
| 6/12/77 | " | (a) | " | (a) | - |
| 6/18/77 | " | 4.0 | " | 4.2 | 2.0 |
| 6/26/77 | " | 1.8 | " | 1.8 | 1.8 |
| 7/03/77 | " | (c) | " | (c) | - |

(a) No readings due to weather conditions.
(b) No readings due to minometer malfunction.
(c) No reading due to moisture problems.
\+ Unusual reading possibly due to exposure to airborne noble gases.

TABLE 5.1-7

IONIZATION CHAMBER READINGS
Background Stations

| Week Ending | D-02 Serial Number | mR | ELWOOD Serial Number | mR | J15 mR/Week | D-03 Serial Number | mR | JOLIET, BRANDON RD. Serial Number | mR | J48 mR/Week |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 2467 | 5.6 | 2466 | 6.0 | 2.0 | 2405 | 6.0 | 2554 | 6.2 | 2.1 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.6 | " | 3.6 | 1.7 | " | 4.0 | " | 4.0 | 1.9 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | (c) | " | (c) | - | " | 9.8 | " | 10.0 | 2.5 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | (d) | " | (d) | - | " | 4.0 | " | 3.7 | 1.9 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 1.8 | " | 1.8 | 1.8 | " | 3.0 | " | 4.2 | 1.5 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 4.2 | " | 4.3 | 1.5 | " | 6.1 | " | 6.0 | 2.1 |
| 4/16/77 | " | 1.5 | " | 1.5 | 1.5 | " | 1.8 | " | 2.0 | 1.8 |
| 4/23/77 | " | 1.7 | " | 1.7 | 1.7 | " | 2.0 | " | 2.1 | 2.0 |
| 4/30/77 | " | 1.5 | " | 1.8 | 1.5 | " | 1.7 | " | 1.7 | 1.7 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.2 | " | 3.5 | 1.8 | " | 3.6 | " | 3.7 | 1.8 |
| 5/21/77 | " | 1.5 | " | 1.6 | 1.5 | " | 1.5 | " | 1.5 | 1.5 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.5 | " | 3.4 | 1.7 | " | 3.6 | " | 3.6 | 1.8 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 3.6 | " | 3.6 | 1.8 | " | 4.0 | " | 4.0 | 2.0 |
| 6/26/77 | " | 1.6 | " | 1.6 | 1.6 | " | 1.9 | " | 2.0 | 1.9 |
| 7/03/77 | " | (e) | " | (e) | - | " | (e) | " | (e) | - |

(a) No reading due to weather conditions.
(b) No readings due to minometer malfunction.
(c) [illegible] readings; pump removed for repair.
(d) No power at station.
(e) No readings due to moisture problems.

TAB[illegible] 1-8

IONIZATION CHAMBER READINGS
Background Stations

| | D-04 | | WILMINGTON | | 464 | D-06 | | MORRIS | | J16 |
|---|---|---|---|---|---|---|---|---|---|---|
| Week Ending | Serial Number | mR | Serial Number | mR | mR/Week | Serial Number | mR | Serial Number | mR | mR/Week |
| 1/07/77 | 2537 | 5.0 | 2642 | 4.5 | 1.6 | 2411 | 5.5 | 2457 | 5.2 | 1.8 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.2 | " | 3.5 | 1.5 | " | 3.6 | " | 4.0 | 1.7 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.5 | " | 9.8 | 2.4+ | " | 9.4 | " | 8.3 | 2.4+ |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.0 | " | 3.0 | 1.5 | " | 2.6 | " | 2.8 | 1.3 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.0 | " | 3.2 | 1.5 | " | 2.6 | " | 4.4 | 1.3 |
| 3/26/77 | " | (b) | " | (b) | - | " | (a) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 4.2 | " | 4.5 | 1.5 | " | 4.1 | " | 4.2 | 1.4 |
| 4/16/77 | " | 1.5 | " | 1.8 | 1.5 | " | 1.5 | " | 1.6 | 1.5 |
| 4/23/77 | " | 1.5 | " | 1.5 | 1.5 | " | 1.5 | " | 1.5 | 1.5 |
| 4/30/77 | " | 1.6 | " | 1.6 | 1.6 | " | 1.3 | " | 1.5 | 1.3 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.2 | " | 3.0 | 1.5 | " | 3.0 | " | 3.2 | 1.5 |
| 5/21/77 | " | 1.2 | " | 1.3 | 1.2 | " | 1.4 | " | 1.4 | 1.4 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.0 | " | 3.1 | 1.5 | " | 3.2 | " | 3.5 | 1.6 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 3.2 | " | 3.3 | 1.6 | " | 3.0 | " | 3.0 | 1.5 |
| 6/26/77 | " | 1.6 | " | 1.7 | 1.6 | " | 1.8 | " | 1.8 | 1.8 |
| 7/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a) No reading due to weather conditions. + Unusual reading
(b) No reading due to minometer malfunction. (c) No reading due to moisture problems.

TABLE 5.1-9

IONIZATION CHAMBER READINGS
Background Stations

| Week Ending | D-07 Serial Number | mR | LISBON Serial Number | mR | J24 mR/Week | D-08 Serial Number | mR | COAL CITY Serial Number | mR | J68 mR/Week |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 2694 | 4.7 | 0274 | 4.8 | 1.6 | 2582 | 5.5 | 0973 | 5.5 | 2.0 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.6 | " | 3.5 | 1.6 | " | 3.8 | " | 4.1 | 1.7 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 8.8 | " | 9.0 | 2.2+ | " | 10.0 | " | 9.0 | 2.3 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 2.7 | " | 2.7 | 1.4 | " | 3.0 | " | 3.0 | 1.5 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.0 | " | 4.5 | 1.5 | " | 4.0 | " | 4.5 | 2.0 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 4.2 | " | 4.2 | 1.5 | " | 4.1 | " | 4.5 | 1.4 |
| 4/16/77 | " | 1.5 | " | 1.7 | 1.5 | " | 1.5 | " | 1.8 | 1.5 |
| 4/23/77 | " | 1.5 | " | 1.6 | 1.5 | " | 1.5 | " | 1.6 | 1.5 |
| 4/30/77 | " | 1.5 | " | 1.5 | 1.5 | " | 1.4 | " | 1.6 | 1.4 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.0 | " | 3.0 | 1.5 | " | 3.2 | " | 3.2 | 1.6 |
| 5/21/77 | " | 1.5 | " | 1.5 | 1.5 | " | 1.4 | " | 1.5 | 1.4 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.2 | " | 3.5 | 1.6 | " | 4.0 | " | 4.0 | 2.0 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 3.2 | " | 3.5 | 1.6 | " | 3.6 | " | 3.0 | 1.5 |
| 6/26/77 | " | 1.7 | " | 1.8 | 1.7 | " | 1.8 | " | 1.9 | 1.8 |
| 7/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a) No reading due to weather conditions.
(b) No reading due to minometer malfunction.
+ Unusual reading.
(c) No reading due to moisture problems.

TABL[illegible]-10

IONIZATION CHAMBER READINGS
Background Stations

| Week Ending | D-11 Serial Number | mR | CHANNAHON Serial Number | mR | CH mR/Week | D-14 Serial Number | mR | MINOOKA Serial Number | mR | J27 mR/Week |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 0775 | 6.0 | 2543 | 6.5 | 2.1 | 2610 | 5.5 | 2397 | 5.5 | 2.0 |
| 1/15/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.8 | " | 4.0 | 1.8 | " | 3.8 | " | 4.5 | 1.8 |
| 1/30/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 2/19/77 | " | 9.5 | " | 9.8 | 2.4 | " | 9.2 | " | 9.7 | 2.3 |
| 2/26/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.5 | " | 3.0 | 1.5 | " | 2.8 | " | 2.9 | 1.4 |
| 3/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 3/19/77 | " | 3.2 | " | 3.2 | 1.6 | " | 3.0 | " | 4.8 | 1.5 |
| 3/26/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 4/09/77 | " | 4.8 | " | 5.5 | 1.7 | " | 4.5 | " | 5.1 | 1.5 |
| 4/16/77 | " | 2.5 | " | 4.0 | 2.5 | " | 1.6 | " | 1.8 | 1.6 |
| 4/23/77 | " | 1.6 | " | 1.6 | 1.6 | " | 1.6 | " | 1.6 | 1.6 |
| 4/30/77 | " | 1.5 | " | 1.6 | 1.5 | " | 1.5 | " | 1.5 | 1.5 |
| 5/07/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.6 | " | 3.6 | 1.8 | " | 3.2 | " | 3.0 | 1.5 |
| 5/21/77 | " | 1.5 | " | 1.5 | 1.5 | " | 1.5 | " | 1.6 | 1.5 |
| 5/28/77 | " | (b) | " | (b) | - | " | (b) | " | (b) | - |
| 6/04/77 | " | 3.5 | " | 3.5 | 1.8 | " | 3.2 | " | 3.3 | 1.6 |
| 6/12/77 | " | (a) | " | (a) | - | " | (a) | " | (a) | - |
| 6/18/77 | " | 3.6 | " | 3.5 | 1.8 | " | 4.0 | " | 4.0 | 2.0 |
| 6/26/77 | " | 1.8 | " | 1.8 | 1.8 | " | 1.5 | " | 1.6 | 1.5 |
| 7/03/77 | " | (c) | " | (c) | - | " | (c) | " | (c) | - |

(a) No reading due to weather conditions.
(b) No reading due to minometer malfunction. (c) No reading due to moisture problems.

TABLE 5.1-11

IONIZATION CHAMBER READINGS
Background Stations

| Week Ending | D-44 Serial Number | mR | GOOSE LAKE VILLAGE Serial Number | mR | GLV mR/Week |
|---|---|---|---|---|---|
| 1/07/77 | 2525 | 5.5 | 2724 | 5.2 | 1.8 |
| 1/15/77 | " | (a) | " | (a) | - |
| 1/22/77 | " | 3.6 | " | 3.6 | 1.7 |
| 1/30/77 | " | (a) | " | (a) | - |
| 2/05/77 | " | (b) | " | (b) | - |
| 2/12/77 | " | (a) | " | (a) | - |
| 2/19/77 | " | 8.5 | " | 8.5 | 2.1 |
| 2/26/77 | " | (a) | " | (a) | - |
| 3/05/77 | " | 3.0 | " | F.S. | 1.5 |
| 3/12/77 | " | (a) | " | (a) | - |
| 3/19/77 | " | 2.6 | " | 2.5 | 1.3 |
| 3/26/77 | " | (b) | " | (b) | - |
| 4/02/77 | " | (a) | " | (a) | - |
| 4/09/77 | " | 4.1 | " | 4.2 | 1.4 |
| 4/16/77 | " | 1.4 | " | 1.4 | 1.4 |
| 4/23/77 | " | 1.5 | " | 1.6 | 1.5 |
| 4/30/77 | " | 1.4 | " | 1.4 | 1.4 |
| 5/07/77 | " | (b) | " | (b) | - |
| 5/14/77 | " | 3.0 | " | 3.0 | 1.5 |
| 5/21/77 | " | 1.3 | " | 1.3 | 1.3 |
| 5/28/77 | " | (b) | " | (b) | - |
| 6/04/66 | " | 3.4 | " | 3.5 | 1.7 |
| 6/12/77 | " | (a) | " | (a) | - |
| 6/18/77 | " | 3.6 | " | 3.6 | 1.8 |
| 6/26/77 | " | 1.7 | " | 1.8 | 1.7 |
| 7/03/77 | " | (c) | " | (c) | - |

(a)No reading due to weather conditions.
(b)No reading due to minometer malfunction. (c) No reading due to moisture problems.
F = Full Scale

