

November 19, 1984  
NRC/TMI-84-081

MEMORANDUM FOR: Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Bernard J. Snyder, Program Director  
TMI Program Office

FROM: William D. Travers, Deputy Program Director  
TMI Program Office

SUBJECT: NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT FOR  
NOVEMBER 10, 1984 - NOVEMBER 17, 1984

A remotely controlled robot survey vehicle was used to perform a video inspection of the 282 ft. elevation of the reactor building. This is the first inspection of this area since the 1979 accident.

Data from effluent and environmental monitoring systems indicated no plant release in excess of regulatory limits. Waste processing continued on a routine basis. Plant parameters have shown no significant changes. Other site activities this period included: robot entry, plenum assembly inspection, and continued fuel pool "A" refurbishment.

Significant items covered in the enclosure are:

- Reactor Building Activities
- Auxiliary and Fuel Handling Building Activities
- Waste Water Management Activities
- EPA Environmental Sampling Results

Summary sheets included in this report are:

- Liquid Effluent and Environmental Data
- Waste Water Processing Data
- Plant Status Data

ORIGINAL SIGNED BY:  
William D. Travers  
Deputy Program Director  
TMI Program Office

Enclosure: As stated

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| SURNAME | DCollins/ <i>mp</i> | RCook <i>RC</i> | PGrant             | WTravers             |  |  |
| DATE    | 11/19/84            | 11/9/84         | 11/12/84           | 11/19/84             |  |  |

## ENCLOSURE

### REACTOR BUILDING ACTIVITIES:

A robotic vehicle is being used to inspect the basement of the reactor building. After two inspections, each several hours in duration, the robot has inspected the southeast half of the basement. The inspections were limited to the areas outside the "D-rings." The video tapes produced by the inspections are being reviewed and an expanded program for the robotic vehicles is being evaluated. Dose rates measured on the 282 ft. elevation during the inspection confirmed previous measurements that the basement is essentially inaccessible to humans. General area radiation fields range from 10 to 70 R/hr. One location near the elevator enclosure was measured to be in excess of 1,100 R/hr.

Other work in the reactor building is proceeding on schedule. Procedures are being finalized to commence the plenum jacking operations in early December. The plenum is scheduled to be removed from the vessel in May 1985 and defueling should commence during the summer of 1985.

### AUXILIARY AND FUEL HANDLING BUILDING ACTIVITIES:

The "A" fuel pool refurbishment has continued this week. Decontamination of the stainless steel liner is approximately 20% completed.

The makeup and purification resin elution process has been on hold since October 22 due to a valve failure. Maintenance work on the valve has been substantially completed.

### WASTE MANAGEMENT ACTIVITIES:

The submerged demineralizer system (SDS) completed processing batch 107 on November 7, 1984. Processing parameters for SDS batches 102 to 107 are included in Appendix 2.

The EPICOR II system completed processing batch 230 on November 7, 1984. Processing parameters of EPICOR II batches 221 to 230 are shown in Appendix 2.

The following is a summary of the processing history of both the SDS and EPICOR II systems.

#### SDS PROCESSING SUMMARY (July 1981 through November 15, 1984)

| <u>Water Source</u>           | <u>Approximate Gallons</u> |
|-------------------------------|----------------------------|
| Reactor Building Sump         | 651,000                    |
| Reactor Building Sump (Decon) | 443,000                    |
| Reactor Coolant System        | 797,000                    |
| Miscellaneous Decon Water     | 678,000                    |
| Total                         | <u>2,569,000</u>           |

EPICOR II PROCESSING SUMMARY (November 1979 through May 1984)

| <u>Water Source</u>             | <u>Approximate Gallons</u> |
|---------------------------------|----------------------------|
| Pre-SDS Auxiliary Building Sump | 565,000                    |
| Reactor Building Sump           | 649,000                    |
| Reactor Building Sump (Decon)   | 400,000                    |
| Miscellaneous Sources           | <u>621,000</u>             |
| Total                           | 2,235,000                  |

EPA ENVIRONMENTAL SAMPLING RESULTS:

Included in Appendix 1 are results from EPA's environmental monitoring program in the area surrounding Three Mile Island. Periods covered include August 17 through October 12, 1984 for noble gas monitoring, and September 1 through October 31, 1984 for gamma radiation and airborne particulate radioactivity.

