

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE*Gill* 7/1/57EP-222 FIELD SURVEY GROUP**PROPRIETARY**1.0 PURPOSE

The purpose of this procedure is to provide instructions and guidelines for the actions of the Field Survey Group.

2.0 RESPONSIBILITIES

- 2.1 The Field Survey Group Leader shall be responsible to direct the actions of the field survey group members.
- 2.2 The Field Survey Group members shall be responsible to conduct field surveys as directed by the Field Survey Group leader and this procedure.

3.0 APPENDICES

- 3.1 EP-222-1, Emergency Exposure Guidelines
- 3.2 EP-222-2, Field Survey Group Survey Record
- 3.3 EP-222-3, Field Survey Group Exposure Record
- 3.4 EP-222-4, Field Survey Air Sample Data Record
- 3.5 EP-222-5, Field Survey Group Leader Data Record
- 3.6 EP-222-6, Field Survey Kit Inventory Checklist
- 3.7 EP-222-7, Field Survey Checklist

4.0 PREREQUISITES

- 4.1 Emergency has been declared per EP-101, Classification of Emergencies.

VALID ONLY WHEN RED

5.0 SPECIAL EQUIPMENT

- 5.1 Radio with 2 Battery Packs
- 5.2 Field survey kits
- 5.3 Vehicle
- 5.4 Emergency Dosimetry (0-1500 mR and 0-5 R DRD's)

6.0 SYMPTOMS

- 6.1 An actual or potential release of radioactive material beyond the site boundary in excess of technical specifications.

7.0 ACTION LEVEL

- 7.1 The Field Survey Group shall be activated at the Alert level or as determined by the Dose Assessment Team Leader.

8.0 PRECAUTIONS

- 8.1 The group members exposure shall be limited to the guidelines in EP-222-1, Emergency Exposure Guidelines.
- 8.2 Meteorological conditions, expected radiation levels, and other hazards shall be used to determine the positioning of field survey groups.

9.0 PROCEDURE

- 9.1 Activation
 - 9.1.1 The Field Survey Group Leader (FSGL) shall:
 - 9.1.1.1 Report to the Technical Support Center (TSC).

- 9.1.1.2 Discuss the situation with the Dose Assessment Team Leader. This discussion should include: the potential for release, the magnitude of the radioactive source term, meteorological conditions and potential for change, and the number of field survey squads needed.
- 9.1.1.3 Coordinate the formation of the necessary number of field survey squads from personnel supplied by the Operations Support Center (OSC). A squad consists of a Health Physics Technician and a driver.
- 9.1.1.4 Obtain drivers and vehicles from the Fire and Damage Team Leader and have them report to the TSC.
- 9.1.1.5 Direct field survey squads to obtain emergency dosimetry.
- 9.1.1.6 Instruct the H.P. Technicians to secure and inventory the required number of field survey kits and radios, and perform equipment checks. The radios are located in the Dose Assessment Room in the Technical Support Center and the field survey kits are located in the storage closets in the Personnel Entry Area of the Technical Support Center.
- 9.1.1.7 Discuss the situation with each squad, assign each squad a unique color designation, and direct them to specific initial locations in the field.
- 9.1.1.8 Notify Security Team Leader of the names of field survey squad members so that they will not be detained upon leaving the site.
- 9.1.2 Field survey 'squad members shall:
 - 9.1.2.1 Report to the Field Survey Group Leader (FSGL) at the Technical Support Center or the Personnel Safety Team Leader after the EOF has been activated.
 - 9.1.2.2 Obtain a field survey kit and a radio.
 - 9.1.2.3 Break the seal on the field survey kit and check equipment for operability including source check of survey equipment. Document equipment checks on EP-222-2.

NOTE

IF THE SEAL ON THE FIELD SURVEY KIT WAS ALREADY BROKEN, PERFORM AN INVENTORY OF THE KIT CONTENTS PER APPENDIX EP-222-6, FIELD SURVEY KIT INVENTORY CHECKLIST

- 9.1.2.4 Obtain emergency dosimetry (0-1500 mR and 0-5 R Direct Reading Dosimeters (DRDs). Ensure that DRDs are zeroed prior to leaving the TSC.
- 9.1.2.5 Obtain information from the FSGL on the situation, plan of action, specific survey locations, and necessary precautions.

NOTE

ISSUANCE OF A 0-5 R DRD IS NOT TO BE INTERPRETED AS AN AUTHORIZATION TO EXCEED STATION ADMINISTRATIVE GUIDELINES.

- 9.1.2.6 Upon leaving the TSC keep all dosimetry.
- 9.1.2.7 Ensure that the E-520/HP-270 or equivalent is on and operating prior to leaving the TSC.
- 9.1.2.8 Perform communication check of radios with the FSGL prior to leaving the site.
- 9.1.2.9 Proceed to the first field survey point as directed by the FSGL.

9.2 Implementation

- 9.2.1 The Field Survey Group leader shall:
 - 9.2.1.1 Maintain communication with and direct the activities of the field survey squads. Ensure that the location of each squad on the Field Survey display map is updated as necessary.
 - 9.2.1.2 Obtain field survey results as provided by field survey squads and record results on EP-222-5, Field Survey Group Leader Data Record.
 - 9.2.1.3 Provide the field survey squads with status updates including: radiological and meteorological conditions, etc.
 - 9.2.1.4 Dispatch the field survey squads to additional survey locations as necessary.

~~PROPRIETARY~~

- 9.2.1.5 Field Survey Group Exposure Record, Appendix EP-222-3, shall be completed as directed by the Field Survey Group Leader.
- 9.2.1.6 If the field survey squad members and/or vehicles become contaminated inform the Personnel Safety Team Leader.
- 9.2.1.7 When advised that the EOF has taken over the Dose Assessment function, inform the field survey squads. Perform a formal turnover with the EOF Field Survey Group Leader and report to the Dose Assessment Team Leader.
- 9.2.2 Field survey squad members shall:
 - 9.2.2.1 While in transit, ensure that the E-520/HP-270 or equivalent is on and switched to the lowest appropriate scale. Hold the probe outside the vehicle and have the driver proceed until the specified survey location is reached. Continuously monitor the survey instrument while in transit.
 - 9.2.2.2 When survey location is reached, pull off the road and turn on emergency flashers. Exit vehicle and determine the maximum dose rate at waist height in a 360 degree radius using the E-520/HP-270 or equivalent. Take readings with the probe shielded and unshielded. If the unshielded reading is greater than two times the shielded reading, assume that you are immersed in the plume (as opposed to seeing the effects of skyshine).
 - 9.2.2.3 Record all results on EP-222-2, Field Survey Group Survey Record, and transmit information to the FSGL by radio. If the radio does not function properly, locate a telephone and report survey information. Call [REDACTED] (EOF) and ask for the Field Survey Group Leader.
 - 9.2.2.4 Take air sample at the location if directed by the FSGL as follows:

CAUTION

ENSURE THAT THE ON/OFF SWITCH IS OFF PRIOR TO CONNECTING THE AIR SAMPLER TO THE VEHICLE BATTERY. CONNECT RED LEAD TO THE POSITIVE BATTERY TERMINAL AND BLACK LEAD TO NEGATIVE BATTERY TERMINAL.

- a) Connect terminals of Radeco H809C or equivalent to vehicle battery with engine running as stated above. Place air sampler on an elevated surface, not the ground.
- b) Mark filter and silver zeolite cartridge to indicate air flow direction.
- c) Orient the air sampler toward the plant and run air sampler for 5 minutes or as directed by FSGL. Record the indicated flow rate on EP-222-4, Field Survey Air Sample Data Record.
- d) While air sampler is running, label one envelope and one small plastic bag with the following information: Location, Date, Flow rate, Time On, and Time Off.

NOTE

AIR SAMPLER SHOULD NOT BE RUN AT GREATER THAN 2.5 cfm.
ADVISE FSGL IF SUCH IS THE CASE.

