VOLUME III

OMAHA PUBLIC POWER DISTRICT - FORT CALHOUN STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURES

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2. EMERGENCY OPERATION FACILITY (Continued)

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3. TECHNICAL SUPPORT CENTER

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Fort Calhoun Station Unit No. 1
Emergency Plan Implementing Procedure
EPIP-OSC-10

Initial Assessment of Plant Parameters and Effluent Monitors to Determine Source Term

I. PURPOSE

To determine the release rates of radionuclides from the plant, following an accidental release of airborne activity, these two methods are used:

A. Estimate release rates using stack or condenser off gas effluent monitor data.

B. Estimate release rates using containment area monitor data, when the containment is isolated.

II. PREREQUISITES

A. Emergency classification has been defined per EPIP-OSC-1.

B. Emergency plan has been activated per EPIP-OSC-2.

C. Effluent radiation monitors data is available for estimating release rates from the stack or condenser off gas.

D. Containment exposure rates data is available from the containment area radiation monitor(s) and the containment has been isolated in order to determine the release rates from the containment.

E. Post-Accident Procedure OI-PAP-7 is completed.

III. PRECAUTIONS

None

IV. PROCEDURE

1. Source term using effluent monitors data.

   (1) Complete Form FC-220, for meteorological data and calculation of release rate, 'Q' in Ci/sec. Refer to EPIP-EOF-6 for Form FC-220.

   NOTE: Information from Form FC-220 will be used for performing initial dose assessment per EPIP-OSC-11.

IV. PROCEDURE (Continued)

2. Source term using containment area monitor data (when containment is isolated).

NOTES:
1. Information from Table OSC-10.1 will be used for performing initial dose assessment per EPIP-OSC-11.
2. This procedure is used for obtaining the source term for any type of accident, provided the dose rates in the containment and the release rates from the containment for LOCA conditions are defined.

(1) Noble gas release rates.

a. Select the time after an accident at which release rate is to be calculated and enter in Table OSC-10.1.

b. Determine the containment area monitor reading from the control room radiation monitor readout and record in Table OSC-10-1.

c. Determine the containment dose rate for LOCA from Figure OSC-10.1 and record in Table OSC-10.1.

d. Determine the noble gas release rate from the containment for LOCA from Figure OSC-10.2 and enter this value in Table OSC-10.1.

e. Estimate the noble gas release rate from the containment for any accident by using the equation presented in Table OSC-10.1 and enter the result in Table OSC-10.1.

f. Notify the Plant Manager or EDO about the results.

g. Repeat steps a through e as deemed necessary.

(2) Iodine - 131 release rates.

a. Select the time after an accident at which the release rate is to be calculated and enter in Table OSC-10.1.

b. Determine the containment area monitor reading from the control room radiation monitor readout and record in Table OSC-10.1.

c. Determine the containment dose rate for LOCA from Figure OSC-10.1 and record in Table OSC-10.1.

d. Determine the Iodine -131 release rate from the containment for LOCA from Figure OSC-10.3 and enter this value in Table OSC-10.1.

NOTE: For time greater than 1.5 hours in Figure OSC-10.3, use a value of 1.0E-04 Ci/sec.

IV. PROCEDURE (Continued)

e. Estimate the iodine release rate from the containment for any accident by using the equation presented in Table OSC-10.1 and enter the result in Table OSC-10.1.

f. Notify the Plant Manager or EDO about the results.

g. Repeat steps a through e as deemed necessary.

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TABLE OSC-10.1

Release Rate Calculation Using Containment
Area Radiation Monitors

Date and Time of Accident _____.

1. Noble Gas Release Rates:

   Time after the Accident (t): _____ hrs.

   Area Monitor Reading: _____ R/hr.

   Dose Rate from Figure OSC-10.1 at time 't': _____ R/hr.

   Noble Gas Release Rate at Time 't' from Figure OSC-10.2: _____ Ci/sec.

   Therefore:

   Noble Gas Release Rate (Q) = $\frac{\text{Area Monitor Reading}}{\text{Dose Rate for LOCA, Figure OSC-10.1}}$ x Noble Gas Release Rate for LOCA, Figure OSC-10.2
   (For any accident)

   or: $Q = \frac{\_\_\_\_\_ \text{ R/hr}}{\text{R/hr}} \times \_\_\_\_\_ \text{ Ci/sec}$

   or: Release Rate (Q) = _____ Ci/sec.

2. Iodine - 131 Release Rates

   Time after the Accident (t): _____ hrs

   Area Monitor Reading: _____ R/hr

   Dose Rate from Figure OSC-10.1 at time 't': _____ R/hr

   Release Rate from Figure OSC-10.3 at time 't': _____ Ci/sec

   Therefore:

   I-131 Release Rate (Q) = $\frac{\text{Area Monitor Reading}}{\text{Dose Rate for LOCA, Figure OSC-10.1}}$ x I-131 Release Rate for LOCA, Figure OSC-10.3
   (For any accident)

   or: $Q = \frac{\_\_\_\_\_ \text{ R/hr}}{\text{R/hr}} \times \_\_\_\_\_ \text{ Ci/sec}$

   or: Release Rate (Q) = _____ Ci/sec.

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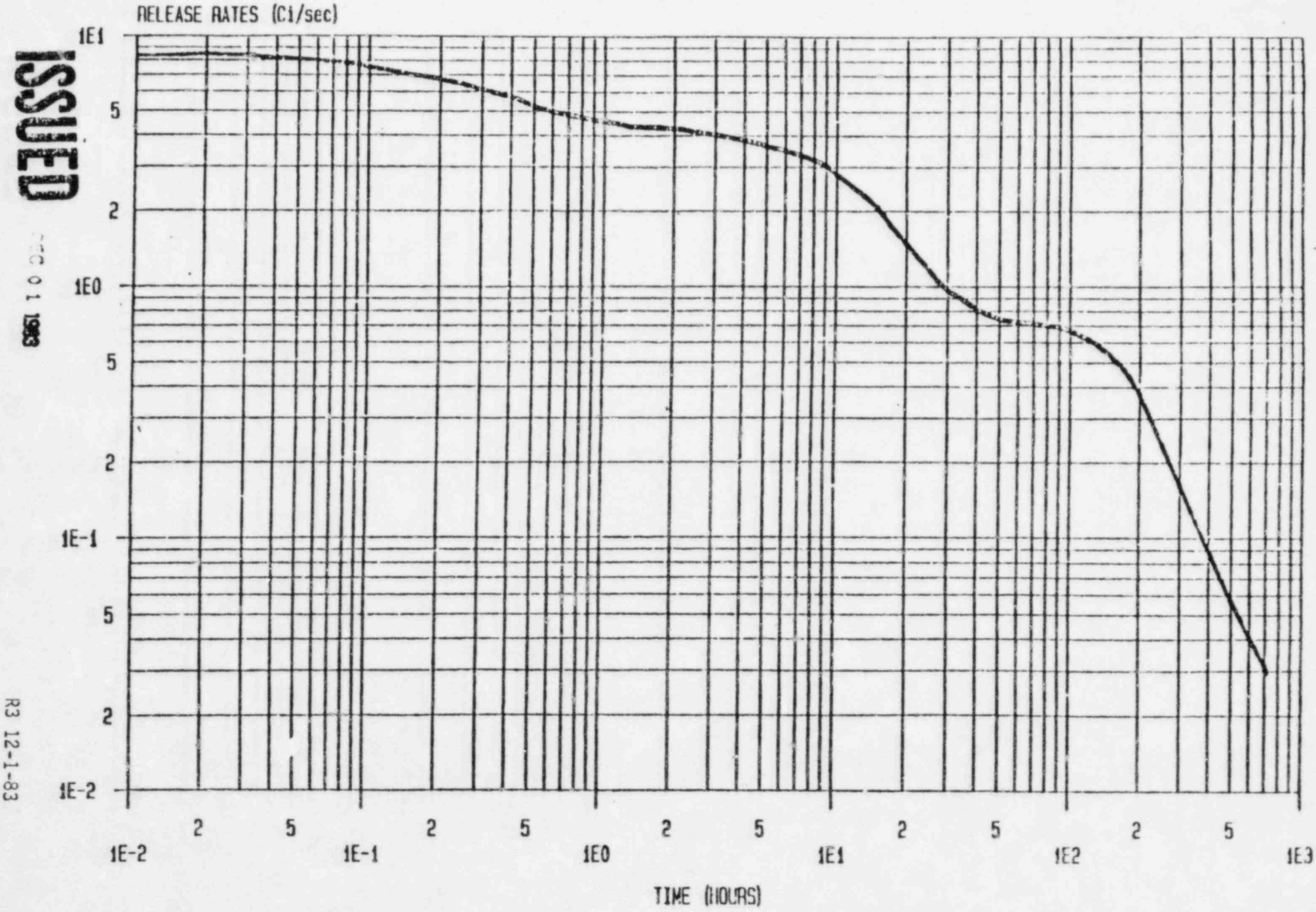
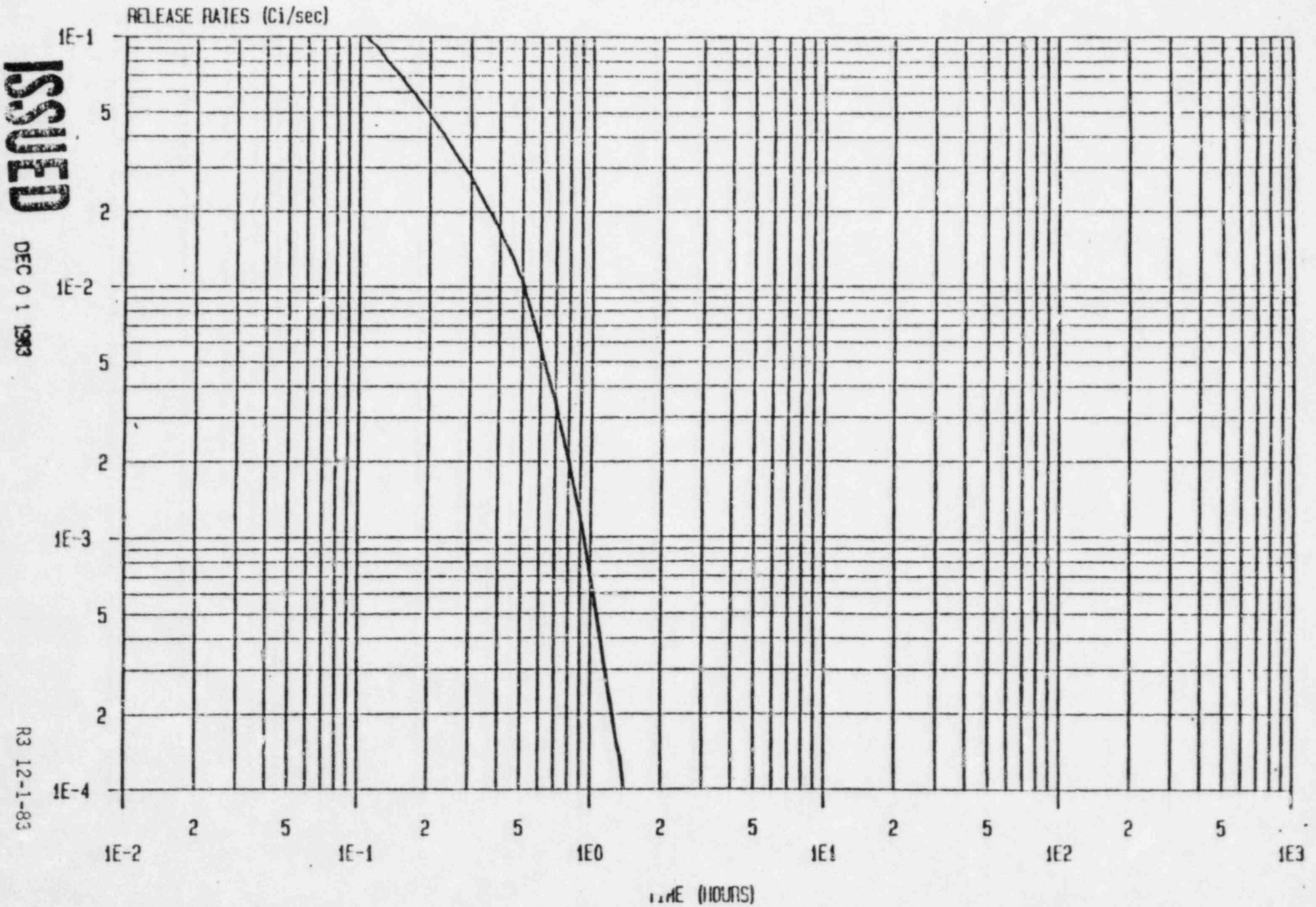
CONT. NOBLE GAS RELEASE RATES FOR LOCA

