

NINE MILE POINT NUCLEAR STATION - UNIT 2

SEMI-ANNUAL RADIOACTIVE EFFLUENT

RELEASE REPORT

JANUARY - JUNE 1990

DOCKET NO.: 50-410

LICENSE NO.: NPF-69

NIAGARA MOHAWK POWER CORPORATION

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SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY - JUNE 1990

Facility: Nine Mile Point Unit #2

Licensee: Niagara Mohawk Power Corporation

1. Technical Specification Limits:

A) Fission and activation gases:

1. The dose rate limit of noble gases from the site to areas at or beyond the site boundary shall be less than or equal to 500 mrem/year to the whole body and less than or equal to 3000 mrem/year to the skin.
2. The air dose from noble gases released in gaseous effluents from the Nine Mile Point 2 Station to areas at or beyond the site boundary shall be limited during any calendar quarter to less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation and, during any calendar year to less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

B&C) Tritium, Iodines and Particulates, half lives > 8 days:

1. The dose rate limit of Iodine-131, Iodine-133, Tritium and all radionuclides in particulate form with half-lives greater than eight days, released gaseous effluents from the site to areas at or beyond the site boundary, shall be less than or equal to 1500 mrem/year to any organ.
2. The dose to a member of the public from Iodine-131, Iodine-133, Tritium and all radionuclides in particulate form with half lives greater than 8 days as part of gaseous effluents released from the Nine Mile Point 2 Station to areas at or beyond the site boundary shall be limited during any calendar quarter to less than or equal to 7.5 mrem to any organ and, during any calendar year to less than or equal to 15 mrem to any organ.

D) Liquid Effluents

1. The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to $2E-04$ microcuries/ml total activity.



D. Liquid Effluents (Cont'd)

2. The dose or dose commitment to a member of the public from radioactive materials in liquid effluents released from Nine Mile Point Unit 2 to unrestricted areas shall be limited during any calendar quarter to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ, and during any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

2. Maximum Permissible Concentrations

A) Fission and activation gases:

None specified

B&C) Iodines and particulates, half lives > 8 days:

None specified

D) Liquid Effluents:

10CFR 20, Appendix B, Table II, Column 2.

Avg MPC (Jan. - March) = 1.83E-03

Avg MPC (April - June) = 2.56E-03

3. Average Energy (Fission and Activation gases - Mev)

Jan. - March: $\bar{E}_\beta = 0.608$; $\bar{E}_\gamma = 1.11$

Apr. - June: $\bar{E}_\beta = 0.799$; $\bar{E}_\gamma = 1.21$

4. Measurements and Approximations of Total Radioactivity

Described below are the normal methods used to measure or approximate the total radioactivity and radionuclide composition in effluents.

- A) Fission and Activation Gases: Noble gas effluent activity is determined by on-line gamma spectroscopic monitoring (intrinsic germanium crystal) of an isokinetic sample stream.
- B) Iodines: Iodine effluent activity is determined by gamma spectroscopic analysis (at least weekly) of charcoal cartridges sampled from an isokinetic sample stream.
- C) Particulates: Activity released is determined by gamma spectroscopic analysis (at least weekly) of particulate filters sampled from an isokinetic sample stream.

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4. (Cont'd)

- D) Tritium: Tritium effluent activity is measured by liquid scintillation or gas proportional counting of monthly samples taken with an air sparging/water trap apparatus.
- E) Liquid Effluents: Isotopic Analysis of a representative sample of each batch.
- F) Solid Effluents: Isotopic contents of waste shipments are determined by gamma spectroscopy analyses and water content estimates of a representative sample of each batch. Scaling factors established from primary composite sample analyses conducted off-site are applied, where appropriate, to find estimated concentration of non-gamma emitters. For low activity trash shipments, curie content is estimated by dose rate measurement and application of appropriate scaling factors.

5. Batch Releases

The following information relates to batch releases of radioactive materials in liquid and gaseous effluents.

A) Liquid -

- 1. Number of batch releases: 24
- 2. Total time period for batch releases: 81 hours 25 min.
- 3. Maximum time period for a batch release: 3 hours 28 min.
- 4. Average time period for a batch release: 3 hours 24 min.
- 5. Minimum time period for a batch release: 3 hours 17 min.
- 6. Average stream flow during period of release of effluent into a flowing stream: Not Applicable
- 7. Total volume of water used to dilute the liquid effluent during release periods : 4.46 E+08 liters
- 8. Total volume of water available to dilute the liquid effluent during reporting period : 2.16 E+10 liters

B) Gaseous (Primary Containment Purge)*

- 1. Number of batch releases: 12
- 2. Total time period for batch releases: 121 hours 52 min.
- 3. Maximum time period for a batch release: 12 hours 30 min.
- 4. Average time period for a batch release: 12 hours
- 5. Minimum time period for a batch release: 11 hours 26 min.

