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AUTOMATED RECORD MANAGEMENT  
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AD45

**COMPUTER-BASED OFFSITE DOSE ASSESSMENT - AIRBORNE RELEASE**

**Revision Summary**

- 1) Revised Note 1 in Enclosure A to list monitors used to identify fission product radioactivity.
- 2) Added information in Note 3 in Enclosure A regarding valid IPCS indications.
- 3) Added step 11.a.1) a) in Enclosure C for calculating rapid dose projections based on current monitor readings.
- 4) Added new step 13.a in Enclosure C regarding met data from IPCS.
- 5) Made minor editorial changes throughout procedure. No revision bars used to identify these changes.

**Implementation Plan**

- 1) This procedure goes into effect upon issuance.

Attachments - None

**Enclosures**

- |   |        |   |
|---|--------|---|
| A | 040604 | Dose Assessment Initiation Flowchart    |
| B | 051303 | Operating Raddose-V in Automatic Mode   |
| C | 040604 | Operating Raddose-V in Manual Mode      |
| D | 040604 | Back Calculation Using Field Dose Rates |
| E | 051303 | Effluent Sample Analysis                |
| F | 051303 | Override Monitor Readings               |
| G | 051303 | Source Air Sample Analysis              |

<i>Information and Procedures</i>				
DSN EP-542	Revision 7	DCR # 04-0483	DTC TPEPT	File # 1703.10
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**CONTROLLED**

## 1.0 PURPOSE

To prescribe the method by which dose assessment personnel use a computer-based program to calculate offsite Total Effective Dose Equivalent (TEDE) and thyroid dose and dose rates resulting from an unplanned/abnormal airborne release.

## 2.0 USE REFERENCES

- 2.1 EP-101, Classification of Emergencies
- 2.2 EP-546, Calculation of Estimated Containment High Range Radiation Monitor or SGTS/AXM Monitor Readings if Instruments are Inoperable or Offscale
- 2.3 EP-547, Rapid Estimate of Core/Fuel Damage Based on Containment High Range Radiation Monitor
- 2.4 23.615, Integrated Plant Computer System (IPCS)

## 3.0 ENTRY CONDITIONS

- 3.1 Potential exists for an abnormal/unplanned release to the environment

or

- 3.2 Actual abnormal/unplanned release has occurred or is occurring through one of the plant effluent release pathways.

## 4.0 GENERAL INFORMATION

- 4.1 The Raddose-V dose assessment program interfaces with the Integrated Plant Computer System (IPCS) to obtain meteorological and radiation monitor data for calculating offsite dose and dose rates. The program's Automatic Mode serves as the primary method for performing dose calculations. The Manual Mode serves as an alternate/backup for performing dose assessment.
- 4.2 Airborne fission product radioactivity released in the plant is normally transported by the plant ventilation systems (e.g., SGTS, RB HVAC, etc.) to the environment and quantified by effluent radiation monitors. Due to accident/plant conditions, Radiation Protection personnel must consider and have surveys performed for the possibility of **unmonitored** releases.

- 4.3 Raddose-V features a "Control" User Mode associated with operating in the Automatic Mode. The user **must** select "Control" to operate in the Automatic Mode. The Automatic Mode is the only mode that retrieves IPCS data (i.e., Met and SPING/AXM data) automatically, prints dose reports every 15 minutes, and writes data files to the Integrated Plant Computer System (IPCS) as well as to the local PC terminal.
- 4.4 The Dose Assessor, responsible for dose assessment, **must** operate in the "Control" User Mode even if IPCS data is unavailable. Raddose-V in the "Control" User Mode indicates Fermi Summary Reports as the "Record Copy" and identifies the "Control" terminal.
- 4.5 Initiating Raddose-V in the "Independent" User Mode will automatically force Raddose-V to operate in the Manual Mode. This mode is used for any miscellaneous dose calculations and indicates Fermi Summary Reports as "For Information Use Only."
- 4.6 Raddose-V can be operated in the Manual Mode even if IPCS data is available to allow the user to run back-up (peer check) calculations or choose other methods (e.g., back calculate using field data) to calculate offsite dose/dose rates. If IPCS data is unavailable, the Dose Assessor **must** operate in the Manual operating mode and all Raddose-V inputs are entered manually.
- 4.7 Raddose-V defaults to a **four-hour** projection duration. This duration is consistent with the evacuation time estimate (for our 10-mile EPZ). The user can change the default projection duration if other projected dose durations are deemed necessary.
- 4.8 Raddose-V has seven Accident Types to choose from.

