		INFO	CTRL
*Backup TSC,NOB-3	B. Siebler	—	1
*Bureau of Rad Protection	M. Vyenielo	—	1
Central File	D. Marshbank	Plain	Copy
*Control Rm-U/1 File Copy, OOB-1	S. Van Ormer	—	1
Control Rm - Shift Mgrs Office, OOB	S. Van Ormer	—	1
*Control Rm - CRS Workstation, OOB-1	S. Van Ormer	—	1
Coatesville EOF, Kennett Square	R. Rogers	—	1
*Document Center, NOB-2	IKON	—	1
~~*Document Control Desk, Label~~	NRC	1	—
EACC, EOF	IKON	—	1
*EP – NDB, Trng. Bldg. #2 R.BRADY	~~N. D. Brown~~	—	1
*Emerg. Prep. Dept.	D. Light	1	—
*EOF	IKON	—	1
EOF Communicator, EOF	IKON	—	—
EOF (PEMA Area), EOF	IKON	—	—
*EP Drills, Trng. Bldg. R.BRADY	~~N. D. Brown~~	—	1
EP Rep, EOF	IKON	—	—
ESD, EOF	IKON	—	—
ESD Asst., EOF	IKON	—	—
Environ. Affairs-TMI, NOB-1	W. Ressler	—	1
GLRE&C, EOF	IKON	—	—
Kennett EOF, Kennet Square	R. Rogers	—	1
Logisitcal Support, EOF	IKON	—	—
*NRC – Onsite, Service Bldg.	P. Sauder	—	1
*NRC – Region 1, (Chief EP Section)	N. McNama	—	2
*PEMA – Bureau of Plans	D. Fleck	—	1
PI Rep, EOF	IKON	—	—
Personnnel/Vehicle Monitor Kit Trng Ctr.	T. Berstler	—	—
*Plant Maint. (Library), Serv. Bldg.	J. Eckroth	—	1
RLM, Rad Field Ops.	T. Berstler	—	—
Rad Con -RAC Locker, Rad Field Ops.	T. Berstler	—	1
Rad Con -Kit 1 PC, Rad Field Ops.	T. Berstler	—	1
Rad Con -Kit 2 PC, Rad Field Ops.	T. Berstler	—	1
Rad Con-Kit 3 EOF Bldg Rad Field Ops	T. Berstler	—	1
Rad Con-Kit 4 EOF Bldg Rad Field Ops.	T. Berstler	—	1
Rad Con-Kit 5 EOF Bldg Rad Field Ops.	T. Berstler	—	—
Rad Con-Simulator Locker,Rad Field Ops	T. Berstler	—	1
*Rad Engineers-U1, OOB	T. Griffith	—	1
*Rad Instrument, Bldg. 159	T. Griffith	—	1
Secondary Chem Lab-, OOB-1	S. Van Ormer	—	1
*Security Mgr., PC	M. Bruecks	—	1
Security U-1, PC	M. Bruecks	—	—
*Simulator Rm/File Copy	IKON	—	1
Simulator Rm - Shift Mgrs Office	IKON	—	1
*Simulator Rm – CRS Workstation	IKON	—	1
Tech Support Rep	N. D. Brown	—	—
*TSC - Unit 1, NOB-3	B. Siebler	—	1
*Training Dept. Library, Trng	C. Flory	—	1
*OSC, Rad Field Ops..	T. Berstler	—	1
Record Box, SOB + History Package	S. Zimmerman	Plain	Copy

EPIP/TEP Instruction Memo

Date 11-22-02 Verif: DKB Box No. 20020515 T1 ✓ T2 —

Please update your file with the attached listed below, destroy the superseded/cancelled document(s). Also, if Controlled Documents please sign the acknowledgment at the bottom of this memo and return to Debbie Marshbank, Configuration Cntrl., Rm. 135, SOB

Document Number	Rev	TC NUMBER	Page Replac.	Entire	TC/PROC Cld	Level
EPIP-TMI-.10	15			✓		2

ADDITIONAL DISTRIBUTION:

		I	3H	C	3H

I hereby acknowledge receipt of this memo and have complied with the instructions. Signature and returned memo required ONLY if CONTROLLED.

