

2.50 Series

Emergency Plan

(PS&P Section 12.5)

NUMBER	TITLE	CURRENT REVISION							
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2.50.0	Declaration & Categorization of Emer. Cond.	1	3/81	2	9/81	3	6/82		
2.50.1	Notification of Unusual Event	1	3/81	2	9/81	3	10/82		
2.50.2	Alert	1	3/81	2	9/81	3	7/82		
2.50.3	Site Area Emergency	1	3/81	2	9/81	3	7/82		
2.50.4	General Emergency	1	3/81	2	9/81	3	7/82		
2.50.5	Emergency Plan Training and Exercise	0	3/81						
2.50.6	Emergency Equipment Readiness Check	16	10/82						
2.50.7	Emergency On-Site Radiation Monitoring Procedure	0	3/81	1	9/81				
2.50.8	Medical Emergency Plan	0	3/81						
2.50.9	Security Force Radiation Emergency Plan	0	3/81	1	9/81				
2.50.10	Evaluation of Radiological Data	1	3/81	2	9/81				
2.50.11	Plant Entry and Recovery Plan	4	6/80	4	7/82	5	10/82		
2.50.12	Emergency Off-Site Radiation Monitoring Proc.	0	3/81	1	10/82				
2.50.14	Emergency Radiation Control	0	3/81	1	9/81	2	10/82		
2.50.15	Release of Public Information	0	3/81						
2.50.16	Off-Site Protective Action Recommendations	0	3/81						
2.50.17	Emergency Notification	4	7/82						

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2.50.12 EMERGENCY OFF-SITE RADIATION MONITORING PROCEDURE

1.0 DISCUSSION

This procedure provides a means for rapidly assessing the radiological impact of accidental releases of radioactive material. Offsite radiation monitoring surveys are important during and following an accident since decisions regarding protective actions for the public will be based on survey results.

During the initial stages of the accident, projected offsite whole body dose rates will be made based on source term evaluations and effluent monitor responses. These dose rate projections represent sector average dose rates based on the observed meteorological conditions. The offsite survey results represent specific locations and therefore may not coincide with the projection from in-plant parameters due to actual variations in plume behavior.

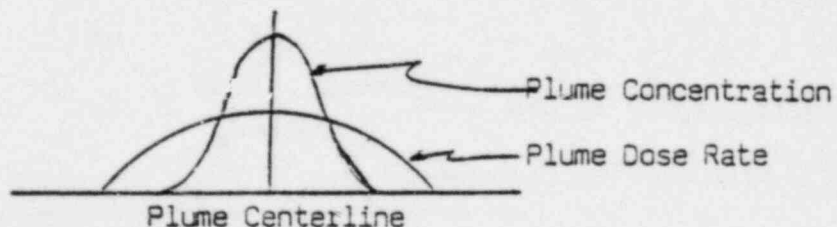
The task of each monitoring team is to collect and transmit information to and/or receive instructions from the Emergency Operations Facility (EOF). An important consideration in the initial survey is speed. Therefore, the survey consists of simple methods to quickly approximate the magnitude of the accident. Once these initial surveys are completed, subsequent surveys and additional analysis will be made to obtain more complete radiological results.

The general area for sampling locations will be determined by the Emergency Coordinator and assigned to the appropriate off-site survey team. The main objectives of the survey teams are:

1. Locate the appropriate plume sampling location by observation of the dose rates across the plume.
2. Upon arrival at the determined sampling location, take appropriate beta-gamma and air sample surveys as described in this procedure.

The process of determining the appropriate plume sampling location should consider the expected variation in cross-plume dose rates and concentrations which are depicted in the following sketch.

3. Calculate the air activity from survey results and report (via radio) to the E.O.F.



It should not be expected that a rapid increase and decrease in dose rate would be observed in traversing across the plume but rather a long plateau region. The sampling location should be chosen as the "best estimate" of the center of this dose rate plateau.

2.0 OBJECTIVE

- 2.1 To locate the appropriate plume sampling location, perform radiological surveys and report results to the Emergency Coordinator.

