

# FOR USE IN UNIT I ONLY

1004.9  
Revision 2  
10/13/82

IMPORTANT TO SAFETY  
NON-ENVIRONMENTAL IMPACT RELATED

CONTROLLED COPY FOR  
USE IN UNIT I ONLY

THREE MILE ISLAND NUCLEAR STATION  
UNIT NO. 1 EMERGENCY PLAN IMPLEMENTING PROCEDURE NO. 1004.9  
RADIOLOGICAL CONTROLS DURING EMERGENCIES

## Table of Effective Pages

*Office of Nuc. React. Reg.*

<u>Page</u>	<u>Revision</u>	<u>Page</u>	<u>Revision</u>	<u>Page</u>	<u>Revision</u>	<u>Page</u>	<u>Revision</u>
1.0	2						
2.0	2						
3.0	2						
4.0	2						
5.0	2						
6.0	2						
7.0	2						
8.0	2						
9.0	2						
10.0	2						
11.0	2						
12.0	2						
13.0	2						

*(PDR) M. A. Nelson*  
Signature

*10/12/82*  
Date

*R. J. Toole*  
Signature

*10-13-82*  
Date

Document ID: 0005W

# FOR USE IN UNIT I ONLY

# FOR USE IN UNIT 1 ONLY

1004.9  
Revision 2

## THREE MILE ISLAND NUCLEAR STATION UNIT NO. 1 EMERGENCY PLAN IMPLEMENTING PROCEDURE NO. 1004.9 RADIOLOGICAL CONTROLS DURING EMERGENCIES

### 1.0 PURPOSE

The purpose of this procedure is to provide guidelines for coordination of the implementation of the radiological program during emergency conditions and for re-entry operations during and after the declaration of a radiological emergency to assure maximum protection of the general public, plant personnel, and emergency teams without restricting necessary operations and maintenance.

The Radiological Controls Coordinator is responsible for implementing Section 4.0 of this procedure. The Radiological Assessment Coordinator is responsible for implementing Attachment I of this procedure.

### 2.0 ATTACHMENTS

- 2.1 Attachment I - Radiological Controls Checklist
- 2.2 Attachment II - Personnel Briefing/Debriefing
- 2.3 Attachment III - Re-entry Team Dress-out and Equipment Checklist
- 2.4 Attachment IV - Personnel Assignment Checklist

### 3.0 EMERGENCY ACTION LEVELS

- 3.1 This procedure shall be implemented under the following conditions:
  - 3.1.1 If radiological problems exist and one of the following emergencies has been declared:
    - a. Unusual Event (1004.1)
    - b. Alert (1004.2)
    - c. Site Emergency (1004.3)
    - d. General Emergency (1004.4)

1.0  
FOR USE IN UNIT 1 ONLY

# FOR USE IN UNIT I ONLY

1004.9  
Revision 2

- 3.1.2 If it is necessary to enter an area, during or after a radiation related emergency, in which the radiological conditions are unknown but are suspected to be hazardous.
- 3.1.3 As referenced by other emergency procedures.
- 3.1.4 As directed by the Emergency Director.

## 4.0 EMERGENCY ACTIONS

### INITIALS

-----  
: NOTE: For overall coordination of Radiological Controls :  
: activities, refer to the Radiological Controls :  
: Checklist, Attachment I. :  
-----

- \_\_\_ 4.1 If exposures in excess of the limits of 10CFR20.101 are anticipated, ensure that each member of the team (Search and Rescue, Emergency Repair, In-Plant Monitoring, etc.) understands that this exposure is voluntary. Exposure in excess of the limits of 10CRF20.101 shall be authorized by the Emergency Director only.
- \_\_\_ 4.2 Preference should be given to those team members who are current in their Radiation Worker Training.
- \_\_\_ 4.3 When re-entry to a hazardous or potentially hazardous area is necessary, ensure that re-entry team members are briefed on all known hazards in the re-entry area (i.e., heat, smoke, steam, flooding, fire, toxic materials, direct radiation and airborne radioactivity levels) and that they are properly prepared. If time permits, the re-entry should be planned in detail and every effort should be made to minimize exposure. Complete Attachment II, Personnel Briefing/Debriefing Checklist.