TABL[illegible]2-1

AIRBORNE IODINE-131* AND GROSS ALPHA AND BETA IN AIR PARTICULATES
Indicator Stations

| | D-09 | BENNITT | BE | D-15 | CLAY PRODUCTS | J21 |
|---|---|---|---|---|---|---|
| Week Ending | Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) |
| 1/07/77 | 325 | <5 | 9 ± 2 | 325 | <5 | 10 ± 2 |
| 1/15/77 | 280 | - | 6 ± 1 | 280 | - | 7 ± 1 |
| 1/22/77 | 290 | - | 8 ± 2 | 290 | - | 8 ± 2 |
| 1/30/77 | ** | - | - | 325 | - | 3 ± 1 |
| 2/05/77 | 395 | <5 | 2 ± 1 | 245 | <5 | 3 ± 1 |
| 2/12/77 | 285 | - | 9 ± 1 | 285 | - | 6 ± 1 |
| 2/19/77 | 285 | - | 7 ± 1 | 285 | - | 6 ± 1 |
| 2/26/77 | 285 | - | 8 ± 1 | 285 | - | 4 ± 1 |
| 3/05/77 | 285 | <5 | 5 ± 1 | 285 | <5 | 6 ± 1 |
| 3/12/77 | 285 | - | 10 ± 2 | 285 | - | 11 ± 2 |
| 3/19/77 | 285 | - | 9 ± 2 | 280 | - | 8 ± 2 |
| 3/26/77 | 280 | - | 9 ± 1 | 280 | - | 7 ± 1 |
| 4/02/77 | 290 | 1 ± 1 | 19 ± 3 | 290 | 2 ± 1 | 19 ± 3 |
| 4/09/77 | 285 | - | 11 ± 2 | 285 | - | 10 ± 2 |
| 4/16/77 | 285 | - | 35 ± 5 | 285 | - | 25 ± 4 |
| 4/23/77 | 285 | - | 36 ± 5 | 290 | - | 34 ± 5 |
| 4/30/77 | 285 | - | 29 ± 4 | 285 | - | 24 ± 4 |
| 5/07/77 | 290 | <5 | 44 ± 2 | 290 | <5 | 45 ± 2 |
| 5/14/77 | 280 | - | 48 ± 7 | 280 | - | 40 ± 6 |
| 5/21/77 | 285 | - | 67 ±10 | 285 | - | 59 ± 9 |
| 5/28/77 | 285 | - | 54 ± 8 | 285 | - | 53 ± 8 |
| 6/04/77 | 280 | <5 | 58 ± 8 | 285 | <5 | 49 ± 7 |
| 6/12/77 | 330 | - | 50 ± 7 | 330 | - | 47 ± 7 |
| 6/18/77 | 245 | - | 40 ± 6 | 245 | - | 37 ± 5 |
| 6/26/77 | 330 | - | 32 ± 5 | 330 | - | 30 ± 4 |
| 7/03/77 | 275 | - | 34 ± 5 | 275 | - | 31 ± 5 |

*Iodine-131 is sampled alternate weeks. Activity is < 0.03 pCi/$m^3$ unless otherwise specified.
Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.
**Sample not available. (road blocked)

TABLE 5.2-3

AIRBORNE IODINE-131* AND GROSS ALPHA AND BETA IN AIR PARTICULATES
Indicator Stations

| Week Ending | D-45 PHEASANT TRAIL PT Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | D-46 COLLINS ROAD CR Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | D-47 PRAIRIE PARK PP Volume ($m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) |
|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 325 | <5 | 11 ± 2 | 325 | <5 | 11 ± 2 | 325 | 11 ± 2 |
| 1/15/77 | 280 | - | 9 ± 2 | 280 | - | 9 ± 2 | 280 | 8 ± 2 |
| 1/22/77 | 290 | - | 6 ± 1 | 290 | - | 5 ± 1 | 285 | 6 ± 1 |
| 1/30/77 | 325 | - | 4 ± 1 | 325 | - | 3 ± 1 | 325 | 5 ± 1 |
| 2/05/77 | 245 | <5 | 4 ± 1 | 245 | <5 | 4 ± 1 | 240 | 4 ± 1 |
| 2/12/77 | 280 | - | 9 ± 1 | 285 | - | 8 ± 1 | 280 | 8 ± 1 |
| 2/19/77 | 285 | - | 8 ± 2 | 285 | - | 5 ± 1 | 290 | 7 ± 1 |
| 2/26/77 | 285 | - | 8 ± 1 | 285 | - | 6 ± 1 | 285 | 8 ± 1 |
| 3/05/77 | 285 | <5 | 5 ± 1 | 285 | <5 | 5 ± 1 | 285 | 7 ± 1 |
| 3/12/77 | 285 | - | 9 ± 2 | 285 | - | 11 ± 2 | 285 | 12 ± 2 |
| 3/19/77 | 280 | - | 10 ± 2 | 280 | - | 8 ± 1 | 280 | 11 ± 2 |
| 3/26/77 | 285 | - | 9 ± 1 | 280 | - | 7 ± 1 | 280 | 8 ± 1 |
| 4/02/77 | 295 | 1 ± 1 | 18 ± 3 | 290 | 2 ± 1 | 17 ± 3 | 290 | 22 ± 3 |
| 4/09/77 | 285 | - | 11 ± 2 | 285 | - | 9 ± 2 | 285 | 7 ± 1 |
| 4/16/77 | 285 | - | 31 ± 5 | 285 | - | 32 ± 5 | 285 | 32 ± 5 |
| 4/23/77 | 285 | - | 31 ± 5 | 280 | - | 30 ± 5 | 285 | 31 ± 5 |
| 4/30/77 | 285 | - | 34 ± 5 | 285 | - | 24 ± 4 | 285 | 20 ± 3 |
| 5/07/77 | 290 | <5 | 39 ± 2 | 290 | <5 | 42 ± 2 | 290 | 56 ± 6 |
| 5/14/77 | 280 | - | 52 ± 8 | 280 | - | 47 ± 7 | 280 | 42 ± 6 |
| 5/21/77 | 280 | - | 63 ± 9 | 285 | - | 57 ± 8 | 285 | 66 ±10 |
| 5/28/77 | 290 | - | 49 ± 7 | 285 | - | 57 ± 8 | 285 | 52 ± 8 |
| 6/04/77 | 275 | <5 | 47 ± 7 | 285 | <5 | 51 ± 8 | 280 | 56 ± 8 |
| 6/12/77 | 325 | - | 44 ± 6 | 330 | - | 48 ± 7 | 330 | 45 ± 7 |
| 6/18/77 | 245 | - | 28 ± 4 | 245 | - | 38 ± 6 | 245 | 38 ± 6 |
| 6/26/77 | 330 | - | 29 ± 4 | 330 | - | 25 ± 4 | 330 | 32 ± 5 |
| 7/03/77 | 280 | - | 30 ± 5 | 280 | - | 30 ± 4 | 275 | 37 ± 5 |

*Iodine-131 is sampled alternate weeks. Activity is < 0.03 pCi/$m^3$ unless otherwise specified. Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TAB[illegible]2-4

AIRBORNE IODINE-131* AND GROSS ALPHA AND GROSS BETA IN AIR PARTICULATES
Background Stations

| | D-02 ELWOOD J15 | | D-03 JOLIET, BRANDON ROAD J48 | | | D-04 WILMINGTON 464 | |
|---|---|---|---|---|---|---|---|
| Week Ending | Volume ($m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | Volume ($m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) |
| 1/07/77 | 325 | 12 ± 2 | 325 | <5 | 11 ± 2 | 325 | 9 ± 2 |
| 1/15/77 | 280 | 9 ± 2 | 280 | - | 10 ± 2 | 280 | 9 ± 2 |
| 1/22/77 | 290 | 5 ± 1 | 290 | - | 5 ± 1 | 290 | 6 ± 1 |
| 1/30/77 | 325 | 3 ± 1 | 325 | - | 4 ± 1 | 325 | 3 ± 1 |
| 2/05/77 | 245 | 4 ± 1 | 245 | <5 | 4 ± 1 | 245 | 3 ± 1 |
| 2/12/77 | 280 | 7 ± 1 | 280 | - | 7 ± 1 | 280 | 10 ± 1 |
| 2/19/77 | 110 | 4 ± 2 | 290 | - | 5 ± 1 | 285 | 7 ± 1 |
| 2/26/77 | (a) | (a) | 290 | - | 6 ± 1 | 290 | 4 ± 1 |
| 3/05/77 | (a) | (a) | 285 | <5 | 5 ± 1 | 285 | 7 ± 1 |
| 3/12/77 | 175 | 15 ± 2 | 285 | - | 14 ± 4 | 285 | 11 ± 2 |
| 3/19/77 | 280 | 8 ± 2 | 280 | - | 10 ± 2 | 280 | 8 ± 2 |
| 3/26/77 | 280 | 7 ± 1 | 280 | - | 9 ± 1 | 280 | 7 ± 1 |
| 4/02/77 | 295 | 21 ± 3 | 295 | 2 ± 1 | 19 ± 3 | 295 | 20 ± 3 |
| 4/09/77 | 280 | 9 ± 2 | 280 | - | 12 ± 2 | 280 | 11 ± 2 |
| 4/16/77 | 285 | 32 ± 5 | 285 | - | 33 ± 5 | 290 | 32 ± 5 |
| 4/23/77 | 285(b) | 30 ± 5 | 285 | - | 33 ± 5 | 280 | 34 ± 5 |
| 4/30/77 | 285 | 27 ± 5 | 285 | - | 33 ± 5 | 285 | 23 ± 4 |
| 5/07/77 | 290 | 52 ± 5 | 290 | <5 | 47 ± 2 | 290 | 56 ± 6 |
| 5/14/77 | 280 | 50 ± 7 | 280 | - | 49 ± 7 | 280 | 42 ± 6 |
| 5/21/77 | 280 | 63 ± 9 | 280 | - | 74 ±11 | 250 | 60 ± 9 |
| 5/28/77 | 290 | 57 ± 8 | 290 | - | 48 ± 7 | 290 | 54 ± 8 |
| 6/04/77 | 290 | 46 ± 7 | 290 | <5 | 52 ± 8 | 290 | 43 ± 6 |
| 6/12/77 | 330 | 53 ± 8 | 330 | - | 53 ± 8 | 330 | 43 ± 6 |
| 6/18/77 | 245 | 37 ± 6 | 245 | - | 37 ± 6 | 245 | 39 ± 6 |
| 6/26/77 | 330 | 34 ± 5 | 330 | - | 39 ± 6 | 330 | 23 ± 3 |
| 7/03/77 | 280 | 34 ± 5 | 280 | - | 32 ± 5 | 280 | 30 ± 4 |

*Iodine-131 is sampled alternate weeks. Activity is < 0.03 pCi/$m^3$ unless otherwise specified.
Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.
(a) Sample not available due to power failure. (b) I-131 = <0.04 pCi/$m^3$