**NOTE:** Accident Type selection is determined by identifying the location(s) of the airborne fission product activity (source term) and the release pathway.

- LOCAC/LOCACP (LOCA/fission products in containment; pathway via SGTS): LOCACP is the potential projection model
- LOCAX (LOCA/fission products outside containment; pathway via SGTS)
- FHA (Fuel Handling Accident; pathway via SGTS)
- RXBLG (fission products in the Reactor Building; pathway via RB HVAC)
- TRBLG (fission products in the Turbine Building; pathway via TB HVAC)
- RWBLG (fission products in the Radwaste Building; pathway via RW HVAC)
- PCV (fission products in containment; pathway via SGTS Torus hardened pipe)

4.9 Source Type selection involves selecting one of three default Source Types or inputting an air sample isotopic analysis. The three default Source Types are:

- Coolant (use during LOCAs or release of fission products with **no** fuel damage)
- Gap (fuel/clad damage event; assumes 10% noble gases, 2% iodines)
- Core (fuel/core melt event; assumes 100% noble gases, 2% iodines)

4.9.1 Raddose-V and CHRRMs readings can be used to select default Source Types. "Override Monitor Readings" can be used from the NG Basis option (under "Potential Projection") to obtain the 100% (worst case) Source Type value for CHRRMs (Refer to Enclosure F).

4.9.2 EP-547, "Rapid Estimate of Core/Fuel Damage Based on Containment High Range Radiation Monitor," (Enclosures A and B) can be used to determine a 100% "Gap" or "Core Melt" CHRRM reading to assist in Source Type selection.

4.9.3 An air sample isotopic analysis (e.g., PASS atmospheric sample) can be used as the Source Type. The user enters sample results on a nuclide entry screen. This option is only available in the Manual operating mode (Refer to Enclosure G).

4.10 If using "Back Calculation Using Field Dose Rates" as the method of dose assessment, a minimum of one calculated time step using valid met and effluent monitor readings is required to reflect a release. This option is only available in the Manual operating mode (Refer to Enclosure D).

4.11 If an effluent sample isotopic analysis is to be used as the method of dose assessment, choose "Effluent Sample Analysis" under the NG Basis options. This option is only available in the Manual operating mode (Refer to Enclosure E).

## 5.0 IMMEDIATE ACTIONS

**NOTE:** Enclosure A, Dose Assessment Initiation Flowchart, provides guidance on plant conditions requiring initiation of dose assessment.

5.1 Initiate the Automatic Mode of the Raddose-V dose assessment program in accordance with Enclosure B.

5.2 If IPCS data is not available or another method of dose assessment is preferred, initiate the Manual Mode of Raddose-V in accordance with Enclosure C.

**6.0 PROCEDURE – None**

**7.0 FOLLOW-UP ACTIONS**

- 7.1 Continue to calculate TEDE and Adult Thyroid dose and dose rates until directed to terminate dose assessment.

**8.0 RECORDS**

- 8.1 All documentation generated as part of performing dose assessment should be reviewed by the Radiation Protection Advisor/Radiation Protection Coordinator then forwarded to the Supervisor, RERP, for retention.