FIGURE OSC: 10.2



CONT. I-131 RELEASE RATES FOR LOCA

FIGURE OSC: 10.3



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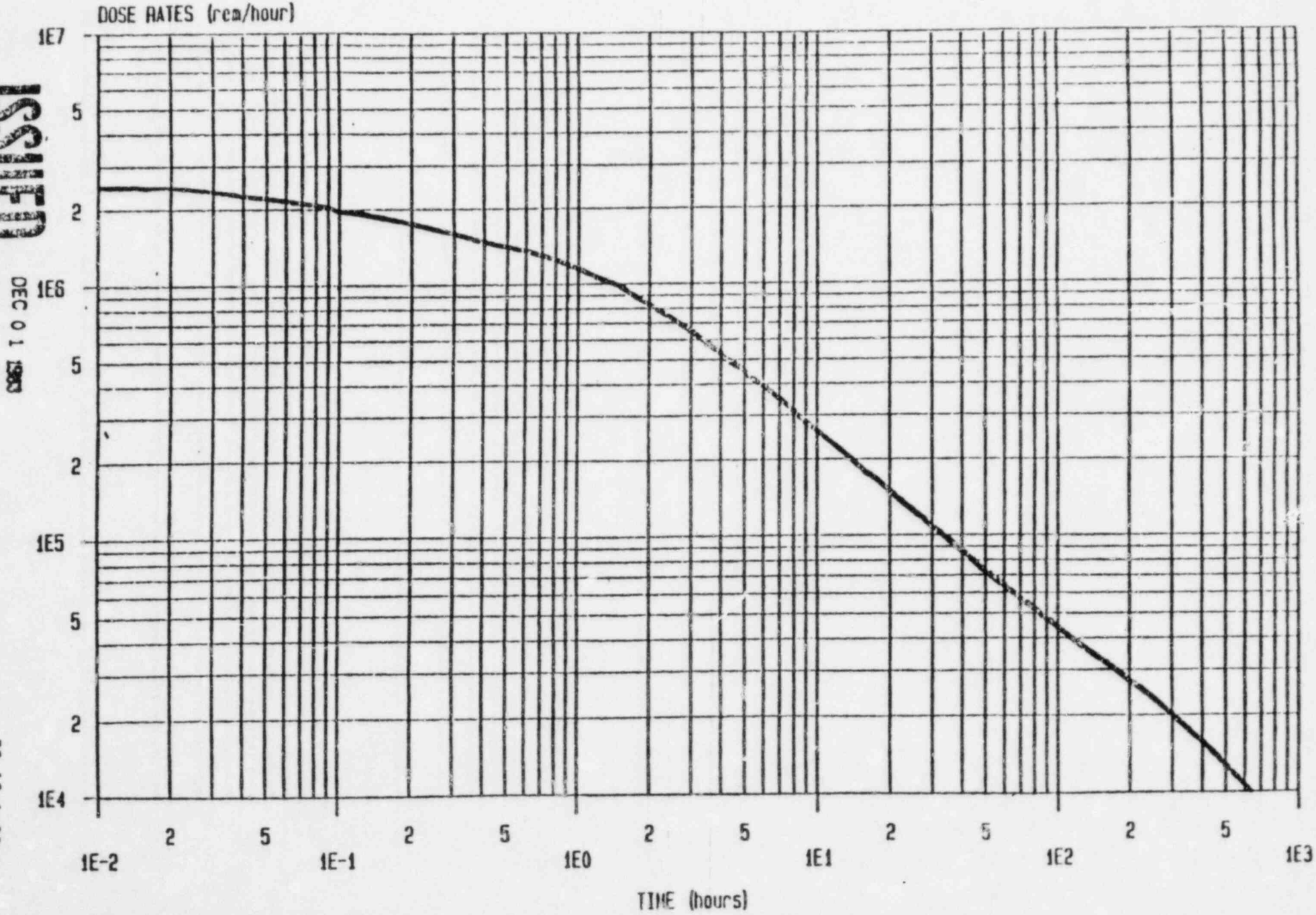
CONTAINMENT DOSE RATES FOR LOCA

FIGURE OSC: 10.1



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EPIP-OSC-10-7

Fort Calhoun Station Unit No. 1
Emergency Plan Implementing Procedure
EPIP-OSC-15

CONTROL ROOM COMMUNICATOR

I. PURPOSE

To provide a procedure which delineates the duties, responsibilities and actions of the Control Room Communicator (6th Operator on duty). Attachment 1 identifies information requiring transmit, receiving activity, emergency response personnel requiring data and telephone numbers used to establish the conference network.

II. PREREQUISITES

The Control Room Communicator has been trained.

III. PRECAUTIONS

FC-194 and FC-197 are available in the control room emergency locker.

IV. PROCEDURE

1. Reports to the Shift Supervisor and makes initial and follow-up contact with State and County officials utilizing the Conference Operations Telephone Network (COP) (Green Phone).

2. Take over the function of calling persons listed on the Emergency Call List from the Shift Supervisor. Continues this function until all personnel requiring notification [based upon accident classification(s)] have been contacted or the TSC phone talker assumes the responsibility.

3. Initiate and maintain an open telephone conference network with the following activities utilizing numbers listed below. Attachment 2 provides guidance in establishing the conference network and steps to follow when receiving or placing calls while in conference:

   a. Control Room 6623

   b. OSC Manager 6632

   c. EDO/TSC Manager phone talker . . . 6787

   d. Recovery Manager 6731

   e. Emergency Coordinator 6732

   f. TSC Dose Assessment 6643

   NOTE: Personnel in this conference call should be phone talkers and not the principle person unless necessary.

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IV. PROCEDURE (Continued)

4. The on-shift STA will collect meteorological dose assessment and operational data from plant instrumention and complete FC-194 and FC-197, Part I and II, and the STA will pass this information to the Control Room communicator who will pass this information over the open conference network automatically every 15 minutes.

5. Maintain the control room emergency action log of all events. This includes telephone notification calls, telephone conversations, personnel accountability, etc.

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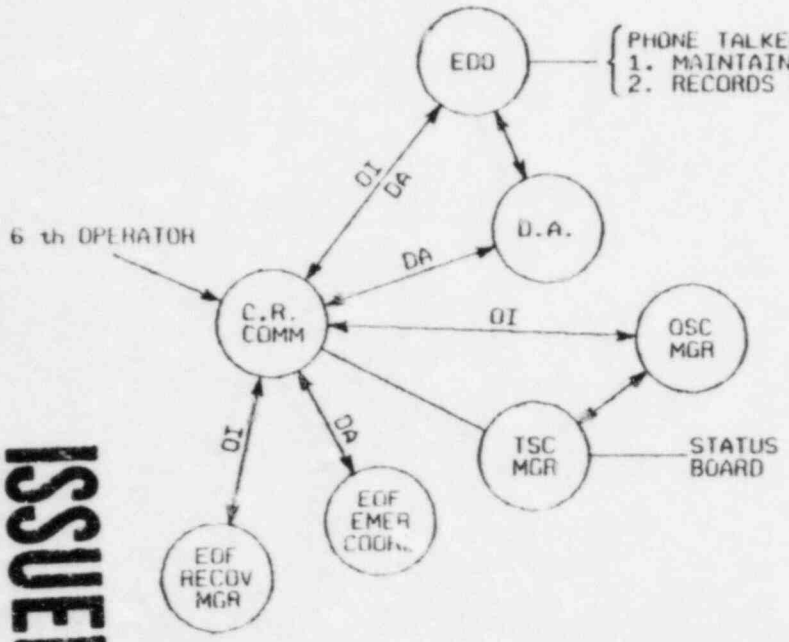
EMERGENCY RESPONSE FACILITIES CONFERENCE SYSTEM

EPIP-OSC-15-3

DA = DOSE ASSESSMENT
OI = OPERATIONAL INFORMATION



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CONFERENCE TELEPHONE CONTACT NUMBERS

CR	6623
OSC MANAGER (OSC PHONE TALKER)	6632
EDO/TSC MANAGER (TSC PHONE TALKER)	6787
RECOVERY MANAGER (REC MGR SECRETARY)	6731
EMERGENCY COORD (DOSE ASSESSMENT OPR)	6732
TSC DOSE ASSESSMENT (RAD PROT TECH)	6643

INFORMATION REQUIRING TRANSMIT

A. OPERATIONS INFORMATION
   1. CR - CR COMMUNICATOR 6th OPERATOR
   2. EDO (TRANSFERED TO RECOVERY MANAGER)
   3. OSC MANAGER
   4. TSC MANAGER

B. DOSE ASSESSMENT INFORMATION
   1. CR - CR COMMUNICATOR 6th OPERATOR
   2. EDO (TRANSFERED TO EMER. COORD.)
   3. OSC DOSE ASSESSMENT

INFORMATION RECEIVED BY

A. OPERATIONS INFORMATION
   1. EDO (PHONE TALKER)
   2. OSC (CLERICAL SPT - PHONE TALKER)
   3. TSC (EDO PHONE TALKER)
   4. EOF (CLERICAL ASSISTANT)

B. DOSE ASSESSMENT DATA
   1. EDO (PHONE TALKER)
   2. DA (RAD PROT.TECH.)
   3. EOF (DOSE ASSESSMENT OPR.)

RO 12-1-83

Attachment 2

ESTABLISHING A CONFERENCE CALL

1. Dial first number - tell individual to wait
2. Flash
3. Dial next number - tell individual to wait
4. Flash
5. Press * 4 - now everyone is in conference
6. Repeat steps 2 thru 5 for all numbers

RECEIVING CALL WHILE IN CONFERENCE

1. Beep - (beep is heard when calling party waits on busy signal for 10 seconds)
2. Flash
3. Press * 1 - you are now connected to caller
4. Flash

5a. Press * 1 - you are now back in conference

5b. Press * 4 - caller and you are now back in conference call

PLACING CALLS WHILE IN CONFERENCE

1. Flash
2. Dial Number - you may call wherever you wish
3. Flash
4. Press * 1 - you are reconnected to conference

Fort Calhoun Station Unit No. 1
Emergency Implementing Procedure
EPIP-EOF-3
EMERGENCY OPERATION FACILITY
EMERGENCY INSTRUMENTS AND EQUIPMENT

I. PURPOSE

The purpose of this procedure is to provide instructions for the use of instruments and equipment provided for use during designated emergencies.

II. PREREQUISITE

A. All emergency monitoring team members have been trained in the use of their instruments and equipment and the responsibilities of their jobs.

III. PRECAUTIONS

A. Samples of type which are collected during an emergency should be retained for subsequent analysis.

B. Instrument problems or malfunctions should be immediately brought to the attention of the Monitor Team Coordinator.

IV. PROCEDURE

1. Operate radiation monitoring instruments in the following manner:

a. Operation of the E-520

(1) Check the instrument for physical damage.

(2) Place the instrument scale switch to the battery check position. The batteries are satisfactory if the needle is within the battery range indicated on the meter face.

(3) When performing General Area Surveys, hold the instrument detection at waist level. Approach the area or room to be surveyed with the instrument on the highest scale (2000 MR for E-520, 200 MR for E-530). Switch to lower scales as necessary to achieve an on scale reading.

(4) Contact readings are made by placing the detector in contact with the article to be surveyed. Down shift scales as necessary.

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IV. PROCEDURE (Continued)

b. Operation of the HRTP (High Range Telescoping Probe):

(1) Check the instrument for physical damage.

(2) Place the instrument scale switch to the battery check position. The batteries are satisfactory if the needle is within the battery range indicated on the meter face.

(3) When performing General Area Surveys, hold the instrument detector at waist level. The probe should be extended to full length when entering an area or room of unknown radiation levels. Approach the area or room to be surveyed with the instrument on the highest scale (500 Rem). Switch to lower scales as necessary to achieve an on scale reading.

(4) Contact readings are made by placing the detector in contact with the article to be surveyed. Down shift scales as necessary.

c. Operation of the Teletector:

(1) Check the instrument for physical damage.

(2) Place the instrument scale switch to the battery check position. The batteries are satisfactory if the needle is within the battery range indicated on the meter face.

