

1004.12
Revision 3
02/15/83

IMPORTANT TO SAFETY
NON-ENVIRONMENTAL IMPACT RELATED

THREE MILE ISLAND NUCLEAR STATION
UNIT NO. 1 EMERGENCY PLAN IMPLEMENTING PROCEDURE 1004.12
ENVIRONMENTAL MONITORING

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THREE MILE ISLAND NUCLEAR STATION
UNIT NO. 1 EMERGENCY PLAN IMPLEMENTING PROCEDURE 1004.12
ENVIRONMENTAL MONITORING

1.0 PURPOSE

The purpose of this procedure is to provide the requirements and methods for environmental monitoring during or after a declared emergency at Three Mile Island. The Environmental Assessment Coordinator is responsible for implementing this procedure.

2.0 ATTACHMENTS

2.1 Attachment I - TMINS TLD Program

2.2 Attachment II - Radiological Environmental Sampling Program

3.0 EMERGENCY ACTION LEVELS

3.1 This procedure is to be initiated upon declaration of the following:

- a. Site Emergency (as determined by the Site Emergency Procedure 1004.3).
- b. General Emergency (as determined by the General Emergency Procedure 1004.4).
- c. As directed by the Emergency Director.

4.0 EMERGENCY ACTIONS

| | | |
|---|--------------|--|
| : | <u>NOTE:</u> | Notify the RAC when approaching 300 mRem. Recommend : |
| : | | to the RAC that your team be relieved if possible. : |
| : | | Relief should be conducted in a low radiation area. : |
| : | | Notify the RAC when approaching $3E-10$ μ c/cc gross B- γ : |
| : | | airborne activity. Recommend to the RAC that your : |
| : | | team don respiratory equipment. : |

Initial

- 4.1 Obtain effluent monitoring data (type of release, release rate, flow rate, release pathways, wind speed and direction,

etc.) from the Radiological Assessment coordinator to determine the appropriate environmental sample locations.

- ____ 4.2 Dispatch offsite monitoring teams and the mobile monitoring lab when the Environmental Assessment Command Center is activated per procedure 1004.30.
- ____ 4.3 Ensure communications are established between the monitoring teams and the Environmental Assessment Command Center.
- ____ 4.4 When mobile lab reports to designated location, ensure that additional meteorological information from its portable tower is obtained.
- ____ 4.5 Ensure that field data from the mobile lab and the monitoring teams is relayed to the Control Room and the Near-site Emergency Operations Facility.
- ____ 4.6 Ensure that all effluent monitoring data is fed into the Environmental Assessment computer.
- ____ 4.7 Determine the frequency for the changeout of the thermoluminescent dosimeters (TLD's) listed in Attachment I.
- ____ 4.8 Determine specific types of samples and sampling frequencies required to determine offsite radiological conditions. Refer to Attachment II.
- ____ 4.9 Ensure that all samples are returned to the EACC for further analysis and retention.
- ____ 4.10 Ensure that all samples are labelled in accordance with Environmental Controls Procedures 9420-REM-4620.2 through 4620.10.
- ____ 4.11 Ensure that environmental monitoring is continued to completion in all situations, even though the emergency status has terminated before sampling is complete.

- ____ 4.12 Ensure that required sampling records are completed and maintained in accordance with procedure 1004.5 (Communications and Recordkeeping). Attach log to procedure.

5.0 FINAL CONDITIONS

- ____ 5.1 All samples have been analyzed and the results reported and evaluated.

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ATTACHMENT I

ENVIRONMENTAL MONITORING
TMINS TLD PROGRAM

| <u>LOCATION</u> | <u>HEIGHT FEET</u> | <u>DISTANCE MILES</u> | <u>ASIMUTH o</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|------------------------|---------------------------|----------------------|------------------------------|---------------|
| TM-ID-1S2 | 4 | 0 | 0 | North Weather Station | E, Q |
| TM-ID-2S2 | 3 1/2 | 0.7 | 25 | North Bridge | E |
| TM-ID-4S2 | 3 1/2 | 0.3 | 71 | Top of Dike | Q |
| TM-5S2 | 4 | 0.2 | 95 | Top of Dike | Q |
| TM-ID-8S1 | 6 | 0.4 | 167 | Pole No.33-ME-T-60 | E, N |
| TM-ID-9S2 | 4 1/2 | 0.8 | 190 | South TMI | E |
| TM-ID-10S2 | 6 | 0.4 | 200 | Pole No. ME-33-T-28 | E, N |
| TM-ID-11S1 | 4 | 0.1 | 221 | Mechanical Draft Towers | Q |
| TM-ID-13S1 | 7 | 0.4 | 270 | Due West on Shelley's Island | N |
| TM-ID-14S2 | 3 1/2 | 0.4 | 293 | Shelley's Island | |
| TM-ID-15S1 | 6 1/2 | 0.5 | 317 | Shelley's Island | N |
| TM-ID-16S1 | 4 | 0.2 | 340 | North Boat Dock | E, Q |
| TM-ID-3A1 | 3 | 0.6 | 35 | Route 441 | E, N, Q |
| TM-ID-4A1 | 7 | 0.5 | 65 | Laurel Road | E |
| TM-ID-5A1 | 3 | 0.4 | 86 | Observation Center | E, Q |
| TM-ID-6A1 | 6 | 0.5 | 117 | Route 441 on Light Pole | E, N |