TABLE 5.2-5

AIRBORNE IODINE-131* AND GROSS ALPHA AND GROSS BETA IN AIR PARTICULATES
Background Stations

| | D-06 MORRIS J16 | | | D-07 LISBON J24 | | D-08 COAL CITY J68 | | |
|---|---|---|---|---|---|---|---|---|
| Week Ending | Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | Volume ($m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) |
| 1/07/77 | 330 | <5 | 10 ± 2 | 325 | 10 ± 2 | 325 | <5 | 11 ± 2 |
| 1/15/77 | 275 | - | 7 ± 1 | 280 | 7 ± 1 | 280 | - | 10 ± 2 |
| 1/22/77 | 290 | - | 6 ± 1 | 290 | 6 ± 1 | 130 | - | 8 ± 2 |
| 1/30/77 | 325 | - | 3 ± 1 | 325 | 4 ± 1 | ** | - | - |
| 2/05/77 | 240 | <5 | 4 ± 1 | 240 | 3 ± 1 | 260(a) | <5 | 2 ± 1 |
| 2/12/77 | 285 | - | 9 ± 1 | 285 | 9 ± 1 | 200 | - | 12 ± 1 |
| 2/19/77 | 285 | - | 6 ± 1 | 285 | 9 ± 1 | 285 | - | 8 ± 1 |
| 2/26/77 | 285 | - | 7 ± 1 | 285 | 6 ± 1 | 285 | - | 7 ± 1 |
| 3/05/77 | 285 | <5 | 6 ± 1 | 285 | 6 ± 1 | 285 | <5 | 6 ± 1 |
| 3/12/77 | 285 | - | 13 ± 2 | 285 | 11 ± 2 | 285 | - | 13 ± 2 |
| 3/19/77 | 280 | - | 8 ± 1 | 280 | 6 ± 1 | 280 | - | 10 ± 2 |
| 3/26/77 | 280 | - | 8 ± 1 | 280 | 9 ± 1 | 280 | - | 9 ± 1 |
| 4/02/77 | 290 | 2 ± 1 | 19 ± 3 | 290 | 19 ± 3 | 290 | 2 ± 1 | 24 ± 4 |
| 4/09/77 | 285 | - | 11 ± 2 | 285 | 10 ± 2 | 285 | - | 12 ± 2 |
| 4/16/77 | 285 | - | 33 ± 5 | 285 | 36 ± 5 | 285 | - | 35 ± 5 |
| 4/23/77 | 285 | - | 33 ± 5 | 285 | 19 ± 3 | 285 | - | 42 ± 6 |
| 4/30/77 | 285 | - | 25 ± 4 | 285 | 26 ± 4 | 285 | - | 23 ± 4 |
| 5/07/77 | 290 | <5 | 42 ± 2 | 290 | 39 ± 4 | 290 | <5 | 43 ± 2 |
| 5/14/77 | 280 | - | 47 ± 7 | 280 | 43 ± 6 | 280 | - | 39 ± 6 |
| 5/21/77 | 285 | - | 62 ± 9 | 285 | 56 ± 8 | 285 | - | 62 ± 9 |
| 5/28/77 | 285 | - | 51 ± 8 | 285 | 49 ± 7 | 285 | - | 53 ± 8 |
| 6/04/77 | 285 | <5 | 46 ± 7 | 285 | 9 ± 1 | 280 | <5 | 46 ± 7 |
| 6/12/77 | 330 | - | 61 ± 9 | (b) | - | 330 | - | 47 ± 7 |
| 6/18/77 | 245 | - | 36 ± 5 | (b) | - | 245 | - | 39 ± 6 |
| 6/26/77 | 330 | - | 37 ± 5 | 325 | 26 ± 4 | 330 | - | 28 ± 4 |
| 7/03/77 | 280 | - | 31 ± 5 | 150 | 31 ± 5 | 280 | | 30 ± 4 |

*Iodine-131 is sampled alternate weeks. Activity is < 0.03 pCi/$m^3$ unless otherwise specified. Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

**Sample not available due to equipment malfunction. (pump replaced)

(a) [illegible]rage volume. (b) Sample not available; pump o[illegible]r repairs.

TABLE 5.

AIRBORNE IODINE-131* AND GROSS ALPHA AND GROSS BETA IN AIR PARTICULATES
Background Stations

| Week Ending | D-11 CHANNAHON CH Volume ($m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | D-14 MINOOKA J27 Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) | D-44 GOOSE LAKE VILLAGE GLV Volume ($m^3$) | Gross α ($10^{-3}$ pCi/$m^3$) | Gross β ($10^{-2}$ pCi/$m^3$) |
|---|---|---|---|---|---|---|---|---|
| 1/07/77 | 325 | 9 ± 2 | 325 | <5 | 10 ± 2 | 325 | <5 | 14 ± 2 |
| 1/15/77 | 285 | 8 ± 2 | 280 | - | 10 ± 2 | 280 | - | 8 ± 2 |
| 1/22/77 | 290 | 7 ± 1 | 290 | - | 7 ± 1 | 290 | - | 6 ± 1 |
| 1/30/77 | 325 | 3 ± 1 | 325 | - | 5 ± 1 | 325 | - | 4 ± 1 |
| 2/05/77 | 240 | 4 ± 1 | 240 | <5 | 4 ± 1 | 240 | <5 | 4 ± 1 |
| 2/12/77 | 285 | 10 ± 1 | 280 | - | 8 ± 1 | 285 | - | 9 ± 1 |
| 2/19/77 | 285 | 7 ± 1 | 285 | - | 8 ± 2 | 285 | - | 5 ± 1 |
| 2/26/77 | 255 | 7 ± 1 | 285 | - | 8 ± 1 | 285 | - | 7 ± 1 |
| 3/05/77 | 285 | 5 ± 1 | 285 | <5 | 5 ± 1 | 285 | <5 | 6 ± 1 |
| 3/12/77 | 285 | 11 ± 2 | 285 | - | 11 ± 2 | 285 | - | 10 ± 2 |
| 3/19/77 | 280 | 6 ± 1 | 285 | - | 8 ± 2 | 280 | - | 2 ± 1 |
| 3/26/77 | 280 | 8 ± 1 | 280 | - | 7 ± 1 | 280 | - | 8 ± 1 |
| 4/02/77 | 290 | 19 ± 3 | 290 | 2 ± 1 | 16 ± 2 | 290 | 1 ± 1 | 20 ± 3 |
| 4/09/77 | 285 | 11 ± 2 | 285 | - | 11 ± 2 | 285 | - | 10 ± 2 |
| 4/16/77 | 285 | 39 ± 6 | 285 | - | 32 ± 5 | 285 | - | 36 ± 5 |
| 4/23/77 | 285 | 31 ± 5 | 285 | - | 17 ± 3 | 285 | - | 34 ± 5 |
| 4/30/77 | 285 | 23 ± 4 | 285 | - | 21 ± 3 | 285 | - | 27 ± 4 |
| 5/07/77 | 290 | 47 ± 5 | 290 | <5 | 41 ± 2 | 290 | <5 | 44 ± 2 |
| 5/14/77 | 280 | 39 ± 6 | 280 | - | 42 ± 6 | 280 | - | 51 ± 8 |
| 5/21/77 | 285 | 68 ±10 | 285 | - | 70 ±10 | 285 | - | 61 ± 9 |
| 5/28/77 | 285 | 51 ± 8 | 285 | - | 53 ± 8 | 285 | - | 53 ± 8 |
| 6/04/77 | 280 | 58 ± 8 | 280 | <5 | 53 ± 8 | 280 | <5 | 47 ± 7 |
| 6/12/77 | 330 | 41 ± 6 | 330 | - | 51 ± 8 | 330 | - | 48 ± 7 |
| 6/18/77 | 245 | 38 ± 6 | 245 | - | 42 ± 6 | 245 | - | 42 ± 6 |
| 6/26/77 | 335 | 34 ± 5 | 330 | - | 30 ± 5 | 330 | - | 34 ± 5 |
| 7/03/77 | 280 | 31 ± 5 | 280 | - | 36 ± 5 | 275 | - | 36 ± 5 |

*Iodine-131 is sampled alternate weeks. Activity is < 0.03 pCi/$m^3$ unless otherwise specified.
Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TABLE 5.2-7

GAMMA ISOTOPIC* ANALYSIS OF
MONTHLY AIR PARTICULATE FILTER COMPOSITES

| Month | pCi/m³ | | | | | | |
|---|---|---|---|---|---|---|---|
| | Be-7 | Ce-141 | Ce-144 | Zr-95 | Nb-95 | Ru-103 | Other Gamma |
| January | .09 ± .02 | <.01 | <.01 | <.01 | <.01 | <.01 | <.01 |
| February | .07 ± .02 | <.01 | <.01 | <.01 | <.01 | <.01 | <.01 |
| March | .09 ± .01 | <.01 | .01 ± .002 | .01 ± .001 | <.01 | <.01 | <.01 |
| April | .16 ± .02 | .02 ± .002 | .03 ± .007 | .02 ± .003 | .08 ± .006 | .02 ± .002 | <.01 |
| May | .13 ± .02 | .03 ± .01 | .15 ± .02 | .04 ± .01 | .06 ± .01 | .02 ± .01 | <.01 |
| June | .24 ± .04 | .07 ± .01 | .06 ± .01 | .04 ± .01 | .02 ± .01 | .03 ± .01 | <.01 |

ADDITIONAL ANALYSIS OF WEEKLY AIR PARTICULATE FILTER COMPOSITES

| Collection Date | pCi/m³ | | | | | | |
|---|---|---|---|---|---|---|---|
| | Be-7 | Ce-141 | Ce-144 | Zr-95 | Nb-95 | Ru-103 | Other gamma |
| 04/16/77 | .38 ± .03 | .05 ± .01 | <.01 | .06 ± .01 | .04 ± .004 | .04 ± .004 | <.01 |

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 1

GROSS ALPHA, GROSS BETA AND IODINE-131* IN SURFACE WATER SAMPLES

| Collection Date | Background Station D-19 INLET CANAL 1D Gross α (pCi/l) | Background Station D-19 INLET CANAL 1D Gross β (pCi/l) | Indicator Station D-20-1 DISCHARGE CANAL 1D Gross α (pCi/l) | Indicator Station D-20-1 DISCHARGE CANAL 1D Gross β (pCi/l) | Indicator Station D-20-2/3 DISCHARGE CANAL 2/3D Gross α (pCi/l) | Indicator Station D-20-2/3 DISCHARGE CANAL 2/3D Gross β (pCi/l) | Indicator Station D-21 IL RIVER AT EJ AND E RR Gross α (pCi/l) | Indicator Station D-21 IL RIVER AT EJ AND E RR Gross β (pCi/l) |
|---|---|---|---|---|---|---|---|---|
| 1/07/77 | <0.5 | 6 ± 2 | 1 ± 1 | 4 ± 2 | <0.7 | 7 ± 2 | <0.6 | 9 ± 2 |
| 1/14/77 | <0.8 | 1 ± 1 | 0.6 ± 0.6 | 6 ± 2 | 0.9 ± 0.8 | 4 ± 2 | <0.9 | 3 ± 1 |
| 1/21/77 | <0.6 | 4 ± 1 | <0.6 | 4 ± 1 | <0.6 | 3 ± 2 | <0.5 | 8 ± 2 |
| 1/28/77 | <0.5 | 3 ± 2 | <0.5 | 3 ± 2 | <0.5 | 2 ± 2 | 1.3 ± 0.8 | 4 ± 2 |
| 2/04/77 | <0.5 | 4 ± 2 | <0.5 | 4 ± 2 | <0.7 | 2 ± 2 | <0.8 | 4 ± 2 |
| 2/12/77 | <1.0 | 3 ± 2 | <1.0 | 6 ± 3 | 1 ± 1 | 2 ± 2 | <1.0 | 4 ± 2 |
| 2/19/77 | <2.0 | 3 ± 2 | <1.0 | 4 ± 2 | <1.0 | 4 ± 2 | <1.0 | 5 ± 2 |
| 2/26/77 | <0.5 | 3 ± 2 | <0.7 | 5 ± 1 | <0.7 | 5 ± 2 | <0.4 | 6 ± 4 |
| 3/05/77 | <0.6 | 7 ± 2 | <0.9 | 7 ± 2 | <0.7 | 4 ± 2 | <0.7 | 2 ± 1 |
| 3/12/77 | <0.7 | 5 ± 2 | <1.0 | 7 ± 2 | <0.5 | 3 ± 2 | <0.8 | 6 ± 2 |
| 3/19/77 | <1.0 | 11 ± 2 | <1.0 | 11 ± 2 | <1.0 | 11 ± 2 | <1.0 | 11 ± 2 |
| 3/26/77 | <1.0 | 10 ± 2 | <1.0 | 13 ± 2 | <1.0 | 12 ± 2 | <1.0 | 15 ± 2 |
| 4/02/77 | <0.6 | 5 ± 2 | 2.0 ± 1.2 | 8 ± 2 | <0.6 | 5 ± 2 | 1.1 ± 0.9 | 8 ± 2 |
| 4/09/77 | <2.0 | 15 ± 3 | <1.0 | 11 ± 3 | <2.0 | 12 ± 3 | 0.9 ± 0.8 | 6 ± 2 |
| 4/16/77 | <1.0 | 7 ± 2 | <1.0 | 11 ± 2 | <1.0 | 8 ± 2 | <1.0 | 6 ± 2 |
| 4/23/77 | <1.0 | 10 ± 2 | <1.0 | 7 ± 2 | <1.0 | 6 ± 2 | <1.0 | 5 ± 2 |
| 4/30/77 | <1.0 | 6 ± 4 | <0.8 | < 1 | <1.0 | 4 ± 3 | <1.0 | 7 ± 4 |
| 5/07/77 | <0.8 | 6 ± 2 | <0.8 | 6 ± 2 | <0.8 | 5 ± 2 | <0.8 | 5 ± 2 |
| 5/14/77 | <0.9 | 1 ± 1 | <0.9 | 6 ± 3 | <0.5 | 6 ± 2 | <0.7 | 5 ± 2 |
| 5/20/77 | <0.7 | 4 ± 2 | <0.7 | 3 ± 2 | <0.5 | 4 ± 2 | <0.5 | 5 ± 2 |
| 5/28/77 | <0.7 | 8 ± 2 | <0.7 | 8 ± 2 | <0.7 | 6 ± 2 | <0.7 | 7 ± 2 |
| 6/04/77 | 2.0 ± 1.1 | 5 ± 2 | 2.3 ± 1.2 | 7 ± 2 | 2.1 ± 1.2 | 4 ± 2 | 1.8 ± 1.1 | 10 ± 2 |
| 6/11/77 | <1.0 | 6 ± 2 | <1.0 | 5 ± 2 | <1.0 | 7 ± 2 | <1.0 | 11 ± 3 |
| 6/18/77 | <1.0 | 6 ± 2 | <1.0 | 8 ± 2 | <1.0 | 12 ± 3 | <1.0 | 9 ± 2 |
| 6/26/77 | <1.0 | 4 ± 2 | <0.7 | 5 ± 2 | <1.0 | 4 ± 2 | <1.0 | 6 ± 2 |
| 7/02/77 | <1.0 | 6 ± 2 | <1.0 | 6 ± 2 | <1.0 | 3 ± 2 | <1.0 | 7 ± 2 |