**END OF TEXT**

### DOSE ASSESSMENT INITIATION FLOWCHART

**NOTE (1):** Monitors used to identify fission product radioactivity include but not limited to:

- Containment High Range Radiation Monitors (CHRRMs)
- Gaseous Effluent Monitors (SPINGs/AXMs)
- Area Radiation Monitors (ARMs)
- Offgas or MSIV radiation monitors
- Hand held instrumentation used by Onsite/Offsite RETs (may also verify an unmonitored release)

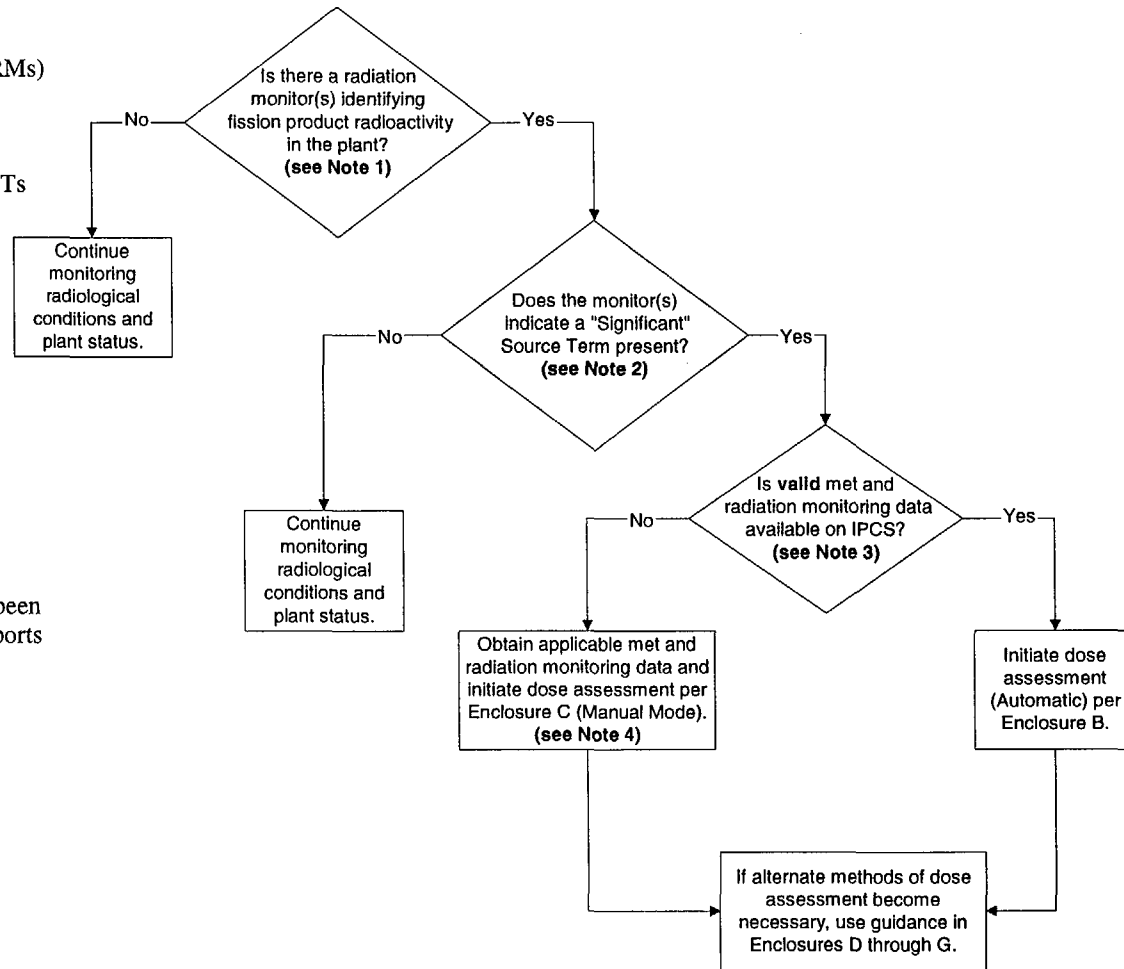
**NOTE (2):** "Significant" source terms may be indicated by:

- CHRRMS in alarm (>1000 R/hr) (EP-101, Tab F)
- SPING(s) on an operating HVAC system in alarm and reached/exceeded AU1 EAL SPING values (EP-101, Tab A)
- Declared "Loss (or Potential Loss) of Clad" (EP-101, Tab F)

**NOTE (3):** Valid refers to indications green ("good"), yellow (Hi alarm), or red (Hi Hi alarm) on IPCS or have been verified by other methods (e.g., control panel displays, reports from plant personnel, or radiological survey results).