- 9.2.2.5 If so directed by the FSGL take 6 inch and waist level shielded probe measurements using the E-520/HP-270. If the 6 inch reading is greater than the waist level reading, take several disc smears of representative flat environmental surfaces. Using caution to prevent the spread of contamination, place smears in labelled envelopes for counting at a later time.
- 9.2.2.6 When you have finished collecting the Air Sample, inform the FSGL that the air sample is ready to be analyzed. Disconnect air sampler, place air sampler in vehicle, and drive to a low background counting area, as directed by the FSGL. While in transit, monitor E-520/HP-270 or equivalent for radiation levels. Note minimum and maximum readings and transmit the location of these readings to the FSGL.
- 9.2.2.7 Upon arrival at the low background counting area, set up the SAM-2 or equivalent and allow to warm up and stabilize, as follows:
 - a) Connect cable from RD22 probe to "Detector" jack on the front of the SAM-2.

- b) Connect the battery lead to the "Battery" jack on the back of the SAM-2. Plug other end of lead into the socket on the side of the battery pack.
- c) Set the SAM-2 Controls as follows:
- Stabilizer: OFF
 - Count Mode: TIMED
 - Meter Channel: 1
 - Window: Set as shown on Calibration Sticker
 - Threshold: Set as shown on Calibration Sticker
 - Multiplier: x10
 - Response: "Midrange" - "IN"
 - Count Time: 5 x 1
 - Channel 1: In, +
 - Channel 2: Off, out
 - H.V.: As shown on the SAM-2 Calibration Sticker.
- d) Switch the "Power" Switch on the back of the SAM-2 to "ON". Press the "RESET START" button on the front of the SAM-2 and allow the instrument to count for 5 minutes to warm up.

NOTE

IF THE "BATT OK" LIGHT IS NOT LIT, INFORM FSGL.

- 9.2.2.8 Remove only the particulate filter from the air sampler head and perform an analysis of the particulate filter using the E140N/HP-210T with the SH4A sample holder. Record background readings and sample readings in EP-222-4, Field Survey Air Sample Data Record.

CAUTION

IF BACKGROUND RADIATION LEVELS EXCEED 300 CPM USING THE E-140N/HP-210 T, INFORM THE FSGL AND MOVE TO

ANOTHER COUNTING AREA WHERE THE BACKGROUND IS LESS THAN OR EQUAL TO 300 CPM.

- 9.2.2.9 Run the air sampler for one minute with the silver zeolite cartridge in place to purge the cartridge.
- 9.2.2.10 Place the Ba-133 check source cartridge against the end of the RD22 probe in the sample holder and set the count time on the SAM-2 to 2x1 minutes. Press the "RESET START" button and count. Record total number of counts on Appendix EP-222-4.
- 9.2.2.11 To establish the background of the counting system, exchange a clean silver zeolite cartridge for the Ba-133 check source and press "RESET START". Record total number of counts on Appendix EP-222-4.
- 9.2.2.12 Compute the net count rate as follows:
$$\text{NET (CPM)} = \frac{\text{GROSS COUNTS} - \text{BKG COUNTS}}{2}$$
and record on Appendix EP-222-4.
- 9.2.2.13 Compare the net count rate to the allowable net count rate listed on the SAM-2 calibration label. If the measured net count rate is within the range specified, proceed to 9.2.2.14 and use the SAM-2 for I-131 determination. IF THE NET COUNT RATE FALLS OUTSIDE OF THE ALLOWABLE RANGE, REPEAT STEPS 9.2.2.10 TO 9.2.2.13 ONE TIME. If results are still unsatisfactory, inform the Field Survey Group Leader.

NOTE

THE BA-133 SOURCE CHECK STEPS 9.2.2.10 to 9.2.2.13, MUST BE PERFORMED INITIALLY TO VERIFY SATISFACTORY OPERATION OF THE SAM-2 COUNTING SYSTEM. THIS CHECK NEED NOT BE PERFORMED PRIOR TO COUNTING SUBSEQUENT AIR SAMPLES UNLESS THERE IS REASON TO SUSPECT A PROBLEM WITH THE SAM-2 COUNTING SYSTEM. THE BACKGROUND, HOWEVER, MUST BE COUNTED PRIOR TO COUNTING EACH AIR SAMPLE.

- 9.2.2.14 Remove the silver zeolite cartridge with the field sample from the air sampler head and carefully wrap the cartridge in cellophane.
- 9.2.2.15 Place the wrapped cartridge in the sample holder and press "RESET START". Record

TOTAL number of counts on EP-222-4 when the count is complete.

- 9.2.2.16 Calculate I-131 concentration using the equation listed in EP-222-4, Part 2 and transmit the results to the FSGL.
- 9.2.2.17 Rebag the samples for transport back to the site for analysis.
- 9.2.2.18 Await further instructions from the Field Survey Group Leader.
- 9.2.2.19 Before returning to the site, survey self and vehicle for contamination. If contamination is found, inform the Field Survey Group Leader and take the vehicle to the designated Vehicle Decontamination Facility.
- 9.2.2.20 Bring all environmental samples to the Personnel Decontamination Facility in the Radwaste Enclosure and turn them over to a member of the Chemistry Sampling and Analysis Group or as directed by the FSGL.
- 9.2.2.21 Place all data forms in a clean plastic bag and have a noncontaminated individual bring the bag to the Field Survey Group Leader in the TSC.
- 9.2.2.22 The Health Physics Technician shall inventory the field survey kit upon returning to the site and report results to FSGL.

APPENDIX EP-222-1
EMERGENCY EXPOSURE GUIDELINES

| <u>Function</u> | <u>Projected Whole Body Dose</u> | <u>Thyroid Dose</u> | <u>Authorized By</u> |
|--|-----------------------------------|-----------------------------------|--------------------------------|
| 1. Life Saving and Reduction of Injury | 75 rem* | 375 rem | (Interim) Emergency** Director |
| 2. Operation of Equipment to Mitigate an Emergency | 25 rem* | 125 rem | (Interim) Emergency** Director |
| 3. Protection of Health and Safety of the Public | 5 rem | 25 rem | (Interim) Emergency** Director |
| 4. Other Emergency Activities | 10 CFR 20 limits | 10 CFR 20 limits | (Interim) Emergency Director |
| 5. Re-entry/Recovery Activities | Station Administrative Guidelines | Station Administrative Guidelines | N/A |

* Reference: EPA-520/1-75-001 Table 2.1
 ** Such exposure shall be on a voluntary basis

APPENDIX EP-222-2

FIELD SURVEY GROUP SURVEY RECORD

(Page 1 of 2)

| Field Survey Team _____

| Team Members: _____

Date: ____/____/____

| _____

| _____

| INSTRUMENT INVENTORY

| Instrument Type | Serial Number | Calibration ok | Batt ok | Response ok |
|-----------------|---------------|----------------|---------|-------------|
| RO-2A | _____ | _____ | _____ | _____ |
| E-520 | _____ | _____ | _____ | _____ |
| E-140N HP210T | _____ | _____ | _____ | _____ |
| Radeco H-890C | _____ | _____ | _____ | _____ |
| SAM II | _____ | _____ | _____ | _____ |

APPENDIX EP-222-3
FIELD SURVEY GROUP EXPOSURE RECORD

Field Survey Team _____

Date: ____/____/____
 Time: _____

| Name | Dose Rec'd. (mR) | Time Spent In Area (Hrs.) | MPC-hours** |
|-------------|------------------|---------------------------|-------------|
| (A) HP TECH | | | |
| (B) DRIVER | | | |
| (C) OTHER | | | |

**MPC-hrs (I 131) = (Detected conc. uCi/cc I 131) (Time in Area) (1.11p8 MPC/uCi/c

**NOTES:

1. MPC-HOURS ARE CALCULATED USING I-131 AS THE LIMITING ISOTOPE
2. MPC-HOURS ARE ADMINISTRATIVELY CONTROLLED AT 20 MPC-HRS/WK;
 Exposures >20 mpc/hrs/wk to 40 mpc-hrs/wk can be authorized by the Senior Health Physicist

| | (A) | (B) | (C) | | (A) | (B) | (C) | |
|----------------------------|-----|-----|-----|----------|-----|-----|-----|----------|
| Previous Daily Exposures | | | | (mR) W/B | | | | MPC-hrs. |
| Exposure from this entry + | | | | (mR) W/B | | | | MPC-hrs. |
| Exposure Totals | | | | (mR) W/B | | | | MPC-hrs. |
| Remaining Balance | | | | (mR) W/B | | | | MPC-hrs. |

3. INDIVIDUALS SUSPECTED OF EXCEEDING 10 MPC-HRS/WK ARE REQUIRED TO HAVE A WHOLE BODY COUNT
4. DOSIMETRY RECORDS ARE REQUIRED FOR EXPOSURES > 2 MPC HRS/DAY, >10 MPC HOURS/WK.