Status: E = ETS Location, N = New Location, Q = Quality Control Location

ATTACHMENT I (Cont'd)

| LOCATION | HEIGHT FEET | DISTANCE MILES | ASIMUTH 0 | DESCRIPTION | STATUS |
|------------|----------------|-------------------|--------------|---|---------|
| TM-ID-7A3 | 3 | 0.6 | 143 | Route 441 | E, N, Q |
| TM-ID-11A2 | 6 | 0.5 | 221 | Beech Island | N |
| TM-ID-16A1 | 4 | 0.4 | 332 | Kohr Island | |
| TM-ID-10B1 | 2 1/2 | 1.1 | 204 | Shelley's Island | |
| TM-ID-11B1 | 6 | 1.9 | 227 | Route 262 Pole No. ME2890, BK722-306 | E, N |
| TM-ID-12B1 | 4 | 1.3 | 258 | Goldsboro Air Station | E |
| TM-ID-13B1 | 7 | 1.2 | 205 | Goldsboro Marine on Light Pole | E, N, Q |
| TM-ID-14B1 | 7 | 1.4 | 290 | Still House Road on Tree | E, N |
| TM-ID-15B1 | 6 | 1.8 | 304 | Still House Road No. ME2397NB, 233L-35L | E, N |
| TM-ID-1C1 | 4 | 2.6 | 0 | Middletown Substation | E |
| TM-ID-8C1 | 4 | 2.3 | 190 | Falmouth-Collins Substation | Q |
| TM-ID-1E4 | 6 | 4.3 | ? | Vine Street Exit From Route 283, Pole No. ME2481-10 | E, N |
| TM-ID-2E1 | 6 | 4.8 | 18 | School House Lane and Miller Road, Pole No. ME782-10 | |
| TM-ID-3E3 | 6 | 4.5 | 46 | Kennedy Lane, Pole No. 74-ME-97 | E, N |
| TM-ID-4E5 | 4 | 4.9 | 71 | Beagle Road | E, N |

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ATTACHMENT I (Cont'd)

| <u>LOCATION</u> | <u>HEIGHT FEET</u> | <u>DISTANCE MILES</u> | <u>ASIMUTH °</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|------------------------|---------------------------|----------------------|--|---------------|
| TM-ID-5E1 | 6 | 4.6 | 85 | N. Market Street (Route 230) and Zaeger Road, Pole No.PP and L 31084, S30386 | E, N |
| TM-ID-6E6 | 6 | 4.6 | 115 | Amosite Road, Pole No.PP and L 31016, S29272 | E, N |
| TM-ID-7E6 | 6 | 4.8 | 131 | Bainbridge Road (Route 241) and Risser Road, Pole No.ME825 | |
| TM-ID-8E2 | 6 1/2 | 4.1 | 161 | Guard Shack at Brunner Road | E, N |
| TM-ID-9E1 | 6 | 4.9 | 182 | Canal Road, Conewago Heights, Pole No.ME497EM, BK244122 | E, N |
| TM-ID-10E3 | 6 | 5.0 | 189 | Conewago Creek Road, Strines- town Pole No.ME924CE, BANK | |
| TM-ID-11E3 | 6 | 4.1 | 228 | Stevens and Wilson Roads, Pole No. ME2521NB | E, N |
| TM-ID-12E4 | 6 | 4.3 | 245 | Lewisberry and Roxberry Roads, Newberrytown, Pole No.ME725NB | E, N |
| TM-ID-13E1 | 6 | 4.9 | 268 | Yocumtown Road and Old Trail, No. ME1050NB | E, N |
| TM-ID-14E4 | 6 | 4.9 | 281 | Route 262 and Beinhower Road, Pole No.ME135FA | E, N |
| TM-ID-15E1 | 6 | 5.0 | 313 | Lumber Street, Highspire, Pole No.PP and L 26827, S31990 | E, N |
| TM-ID-2F1 | 6 | 9.0 | 15 | West Areba Ave., and Mill Street, Hershey, Pole No.PP and L 30383, S34608 | E, N |

