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	TOC 1	TOC 2	Document Type	Document Number	Sht/Sec	Changes	Rev	Status
old	EPIB		PROC	RA-EP-02250			0000	APPROVED
new	EPIB		PROC	RA-EP-02250		C01-3142	0000	APPROVED

PROCEDURE DEVELOPMENT FORM
ED 7635-17

SHEET	PROCEDURE ACTIVITY TRACKING NO.
1 OF 1	01-3142

SECTION 1 - IDENTITY

PROCEDURE NO. / CURRENT REVISION	PROPOSED REVISION NO.	PROPOSED C or E NO.		
RA-EP-02250 / 00			☐ NEW (N) ☐ CANCELLATION (CX)	☐ RESTRICTED (CR/TR)
SUPERSEDES			☐ REVISION (R) ☐ INACTIVATION (IN)	ESTIMATED EXPIRATION
		C-1	☒ CHANGE (C) ☐ REACTIVATION (RA)	(DATE / EVENT)
			☐ TEMPORARY APPROVAL (TA)	
			☐ EDITORIAL CORRECTION (E)	

PROCEDURE TITLE
Radiation Monitoring Team Surveys

PROCEDURE CLASSIFICATION	HAS PROCEDURE BEEN EXEMPTED FROM REGULATORY APPLICABILITY?	PAT / PCR NOS. CLOSED OUT
☒ SR ☐ QR ☐ N-QR CHANGE TO? ☐ YES ☒ NO	☐ YES ☐ NO	01-3116 ☐ CONTINUED

ACTIVITY SUMMARY / PURPOSE
Add steps to log in and log out sources in the RTL Source Accountability Log Book during instrument checks on Attachment 1 to address PCR 01-3116 and CR 01-2436.

☐ CONTINUED

SECTION 2 - CONCURRENT EFFECTIVE DOCUMENTS ☐ CONTINUED

DOCUMENT NO. / REVISION	DOCUMENT TITLE	PAT NO. / CHANGE REQUEST

SECTION 3 - REVIEW ORGANIZATIONS

REQUIRED	REQUESTED
RP ____ ____ ____ ____ ____ ☐ CONTINUED	____ ____ ☐ CONTINUED

PROCEDURE PREPARER	DATE	QUALIFIED REVIEWER	DATE
Patti J Smith	12/6/01	E J Gordon	12/11/01

SECTION 4 - ATTACHMENTS

COMPLETED AND ATTACHED

YES	N/A		YES	N/A		YES	N/A	
☐	☒	VALIDATION CHECKLIST	☐	☒	10CFR50.59 SCREEN NO. ____	☐	☒	REVISED CROSS REFERENCES LIST
☒	☐	COMMITMENT VERIFICATION SUMMARY	☐	☒	10CFR50.59 EVALUATION NO. ____	☒	☐	PCRs
☒	☐	REGULATORY APPLICABILITY DETERMINATION NO. 01-01062	☒	☐	DOCUMENT REVIEW SHEETS	☐	☒	OTHER ____

FINAL QUALIFIED REVIEWER CONCURRENCE	DATE
	12-17-01

SECTION 5 - TEMPORARY APPROVAL

MANAGEMENT SRO	DATE	APPROVAL AUTHORITY	DATE
N/A			

SECTION 6 - CONCURRENCE / FINAL APPROVAL

PROCEDURE SPONSOR NG Wm H. Rochwood	DATE 12-18-01	☒ SRB	DATE 1/8/02
☐ MANAGER – NUCLEAR QUALITY ASSESSMENT (QA)	DATE	☒ PLANT MANAGER Jim Fast	DATE 1-10-02
		APPROVAL AUTHORITY Wm H. Rochwood	DATE 1/21/02 1-15-02

SECTION 7 - TRAINING / PROCEDURE EFFECTIVITY

TRAINING COMPLETE	ALTERATION EFFECTIVE DATE	PROCEDURE SPONSOR	DATE
☐ YES ☒ N/A	1/30/02	Wm H. Rochwood	1-24-02

Davis-Besse Nuclear Power Station

EMERGENCY PLAN IMPLEMENTING PROCEDURE

RA-EP-02250

(Supersedes HS-EP-02250, R5/C2)

Total Rewrite Without Revision Bars

RADIATION MONITORING TEAM SURVEYS

REVISION 0

Prepared by:		03/16/01 Date
Sponsor:	for D. H. Lockwood Manager - Regulatory Affairs	3/16/01 Date
Approved by:	Director – Support Services	3/29/01 Date
Approved by:	Plant Manager	3/29/01 Date

Effective Date: 4/6/01

Procedure Classification:

X Safety Related

____ Quality Related

____ Non-Quality Related

LEVEL OF USE:

STEP-BY-STEP

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1.0 PURPOSE

This procedure provides instructions for Radiation Monitoring Teams (RMTs) to perform radiological surveys and sampling outside of the Protected Area during emergencies.

2.0 REFERENCES

2.1 Developmental

2.1.1 Davis-Besse Nuclear Power Station Emergency Plan

2.1.2 DB-HP-01103, Use of Portable Radiation, Contamination, and Airborne Survey Equipment

2.2 Implementing

2.2.1 RA-EP-00600, Emergency Facilities and Equipment Maintenance Program

2.2.2 HS-EP-02550, Offsite Personnel and Vehicle Monitoring and Decontamination

3.0 DEFINITIONS

3.1 DBAB RADIATION MONITORING TEAM (RMT) - Individuals who perform radiological monitoring inside the Davis-Besse Administration Building (DBAB) during emergencies.

3.2 FIELD RMT - Individuals who perform radiological monitoring outside the Protected Area and DBAB during emergencies.

4.0 RESPONSIBILITIES

4.1 DBAB RMTs shall be responsible for performing DBAB surveys and air samples, setting up personnel monitoring instrumentation in the DBAB, and assisting with decontamination at the DBAB and offsite assembly area; including the setting up and operation of laboratory equipment for analysis of DBAB Habitability Surveys and RMT Field Samples.

4.2 Field RMTs shall be responsible for distributing dosimetry to the Warehouse and the Access Road Security Station, performing surveys, air sampling, and environmental sampling outside of the Protected Area, as directed by the RMT Coordinator.

4.3 The Supervisor - Emergency Preparedness shall be responsible for accumulating and submitting records to Nuclear Records Management.

5.0 INITIATING CONDITIONS

This procedure shall be implemented:

5.1 When an emergency has been declared and classified as an Alert, a Site Area Emergency, or a General Emergency.

5.2 At the direction of the Emergency Director.

6.0 PROCEDURE

6.1 Radiation Monitoring Team (RMT) Initial Instructions

6.1.1 RMT members should sign in on the status board, enter their estimated annual exposure to date, and obtain personnel dosimetry from Cabinet #1 in the Radiological Testing Lab (RTL).

a. Each RMT member should possess and complete:

1. One Thermoluminescent Dosimeter (TLD).

2. One Self-Reading Dosimeter (SRD), this will normally be a 0-500 mRem SRD.

3. Completed TLD and SRD issuance documentation

b. Rezero the SRD if scale is greater than 20%.

c. Record initial SRD readings on the Dosimeter Record, ED 6547, and when assigned to a team, update the status board with your name and SRD reading.

d. Wear the TLD and SRD together on outer clothing between your collar and waist.

6.1.2 While in the DBAB, RMT members shall perform as directed by the RTL Coordinator.

a. IF assigned to a Field RMT,
THEN go to Subsection 6.2, Field RMT Activation.

b. IF assigned to a DBAB RMT,
THEN go to Subsection 6.5, DBAB RMT Activation.

6.1.3 IF the RTL Coordinator is not present,
THEN a senior RMT member should assume this duty,
AND prepare for field surveys in accordance with Subsection 6.2, Field RMT Activation.

6.2 Field RMT Activation

Field RMT Member should:

6.2.1 Inform the RTL Coordinator of any problems encountered during Field RMT Activation.

6.2.2 Fill out a Potassium Iodide (KI) Administration Form (ED 8057). The RTL Coordinator will provide the KI briefing.

6.2.3 Locate a RMT Kit and an Environmental Sampling Kit.

6.2.4 IF the seal is NOT intact on either kit,
THEN inventory the contents of the unsealed kit using RA-EP-00600, Emergency Facilities and Equipment Maintenance Program.

6.2.5 Obtain a 0-5 Rem SRD from the RMT kit.

a. Rezero SRD
b. Wear SRD next to TLD and other SRD.