6. Abnormal Releases

- A. Liquids - none
- B. Gaseous - none

* Actual purge times are less than shown. The times presented are the sampling times, and represent a conservative approximation to actual purge times, (approximately 12 hours per purge).

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TABLE 1A

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
ELEVATED AND GROUND LEVEL

JANUARY - JUNE 1990

| | <u>UNIT</u> | <u>1st
QUARTER</u> | <u>2nd
QUARTER</u> | <u>EST. TOTAL
ERROR, %</u> |
|--|-------------|------------------------|------------------------|--------------------------------|
| A. <u>Fission & Activation gases</u> | | | | |
| 1. Total release | Ci | 2.01E+01 | 1.40E+02 | 5.0E+01 |
| 2. Average release rate
for period | uCi/sec | 2.59E+00 | 1.80E+01 | |
| 3. Percent of Technical
Specification Limit | % | * | * | |
| B. <u>Iodines</u> | | | | |
| 1. Total iodine | Ci | 8.95E-04 | 3.10E-03 | 5.0E+01 |
| 2. Average release rate
for period | uCi/sec | 1.15E-04 | 3.95E-04 | |
| 3. Percent of Technical
Specification Limit | % | * | * | |
| C. <u>Particulates #</u> | | | | |
| 1. Particulates with half-
lives > 8 days | Ci | 9.48E-04 | 1.07E-03 | 5.0E+01 |
| 2. Average release rate
for period | uCi/sec | 1.22E-04 | 1.36E-04 | |
| 3. Percent of Technical
Specification Limit | % | * | * | |
| 4. Gross alpha radio-
activity | Ci | 5.72E-06 | 1.31E-05 | 5.0E+01 |
| D. <u>Tritium</u> | | | | |
| 1. Total release | Ci | 2.53E+00 | 4.84E+00 | 5.0E+01 |
| 2. Average release rate
for period | uCi/sec | 3.25E-01 | 6.16E-01 | |
| 3. Percent of Technical
Specification Limit | % | * | * | |

Include Mo-99 also

* Refer to Section E on next page

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TABLE 1A
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES
ELEVATED AND GROUND LEVEL

JANUARY - JUNE 1990

| | <u>UNIT</u> | <u>1st</u>
<u>QUARTER</u> | <u>2nd</u>
<u>QUARTER</u> |
|---|-------------|------------------------------|------------------------------|
| <u>E. Percent of Technical Specification Limits</u> | | | |
| <u>Fission and Activation Gases:</u> | | | |
| 1. Percent of Quarterly | | | |
| Gamma Air Dose Limit | % | 1.80E-01 | 1.22E+00 |
| 2. Percent of Quarterly | | | |
| Beta Air Dose Limit | % | 1.30E-03 | 1.19E-02 |
| 3. Percent of Annual Gamma | | | |
| Air Dose Limit to Date | % | 9.01E-02 | 6.98E-01 |
| 4. Percent of Annual Beta | | | |
| Air Dose Limit to Date | % | 6.50E-04 | 6.60E-03 |
| 5. Percent of Whole Body | | | |
| Dose Rate Limit | % | 6.98E-03 | 4.66E-02 |
| 6. Percent of Skin Dose | | | |
| Rate Limit | % | 1.36E-03 | 9.10E-03 |
| <u>Tritium, Iodines and Particulates (with half-lives greater than 8 days):</u> | | | |
| 1. Percent of Quarterly | | | |
| Dose Limit | % | 4.76E-03 | 2.84E-02 |
| 2. Percent of Annual Dose | | | |
| Limit to Date | % | 2.38E-03 | 1.66E-02 |
| 3. Percent of Organ Dose | | | |
| Rate Limit | % | 1.94E-04 | 1.16E-03 |

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TABLE 1B

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
GASEOUS EFFLUENTS-ELEVATED (STACK)