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ATTACHMENT I (Cont d)

| <u>LOCATION</u> | <u>HEIGHT FEET</u> | <u>DISTANCE MILES</u> | <u>AZIMUTH °</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|------------------------|---------------------------|----------------------|--|---------------|
| TM-ID-5F1 | 6 | 6.8 | 89 | Hummelstown Street, Elizabethtown, Pole No. PP and L 32190, S30207 | E, N |
| TM-ID-7F1 | 4 | 9.6 | 132 | Drager Farm | Q |
| TM-ID-3G1 | 4 | 19.7 | 47 | Cumberland Street (Route 422) at 16th Street, Substation, Lebanon | N |
| TM-ID-4G1 | 6 | 10.0 | 68 | Route 241 | E, Q |
| TM-ID-5G2 | 6 | 21.1 | 115 | Steel Way and Loop Road, Lancaster, Pole PP and L 21274, 39808, S36930 | N |
| TM-ID-7G1 | 5 1/2 | 15.0 | 124 | Columbia | E |
| TM-ID-9G1 | 4 | 13.0 | 183 | North York Substation | E |
| TM-ID-14G1 | 6 | 12.2 | 300 | Erford Road, Camp Hill, Pole No. PP and L (ATTACHMENT) 23347, S33615 | N |
| TM-ID-15G1 | 3 1/2 | 15.0 | 308 | West Fairview | E, Q |
| TM-ID-15G2 | 6 | 11.5 | 307 | Penn and Forster Sts. Hbg. Pole No. PP and L 25874, S35291 | N |
| TM-ID-16E1 | 6 | 4.9 | 339 | Spring Garden Drive and Route 441. Pole No. PP and L 27716, S232497 | E, N |

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ATTACHMENT I (Cont'd)

| <u>LOCATION</u> | <u>HEIGHT FEET</u> | <u>DISTANCE MILES</u> | <u>AZIMUTH °</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|------------------------|---------------------------|----------------------|---|---------------|
| TM-ID-3F1 | 6 | 7.16 | 48 | (Conewago School) Met-Ed 1039 CW 764/185 on School House Road Rd. 1/8 mi. W of Schanks Church | N |
| TI-ID-4F1 | 6 1/2 | 8.55 | 72 | Bellaire PP and L 32920 S 31503 1/4 mi. E. of Bellaire Crossroads on Mt. Gretna Rd. | N |
| TI-ID-6F1 | 6 1/2 | 9.36 | 113 | (Donegal Springs) PP and L 33225 S28173 1/8 mi. W of Colebrook Rd and Donegal Springs Rd inter- section on Donegal Springs Rd. | |
| TI-ID-8F1 | 6 1/2 | 7.37 | 103 | (Starview) Met-Ed 193 EM 1/8 mi. N of Starview Methodist Church in Starview on Saginaw Road | N |
| TI-ID-8G1 | 6 1/2 | 13.15 | 157 | (Wilshire Hills) ME793SE SW corner of Orchard Rd and Stonewood Rd Wilshire Hills | N |
| TI-ID-9F1 | 6 1/2 | 6.48 | 177 | Manchester C53-LIM ME240 MT on Maple Street in Manchester across from High Street at corner of Cemetary Drive | N |
| TI-ID-10F1 | 6 1/2 | 7.39 | 196 | (Zion's View) ME1459 CE 5E corner of Goppenhaffer Road and Rt. 295 Intersection | N |
| TI-ID-10G1 | 6 1/2 | 12.96 | 204 | (Weiglesdown) L and P (old Met-Ed) 6522 opposite corner of Alta Vista Road and Fox Run Rd 100 yds East of Rt 74 | N |

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ATTACHMENT I (Cont'd)