(3) When performing General Area Surveys, hold the instrument detector at waist level. The probe should be extended to full length when entering an area room of unknown radiation levels. Approach the area or room to be surveyed with the instrument on the highest scale (1000 Rem). Switch to lower scales as necessary to achieve an on scale reading.

(4) Contact readings are made by placing the detector in contact with the article to be surveyed. Down shift scales as necessary.

d. Operation of the RO-2 and RO-2A, RO-4A and RO-5A

(1) Check the instrument for physical damage.

(2) Check the instrument batteries by turning the function switch to BAT1 and BAT2 positions. The batteries are satisfactory if the needle reads above the BATT cut off line in both cases.

(3) Turn the function switch to the zero position. Check that the meter reads zero. If not, set it with the zero knob.

(4) Perform an instrument function check as required by function check procedures.

IV. PROCEDURE (Continued)

(5) When performing General Area Surveys, hold the instrument at waist level. Approach the area or room to be surveyed with the instrument on the highest scale. Switch to lower scales as necessary to achieve an on scale reading.

(6) Contact readings are made by placing the detector in contact with the article to be surveyed.

(7) When measuring Beta or Low Energy Gamma, open the sliding beta shield on the bottom of the case and face the bottom of the instrument toward the radiation source.

2. Operate sample counters and friskers in the following manner:

a. Operation of the E-120 sample counter

(1) Check the instrument for physical damage.

(2) Place the instrument scale switch to the battery check position. The batteries are satisfactory if the needle is within the battery range indicated on the meter face.

(3) Observe the background level prior to each sample count.

(4) Position the sample to be counted as indicated by the instructions attached to the E-120.

(5) Start the sample count with the Range Switch on the highest scale. Down switch the scale until a good count rate is obtained.

(6) Observe the count rate for at least ten seconds. If the count rate continues to increase, observe until the count rate becomes steady.

(7) Calculate the smear activity using the formula given by the instructions attached to the E-120.

(8) Record and/or report the activity, time, date and location of the sample. Label each smear and save for later analysis.

b. Operation of the RM-14/RM-15 Frisker

(1) Check the instrument for physical damage.

(2) Plug the power cord into a 115 VAC, 60Hz power supply. Place the instrument scale switch to the battery check position. The batteries are satisfactory if the needle is within the battery range indicated on the meter face.

IV. PROCEDURE (Continued)

(3) If the batteries are low or dead, the instrument will not respond properly in either AC or battery operation.

(4) Determine a background reading by holding the probe at waist level, facing downward for 15 to 20 seconds. Observe the count rate on the meter face. If the background levels are greater than 300 CPM, move the instrument to an area of lower background.

(5) Hold the probe approximatey one half-inch from the surface to be monitored. Move the probe at a rate of approximately four inches per second.

(6) Observe the count rate. To arrive at DPM/probe, subtract the background reading from the meter reading and multiply the result by the efficiency factor listed on the instrument. (CPM-CPM bkg.) Eff. = dpm/probe.

c. Operation of the SAM-2

(1) Set up the SAM-2 as follows:

(a) Plug the power cord into the power supply provided in the vehicle.

(b) Connect the Eberline RD-22 detector to the SAM-2.

(c) Place the Channel 1 and 2 "IN-OUT" switches in the "IN" position.

(d) Check that Channel 1 "THRESHOLD" control is set at 3.27.

(e) Check that Channel 1 "WINDOW" control is set at 0.72.

(f) Place the Channel 1 "+OFF-" switch in the "+" position.

(g) Place the Channel 2 "+OFF-" switch in the "OFF" position.

(h) Place the Count Mode Switch to the "STOP" position.

(i) Check that the Multiplier Switch is "OFF".

(j) Place the rate meter display switch to the Channel "1" position.

(k) Place the rate meter scale switch to the "X1K" position.

(l) Adjust the response switch to approximately mid range.

(m) Place the display switch in the "ON" position.

(n) Place the stabilizer switch in the "ON" position.

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IV. PROCEDURE (Continued)

(o) Place the power switch to the "ON" position.

(p) Select a count time of 20 minutes.

(q) Place the count mode switch to the "TIMED" position.

(r) Obtain a background reading as follows:

1) Place an unused silver zeolite cartridge in the sample holder on shelf 4.

a) Press the "RESET-START" switch.

b) Record the counts from the digital display.

c) Divide the displayed count value by 20.

d) Record the gross count rate _____cpm.

(2) Collect the radioiodine and particulate sample.

(a) Properly place the silver zeolite cartridge and particulate filter into the 2 inch sample holder of the RADeCO H809V.

(b) With the power switch in the OFF position, plug the sample into a 115VAC/60HA outlet.

(c) Adjust the motor reostat to give the lowest flow rate when the sampler motor is energized.

(d) Flip the power switch to the VARIABLE postion, and adjust the flow rate to 3 ft^3/min. Sample at this rate for 70 seconds.

(e) Turn the power switch to OFF, and carefully remove the cartridge and particulate filter for analysis.

(f) Make appropriate sample log entries.

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IV. PROCEDURE (Continued)

(3) Analyze the radioiodine sample with the SAM-2

(a) Place the silver zeolite cartridge in the sample holder on the desired shelf.

1) The first count should be performed on shelf 5. If there are no counts or the counts are low, proceed to shelf 4, then shelf 3. Additional samples from the same location may continue to be counted on the same shelf until a large change in count rate is noted.

(b) Select a count time of 5.0 minutes

(c) Press the "reset-start" switch. Observe the count rate meter, adjust the scale switch as necessary.

(d) Record the counts from the digital display.

(e) Divide the displayed counts by 5 to get cpm.

(f) Calculate the radioiodine concentration of the sample.

$$\mu ci/cc = \frac{CPM - CPM_{bkg}\ (Shelf\ Factor)}{99110\ \ (2.22\ E{+}06)}$$

where:

Shelf Factor = Multiplication factor for the shelf used

Shelf 5 = 91.7
Shelf 4 = 67.2
Shelf 3 = 50.4

2.22 E+06 = The conversion factor from DPM to microcuries

(g) Record and/or report the sample concentration.

3. Use of Fixed Monitors

a. Area Radiation Monitors

(1) To obtain information about radiation levels monitored by Area Monitors (RM-070 through RM-089 and RM-091A, RM-091B) contact the control room.

b. Process Monitors

(1) To obtain information about process monitor indications (RM-050 through RM-064) contact the control room.

c. Meterological Tower

(1) To obtain meteorological data, contact the control room.

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IV. PROCEDURE (Continued)

4. Use of power converters

a. When the vehicle engine is started, the inverter will automatically operate to provdie both AC and DC power to the installed outlets in the vehicles.

b. Other than maintenance, no operator action is required.

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Fort Calhoun Station Unit No. 1
Emergency Plan Implementing Procedure
EPIP-EOF-5

ONSITE AND OFFSITE DOSE ASSESSMENT
(Computerized Program)

I. PURPOSE

This procedure establishes step by step instructions for the operation of the Tektronix-4105 computer terminal to execute the Emergency Assessment of Gaseous and Liquid Effluents (EAGLE) Program on VAX 11/780. This procedure is the preferred method and a back-up method is provided in EPIP-EOF-6.

II. PREREQUISITES

A. Emergency classification has been initiated per EPIP-OSC-1.

B. The Emergency Plan has been activated per EPIP-OSC-2.

C. The Emergency Operation Facility has been activated per EPIP-EOF-1.

D. Post Accident Procedure OI-PAP-7 is available.

E. The Technical Data Book is available.

F. The Tektronix terminal along with associated equipment is available in the Dose Assessment rooms.

G. The Terminal and the Modem are plugged into an AC outlet.

H. A working knowledge of the Tektronix terminal is helpful.

I. The appropriate form has to be filled out for each plume, for meteorological data and appropriate radiological data.

J. Release rate calculations have to be performed utilizing i) Form FC-220 (attached to EPIP-EOF-6) or ii) EPIP-OSC-10, if the containment is isolated and there are no releases thru the stack.

III. PRECAUTIONS

A. All releases (actual or potential) are treated as ground level for conservatism.

B. Always use the lowest level winds and differential temperature data as input to the program.

C. Use the 10 meter temperature value as ambient temperature and effluents exit temperature(s).

D. Update and perform the dose assessments every fifteen (15) minutes.

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IV. LIMITATIONS AND ACTIONS

A. If either VAX 11/780 is down or communication with the computer via terminal 4105 cannot be established, the "Onsite and Offsite Dose Assessment" can be performed by EPIP-EOF-6.

B. Dose calculations cannot be performed concurrently on both terminals (one in the TSC and one in the EOF). The program has to be ended by one party (TSC or EOF) on a given plume before the next party (EOF or TSC) can start calculation on the next plume. Tabular displays menu for previous plumes can, however, be executed by a second party while the first party is performing calculations on the current 15-minute plume.

C. The dose calculations have to be ended on the current 15-minute plume before switching to the tabular displays menu for additional data on the current plume.

V. PROCEDURE

A. Entering the Computer System

The remote telecommunicating accessibility between the VAX and the terminal is provided via 1200-baud modem lines. The log-on and the program calculations consist of the following steps:

1. Turn the terminal on by pushing the button on the CRT.

2. Pickup the telephone receiver, push the button on the modem to "TK" mode, listen to the dial tone on the telephone receiver and dial the following number in Los Angeles:

   9-1-(213) 627-8523

   Allow the telephone to ring until a continuous high pitched tone is received. Push the button on the modem to "DA" mode and hang up the receiver. YOU ARE NOW CONNECTED TO THE VAX SYSTEM.

   NOTE: If the above telephone number is inaccessible due to any technical problems, dial the following number in Chicago:

   9-1-(312) 297-0094

   Should the above communication lines develop any technical problems, the following number in Los Angeles may be used:

   9-1-(213) 623-7187

3. Press the <RETURN> key twice and the VAX will prompt you to enter your user name as follows:

   USER NAME:

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V. PROCEDURE (Continued)

A. Entering the Computer System (Continued)

4. Enter the following user name:

OPPD

5. Press the <RETURN> key and the VAX will now prompt you to enter the password as follows:

PASSWORD:

6. Enter the password and hit <RETURN> (only authorized individuals are provided the password).

NOTE: There will be no screen display of the password entered. Be sure to remember the password. If wrong entry is made, the computer will log itself off automatically. Then go to step 2, above, for log-on process.

7. Wait a few seconds and the following sign will appear:

$

8. Press the "Caps Lock" key down on the keyboard.

9. Enter @MODEL, following $ and hit <RETURN>.

10. Hit <RETURN> at the end of the title page on the screen and the program will prompt you to the following menu indices on the screen:

MENU

EMERGENCY ASSESSMENT OF GASEOUS AND LIQUID EFFLUENTS
(EAGLE)

1. ATMOSPHERIC DIFFUSION AND DOSE CALCULATIONS
2. TABULAR DISPLAYS OF MODEL RESULTS
3. EXIT

ENTER MENU INDEX (1 thru 3) FOR PROGRAM EXECUTION:

---

11. Enter "1" to start the program in response to "(1 thru 3)" above and hit <RETURN>. The menus within the program will guide you to various options that are available for diffusion and dose calculations.

NOTE: The diffusion and dose calculations can be aborted, i.e., any mistakes can be corrected, by simultaneously pressing the following keys:

<CTRL> and <Y>

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V. PROCEDURE (Continued)

A. Entering the Computer System (Continued)

12. End the program for "Atmospheric Diffusion and Dose Calculations", for a given plume, by entering <END> at the end of a given plume. This will prompt you back to the menu indices as in Step 9, above. Enter "2" and hit <RETURN> to see the tabular displays for a given plume.

NOTE: Tabular displays can be exited by either following the instructions on the screen for Tabular Display Menu for by simultaneously pressing <CTRL> and <Y> keys.

B. Leaving the Computer System

It is important to log-off the system when you are done with the program calculations. This can be done by simply entering the following command following "$" sign:

LOGOFF

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Fort Calhoun Station Unit No. 1
EMERGENCY PLAN IMPLEMENTING PROCEDURE
EPIP-EOF-6

Onsite and Offsite Dose Assessment

I. PURPOSE

A. This document provides instructions and calculations necessary to predict offsite dose rates based upon actual meteorological data, release rates and dispersion factor overlay.

B. This document also provides instructions and calculations necessary to determine actual offsite dose rates and verify activity release rates utilizing information from the onsite and offsite monitor teams.