JANUARY - JUNE 1990

| Nuclides Released | Unit | CONTINUOUS MODE | | BATCH MODE | |
|-------------------------|------|-----------------|-------------|-------------|-------------|
| | | 1st Quarter | 2nd Quarter | 1st Quarter | 2nd Quarter |
| 1. <u>Fission Gases</u> | | | | | |
| Argon-41 | Ci | 6.55E+00 | 5.25E+00 | ** | ** |
| Krypton-85m | Ci | 2.25E+00 | 2.53E+00 | ** | ** |
| Krypton-87 | Ci | ** | 2.08E+00 | ** | ** |
| Krypton-88 | Ci | 4.86E+00 | 6.56E+01 | ** | ** |
| Xenon-133 | Ci | 1.09E-05 | 1.57E-06 | ** | ** |
| Xenon-135 | Ci | ** | 8.65E-01 | ** | ** |
| Xenon-135m | Ci | 3.82E-01 | 3.38E+00 | 2.44E-01 | ** |
| Xenon-137 | Ci | 2.90E+00 | 3.91E+01 | ** | ** |
| Xenon-138 | Ci | 1.95E+00 | 2.11E+01 | 9.12E-01 | ** |
| 2. <u>Iodines</u> | | | | | |
| Iodine-131 | Ci | 4.93E-05 | 3.22E-04 | ** | ** |
| Iodine-133 | Ci | 8.46E-04 | 2.78E-03 | ** | ** |
| Iodine-135 | Ci | ** | ** | ** | ** |
| 3. <u>Particulates</u> | | | | | |
| Strontium-89 | Ci | 4.06E-05 | # | ** | ** |
| Strontium-90 | Ci | ** | # | ** | ** |
| Strontium-91 | Ci | ** | ** | ** | ** |
| Cesium-134 | Ci | ** | ** | ** | ** |
| Cesium-137 | Ci | ** | ** | ** | ** |
| Cobalt-60 | Ci | 3.61E-06 | 2.42E-06 | ** | ** |
| Cobalt-58 | Ci | ** | ** | ** | ** |
| Manganese-54 | Ci | 8.60E-07 | 6.80E-07 | ** | ** |
| Barium-Lanthanum-140 | Ci | ** | ** | ** | ** |
| Antimony-125 | Ci | ** | ** | ** | ** |
| Niobium-95 | Ci | ** | ** | ** | ** |
| Cerium-141 | Ci | ** | ** | ** | ** |
| Cerium-144 | Ci | ** | ** | ** | ** |
| Iron-59 | Ci | ** | ** | ** | ** |
| Cesium-136 | Ci | ** | ** | ** | ** |
| Chromium-51 | Ci | ** | 2.94E-05 | ** | ** |
| Zinc-65 | Ci | ** | 2.20E-06 | ** | ** |
| Iron-55 | Ci | 3.22E-05 | # | ** | ** |
| Molybdenum-99 | Ci | 4.10E-06 | 2.33E-05 | ** | ** |
| 4. <u>Tritium</u> | | | | | |
| | Ci | 1.22E+00 | 3.50E+00 | 1.07E-02 | 5.39E-02 |

** Less than sensitivity of 1.00E-04 uCi/ml for noble gases, 1.00E-12 uCi/ml for iodines, 1.00E-11 uCi/ml for particulates and 1.00E-06 uCi/ml for tritium as applicable in Technical Specifications.

Results were not received from offsite vendor as of August 15, 1990. They will be included in the next Semi-Annual Report.

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TABLE 1C

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
GASEOUS EFFLUENTS-COMBINED GROUND LEVEL-ELEVATED (REACTOR BUILDING VENT)

JANUARY - JUNE 1990

| Nuclides Released | Unit | CONTINUOUS MODE | | BATCH MODE | |
|-------------------------|------|--------------------|--------------------|--------------------|--------------------|
| | | <u>1st Quarter</u> | <u>2nd Quarter</u> | <u>1st Quarter</u> | <u>2nd Quarter</u> |
| 1. <u>Fission Gases</u> | | | | | |
| Argon-41 | Ci | ** | ** | | |
| Krypton-85 | Ci | 4.25E-04 | ** | | |
| Krypton-85m | Ci | ** | ** | | |
| Krypton-87 | Ci | ** | ** | | |
| Krypton-88 | Ci | 7.74E-06 | ** | | |
| Xenon-133 | Ci | ** | ** | | |
| Xenon-135 | Ci | ** | ** | | |
| Xenon-135m | Ci | ** | ** | | |
| Xenon-137 | Ci | ** | ** | | |
| Xenon-138 | Ci | ** | ** | | |
| 2. <u>Iodines</u> | | | | | |
| Iodine-131 | Ci | 6.50E-07 | ** | | |
| Iodine-133 | Ci | ** | ** | | |
| Iodine-135 | Ci | ** | ** | | |
| 3. <u>Particulates</u> | | | | | |
| | | | | No batch releases | |
| Strontium-89 | Ci | ** | ** | | |
| Strontium-90 | Ci | ** | ** | | |
| Cesium-134 | Ci | ** | ** | | |
| Cesium-137 | Ci | ** | ** | | |
| Cobalt-60 | Ci | 1.68E-05 | 3.50E-05 | | |
| Cobalt-58 | Ci | ** | 2.85E-06 | | |
| Manganese-54 | Ci | 1.16E-06 | 1.83E-05 | | |
| Barium-Lanthanum-140 | Ci | ** | ** | | |
| Antimony-125 | Ci | ** | ** | | |
| Niobium-95 | Ci | ** | ** | | |
| Cerium-141 | Ci | ** | ** | | |
| Cerium-144 | Ci | ** | ** | | |
| Iron-59 | Ci | ** | ** | | |
| Cesium-136 | Ci | ** | ** | | |
| Chromium-51 | Ci | 7.14E-04 | 8.39E-04 | | |
| Zinc-65 | Ci | 3.10E-06 | 2.80E-05 | | |
| Iron-55 | Ci | 2.49E-05 | ** | | |
| Molybdenum-99 | Ci | 1.07E-04 | 8.62E-05 | | |
| 4. <u>Tritium</u> | | | | | |
| | Ci | 1.30E+00 | 1.34E+00 | | |