COPIES TO: - FIELD SURVEY TEAM LEADER; - DOSE ASSESSMENT TEAM LEADER

APPENDIX EP-222-4
FIELD SURVEY AIR SAMPLE DATA RECORD

Date: ___/___/___ Time: _____

Survey Team " _____ " Location _____
 Sector _____

PART 1

1. Air Sample "Time On" _____
2. Air Sample "Time Off" _____
3. Air Sample Run Time _____ minutes
4. Air Sample Flow Rate _____ cfm
5. E-140N/HP-210T Background _____ cpm
6. Particulate Filter Gross Count Rate _____ cpm
7. Particulate Filter Net Count Rate _____ cpm(net)
8. AgX Cartridge Gross Count Rate _____ cpm
9. AgX Cartridge Net Count Rate _____ cpm(net)
- *10. SAM-2 Ba-133 Check source _____ Counts/2 min.
11. SAM-2 Background (clean cartridge) _____ Counts/2 min.
- *12. Ba-133 Net Counts _____ Counts/2 min.
13. SAM-2 I-131 field sample _____ Counts/2 min.

*Perform initially to verify operation of SAM-2-See NOTE, sec. 9.2.2.13

PART 2

Determination of I-131 Concentration

1. Air Sample Volume:
 Run Time (#3) X Flow Rate (#4) = _____ cubic feet (ft3)

2. (#13) (#11)

$$\left[\frac{\text{Counts} - \text{Bkg}}{2 \text{ Minutes}} \right] \left[\frac{1}{\text{Eff}} \right] \left[\frac{1}{\text{Volume}} \right] \left[\frac{1}{0.95} \right] \times 1.59N11 = \text{uCi/cc}$$

$$\left[\frac{\text{ } - \text{ }}{2 \text{ Min}} \right] \left[\frac{1}{\text{ }} \right] \left[\frac{1}{\text{ }} \right] \left[\frac{1}{0.95} \right] \times 1.59N11 = \text{uCi/cc}$$

PART 3

Determination of MPC Fraction (If directed by FSGL)

$$\text{E-140N} - \frac{(\text{Net CPM})}{(\text{Volume}) (18.7)} = \text{ } \% \text{ MPC}$$

APPENDIX EP-222-5
FIELD SURVEY GROUP LEADER RECORD

Date: ___/___/___

Time: _____ EST

Survey Team " _____ "

Location _____

6" Waist High

Sector _____

Area Dose Rate ()

| | |
|--|--|
| | |
| | |

mR/Hr (shielded) E-520/HP-270
mR/Hr (unshielded) E-520/HP-270

()

Direct Frisk of Air Sample Filters

AgX _____ net cpm

Particulate Filter _____ net cpm

Air Sample Data (Part) _____ MPC Fraction (unidentified)

(I - 131) _____ uCi/cc

Copies to: Field Survey Team Leader - Status Board Keeper - Dose
Assessment Team Leader

APPENDIX EP 222-6

FIELD SURVEY KIT INVENTORY

(Page 1 of 2)

| | Quantity | (Check) |
|--|----------|---------|
| 1. Car Battery Operated Air Sampler (H809C) | 1 | _____ |
| a) Sampling Head | 1 | _____ |
| b) Filter Paper, Box | 1 | _____ |
| c) Silver Zeolite Cartridges | 10 | _____ |
| 2. G. M. Counter (E520) | 1 | _____ |
| a) Probe (HP-270) | 1 | _____ |
| b) GM Headset | 1 | _____ |
| c) Spare Batteries (alkaline D cells) | 2 | _____ |
| 3. Ion Chamber (RO2A) | 1 | _____ |
| a) Spare Batteries (Alkaline 9 volt) | 4 | _____ |
| 4. Frisker (E-140N) | 1 | _____ |
| a) Probe (HP-210T) | 1 | _____ |
| b) Sample Holder (SH-4A) | 1 | _____ |
| c) Spare Batteries (Alkaline D cells) | 2 | _____ |
| 5. Stabilized Assay Meter (SAM-2) | 1 | _____ |
| a) Detector (RD22) | 1 | _____ |
| b) Battery Pack (BP4) | 1 | _____ |
| c) Probe/Sample Holder | 1 | _____ |
| d) Spacers (0.5", 1.0", 1.5") | 3 | _____ |
| e) BA-133 Check Source | 1 | _____ |
| 6. Flashlight | 2 | _____ |
| a) Spare Batteries (alkaline D cells) | 4 | _____ |
| 7. Radiation Tape (roll) | 1 | _____ |
| 8. Clip Board | 1 | _____ |
| 9. Log Book | 1 | _____ |
| 10. Black Pens | 3 | _____ |
| 11. Grease Pencils | 1 | _____ |
| 12. Field Survey Maps (Book) | 1 | _____ |
| 13. Smears (Book) | 10 | _____ |
| 14. Envelopes for Smears (Stamped) | 20 | _____ |
| 15. Ziplock Bags | 20 | _____ |
| 16. Felt Tip Marker | 2 | _____ |
| 17. Plastic Wrap (roll) | 1 | _____ |
| 18. Masking Tape (2" roll) | 2 | _____ |
| 19. Duct Tape (2" roll) | 2 | _____ |
| 20. Masslinn (Package) | 1 | _____ |
| 21. Quarters for Pay Phone (Roll) | 1 | _____ |
| 22. Protective Clothing (set includes paper coveralls, cap, cotton liners) | 2 | _____ |
| 23. Stopwatch | 1 | _____ |
| 24. Pocket Knife | 1 | _____ |
| 25. Tweezers | 1 | _____ |
| 26. Pocket Calculator | 1 | _____ |
| 27. Compass | 1 | _____ |
| 28. Rain Suit (Pants & Jacket) | 2 | _____ |
| 29. Plastic Bags (5 gallon) | 25 | _____ |

Appendix EP-222-6

FIELD SURVEY KIT INVENTORY

(Page 2 of 2)

| | Quantity | (Check) |
|---------------------------------|-----------|---------|
| 30. Plastic Bottle (1 liter) | <u>3</u> | _____ |
| 31. Radiation Material Stickers | <u>50</u> | _____ |
| 32. Gloves, plastic (pair) | <u>30</u> | _____ |
| 33. Shoe Covers (pair) | <u>10</u> | _____ |
| 34. Telephone Directory (Site) | <u>1</u> | _____ |
| 35. Current HP Procedures (set) | <u>1</u> | _____ |
| 36. Rad Rope (50' roll) | <u>1</u> | _____ |
| 37. Current EP Procedures (set) | <u>1</u> | _____ |

APPENDIX EP-222-7
FIELD SURVEY CHECKLIST

1. BEFORE LEAVING SITE

- A) All Equipment accounted for and operable
- B) Have been briefed on situation, etc.
- C) Have Emergency Dosimetry and they are zeroed
- D) Communication check performed
- E) E520/HP270 is ON

2. AT THE SURVEY LOCATION AND WHILE IN TRANSIT

- A) Looked for and reported location where increasing radiation levels occurred while still in transit to specified survey location
- B) Performed survey using E-520/HP-270 to look for maximum dose rate at waist level in 360 deg. radius
- C) Survey with E-520/HP-270 with probe shielded and unshielded
- D) Have notified FSGL of arrival and dose rate encountered
- E) If advised to take air sample:
 - 1) Particulate filter and silver zeolite cartridge marked to indicate direction of air flow
 - 2) Air Sampler head loaded with filter located outside of cartridge
 - 3) Air Sampler head oriented toward the plant and running
 - 4) Flow Rate observed and recorded

- F) If directed by FSGL, 6 inch gamma readings taken with E-520/HP-270
- G) If 6" readings higher than waist level readings, smears taken
- H) Notified FSGL that Air Sample has been pulled and advised to move to low background counting area to analyze sample
- I) E520/HP270 is ON during transit - looking for and reporting locations of maximum and minimum dose rates

3) AT LOW BACKGROUND COUNTING AREA

- A) SAM 2 set up and counting for 5 minutes to warm up
- *B) 2 minute count of Ba-133 check source (for initial analysis only)
- C) Remove and count particulate filter with E-140N/HP-210T
- D) Purge Silver zeolite cartridge for 1 minute
- E) 2 minute count of Clean Silver Zeolite cartridge
- F) 2 minute count of Sample Silver Zeolite cartridge
- G) I-131 Concentration calculated
- H) All results recorded and relayed to FSGL
- I) Advised to move to new location
- J) If advised to return, monitor self and vehicle and relay findings to FSGL
- K) All samples turned over to Chemistry Sampling & Analysis Group at Personnel Decon Facility in Radwaste Enclosure
- L) All forms turned over to FSGL for subsequent disposition

*Perform initially to verify satisfactory operation of SAM-2 counting system only

PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION
EMERGENCY PLAN IMPLEMENTING PROCEDURE**PROPRIETARY**

EP-315

CALCULATION OF OFFSITE DOSES DURING A RADIOLOGICAL
EMERGENCY USING RMMS IN THE MANUAL MODE1.0 PURPOSE

The purpose of this procedure is to provide guidelines to RMMS operators and dose assessment personnel who are using RMMS to calculate offsite doses during a potential or actual radiological emergency.