*Iodine-131 sampled weekly. Activity is < 4 pCi/l unless otherwise specified. Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TABLE 5.3-2

GROSS BETA IN SURFACE WATER SAMPLES
Indicator Stations

| Collection Date | Ill. River at Morris (D-22)* Gross β pCi/l | Collection Date | Dresden Lake (D-34) Gross β pCi/l | Collection Date | Goose Lake Corp of Engineers (D-33) pCi/l Gross β | Tritium |
|---|---|---|---|---|---|---|
| 1/15/77 | 2 ± 1 | 1/08/77 | 5 ± 2 | | | |
| 1/30/77 | 4 ± 2 | 1/15/77 | < 1 | 2/05/77 | 4 ± 2 | 280 ± 90 |
| 2/15/77 | 5 ± 2 | 1/22/77 | 5 ± 2 | 4/02/77 | 4 ± 2 | < 200 |
| 2/28/77 | 6 ± 3 | 1/30/77 | 6 ± 2 | | | |
| 3/15/77 | 7 ± 2 | 2/05/77 | 2 ± 2 | | | |
| 3/31/77 | 7 ± 2 | 2/12/77 | 2 ± 2 | | | |
| 4/15/77 | 5 ± 2 | 2/19/77 | 5 ± 2 | | | |
| 4/30/77 | 6 ± 2 | 2/26/77 | 2 ± 2 | | | |
| 5/15/77 | 6 ± 2 | 3/05/77 | 3 ± 2 | | | |
| 5/31/77 | 7 ± 2 | 3/12/77 | 4 ± 2 | | | |
| 6/15/77 | 8 ± 3 | 3/19/77 | 5 ± 2 | | | |
| 6/29/77 | 9 ± 3 | 3/26/77 | 4 ± 2 | | | |
| | | 4/02/77 | 8 ± 2 | | | |
| | | 4/09/77 | 9 ± 2 | | | |
| | | 4/16/77 | 5 ± 2 | | | |
| | | 4/23/77 | 8 ± 2 | | | |
| | | 4/30/77 | 4 ± 2 | | | |
| | | 5/07/55 | 6 ± 2 | | | |
| | | 5/14/77 | 8 ± 2 | | | |
| | | 5/21/77 | 3 ± 2 | | | |
| | | 5/28/77 | 8 ± 2 | | | |
| | | 6/04/77 | 7 ± 2 | | | |
| | | 6/12/77 | 7 ± 2 | | | |
| | | 6/18/77 | 7 ± 2 | | | |
| | | 6/26/77 | 7 ± 2 | | | |
| | | 7/03/77 | 5 ± 2 | | | |

*This station collected by the State of Illinois and is not always available on scheduled dates.

TABLE 5.3-3

TRITIUM, Sr-89 and Sr-90 IN SURFACE WATER COMPOSITE SAMPLES

| Collection Site | Tritium pCi/l | | Sr-89 pCi/l | | Sr-90 pCi/l | |
|---|---|---|---|---|---|---|
| | Jan - March | April-June | Jan - March | April-June | Jan - March | April-June |
| Inlet Canal (D-19) | 200 ± 100 | < 200 | < 5 | < 5 | < 1 | < 1 |
| Unit 1 Discharge Canal (D-20-1) | 240 ± 130 | < 200 | < 5 | < 5 | < 1 | < 1 |
| Unit 2 Discharge Canal (D-20-2/3) | 240 ± 110 | 220 ± 150 | < 5 | < 5 | < 1 | < 1 |
| Illinois River at EJ + E Bridge (D-21) | 230 ± 110 | < 200 | < 5 | < 5 | < 1 | < 2 |
| Illinois River at Morris (D-22) | 210 ± 140 | < 200 | NR | NR | NR | NR |
| Dresden Lake (D-34) | < 200 | 310 ± 150 | NR | NR | NR | NR |

TABLE 5.3-4

RADIONUCLIDES IN SURFACE WATER SAMPLES

| Collection Date | (D-23) DRESDEN LOCK AND DAM pCi/l Sr-89 | Sr-90 | Gamma Emitters* | Gross β |
|---|---|---|---|---|
| 02/05/77 | < 5 | 4 ± 2+ | < 10 | 4 ± 2 |
| 04/16/77(a) | < 5 | < 1 | < 10 | 5 ± 3 |
| 5/07/77 | < 5 | < 1 | < 10 | 10 ± 2 |

TABLE 5.3-5

ADDITIONAL ANALYSIS

OF SURFACE WATER

| Collection Site | Collection Date | pCi/l Sr-89 | Sr-90 |
|---|---|---|---|
| D-21 IL River at | 02/05/77 | < 5 | < 1 |
| EJ&E RR Bridge | 02/12/77 | < 5 | < 1 |

(a) Supplemental Collection + Unusual reading; refer to Section 5.3.
*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 5.3-6

GROSS BETA ANALYSIS OF PERIPHYTON (SLIME) SAMPLES

| Collection Site | Collection Date | pCi/g Wet Gross Beta |
|---|---|---|
| Dresden Lock and Dam (D-23) | 02/26/77 | 3 ± 1 |
| | 05/14/77 | 7 ± 1 |
| Kankakee River (D-36) | 02/26/77 | 6 ± 1 |
| | 05/14/77 | 8 ± 1 |
| DesPlaines River (D-37) | 02/26/77 | 3 ± 1 |
| | 05/14/77 | 8 ± 1 |

TABLE 5.3-7

GAMMA ISOTOPIC, GROSS BETA, Sr-89 AND Sr-90 ANALYSES OF SEDIMENT SAMPLES

| Collection Site | Collection Date | pCi/g (Dry) Gross Beta | Sr-89 | Sr-90 | Gamma Emitters* |
|---|---|---|---|---|---|
| (D-23) Dresden Lock and Dam | 02/26/77 | 4 ± 1 | < 2 | < 1 | < 1 |
| | 05/14/77 | 5 ± 1 | < 2 | < 1 | < 1(a) |
| Kankakee River (D-36) | 02/26/77 | < 2 | < 2 | < 1 | NR |
| | 05/14/77 | 4 ± 1 | < 2 | < 1 | NR |
| DesPlaines River (D-37) | 02/26/77 | 13 ± 2 | < 2 | < 1 | NR |
| | 05/14/77 | 2 ± 1 | < 2 | < 1 | NR |

(a) Unusual reading, Zr-95 = 1.4 ± 0.7.
NR=Not Required
*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 5.3-8

RADIONUCLIDES IN AQUATIC PLANTS

| Collection Site | Collection Date | pCi/g (Wet) Cs-134 | Cs-137 | Co-60 | I-131 | Collection Date | pCi/g (Wet) Gross β | Sr-89 | Sr-90 |
|---|---|---|---|---|---|---|---|---|---|
| D-19 Inlet Canal | 05/28/77 | < 1 | < 1 | < 1 | < 1 | 06/05/77 | 2 ± 1 | < 2 | < 1 |
| D-20-1 Discharge Canal | 05/28/77 | < 1 | < 1 | < 1 | < 1 | 06/05/77 | 2 ± 1 | < 2 | < 1 |
| D-20-2/3 Discharge Canal | 05/28/77 | < 1 | < 1 | < 1 | < 1 | 06/05/77 | 2 ± 1 | < 2 | < 1 |

TABLE 5.3-9

RADIONUCLIDES IN FISH SAMPLES

| Sample Description | Collection Date | D-23 DRESDEN LOCK AND DAM Radionuclide Concentration pCi/g (Wet) Gross Beta | Sr-89 | Sr-90 | Gamma Emitters** |
|---|---|---|---|---|---|
| Redhorse - whole | 06/20/77 | 2 ± 1 | < 1 | < 1 | < 1 |
| Redhorse - edible | 06/20/77 | 1 ± 1 | < 1 | < 1 | < 1 |

*Collection Date 06/05/77.

**The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 5.4-1

IODINE-131 IN MILK

| Collection Date | D-30 Davidson Farm pCi/l* | D-59 Dorin Farm pCi/l* | D-53 Mather Farm pCi/l* |
|---|---|---|---|
| 1/01/77 | <4 | <4 | <4 |
| 1/08/77 | <4 | <4 | <4 |
| 1/15/77 | <4 | <4 | <4 |
| 1/22/77 | <4 | <4 | <4 |
| 1/29/77 | <4 | <4 | <4 |
| 2/05/77 | <4 | <4 | <4 |
| 2/12/77 | <4 | <4 | <4 |
| 2/19/77 | <4 | <4 | <4 |
| 2/26/77 | <4 | <4 | <4 |
| 3/05/77 | <4 | <4 | <4 |
| 3/12/77 | <4 | <4 | <4 |
| 3/19/77 | <4 | <4 | <4 |
| 3/26/77 | <4 | <4 | <4 |
| 4/02/77 | <0.5 | <0.5 | <0.5 |
| 4/09/77 | <0.5 | <0.5 | <0.5 |
| 4/16/77 | <0.5 | <0.5 | <0.5 |
| 4/23/77 | <0.5 | <0.5 | <0.5 |
| 4/30/77 | <0.5 | <0.5 | <0.5 |
| 5/07/77 | <0.5 | <0.5 | <0.5 |
| 5/14/77 | <0.5 | <0.5 | <0.5 |
| 5/21/77 | <0.5 | <0.5 | <0.5 |
| 5/28/77 | <0.5 | <0.5 | <0.5 |
| 6/04/77 | <0.5 | <0.5 | <0.5 |
| 6/12/77 | <0.5 | <0.5 | <0.5 |
| 6/18/77 | <0.5 | <0.5 | <0.5 |
| 6/26/77 | <0.5 | <0.5 | <0.5 |

*at time of collection.