## APPENDIX 1

### LIQUID EFFLUENT AND ENVIRONMENTAL DATA

#### GPU Nuclear

Based on sampling and monitoring, liquid effluents from the TMI site released to the Susquehanna River were determined to be within regulatory limits and in accordance with NRC requirements and the City of Lancaster Agreement.

During the period November 9, 1984 through November 15, 1984, liquid effluents contained no detectable radioactivity at the discharge point. Individual effluent sources originating within Unit 2 contained minute amounts of radioactivity. Calculations indicate that less than  $8.6 \text{ E-7}$  (0.00000086) of a curie of Cs-137, less than  $1.5 \text{ E-6}$  (0.0000015) of a curie of gross beta activity and less than  $7.8 \text{ E-6}$  (0.0000078) of a curie of tritium were discharged.

#### Environmental Protection Agency

Lancaster Water Samples: 7 samples

Period Covered: October 27 - November 3, 1984

Results: Gamma Scan Negative for reactor related radioactivity

TMI Water Samples: 7 samples

Period Covered: October 28 - November 3, 1984

Results: Gamma Scan Negative for reactor related radioactivity

#### NRC Environmental Data

The NRC operated continuous outdoor air sampler at the TMI site did not detect any reactor related radioactivity. The air sampler parameters are listed below. The analysis results were less than the lower limit of detectability of the analytical instruments:  $7.7 \text{ E-14 uCi/cc}$  for I-131 and  $7.7 \text{ E-14 uCi/cc}$  for Cs-137.

| <u>Sample</u> | <u>Period</u>                   | <u>Volume</u>       |
|---------------|---------------------------------|---------------------|
| HP-445        | November 11 - November 15, 1984 | 455.8m <sup>3</sup> |

EPA Environmental Data

-- The EPA measures Kr-85 concentrations in air at several environmental monitoring stations and reported the following results:

| <u>Location</u>        | <u>August 17-31, 1984</u><br>(pCi/m <sup>3</sup> ) | <u>August 31 - September 14, 1984</u><br>(pCi/m <sup>3</sup> ) |
|------------------------|--|--|
| Goldsboro              | 25   | 26   |
| Middletown             | 26   | 27   |
| Yorkhaven              | 29   | Sampler Malfunction  |
| TMI Observation Center | 25   | 27   |

| <u>Location</u>        | <u>September 14-28, 1984</u><br>(pCi/m <sup>3</sup> ) | <u>September 28 - October 12, 1984</u><br>(pCi/m <sup>3</sup> ) |
|------------------------|---|---|
| Goldsboro              | 25  | 26  |
| Middletown             | 25  | 25  |
| Yorkhaven              | 25  | 26  |
| TMI Observation Center | 22  | 25  |

-- The EPA gamma radiation detection system continuously monitors for increases above naturally occurring radioactivity and residual fallout radioactivity at 13 stations in the TMI area. During this period the EPA has attributed the measurements to naturally occurring radioactivity and/or residual fallout radioactivity.