The manual mode of RMMS will allow the operator to bypass the use of real time radiation and meteorological data, enabling him to enter data of his own choosing.

Operation of RMMS in the manual mode is useful for investigating offsite doses during Emergency Plan exercises and in the event that radiation or meteorological data are unavailable in the real time mode.

2.0 RESPONSIBILITIES

- 2.1 It is the responsibility of the Shift Technical Advisor in the control room, assigned to RMMS, to initiate dose calculations if there is an indication that a radiological release in excess of instantaneous Technical Specifications limits has occurred.
- 2.2 It is the responsibility of the Shift Superintendent to evaluate the dose rates, declare the appropriate EAL based on releases, and assist the Emergency Director in making EAL recommendations if warranted.
- 2.3 It is the responsibility of the Dose Assessment Team Leader (upon activation of the TSC) to initiate and direct dose calculations, evaluate the results, and assist the Emergency Director with EAL declarations and PAG recommendations.
- 2.4 It is the responsibility of the RM-11 Operator in the TSC to provide radiation release data to the RM-21A Operator and the Dose Assessment Team Leader.

- 2.5 It is the responsibility of the RM-21A Operator in the TSC to enter radiation release data and meteorological data and generate offsite dose estimates.
- 2.6 It is the responsibility of the Field Survey Group Leader in the TSC to direct field survey squads to locations in the plume in order to acquire data which will augment and enhance the offsite dose estimates.
- 2.7 It is the responsibility of the Calculator in the TSC to assist the RM-21A Operator with data entry problems and to periodically update the Dose Assessment Status Board Keeper and Meteorological Status Board Keeper with information.
- 2.8 It is the responsibility of the Dose Assessment Team Leader in the EOF to initiate and direct the offsite dose calculations when the EOF is activated and assist the Site Emergency Coordinator with EAL declarations and PAG recommendations.
- 2.9 It is the responsibility of the RM-21A Operator in the EOF to enter radiation release data and meteorological data and generate offsite dose estimates.
- 2.10 It is the responsibility of the Field Survey Group Leader in the EOF to direct field survey squads to locations in the plume in order to acquire data which will augment and enhance the offsite dose estimates.
- 2.11 It is the responsibility of the Calculator in the EOF to assist the RM-21A Operator with data entry problems, and periodically update the Dose Assessment Status Board Keeper with information.

3.0 APPENDICES

None

4.0 PREREQUISITES

None

5.0 SPECIAL EQUIPMENT

- 5.1 RM-21A consoles and hardcopy units
- 5.2 RM-11 consoles and printers

6.0 SYMPTOMS

- 6.1 An indication that a radiological release in excess of instantaneous Technical Specifications limits has or may occur.

7.0 ACTION LEVEL

None

8.0 PRECAUTIONS

None

9.0 PROCEDURE

9.1 Control Room Operations

9.1.1 Upon receiving an indication that a gaseous release in excess of instantaneous technical specifications may have occurred, the control room operator shall first acknowledge the alarm on the RM-11 console, and request that an offsite dose calculation be initiated to evaluate the release.

9.1.2 The following channels will provide an indication of a potential technical specification release if in a blinking red state and audibly alarming:

9.1.2.1 North Vent:

Wide Range Gas Monitor

Channel 4TE076

Particulate, Iodine, Noble Gas Monitors

Channel 2IE075

Channel 5IE075

Channel 3GE075

Channel 6GE075

9.1.2.2 South Vent - Unit 1

Particulate, Iodine, Noble Gas Monitors

Channel 2IE185

Channel 5IE185

Channel 3GE185

Channel 6GE185

9.1.2.3 South Vent - Unit 2

Particulate, Iodine, Noble Gas Monitors

Channel 2IE285

Channel 5IE285

Channel 3GE285

Channel 6GE285

9.1.3 The control room Shift Technical Advisor assigned to the RM-21A will logon to the system using the appropriate username and password, select option 6 (Emergency Dose Calculations) from the Primary Option Menu, then option 3 (Class A Dose Model) from the secondary menu.

9.1.4 The RM-21A operator will choose ACRISO Run Control Parameter Menu option 3, All Manual Mode.

9.1.5 The operator will respond "yes" to reviewing the run control table and verify the table matches the example exactly in Attachment 1. If not he will edit the table.

- 9.1.6 The operator should generate a hardcopy of this and all other data displays for future reference.
- 9.1.7 The operator shall complete the following mandatory steps:
- 9.1.7.1 Enter Time of Reactor Trip or Scram. If the Reactor has not tripped or scrambled enter the start time of the release.
- 9.1.7.2 Enter Time of Release. Enter the Start Time of the release or the beginning of the period to be evaluated. This time must be later than or equal to the Time of Reactor Trip.

NOTE

EASTERN STANDARD TIME (EST) IS USED BY RMMS. EST IS EQUAL TO DAYLIGHT SAVINGS TIME MINUS 1 HOUR.

- 9.1.7.3 Enter the Remaining Duration of Release. The operator must request that the Shift Supervisor provide him with an estimated duration of release. If the duration cannot be estimated with confidence, enter 2 hours.

NOTE

THE REMAINING DURATION OF RELEASE IS USED IN THE EAL TABLE WHICH PROVIDES THE OPERATOR WITH INFORMATION REGARDING CLASSIFICATION OF AN EMERGENCY BASED ON RADIOLOGICAL RELEASES. IT IS ALSO USED IN THE PAG SUMMARY DISPLAY TO PROVIDE GUIDANCE ON WHEN PAGS MAY BE EXCEEDED.

- 9.1.8 The operator shall respond to the following additional prompts:
- 9.1.8.1 Enter the Isotopic Release Data for selected release point by selecting option 3 as follows:

A. Noble Gases

The operator should choose gaseous isotope 8 Kr-88 and enter the isotopic release rate obtained from channel 4TE076 on the RM-11 display console for the period of interest.

~~PROPRIETARY~~

B. Iodines

The operator should select isotope 34, I-131 and enter the isotopic release rate as follows:

Obtain the average iodine concentration (uCi/cc) from channels 2IE075 and 5IE075, multiply this average by the process flow rate in CFM (obtained from the top of either above channel trend display), and multiply by 472 (to convert units to uCi/sec)

9.1.8.2 Enter the Vent Flow Rate (CFM)

Obtain this value from the top of any channel trend display associated with the release point of interest. (Indicated as process flow rate N. on the trend display).

NOTE

IF OFFSITE POWER HAS BEEN LOST, CHOOSE PROCESS FLOW RATE "A" ON THE TREND DISPLAY.

9.1.8.3 Enter the Meteorological Data

Obtain the data from the Meteorological Data-Logger and enter the sensor which corresponds to the prompt. Refer to the cross reference attached to the RM-21A console for the correct sensor input.