6.2.6 Conduct an operational check of the survey meters in the RMT kits, and the RADeCO H-809B and H-809C air samplers in accordance with Attachment 1, Instrument Check.

a. During operational checks report any problems to the RTL Coordinator.

6.2.7 If assigned by the RTL Coordinator, obtain 10 dosimetry packets and identification tags from the DBAB RTL for distribution to the Access Road Security Station and Warehouse.

a. Rezero all SRDs
b. Take dosimeter record forms for issue documentation when delivered
c. Instruct person receiving package, issuance documentation shall be completed and TLDs cannot be assigned to more than one individual.

6.2.8 Obtain an SMR handheld radio from Cabinet #1.

6.2.9 When all equipment is checked and operating, report to the RTL Coordinator that the team is ready for field monitoring.

6.2.10 When directed by the RTL Coordinator, proceed to the Dose Assessment Center for a briefing from the RMT Coordinator.

6.3 Field RMT Operations

RMT members should perform as directed by the RMT Coordinator during field RMT Operations.

NOTE 6.3.1

Normal background dose rate is less than 0.2 mRem/hr.

6.3.1 Monitor dose rates while proceeding to the RMT vehicle with RMT Kit, air samplers, tripod, Environmental Sampling Kit and at least one hand-held radio.

6.3.2 Check the vehicle-mounted air sampler response.

a. Mount the air sampler on the vehicle.

b. Plug the power cable into the receptacle on the mount.

c. Ensure vehicle is running.

d. Remove the cover and/or tape from the filter holder.

e. Turn on the air sampler.

f. Ensure the flow meter indicates the calibrated flow rate.

g. Turn off the air sampler.

h. Replace the cover and/or tape.

6.3.3 While in the RMT vehicle, set the RO-2A or RSO-50 to the 0-50 Rem/hr range and keep it within reach in case area radiation levels exceed 5 Rem/hr.

a. Remove the PRM-6 or equivalent count rate meter and have it on and accessible for early plume detection.

6.3.4 Keep the vehicle running with a SMR radio on at all times.

6.3.5 Conduct a radio check before leaving the site, away from the DBAB.

a. IF all radios become inoperable in the field,
THEN contact the RMT Coordinator via telephone using the numbers in the RMT Vehicle Guidebook, located in the vehicle glovebox.

6.3.6 As directed by the RTL Coordinator, distribute personnel dosimetry to the Access Road Security Station and Warehouse.

a. Proceed to the Access Road Security Station.

1. Distribute personnel dosimetry to guards.

2. Fill out the Dosimeter Record, ED 6547, for personnel dosimetry issued.

3. Ensure personnel understand their responsibility for dosimetry issued to them.

b. Proceed to the Warehouse.

1. Distribute personnel dosimetry to Warehouse personnel.

2. Fill out the Dosimeter Record, ED 6547, for personnel dosimetry issued.

3. Ensure personnel understand their responsibility for dosimetry issued to them.

c. Keep dosimetry records in your possession until returning to the RTL.

d. Instruct personnel how to process dosimetry at the end of the shift.

e. Ensure dosimetry is available to oncoming shift.

6.3.7 Proceed in RMT vehicle to assigned survey location when instructed by RMT Coordinator.

6.3.8 <u>IF</u> dose rates exceed 5 Rem/hr,
<u>THEN</u> the RMTs shall exit to a low dose rate area and contact the RMT Coordinator.

NOTE 6.3.9

When the open window reading differs from the closed window reading, the plume has been entered. Open window value will be a larger number in the plume.

6.3.9 Observe survey meters for an upscale reading indicating that a radioactive plume has been encountered.

a. Obtain readings with survey meter beta shield in both open and closed positions to determine if plume has been entered.

6.3.10 Traverse the plume, and complete the plume data section of DBEP-005, Field RMT Survey Record.

a. Check personal dosimetry after each traverse.
b. Record value in "RMT Dose" section of DBEP-05.

6.3.11 IF plume dose rates exceed 500 mrem/hr (closed window), or SRD reaches 400 mrem or greater,
THEN convey applicable data to the RTL Coordinator.

a. IF instructed to rezero a SRD,
THEN record the final reading, date and time
AND new initial reading on Dosimeter Record, ED 6547, with date and time.

b. Use the 0-5 Rem SRD as a backup if the other SRD over ranges or is dropped and is off scale.

6.3.12 IF plume dose rates do not exceed 500 mRem/hr (closed window),
AND open-window readings are greater than closed-window readings,
THEN proceed to the plume centerline and obtain an air sample in accordance with Attachment 2, Field Air Sampling Procedure.

6.3.13 Report air sample results to the RMT Coordinator after leaving the plume.

a. Continue to observe the survey meter while analyzing air sample.

6.3.14 As directed, perform environmental sampling using the following attachments:

- Vegetation Sampling Procedure, Attachment 3
- Soil Sampling Procedure, Attachment 4
- Water Sampling Procedure, Attachment 5
- Snow Sampling Procedure, Attachment 6

6.3.15 Report to the RMT Coordinator that environmental sampling is complete

a. Continue to observe the survey meter.

6.4 Field RMT Deactivation

6.4.1 Collect Access Road Security Station and Warehouse dosimetry and complete dosimetry record forms.

6.4.2 IF directed to return to the RTL,
THEN return RMT vehicle to its parking spot near the DBAB.

6.4.3 Return to the RTL .

a. Notify the RTL Coordinator of your arrival.

b. Perform personnel monitoring prior to entering the facility.

c. The RTL Coordinator will assist with personnel and equipment monitoring and decontamination.

6.4.4 Deliver all environmental samples to the RTL Coordinator.

6.4.5 IF background radiation levels allow,
THEN survey RMT vehicles for contamination.

a. Survey wheel wells, exterior of air filter, front grill/ radiator, and door handles.

b. Document on Survey Record

c. Report survey results to the RTL Coordinator.

6.4.6 Conduct a debriefing with the RMT Coordinator and return vehicle keys.

6.4.7 Debrief with the RTL Coordinator.

- Complete and submit all recorded surveys.
- Complete and submit dosimeter record forms.
- Return personnel monitoring devices.
- Report procedural or equipment problems.

6.4.8 Inventory and restock RMT Kit and Environmental Sampling Kit according to RA-EP-00600.

6.4.9 IF radioiodine cartridge reading was greater than 100 net CPM,
THEN complete Attachment 14, Estimate of CEDE From Radioiodides,
AND inform the RTL Coordinator.

6.5 DBAB RMT Activation

6.5.1 Conduct operational checks of the survey meters to be used in accordance with Attachment 1, Instrument Check.

a. Use survey instruments from Cabinet #1 in the RTL, when available; otherwise use RMT kit instruments.

- RSO - 5 or equivalent
- PRM - 6 or equivalent

b. During operational checks, report any problems to the RTL Coordinator.

6.5.2 Obtain an AC powered air sampler from Cabinet #1, and perform an operational check in accordance with Attachment 1, Instrument Check.

6.5.3 IF directed by the RTL Coordinator,
THEN Assemble 10 dosimetry packets from Cabinet #1.

a. Rezero SRDs.

6.5.4 Report to the RTL Coordinator that the team is ready to perform DBAB surveys.

6.6 DBAB RMT Operations

DBAB RMT members should perform the following when directed by the RTL Coordinator:

6.6.1 Check area monitoring dosimetry in the DBAB.

a. Take a dosimeter charger from Cabinet #1 to rezero SRDs if required.

b. Obtain a DBAB Master key and an Annex Master key from the Dose Assessment Area key locker.

c. Check Area Monitoring dosimetry at locations designated on Area Monitoring Stations, Attachment 8.

1. Record TLD numbers .

2. Record SRD numbers, readings, and time of readings.

d. Return to the RTL and report to the RTL Coordinator.

6.6.2 Set up personnel monitoring instrumentation.

a. Ensure operational check(s) of frisker(s) have been performed in accordance with Attachment 1, Instrument Check.

NOTE 6.6.2.b

Normal installations are at South Security Station and Plant Entrance Area (Reference Attachment 9, DBAB Map.)

b. Place friskers at locations designated by the RTL Coordinator.

c. Report set-up completion to RTL Coordinator.

6.6.3 Continuous Air Monitor (CAM)

a. Perform an operability check on the CAM in accordance with Attachment 10, Continuous Air Monitor Operability Check.

6.6.4 Operation of RTL Counting Equipment

Establish operation of laboratory counting equipment using Attachment 7, Counting Equipment Set-up and Operation.

6.6.5 Indoor air samples:

a. Ensure air sampler operability has been checked in accordance with Attachment 1, Instrument Check.

b. Proceed to sampling location assigned by RTL Coordinator.