3.0 REFERENCES

4.0 PRECAUTIONS

- R 4.1 Use good Health Physics practices and common sense. Don't contaminate yourself and your counting instruments.
- R 4.1.1 Keep the E-140 inside the car, protected.
- R 4.1.2 The air sampler and survey meter will be exposed to the plume and can become contaminated; handle them accordingly.
- R 4.1.3 Air filters will contain concentrated contamination. Use cotton glove liners and tweezers to remove the filters from the air sampler.
- R 4.1.4 Protect the filters from being damaged during wet weather.
- R 4.2 Check your dosimeter every 10-15 minutes.
- 4.3 Use tweezers to handle filters to prevent cross-contamination of filters and cartridge .
- 4.4 Vehicles with installed radios must be kept running to operate radios.
- 4.5 Radio communications with the EOF may be temporarily lost in certain locations due to the presence of valleys and hills. If this should happen, report survey results over the radio regardless of the communication conditions. If necessary, use another offsite survey team for radio communication relay to the EOF.
- R 4.6 If radio communication fails completely, try reaching the plant by telephone or return to plant if all else fails.
- R 4.7 Always turn the E-140 off before changing detectors.

5.0 PROCEDURE

- R 5.1 Report to the Radiological Assistant at the E.O.F. that you are available for assignment.
- R 5.2 All members of the off-site team should hear the instructions about sample location and route from the Radiological Assistant.

R 5.3 Record the off-site team number assigned to your team.
Team No. _____

5.4 Complete the steps in Appendix A prior to leaving the EOF.

R 5.5 If state off-site monitoring personnel are at the E.O.F., make sure that one is assigned to go with the team. Check with the Radiological Assistant to see if a state monitor is available before you leave.

NOTE: If state personnel are not at the E.O.F. when you leave, they will be directed to link up with you at your sample location.

5.6 Complete the steps in Appendix B in transit toward the sampling location.

5.7 Perform the steps in Appendix C at the sampling location and at the sample counting location.

5.8 Throughout the offsite sampling effort, be sure to make periodic checks of the pocket dosimeter reading. If greater than 1 R of cumulative exposure is observed, notify Emergency Coordinator and move out of the plume and await further instructions.

6.0 FINAL CONDITIONS

6.1 Off-site surveys have been completed, all actions performed have been initialed and the results recorded.

6.2 Upon returning to the EOF, log-in the dosimeter reading with the radiological assistant.

6.3 Return all equipment to its original status.

6.4 Check with the Emergency Coordinator for additional assignments.

APPENDIX A
STEPS TO BE COMPLETED
PRIOR TO LEAVING THE EOF

DATE _____ TEAM MEMBERS _____
TIME _____
TEAM # _____

1.0 PERFORM THE FOLLOWING CHECKS ON THE BATTERY OPERATED AIR SAMPLER

- R 1.1 Install a charcoal filter and a particulate filter (fuzzy side out) in the filter head. _____
- R 1.2 Attach the cable leads on the air sampler to the proper battery terminals. If the leads are backwards, the air will still flow properly. _____
- 1.3 Switch to "ON" position. _____
- 1.4 Check flow meter (should be at least 1 cfm flow rate). _____
- R 1.5 Turn off sampler, discard the filters and place the sampler back in the kit. _____

2.0 PERFORM THE FOLLOWING CHECKS ON THE LOW RANGE SURVEY METER (E-140)

- R 2.1 Record the E-140 serial no. _____
- R 2.2 Attach the G.M. detector (black cylindrical detector) to the meter cable. _____
- R 2.3 Check the E-140 battery response and check source response. (Note: Place the SLOW/FAST response knob in the mid-position.) _____
- R 2.4 Turn the meter OFF and remove the G.M. detector. Attach the pancake detector (round silver detector) to the meter cable. _____
- R 2.5 Check the meter response again to the check source. _____
- R 3.0 In the event of faulty equipment, notify Radiological Assistant. In cold weather the E-140 may not function properly. In this event keep the meter warm.

R 4.0 Check vehicle for contamination using the pancake probe before leaving EOF. If contamination is found, notify the Radiological Assistant.

R 5.0 Place all monitoring equipment in a radio communications car. Check the fuel gauge, if less than 1/2 full refuel before leaving.

R 6.0 Verify radio communications with the EOF "EOF, this is off-site survey team number _____, can you hear us? Over".

R 7.0 Check with the Emergency Coordinator to determine your sampling location and the best route to take.

Destination to be Surveyed

NOTE: The decision to use respiratory protection devices and protective clothing will be made by the Emergency Coordinator.

8.0 Observe the vehicle odometer reading and log it below.

Odometer Reading _____

9.0 Pick up personnel monitoring devices (TLD and High Range Dosimeter) before leaving EOF and log in pocket dosimeter initial reading.