NOTE

IF METEOROLOGICAL DATA IS UNAVAILABLE THE OPERATOR SHALL ATTEMPT TO OBTAIN THE DATA FROM THE FOLLOWING SOURCES (LISTED IN ORDER OF PREFERENCE):

1. CONTROL ROOM STRIP CHART RECORDERS
2. PEAPS CONTROL OPERATOR (EXT. [REDACTED], REQUEST TOWER 2, 75' WIND SPEED AND DIRECTION, 300' - 30' DELTA T FOR STABILITY DETERMINATION
3. NATIONAL WEATHER SERVICE [REDACTED]

- 9.1.9 The operator shall review the following displays for accuracy and generate a hardcopy for his records. If the information shown on the displays is incorrect, he should enter R to Restart his data entry.
- 9.1.9.1 Meteorological Data Summary
- Verify that the dates and times of the release are correct. Verify that the meteorological data are correct. Generate hardcopy.
- 9.1.9.2 Release Summary
- Verify that the isotopic release data and vent flow data are correct. Generate hardcopy.
- 9.1.10 The operator shall then review the Site Boundary Emergency Action Level Display for the current action level, generate a hardcopy and inform the shift superintendent of the action level.
- 9.1.11 The operator shall generate the following displays and obtain a hardcopy of each if a current action level of unusual event or greater is obtained:
- 9.1.11.1 X/Q Display.
- 9.1.11.2 Projected Dose Summary.
- 9.1.11.3 Summary Report.
- 9.1.12 The RM-21A Operator should repeat the steps in 9.1.7 to 9.1.11 if any following condition is observed:
- 9.1.12.1 A new high alarm (red, blinking, audible) is indicated on the RM-11 display console from any channel described in 9.1.2.
- 9.1.12.2 An upward trend is observed in any channel described in 9.1.2 while it is in the high alarm state.
- 9.1.12.3 An EAL value described on either the RM-11 or RM-21A operator aid card is met or exceeded.

9.1.13 Dose assessment turnover to the TSC

Upon activation of the TSC, the RM-21A Operator in Control Room shall contact the Dose Assessment Team Leader, (extension [redacted] and provide the following information if an EAL based on a release has been determined.

9.1.13.1 Time of Reactor Trip or Scram

9.1.13.2 Time of Release

9.1.13.3 Estimated Duration of Release

9.1.13.4 Wind Direction

9.1.13.5 Location of Peak X/Q

9.1.13.6 Time to Reach Peak X/Q

9.1.13.7 Location and Value of Peak Whole Body Gamma Dose Rate

9.1.13.8 Location and Value of Peak Thyroid Dose Rate

9.1.13.9 Whole Body Gamma Dose Rate at 2, 5 and 10 Miles

9.1.13.10 Phone number where the RM-21A operator in the Control Room can be contacted.

9.2 TSC Operations

9.2.1 Upon turnover of dose assessment from the Control Room to the TSC, the Dose Assessment Team Leader shall do the following:

9.2.1.1 Brief team members on plant and release status.

9.2.1.2 Assign personnel as RM-21A Operator, RM-11 Operator, Calculator, Field Survey Group Leader.

9.2.1.3 Initiate and direct dose calculations using RMMS.

9.2.1.4 Review dose model inputs (Meteorological Data Summary and Release Summary Displays) for accuracy.

- 9.2.1.5 Evaluate dose model results (Summary Report and Projected Dose Summary) against Whole Body Gamma and Thyroid Inhalation PAGs.
- 9.2.1.6 Periodically brief the Emergency Director on offsite dose results and assist him with PAG recommendations if conditions are warranted.
- 9.2.1.7 Direct the Field Survey Group Leader to dispatch Field Survey Squads to areas within the plume (using chi/Q plot and Whole Body Gamma, Inhalation Thyroid prints and plots) in order to augment and enhance the offsite dose projections.
- 9.2.1.8 Periodically update the BRP on plant conditions, meteorology, and actual or potential releases.
- 9.2.2 The RM-11 Operator shall perform the following:
 - 9.2.2.1 Continuously assess radiological trends from the Drywell High Range Radiation Monitors and plant effluent monitors and inform the Calculator as conditions change.
 - 9.2.2.2 Update the Calculator and Dose Assessment Team Leader on an approximately 15 minute basis, with information from the affected radiation effluent monitors unless otherwise directed by the Dose Assessment Team Leader.
 - 9.2.2.3 Inform the Dose Assessment Team Leader immediately in the event that any EAL condition specified on the operator aid card has been reached or exceeded.
- 9.2.3 The Calculator shall perform the following:
 - 9.2.3.1 Obtain approximately every 15 minutes, the effluent release data from the RM-11 operator.
 - 9.2.3.2 Perform, as requested by the Dose Assessment Team Leader, EP-325 for input to the RMMS dose model.
 - 9.2.3.3 Select and calculate, as directed by the Dose Assessment Team Leader, isotopic breakdowns of the source term for input to the RMMS dose model.

- 9.2.3.4 Note on the dose model output cover sheet, the time of the calculations and assumptions used.
- 9.2.3.5 Update dose trending sheets as required.
- 9.2.3.6 Review Dose Model Results for key information. Immediately, inform the Dose Assessment Team Leader if dose model results indicate PAG levels may be met or exceeded.
- 9.2.3.7 Update the status board keepers with the requested information.
- 9.2.4 The RM-21A Operator shall perform the following:
 - 9.2.4.1 Logon to the RM-21A system using the appropriate user name and password.
 - 9.2.4.2 Obtain meteorological data for the period of interest by selecting option 4 (Meteorological Data Collection and Processing) from the Primary Option Menu, then option 3 (Meteorological Data Processing), then option 3 (Review Current Averages) or option 4 (Meteorological Data Averages) if the evaluation is to be done with historical meteorological data. Respond to the prompts as displayed and generate a hardcopy to transcribe the sensor names into RMMS inputs.

NOTE

THE RM-21A OPERATOR SHOULD EVALUATE THE METEOROLOGICAL DATA FOR CHANGES EVERY 15 MINUTES OR AS DIRECTED BY THE DOSE ASSESSMENT TEAM LEADER.

- 9.2.4.3 Return to the Primary Option Menu and select option 6 (Emergency Dose Calculations), then option 3 (Class A Dose Model) from the secondary menu.
- 9.2.4.4 The RM-21A Operator will choose ACRISO Run Control Parameter Menu option 3 (All Manual Mode).
- 9.2.4.5 The Operator will respond "yes" to reviewing the Run Control Table and verify the table matches exactly the example in Attachment 1. If not, he will edit the table.

NOTE

THE OPERATOR SHOULD GENERATE A HARDCOPY OF THIS AND ALL REQUESTED DATA DISPLAYS FOR FUTURE REFERENCE.

9.2.4.6 The Operator shall complete the following mandatory steps:

- A. Enter the Time of Reactor Trip or Scram.

This prompt is chiefly used for decaying default accident isotopic spectra or isotopic data collected at the source, (e.g., P.A.S.S. or containment air sample) to the time of release. If the isotopic data provided to the operator is data obtained from the release point, enter the time of release. Also, if exact isotopic composition of the release is unknown, enter the time of release.

- B. Enter Time of Release

Enter the start time of the release. If release has begun, enter the beginning of the period to be evaluated. This time must be later than, or equal to the Time of Reactor Trip.

NOTE

EASTERN STANDARD TIME (EST) IS USED BY RMMS. EST IS EQUAL TO DAYLIGHT SAVINGS TIME MINUS 1 HOUR.

- C. Enter Remaining Duration of Release

The Operator must request that the Dose Assessment Team Leader provide him with an estimated duration of release. If the duration cannot be estimated with confidence, enter 2 hours.

NOTE

THE REMAINING DURATION OF RELEASE IS USED IN THE EAL TABLE WHICH PROVIDES THE OPERATOR WITH INFORMATION REGARDING CLASSIFICATION OF AN EMERGENCY BASED ON RADIOLOGICAL RELEASES. IT IS ALSO USED IN THE PAG SUMMARY DISPLAY TO PROVIDE GUIDANCE ON WHEN PAGES MAY BE EXCEEDED.

~~PROPRIETARY~~

9.2.4.7

The Operator shall respond to the following additional prompts. Radiation effluent data shall be obtained from the Calculator. Meteorological data shall be obtained from the RM-21A console for the period of interest.

A. Enter the Isotopic Release Data for the release point of interest by selecting option 3 or as otherwise directed by the Dose Assessment Team Leader:

1. For Noble Gases, choose gaseous isotope 8, Kr-88, and enter the gross isotopic release rate(s) provided by the Calculator.
2. For Iodines, the operator should select isotopes 34 and 35, I-131 and I-133 respectively, and enter the isotopic release rate(s) provided by the Calculator.