FOR USE IN <sup>2.0</sup> UNIT I ONLY

# FOR USE IN UNIT 1 ONLY

1004.9  
Revision 2

- \_\_\_ 4.4 Ensure that each re-entry team is properly equipped. See Attachment III checklist.
- \_\_\_ 4.5 Report to the Operations Support Center Coordinator that the team(s) is (are) briefed and ready to perform the assigned task.
- \_\_\_ 4.6 Ensure that communications at predetermined intervals, are maintained with the Operations Support Center.
- \_\_\_ 4.7 Appropriate Radiological Controls Procedures (RCP-1602, RCP-1609, RCP-1605) shall be used. Implement the following guidelines and controls when deviations from routine procedures are determined to be necessary. The specifics of the implementation will be dependent on the radiological conditions. Assign individuals to be responsible for each designated area and make appropriate entries on Attachment IV.
- \_\_\_ 4.7.1 Access Control
- Insure that inadvertent entry into areas of extreme dose rate does not occur by considering implementation of one or more of the following controls:
- a. Request the Ops Support Center Coordinator to have the Control Room make an announcement over the public address system identifying the locations of those areas that are off limits due to radiological hazards.
  - b. Lock the doors at all possible entry points.

FOR USE IN <sup>3.0</sup> UNIT 1 ONLY

- c. Post "Danger-High Radiation" signs at all possible entry points and consider barricading with radiological rope.
- d. Post personnel at possible entry points that cannot be secured by other means.

4.7.2 Personnel Radiation Exposure Monitoring

Track accumulated exposures for personnel required to enter high radiation exposure areas. The RWP Log sheet can be used to document exposures and stay times.

4.7.3 Radiation Surveys

Where dose-rate conditions exist, Radiological Controls personnel should not be used for the sole purpose of performing dose-rate surveys. Radiation levels must be determined while performing other duties (in conjunction with 4.7.5) with all information documented for use as guidance by others requiring access.

4.7.4 Airborne Surveys

Where emergency access is required to in-plant areas where known or suspected airborne radioactivity exists, maximum respiratory protection shall be provided. Air samples will be taken if they can be obtained without significant additional personnel exposure. Air samples (preferably lapel sampling) should be obtained by personnel making entries for

other purposes, if practical, to minimize exposure. Whole Body Counts on personnel should be used to evaluate the effectiveness of the respiratory program and the need for additional concern of personnel who have made entries. Unless real-time monitoring is available, air samples should not be used as guidance in determining respiratory requirements during accident conditions. Maximum protection shall be afforded each individual.

4.7.5 Personnel Briefing/Debriefing

Insure that each individual entering an area of extreme radiation exposure rate has appropriate authorization to enter. A briefing and debriefing should be accomplished before and after each entry. Attachment I provides guidance in briefing/debriefing information requirements. The Radiological Controls Coordinator should assign a specific individual(s) to conduct the briefing/debriefing.

NOTE: These individuals may be located at the access control point and also provide positive access control required by 4.7.1.



\_\_\_\_ 4.7.6 Personnel Assignments

As soon as possible, individuals should be assigned to maintain radiological controls supplies and equipment. Segregation of contaminated materials for eventual decontamination or discarding should occur. Attachment IV provides specific logistic concerns which should be addressed.

\_\_\_\_ 4.7.7 Personnel Decontamination

Assign a specific individual to insure all contaminated personnel are properly decontaminated and evaluated as necessary. Control Point personnel must be aware of the location of decontaminated facilities and insure contaminated personnel are directed to the facility. (See procedure 1004.16 Radiation Overexposure and Decontamination, for personnel decontamination).

\_\_\_\_ 4.7.8 Bioassay

All personnel entering known high airborne radioactivity areas shall be scheduled for whole body counts. An individual shall be assigned, as soon as practical, to coordinate the whole body counts, assuring that all scheduled personnel are counted, reviewing and evaluating the results and scheduling follow-up counts. Health Physics Consultants (i.e., Porter Consultants, Inc., Radiation Management Corporation, etc.) can be used for this function.