**NOTE (4):** Obtain CHRRMS and/or SPING/AXM data via Control Room/Relay Room instrumentation. SPING readings can also be obtained directly at the individual units. Meteorological data may be obtained by:

- Using designated PC for dialing up/accessing the meteorological building data [Refer to 23.615, Integrated Plant Computer System (IPCS)]
- Accessing the RERP Intranet Weather page to obtain either the "Fermi II Local Weather" data or "Fermi 2 NGM MOS Forecast" data



## OPERATING RADDOSE-V IN AUTOMATIC MODE

1. Access an IPCS terminal that has Raddose-V.
2. From the IPCS terminal Windows desktop, click on the Raddose-V icon (i.e., radiation symbol icon).

**NOTE:** The user **MUST** chose "Control" User Mode to operate in the "Automatic Mode" and have a dose report print out automatically every 15 minutes.

3. From the "Initialization Options" screen, chose "Control" User Mode.
4. Select "Automatic Mode" for the Operating Mode.
5. Select "Accident" Run Mode for plant data or "Drill" to connect to the simulator computer.
6. Once selections are made, click OK.
7. Review the "Status Screen." This screen identifies your IPCS terminal, current selections, and latest "Control" Mode information.
  - a. To change User, Operating, or Run Mode(s), click "Change Selections."
  - b. To exit out of the Raddose-V program, click "Exit Raddose-V."
8. To continue initiating dose assessment, click "Proceed to Start-Up Menu."
9. *If continuing dose assessment* (i.e., taking over control or continuing a scenario already initiated), **GO TO** step 11.
10. *If initiating dose assessment*, **GO TO** step 12.
11. *To continue dose assessment*, click "Continue Previous Incident." The user receives a pop-up message warning you will be continuing with the data from the previous controller.
  - a. Click 'Yes' to continue or 'No' to return to "Start-up Menu" screen.
  - b. A "Continuation Data" screen will appear identifying previous information. After review, click OK. This will start Raddose-V running and display the "Automatic Mode Status Screen" which provides the "Summary of Operations."
  - c. **GO TO** step 13.



## OPERATING RADDOSE-V IN AUTOMATIC MODE

**NOTE:** A pop up message will warn the user that current Controller data will be overwritten if “Begin New Incident” is chosen.

12. *To initiate dose assessment*, click “Begin New Incident” on the “Start-Up Menu” screen and click ‘Yes’ on the pop-up warning message.

a. From the “Accident Scenario Definition” screen, enter:

**NOTE:** Release start time refers to time when airborne radioactivity was identified in the plant. It also is the scenario start time for “Operating” reactor scenarios.

1) Release Information (Release Start Date, Release Start Time)

2) Operator’s Initials

**NOTE:** If Reactor is not shutdown, Reactor Shutdown Date/Time becomes disabled (shaded out).

3) Reactor Information

4) Verify if Eastern Standard or Daylight Savings Time is correctly indicated.

5) Select Automatic Data Retrieval Parameters (see General Information steps 4.8 and 4.9 for selecting Accident Types and Source Types if necessary)

a) Select Accident Type.

b) Select Source Type.

- If an air sample result (e.g., PASS atmosphere sample) is to be used as the “Source Type”, exit out of the “Automatic Mode” and use “Manual Mode” per Enclosure C.

c) Select proper “Div.”

- If SGTS is the release pathway, click the appropriate “Div” circle indicator. Verify correct division via IPCS or contact the Control Room. “Div” is shaded out for non-SGTS pathways.

d) Verify projection period reflects *four* hours.