NOTE 6.6.5.c

Air samples performed at ground level may be invalidated by loose surface contamination.

c. Place air sampler at waist level, or above.

d. Ensure that the filter (rough side out) and cartridge (follow flow arrow) are installed correctly.

e. Plug sampler power cord into an electrical outlet.

6.6.5 Indoor air samples (cont.)

f. Remove tape from the filter assembly.

g. Start air sampler and record start time on the air sample bag label.

h. Record the following on an air sample bag label:

- Sample date
- Sample location
- LI number (air sampler number)
- Calibration due date
- Time on
- Flow rate
- Tester

i. Collect a 10-minute air sample, unless otherwise directed by the RTL Coordinator.

j. Record stop time on air sample bag label.

k. Return to the RTL.

l. Transfer the silver zeolite cartridge and particulate filter to the labeled air sample bag.

m. Give the labeled air samples to the RTL Coordinator,
<u>AND</u> frisk, decontaminate as necessary,
<u>THEN</u> return the air sampler to Cabinet #1.

n. Count silver zeolite cartridge/filter paper combination using Bicron LabTech in accordance with Attachment 7.

1. Record results on Attachment 11, Air Sample Analysis Worksheet.

o. Transfer the air filter only to a labeled sample bag.

p. Use a frisker to determine gross beta on the particulate filter using Attachment 11, Air Sample Analysis Worksheet.

6.6.6 DBAB area radiation and contamination surveys:

a. Obtain the following:

1. RSO-5 or the equivalent, that has been checked for operability.

2. PRM-6 or the equivalent, that has been checked for operability.

3. Three smears, numbered 9, 10 and 12, for tiled floor surfaces.

b. Conduct area surveys with the meter held at waist level.

c. Record area survey readings on Attachment 12, DBAB Survey Sheet.

d. Conduct area contamination surveys at the pre-assigned locations of Attachment 12, DBAB Survey Sheet.

1. Match smear number with location number.

2. On tile surfaces take an approximately , 8" long smear.

3. On carpet, use the PRM-6 or equivalent to survey approximately one square foot of carpet, holding the probe approximately one-half inch above the surface.

e. Record contamination surveys on Attachment 12, DBAB Survey Sheet.

f. Count smears on a scaler or frisker in the RTL, in accordance with Attachment 7.

1. Use the sample holder for consistent geometry
2. Record results

g. Submit survey sheet and smears to the RTL Coordinator.

6.6.7 RTL area radiation and contamination surveys

a. Obtain the following:

1. RSO-5 or equivalent, that has been checked for operability.
2. 10 smears numbered R1 - R10.

b. Conduct area surveys with the meter held at waist level.

c. Record area survey readings on Attachment 13, RTL Survey Sheet.

d. Conduct area contamination surveys at the pre-assigned locations on Attachment 13, RTL Survey Sheet.

e. Count smears on a scaler frisker in the RTL.

1. Use sample holder for consistent geometry
2. Record results on the survey sheet

f. Submit survey sheet to the RTL Coordinator.

NOTE 6.6.8

All herculite sections are numbered in accordance with Attachment 15. Stanchions are marked A, B, C, etc., reflecting the corresponding locations on the herculite.

6.6.8 DBAB Monitoring and Decontamination Station

a. Set up the DBAB Monitoring and Decontamination Station using Attachment 15, DBAB Monitoring and Decontamination Station.

1. Notify the OCA Supervisor that the berthing area hallway access door will be opened.

2. Installation should include:

a. Rad-rope and signs.

b. Installation of step-off-pads between the frisking stations and clean hallway leading to the TSC.

c. Rad-postings in the radiologically controlled hallway leading to the decontamination room.

6.6.8 DBAB Monitoring and Decontamination Station (cont.)

d. Containers for contaminated materials.

e. Radwaste containers.

f. A step-off-pad at the clean exit.

g. A frisking station.

h. Sufficient decontamination supplies in accordance with HS-EP-02550, Offsite Personnel and Vehicle Monitoring and Decontamination.

6.6.9 Offsite Assembly Area Decontamination:

If required, assist with decontamination at the offsite assembly area.

a. Proceed to the Dose Assessment Center for a briefing from the RMT Coordinator.

b. Obtain keys for a vehicle from the RMT Coordinator, or arrange for transportation to the offsite assembly area.

c. Obtain at least 2 friskers that have been checked for operability.

d. Obtain a RSO-5 survey meter or the equivalent, that has been checked for operability.

e. Obtain at least 2 copies of HS-EP-02550.

NOTE 6.6.9.f

Additional Radiation Protection supplies may be required that are not available in the kit, refer to the checklist on the kit and the RTL Coordinator

f. Obtain the offsite assembly area decontamination kit from the RTL.

g. Proceed to the offsite assembly area,

1. Report arrival to the RMT Coordinator.

2. Perform as instructed by the Radiation Protection Technicians.

6.7 DBAB RMT Deactivation

DBAB RMT members should:

6.7.1 Return all usable supplies and instrumentation to the proper RTL cabinet according to RA-EP-00600, Emergency Facilities and Equipment Maintenance Program.

a. Document inventory deficiencies and submit to the RTL Coordinator.

6.7.2 Ensure all smears and samples have been submitted to the RTL Coordinator.

6.7.3 Deenergize the CAM in accordance with Attachment 10; Step 9.

6.7.4 When dismissed, debrief with the RTL Coordinator.

a. Complete and submit all recorded surveys.

b. Return personnel monitoring devices.

c. Report any procedural or equipment problems.

7.0 FINAL CONDITIONS

Activities governed by this procedure may be terminated when:

7.1 RMT members have been relieved of all emergency duties.

7.2 All records have been completed and submitted to the RTL Coordinator for review.

7.3 All equipment and supplies have been returned to their storage locations.

7.4 The RTL Coordinator has forwarded all records to the Supervisor - Emergency Preparedness.

7.5 The RTL Coordinator has forwarded a copy of all personnel dosimetry records to the Manager - Radiation Protection.

8.0 RECORDS

8.1 The following quality assurance records are completed by this procedure and shall be listed on the Nuclear Records List, captured, and submitted to Nuclear Records Management in accordance with NG-NA-00106:

8.1.1 None

8.2 The following non-quality assurance records are completed by this procedure and may be captured and submitted to Nuclear Records Management, in accordance with NG-NA-00106:

8.2.1 Dosimeter Record

8.2.2 RMT Field Survey

8.2.3 DBAB Area Monitoring Stations

8.2.4 DBAB Survey Sheet

8.2.5 RTL Survey Sheet

8.2.6 Air Sample Analysis Worksheet

8.2.7 Estimate of CEDE From Radioiodines

ATTACHMENT 1. INSTRUMENT CHECK

Survey Meter Source Check

Instrument					
PRM-6	Frisker	RO-2A	RSO-5	RSO-50	
X	X	X	X	X	1. Verify that the calibration date is current.
X	X	X	X	X	2. Inspect the instrument for damage.
X	X				3. Inspect and attach the GM pancake detector probe and cord, if disconnected.
X	X	X	X	X	4. Perform battery check(s).
X					5. Turn on speaker switch.
	X				6. Set alarm knob to "5" and place toggle switch to "Slow Response".
X					7. Set response knob to midpoint.
		X	X	X	8. Perform Zero check, adjust if needed.
X	X	X	X	X	9. Obtain source available in lead pig in Cabinet #1. Cabinet #1 inside door lists which source to use. Log source out on the appropriate log sheet in the RTL Source Accountability Logbook located in Cabinet #1.
X	X				10. Check all scales with the check source *NOTE:* Source must be oriented correctly
		X	X	X	11. Open beta window and check lowest scale with the check source. (Close window when complete.)
X	X	X	X	X	12. Return source to lead pig in Cabinet #1 and log source in on the appropriate log sheet in the RTL Source Accountability Logbook located in Cabinet #1.
X	X	X	X	X	13. Attach a daily instrument response check sticker, if necessary, and sign on the appropriate day.
X			X		14. Set meter to lowest scale and maintain it in your possession.

ATTACHMENT 1: INSTRUMENT CHECK (CONT.)