If airborne tritium is suspected or known to exist, obtain 24-hour urine samples from all persons who have entered these areas. Analyze the samples for the "maximum risk" individuals within 48 hours.

\_\_\_\_ 4.8 Debrief the team(s) in accordance with Attachment II, Personnel Briefing/Debriefing checklist.

5.0 FINAL CONDITIONS

\_\_\_\_ 5.1 The normal plant Radiological Controls Procedures are fully implemented.



# FOR USE IN UNIT 1 ONLY

1004.9  
Revision 2

## ATTACHMENT I RADIOLOGICAL CONTROL CHECKLIST

FUNCTIONS	CHECK	COMMENTS
Protective Action Recommendations (1004.1-4, Attachment I, Section IV) completed		
BRP has initiated communications with the RAC		
Status Reports (1004.1-4, Attachment II, Section I and II) completed and info. transmitted to BRP		
Dose Projection (1004.7) IRS-80 S/U and Operational		
Initial Dose Projections Supplied to the ED		
PAG Recommendations Supplied to the ED		
EACC Briefed per Plant Status, Source Item Data . . .		
Offsite Monitoring Responsibility Assumed by the EACC		
Field Monitoring (1004.10) Radio Check (Channel 3) Accomplished with Field Teams		
Telephone Pager Numbers Recorded for Field Teams		
Consideration given to Rad Mon		
Team Relief when Whole Body Exposures Approach 300 mrem		
Respirators Utilized in Airborne Particulate Concentrations Approaching 3E-10 uc/ml		
Post-Accident Sampling (1004.15) Post-Accident Sample Requested Upon Approval of		
of Emergency Director		
Emergency Director Briefed per Sample Results		
Contaminated/Injured Personnel (1004.16) Report of Contaminated Injured		
Personnel in a Radiologically Controlled Area		
Radiological Precautions observed during the transport of the victim out of		
the Controlled Area to an Onsite Facility (P.C.'s, Plume Direction, etc.)		
Radiological Precautions observed during the transport of the victim to the		
Offsite Facility (Ambulance lined, Plume Direction, P.C.'s)		
If offsite ambulance is required, ensure one is summoned.		
If offsite transport is required, notify Hospital, dispatch Rad Con Tech.		
Supply Status to ED		
Decontamination (1004.20) Emergency Director Briefed as to the Status of the		
Injured/Contaminated Individual		
Report of Contaminated Person/Vehicle		
Team Leader Assigned/Dispatched to Monitoring Location with Contaminated		
Person/Vehicle		
Team Leader Assigned/Dispatched to Decontamination Facility with		
Contaminated Person/Vehicle		
Emergency Director Briefed as to the Status of the Contaminated		
Person/Vehicle		
Airborne Radioactivity Sampling and Analysis (1004.31) Airborne Radioactivity		
Sample Requested		
Airborne Radioactivity Sample Procured and Analyzed		
Resultant Radiological Precautions Observed (i.e., posting requirements,		
use of respirators, evacuation of personnel, etc.)		
Emergency Director Briefed as to the Status of Airborne Radioactivity		
Levels		
Thyroid Blocking (1004.35) Personnel Have Been Exposed to Quantities of I-131		
that will result in > 10 RAD Thyroid Dose		
RMC Representative Notified		
Safety Representative Notified to Rendezvous with Exposed Individuals		
Potassium Iodide Administered and Attachment 2.1 complete		
Emergency Director Briefed as to the Status of Exposed Personnel		