Signature _____ Date _____

Procedure Distribution:

Info Copy 2 Stapled, 3 Hole Punch

Ctrl Copy 33 Stapled, 3 Hole Punch

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____ Plain Copy Stapled, 3-hole punch for Central File (if TC is original)

A045

09/06/02

FOR INFORMATION ONLY

AmerGen	TMI - Unit 1 Emergency Plan Implementing Document	Number EPIP-TMI-.10
Title Onsite/Offsite Radiological/Environmental Monitoring		Revision No 15
Applicability/Scope TMI Division	USAGE LEVEL 2	Effective Date 11/22/02

This document is within QA plan scope	X	Yes		No
50.59 Applicable	X	Yes		No

List of Effective Pages

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1.0 PURPOSE

The purpose of this procedure is to provide guidance to radiological and environmental monitoring teams for adequate onsite and offsite monitoring of radiation, contamination and airborne radioactivity levels, and environmental sample procurement, following the accidental release of radioactive materials to the environment. The procedure establishes monitoring team actions necessary to obtain data required to make valid radiological assessments.

2.0 APPLICABILITY/SCOPE

All TMI Emergency Radiological and Environmental Monitoring Team Personnel.

3.0 DEFINITIONS

3.1 Derived Air Concentration (DAC) - The airborne concentration of radioactive material that if breathed by a worker for one hour, results in an estimated Internal Whole Body Dose (CEDE) of 2.5 mrem, or in the case of radioiodine, results in an estimated thyroid dose (CDE) of 25 mrem.

3.2 External Whole Body Dose (DDE) - The whole body dose from sources external to the body. Typically this is the dose recorded on a whole body TLD. Official term: Deep Dose Equivalent

3 3 Internal Whole Body Dose (CEDE) - The estimated risk-based dose to the whole body resulting from the intake of radioactive material. Official term: Committed Effective Dose Equivalent.

3.4 Thyroid Dose (CDE(th)) - the dose to the Thyroid resulting from the intake of radioactive material. Official term: Committed Dose Equivalent - thyroid.

3.5 Total Whole Body Dose (TEDE) - the sum of the External Whole Body Dose (DDE) and the Internal Whole Body Dose (CEDE).

4.0 RESPONSIBILITIES

4.1 The Radiological/Environmental Monitoring Teams are responsible for implementing this procedure.

5 0 PROCEDURE

5.1 Implementation Criteria

5.1.1 This procedure is to be initiated upon the direction of the Emergency Director, the Radiological Assessment Coordinator (RAC), the Environmental Assessment Coordinator (EAC), or their designee.

5.2 Emergency Actions

NOTE

Team members utilize additional radiological precautions when approaching any of the following:

1. 4 REM Year-to-Date Total Whole Body Dose (TEDE)

2. 25 REM Thyroid Dose (CDE) during this event.

Minimize time spent in the plume especially in areas projected (by the RAC/EACC) to have high airborne radioactivity. Utilize protection such as thyroid blocking agent if advised by the RAC or the Env. Assessment Command Center (EACC).

INITIALS

_____ 5.2.1 Upon assignment as a monitoring team member, obtain emergency equipment and emergency vehicle.

5.2.1.1 Emergency Equipment consists of the following:

- Emergency Equipment/Instrument Kit (suitcase).
- Air Sampler.
- Portable Two Way Radio with spare battery.

_____ 5.2.2 Verify that the seal on the emergency kit was intact.

5.2 2.1 If the emergency kit seal was broken, conduct a brief inventory of the major pieces of equipment.

NOTE

There is no need to inventory a kit if its seal was intact.

_____ 5.2.3 Record the following information on Exhibit 6. 1) Name, 2) SSN, 3) Date, 4) Current Year-to-date Total Whole Body Dose (TEDE). Item 4 may be obtained from the computerized dose tracking system or may be transmitted via radio while the team is in transit to their first monitoring location.

_____ 5.2.4 Operationally check all radiation meters and portable air sampler (battery check, air flow check, visual inspection).

A. Obtain properly calibrated replacements for any meters or samplers found to be unsatisfactory.

NOTE

Emergency kit radiation meters are source response checked at the same time that they are calibrated. Additional source response checks (i.e., between calibrations) are not required.

INITIALS

B. Inform the RAC/EACC of equipment problems and, if needed, request assistance in obtaining replacements.

NOTE

If personnel intend to take air samples in areas inaccessible to vehicles (e.g., Shelley Island), a battery powered air sampler should be obtained for this purpose. A portable generator and an ordinary air sampler can be used if a battery powered air sampler is not available. Check the fuel level in the portable generator and operationally test it by running it momentarily.