Air Sampler Operational Check

Instrument			
H-809B	RAS-1*	H-809C	
X	X	X	1. Verify that the sampler calibration date is current.
X	X	X	2. Inspect the sampler for damage.
			3. Ensure filter assembly o-rings are in place.
X	X	X	4. Ensure filter assembly contains a particulate filter and a silver zeolite cartridge.
X	X	X	5. Reassemble the filter assembly, ensuring arrow on cartridge points toward the sampler.
X	X	X	6. Ensure rough side of particulate filter points away from the sampler (lined side toward sampler).
		X	7. Follow instructions on power supply.
X			8. Turn on a timer switch and press the "start" button.
	X		9. Plug in AC cord to 120 V. wall outlet, and turn sampler on.
X	X		10. Ensure flow meter indicates the calibrated flow rate.
X	X		11. Place palm of hand over air intake and ensure flow meter decreases.
X	X		12. Turn sampler off.
X	X		13. Tape the intake end of the filter assembly.

* or equivalent AC-powered air samplers.

ATTACHMENT 2: FIELD AIR SAMPLING PROCEDURE

NOTE 1.

a. Use teamwork to avoid cross contamination of samples.
b. If sampling while in plume, monitor for changes in dose rate.
c. Air sample duration is 10 minutes, unless otherwise specified.

1. IF dose rate is less than 500 mRem/hr,
   THEN use the vehicle mounted air sampler,
   OTHERWISE use the battery-powered air sampler on the tripod at waist level.

2. Ensure that the filter assembly has not been loosened.

3. Point the sampler into the wind, but DO NOT face the sampler toward the vehicle.

4. IF using the vehicle-mounted sampler,
   THEN ensure the cord is plugged into the battery outlet and the vehicle is running.

5. IF your watch does not have a second hand,
   THEN obtain stopwatch from RMT kit.

6. Remove tape from filter assembly.

7. Start air sampler and note start time and flow rate. Return to vehicle.

8. IF using a tripod air sampler,
   THEN exit the plume.

9. Take a plastic air sample bag from the environmental sampling kit.

10. Record the following information on the air sample bag label:

    - Sample date
    - Sample location
    - Time on
    - Flow rate
    - Tester

11. Stop sampler at the end of the sampling period and record the stop time on the air sampling bag label.

ATTACHMENT 2: FIELD AIR SAMPLING PROCEDURE (Cont.)

12. Retape the intake end of the filter assembly.

13. IF using air sampler on tripod,
THEN place yellow waste bag over air sampler and tripod,
AND place them in the vehicle.

14. IF using vehicle-mounted sampler,
THEN put plastic cover over sampler and secure tightly.

15. Drive to a low background area. Normally, a low background area is 300 counts per minute or less.

> NOTE 16
> The following steps require contamination control measures.
> The measures will vary with the current radiological conditions.

16. IF using tripod air sampler,
THEN remove air sampler from vehicle.

17. IF using vehicle-mounted sampler,
THEN remove plastic cover.

18. Record LI Number (air sampler number) and calibration due date on the air sample bag label.

19. Using the "clean" person/"dirty" person technique, remove the filter media assembly from the sampler.

> NOTE 20
> Ensure the silver zeolite cartridge and particulate filter are placed in the sample bag in the same configuration as they were installed in the air sample head.

20. Remove the silver zeolite cartridge and place into the labeled air sample bag.

21. Remove the particulate filter from the filter assembly (tweezers may be required) and place into the bag with the silver zeolite cartridge; seal the bag.

22. Clean tweezers, if used, with decon cloth.

23. Reload air sampler with clean filter cartridge and particulate filter.

ATTACHMENT 2: FIELD AIR SAMPLING PROCEDURE (Cont.)

24. Tape intake end of air sampler filter assembly.

25. Ensure tweezers have no smearable contamination and return them to the kit.

26. Put used decon cloths into a yellow waste bag.

27. Obtain PRM-6 survey meter or the equivalent, from the vehicle.

28. Move well away from the vehicle to prevent possible background interference.

29. Ensure meter is on, and set to the lowest scale.

30. Holding Geiger-Mueller (GM) pancake detector at arm's length from your body, take a background reading.

> NOTE 31
> The GM pancake detector window must face the collection side of the particulate filter/silver zeolite cartridge. (Arrow pointing away from detector.)

31. Take a contact reading on silver zeolite cartridge and particulate filter through the plastic bag.

32. Subtract background reading from contact reading and record as net reading on the air sample bag.

33. Place samples in a bag marked as radioactive material.

34. Return air sampling equipment to the vehicle avoiding cross-contamination.

35. Record pertinent data on Field RMT Survey Record (DBEP-005).

36. Report the following to the RMT Coordinator:

    - Sample start time
    - Sample length
    - Air sampler flow rate
    - Net cpm from silver zeolite cartridge/particulate filter.
    - SRD readings

37. Return to Step 6.3.13 of the procedure

ATTACHMENT 3: VEGETATION SAMPLING PROCEDURE

CAUTION 1.

Cross contamination of samples shall be avoided.

1. Don cotton liners and rubber gloves.

2. Examine large sample bag for cleanliness.

3. Obtain the 18" ruler from the environmental sampling kit.

4. IF grass is not available at the sample location,
   THEN obtain a sample of other vegetation as determined by the RMT Coordinator.

5. Define an approximate 18" square grass sample area in an undisturbed location at least 10 feet from roadway traffic.

6. Perform a radiation survey approximately 1" above grass using either a frisker or survey meter. Be cautious not to contaminate probe.

7. Record the reading on the sample bag..

8. Complete the sample bag label (Date/Time/Location/Sampler).

9. Obtain the clippers from the environmental sampling kit.

10. Use the clippers to collect the grass or vegetation within the sampling square by trimming the vegetation to the soil surface.

11. Deposit the sample into the vegetation sample bag.

12. Wipe the clippers with decon cloth and monitor both for contamination. Repeat with clean section of decon cloth, if necessary.

13. Ensure clippers have no smearable contamination and return the clippers to the environmental sampling kit.

14. Put decon cloth, gloves, and glove liners into yellow waste bag.

15. Place the sample bag into another yellow bag.

16. Take contact dose rate on yellow bags AND record on bags.

17. Return to Step 6.3.15 of the procedure.

ATTACHMENT 4: SOIL SAMPLING PROCEDURE

CAUTION 1.
Cross contamination of samples shall be avoided.

1. Don cotton liners and rubber gloves.
2. Examine large sample bag for cleanliness.
3. Obtain the 18" ruler from the environmental sampling kit.
4. Define an approximate 18" square sample area in an undisturbed location at least 10 feet from roadway traffic.
5. Perform a radiation survey approximately 1" above ground using either a frisker or survey meter.
6. Record the reading on the sample bag.
7. Complete the sample bag label.
8. Obtain the trowel from the environmental sampling kit.
9. Collect the soil sample, including roots (if vegetated), to a depth of 1". If precipitation has collected in sample area, contact RMT Coordinator for guidance.
10. Transfer the sample to the soil sample bag.
11. Wipe the trowel with decon cloth and monitor for contamination. Repeat with clean section of decon cloth, if necessary.
12. Ensure the trowel has no smearable contamination and return the trowel to the kit.
13. Put decon cloth, gloves, and glove liners into yellow waste bag.
14. Place the sample bag into another yellow bag.
15. Take contact dose rates on bags and mark the dose rate on the outside of the bags.
16. Return to Step 6.3.15 of the procedure.

ATTACHMENT 5: WATER SAMPLING PROCEDURE

CAUTION 1.

Cross contamination of samples shall be avoided.

1. Don cotton liners and rubber gloves.
2. Obtain cubitainer from environmental sampling kit and examine it for cleanliness.
3. Obtain dipper from kit and examine it for cleanliness.
4. Take sample by submerging dipper within a few inches of the water's surface. Discard the first dipper of sample.
5. Transfer sample to cubitainer and repeat until cubitainer is full.
6. Cap cubitainer.
7. Use paper towel to wipe off excess water from the cubitainer and dipper.
8. Wipe dipper with clean decon cloth and monitor for contamination. Repeat with clean, dry section of decon cloth if necessary.
9. Ensure the dipper has no smearable contamination and put dipper back in the kit.
10. Perform a radiation survey approximately 1" above ground using either a frisker or survey meter.
11. Record the reading on the sample bag.
12. Record survey results, and complete cubitainer label.
13. Bag the cubitainer in a yellow bag.
14. Discard gloves, glove liners, and used paper towels/decon clothes into a yellow waste bag.
15. Return to Step 6.3.15 of the procedure.

ATTACHMENT 6: SNOW SAMPLING PROCEDURE

CAUTION 1.

Cross contamination of samples shall be avoided.