| <u>LOCATION</u> | <u>HEIGHT- FEET</u> | <u>DISTANCE MILES</u> | <u>AZIMUTH °</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|-------------------------|---------------------------|----------------------|---|---------------|
| TI-ID-11F1 | 6 1/2 | 7.96 | 225 | (Andersontown) ME611 DO 2017/ 100 on Andersontown Rd R 1/8 mi SW of Orchard | N |
| TI-ID 11G1 | 6 1/2 | 11.91 | 225 | (Mt. Royal) ME3053 DO Bank 321-232 W Side of Rt. 74 at Mt. Royal Full Gospel Church | N |
| TI-ID-12F1 | 6 1/2 | 8.56 | 242 | (Maytown) 16E/78/End Dj/63 on Alpine Rd. 150 yds S on Rt. 177 at Maytown | N |
| TI-ID-12G2 | 6 1/2 | 11.94 | 285 | (Rossville) ME574 WR Bank 474-100 W. Side of Rt 74- 1/4 mi. from Rt. 177 cross- road by Earch Craft Barn | N |
| TI-ID-12F1 | 6 1/2 | 7.77 | 260 | (Lewisberry) PP and L 24599 S 29513 W side Rt 382 -1/2 mi. N of Lewisberry | N |
| TI-ID-13G2 | 6 1/2 | 10.4 | 274 | (Lisburn) PP and L 23149 S 30533 NW corner of Lisburn Rd and Main St. of Lisburn (Rt 114) | N |
| TI-ID-13G1 | 6 1/2 | 13.19 | 276 | (Mt. Allen) Attach 21728 S 20980 of Orchard Lane and Hartzler Rd due S of water tower | N |
| TI-ID-14F1 | 6 1/2 | 7.96 | 292 | (Reese's Summit) Attach 24757 S 164 on Evergreen Rd by Fairview Brethren in Christ Church Reese's Summit | N |

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ATTACHMENT I (Cont'd)

| <u>LOCATION</u> | <u>HEIGHT FEET</u> | <u>DISTANCE MILES</u> | <u>AZIMUTH o</u> | <u>DESCRIPTION</u> | <u>STATUS</u> |
|-----------------|------------------------|---------------------------|----------------------|---|---------------|
| TI-ID-15F1 | 6 1/2 | 8.49 | 308 | (Steelton) PP and L 21570 S 32926 across from parking lot of Steelton Water Co. | N |
| TI-ID-16F1 | 7 | 8.67 | 340 | (Rutherford Heights) Attach 27280 S 34073 on Derry St. at 66th St. Rutherford Heights, NE corner | N |

(Twenty TLD's collected monthly.
Fifty-three additional collected quarterly).

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ENVIRONMENTAL MONITORING
ATTACHMENT II
RADIOLOGICAL ENVIRONMENTAL SAMPLING PROGRAM

The basic objective of radiological environmental analysis is the protection of people in the surrounding area from exposure to radiation in excess of the maximum permissible levels and guidelines, or fractions thereof.

The following table should be used in determining environmental samples (and quantity to be sampled):

TABLE I

| Medium Sampled | Quantity/Volume Each Sample | Analysis | Preferred Sample Location |
|-------------------------|--------------------------------|------------------------|---|
| Air-particulate | 7E4 cc (25 ft3) | Beta, gamma | Gross Downwind from site |
| Air-Iodine | 7E4 cc (25 ft3) | Beta gamma | Gross Downwind from site |
| Air-Noble Gases | 7E4 cc (25 ft3) | Beta gamma | Gross Downwind from site |
| Water-River (Note 1) | 2 liters | Beta, gamma Isotope | Gross 100m downriver from site 2 upstream from site for control |
| Water-Tap (Note 2) | 2 liters | Gamma Isotope | 2 from control ~25km from site 4 downwind from site |
| Soil (Note 3) | 1 kg. | Gamma Isotope | 2 from control ~25km from site 6 downwind from site |

TABLE I (Cont'd)

| Medium Sampled | Quantity/Volume Each Sample | Analysis | Preferred Sample Location |
|------------------------|--------------------------------|---|--|
| Vegetation (Note 3) | 1 kg. | Gamma Isotope | 2 from control ~25 km from site 6 downwind from site |
| Milk (Note 4) | 2 liters | 1 ^{131}I ^{137}Cs Sr^{90} | 4 from control ~25km from site 10-20 downwind from site |
| Precipitation | 2 liters | Gamma | Onsite collection |

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ENVIRONMENTAL MONITORING

ATTACHMENT II

RADIOLOGICAL ENVIRONMENTAL SAMPLING PROGRAM

- Note 1: Upstream samples should be a minimum of 10km upstream of plant outfall.
- Note 2: Control samples should come from least prevalent wind direction from township (municipal) water supply.
- Note 3: Control samples should come from least prevalent wind direction at nearest TLD site for sample accountability. Downwind samples should be taken at near TLD locations for sample accountability.
- Note 4: Milk samples should be raw, untreated milk from dairies in least prevalent wind direction for control purposes.

NOT ALL SAMPLES ON TABLE NEED TO BE COLLECTED DURING EMERGENCY CONDITIONS, HOWEVER, A REPRESENTATIVE SAMPLE SHOULD BE TAKEN ON THOSE LISTED, AS TIME PERMITS.

This procedure may continue for a relatively long period of time after the emergency has been cancelled. As a minimum, this procedure should continue in effect until all required samples have been collected, prepared, and analyzed.