# FOR USE IN UNIT 1 ONLY

ATTACHMENT II

PERSONNEL BRIEFING/DEBRIEFING

1. Briefing prior to entry into High Radiation Area.

DESCRIPTION OF ENTRY

Building or space being entered \_\_\_\_\_

Purpose of Entry \_\_\_\_\_

INITIAL

- \_\_\_ A. Ensure that team members are aware of the voluntary nature of reentry, if applicable.
- \_\_\_ B. Ensure that Reentry Team members understand the Potential Hazards and are familiar with the area(s) and the access/escape routes.
- \_\_\_ C. Discuss suspected Dose Rates and Activity levels.
- \_\_\_ D. Ensure proper Dosimetry (TLD and High range self-reading dosimeter) is issued and use understood. Also give consideration to Quarterly, Annual, and Lifetime Exposure History.
- \_\_\_ E. If Respiratory Protection is required, ensure proper Respiratory Protection is specified and all members of Reentry Team are qualified in its use.
- \_\_\_ F. Ensure proper Protective Clothing is prescribed.
- \_\_\_ G. Ensure that each member of the Reentry Team has been properly instructed and stay times have been discussed and are understood.
- \_\_\_ H. Ensure instrumentation to be used has appropriate range and sensitivity and has been calibrated and operationally checked.
- \_\_\_ I. Use mock-up situation if time permits.

ATTACHMENT II (Cont'd)

PERSONNEL BRIEFING/DEBRIEFING

- \_\_\_ J. Review Documentation required for reentry and for personnel records if time permits.
- \_\_\_ K. Review Safety and Health Concerns i.e., gases present, toxic materials, equipment malfunction, etc.
- \_\_\_ L. Review and explain any known or suspected system malfunctions, breaks or hazards from operating equipment.
- \_\_\_ M. Ensure Reentry Team members are briefed on any surveys to be performed (air, cont. rad.) in accordance with RCP 1602, 1605, 1609.
- \_\_\_ N. The following Reentry Team Members have been briefed as detailed above.

Name	Badge No.	Initials
_____	_____	_____
_____	_____	_____
_____	_____	_____

\_\_\_\_\_  
Rad Con Coordinator

2. Debriefing after exiting High Radiation Area.

INITIAL

- \_\_\_ A. Determine exposure and time in Area.
- \_\_\_ B. Monitor for Personnel Contamination, document positive findings.
- \_\_\_ C. Determine approximate dose-rates from survey meter.
- \_\_\_ D. Document exposure, time and survey information.

ATTACHMENT II (Cont'd)

PERSONNEL BRIEFING/DEBRIEFING

- E. Any noticeable radiological or operations concern, i.e., gas leaks, liquid spills, alarms, equipment malfunction, etc.
- F. Document recommended bioassay.
- G. Take nasal swabs of persons in airborne contamination areas.
- H. Obtain any survey data sheets.

\_\_\_\_\_  
Rad Con Coordinator

## ATTACHMENT III

### RE-ENTRY TEAM DRESS-OUT AND EQUIPMENT CHECKLIST

Depending on hazards involved, teams should be equipped with appropriate equipment from the list below:

	Number	Type
1. Protective Clothing for each individual	_____	_____
2. Respirators for each individual	_____	_____
3. Scott-Air Paks (refill of bottles)	_____	_____
4. Gamma Dose-rate instruments; Beta Dose-rate instruments	_____	_____
5. Self-Reading dosimeters (two high range for each individual.)	_____	_____
6. TLD's, Extremity TLD's (at least one whole body TLD for each individual; if available, several TLD's should be worn by each individual.)	_____	_____
7. Wet Suits	_____	_____
8. Air Samplers	_____	_____
9. Air Particulate Filters	_____	_____
10. Iodine Filters (Silver Zeolite or Charcoal.)	_____	_____
11. Poly Bags	_____	_____
12. Absorbent materials	_____	_____
13. Maranelli beakers for grab air samples	_____	_____
14. First Aid Kit	_____	_____
15. Additional survey equipment as required	_____	_____

ATTACHMENT IV

PERSONNEL ASSIGNMENT CHECKLIST

1. Access Control: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Radiation Exposure Monitoring Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
3. Radiation Surveys: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
4. Airborne Surveys: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
5. Personnel Briefing/Debriefing: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
6. Supplies: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
7. Personnel Decontamination: Individual Assigned: \_\_\_\_\_  
\_\_\_\_\_
8. Bioassay - scheduling and data review: Individual  
Assigned: \_\_\_\_\_  
\_\_\_\_\_