1. Don cotton liners and rubber gloves.
2. Obtain snow container from environmental sampling kit and examine it for cleanliness.
3. Obtain the 18" ruler from the environmental sampling kit.
4. Define an approximate 18" sample square in an undisturbed location at least 10 feet from roadway traffic.
5. Perform a radiation survey approximately 1" above ground using either a frisker or survey meter.
6. Record the reading on the sample bag.
7. Record survey reading on snow container label.
8. Use the trowel to collect 1 to 2 inches of snow from the surface, unless directed to take more or less.
9. Transfer snow to container.
10. Seal container.
11. Use paper towel to wipe off excess snow and/or water from container.
12. Complete sample container label.
13. Place the snow container in a yellow bag.
14. Clean trowel with decon cloth and monitor for contamination. Repeat with clean, dry decon cloth if necessary.
15. Ensure the trowel has no smearable contamination and return the trowel to the kit.
16. Place used paper towels/decon clothes, gloves, and glove liners in the yellow waste bag.
17. Return to Step 6.3.15 of the procedure.

ATTACHMENT 7: COUNTING EQUIPMENT SET-UP AND OPERATION

1.0 Daily Checks and Setup: Bicron Labtech

1.1 Check instrument for physical damage.

1.2 Connect detector (a NaI crystal) to detector connection.

1.3 Turn instrument "ON".

1.4 Plug in Labtech to 115 volt AC 60 Hz line source
OR verify battery reads in "BAT OK" region of meter.

1.5 If the battery does not read in the "BAT OK" region, the instrument shall be used with AC power.

NOTE 1.6

Calibration values recorded on top of instrument.

1.6 Verify controls are set as follows (adjust as necessary):

a. H.V. ADJUST to value determined at calibration

b. Adjust THRESHOLD to value identified at calibration

c. WINDOW to value determined at calibration

d. Switch ANALYZER to Ch 1

1.7 Background determination

a. Set Ratemeter to X1

b. Set Scaler to Preset Time

c. Set Preset Time to 10 minutes by pressing the white set button until 10.0 is displayed

d. Press the red count button to start a count

e. Perform a 10-minute background count

f. Record background on Daily Source Check Sheet

ATTACHMENT 7: COUNTING EQUIPMENT SET-UP AND OPERATION (Cont.)

NOTE 1.8

Acceptable source response check is within ±20% of the posted source value.

1.8 Source Response Check

a. Set Ratemeter to X100 or appropriate scale for the Ba-133 source being used

b. Set Scaler to Preset time.

c. Set Preset Time to 10 minutes by pressing the white set button until 10.0 is displayed.

d. Press the red count button to start a count.

e. Insert a Ba-133 source into a calibrated geometry.

f. Perform a 10 minute source count using a Ba-133 source.

g. Subtract current daily background (BKG) cpm from source cpm.

h. Compare source net counts to the posted value for emergency use instruments.

i. Initial the daily check sticker indicating satisfactory response.

ATTACHMENT 7: COUNTING EQUIPMENT SET-UP AND OPERATION (Cont.)

2.0 Operation

2.1 Scaler Operation

a. The scaler normal use mode is the Preset time mode. This is selected by the rotary scaler switch.

b. Ensure instrument power is "ON". The display will read 0.0 with the Preset and Minutes lights illuminated.

c. Enter preset time by pushing the four white set pushbuttons corresponding to the correct digit place (e.g., tenths, minutes, ten minute increments, etc.). Each pushbutton corresponds to the digit directly above it.

d. The red reset button will reset the preset time to zero and clear the counting registers.

e. Press the count pushbutton to start a count. The display will show the elapsed time until the count is complete. Ensure the analyzer switch is in CH1 to display counts in Channel 1.

f. By pressing the hold button after the count is complete the instrument will display preset minutes, counts per minute, elapsed minutes and elapsed counts. The hold button must be pressed again to change between each display.

2.2 Sample Counting

a. Perform a 2 minute background count before each group of samples is counted. Ensure Analyzer switch is set to CH 1.

b. This background is to be subtracted from the gross count on the sample to obtain the net counts.

c. Place sample in a calibrated geometry and start a 2 minute count.

d. Read the LED net count digital display.

e. Calculate and record the net counts.

2.3 To determine I-131 activity in μCi/cc use the following formula:

$$\frac{\text{(Net Counts)}}{\text{(Flow Time) (in min)} \quad \text{(Flow Rate) (in cfm)} \quad \text{(Count Time) (in min)} \quad \text{(Efficiency)} \quad (28317) \quad (2.2\ E+6)}$$

ATTACHMENT 7: COUNTING EQUIPMENT SET-UP AND OPERATION Cont.)

3.0 Daily Checks and Set-up: Bicron FriskTech

3.1 Check Instrument for Physical Damage

3.2 Connect detector

3.3 Turn instrument "on".

3.4 Plug in FriskTech to 115 volt AC 60 Hz source OR verify battery reads in "BAT OK" region of the meter.

3.5 If the battery does not read in the "BAT OK" region, the instrument shall be used with AC power.

3.6 Verify controls are set as follows (adjust as necessary):

a. Response knob in middle of range

b. Volume knob in middle of range

c. Set speaker to "pulse/alarm"

3.7 Background Determination

a. Set ratemeter to X1

NOTE 3.7.b

Preset count time equals one (1) minute.

b. Press the red "meter reset" count button to start count

c. Perform two, one (1) minute background counts

d. Average background counts

e. Retain average for use in Step 3.8.f

Note 3.8

Acceptable source range is identified on top of instrument.

3.8 Source Response Check

a. Select Tc-99 source described on top of instrument

b. Set ratemeter to X10 scale

ATTACHMENT 7: COUNTING EQUIPMENT SET-UP AND OPERATION Cont.)

c. Insert Tc-99 source into calibrated geometry

   1. Ensure source writing faces away from the detector

d. Perform two, one (1) minute source counts using Tc-99 source

e. Press the red "meter reset" count button to start count

f. Subtract background counts-per-minute (cpm) from source cpm

g. Compare source net counts to posted value on top of instrument

h. Initial the daily check sticker indicating satisfactory response

4.0 FriskTech Operation

4.1 Operation

a. Ensure instrument power is "on".

b. Verify response knob in middle of range

c. Set ratemeter to X1 scale

Note: 4.2

Record results of analysis on Attachment 12 or 13 as applicable

4.2 Sample Counting

a. Perform a one (1) minute background in fixed geometry

b. Push "meter reset" button

c. Count light will extinguish when count is complete

d. Record results of background count

e. Place sample in calibrated geometry

f. Start a 1 minute count by pushing "meter reset"