Period Covered: September 1-30, 1984

| <u>Location</u>                              | <u>Direction</u><br>(degrees) | <u>Distance</u><br>(miles) | <u>Average</u><br>(millirem/hr) | <u>Integrated Dose</u><br>(millirem) |
|--|-------------------------------|----------------------------|---------------------------------|--------------------------------------|
| Harrisburg International Airport, Middletown | 325                           | 3.5                        | .008                            | 6.0                                  |
| Londonderry Township Bldg                    | 040                           | 2.6                        | .007                            | 5.2                                  |
| Newville                                     | 100                           | 3.0                        | .010                            | 7.1                                  |
| Falmouth                                     | 130                           | 2.9                        | .010                            | 7.3                                  |
| Falmouth                                     | 150                           | 3.0                        | .008                            | 5.8                                  |
| York Haven                                   | 180                           | 3.0                        | .009                            | 6.3                                  |
| Woodside                                     | 205                           | 2.5                        | .007                            | 4.9                                  |
| Goldsboro                                    | 270                           | 1.5                        | .011                            | 7.7                                  |
| Plainfield                                   | 305                           | 2.7                        | .008                            | 5.3                                  |
| Royalton                                     | 068                           | 3.5                        | .010                            | 6.8                                  |
| TMI Observation Center                       | 095                           | 0.5                        | .008                            | 5.7                                  |
| EPA TMI Field Station, Middletown            | 356                           | 2.8                        | .006                            | 4.5                                  |
| Newberrytown                                 | 136                           | 3.0                        | .009                            | 6.3                                  |
| Yocumtown                                    | 275                           | 4.0                        | .007                            | 5.2                                  |

Period Covered: October 1-31, 1984

| <u>Location</u>                      | <u>Direction</u><br>(degrees) | <u>Distance</u><br>(miles) | <u>Average</u><br>(millirem/hr) | <u>Integrated</u><br><u>Dose</u><br>(millirem) |
|--------------------------------------|-------------------------------|----------------------------|---------------------------------|--|
| Harrisburg International             |                               |                            |                                 |  |
| Airport, Middletown                  | 325                           | 3.5                        | .008                            | 6.3  |
| Londonderry Township Bldg            | 040                           | 2.6                        | .007                            | 5.2  |
| Newville                             | 100                           | 3.0                        | .010                            | 6.9  |
| Falmouth                             | 130                           | 2.9                        | .010                            | 7.3  |
| Falmouth                             | 150                           | 3.0                        | .008                            | 5.7  |
| York Haven                           | 180                           | 3.0                        | .009                            | 6.3  |
| Woodside                             | 205                           | 2.5                        | .007                            | 5.0  |
| Goldsboro                            | 270                           | 1.5                        | .011                            | 7.8  |
| Plainfield                           | 305                           | 2.7                        | .008                            | 5.4  |
| Royalton                             | 068                           | 3.5                        | .009                            | 6.6  |
| TMI Observation Center               | 095                           | 0.5                        | .008                            | 5.6  |
| EPA TMI Field Station,<br>Middletown | 356                           | 2.8                        | .006                            | 4.5  |
| Newberrytown                         | 136                           | 3.0                        | .009                            | 6.3  |
| Yocumtown                            | 275                           | 4.0                        | .007                            | 5.1  |

-- EPA results of airborne particulate samples collected at the same locations as the gamma radioactivity monitors (above) during the period September 1 - October 31, 1984 were all less than 0.2 picocuries per cubic meter of air, the minimum detectable concentrations for EPA's analytical instruments.

APPENDIX 2

WASTE WATER PROCESSING DATA

Submerged Demineralizer System (SDS)

| <u>Batch</u> | <u>Source</u>                  | <u>Volume<br/>(gallons)</u> | <u>Processing-Dates</u> |
|--------------|--------------------------------|-----------------------------|-------------------------|
| 102          | "C" Reactor Coolant Bleed Tank | 5,107                       | August 16-17, 1984      |
| 103          | Reactor Coolant System (IIF)   | 56,539                      | August 17-20, 1984      |
| 104          | Neutralizer Tanks              | 6,382                       | October 6-7, 1984       |
| 105          | Neutralizer Tanks              | 10,005                      | October 19-20, 1984     |
| 106          | Neutralizer Tanks              | 12,981                      | October 27-28, 1984     |
| 107          | Reactor Building Sump          | 41,275                      | November 1-7, 1984      |