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TABLE 5.4-2

RADIONUCLIDES IN MILK

Monthly Composites

| Month of Collection | D-30 Sr-89 (pCi/l) | Sr-90 (pCi/l) | DAVIDSON FARM Cs-137 (pCi/l) | Calcium (g/l) | HTO* (pCi/l) |
|---|---|---|---|---|---|
| January | < 5 | 3 ± 1 | < 5 | 1.14 | NR |
| February | < 5 | 4 ± 2 | < 5 | 1.37 | NR |
| March | < 5 | 3 ± 1 | < 5 | 1.18 | NR |
| April | < 5 | 2 ± 1 | < 5 | 1.44 | NR |
| May | < 5 | 1 ± 1 | < 5 | 1.38 | NR |
| June | < 5 | 1 ± 1 | < 5 | 1.33 | 240 ± 150 |

| Month of Collection | D-53 Sr-89 (pCi/l) | Sr-90 (pCi/l) | MATHER FARM Cs-137 (pCi/l) | Calcium (g/l) | HTO* (pCi/l) |
|---|---|---|---|---|---|
| January | < 5 | 4 ± 2 | < 5 | 1.39 | NR |
| February | < 5 | 4 ± 2 | < 5 | 1.42 | NR |
| March | < 5 | 5 ± 2 | < 5 | 1.96 | NR |
| April | < 5 | 2 ± 1 | < 5 | 1.42 | NR |
| May | < 5 | 2 ± 1 | < 5 | 1.55 | NR |
| June | < 5 | 7 ± 2 | < 5 | 1.37 | 270 ± 110 |

| Month of Collection | D-59 Sr-89 (pCi/l) | Sr-90 (pCi/l) | DORIN FARM Cs-137 (pCi/l) | Calcium (g/l) | HTO* (pCi/l) |
|---|---|---|---|---|---|
| January | < 5 | 5 ± 2 | < 5 | 1.37 | NR |
| February | < 5 | 3 ± 1 | < 5 | 1.61 | NR |
| March | < 5 | 8 ± 2 | < 5 | 1.68 | NR |
| April | < 5 | 5 ± 3 | < 5 | 1.40 | NR |
| May | < 5 | 3 ± 2 | 7 ± 2 | 1.52 | NR |
| June | < 5 | 3 ± 3 | < 5 | 1.24 | 360 ± 100 |

*HTO required on June sample only. NR = Not required.

TABLE 4-3

GROSS BETA AND RADIOSTRONTIUM IN GRASS AND CATTLEFEED

| Collection Site | Collection Date | Type Feed | pCi/g (Wet) Gross Beta | Sr-89 | Sr-90 |
|---|---|---|---|---|---|
| D-30 Davidson Farm | 12/31/76 | Cattlefeed | 7 ± 1 | < 2 | < 1 |
| | 12/31/76 | Grass | 13 ± 1 | < 2 | < 1 |
| | 02/05/77 | Hay | 9 ± 1 | < 2 | < 1 |
| | 02/05/77 | Grainlage | 3 ± 1 | < 2 | < 1 |
| | 03/05/77 | Hay | 7 ± 1 | < 2 | < 1 |
| | 03/05/77 | Grainlage | 6 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grainlage | 4 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grass | 6 ± 1 | < 2 | < 1 |
| | 04/09/77(a) | Grass | 7 ± 1 | < 2 | < 1 |
| | 04/23/77(a) | Grass | 6 ± 1 | < 2 | < 1 |
| | 5/07/77(a) | Grass | 5 ± 1 | < 2 | < 1 |
| | 5/07/77 | Grain | 6 ± 1 | < 2 | < 1 |
| | 5/07/77 | Grass | 7 ± 2 | < 2 | < 1 |
| | 5/28/77(a) | Grass | 6 ± 1 | < 2 | < 1 |
| | 6/04/77 | Cattlefeed | 3 ± 1 | < 2 | < 1 |
| | 6/05/77 | Grass | 2 ± 1 | < 2 | < 1 |
| | 6/26/77(a) | Grass | 4 ± 1 | < 2 | < 1 |
| D-53 Mather Farm | 12/31/76 | Cattlefeed | 6 ± 1 | < 2 | < 1 |
| | 12/31/76 | Grass | 17 ± 3 | < 2 | < 1 |
| | 02/05/77 | Hay | 15 ± 1 | < 2 | < 1 |
| | 02/05/77 | Grainlage | 3 ± 1 | < 2 | < 1 |
| | 03/05/77 | Hay | 12 ± 2 | < 2 | < 1 |
| | 03/05/77 | Grainlage | 7 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grainlage | 2 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grass | 15 ± 2 | < 2 | < 1 |
| | 04/09/77(a) | Grass | 7 ± 1 | < 2 | < 1 |
| | 04/23/77(a) | Grass | 5 ± 1 | < 2 | < 1 |
| | 05/07/77(a) | Grass | 5 ± 1 | < 2 | < 1 |
| | 05/07/77 | Grainlage | 2 ± 1 | < 2 | < 1 |
| | 05/07/77 | Grass | 10 ± 2 | < 2 | < 1 |
| | 05/28/77(a) | Grass | 6 ± 1 | < 2 | < 1 |
| | 06/04/77 | Cattlefeed | 3 ± 1 | < 2 | < 1 |
| | 06/05/77 | Grass | 3 ± 1 | < 2 | < 1 |
| | 06/26/77(a) | Grass | 5 ± 1 | < 2 | < 1 |

(a) Special Collection

TABLE 5.4-3 (Cont'd)

GROSS BETA AND RADIOSTRONTIUM IN GRASS AND CATTLEFEED

| Collection Site | Collection Date | Type Feed | pCi/g (Wet) Gross Beta | Sr-89 | Sr-90 |
|---|---|---|---|---|---|
| D-59 Dorin Farm | 12/31/76 | Cattlefeed | 7 ± 1 | < 2 | < 1 |
| | 12/31/76 | Grass | 12 ± 1 | < 2 | < 1 |
| | 02/05/77 | Hay | 10 ± 1 | < 2 | < 1 |
| | 02/05/77 | Grainlage | 3 ± 1 | < 2 | < 1 |
| | 03/05/77 | Hay | 9 ± 1 | < 2 | < 1 |
| | 03/05/77 | Grain | 5 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grain | 3 ± 1 | < 2 | < 1 |
| | 04/02/77 | Grass | 9 ± 1 | < 2 | < 1 |
| | 04/09/77(a) | Grass | 12 ± 1 | < 2 | < 1 |
| | 04/23/77(a) | Grass | 10 ± 1 | < 2 | < 1 |
| | 05/07/77(a) | Grass | 9 ± 1 | < 2 | < 1 |
| | 05/07/77 | Grain | 11 ± 2 | < 2 | < 1 |
| | 05/07/77 | Grass | 8 ± 2 | < 2 | < 1 |
| | 05/28/77(a) | Grass | 6 ± 1 | < 2 | < 1 |
| | 06/04/77 | Cattlefeed | 6 ± 1 | < 2 | < 1 |
| | 06/05/77 | Grass | 9 ± 1 | < 2 | < 1 |
| | 06/26/77(a) | Grass | 8 ± 1 | < 2 | < 1 |
| D-27 Thorsen Farm | 04/09/77(a) | Grass | 9 ± 1 | < 2 | < 1 |
| | 04/23/77(a) | Grass | 12 ± 1 | < 2 | < 1 |
| | 05/07/77(a) | Grass | 6 ± 1 | < 2 | < 1 |
| | 05/28/77(a) | Grass | 5 ± 1 | < 2 | < 1 |
| | 06/26/77(a) | Grass | 6 ± 1 | < 2 | < 1 |

(a)Special Collection

TABLE 5.4-4

GAMMA ISOTOPIC ANALYSIS OF GRASS AND CATTLEFEED

| Collection Site | Collection Date | Type Feed | pCi/gm (Wet) Cs-137 | I-131 | Other Gamma* |
|---|---|---|---|---|---|
| D-30 Davidson Farm | 12/31/76 | Cattlefeed | <1 | < 0.3 | <1 |
| D-53 Mather Farm | 12/31/76 | Cattlefeed | <1 | NR | <1 |
| D-59 Dorin Farm | 12/31/76 | Cattlefeed | <1 | NR | <1 |
| D-30 Davidson Farm | 12/31/76 | Grass | <1 | < 0.1 | <1 |
| D-53 Mather Farm | 12/31/76 | Grass | <1 | NR | <1 |
| D-59 Dorin Farm | 12/31/76 | Grass | <1 | NR | <1 |
| D-30 Davidson Farm | 02/05/77 | Hay | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 02/05/77 | Hay | <1 | NR | <1 |
| D-59 Dorin Farm | 02/05/77 | Hay | <1 | NR | <1 |
| D-30 Davidson Farm | 02/05/77 | Grainlage | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 02/05/77 | Grainlage | <1 | NR | <1 |
| D-59 Dorin Farm | 02/05/77 | Grainlage | <1 | NR | <1 |
| D-30 Davidson Farm | 04/02/77 | Grass | <1 | < 1.0 | <1 |
| D-53 Mather Farm | 04/02/77 | Grass | <1 | NR | <1 |
| D-59 Dorin Farm | 04/02/77 | Grass | <1 | NR | <1 |
| D-27 Thorsen Farm | 04/09/77(a) | Grass | <1 | < 0.5 | <1 |
| [illegible] Davidson Farm | 04/09/77(a) | Grass | <1 | < 0.5 | <1(b)+ |
| [illegible] Mather Farm | 04/09/77(a) | Grass | <1 | < 0.5 | <1(c)+ |
| D-59 Dorin Farm | 04/09/77(a) | Grass | <1 | < 0.5 | <1 |
| D-27 Thorsen Farm | 04/23/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 04/23/77(a) | Grass | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 04/23/77(a) | Grass | <1 | < 0.5 | <1 |
| D-59 Dorin Farm | 04/23/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 05/07/77 | Grass | <1 | < 1.0 | <1 |
| D-53 Mather Farm | 05/07/77 | Grass | <1 | NR | <1 |
| D-59 Dorin Farm | 05/07/77 | Grass | <1 | NR | <1 |
| D-27 Thorsen Farm | 05/07/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 05/07/77(a) | Grass | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 05/07/77(a) | Grass | <1 | < 0.5 | <1 |
| D-59 Dorin Farm | 05/07/77(a) | Grass | <1 | < 0.5 | <1 |

+ Unusual reading.
(a) Special Collection (b) Nb-95 = 1.4 ± 0.7, Ce-141 = 1.5 ± 0.7 (c) Ru-103 = <1

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally [illegible]curring gamma emitters such as K-40 and Ra daughters are frequently detected but [illegible] listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless [illegible]therwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.
NR--Not Required.