g. Count light will extinguish when count is complete

h. Read the digital count display

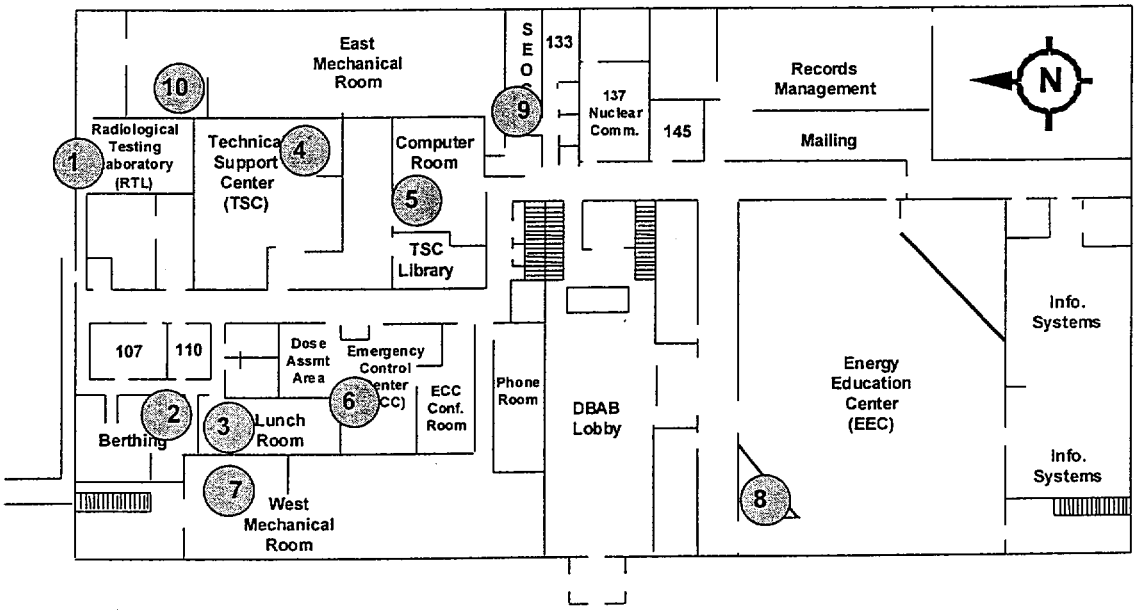
i. Calculate and record the net counts

ATTACHMENT 8: DBAB AREA MONITORING STATIONS

Name(s) _____ Date_____ Time _____

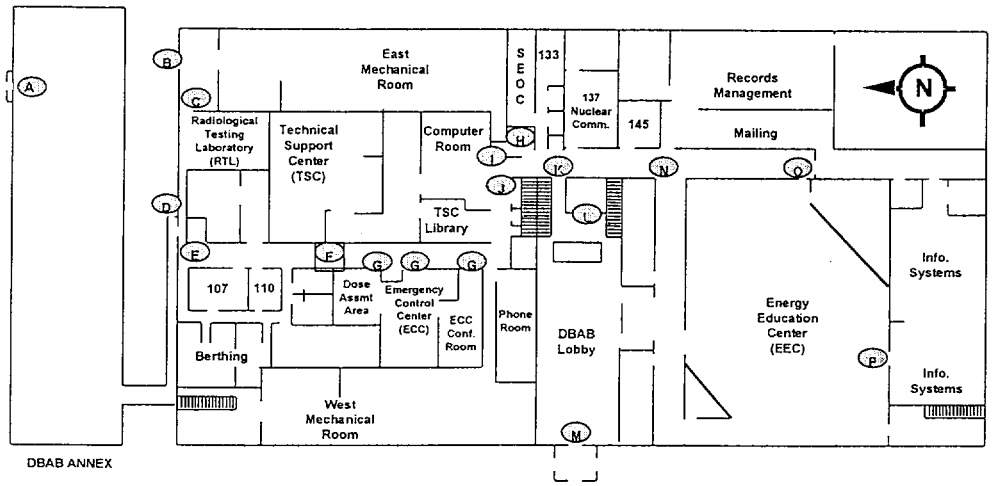
_____

DAVIS-BESSE ADMINISTRATION BUILDING



Monitor #	Area Description	TLD #	SRD # (5-digit)	SRD mRem	Time		SRD mRem	Time
1	Radiological Testing Laboratory							
2	DBAB Decon Area (Use Annex master key)							
3	Lunch Room							
4	Technical Support Center (TSC)							
5	Computer Room							
6	Emergency Control Center (ECC)							
7	West Mechanical Equipment Room							
8	Projector Room (Use DBAB Master key)							
9	SEOC (Use DBAB Master key)							
10	East Mechanical Equipment Room							

ATTACHMENT 9: DBAB MAP



DAVIS-BESSE ADMINISTRATION BUILDING

- (A) N. DBAB Annex Door
- (B) NE. DBAB Entrance Door
- (C) RMT Access Door
- (D) N. Entrance Double Doors
- (E) RTL Door
- (F) TSC
- (G) ECC
- (H) DBAB East Mechanical Room Door
- (I) Computer Room Door
- (J) South Badging Station Hallway Door
- (K) Lobby to Hallway Door
- (L) DBAB Elevator
- (M) DBAB Lobby Doors
- (N) EEC Lobby to Hallway Door
- (O) EEC to Hallway Door
- (P) EEC to Info. Systems Door

ATTACHMENT 10: CONTINUOUS AIR MONITOR OPERABILITY CHECK

1. Ensure a Particulate filter is in the Particulate channel holder as follows:

   a. Ensure SW-2, the pump switch, is off (under the CAM top).

   b. Ensure SW-1, power switch, is off (under the CAM top).

   c. Loosen the two thumbscrews securing the left-most filter assembly (bottom left of CAM) and carefully remove the assembly from the shield.

   d. To replace filter paper:

      1. Remove the ring which is fitted over the old filter paper and remove the old filter paper.

      2. Put the new filter paper on the screen, rough side out.

      3. Slip the ring straight over the filter paper without rotation and push it down firmly.

   e. Carefully reinsert the filter assembly into the shield and tighten the thumb screws.

2. Ensure a silver zeolite cartridge is in the Iodine channel holder as follows:

   a. Ensure that SW-1 AND SW-2 ARE OFF.

   b. Loosen the two thumbscrews securing the right-most assembly and remove the assembly from the shield.

   c. To replace cartridge:

      1. Gently pull the cartridge out of the cartridge holder (a slight twisting motion may be needed).

      2. Handle the cartridge by the metal edges.

      3. Insert a new silver zeolite cartridge into the holder ensuring arrow points in the direction of flow (toward bulk of the filter housing).

   d. Insert the assembly into the shield.

3. Ensure the CAM power cord is plugged into an 120V AC power source.

4. Lift the top of the CAM and check that the CRT, PIOPS and Paper Take Up Power cords are plugged into the receptacles.

ATTACHMENT 10: CONTINUOUS AIR MONITOR OPERABILITY CHECK (Cont.)

5. Turn on SW-1 and SW-2.

6. Maintain Flow Rate between 1.5 and 2.5 cfm by moving the high and low flow control indicators on the photohelic guage.
7. Recorder Paper and Pens

   a. Open the recorder cover

   b. Remove the pen covers by removing and replacing the cartidges one at a time.

   c. Ensure both toggle switches are in the "ON" position.

   d. Move pen lift lever up until all three pens are contacting and producing a trace on the chart paper.

   e. Roll the chart so that the correct time of day is being displayed.

   f. Write the date and time on the chart at the starting point.

   g. IF a blue line starts to appear in the left-hand margin of the chart paper, THEN replace the chart.

8. Check Source

   a. Connect the keypad to the CAM and put the unit in the LOCAL mode of operation as follows:

      1. Press 1, "Change Local Status". (If "Change Local Status" not available in menu, press "0".)

      2. Enter the 4-digit security password. (1562)

   b. Press 3, "Control Check Source/diagnostics".

   c. Insert each check source one at a time to verify detector response.

      1. Enter 1 to cause the check source for the selected channel to be inserted or retracted.

      2. When the check source is inserted, observe the flashing status block in the CSI column for the specific channel.

      3. IF insertion of the check source produce an upscale CPM reading on the CRT display, THEN the detector response is satisfactory.

ATTACHMENT 10: CONTINUOUS AIR MONITOR OPERABILITY CHECK (Cont.)

4. IF Alert and/or High Alarm goes off, retract source, THEN press ACK on keypad.

5. IF upon check source insertion no response in cpm on the detector is observed, THEN tag the CAM with a maintenance information tag.

6. Repeat steps 1 through 5 for channels 2 and 3.

d. Ensure all check sources are retracted.

e. Press "0", "Exit".
f. Get out of Local Mode by pressing 1.

g. Initial the Daily Instrument Check Sticker.

9. CAM power down

a. Turn off switches SW-1 and SW-2.

b. Disconnect keypad and close top

c. Replace caps on inking pens

d. Unplug CAM power cord from 120 VAC source.

ATTACHMENT 11: AIR SAMPLE ANALYSIS WORKSHEET

Sample Taken By: _____ Date: _____

Sample Location: _____ Sample I.D. No.: _____

Sample Collection Time: _____ min. (a)

Air Sampler L.I. No.: _____ Air Sampler Flow Rate: _____ cfm (b)

IODINE CARTRIDGE AND FILTER PAPER

Counter _____ L.I. No. _____ Eff.: _____ (c)

Count Time _____ min (d) Total Counts _____ (e)

Sample cpm (e/d) = _____ cpm (f) Background = _____ cpm (g)

Net Sample cpm (f-g) _____ cpm (h)

$$\text{I-131 } \mu\text{Ci/cc} = \frac{(h_____)(1.77\text{ E-11})}{(a_____)(b_____)(c_____)} = _____ (j)$$

(j_____) (Correction factor* _____) = _____ Rem/hr to Thyroid

---

PARTICULATE FILTER ONLY

Counter _____ L.I. No. _____ Eff.: _____ (k)

Background cpm _____ (l) Filter cpm _____ (m)

Net Filter cpm (m-l) _____

$$\text{Gross beta} = \frac{(m_____)(1.59\text{ E-11})}{(a_____)(b_____)(k_____)} = _____ \frac{\mu\text{Ci}}{\text{cc}}$$

* from Table 1, Radioiodine Correction Factor

ATTACHMENT 11: AIR SAMPLE ANALYSIS WORKSHEET (Cont.)