B. Enter the Vent Flow Rate (CFM)

Enter the flow rate provided by the Calculator.

C. Enter the Meteorological Data

Enter the Meteorological Data obtained from the RM-21 console for the time period of interest.

NOTE

IF METEOROLOGICAL DATA IS UNAVAILABLE, THE OPERATOR SHALL ATTEMPT TO OBTAIN THE DATA FROM THE FOLLOWING SOURCES (LISTED IN ORDER OF PREFERENCE):

1. Control Room Strip Chart Recorders

2. PBAPS Control Operator (ext. [redacted])
Request Tower 2, 75' wind speed and direction, 300'-30' delta T for stability determination

3. National Weather Service [redacted]

- 9.2.4.8 The operator shall review the following displays for accuracy and generate hardcopy for his records. If the information shown on the displays is incorrect, he should enter R to Restart his data entry.
- A. Meteorological Data Summary
Verify the dates and times of the release are correct. Verify the meteorological data is correct. Generate hardcopy.
 - B. Release Summary
Verify the isotopic release data and vent flow data are as entered. Generate hardcopy.
- 9.2.4.9 The operator shall then review the Site Boundary Emergency Action Level Display for the current action level, generate a hardcopy and inform the Dose Assessment Team Leader of the action level.
- 9.2.4.10 The operator shall generate the following displays and obtain a hardcopy of each if a current action level of unusual event or greater is obtained or as directed by the Dose Assessment Team Leader:
- A. X/Q Display
 - B. Skin Isopleth
 - C. Gamma Isopleth
 - D. Inhalation Thyroid Isopleth
 - E. Projected Dose Summary
 - F. Summary Report
- 9.2.4.11 The operator should repeat steps 6.2.4.1 through 6.2.4.10 if any of the following occur:
- A. Meteorology changes significantly.
 - B. New isotopic data is made available.
 - C. An upward trend is observed in any effluent channel of interest.

- D. An EAL value described on either the RM-11 or RM-21A operator aid card is met or exceeded.
- E. As directed by the Dose Assessment Team Leader.

9.2.5 The Field Survey Group Leader shall do the following:

9.2.5.1 Assign drivers and technicians to Field Survey Squads.

9.2.5.2 Assist the Dose Assessment Team Leader in briefing squad members on plume dimensions, location of peak Chi/Q, and dose rates, initial instructions, and potential sample locations.

9.2.5.3 Dispatch Field Survey Squads to positions near or within the plume and coordinate their activities.

9.2.5.4 Receive periodic updates on dose rates and meteorological conditions from the Dose Assessment Team Leader via the RMMS Chi/Q Gamma Whole Body, and Inhalation Thyroid prints and plots.

9.2.5.5 Instruct the Field Survey Clerk to record Field Survey Squad data.

9.2.5.6 Update the Dose Assessment Team Leader with actual exposure rates and concentrations at the designated sample locations.

9.3 EOF Operations

9.3.1 Upon turnover of dose assessment from the TSC to the EOF, the Dose Assessment Team Leader shall do the following:

9.3.1.1 Assign personnel as RM-21A Operator Calculator, and Field Survey Group Leader.

9.3.1.2 Periodically brief team members on the status of plant, radiological, and meteorological parameters.

9.3.1.3 Initiate and direct dose calculations using RMMS.

- 9.3.1.4 Review dose model inputs (Meteorological Data Summary and Release Summary Displays) for accuracy.
- 9.3.1.5 Evaluate dose model results (Summary Report and Projected Dose Summary) against Whole Body Gamma and Thyroid Inhalation PAGs.
- 9.3.1.6 Periodically brief the Emergency Director on offsite dose results and assist him with PAG recommendations if conditions are warranted.
- 9.3.1.7 Direct the Field Survey Group Leader to dispatch Field Survey Squads to areas within the plume (using chi/Q plot and Whole Body Gamma, Inhalation Thyroid prints and plots). In order to augment and enhance the offsite dose projections.
- 9.3.1.8 Periodically update the BRP on plant conditions, meteorology, and actual or potential releases.
- 9.3.2 The Calculator shall perform the following:
 - 9.3.2.1 Obtain (approximately every 15 minutes) the effluent release data and meteorological data from the RM-21A operator.
 - 9.3.2.2 Perform, as requested by the Dose Assessment Team Leader, EP-325 for input to the RMMS dose model.
 - 9.3.2.3 Select and calculate, as directed by the Dose Assessment Team Leader, isotopic breakdowns of the source term as input to the RMMS dose model.
 - 9.3.2.4 Note on the dose model output cover sheet, the time of the calculations and the assumptions used,
 - 9.3.2.5 Update dose trending sheets as required.
 - 9.3.2.6 Review dose model results for key information. Immediately inform the Dose Assessment Team Leader if dose model results indicate PAG levels are being met or exceeded.
 - 9.3.2.7 Update the status board keeper with the appropriate information.

9.3.3 The RM-21A Operator shall perform the following:

9.3.3.1 Logon to the RM-21A system using the appropriate username, password and following method:

A. Lift phone receiver from cradle and pull the left switch hook into a full upward position.

B. When a dial tone is present, dial One ring followed by a tone should be heard.

C. Press the switch hook down to the first notch. This engages the RM-21A terminal (Textronics 4014) to the VAX Computer.

D. Logon to the RM-21A system using the appropriate username and password.

9.3.3.2 Obtain meteorological data for the period of interest by selecting option 4 (Meteorological Data Collection and Processing) from the Primary Option Menu, then option 3 (Meteorological Data Processing), then option 3 (Review Current Averages) or option 4 (Meteorological Data Averages) if the evaluation is to be done on historical meteorological data. Respond to the prompts as displayed and generate a hardcopy to transcribe the sensor names into RMMS inputs.

9.3.3.3 Return to the Primary Option Menu and select option 5 (Emergency Dose Calculations) then option 3 (Class A Dose Model) from the secondary menu.

9.3.3.4 The RM-21A Operator will choose ACRISO Run Control Parameter Menu option 3 (All Manual Mode).

NOTE

THE RM-21A OPERATOR SHOULD EVALUATE THE METEOROLOGICAL DATA FOR SIGNIFICANT CHANGES EVERY 15 MINUTES OR AS DIRECTED BY THE DOSE ASSESSMENT TEAM LEADER.

- 9.3.3.5 The Operator will respond "YES" to reviewing the Run Control Table and verify the table matches exactly the example in Attachment 1. If not he will edit the table.

NOTE

THE OPERATOR SHOULD GENERATE A HARDCOPY OF THIS AND ALL REQUESTED DATA DISPLAYS FOR FUTURE REFERENCE.

- 9.3.3.6 The operator shall complete the following mandatory steps:

- A. Enter time of Reactor Trip or Scram.

This prompt is chiefly used for decaying default accident isotopic spectra and isotopic data collected at the source, (e.g. P.A.S.S. or Containment Air Sample) to the time of release. If the isotopic data provided to the operator is from the release point, enter the time of release. Also, if exact isotopic composition of the release is unknown, enter the time of release.

- B. Enter time of release.

Enter the start time of the release or, if release has begun, enter the beginning of the period to be evaluated. This time must be later than, or equal to the Time of Reactor Trip.

NOTE

EASTERN STANDARD TIME (EST) IS USED BY RMMS. EST IS EQUAL TO DAYLIGHT SAVINGS TIME MINUS 1 HOUR.

- C. Enter remaining duration of release

The operator must request that the Dose Assessment Team Leader provide him with an estimated duration of release. If the duration cannot be estimated with confidence, enter 2 hours.

~~PROPRIETARY~~

NOTE

THE REMAINING DURATION OF RELEASE IS USED IN THE EAL TABLE DISPLAY WHICH PROVIDES THE OPERATOR WITH INFORMATION REGARDING CLASSIFICATION OF AN EMERGENCY BASED ON RADIOLOGICAL RELEASES. IT IS ALSO USED IN THE PAG SUMMARY DISPLAY TO PROVIDE GUIDANCE ON WHEN PAGES MAY BE EXCEEDED.

9.3.3.7 The operator shall respond to the following additional prompts. Radiation effluent data and meteorological data shall be obtained from the RM-21A console for the period of interest.