_____ 5 2.5 Fill (or verify filled) the noble gas sampling devices (plastic bottles or marinelli beakers) with water prior to leaving the P.C. or EOF.

_____ 5.2.6 Issue self reading dosimeters (SRPDs or ESRDs) to team members.

_____ 5.2.7 Ensure each team member is wearing a TLD

A. Team members responding from on-site should retain their TLD. Team members should either retain their personal TLD (if available) or be issued a TLD from the supply of emergency TLDs

B Use the individual dose log, Exhibit 6 to track each team member's dose.

C. At a minimum, each team member shall enter his/her SRPD/ESRD reading and time when he/she begins monitoring activities and again when he/she returns from the field.

D. SRPD/ESRD readings may be entered on the individual exposure log more frequently if a team member so desires (eg., when entering and leaving the plume).

E. Keep the RAC/EACC informed of field monitoring team doses.

- Advise the RAC/EACC if any team member's dose approaches:
  - 4 REM year-to-date total whole body dose (TEDE) or
  - 25 REM thyroid dose (CDE) during this event.
- Recommend that the RAC/EACC consider the need for team relief.

NOTE

Relief should be conducted in a low radiation area.

- Recommend that the RAC/EACC consider authorizing the use of thyroid blocking agent if field monitoring team thyroid doses are projected to be 25 REM (CDE) or greater.
- If the RAC/EACC authorizes the use of thyroid blocking agent, complete a copy of Exhibit 9 for each field team member.

INITIALS

_____ 5.2.8 Ensure your survey meter is turned on.

NOTE

The survey meter should remain all times during the performance of monitoring team duties.

_____ 5.2.9 Perform radio check with the RAC/EACC (see Exhibit 10 for radio operating guidelines).

NOTE

Radio transmission may affect accuracy of portable instrument response. Information should not be transmitted while taking readings.

WARNING

Utilize roof top strobe light and vehicle's 4-way flashers whenever you are stopped along the road or travelling significantly slower than the speed limit.

INITIALS

_____ 5.2 10 Proceed to the designated monitoring point or other location as directed by the RAC/EACC. (See map in emergency kit for specifically designated monitoring point locations.)

NOTE

The following steps should be implemented as they are needed. These steps need not be performed in the sequence listed and may be performed multiple times. The Field Monitoring Team should periodically review these steps to ensure that necessary actions are being performed.

A. As time permits, keep a log of your major activities or the Major Activities log, Exhibit 7.

B. Perform radiological surveys/sampling as directed by the RAC/EACC at designated monitoring locations.

- Use the appropriate exhibit for the type of survey/sample requested:

  Exhibit 1 Radiation Surveys (including plume centerline scans).
  Exhibit 2 Radioiodine and Particulate Air Samples.
  Exhibit 3 Noble Gas Air Samples.
  Exhibit 4 Contamination Surveys.

C. If radio communications are lost, attempt to re-establish radio communications with the RAC/EACC. Move to higher ground if possible.

NOTE

If the portable radio displays "CC SCAN" this indicates that the radio is in a bad location or it is out of range.

- If radio communications cannot be re-established drive to the nearest telephone and call the RAC or the EACC (as appropriate). A list of important phone numbers is contained in Exhibit 8.

D. Minimize personnel exposures by moving out of areas of high radiation when counting samples, recording data or awaiting further instructions.

E. Ensure all team members keep track of their doses in Exhibit 6.

INITIALS

_____ F. Maintain all completed exhibits for permanent records.

G. Return all completed forms to Rad Con Coordinator at the OSC or other location as directed by the RAC/EACC.

_____ H. Retain all samples for later counting and analysis.

NOTE

Samples may be returned to the Rad Con Lab or designated collection point at a convenient time as directed by the RAC/EACC.

_____ I. When the Environmental Assessment Command Center (EACC) is activated and takes control of monitoring teams, begin reporting offsite surveys to the EACC.

_____ J. Upon relief or upon completion of monitoring duties, team members shall frisk themselves in a low background area and frisk the tires, seats, floor, and foot pedals.