Table 1

Radioiodine Correction Factor

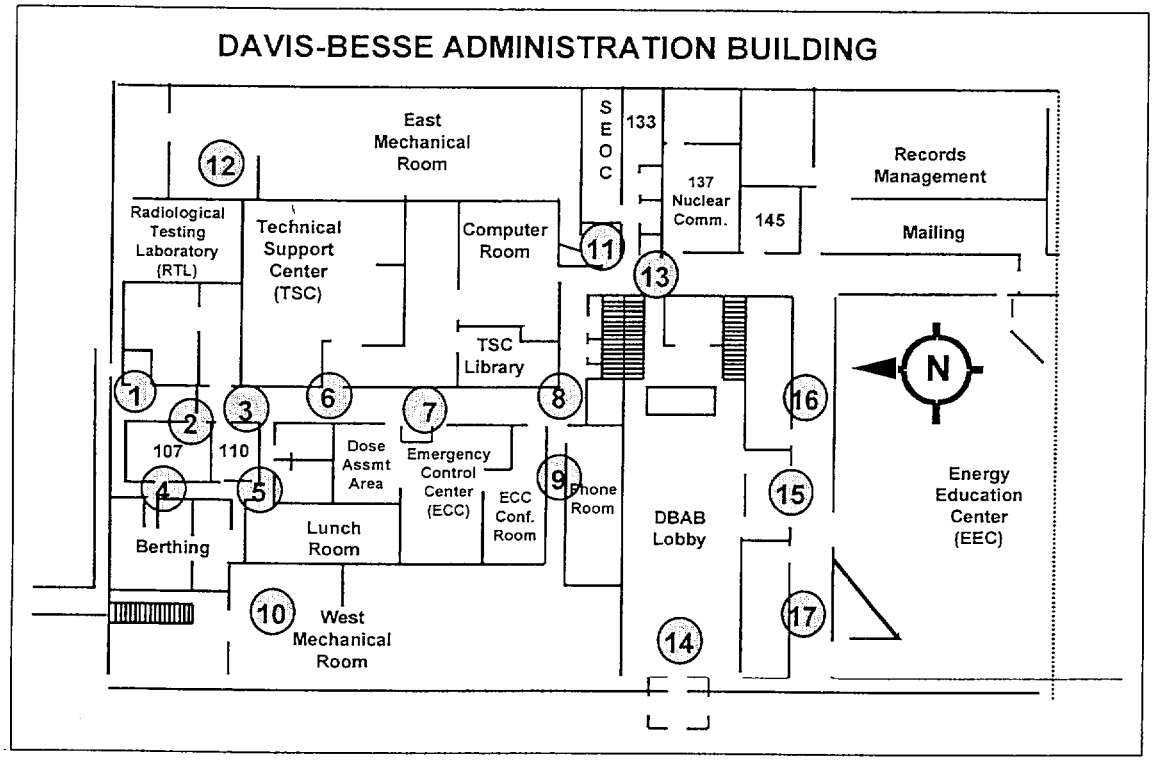
Hours After Reactor Shutdown	Correction Factor	Hours After Reactor Shutdown	Correction Factor	Hours After Reactor Shutdown	Correction Factor
0	2.88 E+06	21	2.32 E+06	54 - 55	2.02 E+06
0.5	2.86 E+06	22	2.31 E+06		
1	2.83 E+06	23	2.29 E+06	56 - 57	2.01 E+06
1.5	2.81 E+06	24	2.28 E+06		
2	2.79 E+06	25	2.27 E+06	58 - 59	2.00 E+06
2.5	2.77 E+06				
				60 - 61	1.99 E+06
3	2.75 E+06	26	2.25 E+06		
3.5	2.73 E+06	27	2.24 E+06	62 - 64	1.98 E+06
4	2.71 E+06	28	2.23 E+06		
4.5	2.70 E+06	29	2.22 E+06	65 - 67	1.97 E+06
5	2.68 E+06	30	2.21 E+06		
				68 - 70	1.96 E+06
5.5	2.67 E+06	31	2.19 E+06		
6	2.65 E+06	32	2.18 E+06	71 - 73	1.95 E+06
6.5	2.64 E+06	33	2.17 E+06		
7	2.62 E+06	34	2.16 E+06	74 - 77	1.94 E+06
7.5	2.61 E+06	35	2.15 E+06		
				78 - 81	1.93 E+06
8	2.59 E+06	36	2.14 E+06		
8.5	2.58 E+06	37	2.14 E+06	82 - 86	1.92 E+06
9	2.57 E+06	38	2.13 E+06		
9.5	2.55 E+06	39	2.12 E+06	87 - 92	1.91 E+06
10	2.54 E+06	40	2.11 E+06		
11	2.52 E+06	41	2.10 E+06	93 - 98	1.90 E+06
12	2.49 E+06	42	2.10 E+06		
13	2.47 E+06	43	2.09 E+06	99 - 107	1.89 E+06
14	2.45 E+06	44	2.08 E+06		
15	2.43 E+06	45	2.07 E+06	108 - 118	1.88 E+06
16	2.41 E+06	46 - 47	2.06 E+06	119 - 135	1.87 E+06
17	2.39 E+06				
18	2.37 E+06	48 - 49	2.05 E+06	136 - 173	1.86 E+06
19	2.36 E+06				
20	2.34 E+06	50 - 51	2.04 E+06	≥174	1.85 E+06
		52 - 53	2.03 E+06		

ATTACHMENT 12: DBAB SURVEY SHEET

Surveyor(s)_____ Date/Time_____

Area Radiation Survey Meter _____ Area Contamination Survey Meter _____

L.I. #_____ Cal. Due Date _____ L.I. #_____ Cal. Due Date _____



Location	1	2	3	4	5	6	7	8
mRem/hr								
cpm								

Location	9*	10*	11	12*	13	14	15	16	17
MRem/hr									
cpm									

*Tile Areas Cpm/100 cm^2

Smear Analysis:

Instrument Used _____ L.I. # _____ Cal. Due Date _____ Bkg._____

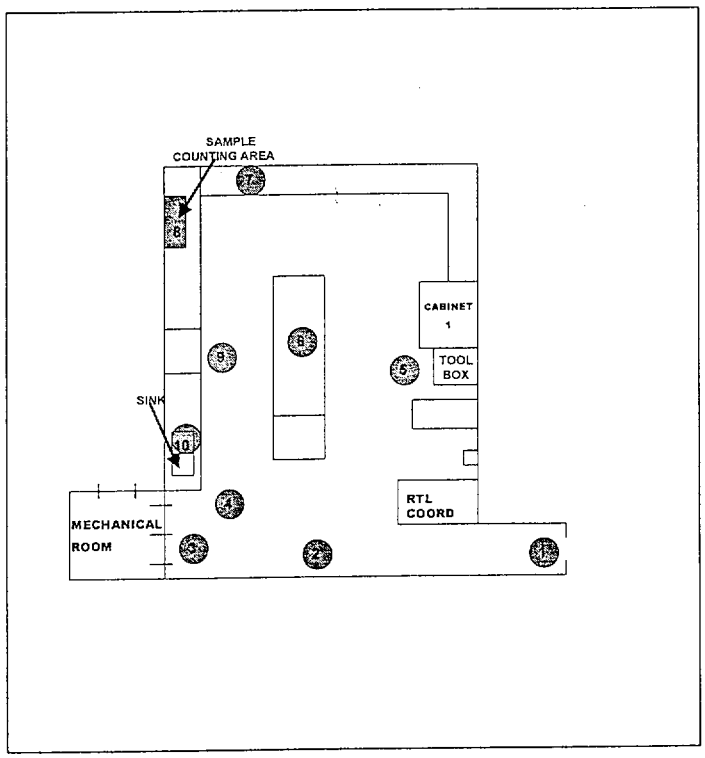
Smears Counted by _____ Date/Time _____

ATTACHMENT 13: RTL SURVEY SHEET

Surveyor(s)_____ Date/Time_____

Area Radiation Survey Meter _____ L.I. #_____ Cal. Due Date _____

RTL SURVEY MAP



Location	R1	R2	R3	R4	R5
mRem/hr					
Cpm/100 cm^2					

Location	R6	R7	R8	R9	R10
MRem/hr					
Cpm/100 cm^2					

Smear Analysis:

Instrument Used _____ L.I. # _____ Cal. Due Date _____ Bkgd. _____

Smears Counted by _____ Date/Time _____

ATTACHMENT 14: ESTIMATE OF CEDE FROM RADIOIODINES

1. Complete the following:

Name_____ Social Security # _____

Date _____ Time _____

TLD # _____ RMT # _____

2. Determine the radioiodide activity at the sample location:

$$\frac{\text{(Net CPM on } I_2 \text{ cartridge/particulate filter)}}{\text{(Total volume in cubic feet)}} \times \frac{4.2\text{ E -9}}{\text{(Conversion Factor)}} = \frac{(\mu\text{ ci/cc})}{\text{(radioiodide activity)}}$$

3. Determine the committed dose equivalent (CDE) rate to the thyroid:

$$\frac{\mu\text{ ci/cc}}{\text{(radioiodide activity, From 2.)}} \times \frac{}{\text{(Correction Factor)*}} = \frac{\frac{\text{mrem}}{\text{hr}}}{\text{(Thyroid CDE Rate)}}$$

*From Table 1, Radioiodine Correction Factor of this attachment.