A. Enter the Isotopic Release Data for the release point of interest by selecting option 3 as follows or as otherwise directed by the Dose Assessment Team Leader:

1. For noble gases, choose gaseous isotope 8, Kr-88, and enter the gross isotopic release rate(s) provided by the Calculator.
2. For iodines, the operator should select isotopes 34 and 35, I-131 and I-133 respectively and enter the isotopic release rate(s) provided by the Calculator.

B. Enter the Vent Flow Rate (CFM)

C. Enter the Meteorological Data

Enter the Meteorological Data obtained from the RM-21 Console for the time period of interest.

NOTE,

IF METEOROLOGICAL DATA IS UNAVAILABLE, THE OPERATOR SHALL ATTEMPT TO OBTAIN THE DATA FROM THE FOLLOWING SOURCES (LISTED IN ORDER OF PREFERENCE)

1. Control Room Strip Chart Recorders

2. ~~PPAPS~~ Control Operator (ext. ~~Request~~ Request Tower 2,75' wind speed and direction, 300'-30' T for stability determination.

3. National Weather Service

- 9.3.3.8 The operator shall review the following displays for accuracy and generate hardcopy for his records. If the information shown on the displays is incorrect, he should enter R to Restart his data entry.
- A. Meteorological Data Summary
Verify the dates and times of the release are correct. Verify the meteorological data is correct. Generate hardcopy.
 - B. Release Summary
Verify the isotopic release data and vent flow data are as entered. Generate hardcopy.
- 9.3.3.9 The operator shall then review the Site Boundary Emergency Action Level Display for the current action level, generate a hardcopy and inform the Dose Assessment Team Leader of the action level.
- 9.3.3.10 The operator shall generate the following displays and obtain a hardcopy of each if a current action level of unusual event or greater is obtained or as directed by the Dose Assessment Team Leader.
- A. X/Q Display
 - B. Skin Isopleth
 - C. Gamma Isopleth
 - D. Inhalation Thyroid Isopleth
 - E. Projected Dose Summary
 - F. Summary Report
- 9.3.3.11 The operator should repeat steps A through J if any of the following occur:
- A. Meteorology changes significantly.
 - B. New isotopic data is made available.

ATTACHMENT 1

Site: Limerick
Unit: U1
USER: HPI
Date: 7/10/84 18:11

ACRISO RUN CONTROL TABLE 3

| <u>ITEM</u> | <u>DESCRIPTION</u> | <u>CURRENT SELECTION</u> |
|-------------|--|--|
| 1 | Meteorological Data..... | Manual Entry |
| 2 | Data File Type..... | 15-Min Workspace |
| 3 | Q Data Source..... | Manual Q File Data |
| 4 | Vent Flow Data..... | Manual Entry |
| 5 | Maximum Downwind Distance (Miles)..... | 10.0 |
| 6 | Output Media..... | Plot |
| 7 | Background Map Selectors..... | Cities Rivers, Lakes and Ocean Roads State Boundaries Counties Text |
| 8 | Report Options..... | X/Q Isopleth Depleted X/Q Isopleth Skin Isopleth Gamma Isopleth Inhal. Thyroid Isopleth Milk Thyroid Isopleth Project Gamma & Thyroid Summary Report Project Dose Summary Point of Interest Print |
| 9 | Release Point for X/Q Output..... | 1 |
| 10 | Isopleth Contour Spacing..... | 1,1,1,2,2,2,2 |
| 11 | Gamma Dose Calculation..... | Semi-Infinite |
| 12 | Off-site Gamma Dose Adjustment Factor..... | 1.00 |
| 13 | Off-site Iodine Adjustment Factor..... | 1.00 |
| 14 | Active Release Points..... | 1 |
| 15 | Title Change..... | Dose Calc--All Manual 15-Min Data |

SELECT OPTIONS

E -- Edit
P -- Print

ENTER OPTION SELECTION (E or P)

EMERGENCY PLAN PROCEDURE INDEX

| PROCEDURE NUMBER | REV. NO. | TITLE | DATE SIGNED BY SUPER. | DATE OF LAST PERIODIC REVIEW |
|------------------|----------|---|-----------------------|------------------------------|
| EP-101 | 1 | Classification of Emergencies | 06/08/84 | |
| EP-102 | 3 | Unusual Event Response | 06/08/84 | |
| EP-103 | 3 | Alert Response | 06/08/84 | |
| EP-104 | 3 | Site Emergency Response | 06/08/84 | |
| EP-105 | 3 | General Emergency Response | 07/09/84 | |
| EP-106 | 1 | Written Summary Notification | 06/08/84 | |
| EP-110 | 2 | Personnel Assembly and Accountability | 06/08/84 | |
| EP-120 | 1 | Site Emergency Coordinator | 06/08/84 | |
| EP-201 | 1 | Technical Support Center (TSC) Activation | 06/08/84 | |
| EP-202 | 1 | Operations Support Center (OSC) Activation | 06/08/84 | |
| EP-203 | 1 | Emergency Operations Facility (EOF) Activation | 06/08/84 | |
| EP-208 | 2 | Security Team Activation | 06/08/84 | |
| EP-210 | 1 | Dose Assessment Team | 06/08/84 | |
| EP-220 | | CANCELLED | | |
| EP-221 | 1 | Personnel Dosimetry, Bioassay, and Respiratory Protection Group | 06/08/84 | |
| EP-222 | 2 | Field Survey Group | 07/17/84 | |
| EP-230 | 2 | Chemistry Sampling and Analysis Team Activation | 06/08/84 | |
| EP-231 | 2 | Operation of Post-Accident Sampling Systems (PASS) | 06/08/84 | |
| EP-232 | | CANCELLED | | |
| EP-233 | 2 | Retrieving and Changing Sample Filters and Cartridges from the Containment Leak Detector During Emergencies | 06/08/84 | |

EMERGENCY PLAN PROCEDURE INDEX

| PROCEDURE NUMBER | REV. NO. | TITLE | DATE SIGNED BY SUPER. | DATE OF LAST PERIODIC REVIEW |
|------------------|----------|--|-----------------------|------------------------------|
| EP-234 | 2 | Obtaining Containment Gas Samples from the Containment Leak Detector During Emergencies | 06/08/84 | |
| EP-235 | 2 | Obtaining Reactor Water Samples from Sample Sinks Following Accident Conditions | 06/08/84 | |
| EP-236 | 1 | Obtaining Cooling Tower Blowdown Line Water Samples Following Radioactive Liquid Release after Accident Conditions | 06/08/84 | |
| EP-237 | 2 | Obtaining the Iodine/Particulate and/or Gas Samples from the North Vent Wide Range Gas Monitor (WRGM) | 06/08/84 | |
| EP-238 | 2 | Obtaining Liquid Radwaste Samples from Radwaste Sample Sink Following Accident Conditions | 05/08/84 | |
| EP-240 | 2 | Obtaining Off-Gas Samples from the Air Ejector/Holdup Pipe Discharge Sample Station | 06/08/84 | |
| EP-241 | 2 | Sample Preparation and Handling of Highly Radioactive Liquid Samples | 06/08/84 | |
| EP-242 | 2 | Sample Preparation and Handling of Highly Radioactive Particulate Filters and Iodine Cartridges | 06/08/84 | |
| EP-243 | 2 | Sample Preparation and Handling of Highly Radioactive Gas Samples | 06/08/84 | |
| EP-244 | 0 | Offsite Analysis of High Activity Samples | 06/08/84 | |
| EP-250 | 1 | Personnel Safety Team Activation | 06/08/84 | |
| EP-251 | 1 | Plant Survey Group | 06/08/84 | |