- If any of the above are found to be greater than 100 CPM above background, inform the RAC/EACC and ask for instructions.
- Recommend to the RAC/EACC that the team be scheduled for a whole body count.

K. If requested by the RAC/EACC, initiate an RWP to cover the duties performed as a monitoring team at the completion of monitoring team activities (if not already done).

5.3 Additional Actions for Environmental Monitoring Teams

_____ A. Determine from the EACC the types of samples to be collected. The EACC shall also determine the location and frequency of collection.

_____ B. Collect and label all samples in accordance with environmental sampling procedures.

NOTE

Plastic disposable gloves shall be worn during the sample collection process.

_____ C. Return all samples to the location specified by the EAC for analysis and retention.

5 4 Final Conditions

INITIALS

_____ A Radiological/Environmental monitoring has been completed and all samples submitted for analysis/retention as directed by the RAC/EACC.

_____ B. Field monitoring equipment has been returned to the location specified by the RAC/EACC.

_____ C. If field team members have taken thyroid blocking agent, they should contact company designated medical personnel to determine how long they should continue to take it

6.0 REFERENCES

6.1 6510-PLN-4520.01, Radiological/Environmental Monitoring Program Plan

7.0 EXHIBITS

7.1 Exhibit 1, Radiation Surveys

7.2 Exhibit 2, Radioiodine and Particulate Air Samples

7.3 Exhibit 3, Noble Gas Air Samples

7.4 Exhibit 4, Contamination Surveys

7.5 Exhibit 5, Radiation/Air/Smear Sample Log

7.6 Exhibit 6, Individual Dose Log

7.7 Exhibit 7, Major Activities Log

7.8 Exhibit 8, Important Telephone Numbers

7.9 Exhibit 9, Field Team Thyroid Blocking Agent Administration Form

7.10 Exhibit 10, Field Team Radio Operating Guidelines

EXHIBIT 1

Radiation Surveys

To perform radiation surveys:

NOTE
Sections A & B below should be implemented as needed based on direction from the RAC/EACC. These sections can be repeated as needed.

A Plume centerline scans:

1. General Guidance:

   - Scanning is most effective when the team slowly travels across the plume at approximately a 90° angle to the wind direction
   - Scanning should be performed with a frisker or a survey instrument. If a survey instrument is used, the probe window should be open.
   - In inclement weather, the instrument probe should be covered with a surgeon's glove or plastic bag to keep it dry.

2. Ask the RAC/EACC to specify a start and stop point for scanning. If the RAC/EACC provides no direction, consult the map and choose a route which runs as nearly perpendicular as possible to the expected plume direction.

3. Proceed to the start point with the survey instrument/frisker turned on.

4. Scan by driving slowly (~ 15 m.p h.) while holding the instrument probe outside the vehicle.

5. Locate the point where the instrument reading is highest.

   5.1 Scan until the reading rises and then begins to decrease

   5.2 Reverse direction and return to the location where the maximum reading was obtained.

   5.3 If the maximum reading persists for a definite distance (i.e., a tenth mile or greater), find the approximate midpoint of that distance.

6. Report the plume centerline location and maximum reading to the RAC/EACC. When reporting the location, give any landmarks which may help fix your location on a map (e.g., intersections, public buildings, streams, etc.).

7. Perform a stationary survey as described below unless directed otherwise by the RAC/EACC.

EXHIBIT 1

B Stationary Surveys:

1. Ensure the probe window is closed and hold the instrument probe at waist level while standing outside the vehicle.

   - In inclement weather, the instrument probe should be covered with a surgeon's glove or plastic bag to keep it dry.

2. Obtain a reading by observing the instrument's needle for several seconds.

   - Mentally average the needle fluctuations to arrive at an average reading.

3. Obtain 3 readings per Step 2 above over a five minute period unless directed otherwise by the RAC/EACC

4. Record the following in Exhibit 5.

   4.1 Record the 3 readings obtained per Step 3. If only 1 reading was taken, record it as "Reading 1".

   4.2 If 3 readings were taken, average them and record the average.

   4.3 Record the date, time and location of the reading(s).

5. Obtain one reading with the probe window open.

   5.1 Record the reading (in mR/hr) in Exhibit 5.

6. Report the location, time, average closed window reading and open window reading to the RAC/EACC.

EXHIBIT 2

Radioiodine And Particulate Air Samples

To perform air samples for Iodine and/or Particulate:

> **NOTE**
>
> If possible, load the air sampler with the Silver Zeolite cartridge and particulate filter prior to entering the plume.