Team Member

Dosimeter Reading (mr)

R10.0 If a state off-site monitoring representative is assigned with the team, record his name. If the state representative is not yet on-site, check the box indicating the state monitor is not on-site.

State off-site monitor _____
Name

State off-site monitor was not on-site

11.0 Proceed to the area specified by the Emergency Coordinator and complete Appendix B.

APPENDIX B

TO BE COMPLETED ENROUTE TO INITIAL SAMPLING LOCATION

- NOTE:
1. The individual driving the vehicle will not perform radio communications while driving the vehicle.
 2. Radio communications with the EOF should begin by addressing EOF and then identifying the Team name.

i.e., "Emergency Operation Facility, this is Team # _____
(Relay Message) over".

R 1.0 While driving to the sample location, place the E-140 pancake detector on the dashboard against the windshield. Watch the meter response for any upscale changes in readings.

R 2.0 If the detector shows an increase in radiation level note the location of the change, and continue driving until you have gone completely through the plume (i.e. radiation readings have reached a high level and then returned to a background level). Note the locations of the high level and low level readings.

R 3.0 If it is not possible to drive completely through the plume, due to road access limitations, skip step 4.0 and proceed to step 5.0.

4.0 Choose a sampling location that represents the center of a dose rate plateau across the plume or the highest reading across the plume. Do not spend greater than 5 minutes locating a sampling location.

5.0 Report the specific sampling location that has been chosen to the EOF and complete the steps in Appendix C.

APPENDIX C

STEPS TO BE COMPLETED AT

SAMPLING LOCATION AND SAMPLE COUNTING LOCATION

1.0 AIR SAMPLING AND BETA-GAMMA SURVEY

R 1.1 Load the air sampler with both a particulate and iodine filter. Show the flow direction on the side of the charcoal or silica gel filter. Place particulate filter with fuzzy side out in the filter holder.

NOTE: Use charcoal cartridges unless silica gel is specified by Emergency Coordinator.

R 1.2 Air samples should be taken in open areas away from trees, buildings etc.

R 1.3 Place the air sampler on the vehicle in a stable position (e.g. hood, fender etc.); the sampler should not be placed on the ground.

R 1.4 During wet weather, the air sampler should be placed on the air cleaner of the vehicle when taking an air sample.

1.5 Clip the cables to the battery terminals of the vehicle and start air sampler and record time started on envelope.

1.6 Check air flow indication and record on data sheet.

1.7 Continue to observe flow rate during sample period.

1.8 Run sampler for 15 minutes unless the Emergency Coordinator has specified other than 15 minutes.

R 1.9 At each air sample location, take the following surveys while air samplers are running using the E-140 with the G.M. Detector. Record the highest dose rate readings the Survey Form.

a. Monitor the radiation levels at waist level with the beta window closed.

b. Monitor the radiation levels at waist level with the beta window open.

R c. With the beta window open, check the radiation levels 2" above the ground. Scan approximately 1 m² of ground in an area away from trees, buildings, etc.

1.10 After the air sample has run for the specified time, disconnect sampler and move to an area outside the plume for sample counting.