II. PREREQUISITES

A. Emergency classification has been defined per EPIP-OSC-1.

B. Emergency Plan has been activated per EPIP-OSC-2.

C. Emergency Operation Facility has been activated per EPIP-EOF-1.

D. Instructions for the use of Emergency Instruments and Equipment have been completed per EPIP-EOF-3.

E. Post Accident Procedure OI-PAP-7 is available.

F. Technical Data Book is available.

III. PRECAUTIONS

None

IV. PROCEDURE

SECTION 1 - Assessment of Gaseous Releases.

1. Contact the control room and obtain the meteorological and radiological information necessary to complete Form FC-220.

2. Update the information in Step 1, above, as frequently as necessary, or at least every hour during an actual release.

3. Predicted Dose Rates:

   A. USING THE TI-59 CALCULATOR

      (1) Complete attached Form FC-220, for meteorological data and calculation of release rate, 'Q' by performing the following: Insert both sides of Mag Card marked "EOF Section 6.1" in side of calculator. Press 'CLR'.

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IV. PROCEDURE (Continued)

Meteorological Data:

a. Press 'A'. Enter the present hour's windspeed in mph, Press 'R/S'.

b. Enter the previous hours wind speed in mph, Press 'R/S'.

c. Record average wind speed from the display in m/sec.

d. Enter stack flow rate in CFM, Press 'R/S'.

PROCESS MONITOR DATA: (From Control Room)

No. 1 RM-062*

a. Press 'CLR'. Press 'B', Enter counts-per-minute, Press 'R/S'.

b. Enter background counts-per-minute, Press 'R/S'.

c. Record net counts-per-minute from display on FC-220.

d. Enter monitor sensitivity in $\frac{\text{cpm}}{\mu\text{Ci/cc}}$, Press 'R/S'.

e. Press 'C', Record 'Q' (Release Rate) from display on FC-220 and DATA RECORD EOF-6.1.

No. 2 RM-052

Repeat the above steps for RM-062 using parameters for RM-052.

No. 3 RM-060

a. Repeat steps a, b, c, of No. 1 above, using RM-060 parameters.

b. Enter monitor sensitivity in $\frac{\text{cpm}}{\mu\text{Ci}}$, Press 'R/S'.

c. Press 'R/S' again, Enter RM-060 flow rate, Press 'R/S'.

d. Enter time of filter cartridge in service since the start of accident in minutes, Press 'R/S'.

e. Record 'Q' (Release Rate) from display on FC-220 and DATA RECORD EOR-6.1.

* When RM-062 is not in service, use the data for RM-052.

IV. PROCEDURE (Continued)

No. 4 RM-061

a. Repeat steps a,b,c, of No. 1, above, using RM-061 parameters.

b. Enter monitor sensitivity in $\frac{cpm}{\mu Ci}$, Press 'R/S'.

c. Press 'R/S' again, Enter RM-061 flow rate, Press 'R/S'.

d. Enter time of filter cartridge in service since the start of accident in minutes, Press 'R/S'.

e. Record 'Q' (Release Rate) from display on FC-220 and DATA RECORD EOF-6.1.

(2) To calculate the whole body or thyroid dose rate for the site boundary at plume center line, enter the actual χ/Q in the calculator from Form FC-220. Press 'STO 06'. Proceed to (3).

To calculate the whole body or thyroid dose rate for other selected points, determine the diffusion factor, D.F., from the appropriate overlay, as determined from data on Form FC-220 and calculate χ/Q from D.F. and average wind speed, $\bar{\mu}$ as follows:

a. Press 'D', Enter D.F. (diffusion factor), Press 'R/S'.

b. Record 'χ/Q' from display in DATA RECORD EOF-6.1.

(3) Calculate the whole body dose rate for the selected locations as follows:

a. Enter 'Q' in Ci/sec for RM-062* from FC-220. Press 'STO 05'.

b. Press '2nd A', 'RCL06', then 'R/S'.

c. Record 'D_{WB}' Whole Body Dose Rate from display in DATA RECORD EOF-6.1.

(4) Calculate thyroid dose rate at the selected locations as follows:

a. Enter 'Q' in Ci/sec for RM-060 from FC-220, Press 'STO 05', then '2nd D', 'R/S'.

b. Record 'D_T' Thyroid Dose from display in DATA RECORD EOF-6.1.

*Use RM-052 if RM-062 is unavailable.

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IV. PROCEDURE (Continued)

(5) Record the selected location coordinates, D.F., χ/Q, D_{WB}, and D_T for each selected location on DATA RECORD EOF-6.1.

(6) Convey the dose rate data to the Emergency Coordinator and post the data on the status board.

B. USING THE MANUAL CALCULATIONS

(1) Complete attached Form FC-220, for meteorological data and calculation of release rate, 'Q'.

(2) To calculate the whole body or thyroid dose rate for the site boundary at plume center line, enter the actual χ/Q from Form FC-220 in DATA RECORD EOF-6.1. Proceed to (3).

To calculate the whole body or thyroid dose rate for other selected points, determine the diffusion factor, D.F., from the appropriate overlay, as determine from data on Form FC-220 and calculate χ/Q from D.F. and average windspeed, $\bar{\mu}$, as follows:

$$\chi/Q = \frac{D.F.}{\bar{\mu}} = \frac{\text{\_\_\_\_\_}}{D.F.} \Big/ \frac{\text{\_\_\_\_\_}}{\bar{\mu}}$$

= _____ sec/m^3, enter this value in DATA RECORD EOF-6.1.

(3) Calculate Whole Body dose rate for the selected locations as follows:

$$D_{WB} = 0.25 \times 0.80 \times 3.6 \times 10^6 \times Q \times \chi/Q \ \frac{mrem}{hr}$$

$$= 7.2 \times 10^5 \times \frac{\text{\_\_\_\_\_}}{Q \text{ for RM-062 (or RM-052)*}} \times \frac{\text{\_\_\_\_\_}}{\chi/Q}$$

= _____ mrem/hr.

(4) Calculate thyroid dose rate for the selected locations as follows:

$$D_T = B \times DCF \times Q \times \chi/Q \times 3.6E+06 \ \frac{mrem}{hr}$$

$$= 3.6E+06 \times 5.9E-05 \times 6.23E+06 \times Q \times \chi/Q$$

$$= 1.55E+09 \times \frac{\text{\_\_\_\_\_}}{Q \text{ for RM-060}} \times \frac{\text{\_\_\_\_\_}}{\chi/Q}$$

= _____ mrem/hr

*Use RM-052 data only if RM-062 is unavailable.

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(5) Record the selected location coordinates, D.F., χ/Q, D_{WB} and D_T for each selected location on DATA RECORD EOF-6.1.

(6) Convey the dose rate data to the Emergency Coordinator and post the data on the status board.

4. Actual Dose Rates (at selected locations utilizing data from onsite and offsite monitor teams).

A. USING THE TI-59 CALCULATOR

(1) Obtain the whole body dose rate from the monitor team for direct radiation dose rate measurements and enter in DATA RECORD EOF-6.1.

(2) Calculate Thyroid dose rate for selected locations as follows:

a. Press 'E', Enter 'χ' supplied by monitor team. Press 'R/S'.

b. Enter 'χ' in display again.

c. Press 'R/S'. Record 'D_T' thyroid dose from display in DATA RECORD EOF-6.1.

(3) Convey the dose rate data to the Emergency Coordinator and post the data on the status board.

B. USING THE MANUAL CALCULATIONS

(1) Obtain the whole body dose rate from the monitor team for direct radiation dose rate measurements and enter in DATA RECORD EOF-6.1.

(2) Calculate thyroid dose rate for selected locations as follows:

$D_T = B \times DCF \times \chi \times 3.6E+06$

$= 3.6E+06 \times 6.9E-05 \times 6.23E+06 \times \chi$

$= 1.55E+09 \times \frac{\chi}{\chi^*}$ mrem/hr

(3) Record actual dose rates on DATA RECORD EOF-6.1.

(4) Convey the dose rate data to the Emergency Coordinator and post the data on the status board.

*Supplied by monitor team.

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IV. PROCEDURE (Continued)

5. In the event that RM-060, or RM-062, (RM-052 if RM-62 is not available) are off scale, refer to Fort Calhoun Station Unit No. 1 OPERATING INSTRUCTION OI-PAP-7, POST ACCIDENT PROCEDURE.

   (1) Determine Thyroid or Whole Body dose rates, as per sections A.4 or A.5 of this instruction, utilizing specific activity, χ, or release rate, Q, from OI-PAP-7.

   (2) Convey the dose rate data to the Emergency Coordinator and post the data on the status board.

IV. PROCEDURE (Continued)

SECTION 2 - Assessment of Liquid Releases

Estimate the total specific activity in the Missouri River at the MUD intake structure after a Liquid Release under accident conditions:

Part I - RM-055 or RM-055A Functioning:

NOTE: Go to Part II if neither RM-055 nor RM-055A is functioning.

1. Obtain the tank release rate from the control room and record here _____gpm.

2. Obtain the RM-055 or RM-055A reading from the control room. Subtract the background reading and record here _____ncpm*.

3. Obtain the Missouri River flow rate and speed from the U.S. Coast Guard, phone 221-4712, and record here _____cfs, _____mph.

4. Plot the intersection point of the tank release rate and RM-055 (in ncpm) or RM-055A (in ncpm) reading on Figure EOF-6.1 or Figure EOF-6.2. (Use Figure EOF-6.1 for RM-055 and Figure EOF-6.2 for RM-055A). This point defines a line of constant activity release rate on or parallel to those in Figure EOF-6.1 or Figure EOF-6.2.

5. Follow the nearest higher line of constant activity release rate to the river flow rate (Y-axis).

6. Read the total activity at MUD intake structure from the top scale based upon the intersection point of 5, above and record the value here _____µCi/ml and in Table EOF-6.1.

7a. USING THE TI-59 CALCULATOR:

Press 'SBR CE' Enter the radionuclide activity from Column I of Table EOF-6.1.
Press 'R/S'. Record the resulting data in Column III of Table EOF-6.1. Enter the radionuclide activity, again and press 'R/S'. Record data in Table EOF-6.1. Continue until the five listed radionuclide activities are calculated.

7b. USING THE MANUAL CALCULATIONS:

Calculate the isotopic activity of the radionuclide from Column I and II of Table EOF-6.1 and enter the data in Column III of Table EOF-6.1.

8. Protective actions -

If the projected activity at the MUD intake structure, or any of the radionuclide under Column III of Table EOF-6.1 is greater than or equal to pertinen values shown under Column IV, notify the MUD (554-7946) and tne State of Nebraska (402-473-1721) immediately for appropriate protective action(s).

*(monitor reading in cpm - backgrcund in cpm)

IV. PROCEDURE (Continued)

Part II - RM-055 or RM-055A Not Functioning:

1. Obtain the tank release rate from the control room and record here _____ gpm.

2. Obtain the river flow rate and speed from the U.S. Coast Guard, phone 221-4712, and record here _____ cfs, _____ mph.

3. Obtain the total tank Gamma specific activity from the control room copy of the Liquid Release Permit and record here _____ µCi/ml.

4. Plot the tank flow rate and total tank Gamma activity on Figure EOF-6.1 to define the line of constant activity release rate.

NOTE: Use Figure EOF-6.1 only as it provides conservative results.

5. Follow the nearest higher constant activity release rate line to the river flow rate (Y-axis).

6. Read the total activity at the MUD intake structure from the top scale from the intersection point of step 5 of this section and record here _____ µCi/ml and in Table EOF-6.1.

7a. USING THE TI-59 CALCULATOR:

Press 'SBR CE'. Enter the radionuclide activity from Column I. Press 'R/S'. Record the resulting data in Column III of Table EOF-6.1. Enter the radionuclide activity again, and press 'R/S'. Record data in Table EOF-6.1. Continute until the five listed radionuclide activities are calculated.

7b. USING THE MANUAL CALCULATIONS:

Calculate the isotopic activity of the radionuclides from Columns I and II of Table EOF-6.1 and enter the data in Column III of Table EOF-6.1.

8. Protective actions -

If the projected activity at the MUD intake structure, or any of the radionuclide under Column III of Table EOF-6.1 is greater than or equal to pertinent values shown under Column IV, notify the MUD (554-7946) and the State of Nebraska (402-473-1721) immediately for appropriate protective action(s).

IV. PROCEDURE (Continued)

SECTION 3 - Relationship of Key Isotopes and Trend Analysis

1. Meteorological Data: (use the current Form FC-220 data)

(1) Wind direction at 10 meters is _____° at _____ hours.