SDS Performance Parameters

| <u>Batch</u> | <u>Radionuclide</u> | <u>Average<br/>Influent<br/>(uc/ml)</u> | <u>Average<br/>Effluent<br/>(uc/ml)</u> | <u>Percent<br/>Removed<br/>(%)</u> |
|--------------|---------------------|---|---|------------------------------------|
| 102          | Cesium 137          | 2.6 E-2                                 | 3.7 E-5                                 | 99.86                              |
|              | Strontium 90        | 1.3 E-1                                 | 2.9 E-3                                 | 97.77                              |
| 103          | Cesium 137          | 5.9 E-1                                 | 5.1 E-5                                 | 99.99                              |
|              | Strontium 90        | 3.9 E0                                  | 5.9 E-2                                 | 98.49                              |
| 104          | Cesium 137          | 4.2 E0                                  | 4.8 E-3                                 | 99.99                              |
|              | Strontium 90        | 1.3 E0                                  | 5.3 E-3                                 | 99.59                              |
| 105          | Cesium 137          | 2.6 E+1                                 | 3.1 E-2                                 | 99.88                              |
|              | Strontium 90        | 5.6 E-1                                 | 3.1 E-2                                 | 94.41                              |
| 106          | Cesium 137          | 6.3 E0                                  | 2.8 E-2                                 | 99.56                              |
|              | Strontium 90        | 3.5 E-1                                 | 2.6 E-2                                 | 92.48                              |
| 107          | Cesium 137          | 5.0 E0                                  | 8.0 E-4                                 | 99.98                              |
|              | Strontium 90        | 1.7 E0                                  | 1.6 E-3                                 | 99.91                              |



EPICOR II

| <u>Batch</u> | <u>Source</u>                  | <u>Volume<br/>(gallions)</u> | <u>Processing-Dates</u> |
|--------------|--------------------------------|------------------------------|-------------------------|
| 221          | "A" Reactor Coolant Bleed Tank | 17,000                       | August 10-11, 1984      |
| 222          | EPICOR Building Sump           | 3,084                        | August 11, 1984         |
| 223          | "A" Monitor Tank               | 10,535                       | August 22, 1984         |
| 224          | "B" Monitor Tank               | 10,089                       | August 22-23, 1984      |
| 225          | "A" Monitor Tank               | 10,821                       | October 20-21, 1984     |
| 226          | "B" Monitor Tank               | 10,855                       | October 28, 1984        |
| 227          | "A" Monitor Tank               | 8,983                        | November 1, 1984        |
| 228          | "B" Monitor Tank               | 10,916                       | November 3-4, 1984      |
| 229          | "A" Monitor Tank               | 10,692                       | November 5, 1984        |
| 230          | "B" Monitor Tank               | 10,915                       | November 6-7, 1984      |

EPICOR Performance Parameters

| <u>Batch</u> | <u>Radionuclide</u> | <u>Average<br/>Influent<br/>(uc/ml)</u> | <u>Average<br/>Effluent<br/>(uc/ml)</u> | <u>Percent<br/>Removed<br/>(%)</u> |
|--------------|---------------------|---|---|------------------------------------|
| 221          | Cesium 137          | 5.1 E-3                                 | 1.2 E-7                                 | 99.99                              |
|              | Antimony 125        | 2.6 E-2                                 | 4.9 E-7                                 | 99.99                              |
|              | Strontium 90        | 2.8 E-2                                 | 6.9 E-6                                 | 99.98                              |
| 222          | Cesium 137          | 3.2 E-4                                 | 2.0 E-7                                 | 99.94                              |
|              | Antimony 125        | --                                      | 3.4 E-7                                 | --                                 |
|              | Strontium 90        | 2.7 E-4                                 | 6.6 E-7                                 | 99.76                              |
| 223          | Cesium 137          | 1.2 E-4                                 | 1.7 E-7                                 | 99.86                              |
|              | Antimony 125        | 5.1 E-3                                 | 3.1 E-7                                 | 99.99                              |
|              | Strontium 90        | 8.1 E-3                                 | 5.8 E-6                                 | 99.93                              |
| 224          | Cesium 137          | 9.6 E-5                                 | 1.9 E-7                                 | 99.81                              |
|              | Antimony 125        | 5.4 E-3                                 | 3.2 E-7                                 | 99.99                              |
|              | Strontium 90        | 1.9 E-2                                 | 9.5 E-6                                 | 99.95                              |
| 225          | Cesium 137          | 1.3 E-2                                 | 4.5 E-7                                 | 99.99                              |
|              | Antimony 125        | 3.1 E-3                                 | 6.2 E-7                                 | 99.98                              |
|              | Strontium 90        | 1.2 E-2                                 | 3.0 E-5                                 | 99.75                              |