EMERGENCY PLAN PROCEDURE INDEX

| PROCEDURE NUMBER | REV. NO. | TITLE | DATE SIGNED BY SUPER. | DATE OF LAST PERIODIC REVIEW |
|------------------|----------|---|-----------------------|------------------------------|
| EP-252 | 1 | Search and Rescue/First Aid | 06/08/84 | |
| EP-254 | 1 | Vehicle and Evacuee Control Group | 06/08/84 | |
| EP-255 | 1 | Vehicle Decontamination | 06/08/84 | |
| EP-260 | 1 | Fire and Damage Team Activation | 06/08/84 | |
| EP-261 | 1 | Damage Repair Group | 06/08/84 | |
| EP-272 | 1 | Philadelphia Electric Company Officials | 06/08/84 | |
| EP-273 | 1 | Limerick Station Supervision Call List | 06/08/84 | |
| EP-275 | | CANCELLED | | |
| EP-276 | 1 | Fire and Damage Team Phone List | 06/08/84 | |
| EP-277 | 1 | Personnel Safety Team Phone List | 06/08/84 | |
| EP-278 | 0 | Security Team Phone List | 12/27/83 | |
| EP-279 | 1 | Emergency Operations Facility (EOF) Group Phone List | 06/08/84 | |
| EP-280 | 1 | Technical Support Center Phone List | 06/08/84 | |
| EP-282 | 1 | Government and Emergency Management Agencies | 06/08/84 | |
| EP-284 | 1 | Company Consultants and Contractors | 06/08/84 | |
| EP-287 | 1 | Nearby Public and Industrial Users of Downstream Water | 06/08/84 | |
| EP-291 | 1 | Staffing Augmentation | 06/08/84 | |
| EP-292 | 1 | Chemistry Sampling and Analysis Team Phone List | 06/08/84 | |
| EP-294 | 1 | Dose Assessment Team Phone List | 06/08/84 | |
| EP-301 | 0 | Operating the Evacuation Alarm and River Warning System | 11/11/83 | |
| EP-303 | 2 | Local Evacuation | 04/02/84 | |

EMERGENCY PLAN PROCEDURE INDEX

| PROCEDURE NUMBER | REV. NO. | TITLE | DATE SIGNED BY SUPER. | DATE OF LAST PERIODIC REVIEW |
|------------------|----------|--|-----------------------|------------------------------|
| EP-304 | 2 | Partial Plant Evacuation | 07/09/84 | |
| EP-305 | 1 | Site Evacuation | 06/08/84 | |
| EP-306 | 0 | Evacuation of the Information Center | 12/27/83 | |
| EP-307 | 1 | Reception and Orientation of Support Personnel | 06/08/84 | |
| EP-312 | 0 | Radioactive Liquid Release | 11/30/83 | |
| EP-313 | 1 | Distribution of Thyroid Blocking Tablets | 06/08/84 | |
| EP-315 | 0 | Calculation of Offsite Doses During a Radiological Emergency Using RMMS in the Manual Mode | 07/17/84 | |
| EP-316 | 0 | Cumulative Population and Near Real-Time Emergency Dose Calculations for Airborne Releases Manual Method | 12/23/83 | |
| EP-317 | 0 | Determination of Protective Action Recommendations | 12/27/83 | |
| EP-318 | 0 | Liquid Release Dose Calculations Method for Drinking Water | 11/30/83 | |
| EP-319 | 0 | Fish Ingestion Pathway Dose Calculation | 11/30/83 | |
| EP-325 | 0 | Use of Containment Radiation Monitors to Estimate Release Source Term | 12/29/83 | |
| EP-330 | 1 | Emergency Response Facility Habitability | 06/08/84 | |
| EP-401 | 1 | Entry for Emergency Repair and Operations | 06/08/84 | |
| EP-410 | 1 | Recovery Phase Implementation | 06/08/84 | |
| EP-500 | 1 | Review and Revision of Emergency Plan | 06/08/84 | |

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET
P.O. BOX 8699
PHILADELPHIA, PA. 19101

SHIELDS L. DALTRUFF
VICE PRESIDENT
ELECTRIC PRODUCTION

(215) 841-5001

August 17, 1984

Re: Docket Nos. 50-352
50-353

Dr. Thomas E. Murley
Region 1
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Enclosed are two copies of Limerick Generating Station
Emergency Plan Implementing Procedures. These procedures are
submitted per regulations in 10 CFR 50, Appendix E, Section V.

The procedures being submitted are the following:

EP-222, Rev. 2
EP-315, Rev. 0

Pursuant to Section 2.790 of the Commission's
regulations, it is hereby requested that the names and telephone
numbers listed in procedures EP-222, page 5 and EP-315, pages 6,
8, 12, 16, 18 and 19 be withheld from public disclosure. An
affidavit setting forth the grounds in support of this request is
attached hereto.

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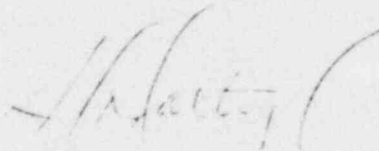
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Dr. Thomas E. Murley
Mr. A. Schwencer

Page 2

Two copies have been sent under separate cover to the Document Control Desk.

Very truly yours,



Enclosure

cc: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Site Inspector - LGS

See Attached Service List

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF PHILADELPHIA :

S. L. Daltroff, being first duly sworn, deposes and states as follows:

1. He is Vice President of the Electric Production Department, of Philadelphia Electric Company (hereinafter referred to as the "Company"); he is authorized to execute this Affidavit on behalf of the Company; and he has reviewed:

EP-222, Rev. 2

EP-315, Rev. 0

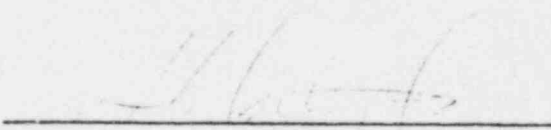
(hereinafter referred to as "the Documents"), and knows the contents thereof.

2. The part of the Documents which is sought to be withheld from public disclosure is the listing of the names and home telephone numbers of employees of the Company, direct-line work telephone numbers of employees of, the Company which are not listed in public telephone directories, names and home and work numbers of emergency response support personnel and organizations.

3. To the best of his knowledge, information and belief, the names and telephone numbers set forth in the

Documents have been treated as confidential information and have been withheld from public disclosure by the Company.

4. The names and home telephone numbers in the Documents should be considered by the Nuclear Regulatory Commission as confidential and proprietary information and be withheld from public disclosure on the grounds that disclosure of the names and home telephone numbers of the employees of the Company and emergency support personnel could constitute an unwarranted invasion of the personal privacy of the individuals involved, disclosure of the work telephone numbers of the Company's employees and of the emergency response personnel and organizations could adversely affect the capability of prompt notification in the event of an emergency; such disclosure is not required in the public interest; and such disclosure could adversely affect the interests of the Company and its ability to effectively implement the notification requirements of the Emergency Plan Procedures.



Subscribed and sworn to
before me this day of

Notary Public

JUDITH Y. FRANKLIN
Notary Public, Phila., Phila. Co.
My Commission Expires July 28, 1987

cc: Judge Lawrence Brenner
Judge Richard F. Cole
Troy B. Connor, Jr., Esquire
Ann P. Hodgdon, Esquire
Mr. Frank R. Romano
Mr. Robert L. Anthony
Charles W. Elliot, Esquire
Zori C. Ferkin, Esquire
Mr. Thomas Gerusky
Director, Pennsylvania Emergency
Management Agency
Angus R. Love, Esquire
David Wersan, Esquire
Robert J. Sugarman, Esquire
Spence W. Perry, Esquire
Jay M. Gutierrez, Esquire
Atomic Safety & Licensing
Appeal Board
Atomic Safety & Licensing
Board Panel
Docket & Service Section
Martha W. Bush, Esquire
Mr. James Wiggins
Mr. Timothy R. S. Campbell
Ms. Maureen Mulligan
Judge Peter A. Morris



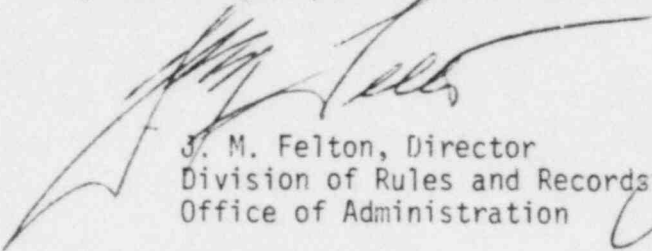
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 14, 1984

50-352/353 Limerick

MEMORANDUM FOR: Chief, Document Management Branch, TIDC
FROM: Director, Division of Rules and Records, ADM
SUBJECT: REVIEW OF UTILITY EMERGENCY PLAN DOCUMENTATION

The Division of Rules and Records has reviewed the attached document and has determined that it may now be made publicly available.


J. M. Felton, Director
Division of Rules and Records
Office of Administration

Attachment: As stated