** Less than the sensitivity of 1.00E-04 uCi/ml for noble gases, 1.00E-12 uCi/ml for iodines, 1.00E-11 uCi/ml for particulates and 1.00E-06 uCi/ml for tritium as applicable in Technical Specifications.

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TABLE 2A

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

JANUARY - JUNE

| | <u>Unit</u> | <u>1st
Quarter</u> | <u>2nd
Quarter</u> | <u>Est. Total
Error, %</u> |
|---|-------------|------------------------|------------------------|--------------------------------|
| A. <u>Fission and activation products</u> | | | | |
| 1. Total release (not including tritium, gases, alpha) | Ci | 2.29E-02 | 2.72E-03 | 2.50E+1 |
| 2. Average diluted concentration during reporting period | uCi/ml | 1.83E-09 | 2.98E-10 | |
| 3. Percent of applicable limit | % | 2.60E-03 | 1.54E-04 | |
| B. <u>Tritium</u> | | | | |
| 1. Total release | Ci | 1.47E+00 | 2.69E-01 | 2.50E+1 |
| 2. Average diluted concentration during reporting period | uCi/ml | 1.18E-07 | 2.96E-08 | |
| 3. Percent of applicable limit | % | 3.92E-03 | 9.85E-04 | |
| C. <u>Dissolved and entrained gases</u> | | | | |
| 1. Total release | Ci | 6.98E-05 | 1.52E-04 | 5.00E+1 |
| 2. Average diluted concentration during reporting period | uCi/ml | 5.58E-12 | 1.67E-11 | |
| 3. Percent of applicable limit | % | 2.79E-06 | 8.32E-06 | |
| D. <u>Gross alpha radioactivity</u> | | | | |
| 1. Total release | Ci | ** | ** | ----- |
| E. <u>Volumes</u> | | | | |
| 1. Prior to dilution | liters | 1.95E+06 | 2.69E+05 | 2.50E+1 |
| 2. Volume of dilution water used during release period | liters | 4.05E+08 | 4.07E+07 | 2.50E+1 |
| 3. Volume of dilution water available during reporting period | liters | 1.25E+10 | 9.11E+09 | 2.50E+1 |

** <1.00E-07 uCi/ml sensitivity for gross alpha radioactivity.

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TABLE 2A
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

JANUARY - JUNE 1990

| | <u>Unit</u> | <u>1st
Quarter</u> | <u>2nd
Quarter</u> |
|--|-------------|------------------------|------------------------|
| F. <u>Percent of Technical Specification Limits</u> | | | |
| 1. Percent of Quarterly
Whole Body Dose Limit | % | 7.50E-01 | 3.27E-02 |
| 2. Percent of Quarterly
Organ Dose Limit | % | 5.01E-01 | 2.16E-02 |
| 3. Percent of Annual Whole
Body Dose Limit to Date | % | 3.75E-01 | 3.91E-01 |
| 4. Percent of Annual Organ
Dose Limit to Date | % | 2.50E-01 | 2.61E-01 |
| 5. Percent of 10CFR20
Concentration Limit | % | 6.52E-03 | 1.14E-03 |
| 6. Percent of Dissolved or
Entrained Noble Gas
Limit | % | 2.79E-06 | 8.32E-06 |