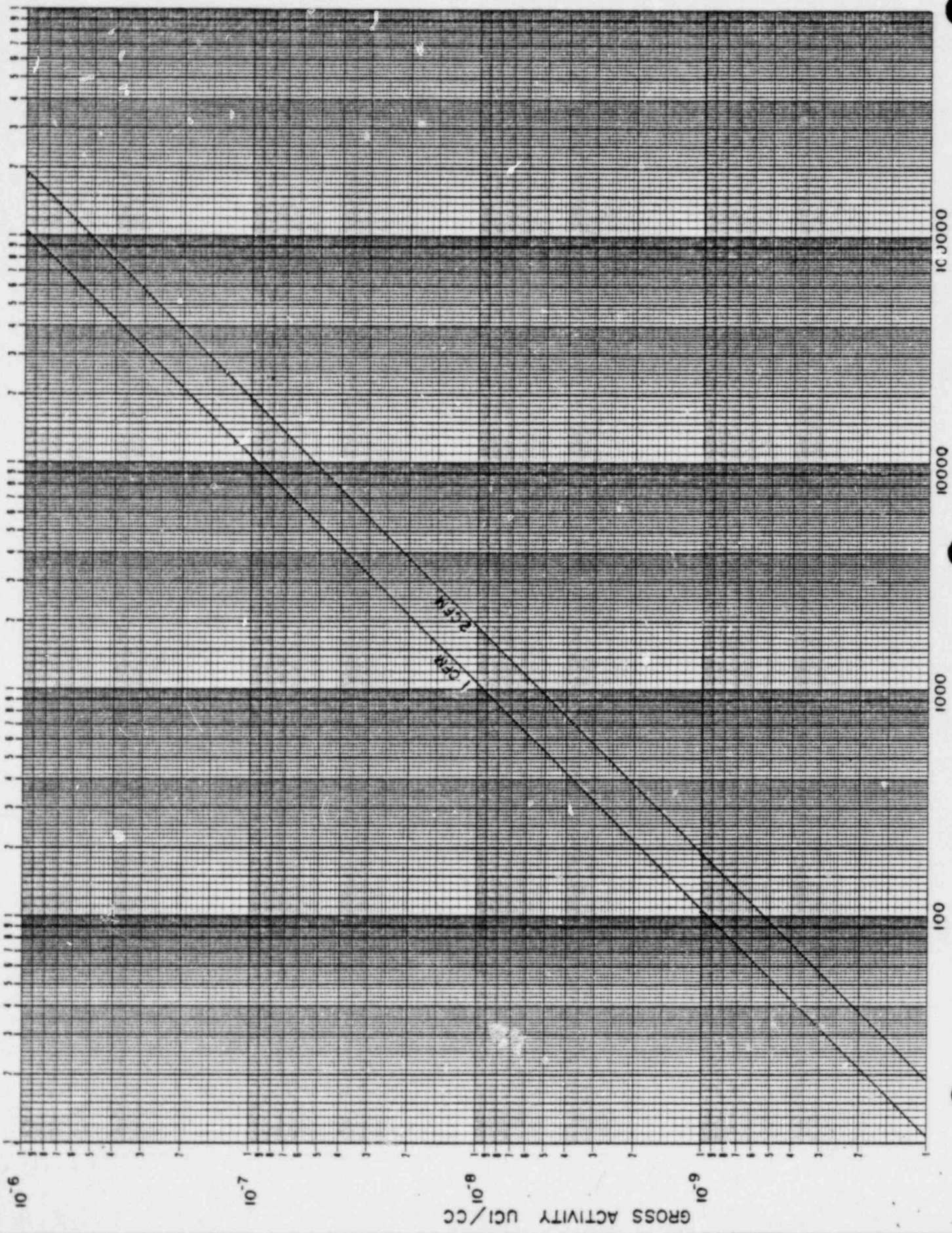
2.0 SAMPLE COUNTING

- R 2.1 Once outside the plume area, take a background count on the E-140 with pancake probe and record this on the survey form in each column. _____
- R 2.2 Remove the charcoal cartridge (use gloves) place it in a plastic bag and count it with the E-140 (pancake probe). _____
- R 2.3 Record the results on the survey form. _____
- R 2.4 Write the date, time, sample location, sampling time and flow rate (CFM) on the stickers provided in the kit. Attach the sticker to the plastic bag. _____
- R 2.5 Remove the charcoal filter from the bag, using gloves, and place it back into the sampler (make sure the flow is in same direction) and run for 2 minutes to purge the cartridge of noble gases. _____
- R 2.6 After purging, remove both filters (particulate & charcoal) from the air sampler. _____
- R 2.7 Put the particulate filter back into its proper envelope and label with filled in sticker. _____
- R 2.8 Put the charcoal filter back into the plastic bag. _____
- R 2.9 Count the filter paper and the charcoal filter (one at a time) and record the results on the survey form. _____
- R 2.10 Record the net counts after purging on the filter label. _____
- R 2.11 Be certain that all filters are properly labeled and set aside for analysis at the EOF. _____
- R 2.12 Perform the calculations to determine air sample activity. _____
- R 2.13 Report the results to the E.O.F. Read the information off the survey form exactly as written. _____
- R NOTE: The radioactive Iodine results you obtain from the charcoal filter count are very important in determining the protective actions that should be recommended for public protection. These samples should be carefully handled, accurately analyzed and promptly reported.

- R 2.14 If additional samples are requested by the E.O.F. go to the location designated and repeat Appendix B. Complete another survey form and call in results as in step 2.13. _____
- R 2.15 If requested to return to the E.O.F. _____
- R 2.16 At the E.O.F. frisk yourself for contamination, check your self-reading dosimeters and report to the Radiological Sample Coordinator. _____
- R 2.17 Give the Coordinator all samples, data sheets and your exposure. _____
- R 2.18 Await further assignments or if instructed recheck your survey kit and prepare it for further use or return it to storage. _____
- R 2.19 If the state off-site monitor has made his initial contact with the team at an off-site location, record his name.