(2) Obtain the actual χ/Q value at the site boundary from the computer
χ/Q = _____ sec/m^3

(3) If the selected location is not the site boundary, then use the following data to calculate the χ/Q values at the selected location.

a. Wind speed at 10 meters is _____ mph at _____ hours.
(present)

b. Wind speed at 10 meters is _____ mph at _____ hours.
(previous hours)

c. AVERAGE WIND SPEED ($\bar{\mu}$) = _____ mph x 0.447.

= _____ m/sec.

d. Assume a diffusion factor of 1.0 E-03 m^{-2} for population exposure in the 2 mile zone.

e. Assume a diffusion factor of 1.0 E-04 m^{-2} for population exposure in the 2 to 5 mile zone.

f. Assume a diffusion factor of 1.0 E-05 m^{-2} for population exposure in the 5 to 10 mile zone.

g. Calculate the χ/Q as follows using the average wind speed per step (3)c and the appropriate diffusion factor (D.F.) per step (3)f, 3(g), or 3(h):

$$\frac{\chi}{Q} = \frac{D.F.}{\bar{\mu}} = \frac{(\quad)}{(\quad)} \frac{m^{-2}}{m/sec}$$

(4) Stack flow rate = _____ cfm

(5) Condenser off gas flow rate = _____ cfm RM-057 ONLY

2. Whole Body Dose Estimates

A. USING THE TI-59 CALCULATOR:

(1) Request for an air (gas and particulate) sample from the stack via RM-061 air pump or from the condenser off gas via RM-057 air pump be drawn, and for an isotopic analysis of radionuclide listed in Table EOF-6.2.

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IV. PROCEDURE (Continued)

(2) Enter the concentrations in Ci/m^3 in Table EOF-6.2.

NOTE: $1\mu Ci/cc = 1Ci/m^3$

(3) Enter '3' in the display. Press '2nd 9 17', then 'CLR'. Insert sides 1, 2 and 3 of the two cards marked "EOF-6, Section 3" and "D_{WB}, D_T, D_β, Table Construction" in the side of the calculator, pressing 'CLR' after each side is read.

(4) Enter χ/Q (either calculated or actual) in the display Press 'STO 00'.

(5) Enter the stack or condenser off gas flow rate in 'cfm' in Table EOF-6.2 from 1.(4) or 1.(5) of this section and convert to 'm^3/sec.' Press 'SBR x^2,' then 'R/S'. Enter the Stack Flow or Condenser off-gas flow rate in m^3/sec in the display. Press 'R/S'.

(6) Enter the radionuclide concentration in the display. Multiply the stack flow or condenser off-gas flow rate by the Radionuclide Concentration by pressing 'R/S'. Enter the Radionuclide release rate from the display into Table EOF-6.2.

NOTE: The average gamma energy factors are contained in the calculator program.

(7) Press 'R/S' and Enter the "Whole Body Dose Factor" from the display in Table EOF-6.2. Press 'R/S'. The Entry number 'n' will be displayed. If additional radionuclides are to be entered, press 'R/S', then repeat steps (6) and (7).

After the last "Whole Body Dose Factor" is displayed, press 'CLR', 'R/S', then on to Step (8).

(8) Press 'R/S' and enter the summation "$\Sigma_i^n (Q_i)(E_{\gamma i})$" in Table EOF-6.2 from the display.

(9) Press 'R/S' to calculate the Whole Body Dose Rate. Enter the value in the display in Table EOF-6.2.

(10) Repeat steps (1) through (9) as deemed appropriate.

B. USING THE MANUAL CALCULATIONS:

(1) Request for an air (gas and particulate) sample from the stack via RM-061 air pump or from condenser off gas via RM-057 air pump be drawn, and for an isotopic analysis of radionuclides listed in Table EOF-6.2.

(2) Enter the concentrations in Ci/m^3 in Table EOF-6.2

NOTE: $1\mu Ci/cc = 1Ci/m^3$

IV. PROCEDURE (Continued)

(3) Enter the stack or condenser off gas flow rate in 'cfm' in Table EOF-6.2 from 1.(4) or 1.(5) and convert to m3/sec.

(4) Multiply the radionuclide concentration by the stack or condenser off gas flow and enter the radionuclide release rate in Table EOF-6.2.

(5) Obtain the "Whole Body Dose Factor" by multiplying the radionuclide release rate by the average gamma energy per disintegration and enter the value in Table EOF-6.2.

(6) Take the summation of "Whole Body Dose Factor" for all radionuclides and enter the value in Table EOF-6.2.

(7) Calculate the whole body dose rates by using the following equation and enter the value in Table EOF-6.2.

$$D_{WB} = 9.0\ E{+}05\ \chi/Q\ \Sigma_i^n\ (Q_i)\ (E_{\gamma i})$$

Where:

D_{WB} is the whole body rate in mrem/hr

Q_i is the radionuclide 'i' release rate in Ci/sec

$E_{\gamma i}$ is the average gamma energy per disintegration for radionuclide 'i'

χ/Q is the dispersion factor for a selected downwind distance in sec/m^3 obtained from step 1.(3) above

Σ_i^n is the summation for radionuclides 'i' through 'n' and

9.0 E+05 is the conversion factor

(8) Repeat steps (1) through (7) as deemed appropriate.

3. Thyroid Dose Estimates

A. USING THE TI-59 CALCULATOR:

(1) Request for an air (filter and charcoal cartridge) sample from the stack via RM-060, and for an isotopic analysis of radionuclides listed in Tables EOF-6.3 and EOF-6.4.

(2) Enter the concentrations in Ci/m^3 in Tables EOF-6.3 and EOF-6.4.

NOTE: 1μCi/cc = 1Ci/m^3

IV. PROCEDURE (Continued)

(3) Enter the stack flow rate in 'cfm' in Tables EOF-6.3 and EOF-6.4 from step 1.(4) above and convert to m^3/sec.

a. If the whole body dose assessments have just been calculated using the TI program, continue by pressing 'CLR', 'SBR lnx', and then 'R/S'.

b. If the whole body dose assessments have not just been calculated using the program, enter '3' in the display. Press '2nd 9 17', then 'CLR'. Insert sides 1, 2 and 3 of the two cards in the side of the calculator, pressing 'CLR' after each side is read. Press '522 STO 07', then 'SBR lnx', then 'R/S'. Enter x/Q (either calculated or actual) in the display. Press 'STO 00'.

c. Enter the stack flow rate in m^3/sec in display. Press 'R/S'.

(4) Enter the radionuclide concentration in the display. Multiply the stack flow or condenser off-gas flow rate by the Radionuclide Concentration by pressing 'R/S'. Enter the Radionuclide release rate from the display into Table EOF-6.3.

NOTE: The Thyroid Dose Conversion factors are contained in the calculator program.

(5) Press 'R/S' and enter the "Thyroid Dose Factor" from the display in Table EOF-6.3. Press 'R/S'. The entry number 'n' will be displayed. If additional Radionuclides are to be entered, press 'R/S', then repeat steps (4) and (5).

After the last "Thyroid Dose Factor" is displayed, Press 'CLR', 'R/S', then on to step 6.

(6) Press 'R/S' and enter the summation "$\Sigma_i^n (Q_i)(DCF_i)$" in

Table EOF-6.3 from the display.

(7) Calculate the Thyroid dose rates to adults for different time intervals by the following:

a. For time interval <8 hours:

Press 'R/S'. When the display is stable, press 'R/S' again. Enter the value of the display in Table EOF-6.3 for Dose Rate <8 hours.

b. For time interval >8 hours:

Press 'R/S'. Enter the value in the display in Table EOF-6.3 for >8 hours.

(8) Repeat steps (1) through (7) as deemed appropriate.

IV. PROCEDURE (Continued)

B. USING THE MANUAL CALCULATIONS:

(1) Request for an air (filter and charcoal cartridge) sample from the stack via RM-060, and for an isotopic analysis of radionucliees listed in Tables EOF-6.3 and EOF-6.4.

(2) Enter the concentrations in Ci/m^3 in Tables EOF-6.3 and EOF-6.4.

NOTE: $1\mu Ci/cc = 1Ci/m^3$

(3) Enter the stack flow rate in 'cfm' in Tables EOF-6.3 and EOF-6.4 from step 1.(4) above and convert to m^3/sec.

(4) Multiply the radionuclide concentration by the stack flow rate and enter the release rate in Tables EOF-6.3.

(5) Obtain the "Thyroid Dose Factor" by multiplying the release rate by the dose conversion factor (DCF) and enter the value in Table EOF-6.3.

(6) Take the summation of "Thyroid Dose Factors" for all radionuclides and enter the value in Table EOF-6.3.

(7) Calculate the thyroid dose rates to adult by using the following equation and enter the values in Tables EOF-6.3.

a. For Time Interval 0-8 Hours:

$$\text{Dose Rate} = B \cdot \chi/Q \sum_{i}^{n} (Q_i)(DCF_i) \quad \text{rem/sec}$$

$$\text{or } D = 1.25\ E{+}03\ \chi/Q \sum_{i}^{n} (Q_i)(DCF_i) \quad \text{mrem/hr}$$

Where:

D is the thyroid dose rate in mrem/hr

χ/Q is the dispersion factor for a selected downwind distance in sec/m^3 obtained from step A.3 above

$\sum_{i}^{n}$ is the summation for radionuclides 'i' through 'n'

Q_i is the radionuclide 'i' release rate in Ci/sec.

DCF_i is the dose conversion factor in rem/Ci

1.25 E+03 is the conversion factor, and

B is the breathing rate for an adult in 3.47 E-04 m^3/sec.

IV. PROCEDURE (Continued)

b. For Time Interval Greater Than 8 Hours

Dose rate = B · $\chi/Q \sum_{i}^{n} (Q_i) (DCF_i)$ rem/sec

or

$D_{\chi} = 8.35 E+02 \chi/Q \sum_{i}^{n} (Q_i) (DCF_i)$ mrem/hr

Where the terms are same as defined in step 7.1. above, with the exception of breathing rate of 2.32 E-04 m^3/sec.

(8) Repeat steps (1) through (7) as deemed appropriate.

IV. PROCEDURE (Continued)

4. Lung Dose Estimates

A. USING THE TI-59 CALCULATOR:

(1) Request for an air (filter and charcoal cartridge) sample from the stack via RM-060, and for an isotopic analysis of radionuclides listed in Tables EOF-6.3 and EOF-6.4.

(2) Enter the concentrations in Ci/m^3 in Tables EOF-6.3 and EOF-6.4.

NOTE: $1\mu Ci/cc = 1Ci/m^3$

(3) Enter the stack flow rate in 'cfm' in Tables EOF-6.4 and from step 1.(4) above and convert to m^3/sec.

a. If the thyroid dose assessments has just been calculated, using the TI program, continue by pressing 'CLR'. Press 'SBR lnx', then 'R/S'.

b. If the thyroid dose assessments have not just been calculated using the TI program, enter '3' in the display. Press '2nd 9 17', then 'CLR'. Insert sides 1, 2 and 3 of the two cards in the side of the calculator, pressing 'CLR' after each side is read. Press '588 STO 07', then 'SBR lnx', then 'R/S'. Enter x/Q (from Section 3.1) in the display. Press 'STO 00'.

c. Enter the stack flow rate in m^3/sec in display. Press 'R/S'.

(4) Enter the radionuclide concentration* in the display. Multiply the stack flow or condenser off-gas flow rate by the Radionuclide Concentration by pressing 'R/S'. Enter the Radionuclide release rate from the display into Table EOF-6.4.

NOTE: The Lung Dose factors are contained in the calculator program.

(5) Press 'R/S' and enter the "Lung Dose Factor" from the display in Table EOF-6.4. Press 'R/S'. The entry number 'n' will be displayed. If additional Radionuclides are to be entered, press 'R/S', then repeat steps (4) and (5).

After the last "Lung Dose Factor" is displayed, Press 'CLR', 'R/S', then on to step 6.

*NOTE: If the Dose Conversion Factor (DCF) in Table EOF-6.4 is left blank for a particular radionuclide, do not enter that radionuclide concentration in the display. Enter the next concentration for which a conversion factor is given, and continue.

IV. PROCEDURE (Continued

(6) Press 'R/S' and enter the summation "$\Sigma_i^n (Q_i) (DCF_i)$" in Table EOF-6.4 from the display.

(7) Calculate the lung dose rates to adult for different time intervals by the following:

a. For time interval <8 hours:

Press 'R/S'. When the display is Stable, press 'R/S' again. Enter the value of the display in Table EOF-6.4 for Dose Rate <8 hours.

b. For time interval >8 hours:

Press 'R/S'. Enter the value in the display in Table EOF-6.4 for >8 hours.