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TABLE 2B

RADIOACTIVE EFFLUENT RELEASE SEMI-ANNUAL REPORT
NINE MILE POINT NUCLEAR STATION #2
LIQUID EFFLUENTS RELEASED

JANUARY - JUNE 1990

| | | CONTINUOUS MODE | | BATCH MODE | |
|----------------------|-------------|--------------------|--------------------|--------------------|--------------------|
| | <u>Unit</u> | <u>1st Quarter</u> | <u>2nd Quarter</u> | <u>1st Quarter</u> | <u>2nd Quarter</u> |
| Nuclides Released | | | | | |
| Strontium-89 | Ci | ** | ** | ** | # |
| Strontium-90 | Ci | ** | ** | ** | # |
| Cesium-134 | Ci | ** | ** | ** | ** |
| Cesium-137 | Ci | ** | ** | ** | ** |
| Iodine-131 | Ci | ** | ** | ** | ** |
| | | | | | |
| Cobalt-58 | Ci | ** | ** | 1.87E-03 | ** |
| Cobalt-60 | Ci | ** | ** | 4.78E-03 | 2.59E-04 |
| Iron-59 | Ci | ** | ** | 6.49E-04 | ** |
| Zinc-65 | CI | ** | ** | 1.01E-02 | 3.47E-04 |
| Manganese-54 | Ci | ** | ** | 2.99E-03 | 8.51E-05 |
| Chromium-51 | Ci | ** | ** | 2.47E-03 | 2.03E-03 |
| | | | | | |
| Zirconium-niobium-95 | Ci | ** | ** | ** | ** |
| Molybdenum-99 | Ci | ** | ** | 1.01E-05 | ** |
| Technetium-99m | Ci | ** | ** | 9.84E-06 | ** |
| Barium-lanthanum-140 | Ci | ** | ** | ** | ** |
| Cerium-141 | Ci | ** | ** | ** | ** |
| | | | | | |
| Hydrogen-3 | Ci | ** | ** | 1.47E+00 | 2.69E-01 |
| Sodium-24 | Ci | ** | ** | ** | ** |
| Iron-55 | Ci | ** | ** | ** | # |
| Manganese-56 | Ci | ** | ** | ** | ** |
| Nickel-65 | Ci | ** | ** | ** | ** |
| Arsenic-76 | Ci | ** | ** | ** | ** |
| Iodine-133 | Ci | ** | ** | ** | ** |
| Tungsten-187 | Ci | ** | ** | ** | ** |
| | | | | | |
| Xenon-133 | Ci | ** | ** | ** | 1.05E-04 |
| Xenon-135 | Ci | ** | ** | 6.98E-05 | 4.65E-05 |

** Less than sensitivity of 5.00E-07 uCi/ml for gamma emitting nuclides, 1.00E-05 uCi/ml for dissolved and entrained noble gases and tritium, 5.00E-08 uCi/ml for Sr89 and Sr90 and 1.00E-06 uCi/ml for Fe55 as applicable in Technical Specifications.

Results were not received from offsite vendor as of August 15, 1990. They will be included in the next Semi-Annual Report.

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TABLE 3A

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

JANUARY - JUNE 1990

A. Solid Waste Shipped Off-Site for Burial or Disposal (Not irradiated fuel)

| 1. | <u>Type of Waste</u> | <u>UNIT</u> | <u>6-MONTH PERIOD</u> | <u>EST. TOTAL
ERROR, %</u> |
|-----|---|----------------|-----------------------|--------------------------------|
| a.* | Spent resins, filter
sludge bottoms, etc. | m ³ | 1.70E+02 | |
| | | Ci | 6.19E+02 | 2.50E+01 |
| b. | Dry compressible
waste, contaminated
equip., etc. | m ³ | 2.80E+01 | |
| | | Ci | 2.09E-01 | 5.00E+01 |
| c. | Irradiated components,
control rods, etc. | m ³ | None | ----- |
| | | Ci | None | ----- |
| d. | Other | m ³ | 0.00E+00 | |
| | | Ci | 0.00E+00 | |

*All were solidified in cement as Class A waste in strong, tight containers. All were shipped as radioactive LSA.

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TABLE 3A
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

JANUARY - JUNE 1990

2. Estimate of Major Nuclide Composition (by Type of Waste)

a. Spent Resins, filter sludges, evaporator bottoms, etc.

| | <u>Percent</u> |
|--------------|----------------|
| Chromium-51 | 6.81E+01 |
| Zinc-65 | 1.97E+01 |
| Cobalt-60 | 4.43E+00 |
| Iron-55 | 2.56E+00 |
| Manganese-54 | 2.24E+00 |
| Cobalt-58 | 1.89E+00 |
| Others | 1.05E+00 |

b. Dry Compressible Waste, Contaminated Equip, Etc.

| | <u>Percent</u> |
|--------------|----------------|
| Zinc-65 | 6.69E+01 |
| Cobalt-60 | 1.56E+01 |
| Manganese-54 | 8.32E+00 |
| Chromium-51 | 2.78E+00 |
| Iron-55 | 1.94E+00 |
| Cobalt-58 | 1.73E+00 |
| Others | 2.73E+00 |

c. Irradiated components, control rods, etc.