### OPERATING RADDOSE-V IN AUTOMATIC MODE

- e) Verify "Print Report" is checked (to receive automatic report every 15 minutes).
  - f) Verify all inputs on the "Accident Scenario Definition" screen then click OK.
  - g) This will start Raddose-V running and display the "Automatic Mode Status Screen" which provides the "Summary of Operations."
13. Review "Summary of Operations" section of the "Automatic Mode Status Screen" to verify Raddose-V is receiving data from IPCS.
14. Obtain and review Summary Reports (printed every 15 minutes) then forward to PAR decision-maker (e.g., Emergency Director, RPA, or RPC) for review.
- NOTE:** Minimizing the "Automatic Mode Status Screen" will enable the user to access/view multiple IPCS screens.
15. Continue reviewing radiation monitor readings and met data from IPCS.
16. To make changes to inputs on the "Accident Scenario Definition" screen (e.g., change "Operating" reactor to "Shutdown"):
- a. Click the "Quit Automatic Mode" button, then click 'Yes' on the pop-up box to display the "Main Menu" screen.
  - b. From the "Main Menu" screen click "Return to Start-Up Menu."
  - c. From the "Start-Up Menu" screen click "Return to Status Screen."
  - d. From the "Status Screen" click "Change Selections."
  - e. **GO TO** step 3 to re-initiate Raddose-V in "Automatic Mode."
17. If IPCS data (i.e., SPINGs/AXMs and/or met data) become unavailable, perform dose assessment in "Manual Mode" per Enclosure C.
18. If dose assessment is to be calculated with methods other than IPCS inputs (e.g., Back Calculation Using Field Data, Effluent Sample Analysis, Override Monitor Readings, etc.) perform dose assessment in "Manual Mode" per Enclosure C.
19. To terminate Raddose-V, click "Quit Automatic Mode," then click 'Yes' on the pop-up box.

### **OPERATING RADDLOSE-V IN AUTOMATIC MODE**

20. To exit Raddose-V:
  - a. From the "Main Menu" screen, click on "Return to Start-Up Menu."
  - b. From the "Start-Up Menu", click "Return to Status Screen."
  - c. From the "Status Screen", click "Exit Raddose-V."

### OPERATING RADDOSE-V IN MANUAL MODE

**NOTE:** The Manual Operating Mode is used to perform dose assessment whenever normal plant monitors are not available (i.e., Automatic Mode not available) or other calculational methods are preferred. For example, back calculations, source sample input, effluent sample analysis, monitor override (DBA), or direct entry, are all performed in the Manual Operating Mode.

1. Log onto Raddose-V by clicking the Raddose-V icon (radiation symbol icon).
2. From the "Initialization Options" screen, select "Control" User Mode if responsible for dose assessment. Otherwise, select "Independent" User Mode.
3. Select "Manual Mode" for the Operating Mode.
4. Select "Accident" Run Mode for plant data (or "Drill" to connect to the simulator computer).
5. Once selections are made, click OK.
6. Review the "Status Screen." This screen identifies your IPCS terminal, current selections, and latest "Control" Mode information.
  - a. To change User, Operating, or Run Mode(s), click "Change Selections."
  - b. To exit out of the Raddose-V program, click "Exit Raddose-V."
7. To continue initiating dose assessment, click "Proceed to Start-Up Menu."
8. *If continuing dose assessment* (i.e., continuing a scenario already initiated), **GO TO** step 10.
9. *If initiating dose assessment*, **GO TO** step 11.
10. *To continue dose assessment*, click "Continue Previous Incident." The user receives a pop-up message warning you will be continuing with the data from the previous controller.
  - a. Click 'Yes' to continue or 'No' to return to "Start-up Menu" screen.
  - b. A "Continuation Data" screen will appear identifying previous information. After review, click OK.
  - c. **GO TO** step 12.

## OPERATING RADDOSE-V IN MANUAL MODE

**NOTE:** If a previous scenario has been run in Raddose-V, a pop up message will warn the user that current Controller data will be overwritten (Control Mode) or previous data will be erased (Independent Mode) if "Begin New Incident" is chosen.

11. *To initiate dose assessment*, click "Begin New Incident" on the "Start-Up Menu" screen and click 'Yes' on the pop-up warning message.

a. From the "Accident Scenario Definition" screen, enter:

**NOTE:** Release start time refers to time when airborne radioactivity was identified in the plant. It is also the scenario start time for "Operating" reactor scenarios.

1) Release Information (Release Start Date, Release Start Time)

a) To calculate a rapid dose projection based on a current monitor reading, subtract 15 minutes from the monitor time (i.e., the time the monitor reading was taken) and use this time as the "Release Start Time."