4. Record the radiation dose rate at the radioiodide sampling locations in mrem/hr.

Closed – window dose rate _____ $\frac{\text{mrem}}{\text{hr}}$

ATTACHMENT 14: ESTIMATE OF CEDE FROM RADIOIODINES (Cont.)

5. Determine the committed effective dose equivalent (CEDE)/Deep Dose Equivalent (DDE) Ratio:

$$\frac{\frac{\text{mrem}}{\text{hr}}}{\text{(CDE rate, From 3.)}} \times \frac{\text{(weighting factor)}}{\frac{\text{mrem}}{\text{hr}}} = \frac{\text{CEDE/DDE ratio}}{\text{(DDE rate, From 4.)}}$$

6. Determine the committed effective dose equivalent (CEDE) from radioiodides:

$$\frac{\text{mrem}}{\text{(SRD Reading in mrem)}} \times \frac{\text{(CEDE/DDE Ratio, From 5.)}}{} = \frac{\text{mrem}}{\text{CEDE}}$$

7. Determine the total effective dose equivalent (TEDE):

$$\frac{\text{mrem}}{\text{(SRD Reading in mrem)}} + \frac{\text{(CEDE, From 6.)}}{} = \frac{}{\text{TEDE}}$$

8. REPORT THE TEDE TO THE RTL COORDINATOR.

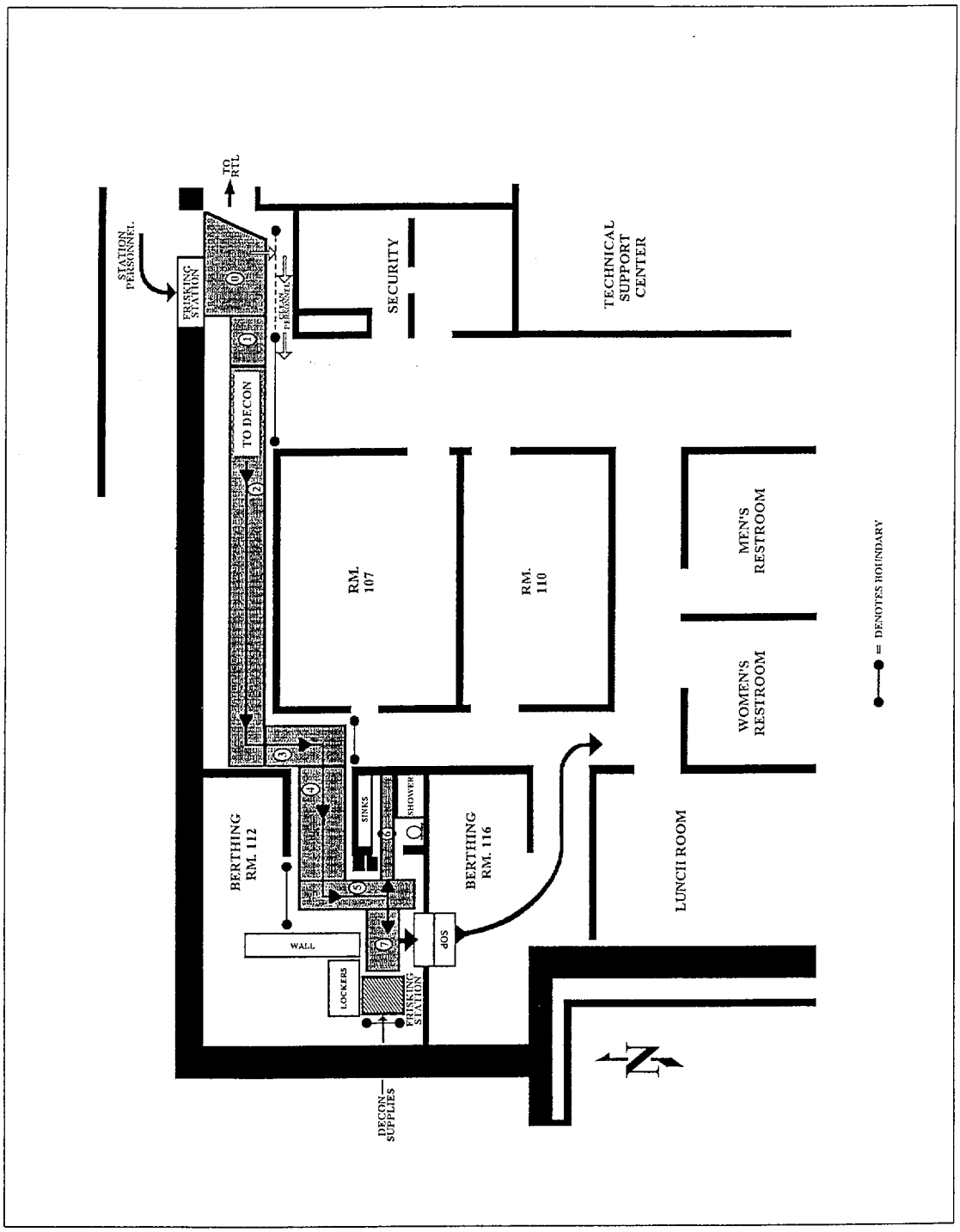
ATTACHMENT 14: ESTIMATE OF CEDE FROM RADIOIODINES (Cont.)

Table 1

Radioiodine Correction Factor

Hours After Reactor Shutdown	Correction Factor	Hours After Reactor Shutdown	Correction Factor	Hours After Reactor Shutdown	Correction Factor
0	2.88 E+09	21	2.32 E+09	54 - 55	2.02 E+09
0.5	2.86 E+09	22	2.31 E+09		
1	2.83 E+09	23	2.29 E+09	56 - 57	2.01 E+09
1.5	2.81 E+09	24	2.28 E+09		
2	2.79 E+09	25	2.27 E+09	58 - 59	2.00 E+09
2.5	2.77 E+09				
3	2.75 E+09	26	2.25 E+09	60 - 61	1.99 E+09
3.5	2.73 E+09	27	2.24 E+09		
4	2.71 E+09	28	2.23 E+09	62 - 64	1.98 E+09
4.5	2.70 E+09	29	2.22 E+09		
5	2.68 E+09	30	2.21 E+09	65 - 67	1.97 E+09
5.5	2.67 E+09	31	2.19 E+09	68 - 70	1.96 E+09
6	2.65 E+09	32	2.18 E+09		
6.5	2.64 E+09	33	2.17 E+09	71 - 73	1.95 E+09
7	2.62 E+09	34	2.16 E+09		
7.5	2.61 E+09	35	2.15 E+09	74 - 77	1.94 E+09
8	2.59 E+09	36	2.14 E+09	78 - 81	1.93 E+09
8.5	2.58 E+09	37	2.14 E+09		
9	2.57 E+09	38	2.13 E+09	82 - 86	1.92 E+09
9.5	2.55 E+09	39	2.12 E+09		
10	2.54 E+09	40	2.11 E+09	87 - 92	1.91 E+09
11	2.52 E+09	41	2.10 E+09	93 - 98	1.90 E+09
12	2.49 E+09	42	2.10 E+09		
13	2.47 E+09	43	2.09 E+09	99 - 107	1.89 E+09
14	2.45 E+09	44	2.08 E+09		
15	2.43 E+09	45	2.07 E+09	108 - 118	1.88 E+09
16	2.41 E+09	46 - 47	2.06 E+09	119 - 135	1.87 E+09
17	2.39 E+09				
18	2.37 E+09	48 - 49	2.05 E+09	136 - 173	1.86 E+09
19	2.36 E+09				
20	2.34 E+09	50 - 51	2.04 E+09	≥174	1.85 E+09
		52 - 53	2.03 E+09		

ATTACHMENT 15: DBAB MONITORING AND DECONTAMINATION STATION



COMMITMENTS

Step Number	Reference	Comments
1.0	TERMS O 07407	Perform onsite and offsite monitoring in accordance with this procedure.
4.0, 6.0, 7.0	TERMS O 13617	RMT & RTL Coordinator duties.
Attachment 1	TERMS O 14325	Types of survey meters in the RMT kits
6.3	TERMS Q 00784	Communications

END