NONE



TABLE 3A
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

JANUARY - JUNE 1990

3. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|-----------------------|
| 28 | Truck | Burial in Barnwell SC |

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

| <u>Number of Shipment</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|---------------------------|-------------------------------|--------------------|
| None | - | - |

C. SOLID WASTE SHIPPED OFFSITE TO VENDORS FOR PROCESSING AND SUBSEQUENT BURIAL

Below is a summary of Dry Activated Waste that was shipped offsite for processing and burial by vendor facilities (i.e., ALARON, QUADREX and SCIENTIFIC ECOLOGY GROUP) during July - December 1989. These totals were reported separately from "10CFR61 Solid Waste Shipped for Burial" (i.e., Section A of Table 3A) since (a) waste classification and burial was performed by the vendors and (b) NMP-2 Technical Specification 6.9.1 requires reporting of "information for each class of solid waste (as defined by 10CFR61) shipped offsite during the reporting period." The information provided in this section, therefore, is in addition to that required by the NMP-2 Technical Specifications.

The offsite data reported in the July - December 1989 semi-annual report was an estimate from Quadrex. The actual data arrived too late to include in the last semi-annual report. Therefore, the following data represents the actual shipments made from Quadrex of our non-compacted commingled trash. This trash was shipped to Quadrex, for processing prior to burial.

| | | | |
|--|----------------|----------------------|----------------------------|
| 1. <u>Type of Waste</u> - noncompacted commingled trash shipped to Oakridge, TN for processing prior to burial at Barnwell, SC | <u>Unit</u> | <u>Shipment 1989</u> | <u>Est. Total Error, %</u> |
| | m ³ | 8.20E+00 | . |
| | Ci | 1.12E-01 | 5.00E+01 |

2. Estimate of Major Nuclide Composition

| | <u>Percent</u> |
|--------------|----------------|
| Cobalt-58 | 3.25E+01 |
| Cobalt-60 | 2.96E+01 |
| Zinc-65 | 2.27E+01 |
| Manganese-54 | 8.29E+00 |
| Cesium-137 | 4.74E+00 |
| Iron-55 | 2.17E+00 |

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes the names of the members of the committee, the names of the members of the subcommittee, and the names of the members of the advisory committee. The addresses are listed in the same order as the names.

TABLE 3A
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

JANUARY - JUNE 1990

3. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|---|
| 22 | Truck | -Processing in
Oakridge, TN
-Burial in
Barnwell, SC. |

D. SEWAGE SLUDGE SENT TO A TREATMENT FACILITY CENTER FOR PROCESSING AND BURIAL

Below is a summary of the sewage sludge which was removed from the site sanitary treatment facility and transferred to a municipal sewage treatment facility for subsequent drying and disposal by landfill. This is a site release and, therefore, includes the results from Unit 1 activities, also.

1. Volume/Activity Summary

| | |
|----------------|----------|
| m ³ | 9.08E+00 |
| Curies | 9.02E-06 |

2. Estimate of Major Nuclide Composition

| | <u>Percent</u> |
|-----------|----------------|
| Cobalt-60 | 1.00E+02 |

3. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Destination</u> |
|----------------------------|--------------------|
| 1 | landfill |

TABLE 4

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
 NINE MILE POINT NUCLEAR STATION # 2
 RECENT CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

JANUARY - JUNE 1990

| <u>Chg. No.</u> | <u>U-2 ODCM Rev. 5
Section Changed</u> | <u>Description of Change
and Justification</u> | <u>Affect on Accuracy/Reliability
of Dose Calculations/Alarm
Setpoint Determination</u> |
|-----------------|--|--|---|
| 1 | P. 1, section 1.0 | Revised to include the normal process for licensee initiated ODCM changes per Technical Specifications | None |
| 2 | p. 2, section 2.1.2.1 | The text was reworded to use common terminology for clarification purposes. | None |
| 3 | p. 3, section 2.1.2.1 | Added the option of using a conservatively lower CR in calculating the monitor efficiency. This option was added so that established procedures can use conservative values of CR thereby preventing repeated changeouts of the monitor calibration/setpoints. | Improved reliability since monitor responds at a more conservative setpoint. |
| 4 | p. 3, section 2.1.2.1 | Added the definition RDF for clarification purposes. | None |

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SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
 NINE MILE POINT NUCLEAR STATION # 2
 RECENT CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