TABLE 5.4-4 (continued)

GAMMA ISOTOPIC ANALYSIS OF GRASS AND CATTLEFEED (continued)

| Collection Site | Collection Date | Type Feed | pCi/gm (Dry) Cs-137 | I-131 | Other Gamma* |
|---|---|---|---|---|---|
| D-27 Thorsen Farm | 05/28/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 05/28/77(a) | Grass | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 05/28/77(a) | Grass | <1 | < 0.5 | <1 |
| D-59 Dorin Farm | 05/28/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 06/05/77 | Grass | <1 | < 1 | <1 |
| D-53 Mather Farm | 06/05/77 | Grass | <1 | NR | <1 |
| D-59 Dorin Farm | 06/05/77 | Grass | <1 | NR | <1 |
| D-27 Thorsen Farm | 06/26/77(a) | Grass | <1 | < 0.5 | <1 |
| D-30 Davidson Farm | 06/26/77(a) | Grass | <1 | < 0.5 | <1 |
| D-53 Mather Farm | 06/26/77(a) | Grass | <1 | < 0.5 | <1 |
| D-59 Dorin Farm | 06/26/77(a) | Grass | <1 | < 0.5 | <1 |

(a) Special collection.
*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 5.5-1

RADIONUCLIDE CONCENTRATIONS IN PRECIPITATION

January - June 1977

| Collection Site | Collection Date | Gross Beta (pCi/l) | Gross Beta (pCi/m²) | H-3 as Water (pCi/l) |
|---|---|---|---|---|
| On-Site 2 (D-17) | Jan. | 39 ± 4 | 517 ± 53 | <360 (a) |
| | Feb. | 53 ± 6 | 420 ± 50 | 260 ± 90 |
| | Mar. | 87 ± 9 | 2800 ±300+ | 520 ± 110 |
| | Apr. | 71 ± 7 | 2800 ±300+ | 380 ± 80 |
| | May | 290 ±30 | 1600 ±200+ | < 500(a) |
| | June | 72 ± 7 | 2100 ±200+ | 370 ± 100 |
| Davidson Farm (D-30) | Jan. | 40 ± 6 | 318 ± 48 | <360 (a) |
| | Feb. | 45 ± 5 | 480 ± 50 | 250 ± 90 |
| | Mar. | 49 ± 5 | 2600 ±300+ | 780 ± 110 |
| | Apr. | 96 ±10 | 3400 ±300+ | 550 ± 90 |
| | May | 200 ±20 | 1100 ±100+ | < 200 |
| | June | 65 ± 7 | 2900 ±300+ | 270 ± 100 |
| Brandon Lock (D-32) | Jan. | 40 ± 7 | 318 ± 56 | <360 (a) |
| | Feb. | 63 ± 6 | 500 ± 50 | 210 ± 130 |
| | Mar. | 100 ±10 | 2700 ±300+ | 460 ± 110 |
| | Apr. | 300 ±30 | 5500 ±600+ | 430 ± 90 |
| | May | 180 ±20 | 960 ±100 | 530 ± 350(a) |
| | June | 100 ±10 | 2900 ±300+ | 260 ± 100 |
| Mather Farm (D-53) | Jan. | 21 ± 5 | 167 ± 40 | <360 (a) |
| | Feb. | 48 ± 6 | 380 ± 50 | <200 |
| | Mar. | 50 ± 5 | 1900 ±200+ | 610 ± 110 |
| | Apr. | 310 ±30 | 4900 ±500+ | 440 ± 90 |
| | May | 100 ±10 | 540 ± 50 | 230 ± 100 |
| | June | 68 ± 7 | 2000 ±200+ | 260 ± 100 |

+Unusual reading; refer to Section 5.0.

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.
(a)Insufficient sample for more sensitive analysis. Samples were direct counted.

TABLE 5.5-2

ADDITIONAL ANALYSIS OF PRECIPITATION SAMPLES

| Collection Site | Collection Date | pCi/l | | | | |
|---|---|---|---|---|---|---|
| | | Ce-141 | Zr-95 | Nb-95 | Ru-103 | Other gamma* |
| D-17 On-Site 2 | March | < 11 | < 10 | < 10 | < 10 | < 10 |
| | April | < 10 | < 10 | < 10 | 14 ± 2 | < 10 |
| | May | < 66** | < 66** | < 66** | < 66** | < 66** |
| | June | < 26** | < 26** | < 26** | < 26** | < 26** |
| D-30 Davidson Farm | March | < 11 | < 10 | < 10 | < 10 | < 10 |
| | April | < 10 | 8 ± 3 | 4 ± 1 | < 10 | < 10 |
| | May | < 66** | < 66** | < 66** | < 66** | < 66** |
| | June | < 26** | < 26** | < 26** | < 26** | < 26** |
| D-32 Brandon Lock | March | < 11 | 6 ± 2 | 11 ± 2 | 17 ± 0.3 | < 10 |
| | April | 25 ± 4 | 20 ± 5 | 48 ± 6 | < 10 | < 10 |
| | May | <130** | <130** | <130** | <130** | <130** |
| | June | < 26** | < 26** | < 26** | < 26** | < 26** |
| D-53 Mather Farm | March | < 11 | < 10 | < 10 | < 10 | < 10 |
| | April | 35 ± 5 | < 10 | < 10 | < 10 | < 10 |
| | May | < 50** | < 50** | < 50** | < 50** | < 50** |
| | June | < 27** | < 27** | < 27** | < 27** | < 27** |

**Insufficient sample remaining for more sensitive analysis.
*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 5.5-3

GAMMA ISOTOPIC, GROSS BETA AND Sr-89, Sr-90 ANALYSIS OF SOIL SAMPLES

D-30 DAVIDSON FARM

| Collection Date | pCi/g (Dry) Gross Beta | Sr-89 | Sr-90 | Gamma* |
|---|---|---|---|---|
| 12/31/76 | 4 ± 1 | < 2 | < 1 | NR |
| 04/02/77 | 3 ± 1 | < 2 | < 1 | NR |
| 04/09/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |
| 04/23/77(a) | 5 ± 1 | < 2 | < 1 | < 1(b) |
| 05/07/77(a) | 3 ± 1 | < 2 | < 1 | < 1 |
| 05/28/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |
| 06/26/77(a) | 3 ± 1 | < 2 | < 1 | < 1 |

D-59 DORIN FARM

| Collection Date | pCi/g (Dry) Gross Beta | Sr-89 | Sr-90 | Gamma* |
|---|---|---|---|---|
| 12/31/76 | 7 ± 1 | < 2 | < 1 | < 1 |
| 04/02/77 | 3 ± 1 | < 2 | < 1 | NR |
| 04/09/77(a) | 7 ± 1 | < 2 | < 1 | < 1 |
| 04/23/77(a) | 5 ± 1 | < 2 | < 1 | < 1 |
| 05/07/77(a) | 5 ± 1 | < 2 | < 1 | < 1 |
| 05/28/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |
| 06/26/77(a) | 3 ± 1 | < 2 | < 1 | < 1 |

D-53 MATHER FARM

| Collection Date | pCi/g (Dry) Gross Beta | Sr-89 | Sr-90 | Gamma* |
|---|---|---|---|---|
| 12/31/76 | 6 ± 1 | < 2 | < 1 | NR |
| 04/02/77 | 4 ± 1 | < 2 | < 1 | NR |
| 04/09/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |
| 04/23/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |
| 05/07/77(a) | 5 ± 1 | < 2 | < 1 | < 1 |
| 05/28/77(a) | 5 ± 1 | < 2 | < 1 | < 1 |
| 06/26/77(a) | 4 ± 1 | < 2 | < 1 | < 1 |

D-27 THORSEN FARM

| Collection Date | pCi/g (Dry) Gross Beta | Sr-89 | Sr-90 | Gamma* |
|---|---|---|---|---|
| 12/31/76 | 14 ± 1 | < 2 | < 1 | NR |
| 04/02/77 | 2 ± 1 | < 2 | < 1 | NR |
| 04/09/77(a) | 3 ± 1 | < 2 | < 1 | < 1 |
| 04/23/77(a) | 8 ± 1 | < 2 | < 1 | < 1 |
| 05/07/77(a) | 6 ± 1 | < 2 | < 1 | < 1 |
| 05/28/77(a) | 8 ± 1 | < 2 | < 1 | < 1 |
| 06/26/77(a) | 5 ± 1 | < 2 | < 1 | < 1 |

(a) Special Collection (b) Cs-137 = 1.0 ± 0.2

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

NOTE: Special Collection samples are analyzed "Wet".

TABLE 5.7-1

GROSS BETA IN WELL WATER SAMPLES

| Collection Site | Collection Date | Gross Beta (pCi/l) |
|---|---|---|
| Bennitt Farm (D-09) Indicator Station | 12/31/76 | 3 ± 2 |
| | 04/02/77 | 5 ± 2 |
| Hansel (D-10) Background Station | 12/31/76 | 9 ± 2 |
| | 04/02/77 | 12 ± 2 |
| Breen (D-12) Background Station | 02/05/77 | 15 ± 2 |
| | 05/07/77 | 14 ± 2 |
| Dresden Lock and Dam (D-23) | 12/31/76 | 16 ± 3 |
| | 02/05/77 | 15 ± 2 |
| | 03/05/77 | 19 ± 3 |
| | 04/02/77 | 4 ± 2 |
| | 05/07/77 | 15 ± 2 |
| | 06/04/77 | 21 ± 3 |
| Drinking Fountain Unit 1 (D-26) | 02/05/77 | 12 ± 2 |
| | 05/07/77 | 15 ± 2 |
| Anderson Farm (D-28) Indicator Station | 02/05/77 | 6 ± 2 |
| | 05/07/77 | 19 ± 2 |
| Olson Farm (D-29) Background Station | 02/05/77 | 16 ± 2 |
| | 05/07/77 | 1 ± 1 |

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TABLE 5.7-2

GROSS BETA AND TRITIUM IN WELL WATER SAMPLES

| Collection Site | Collection Date | pCi/l Gross Beta | pCi/l Tritium |
|---|---|---|---|
| Dresden Well 1 (D-24) Indicator Station | 12/31/76 | 34 ± 3 | 220 ± 110 |
| | 04/02/77 | 14 ± 2 | 590 ± 110 |
| Dresden Well 2 (D-25) Indicator Station | 02/05/77 | 23 ± 3 | 130 ± 100 |
| | 05/07/77 | 15 ± 2 | < 200 |
| Thorsen Farm (D-27) Indicator Station | 12/31/76 | 6 ± 2 | 450 ± 100 |
| | 04/02/77 | 2 ± 1 | 680 ± 110 |

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

TABLE 8.0-1

SPECIAL COLLECTION

Gross Beta, Sr-89, Sr-90 and Gamma Isotopic Analysis of Snow Samples

| Lab No. | Customer Identification | Collection Date | pCi/l Gross Beta | Sr-89 | Sr-90 | Other Gamma* |
|---|---|---|---|---|---|---|
| M29597 | D-27 | 1/30/77 | 80 ± 9 | < 5 | < 1 | <10 |
| M29598 | D-30 | 1/30/77 | 22 ± 5 | < 5 | < 1 | <10 |
| M29599 | D-53 | 1/30/77 | 32 ± 6 | < 5 | < 1 | <10 |
| M29600 | D-59 | 1/30/77 | 86 ± 9 | < 5 | < 2 | <10 |
| M29888 | D-27 | 2/05/77 | 10 ± 4 | < 5 | < 1 | <10 |
| M29889 | D-30 | 2/05/77 | 14 ± 4 | < 5 | < 1 | <10 |
| M29890 | D-53 | 2/05/77 | 12 ± 4 | < 5 | < 1 | <10 |
| M29891 | D-59 | 2/05/77 | 3 ± 3 | < 5 | < 1 | <10 |

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABL[illegible].0-2

SPECIAL COLLECTION

| Lab No. | Customer Identification | Collection Date | Sample Type | pCi/g (Wet) Gross Beta | Sr-89 | Sr-90 | Cs-137 | Other Gamma* |
|---|---|---|---|---|---|---|---|---|
| M32620 | D-27 | 04/09/77 | Grass | 9 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32621 | D-30 | 04/09/77 | Grass | 7 ± 1 | < 2 | < 1 | < 1 | <1(a) |
| M32622 | D-53 | 04/09/77 | Grass | 7 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32623 | D-59 | 04/09/77 | Grass | 12 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32624 | D-27 | 04/09/77 | Soil | 2 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32625 | D-30 | 04/09/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32626 | D-53 | 04/09/77 | Soil | 3 ± 1 | < 2 | < 1 | < 1 | <1 |
| M32627 | D-59 | 04/09/77 | Soil | 5 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33148 | D-27 | 04/23/77 | Soil | 6 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33149 | D-30 | 04/23/77 | Soil | 5 ± 1 | < 2 | < 1 | 1.0 ± 0.2 | <1 |
| M33150 | D-53 | 04/23/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33151 | D-59 | 04/23/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33152 | D-27 | 04/23/77 | Grass | 12 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33153 | D-30 | 04/23/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33154 | D-53 | 04/23/77 | Grass | 5 ± 1 | < 2 | < 1 | < 1 | <1 |
| M33155 | D-59 | 04/23/77 | Grass | 10 ± 1 | < 2 | < 1 | < 1 | <1 |

(a) Nb-95 = 1.4 ± 0.7, Ce-141 = 1.5 ± 0.7

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless otherwise noted, listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

TABLE 8.0-3

SPECIAL COLLECTION

| Lab No. | Customer Identification | Collection Date | Sample Type | pCi/g (Wet) Gross Beta | Sr-89 | Sr-90 | Cs-137 | Other Gamma* |
|---|---|---|---|---|---|---|---|---|
| M33755 | D-27 | 05/07/77 | Soil | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33756 | D-30 | 05/07/77 | Soil | 3 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33757 | D-53 | 05/07/77 | Soil | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33758 | D-59 | 05/07/77 | Soil | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33759 | D-27 | 05/07/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33760 | D-30 | 05/07/77 | Grass | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33761 | D-53 | 05/07/77 | Grass | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M33762 | D-59 | 05/07/77 | Grass | 9 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34525 | D-27 | 05/28/77 | Soil | 8 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34526 | D-30 | 05/28/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34527 | D-53 | 05/28/77 | Soil | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34528 | D-59 | 05/28/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34529 | D-27 | 05/28/77 | Grass | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34530 | D-30 | 05/28/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34531 | D-53 | 05/28/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M34532 | D-59 | 05/28/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35726 | D-27 | 06/26/77 | Soil | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35727 | D-30 | 06/26/77 | Soil | 3 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35728 | D-53 | 06/26/77 | Soil | 4 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35729 | D-59 | 06/26/77 | Soil | 3 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35730 | D-27 | 06/26/77 | Grass | 6 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35731 | D-30 | 06/26/77 | Grass | 4 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35732 | D-53 | 06/26/77 | Grass | 5 ± 1 | < 2 | < 1 | < 1 | < 1 |
| M35733 | D-59 | 06/26/77 | Grass | 8 ± 1 | < 2 | < 1 | < 1 | < 1 |

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Unless other[illegible] noted, listed concentration is for Cs-137 an[illegible]y be slightly more or less sensitive for other [illegible]ides.

