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MEMORANDUM FOR: D. B. Vassallo, Assistant Director  
 for Light Water Reactors, DPM

FROM: W. P. Gammill, Assistant Director  
 for Site Technology, DSE

SUBJECT: METEOROLOGICAL SUPPLEMENT TO THE SER FOR THREE MILE  
 ISLAND, UNIT NO. 2

PLANT NAME: Three Mile Island, Unit No. 2  
 LICENSING STAGE: OL  
 DOCKET NUMBER: 50-320  
 RESPONSIBLE BRANCH: LWR#2  
 REQUESTED COMPLETION DATE: December 15, 1976  
 REVIEW STATUS: Complete

Enclosed is supplemental input to the Safety Evaluation Report for Three Mile Island, Unit 2, addressing the meteorological evaluation for conformance with the requirements of Appendix I to 10 CFR Part 50. Section 2.3.5, "Long-Term (Routine) Diffusion Estimates" has been amended to include a more complete description of the model and assumptions used, including a list of the relative concentration and deposition values used in the dose estimate summary which appears in Section 11.0, "Radioactive Waste Management".

We recommend a revision in the SER Supplement submittal from R. Vollmer to D. Vassallo, "Supplement to the SER for Three Mile Island Nuclear Station, Unit No. 2, Regarding Compliance with Appendix I" dated October 27, 1976. With this revisal of Section 11.0 the last sentence of the second paragraph would be, "Atmospheric transport and diffusion estimates applicable to the dose calculations are described in Section 2.3.5, 'Long-Term (Routine) Diffusion Estimates'".

This input was prepared by L. Andrews and E. H. Markee, Jr., Meteorology Section, HMB.

William P. Gammill, Assistant Director  
 for Site Technology  
 Division of Site Safety and  
 Environmental Analysis

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|         |                         |             |          |         |          |
|---------|-------------------------|-------------|----------|---------|----------|
| OFFICE  | Enclosure:<br>As stated | DSE:HMB     | DSE:HMB  | DSE:HMB | DSE:ST   |
| SURNAME | cc: See next page       | LAndrews:km | EHMarkee | LHulman | WGammill |
| DATE    |                         | 12/16/76    | 12/20/76 | 12/ /76 | 12/ /76  |

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SUPPLEMENT TO THE SAFETY EVALUATION REPORT FOR  
THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 2  
METROPOLITAN EDISON COMPANY  
DOCKET NUMBER 50-320

2.3.5 Long-Term (Routine) Diffusion Estimates

We have made reasonable estimates of average atmospheric dispersion conditions for the Three Mile Island site using our atmospheric dispersion model for long-term releases (Sagendorf and Goll, draft, 1976). This model is based upon the "Straight-Line Trajectory Model" described in Regulatory Guide 1.111, "Methods of Estimating Atmospheric Transport and Dispersion of Gaseous Effluents from Light-Water-Cooled Reactors." The model assumes a mixture of elevated and ground-level releases, based on the criteria established in Regulatory Guide 1.111. Non-continuous and intermittent gaseous releases were evaluated separately from continuous releases. The calculations also include an estimate of maximum increase in calculated relative concentration and deposition due to open terrain recirculation of airflow not considered in the straight-line trajectory model. Table 2.3.5-1 lists relative concentration and deposition values used in the dose estimations which are summarized in Section 11.0, "Radioactive Waste Management."

TABLE 2.3.5-1

THREE MILE ISLAND, UNIT 2, RELATIVE CONCENTRATION (X/Q) AND  
DEPOSITION (D/Q) USED IN DOSE ESTIMATE SUMMARY

| Source       | Receptor             | Direction<br>(From Source) | Distance (mi) | X/Q        | D/Q     | X/Q      | D/Q     | (24@ 2 hrz<br>each) |
|--------------|----------------------|----------------------------|---------------|------------|---------|----------|---------|---------------------|
|              |                      |                            |               | Continuous | Release | Periodic | Release |                     |
| Reactor Vent | Residency/<br>Garden | E                          | 0.43          | 2.3E-06    | 3.8E-08 | 5.2E-06  | 1.2E-07 |                     |
|              |                      | W                          | 0.37          | 1.9E-06    | 2.7E-08 | 4.7E-06  | 9.4E-08 |                     |
|              |                      | WNW                        | 0.37          | 1.4E-06    | 2.2E-08 | 6.7E-06  | 1.4E-07 |                     |
|              |                      | N                          | 1.00          | 3.0E-07    | 4.1E-09 | 9.3E-07  | 1.8E-08 |                     |
|              | Cows                 | NNE                        | 2.34          | 4.9E-07    | 1.8E-09 | 2.5E-06  | 8.9E-09 |                     |
|              |                      |                            |               |            |         |          |         |                     |
| Turbine Vent | Residency/<br>Garden | E                          | 0.43          | 3.6E-05    | 1.1E-07 |          |         |                     |
|              |                      | W                          | 0.37          | 4.7E-05    | 1.3E-07 |          |         |                     |
|              |                      | WNW                        | 0.37          | 4.5E-05    | 1.1E-07 |          |         |                     |
|              |                      | N                          | 1.00          | 6.4E-06    | 1.3E-08 |          |         |                     |
|              | Cows                 | NNE                        | 2.34          | 1.2E-06    | 1.8E-09 |          |         |                     |
|              |                      |                            |               |            |         |          |         |                     |

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References:

1. Sagendorf, J. F., and J. T. Goll, 1976: XQDOQ, Program for the Evaluation of Routine Effluent Releases at Nuclear Power Stations, (DRAFT). U. S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D. C.
2. U. S. Nuclear Regulatory Commission, 1976: Regulatory Guide 1.111, Methods of Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases From Light-Water-Cooled Reactors. USNRC, Office of Standards Development, Washington, D. C.