

TM 210

1670.6
Revision 2
1/16/78THREE MILE ISLAND NUCLEAR STATION
STATION HEALTH PHYSICS PROCEDURE 1670.6VOLUME I EMERGENCY PLANS AND PROCEDURES
OFF-SITE RADIOLOGICAL MONITORING
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Unit 1 Staff Recommends Approval

Approval NA Date
Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval NA Date
Cognizant Dept. Head

Unit 1 PORC Recommends Approval

CF Shortman Date 1-16-78
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Unit 2 PORC Recommends Approval

JF Thelush Date 1-16-78
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74-1524

THREE MILE ISLAND NUCLEAR STATION
STATION HEALTH PHYSICS PROCEDURE 1670.6
OFF-SITE RADIOLOGICAL MONITORING

1.0 DISCUSSION

During a Radiation Emergency (Site or General) where an accidental release of radioactive material, an off-site monitoring team will provide radiological assessment data and information. Conditions at the time of an occurrence will dictate specific areas where radiological efforts will be required. Since emergency situations are expected to produce high radiation levels for a relatively short period of time, initial radiological assessment data is required as soon as possible.

2.0 RADIOLOGICAL MONITORING

2.1 Off-Site Radiation Monitoring Team - Airborne Release

- 2.1.1 An Off-Site Radiation Monitoring Team (RMT) shall be assigned at the Emergency Control Station and dispatched to the security search facility by the Radiation Protection Supervisor to obtain emergency monitoring equipment.
- 2.1.2 Communications will be established via walkie-talkie with the Emergency Control Station (ECS).
- 2.1.3 The RMT shall have the emergency monitoring kits, air sampler, powerverter and walkie-talkie and proceed to location as directed by the ECS. (Refer to monitoring map.)
- 2.1.4 At the location designated, perform a dose rate survey of the general area. Record and relay data information to the Radiation Protection Supervisor at the ECS. Wait for further instructions from the ECS.

- 2.1.5 If directed by the ECS to collect an air sample and determine a radioiodine airborne activity concentration continue with the following:
- 2.1.6 Install the powerverter (DC/AC Converter) by connecting the positive (+) and negative (-) terminals to their respective posts on the vehicles 12V DC battery.
- 2.1.7 Set the main circuit breaker switch and the selector switch to "on". (Red Neon Pilot Light indicates proper operation set-up).
- 2.1.8 Using the Radeco High Volume Air Sampler with a radioiodine sampler cartridge, connect to the powerverter.
- 2.1.9 Set selector switch to "variable" and adjust flow to indicate $5\text{ft}^3/\text{minute}$ and sample for 3 minutes to yield 15ft^3 or 5×10^5 cc sampled air. (If $5\text{ft}^3/\text{minute}$ cannot be obtained adjust flow as high as possible and sample air long enough to yield 15ft^3). Record sample time and contact ECS for location outside of plume for sample counting.
- 2.1.10 The Eberline SAM-2/RD-19 Detector System (Dual-Single Channel Analyzer) will be used for counting the cartridge.
- 2.1.11 The SAM-2 will be powered by use of the battery pack which connects to the rear panel. Adjacent to this connection is the power switch and stabilizer switch to "on". BATT OK Light on front panel should be ON. If the light flickers or does not light, the AC power cord will be substituted for the battery pack. The instrument is then connected to the powerverter for AC power.

2.1.12 Control Circuitry should be set as follows:

- a. Ratemeter switch to "CHI" and selector switch to appropriate range. (i.e. X1, X10, etc).
- b. Scaler display switch to "ON" with count mode switches at 5, X1, timed.
- c. The windows, thresholds, and HV adjust controls should be checked for correct settings as indicated on the calibration sticker.
- d. Threshold switches to "IN", window switches CHI "+", CH2 "Off".
- e. With the detector probe connected to front panel, push count reset - start switch for counting sequence.

2.1.13 Radioiodine Airborne Activity Concentration is calculated by:

$$\mu\text{Ci/cc} = \frac{\text{Net Counts/Minute}}{(\text{Eff}) (\text{Volume}) (2.2 \times 10^6)}$$

Efficiency is posted on the SAM-2 Analyzer.

2.1.14 The concentration data should be relayed to the ECS as soon as possible, and wait for further instructions.

2.1.15 The ECS may direct the monitoring team to do the following:

- a. If a continuous air monitor is located in the designated area, replace charcoal and particulate filters with clean filters and make gross radioactivity determinations from dirty filters. Retain dirty filters for precise laboratory analysis.
- b. If TLD station is nearby, collect TLD and return it to the ECS for evaluation. Replace it with a new TLD.

- c. Report results to Radiation Protection Supervisor.
- d. Place sufficient TLD's at either the continuous air monitor or at a convenient, representative location in the designated area to permit reading TLD's every four hours during the emergency.
- e. Collect additional samples as specifically directed.

2.2 Off-Site Radiation Monitoring Team - Liquid Release

- 2.2.1 When a reading of $6.8 \times 10^{-3} \mu\text{Ci/ml}$ ($4.8 \times 10^5 \text{ CPM}$) is indicated, a radiation monitoring team will be dispatched by the Radiation Protection Supervisor.
- 2.2.2 Water samples will be obtained at the following locations:
 - a. Discharge Monitoring Point
 - b. York Haven Dam
 - c. City of Columbia
 - d. Other points as designated by the Radiation Protection Supervisor
- 2.2.3 Samples will be analyzed to determine activity concentration.

2.3 Washdown Area Monitor

- 2.3.1 Decontamination of vehicles will be supervised by a Rad/Chem Technician at each of the washdown areas. (North Washdown Area - two miles north of the North Gate on Route 441 (Kiwans Field adjacent to Swatara Creek). South Washdown Area - 3 miles south on Route 441 (Collins Substation).
- 2.3.2 Vehicles will be monitored prior to and following the washdown. The vehicle will be released if the radiation level is less than 0.5 mR/hr.