JANUARY - JUNE 1990
 (Continued)

| <u>Chg. No.</u> | <u>U-2 ODCM Rev. 5
Section Changed</u> | <u>Description of Change
and Justification</u> | <u>Affect on Accuracy/Reliability
of Dose Calculations/Alarm
Setpoint Determination</u> |
|-----------------|--|---|---|
| 5 | p. 3, section 2.1.2.1 | For clarification purposes added text "...prior to alarm and termination of release", and also a reference to an alert alarm. | None |
| 6 | p. 5, section 2.1.2.3 | Change text to read "potential contaminant" instead of "concentration in radwaste tank prior to dilution" to more accurately describe the variable as it is used in the equation. | None |
| 7 | p. 6, section 2.1.3.1 | Inserted the word "gamma" since equipment is only sensitive to gamma radiation. | None |
| 8 | p. 6, section 2.1.3.1 | Deleted text since we are operational to produce sufficient activity. | None |
| 9 | p. 6, section 2.1.3.1 | Deleted word initially. | None |
| 10 | p. 6, section 2.1.3.1 | Deleted spent fuel pool analysis capability for tritium, since we do not use this option. | None |



SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION # 2
RECENT CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

JANUARY - JUNE 1990
(Continued)

| <u>Chg. No.</u> | <u>U-2 ODCM Rev. 5
Section Changed</u> | <u>Description of Change
and Justification</u> | <u>Affect on Accuracy/Reliability
of Dose Calculations/Alarm
Setpoint Determination</u> |
|-----------------|--|--|---|
| 11 | p. 7, section 2.1.3.1 | Revised flow rate to correct misprint. | None |
| 12 | p. 7, section 2.1.3.1 | Deleted last paragraph since the assumptions used were overly conservative. | The change should not affect the accuracy/reliability of setpoint determination since the revised method will still ensure alarm response prior to exceeding canal MPC. |
| 13 | p. 8, section 2.1.3.1 | Corrected misprints. | None |
| 14 | p. 9, section 2.1.3.1 | Deleted last part of paragraph since the assumptions used were overly conservative. | The change should not affect the accuracy/reliability of setpoint determination since the revised method will still ensure alarm response prior to exceeding canal MPC. |
| 15 | p. 10, section 2.1.3.2 | Corrected flows to correct misprints. | None |
| 16 | p. 10, section 2.1.3.2 | Changed text to convey the use of reactor water each fuel cycle for detector response evaluation because the old wording was applicable prior to commercial operation. | None |



TABLE 4

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
 NINE MILE POINT NUCLEAR STATION # 2
 RECENT CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

JANUARY - JUNE 1990
 (Continued)

| <u>Chg. No.</u> | <u>U-2 ODCM Rev. 5
Section Changed</u> | <u>Description of Change
and Justification</u> | <u>Affect on Accuracy/Reliability
of Dose Calculations/Alarm
Setpoint Determination</u> |
|-----------------|--|--|---|
| 17 | p. 11, section 2.1.3.2 | Corrected roundoff
and misprint errors. | None |
| 18 | p. 16, section 2.5 | Deleted paragraph
concerning alert alarm
setpoint for the liquid
radwaste effluent alarm,
since it was placed in
the wrong section. It
is now described in
section 2.1.3.1. | |
| 19 | p. 16, section 2.5 | Deleted text reference
to adequate purge
volume and placed in
appropriate procedures. | None |
| 20 | p. 32, section 3.1.2.3 | The equation was
rewritten so that
alarm setpoint is in
proper units of
uCi/cc. | None |
| 21 | p. 33, section 3.1.3 | Included Nine Mile
Point Unit 1 and
Fitzpatrick plant
in notifications,
so as not to exceed
site limit. | None |



SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
 NINE MILE POINT NUCLEAR STATION # 2
 RECENT CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

JANUARY - JUNE 1990
 (Continued)

| <u>Chg. No.</u> | <u>U-2 ODCM Rev. 5
Section Changed</u> | <u>Description of Change
and Justification</u> | <u>Affect on Accuracy/Reliability
of Dose Calculations/Alarm
Setpoint Determination</u> |
|-----------------|--|--|---|
| 22 | p. 35, section 3.1.3.2 | Corrected typographical error. | None |
| 23 | P. 36, section 3.1.3.3 | In Rev. 4 of the U-2 ODCM, the previous method of calculating detector response was applicable prior to commercial operation. The new method is based on actual grab samples and uses a plant distribution typical of a recoil release mechanism. As shown in the plant procedures the actual offgas distribution will change with fuel integrity. | The new method improves the accuracy of the setpoint calculations since actual plant offgas distribution is used instead of an assumed value. |
| 24 | p. 59, section 3.7 | Corrected inaccuracies and rewritten to reflect the true constraints imposed on offgas system operation in accordance with plant technical specifications. | None |