2) Operator's Initials

**NOTE:** If Reactor is not shutdown, Reactor Shutdown Date/Time becomes disabled (shaded out).

3) Reactor Information

4) Verify if Eastern Standard or Daylight Savings Time is correctly indicated.

**NOTE:** In the "Manual" and "Independent" Modes, "Automatic Data Retrieval Parameters" is disabled (shaded out) on the "Accident Scenario Definition" screen.

b. Click OK once all data is entered and verified correct.

12. From the "Main Menu" screen, click "Enter/Edit Meteorological Data" box.

a. If met data is not available from IPCS, a pop-up box will direct user to enter data manually. Click OK.

### OPERATING RADDOSE-V IN MANUAL MODE

13. Enter wind speed (10 meter), wind direction (10 meter, Direction From) Stability Class and Precipitation.
  - a. If obtaining met data from IPCS, use the 15 minute rolling average values for 10 meter wind speed and direction. If 10 meter data is unavailable or not valid, use 15 minute rolling average values for 60 meter wind speed and direction.
  - b. Ensure met data is "entered" into the program by depressing the "enter" keyboard button.
  - c. If multiple met data steps are needed for this scenario, use the "Add New Step" button to continue inputting data.
  - d. Once met data is filled in and self-checked, click OK.
14. Click the "Enter/Edit Source Term Data" box.
  - a. If source term data is available from IPCS, a pop-up box will direct user to enter data manually. Click OK.
15. From the "Source Term Data Input" screen, verify Pathway 1 tab is selected then select the "Accident Type".
  - a. Follow the directions on the bottom of the screen to display drop down boxes.
16. Chose applicable "Accident Type" based on location of airborne activity and release pathway.
17. Chose applicable "Source Type."
  - a. If an air sample nuclide analysis is available to represent the source term, click "SRC SAMP" and enter the isotopic results (Refer to Enclosure G).

### OPERATING RADDOSE-V IN MANUAL MODE

18. Chose the appropriate "NG Basis."

**NOTE:** If Potential Projections (LOCAC Accident Type) are the only dose assessment results applicable due to no release in progress and/or SPINGs/AXMs inoperable, the user may insert a small effluent monitor value (i.e., 1E-10) or select another "NG Basis" method.

- a. This menu provides options to manually input radiation monitor values or chose the following other methods to calculate offsite dose/dose rates:
- Back Calculate (uses field team dose rate data) (Refer to Enclosure D)
  - Effluent Sample Analysis (e.g., isotopic analysis results from PASS or AXM samples) (Refer to Enclosure E)
  - Override Monitor Readings (this option enters the Design Base Accident/worst case values) (Refer to Enclosure F)
  - Direct Entry (if release rates are known, they can be entered directly)
- b. If running a LOCA in containment scenario, the user will be prompted to enter applicable data in the "Potential Projection" tab.

**NOTE:** The "Total of Pathways 1 and 2" tab reflects the sum of pathways 1 and 2 release rates.

- c. If the user is modeling two release pathways simultaneously, fill in applicable data in the "Pathway 2" tab.

19. Once all Source Term data is entered and self-checked, click OK.

20. From the Main Menu screen, click "Perform Calculations."

- a. The user receives a pop-up message confirming the projection calculation will use met/source term data for the corresponding step. Click OK.

**NOTE:** If multiple steps were added to the met and source term data tables, the user can click "Continue Calculations" to run each data step. Once the last step is calculated, from the "Output Menu" screen click on "Go to Report Menu" to view results.

21. From the "Output Menu" screen, click on "Go to Report Menu."

### OPERATING RADDOSE-V IN MANUAL MODE

22. From the "Report Options Menu" screen, click on "View Summary Report" to review dose assessment results.
  - a. Click on the appropriate tab to review projection results. Real time results reflect dose data during the current time step only.
  - b. Multiple data screens (e.g., Inputs Summary, Grid Point, etc.) are available by clicking bottom screen tabs.
  - c. Click "Done" to exit out of "Fermi Summary Report" screen.
23. To print reports and/or maps, click on "Print Reports and Maps" box.
  - a. Check items to be printed then click OK.
24. To review plume maps and/or multiple data screens, go to the "Output Menu" screen.
25. To continue further calculations, return to the "Main Menu" screen to enter new meteorological and source term data or modify method of calculations (e.g., changing NG Basis).
26. Further options from the "Main Menu" screen include:
  - a. Perform Forecast (click here to change projection duration in hours)
  - b. Change current Shutdown Date/Time
  - c. Resume Automatic Operating Mode (disabled unless user was previously in "Automatic Mode" in this scenario run)
27. To exit Raddose-V:
  - a. Return to "Start-Up Menu" screen.
  - b. Proceed to the "Status Screen."
  - c. Click on Exit Raddose-V."