1. Unscrew the filter and cartridge holder rings from the air sampler head and install a new Silver Zeolite cartridge and particulate filter.

   1.1 Ensure that the arrow on the side of the Silver Zeolite cartridge points toward the air sampler.

   1.2 Ensure that the particulate filter is installed such that the side of the filter which has a fibrous appearance is closest to the Silver Zeolite cartridge.

   1.3 Reassemble the air sampler head.

> **NOTE**
>
> The sampler flow rate, measure with both a particulate filter and a Silver Zeolite cartridge in place, is written on the air sampler's calibration sticker. The Silver Zeolite cartridge must be in place to ensure obtaining calibrated air flow rate even if an iodine sample has not been requested and the cartridge will not be analyzed in the field

2. Ensure the following prerequisites and precautions are met:

   - The air sampler shall be placed outside the vehicle or in an open vehicle door or window.
   - Do not place the sampler on the ground or on known contaminated surfaces.
   - Keep the sampler away from vehicle exhaust gases.
   - Protect the sampler from rain and snow.
   - All samples shall be labeled and saved for further analysis
   - Do not point the air sampler inlet toward any object which may restrict sampler air flow.
   - Do not stand directly in front of the sampler inlet when the sampler is running or allow loose clothing to restrict airflow.

3. Using the sampler's self timer (or a stopwatch or wristwatch if the sampler is not so equipped) draw a 300 liter (approximately) air sample.

3.1 Use the table below and the sampler's posted flow rate to determine sampler run time. Sampler's with adjustable flow rate should be set to the highest flowrate possible not to exceed 50 lpm (1.8 cfm) and run for approximate time according to the table below.

Posted or Set Flow Rate	Sampler Run Time
≥ 19 < 21	15 minutes
≥ 21 < 25	13 minutes
≥ 25 < 29 lpm	11 minutes
≥ 29 < 32 lpm	10 minutes
≥ 32 < 36 lpm	9 minutes
≥ 36 < 40 lpm	8 minutes
≥ 40 < 46 lpm	7 minutes
≥ 46 < 50 lpm	6 minutes

NOTE

The RAC/EACC or their designee may direct that sampler run time be shortened to reduce time spent in the plume or to reduce the "lead time" in obtaining sample results or lengthened to provide better sensitivity in low concentration areas.

4. Fill out an air sample label with date, time (i.e., air sampler stop time), your name, location, air sampler run time, and air sampler flow rate.

4.1 Also record this data on Exhibit 5.

5. To evaluate the Silver Zeolite cartridge in the field, perform the following steps:

5.1 Obtain a general area background count rate with the E140N/HP260 pancake probe at approximately waist level.

5.1.1 If the background is more than 200 cpm move to a location where background is acceptable (i.e. ≤ 200) and proceed with Step 5.2.

5.1.2 If background is 200 cpm or less, go to Step 5.3.

NOTE

If you cannot find an area where background is ≤ 200 cpm, ask the RAC/EACC for advice.

5.2 At the low background area run the air sampler for approximately 3 seconds to flush the cartridge.

5.3 Record the background count rate at the sample counting location on the sample label and on Exhibit 5.

5.4 Remove the cartridge from the sampler head and place it in a ziplock bag

> **NOTE**
>
> Surgeons gloves should be used if the cartridge must be handled and contamination is expected.

5.5 Count both sides of the Silver Zeolite cartridge through the ziplock bag.

5.5.1 Record the higher count rate as "gross cpm" on the sample label and on Exhibit 5.

5.6 Subtract the background cpm from the gross cpm and record the result as "Net Cpm" on the sample label and on Exhibit 5.

5.7 Place the sample label in the ziplock bag and retain the sample for later analysis.

6. To evaluate a particulate filter in the field, perform the following steps:

6.1 Obtain a general area background count rate with the E140N/HP-260 pancake probe at approximately waist level.

6.2 If the background count rate is more than 200 cpm move to a location where background is acceptable (i.e. ≤ 200 cpm).

> **NOTE**
>
> If you cannot find an area where the background is ≤ 200 cpm, ask the RAC/EACC for advice.

6.3 Unscrew the filter holder section of the sampler head from the silver zeolite cartridge holder section such that the particulate filter is held in place in the removed section.