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
EXPLANATION OF INSTRUMENTATION INOPERABILITY

JANUARY - JUNE 1990

In accordance with NMP Unit 2 Technical Specifications, Radioactive Effluent Instrumentation which is inoperable for 30 consecutive days within the reporting period must be reported in the Semi-Annual Radioactive Effluent Release Report. Below is a listing of monitors which technically fall into this category during the January - June 1990 reporting period along with a description of causes for the inoperability and, as appropriate, corrective actions taken to resolve the problems.

| <u>Instrument</u> | <u>Date of Instrument
Inoperability</u> | <u>Date Returned
to Service</u> | <u>Cause of Inoperability/
Corrective Actions</u> |
|--|---|---|---|
| Service Water A
Radiation Monitor | June 1989 | May 6, 1990 | Initial pump became inoperable. The pump was replaced. |
| | May 10, 1990 | Not returned to service as of June 30, 1990 | The new pump had a bad motor. We are awaiting a replacement. |
| Service Water B*
Radiation Monitors | Dec. 23, 1989 | Not returned to service as of June 30, 1990 | The pump tripped on a low flow signal and could not be restarted. We are awaiting a replacement pump. |

To comply with Technical Specifications we are taking 12 hour grab samples for service water.

* Note: Service Water B radiation monitor was returned to service on 8-18-90.

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TABLE 5
(Continued)

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
EXPLANATION OF INSTRUMENTATION INOPERABILITY

JANUARY - JUNE 1990

| <u>Instrument</u> | <u>Date of Instrument Inoperability</u> | <u>Date Returned to Service</u> | <u>Cause of Inoperability Corrective Actions</u> |
|--|---|---------------------------------|---|
| Reactor/Radwaste Vent Sample flow device | Jan. 10, 1989 | Feb. 23, 1990 | |
| Reactor/Radwaste Vent effluent flow device | Jan. 10, 1989 | Feb. 23, 1990 | |
| Reactor/Radwaste Vent, Noble Gas Monitor | Jan. 10, 1989 | Feb. 23, 1990 | The vent skid was taken apart to fix a flow control module and we were unsuccessful in re-instating system operability, until the date indicated. |
| Reactor/Radwaste Vent, Iodine Sampler | Jan. 10, 1989 | Feb. 23, 1990 | |
| Reactor/Radwaste Vent, Particulate Sampler | Jan. 10, 1989 | Feb. 23, 1990 | |

To comply with technical specifications for gaseous effluents, we were taking 12 hour grab samples to analyze for noble gases and estimating flow rate every 4 hours. Iodine and particulates were analyzed from a cartridge on the auxiliary sampling station.

| | | | |
|--|------------|---|--|
| Liquid Radwaste Effluent Radiation Monitor | Nov., 1987 | Not returned to service as of June 30, 1990 | The monitor became inoperable due to continuous alarming from a contaminated detector. Applicable ODCM changes have been made to permit increasing the alarm setpoint thereby eliminating the cause of failure. We are scheduled to return to service in 1990. |
|--|------------|---|--|

To comply with technical specifications for liquid radwaste discharge we are taking two samples for each discharge for dual analysis and verification.

TABLE 6

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
CHANGES TO THE PROCESS CONTROL PROGRAM

JANUARY - JUNE 1990

During the reporting period of January thru June 1990 there were no changes to the PCP or Process Control Program.

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TABLE 7

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT
NINE MILE POINT NUCLEAR STATION #2
CIRCULATING WATER DISCHARGED THROUGH
THE UNIT 1 DISCHARGE CANAL

JANUARY - JUNE 1990

During the period of Jan. - June 1990, the circulating water blowdown at Unit 2 was sent through the Unit 1 discharge canal to obtain the required dilution for copper concentration in the Unit 2 circulating water. This copper concentration is now being controlled through the use of chemical addition, and we are not currently sending the circulating water to the Unit 1 discharge canal. While the normal blowdown line could not be used, Unit 2 blowdown water which was sent to Unit 1 was analyzed for radioactivity every 12 hours using gamma spectroscopy. No activity was detected.

| | <u>1st Qtr.</u> | <u>2nd Qtr.</u> |
|--|-----------------|-----------------|
| TOTAL VOLUME DISCHARGED (Liters) | 2.33E+09 | 2.92E+09 |
| TOTAL VOLUME OF DILUTION WATER
USED DURING THE REPORTING PERIOD
(Liters) | 9.74E+10 | 8.34E+10 |

From 1940 to 1941

1942

1943 to 1944