EPICOR Performance Parameters (continued)

| <u>Batch</u> | <u>Radionuclide</u> | <u>Average Influent</u><br><u>(uc/ml)</u> | <u>Average Effluent</u><br><u>(uc/ml)</u> | <u>Percent Removed</u><br><u>(%)</u> |
|--------------|---------------------|---|---|--------------------------------------|
| 226          | Cesium 137          | 2.8 E-2                                   | 1.5 E-6                                   | 99.99                                |
|              | Antimony 125        | 3.4 E-3                                   | 6.1 E-7                                   | 99.98                                |
|              | Strontium 90        | 2.2 E-2                                   | 1.1 E-5                                   | 99.95                                |
| 227          | Cesium 137          | 2.3 E-2                                   | 1.9 E-7                                   | 99.99                                |
|              | Antimony 125        | 1.7 E-3                                   | 2.9 E-7                                   | 99.98                                |
|              | Strontium 90        | 2.2 E-2                                   | 8.8 E-6                                   | 99.96                                |
| 228          | Cesium 137          | 3.6 E-4                                   | 1.3 E-7                                   | 99.96                                |
|              | Antimony 125        | 9.4 E-3                                   | 3.6 E-7                                   | 99.99                                |
|              | Strontium 90        | 3.6 E-3                                   | 1.7 E-5                                   | 99.53                                |
| 229          | Cesium 137          | 9.9 E-4                                   | 3.1 E-7                                   | 99.97                                |
|              | Antimony 125        | 8.4 E-3                                   | 6.5 E-7                                   | 99.99                                |
|              | Strontium 90        | 1.1 E-3                                   | 1.3 E-5                                   | 99.80                                |
| 230          | Cesium 137          | 3.4 E-4                                   | 4.1 E-7                                   | 99.88                                |
|              | Antimony 125        | 9.5 E-3                                   | 5.3 E-7                                   | 99.99                                |
|              | Strontium 90        | 7.9 E-4                                   | 1.1 E-5                                   | 99.61                                |

### APPENDIX 3

#### PLANT STATUS

Reactor Vessel Configuration: Reactor vessel open with modified internals indexing fixture installed

Core Cooling Mode: Heat transfer from the reactor coolant system (RCS) to reactor building ambient

Available Core Cooling/Makeup Sources:  
Standby pressure control (SPC) system  
Reactor coolant bleed tank (RCBT) water transfer system  
Mini decay heat removal (MDHR) system

Major Parameters as of 6:00 AM, November 16, 1984 (approximate values):

#### Reactor Coolant System:

##### Loop Temperatures:

|              | A    | B    |
|--------------|------|------|
| Cold Leg (1) | 65°F | 68°F |
| (2)          | 67°F | 69°F |

#### Reactor Core:

Average Incore Thermocouples:\* 94°F  
Maximum Incore Thermocouple:\* 105°F  
Decay Heat: 15 kilowatts

Reactor Building: Temperature: 63°F  
Pressure: -0.03 psig

#### Airborne Radionuclide Concentrations:

Tritium: 2.5 E-9 uCi/cc (sample 11/13/84)  
Particulates: 3.6 E-9 uCi/cc (sample 11/15/84)  
predominately Cs-137

\*Uncertainties exist as to the exact location and accuracy of these readings.