6.4 Obtain a gross count rate on the particulate filter by holding the collection side of the filter holder against the HP-260 pancake probe.

6.5 Record the count rate as gross CPM on the sample label and on Exhibit 5.

6.6 Unscrew the retainer ring from the filter holder and, using tweezers, remove the filter from the holder.

6.7 Place the filter in the coin envelope.

6.8 Place the coin envelope in a ziplock bag (if an iodine sample was taken, use the same ziplock bag).

EXHIBIT 2

6.9 Reinstall the retainer ring onto the filter holder and re-count the filter holder without the particulate filter in place.

6.9.1 Enter this count rate as Background CPM on the sample label and on Exhibit 5.

6.10 Subtract Background CPM from Gross CPM and record the results as NET CPM on the sample label and on Exhibit 5

6.11 Place the sample label in the ziplock bag and retain the sample for later analysis.

6.12 Report the following information from the sample label to the RAC/EACC:

- Location
- Sample time
- Net cpm for both silver zeolite cartridge and particulate filter
- Run time
- Flow rate

EXHIBIT 3

Noble Gas Air Samples

To obtain noble gas air samples when directed by the RAC/EACC, proceed with Step 1 below:

1. Fill (or obtain a prefilled) clean container (500 ml [0.5 liter] or larger bottle or marinelli beaker) with clean water (i e., not affected by plant release) (this can be done before going into the field).

NOTE
Field monitoring kit contains water filled plastic bottles for noble gas sampling.

2. When a sample is needed:

   2.1 Stand well away from vehicles or other obstructions.

   2.2 Pour the water from the container.

   2.3 Cap or close the container.

3. Label the sample container with the date/time of collection, and location

4. Record the same information on Exhibit 5.

EXHIBIT 4

Contamination Surveys

To perform contamination surveys (if directed by the RAC/EACC):

1. Obtain smears and coin envelopes from the emergency kit, label envelope with date, time and location.
2. Wipe the smear over a 100 cm^2 area (4" x 4" area).
3. Count the background with the E140N w/HP-260 probe (or equiv.).
4. If background is greater than 200 cpm:
   - 4.1 Move to a location where background is ≤ 200 cpm.
   - 4.2 Re-count background and the smear.

NOTE
If you cannot find an area where the background is ≤ 200 cpm, ask the RAC/EACC for advice.

5. Count the smear with the E140N w/HP-260 probe (or equiv.).
6. Enter gross cpm and Bkg. cpm in Exhibit 5.
7. Subtract Bkg. cpm from gross cpm to obtain net cpm.
8. Enter net cpm on Exhibit 5.
9. Report location, time and net cpm for each smear to the RAC/EACC.
10. Save smears in coin envelope for later analysis as directed by the RAC/EACC.

EXHIBIT 5

Radiation/Air/Smear Sample Log

Date_____

Note: Report only the data in the bold outlined boxes to the RAC/EACC

Location	Time	Open Window * E520 (mR/hr)	Closed Window E520 (mR/hr) or Frisker (cpm)				
			Reading 1	Reading 2	Reading 3	Average	
						Air Sampler	
	Time	Sample Type	Gross CPM	Bkg CPM	Net CPM	Run Time	Flow Rate
		Iodine					
		Particulate					
		Smear					
		Noble Gas					

Location	Time	Open Window * E520 (mR/hr)	Closed Window E520 (mR/hr) or Frisker (cpm)				
			Reading 1	Reading 2	Reading 3	Average	
						Air Sampler	
	Time	Sample Type	Gross CPM	Bkg CPM	Net CPM	Run Time	Flow Rate
		Iodine					
		Particulate					
		Smear					
		Noble Gas					

Survey Meter Type_____ Serial No._____ Cal. Due _____
Air Sampler Type_____ Serial No._____ Cal. Due _____
Counting Inst. Type_____ Serial No._____ Cal. Due _____
Technician_____

* Under normal circumstances, open window readings taken with the E-520 are recorded in cpm, however, during emergencies the mR/hr scale shall be used to permit the RAC/EACC to more easily compare the relative magnitudes of open window and closed window readings.