TABLE 8.0-4

GAMMA ISOTOPIC ANALYSIS OF
RADWASTE SAMPLE (WELL WATER)

| Collection Site | Collection Date | Gamma Emitters (pCi/l) | | | |
|---|---|---|---|---|---|
| | | | Filtered | | |
| | | Solids | Cs-137 | Co-60 | Other Gamma |
| D-1 Radwaste Area (D-58) | 03/05/77 | < 10 | < 10 | 15 ± 5 | < 10 |
| | 06/12/77 | | 25 ± 10 | 35 ± 10 | < 10 |

*The spectrum is computer scanned from ~20 to ~2000 KeV. Specifically included are Ce-144, Ba-La-140, Cs-134, Cs-137, Zr-Nb-95, Co-58, Co-60, Mn-54, Zn-65. Naturally occurring gamma emitters such as K-40 and Ra daughters are frequently detected but not listed here. Data listed as "<" are at the 3σ level, others are 2σ. Listed concentration is for Cs-137 and may be slightly more or less sensitive for other nuclides.

# APPENDIX II

## METEOROLOGICAL DATA

(Hours of Occurrence)

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - EXTREMELY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| NNE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
| SE | 0 | 0 | 0 | 3 | 1 | 0 | 4 |
| SSE | 0 | 0 | 2 | 1 | 0 | 0 | 3 |
| S | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| SSW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SW | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| WSW | 0 | 1 | 0 | 2 | 0 | 0 | 3 |
| W | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| WNW | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| NW | 0 | 1 | 3 | 0 | 0 | 0 | 4 |
| NNW | 1 | 1 | 12 | 7 | 0 | 0 | 21 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 1 | 6 | 20 | 18 | 3 | 0 | 48 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 0

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - MODERATELY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| SE | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| SSE | 0 | 0 | 4 | 2 | 0 | 0 | 6 |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SW | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| WSW | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| W | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| WNW | 0 | 0 | 2 | 0 | 1 | 0 | 3 |
| NW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NNW | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 1 | 13 | 6 | 1 | 0 | 21 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 0

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - SLIGHTLY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| SE | 0 | 0 | 2 | 1 | 1 | 0 | 4 |
| SSE | 0 | 0 | 2 | 3 | 1 | 0 | 6 |
| S | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| SSW | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| SW | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| WSW | 0 | 3 | 1 | 0 | 0 | 0 | 4 |
| W | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| WNW | 0 | 1 | 3 | 0 | 2 | 0 | 6 |
| NW | 0 | 1 | 3 | 0 | 0 | 0 | 4 |
| NNW | 0 | 0 | 4 | 0 | 0 | 0 | 4 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 1 | 6 | 15 | 12 | 4 | 0 | 38 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 0

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - NEUTRAL (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 6 | 24 | 12 | 0 | 0 | 42 |
| NNE | 0 | 9 | 5 | 7 | 0 | 0 | 21 |
| NE | 0 | 11 | 6 | 6 | 0 | 0 | 23 |
| ENE | 0 | 8 | 10 | 0 | 0 | 0 | 18 |
| E | 0 | 1 | 7 | 2 | 2 | 0 | 12 |
| ESE | 0 | 3 | 9 | 6 | 0 | 0 | 18 |
| SE | 0 | 1 | 9 | 10 | 5 | 1 | 26 |
| SSE | 0 | 4 | 12 | 17 | 2 | 1 | 36 |
| S | 0 | 18 | 24 | 8 | 2 | 1 | 53 |
| SSW | 0 | 6 | 25 | 20 | 4 | 0 | 55 |
| SW | 1 | 29 | 24 | 16 | 1 | 1 | 72 |
| WSW | 3 | 11 | 19 | 9 | 4 | 1 | 47 |
| W | 1 | 21 | 52 | 51 | 21 | 1 | 147 |
| WNW | 1 | 7 | 27 | 33 | 17 | 16 | 101 |
| NW | 2 | 4 | 20 | 21 | 3 | 0 | 50 |
| NNW | 1 | 13 | 42 | 35 | 2 | 0 | 93 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 9 | 152 | 315 | 253 | 63 | 22 | 814 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 1

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - SLIGHTLY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 2 | 7 | 1 | 1 | 1 | 0 | 12 |
| NNE | 4 | 4 | 1 | 3 | 0 | 0 | 12 |
| NE | 0 | 3 | 0 | 0 | 0 | 0 | 3 |
| ENE | 1 | 11 | 1 | 0 | 0 | 0 | 13 |
| E | 0 | 7 | 8 | 0 | 0 | 0 | 15 |
| ESE | 4 | 16 | 22 | 8 | 2 | 0 | 52 |
| SE | 2 | 10 | 19 | 14 | 9 | 1 | 55 |
| SSE | 1 | 21 | 4 | 26 | 13 | 2 | 67 |
| S | 0 | 27 | 14 | 22 | 6 | 1 | 70 |
| SSW | 1 | 30 | 17 | 19 | 7 | 0 | 74 |
| SW | 4 | 14 | 19 | 11 | 2 | 0 | 50 |
| WSW | 3 | 10 | 10 | 7 | 2 | 0 | 32 |
| W | 3 | 28 | 53 | 51 | 13 | 2 | 150 |
| WNW | 1 | 15 | 92 | 59 | 8 | 3 | 178 |
| NW | 5 | 12 | 21 | 30 | 8 | 0 | 76 |
| NNW | 3 | 19 | 13 | 7 | 0 | 0 | 42 |
| VARIABLE | 7 | 0 | 0 | 0 | 0 | 0 | 7 |
| TOTAL | 41 | 234 | 295 | 258 | 71 | 9 | 908 |

HOURS OF CALM IN THIS STABILITY CLASS - 1
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 2

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - MODERATELY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 3 | 0 | 0 | 0 | 0 | 3 |
| NNE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| NE | 1 | 1 | 1 | 0 | 0 | 0 | 3 |
| ENE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| E | 0 | 0 | 3 | 0 | 0 | 0 | 3 |
| ESE | 0 | 4 | 9 | 0 | 0 | 0 | 13 |
| SE | 2 | 3 | 6 | 0 | 0 | 0 | 11 |
| SSE | 3 | 12 | 5 | 0 | 0 | 0 | 20 |
| S | 2 | 10 | 9 | 2 | 0 | 0 | 23 |
| SSW | 1 | 16 | 2 | 1 | 1 | 0 | 21 |
| SW | 3 | 17 | 4 | 0 | 0 | 0 | 24 |
| WSW | 3 | 16 | 0 | 0 | 0 | 0 | 19 |
| W | 3 | 17 | 6 | 0 | 0 | 0 | 26 |
| WNW | 1 | 16 | 11 | 0 | 0 | 0 | 28 |
| NW | 2 | 6 | 1 | 0 | 0 | 0 | 9 |
| NNW | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| VARIABLE | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| TOTAL | 27 | 125 | 57 | 3 | 1 | 0 | 213 |

HOURS OF CALM IN THIS STABILITY CLASS - 1
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 0

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - JANUARY-MARCH 1977
STABILITY CLASS - EXTREMELY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| SE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSW | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| SW | 3 | 9 | 0 | 0 | 0 | 0 | 12 |
| WSW | 2 | 3 | 0 | 0 | 0 | 0 | 5 |
| W | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| WNW | 1 | 5 | 0 | 0 | 0 | 0 | 6 |
| NW | 0 | 7 | 0 | 0 | 0 | 0 | 7 |
| NNW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VARIABLE | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| TOTAL | 12 | 29 | 1 | 0 | 0 | 0 | 42 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 0

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 71

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - EXTREMELY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 4 | 4 | 0 | 0 | 8 |
| NNE | 0 | 2 | 3 | 2 | 0 | 0 | 7 |
| NE | 0 | 2 | 9 | 1 | 0 | 0 | 12 |
| ENE | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| E | 0 | 3 | 7 | 0 | 0 | 0 | 10 |
| ESE | 0 | 1 | 2 | 0 | 0 | 0 | 3 |
| SE | 0 | 1 | 1 | 1 | 0 | 0 | 3 |
| SSE | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SW | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| WSW | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| W | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WNW | 0 | 0 | 2 | 3 | 0 | 0 | 5 |
| NW | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| NNW | 0 | 1 | 2 | 3 | 0 | 0 | 6 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 10 | 33 | 20 | 0 | 0 | 63 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 7

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - MODERATELY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 2 | 1 | 0 | 0 | 3 |
| NNE | 0 | 1 | 1 | 1 | 0 | 0 | 3 |
| NE | 0 | 1 | 3 | 1 | 0 | 0 | 5 |
| ENE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| E | 0 | 0 | 3 | 1 | 0 | 0 | 4 |
| ESE | 0 | 1 | 2 | 0 | 0 | 0 | 3 |
| SE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| SSE | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| S | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| SSW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SW | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| WSW | 0 | 0 | 0 | 1 | 2 | 1 | 4 |
| W | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WNW | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| NW | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| NNW | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| VARIABLE | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 1 | 7 | 14 | 7 | 2 | 1 | 32 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 4

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - SLIGHTLY UNSTABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 1 | 1 | 1 | 0 | 0 | 3 |
| ENE | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| SE | 0 | 1 | 2 | 0 | 0 | 0 | 3 |
| SSE | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| S | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| SSW | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| SW | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| WSW | 0 | 0 | 3 | 1 | 1 | 0 | 5 |
| W | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| WNW | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| NW | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| NNW | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VARIABLE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 1 | 8 | 9 | 8 | 1 | 0 | 27 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 5

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - NEUTRAL (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 1 | 1 | 5 | 3 | 0 | 0 | 10 |
| NNE | 1 | 11 | 23 | 4 | 0 | 0 | 39 |
| NE | 0 | 6 | 20 | 2 | 0 | 0 | 28 |
| ENE | 2 | 16 | 9 | 0 | 0 | 0 | 27 |
| E | 2 | 8 | 10 | 0 | 0 | 0 | 20 |
| ESE | 2 | 9 | 8 | 0 | 0 | 0 | 19 |
| SE | 2 | 26 | 17 | 2 | 1 | 0 | 48 |
| SSE | 0 | 22 | 15 | 14 | 0 | 0 | 51 |
| S | 1 | 10 | 9 | 7 | 0 | 0 | 27 |
| SSW | 1 | 11 | 7 | 3 | 0 | 0 | 22 |
| SW | 3 | 7 | 7 | 6 | 4 | 4 | 31 |
| WSW | 4 | 17 | 38 | 8 | 14 | 1 | 82 |
| W | 0 | 21 | 17 | 11 | 3 | 2 | 54 |
| WNW | 0 | 7 | 12 | 9 | 4 | 3 | 35 |
| NW | 1 | 8 | 5 | 4 | 13 | 0 | 31 |
| NNW | 0 | 2 | 2 | 7 | 1 | 0 | 12 |
| VARIABLE | 5 | 0 | 0 | 0 | 0 | 0 | 5 |
| TOTAL | 25 | 182 | 204 | 80 | 40 | 10 | 541 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 36