(8) Repeat steps (1) through (7) as deemed appropriate.

B. USING THE MANUAL CALCULATIONS:

(1) Request for an air (filter and charcoal cartridge) sample from the stack via RM-060, and for an isotopic analysis of radionuclides listed in Tables EOF-6.3 and EOF-6.4.

(2) Enter the concentrations in Ci/m^3 in Tables EOF-6.3 and EOF-6.4.

NOTE: $1\mu Ci/cc = 1Ci/m^3$

(3) Enter the stack flow rate in 'cfm' in Tables EOF-6.3 and EOF-6.4 from step 1.(4) above and convert to m^3/sec.

(4) Multiply the radionuclide concentration by the stack flow rate and enter the release rate in Table EOF-6.3 and EOF-6.4.

(5) Obtain the "Lung Dose Factor" by multiplying the release rate by the dose conversion factor (DCF) and enter the value in Table EOF-6.4.

(6) Take the summation of "Lung Dose Factor" for all radionuclides and enter the value in Table EOF-6.4.

(7) Calculate the lung dose rates to adult by using the following equation and enter the values in Tables EOF-6.3 and EOF-6.4.

a. For Time Interval 0-8 Hours:

Dose Rate = $B \cdot X/Q \Sigma_i^n (Q_i) (DCF_i)$ rem/sec

or $D = 1.25 E+03 X/Q \Sigma_i^n (Q_i) (DCF_i)$ mrem/hr

IV. PROCEDURE (Continued)

B. USING THE MANUAL CALCULATIONS: (Continued)

Where:

D is the lung dose rate in mrem/hr

X/Q is the dispersion factor for a selected downwind distance in sec/m^3 obtained from step A.3 above

Σ_i^n is the summation for radionuclides 'i' through 'n'

Q_i is the radionuclide 'i' release rate in Ci/sec.

DCF_i is the dose conversion factor in rem/Ci

1.25 E+03 is the conversion factor, and

B is the breathing rate for an adult in 3.47 E-04 m^3/sec.

b. For Time Interval Greater Than 8 Hours

Dose rate = $B \cdot X/Q \sum_i^n (Q_i)(DCF_i)$ rem/sec

or

$D = 8.35\ E{+}02\ X/Q \sum_i^n (Q_i)(DCF_i)$ mrem/hr

Where the terms are same as defined in step (7)a. above, with the exception of breathing rate of 2.32 E-04 m^3/sec.

(8) Repeat steps (1) through (7) as deemed appropriate.

Fort Calhoun Station Unit No. 1

FC-220
1 of 4

Meteorological Data and Release Rates Calculation Sheet

Time _____ Date _____, 19_____ Monitor _____

METEOROLOGICAL DATA (From Control Room)

1. Wind direction at 10 meters is _____° at _____ hours.
2. Temperature Difference (ΔT) is _____°c at _____ hours.

   STABILITY CLASS (from (ΔT) and table below) _____
3. Wind speed at 10 meters is _____mph at _____ (present) hours.
4. Wind speed at 10 meters is _____mph at _____ (previous hour) hours.

   AVERAGE WIND SPEED ($\bar{\mu}$) = _____ mph x 0.447 = _____ meters/second
5. Stack flow rate = _____ cfm.
6. Condenser off gas flow rate = _____ cfm [RM-057 ONLY]
7. x/Q (at site boundary) = ____ ____ sec/m^3

STABILITY CLASSES

ΔT(°c)	Class
<-1.9	A
-1.9 to -1.7	B
-1.7 to -1.5	C
-1.5 to -0.5	D
-0.5 to 1.5	E
1.5 to 4.0	F
>4.0	G

PROCESS MONITOR DATA (From Control Room)

1. RM-052 reads _____ cpm at _____ hours

   RM-052 background _____ cpm at _____ hours

   RM-052 net cpm is _____ ncpm.

$$Q = \frac{\text{\_\_\_\_\_}}{\text{Stack Flow Rate}} \text{ cfm} \times \left[\frac{\text{\_\_\_\_\_ ncpm}}{\text{2.4E+06 cpm}}\right] \times \left[\frac{\text{4.72E-04}}{\text{(1) } \mu\text{Ci/cc}}\right]$$

RELEASE RATE (Q) = _____ Ci/sec

(1) Monitors sensitivity factors are per Revision 32, dated February 22, 1983 of the Technical Data Book. Use the revised data, if available.

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2. RM-062 reads _____ cpm at _____ hours

RM-062 background _____ cpm at _____ hours

RM-062 net cpm is _____ ncpm.

$$Q = \frac{\text{\_\_\_\_\_}}{\text{Stack Flow Rate}} \text{ cfm} \times \left[\frac{\text{\_\_\_\_\_ ncpm}}{\left[\frac{9.50E+07 \text{ cpm}}{(1) \quad \mu Ci/cc} \right]} \right] \times 4.72E-04$$

RELEASE RATE (Q) = _____ Ci/sec

---

3. RM-060 reads _____ cpm at _____ hours.

RM-060 background _____ cpm at _____ hours.

RM-060 net cpm is _____ ncpm.

RM-060 sample volume:

Sample Volume (cc) = [RM-060 flow rate (cfm)*] x [Time cartridge in service (min)] x [(28,317 (cc/ft^3)]

= _____ cc

* The average flow rate for RM-060 is approximately 2.3 cfm.

$$Q = \frac{\text{\_\_\_\_\_}}{\text{Stack Flow Rate}} \text{ cfm} \times \left[\frac{\text{\_\_\_\_\_ ncpm}}{\left[\frac{1.51E+04 \text{ cpm} \times \text{\_\_\_\_\_ cc}}{(1) \quad \mu Ci \text{ (Sample Vol.)}} \right]} \right] \times 4.72E-04$$

RELEASE RATE (Q) = _____ Ci/sec

NOTE: If the specific activity for iodine-131 has been determined from the sample cartridge using isotopic gamma spectroscopy, the release rate from the plant may be calculated using the following equation:

$$Q = \frac{\text{\_\_\_\_\_}}{\text{Stack Flow Rate}} \text{ cfm} \times \frac{\text{\_\_\_\_\_} \mu Ci/cc}{\text{I-131 Spec. Activity}} \times 4.72E-04$$

RELEASE RATE (Q) = _____ Ci/sec

---

(1) Monitors sensitivity factors are per Revision 32, dated February 22, 1983 of the Technical Data Book. Use the revised data, if available.

4. RM-061 reads _____ cpm at _____ hours.

RM-061 background _____ cpm at _____ hours.

RM-061 net cpm is _____ ncpm.

RM-061 Sample Volume

Sample Volume (cc) = [RM-061 flow rate (cfm)*] x [(Sample collection time (min)**] x [28,317 (cc/ft^3]

= _____cc

* The average flow rate for RM-061 is approximately 7 cfm.

$$Q = \frac{\text{Stack Flow Rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{\left[\frac{4.56E+05 \text{ cpm}}{(1) \ \mu\text{Ci}} \times \frac{\text{cc}}{(\text{Sample Vol.})} \right]} \right] \times 4.72E\text{-}04$$

RELEASE RATE (Q) = _____Ci/sec

**The normal sample collection time used for RM-061 is 60 minutes.

---

5. RM-057 reads _____cpm at _____hours.

RM-057 background _____cpm at _____hours.

RM-057 net cpm is _____ncpm

$$Q = \frac{\text{condenser off gas flow rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{\left[\frac{4.0E+07 \text{ cpm}}{(1) \ \mu\text{Ci/cc}} \right]} \right] \times 4.72E\text{-}04$$

RELEASE RATE (Q) = _____Ci/sec.

---

6. RM-064 (is in review process)

---

(1) Monitors sensitivity factors are per Revision 32, dated February 22, 1983 of the Technical Data Book. Use the revised data, if available.

7. PROCEDURE FOR DETERMINATION OF RELEASE RATE

7.1 RM-063L, RM-063M, and RM-063H for determination of noble gas releases:

RM-063 (L, M, or H) reads _____cpm At _____HOURS

RM-063 (L, M, or H) background _____cpm At _____HOURS

RM-063 (L, M, or H) net count _____ncpm

$$Q = \frac{\text{_____ cfm}}{\text{Stack Flow Rate}} \times \frac{[\text{_____ ncpm}]}{[\text{_____ cpm}]} \times \frac{[\text{(1) } \mu\text{Ci/cc}]}{} \times 4.72\text{ E-04} \times 2.31$$

Release Rate (noble gas) Q N.G. = _____Ci/sec

7.2 Determination of Release Rate for I-131 from the Ventilation Stack:

RM-063 Accident filter Dose Rate	Contact Dose Rate At The Surface of Filter Measured by Teletector	____mr/hr AT_____HOUR
Background Radiation	In The Area Where The Filters Are Measured	____mr/hr AT_____HOUR
RM-063 Accident Filter Net Dose Rate	Contact Dose Rate Subtracted By Background	____mr/hr

Convert net dose rate (mr/hr) to net filter activity (μCi) by multiplying by conversion factor 7.027×10^{-1} μCi/mr/hr (I-131) _____μCi

Sample Volume (cc) = (RM-063M or H Flow Rate 500 cc/min) X (Sampling Time Minutes)

= _____cc

$$\frac{\text{Net Filter Activity}}{\text{Stack Flow Rate}} \quad \frac{\text{_____ μCi}}{\text{Sample Volume}} \times 4.72\text{ E-04} \quad \frac{\text{_____ cc}}{} \quad Q = \text{_____ cfm} \times \text{___}$$

Q (I-131) = _____Ci/sec

(1) Obtain the monitors sensitivity factors from the Technical Data Book.

DATA RECORD EOF-6.1
ON-SITE AND OFF-SITE DOSE RATES: PREDICTED and ACTUAL

LOCATION		DIFFUSION FACTOR $1/m^2$	x/Q sec/m^3	RELEASE RATE, Q Ci/sec	DOSE RATES (mrem/hr)			
					PREDICTED		ACTUAL	
METERS DOWNWIND	METERS CROSSWIND				WHOLE BODY	THYROID	WHOLE BODY	THYROID

TABLE EOF-6.1
Projected Isotopic Activity
at the MUD Intake Structure
Comparison with the EPA Drinking Water Standard

1. Total activity using RM-055 or RM-055A: _____ µCi/ml.

2. Total activity using the monitor tank data: _____ µCi/ml.

Radionuclide	Column I Total Activity From Above	Column II Isotope Distribution Factor	Column III Projected Isotopic Activity (µCi/ml) (Col. I x Col. II	Column IV EPA Standards** (µCi/ml)
I-131		0.15		3.0 E-09
Cs-134		0.45		2.0 E-05
Cs-137	_____	0.10		2.0 E-07
Co-60		0.30		1.0 E-07
H-3		0.70		2.0 E-05

*Reference: National Interim Primary Drink Water Regulation EPA-570/9-76-003.

TABLE EOF-6.2

Whole Body Dose Rate

Stack or Condenser Off Gas Flow Rate _____cfm or _____cfm x 4.72 E-04

= _____m^3/sec.

Radionuclide	Radionuclide Concentration Ci/m^3	Radionuclide Release Ci/sec* (Q_i)	Avg. Gamma Energy $E_{\gamma i}$ (Mev/dis)	Whole Body Dose Rate Factor (Q_i) ($E_{\gamma i}$)
Kr-88			2.03 E+00	
I-131			3.92 E-01	
I-133			6.24 E-01	
I-135			1.56 E+00	
Te-132			2.31 E-01	
Xe-133			4.50 E-02	
Xe-135			2.62 E-01	
Cs-134			1.59 E+00	
Cs-137			5.36 E-01	
				$\Sigma_i^n (Q_i)(E_{\gamma i})$ =

Whole Body Dose Rate (D_{WB}):

= 9.0 E+05 χ/Q Σ_i^n (Q_i) $(E_{\gamma i})$

= _____mrem/hr.

*Radionuclide concentration (Ci/m^3) x Stack or condenser off gas flow rate (m^3/sec)

TABLE EOF-6.3

Thyroid Dose Rate

Stack Flow Rate _____cfm or _____cfm x 4.72 E-04

= _____m^3/sec.