EXHIBIT 6

INDIVIDUAL DOSE LOG

Date: _____

NAME (PRINT)	SOC SEC #	YTD TOTAL WHOLE BODY DOSE (TEDE) (A)

	START TIME	BEGINNING SRPD/ESRD READING (B)	STOP TIME	ENDING SRPD/ESRD READING (C)	EXTERNAL WHOLE BODY DOSE (DDE) (D)	APPROX THYROID DOSE (CDE) (E)*	APPROX INTERNAL WHOLE BODY (CEDE) FROM IODINE (F)*	APPROX TOTAL WHOLE BODY DOSE (TEDE) (G)	TOTAL THYROID DOSE (CDE) (H)
1					(C1-B1)			(A+D1+F1)	(E1)
2					(C2-B2)			(G1+D2+F2)	(H1+E2)
3					(C3-B3)			(G2+D3+F3)	(H2+E3)
4					(C4-B4)			(G3+D4+F4)	(H3+E4)
5					(C5-B5)			(G4+D5+F5)	(H4+E5)
6					(C6-B6)			(G5+D6+F6)	(H5+E6)

NAME (PRINT)	SOC SEC #	YTD TOTAL WHOLE BODY DOSE (TEDE) (A)

	START TIME	BEGINNING SRPD/ESRD READING (B)	STOP TIME	ENDING SRPD/ESRD READING (C)	EXTERNAL WHOLE BODY DOSE (DDE) (D)	APPROX. THYROID DOSE (CDE) (E)*	APPROX INTERNAL WHOLE BODY (CEDE) FROM IODINE (F)*	APPROX TOTAL WHOLE BODY DOSE (TEDE) (G)	TOTAL THYROID DOSE (CDE) (H)
1					(C1-B1)			(A+D1+F1)	(E1)
2					(C2-B2)			(G1+D2+F2)	(H1+E2)
3					(C3-B3)			(G2+D3+F3)	(H2+E3)
4					(C4-B4)			(G3+D4+F4)	(H3+E4)
5					(C5-B5)			(G4+D5+F5)	(H4+E5)
6					(C6-B6)			(G5+D6+F6)	(H5+E6)

* See for estimation method next page

EXHIBIT 6

NOTE

Notify the RAC/EACC when any team member approaches either of the following:

- 4 REM Year-to-Date Total Whole Body Dose (TEDE).
- 25 REM Thyroid Dose (CDE) during this event.

A rough approximation of the iodine derived air concentration (DAC), thyroid dose (CDE) and internal whole body dose (CEDE) can be obtained using the following relationship:

Every 1000 net cpm on the silver zeolite cartridge equals roughly:

- 20 DAC Iodine,
- 500 mREM/hr Thyroid Dose (CDE) and
- 15 mREM/hr Internal Whole Body Dose (CEDE)

For example: 5000 net cpm on the cartridge would roughly equal: 100 DAC Iodine, 2500 mREM/hr CDE and 75 mRERM/hr CEDE.

NOTE

1. This information is intended for field team use only and not for making dose projections for the public.
2. The relationships shown above are valid <u>only</u> if the sampler run times specified in the sampling instructions are followed.
3. The relationships are based on conservative assumptions (e.g. all iodine is I^{131}) and will in most cases overestimate the field team's dose. More refined estimates can be obtained from the RAC or EACC.

EXHIBIT 7

Major Activities Log

Date_____

TIME	Major Activities/Remarks

EXHIBIT 8

Important Telephone Numbers

	Location/Position		Phone Number
Control Room -	RAC		948-8525
	RAC		944-0382
OPS Support Center -	RCC/GRCS	Cellular	948-8248 ext. 5444
			948-8672
			948-8833
Processing Center -	Security		948-8038
Warehouse 1 -	Assembly Area		948-8248 ext. 5500
Warehouse 2 -	Assembly Area		948-8248 ext. 5042
EACC -	EAC/Met-Dose Coordinator		540-4501
EOF -	Group Leader R&EC		657-2097
Simulator (Drills Only) -	RAC		948-2063

EXHIBIT 9
Field Team Thyroid Blocking Agent Administration Form

Instructions:

1. Fill in the information below:

   Field Team Member's Name:

   Last_____First_____Middle Initial_____

   Social Security Number: _____ - _____ - _____

   Badge Number: _____

   Estimated Thyroid Dose (CDE). _____REM

   Name of the RAC/EACC who authorized use of thyroid blocking agent:

   _____

   Date and time of authorization: _____

2. Read the Thyroid Blocking Agent Precautions (Page 2 of this exhibit).

3. Decide if you should and are willing to take Thyroid Blocking Agent

4. Record your decision below and sign/date this form.

NOTE
Although 10 CFR 20 allows up to 50 REM per year, EPA and FDA guidance recommend considering the use of thyroid blocking agent (KI) for acute exposures of 25 REM or greater (CDE) to the adult thyroid in order to maintain exposures As Low As Reasonably Achievable (ALARA).