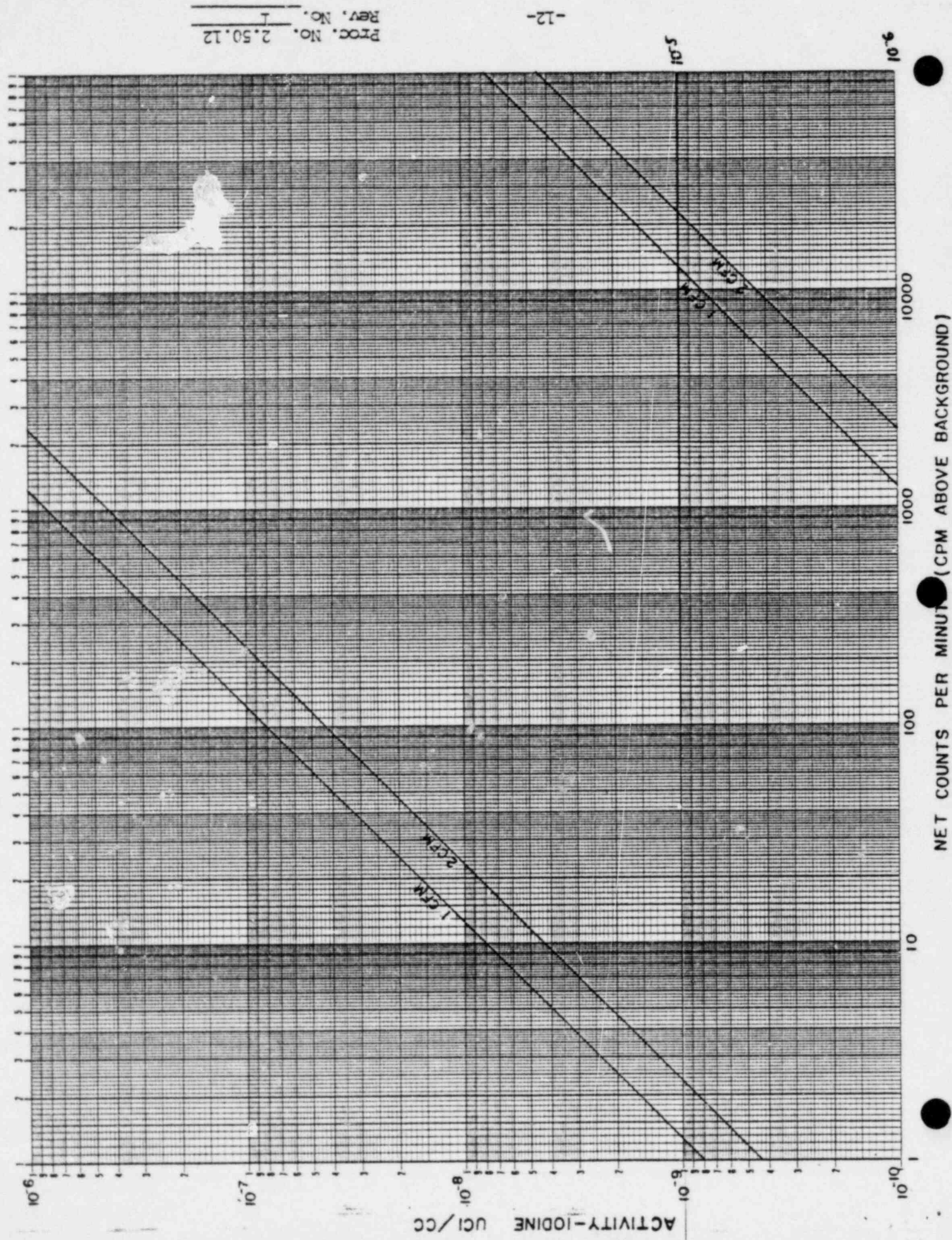
State off-site monitor _____
Name

FIG. 1 GROSS AIRBORNE RADIOACTIVITY (PARTICULATE FILTER) VS. E-140 COUNT RATE W/PANCAKE DET.



PROC. NO. 2.50.12
REV. NO. 1

FIG. 2 AIRBORNE IODINE ACTIVITY VS. E-140 COUNT RATE WITH PANCAKE DETECTOR



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