Radionuclide	Radionuclide Concentration Ci/m^3	Radionuclide Release Ci/sec* (Q_i)	Dose Conversion Factor Rem/Ci (DCF_i)	Thyroid Dose Factor (Q_i)(DCF_i)
I-131			1.4 E+06	
I-132			6.5 E+03	
I-133			1.8 E+05	
I-134			2.5 E+04	
I-135			4.4 E+04	
Te-132			9.7 E+04	

$\Sigma_i^n (Q_i)\ (DCF_i)$ =

Thyroid Dose Rate: (D_T):

< 8 hours = 1.25 E+03 x/Q $\Sigma_i^n\ (Q_i)\ (DCF_i)$

_____mrem/hr

> 8 hours = 8.35 E+02 x/Q $\Sigma_i^n\ (Q_i)\ (DCF_i)$

_____mrem/hr

*Radionuclide concentration (Ci/m^3) x Stack flow rate (m^3/sec)

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TABLE EOF-6.4

Lung Dose Rate

Stack Flow Rate _____cfm or _____cfm x 4.72 E-04

= _____m^3/sec.

Radionuclide	Radionuclide Concentration Ci/m^3	Radionuclide Release Ci/sec* (Q_i)	Dose Conversion Factor Rem/Ci (DCF_i)	Lung Dose Factor (Q_i)(DCF_i)
I-131			2.4 E+06	
I-132			1.0 E+03	
I-133			3.1 E+03	
I-134			-	
I-135			2.5 E+03	
Ru-106			3.9 E+06	
Te-132			3.0 E+04	
Cs-134			5.1 E+04	
Cs-137			4.0 E+04	
Ce-144			-	

$\Sigma_i^n (Q_i)(DCF_i)$ =

Lung Dose Rate: (D_ℓ)

< 8 hours = 1.25 E+03 x/Q Σ_i^n (Q_i) (DCF_i)

_____mrem/hr

> 8 hours = 8.35 E+02 x/Q Σ_i^n (Q_i) (DCF_i)

_____mrem/hr

*Radionuclide concentration (Ci/m^3) x Stack flow rate (m^3/sec)

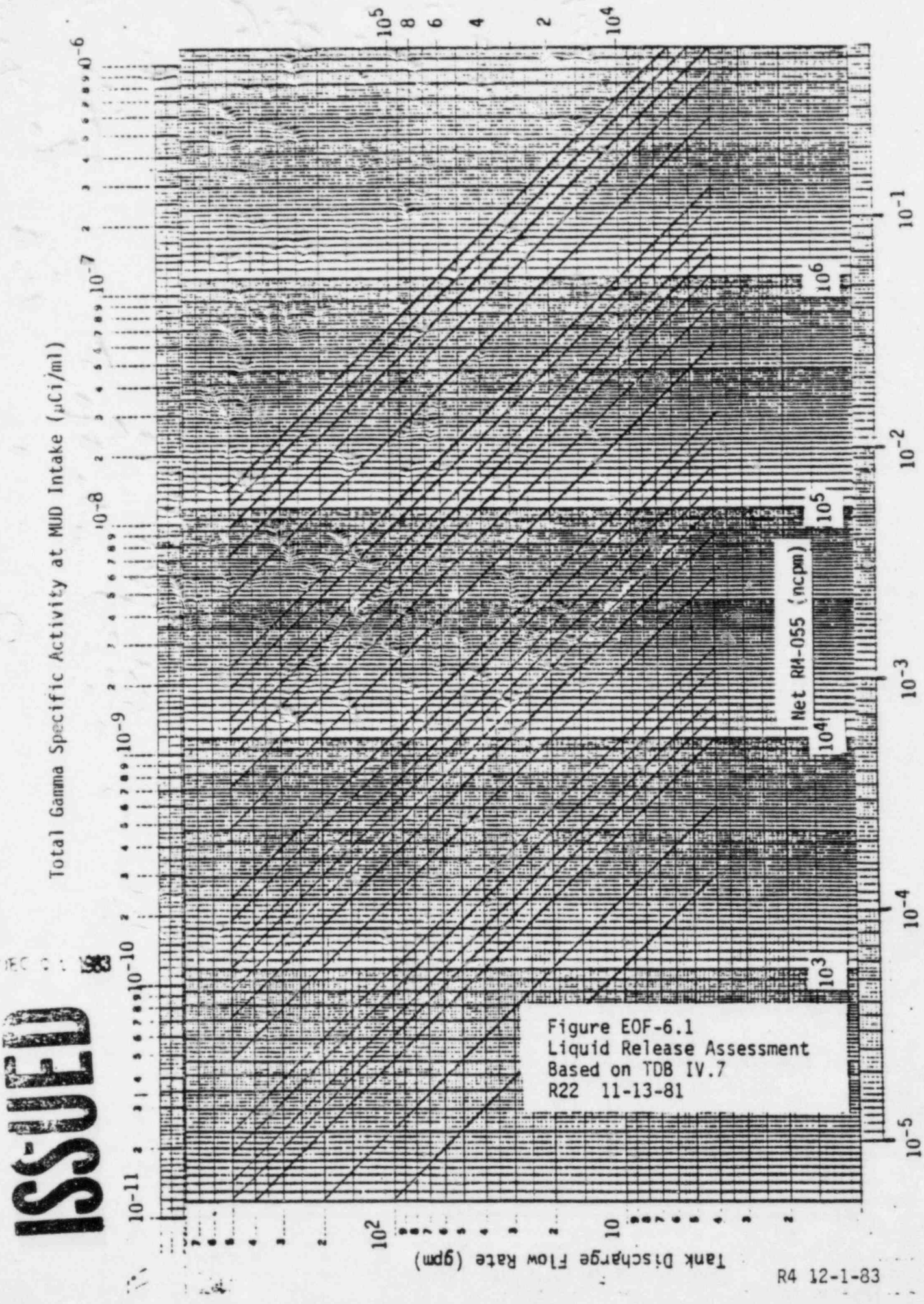

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Figure EOF-6.1
Liquid Release Assessment
Based on TDB IV.7
R22 11-13-81

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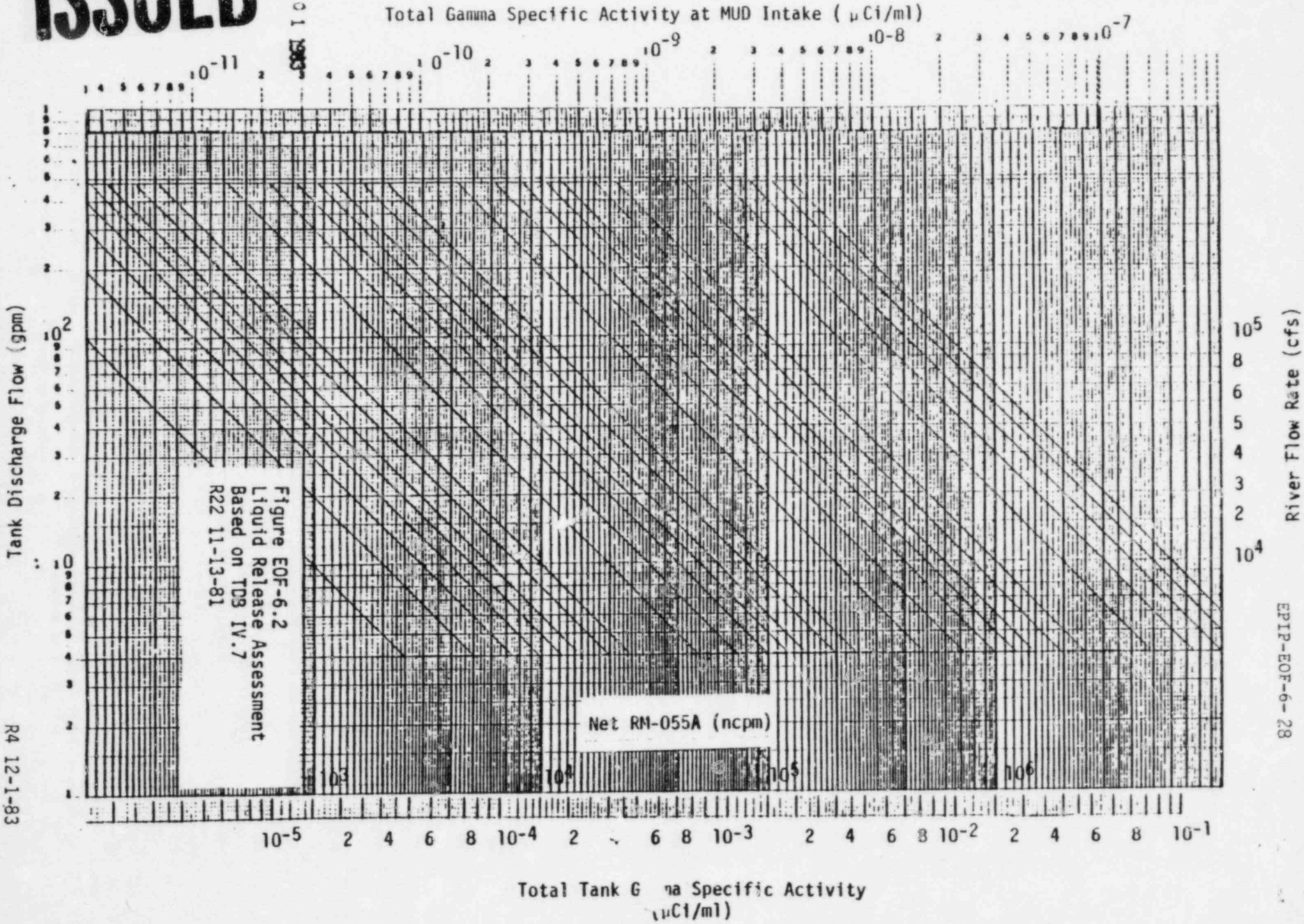

EPIP-EOF-6-28

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Fort Calhoun Station Unit No. 1
Emergency Plan Implementing Procedure
EPIP-EOF-18

OFFSITE RADIOLOGICAL SURVEYS

I. PURPOSE

To describe the actions to be taken by the offsite monitor team, Emergency Team Tag No. 5, 6, 7 and 8, in order to locate and define the radioactive plume.

II. PREREQUISITES

A. Individuals serving on the team have been trained in offsite radiological monitoring techniques, duties and responsibilities.

B. An "Alert" or greater emergency classification has been declared.

C. Portable radiological survey instruments have been properly checked for operability prior to leaving the site and kept in service throughout monitoring process.

D. Communications equipment has been tested prior to leaving the site.

E. A copy of the "Emergency Radiological Monitor Station Booklet" is available in the monitor vehicle.

F. The equipment/supplies listed below are in the monitor vehicle prior to departure from site:

1. SAM-2 Analyzer with RD-19 Detector
2. Air Samplers Radeco H809V
3. E-120 Survey Instrument with HP-190 Probe and sample holder
4. Water Sample Bottles
5. Plastic Bags for Samples (Small Size)
6. Writing Tools
7. Clipboard
8. Survey Form(s)
9. Disposal Gloves
10. Extra Batteries (D-cell)
11. Plastic Bags for Waste (large size)
12. Smear Medium (2" cloth smears)
13. Iodine Filter Cartridges (silver Zeolite)
14. Particulate Air Sample Filters
15. EPIP-EOF-3
16. EPIP-EOF-8
17. Anti-Contamination Clothing
18. Respirators
19. Cold Weather Clothing (if appropriate)
20. Radio Operator Logs

III. PRECAUTIONS

A. Obtain or retain personnel dosimetry prior to leaving the site and wear it throughout the offsite monitoring process.

B. Allow counting instrumentation adequate "warm-up" time to prevent erratic counting results.

C. Prevent cross contamination of samples by using care and disposal gloves when handling smears and particulate air filters.

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III. PRECAUTIONS (Continued)

D. Retain all samples. Clearly label each sample with collection location, date time and name of person performing the survey(s) and complete the appropriate log located in the back of this procedure. Also note the volume of air sampled for air samples. Store each sample in individual plastic bag.

E. When using the radio for communications speak slowly and clearly. (If communications should fail, one member of the team should call either the Monitor Coordinator at the TSC or the Dose Assessment Coordinator at the EOF, dependent upon which function is controlling the teams, or physically report to the TSC or EOF, as appropriate, for additional communications equipment and/or instructions.

TSC Monitor Coordinator: (402) 426-6780
EOF Dose Assessment Coordinator: (402) 536-4841

F. Maintain instruments in service during transit in order to identify trends.

G. Use Channel No. 1 to communicate with the Radio Operators at the TSC and EOF unless instructed otherwise by the Monitor Coordinator or Dose Assessment Coordinator. During drills and/or exercises, all radio transmissions will start and end with "THIS IS A DRILL MESSAGE" or "THIS IS AN EXERCISE MESSAGE".