I verify that I have read and understand the information on the Thyroid Blocking Agent Precautions sheet and understand that taking thyroid blocking agent is voluntary.

I also verify that I have no / have a (circle one) known allergy to iodine. If you have a known allergy to iodine you should not take thyroid blocking agent.

I accept / refuse (circle one) thyroid blocking agent.

_____/_____
Signature of Team Member Date

5. If you have decided to accept thyroid blocking agent:

   - Obtain thyroid blocking agent and drinking water from the field monitoring kit.
   - Take the initial dose of one (1) tablet.
   - Notify the RAC/EACC of this action.

EXHIBIT 9

HOW POTASSIUM IODIDE WORKS

Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salt or fish. The thyroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill-up your thyroid gland with non-radioactive iodine This reduces the chance that radioactive iodine will enter the thyroid gland.

WHO SHOULD NOT TAKE POTASSIUM IODIDE

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or anti-thyroid drug). Pregnant and nursing women and babies and children may also take this drug.

HOW AND WHEN TO TAKE POTASSIUM IODIDE

Potassium Iodide should be taken as soon as possible after proper authorization is received. You should take one dose every 24 hours. More will not help you because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days. Contact company medical personnel to determine how long you should take potassium iodine.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low drug dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

A few people could have an allergic reaction with more serious symptoms These could be fever and joint pains, or swelling of parts of the face and body at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland (goiter).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide and contact the medical department

EXHIBIT 10

Field Team Radio Operating Guidelines

NOTE

The following sections provide guidance for operation of the field team portable radios. Individual sections can be implemented as needed.

To operate the portable radio:

A. Turn on the portable radio by rotating the "power on-off/volume" knob clockwise. The radio will perform a "power up self test" and then display:

- Its unit number (e.g., "TMI P 1" is portable radio #1) and
- Either "EARS" or "CC SCAN" depending on whether the radio is receiving the system Control Channel signal (i.e., if "CC SCAN" appears, the radio is out of range or in a bad location).

B. To transmit:

- Make sure that "EARS" is displayed on the front of the radio and then press the Push-To-Talk (PTT) button (elongated button on the left side of the radio).
- When the short medium pitch beep is heard, begin speaking.
- If a high pitch beep is heard when the PTT is pressed, the system is temporarily busy. Don't release the PTT button - continue pressing it and wait for the short medium pitch peep before starting to speak. The delay should typically be not more than a few seconds.
- When speaking, hold the radio approximately 3 inches from the mouth and speak in a normal voice.

C. Receiving:

- When a call is being received the calling station's identity is displayed in the upper line of the radio's display.

EXHIBIT 10

D. System status beeps:

- The radio will indicate system status by emitting any of several beeps:
  - A short medium pitch beep indicates that the radio has begun to transmit and the user may begin speaking
  - A high pitch beep indicates that all system channels are busy and the radio is waiting for the next available channel. The user should continue pressing the PTT button until a short medium pitch beep is heard and then begin speaking.
  - If five short high pitch beeps are heard while transmitting, this indicates that the radio is approaching its 60 second transmission length limit. Unless the radio is un-keyed before the long low pitch beep is heard, the radio will stop transmitting and information will be missed. Long transmissions should be broken into several shorter transmissions to avoid this.
  - A low pitch beep simultaneous with the appearance of a battery icon in the lower right corner of the display indicates that the battery voltage is low and the battery should be changed.

E. To replace the battery pack:

- Turn the radio off.
- Depress the recessed button beside the belt clip on the rear of the radio and slide the battery toward the bottom of the radio.
- Lift the battery up and away from the radio.
- To install a fresh battery pack: Align the tabs on the battery with the slots on the radio and slide the battery pack toward the top of the radio until it clicks.

F. The channel selector knob and the buttons on the front panel of the radio serve no function and should not be manipulated.