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - SLIGHTLY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 0 | 9 | 8 | 2 | 0 | 0 | 19 |
| NNE | 2 | 17 | 22 | 2 | 0 | 0 | 43 |
| NE | 0 | 56 | 18 | 4 | 0 | 0 | 78 |
| ENE | 5 | 62 | 49 | 1 | 0 | 0 | 117 |
| E | 5 | 46 | 18 | 1 | 0 | 0 | 70 |
| ESE | 2 | 43 | 22 | 1 | 0 | 0 | 68 |
| SE | 2 | 20 | 13 | 3 | 0 | 0 | 38 |
| SSE | 2 | 36 | 35 | 19 | 1 | 0 | 93 |
| S | 5 | 29 | 18 | 26 | 4 | 0 | 82 |
| SSW | 4 | 16 | 15 | 13 | 4 | 0 | 52 |
| SW | 4 | 16 | 11 | 19 | 4 | 0 | 54 |
| WSW | 1 | 11 | 14 | 7 | 3 | 0 | 36 |
| W | 2 | 14 | 14 | 21 | 9 | 2 | 62 |
| WNW | 0 | 5 | 15 | 13 | 9 | 0 | 42 |
| NW | 0 | 4 | 3 | 5 | 3 | 0 | 15 |
| NNW | 1 | 6 | 18 | 7 | 1 | 0 | 33 |
| VARIABLE | 11 | 0 | 0 | 0 | 0 | 0 | 11 |
| TOTAL | 46 | 390 | 293 | 144 | 38 | 2 | 913 |

HOURS OF CALM IN THIS STABILITY CLASS - 4
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 64

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - MODERATELY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 4 | 4 | 0 | 0 | 0 | 0 | 8 |
| NNE | 3 | 4 | 0 | 0 | 0 | 0 | 7 |
| NE | 2 | 4 | 1 | 0 | 0 | 0 | 7 |
| ENE | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| E | 1 | 4 | 1 | 0 | 0 | 0 | 6 |
| ESE | 1 | 37 | 0 | 0 | 0 | 0 | 38 |
| SE | 2 | 23 | 2 | 0 | 0 | 0 | 27 |
| SSE | 1 | 18 | 1 | 0 | 1 | 0 | 21 |
| S | 4 | 21 | 16 | 3 | 0 | 0 | 44 |
| SSW | 5 | 21 | 9 | 2 | 0 | 0 | 37 |
| SW | 4 | 22 | 10 | 2 | 0 | 0 | 38 |
| WSW | 3 | 18 | 5 | 5 | 0 | 0 | 31 |
| W | 3 | 19 | 6 | 0 | 0 | 0 | 28 |
| WNW | 2 | 10 | 3 | 0 | 0 | 0 | 15 |
| NW | 3 | 5 | 1 | 0 | 0 | 0 | 9 |
| NNW | 4 | 4 | 1 | 0 | 0 | 0 | 9 |
| VARIABLE | 6 | 0 | 0 | 0 | 0 | 0 | 6 |
| TOTAL | 49 | 215 | 56 | 12 | 1 | 0 | 333 |

HOURS OF CALM IN THIS STABILITY CLASS - 1
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 25

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

POOR ORIGINAL

DRESDEN NUCLEAR POWER STATION
PERIOD OF RECORD - APRIL-JUNE 1977
STABILITY CLASS - EXTREMELY STABLE (DELTA T 150-35 FT)
WINDS MEASURED AT 35 FEET

| WIND DIRECTION | WIND SPEED (IN MPH) 1- 3 | 4- 7 | 8-12 | 13-18 | 19-24 | GT 24 | TOTAL |
|---|---|---|---|---|---|---|---|
| N | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESE | 1 | 20 | 0 | 0 | 0 | 0 | 21 |
| SE | 0 | 5 | 0 | 0 | 0 | 0 | 5 |
| SSE | 2 | 1 | 1 | 0 | 0 | 0 | 4 |
| S | 1 | 3 | 0 | 0 | 0 | 0 | 4 |
| SSW | 3 | 12 | 3 | 0 | 0 | 0 | 18 |
| SW | 3 | 23 | 4 | 0 | 0 | 0 | 30 |
| WSW | 2 | 15 | 2 | 0 | 0 | 0 | 19 |
| W | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| WNW | 1 | 2 | 0 | 0 | 0 | 0 | 3 |
| NW | 2 | 2 | 0 | 0 | 0 | 0 | 4 |
| NNW | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| VARIABLE | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| TOTAL | 23 | 88 | 10 | 0 | 0 | 0 | 121 |

HOURS OF CALM IN THIS STABILITY CLASS - 0
HOURS OF MISSING WIND MEASUREMENTS IN THIS STABILITY CLASS - 8

HOURS OF MISSING STABILITY MEASUREMENTS IN ALL STABILITY CLASSES - 0

APPENDIX III

ERRATA

Section 9.1

January - June 1976 Report

Table 5.0-1

| | Change | |
|---|---|---|
| | From | To |
| Airborne Particulates | 4110 | 411 |
| Airborne Iodine | 1360 | 136 |

Table 5.3-6 is replaced by the enclosed revised Table 5.3-6

Table 5.4-1 is replaced by the enclosed revised Table 5.4-1

TABLE 5.3-6

RADIONUCLIDES IN AQUATIC PLANTS

| Collection Site | Collection Date | Wt. Ratio Wet - Dry | pCi/gm (Dry) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Gross Beta | Cs-134 | Cs-137 | Co-60 | I-131 | Sr-89 | Sr-90 |
| Inlet Canal (D-19) | 06/06/76 | 8.2 | 15 ± 2 | <1 | <1 | <1 | <1 | < 2 | < 1 |
| Discharge Canal* (D-20-1) Discharge Canal* (D-20-2/3) | 06/06/76 | 6.2 | 27 ± 2 | <1 | <1 | <1 | <1 | < 2 | < 1 |

* Run as a composite due to misunderstanding.

TABLE 5.4-1

IODINE-131 IN MILK

| Collection Date | pCi/l at time of collection | | |
|---|---|---|---|
| | Davidson Farm D-30 DA | Phillips Farm∆ D-48 PH | Mather Farm D-53 MF |
| 01/03/76 | < 4 | < 4 | < 4 |
| 01/10/76 | < 4 | < 4 | < 4 |
| 01/17/76 | < 4 | < 4 | < 4 |
| 01/24/76 | < 4 | < 4 | < 4 |
| 01/31/76 | < 4 | < 4 | < 4 |
| 02/07/76 | < 4 | < 4 | < 4 |
| 02/14/76 | < 4 | < 4 | < 4 |
| 02/22/76 | < 4 | < 4 | < 4 |
| 02/28/76 | < 4 | < 4 | < 4 |
| 03/06/76 | < 4 | < 4 | < 4 |
| 03/13/76 | < 4 | < 4 | < 4 |
| 03/20/76 | < 4 | < 4 | < 4 |
| 03/27/76 | < 4 | < 4 | < 4 |
| 04/03/76 | < 0.5 | < 0.5 | < 0.5 |
| 04/10/76 | < 0.5 | < 0.5 | < 0.5 |
| 04/17/76 | < 0.5 | < 0.5 | < 0.5 |
| 04/24/76 | < 0.5 | < 0.5 | < 0.5 |
| 05/03/76 | < 0.5 | < 0.5 | < 0.5 |
| 05/08/76 | < 0.5 | < 0.5 | < 0.5 |
| 05/15/76 | < 0.5 | < 0.5 | < 0.5 |
| 05/22/76 | < 0.5 | < 0.5 | < 0.5 |
| 05/29/76 | < 1.07(a) | < 0.59(a) | < 0.5 |
| 06/05/76 | < 0.5 | < 0.5 | < 0.5 |
| 06/12/76 | < 0.5 | < 0.5 | < 0.5 |
| 06/19/76 | < 0.5 | < 0.5 | < 0.5 |
| 06/26/76 | < 0.5 | < 0.5 | < 0.5 |

∆ As of 04/11/76, samples collected from the Dorin Farm (D-59)

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

(a) Low sensitivity due to low chemical yields.

ERRATA

Section 9.2

July - December 1976 Report

Table 5.1-1 (Page 44) - Change footnote (a) to read "Unusual reading due to direct radiation from the turbine and exposure to airborne noble gases."

Change footnote (b) to read "Unusual reading possibly due to exposure to airborne noble gases."

Table 5.3-3A (Page 65A) - Insert data (see attached)

Tables 1.2-1, 1.2-2, 1.1-2(Cont'd) and 2.0-1 - Are revised per the attached.

TABLE 5.3-3A

GROSS BETA AND TRITIUM ANALYSIS

OF SURFACE WATER

| D-33 | Goose Lake, Corp of Engineers Pumping Station | |
|---|---|---|
| Collection | pCi/l | |
| Date | Gross Beta | Tritium |
| 1st Qtr/76 | 3 ± 2 | 400 ± 230 |
| 2nd Qtr/76 | 6 ± 1 | < 240* |
| 3rd Qtr/76 | 5 ± 3 | 290 ± 100 |
| 4th Qtr/76 | 14 ± 2 | 240 ± 100 |

*Insufficient sample remaining for more sensitive analysis.

Data reported as "<" are at the 99% confidence level. All other data are at the 95% confidence level, all based on counting errors.

DRESDEN NUCLEAR POWER STATION
RADIOACTIVE WASTE, ENVIRONMENTAL MONITORING AND
OCCUPATIONAL PERSONNEL RADIATION EXPOSURE

JULY THROUGH DECEMBER, 1976

DOCKET NO. 50-10, 50-237, 50-249

TABLE 1.2-1

REPORT OF RADIOACTIVE EFFLUENTS

II. Liquid Effluents (Unit 1)

| 1. Gross Radioactivity ( ) | July | Aug | Sept | Oct | Nov | Dec | 6 Mo total |
|---|---|---|---|---|---|---|---|
| d) Percent of T.S. Limit Based on Avg Conc. Released | 0.6 | 0.7 | 1.4 | 2.6 | 1.4 | 0.5 | 1.2 |

TABLE 1.2-2

II Liquid Effluents (Units 2/3)

| 1. Gross Radioactivity ( ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| d) Percent of T.S. Limit Based on Avg Conc. Released | 0.03 | NO | DISCHARGE | | 1.8 | 0.06 | 0.3 |

TABLE 1.1-2 (Cont'd)

I. Gaseous Effluents (Units 2/3)

| 7. Gaseous Tritium | | | | | | | |
|---|---|---|---|---|---|---|---|
| a) Release (Curies) | 9.1E00 | 8.9E00 | 4.0E01 | 1.1E01 | 1.3E-02 | 1.3E01 | 8.2E01 |

TABLE 2.0-1

I. Solid Waste Shipped Offsite for Burial or Disposal

| 1) Spent Resins, Sludges, Evap. Bottoms | | | | | | | |
|---|---|---|---|---|---|---|---|
| b) Radioactivity (Curies) | * | * | * | * | * | 4.7E02 | * |

* NO CHANGE

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TABLE 2.0-1

| 2) Dry Compressible Waste | July | Aug | Sept | Oct | Nov | Dec | 6 Mo Total |
|---|---|---|---|---|---|---|---|
| a) Quantity Shipped (Cubic Meters) | * | * | * | * | * | 4.1E01 | 4.4E02 |

* NO CHANGE