H. Count all samples in low background area. This may necessitate leaving the plume area.

IV. PROCEDURE

1. Assemble at the TSC.

2. One member of the team must pickup the keys to the designated emergency monitor vehicle which is parked on the east side of the GSB. (NOTE: Keys for the vehicles are located inside each of the offsite monitor team kits. Kits are numbered the same as the OPPD vehicle identification number.

3. Place offsite emergency kit and additional equipment/supplies (as listed under II.F of this procedure) into the monitor vehicle or verify that they are already in place.

4. Prepare the SAM-2 for operation by referring to EPIP-EOF-3 for instructions on set up and operation procedures.

5. Obtain initial instructions for sample type and location for first monitor station.

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IV. PROCEDURE (Continued)

6. Locate monitor station using the "Emergency Radiological Monitor Station Booklet"; and proceed to the monitor station as described in the directions of the booklet.

7. Begin surveying for radiation dose rate prior to entering vicinity of monitor station. Determine dose rates with either an E-120 with G-M probe or a RO-4 Ion Chamber meter. Record location(s) and dose rate reading(s) into log, Figure 18.1 of this procedure.

8. Report significant dose rate changes to the Monitor Coordinator or the Dose Assessment Coordinator, as appropriate, through the TSC or EOF Radio Operator. Refer to Section III.G. above for Precautions.

9. Coordinate locating the plume's length, width and intensity with the Monitor Coordinator.

10. Prepare SAM-2 for counting iodine cartridge samples, as outlined in EPIP-EOF-3, Section IV.2.c.(1)

11. Setup E-120 with HP-190 probe for counting particulate air samples and smears, as outlined in EPIP-EOF-3, Section IV.2.a.

12. Pull and analyze air samples as directed:

    a. Collect the radioiodine and particulate sample(s) using a Radeco air sampler in the manner described in EPIP-EOF-3, Section IV.2.c.(2).

    b. Analyze the radioiodine sample using the SAM-2 analyzer, in accordance with EPIP-EOF-3, Section IV.2.c.(3).

    c. Analyze the particulate air sample using the E-120 with HP-190 probe, in accordance with EPIP-EOF-3, Section IV.2.a.

13. Smear flat surfaces of 100 cm^2 area for each smear.

14. Analyze smears using E-120 with HP-190 probe, as outlined in EPIP-EOF-3, Section IV.2.a.

15. Log all results. (Samples of survey logs are provided in Figures 18.1, 18.2 and 18.3.)

16. Report all results to the Monitor Coordinator or the Dose Assessment Coordinator through the Radio Operator.

17. Continue surveying for radiation dose rate trends.

18. Proceed to next sample station(s) in accordance with directions. Identify instrument fluctuations while travelling. At next monitor station, repeat procedure Steps 12 through 17.

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IV. PROCEDURE (Continued)

19. Continue performing radiological surveys (i.e. air samples, smears, dose rate surveys) until the full plume is defined and the team is instructed to return.

20. Upon returning to the site, remove all protective clothing and contact the gate monitor for a thorough frisk. This should be done on the west side of the GSB, to facilitate decontamination, if necessary.

21. Deliver all samples and logs to the Monitor Coordinator in the TSC or the Dose Assessment Coordinator in the EOF upon returning.

FIGURE EOF 18.1
SAMPLE OF
DOSE RATE SURVEY LOG

Date: _____

Instruments(s) Used (Type and Serial No.): _____

Time	Description of Sample Location	Station ID	Type of Survey (B, _B)	Dose Rate (mR/hr)	Surveyor

Comments: _____

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EPIP-EOF-18-6

FIGURE EOF 18.2
SAMPLE OF
AIR SAMPLE SURVEY LOG

INSTRUMENTS
SAM-2, Serial No. 1 _____
Staplex, Serial No. _____
Radeco, Serial No. _____
E-120, Serial No. _____
Other _____

Date: _____

Description of Sample Location	Station ID	Sample Type (Part./I2)	Flow Rate (cfm)	Time On	Time Off	Collect. Time (min)	Volume* (cc)	Sample Count Time (min)	Gross Counts (cpm)	Bkg. (cpm)	Net Counts (ncpm)	Analyzer Efficiency	Activity** (uCi/cc)	Surveyor

*Volume (cc) = Flow Rate (cfm) x Collection Time (min) x Conversion Factor (28317 cc/ft3)
**Activity from EPIP-EOF-3, Section IV.2.c (3) (f)

Comments: _____

FIGURE EOF 18.3
SAMPLE OF
SMEAR SURVEY LOG

Date: _____

Instrument Used (Type and Serial No.): _____

Time	Description of Sample Location	Station ID	Equipment/ Area Smeared	Sample Count Time (min)	Gross Counts (cpm)	Bkg. Counts (cpm)	Net Counts (ncpm)	Analyzer Efficiency	Activity* (dpm/100cm2)	Surveyor

*Activity (dpm/100cm2) = $\frac{\text{ncpm}}{\text{analyzer efficiency}}$

Comments: _____

Fort Calhoun Station Unit No. 1
EMERGENCY PLAN IMPLEMENTING PROCEDURE
EPIP-TSC-7

Emergency Response Assistance
Combustion Engineering

I. PURPOSE

This procedure provides the instructions to be followed when an emergency occurs at Fort Calhoun Station that requires the support and assistance of Combustion Engineering, Nuclear Emergency Response Organization. It is expected that the Administrative Logistics Manager or his representative will perform this action.

II. PREREQUISITES

A. Emergency classification has been defined per EPIP-OSC-1.

B. Technical Support Center has been activated per EPIP-TSC-1.

C. The recovery organization has been activated per EPIP-RR-1.

III. PRECAUTIONS

None

IV. PROCEDURE

1. When the C-E Nuclear Emergency Response Plan is activated, C-E will make available to the maximum extent possible, any support or resources which is reasonably requested by OPPD. This support can include, but is not limited to:

   a. On-site technical advice and consultation.

   b. Off-site analysis and evaluation support.

   c. On-site technical and construction support.

   d. Overall support using C-E management, engineering, manufacturing, transportation, procurement, and construction resources.

2. Obtain the necessary information and complete the C-E Nuclear Emergency Response Initial Notification "Emergency Information" form (attachment 1).

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IV. PROCEDURE (Continued)

3. Activate the Combustion Engineering Emergency Response Plan by calling OPPD's C-E Project Manager Ray Mills, 9-1-(203)285-9264 during normal work hours or 9-1-(203)243-1070 (Home Phone) after normal work hours. If all attempts to reach Ray Mills fails the C-E Emergency Response Plan can also be activated by calling the following dedicated telephone number at any time: 9-1-(203)683-4669. This number will be answered by the C-E Security Force and is held in confidence at C-E. It is reserved strictly for utility activation of the C-E Nuclear Emergency Response Plan. If this fails see Step 6 below.

4. When the initial contact answers (Ray Mills or Security Supervisor), give him all information indicated on the C-E Nuclear Emergency Response Initial Notification "Emergency Information" form. He will be recording the information in a similar form. Be sure to indicate whether the message is for an EMERGENCY or a DRILL.

5. After the initial activation call, make sure the CALL BACK telephone numbers that were given to C-E off of the "Emergency Information" form are accessible and that personnel are available to provide C-E with updated information. This will enable C-E to initiate the appropriate emergency response. Attachment 2 explains the type of response that can be expected. If communication difficulties are expected, keep the line to C-E open. If this is the case instruct the C-E individual not to hang up the phone.

6. In the event that the emergency number in Step 3 is inoperable and the C-E Project Manager (Ray Mills) cannot be reached, contact one of the individuals on "CALL LIST I" (See attachment 3) or another C-E Project Manager listed on the "C-E PROJECT MANAGER CALL LIST" (See attachment 4).

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C-E NUCLEAR EMERGENCY RESPONSE
INITIAL NOTIFICATION

EMERGENCY INFORMATION

I. CALLER _____ TITLE _____

II. PLANT (Fort Calhoun) LOCATION (Blair, Nebraska)

III. CALL BACK NUMBERS (402) 536- _____

(Give two) (402) 536- _____

IV. Is this call for an EMERGENCY or a DRILL ? (Circle one)

V. What is the NOTIFICATION LEVEL? (Check one or more)

PHONE EXERCISE	( )	ALERT	( )
PRACTICE	( )	SITE EMERGENCY	( )
NOTIFICATION	( )	GENERAL EMERGENCY	( )

VI. What is the C-E RESPONSE to be? (Check one)

NONE	( )	CENTER ACTIVATION	( )
ALERT	( )	FULL RESPONSE	( )

VII. Is there additional EVENT DESCRIPTION? (Include dates and times)
You should give no more than one sentence at this time.

_____

_____

_____

VIII. READ THIS FORM BACK TO RECEIVER FOR VERIFICATION.

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C-E NUCLEAR EMERGENCY RESPONSE
INITIAL NOTIFICATION

EMERGENCY INFORMATION GLOSSARY

I. CALLER, TITLE - That employee of the utility who is authorized to activate the C-E Plan and stipulate the level of response that C-E is to provide.

V. NOTIFICATION LEVEL - An indication of the degree of seriousness for which the C-E Plan is being activated.

PHONE EXERCISE - A check of telephone operability.

PRACTICE - An emergency drill situation.

NOTIFICATION, ALERT, SITE EMERGENCY, GENERAL EMERGENCY - As defined in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".

VI. C-E RESPONSE - The C-E response action authorized by the utility.

NONE - No C-E action authorized.

ALERT - C-E to inform its Emergency Response Organization but no further action is authorized.

CENTER ACTIVATION - C-E to inform its Emergency Response Organization and assemble the Emergency Response Team at the Emergency Control Center. Further action would be specified by the utility.

FULL RESPONSE - C-E to provide Center Activation and in addition, bring all other Plan resources up to full alert. Further action would normally be specified by the utility, but C-E would be authorized to take prudent, independent action where timely utility approval could not be obtained.

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C-E NUCLEAR EMERGENCY RESPONSE
INITIAL NOTIFICATION

CALL LIST I

NOTE: If busy, have operator break in on call.

EMERGENCY or DRILL? (Circle one)

(203) 688-1911

NAME	C-E WORK EXTENSION	HOME PHONE
John Conant	3862/4362	(203) 653-7678
Ray Mills	4738	(203) 243-1070
Jonas Strimaitis	3654/4681	(203) 651-3601
Reid Wolf	5661/3762	(203) 688-4818
Fred Stern	3111/9541	(203) 232-6056

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C-E NUCLEAR EMERGENCY RESPONSE
INITIAL NOTIFICATION

C-E PROJECT MANAGER CALL LIST

NOTE: If busy, have operator break in on call.
EMERGENCY or DRILL? (Circle one)

UTILITY	PROJECT MANAGER	ASSISTANT PROJECT MANAGER
AP&L	T. A. JONES (TOM)	R. P. O'NEIL (RICH)
Home Tel.	(413)357-8764	(203)651-8855
Work Tel.	(203)688-1911 X3173	(203)688-1911 X3635
BG&E	P. W. KRUSE (PETE)	M. A. MICHELSEN (MARK)
Home Tel.	(203)658-9377	(203)749-9508
Weekends.	(203)739-9055	
Work Tel.	(203)688-1911 X2521	(203)688-1911 X2869
CPC	W. D. MEINERT (BILL)	J. E. DAVISON (JOHN)
Home Tel.	(203)688-0559	(203)688-9116
Work Tel.	(203)688-1911 X5594	(203)688-1911 X2868
FP&L	R. R. MILLS (RAY)	T. P. GATES (TOM)
Home Tel.	(203)243-1070	(413)357-6443
Work Tel.	(203)688-1911 X4738	(203)688-1911 X3613
MAINE YANKEE	R. C. JACQUES (RAY)	M. L. MARRIS (MARTY)
Home Tel.	(203)653-3538	(203)623-4113
Work Tel.	(203)688-1911 X5592	(203)688-1911 X3110
NEU	R. C. JACQUES (RAY)	A. R. KASPER (AL)
Home Tel.	(203)653-3538	(203)749-0809 or 872-3586
Work Tel.	(203)688-1911 X5592	(203)688-1911 X3741
OPPD	R. R. MILLS (RAY)	A. G. SCHOENBRUNN (AL)
Home Tel.	(203)243-1070	(203)658-0759
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