## BACK CALCULATION USING FIELD DOSE RATES

The **Back Calculation Using Field Dose Rates** option can be used whenever a confirmed release is in progress and offsite field dose rates (from Offsite RETs) become available. This method may serve as a good comparison to normal dose assessment calculation using in-plant radiation monitors. This method should be used whenever an unmonitored release has been confirmed and/or in-plant monitor readings are suspect or become unreliable.

**NOTE:** This option requires that plume data be calculated before performing a "back" calculation. Prior to using this option, valid inputs for both met and effluent radiation monitor data is required and prior time steps must be calculated (i.e., "Perform Calculations" from the Main Menu options).

To perform dose assessment using the Back Calculate option, perform the following:

1. If valid effluent radiation monitor data is not available for initial time steps, implement EP-546, "Calculation of Estimated Containment High Range Radiation Monitor or SGTS/AXM Monitor Readings if Instruments are Inoperable or Offscale."
2. Select Back Calculate from the "NG Basis" drop down menu.
3. Enter on the Back Calculation of Release Rate pop-up screen the following:
  - a. The 3 foot gamma (closed window) dose rate
  - b. The "Emergency Survey Point Identifier" if applicable or keep as "none." If a survey point is selected, the distance and bearing will be filled in; therefore, **GO TO** step 4.
  - c. Distance (in miles) the dose rate was measured

**NOTE:** The "bearing" is the physical location of the measurement with 0/360 degrees being north of the plant. Example of a bearing of 270 degrees would be west of the plant in sector N.

  - d. Bearing (in degrees) the dose rate was measured
4. Once all data is entered and self-checked, click OK.
5. Return to Enclosure C, step 18 to continue Manual Mode operations.

### EFFLUENT SAMPLE ANALYSIS

The **Effluent Sample Analysis** option can be used whenever a confirmed release is in progress and an actual effluent sample is obtained and analyzed for isotopic composition.

Effluent sample analyses represent an actual mix of isotopes being released. This option also serves as a correction for limitations relating to effluent radiation monitors. Effluent samples can be obtained from normal release pathways (i.e. HVAC systems) via SPING samples. During severe accident conditions, AXM samples may be obtained and analyzed. Effluent isotopic data will then be used to calculate the release rates in-lieu of effluent radiation monitor readings. Effluent sample analysis currently entered into Raddose-V can be carried forward into future time steps. Once entered in the NG Basis, the program continues to use this data and decay correct the isotopes until another NG Basis is selected.

To perform dose assessment using the Effluent Sample Analysis option, perform the following:

1. Select Effluent Sample Analysis from the "NG Basis" drop down menu.
2. Enter Effluent concentrations (in uCi/cc).
  - a. Once concentrations are entered and self-checked, click OK.
3. Return to Enclosure C, step 18 to continue Manual Mode operations.

## OVERRIDE MONITOR READINGS

The **Override Monitor Reading** option provides a method to calculate Design Base Accident (DBA) or worst case release rates. This method also calculates a 100% source term monitor reading taking time after reactor shut down into account. This option can be used to assist in Source Type selection by comparing the actual current CHRRM reading to the "Override" calculated CHRRM reading. Based on this, the LOCAC Accident Type is the only Accident Type applicable due to the only Accident Type utilizing CHRRMs.

To select a Source Type using the Override Monitor Reading option, perform the following:

1. Ensure the LOCAC Accident type is selected.
2. Select the "Coolant" Source Type or "Gap" Source Type if fuel damage has occurred.
3. Under "Potential Projection," select Override Monitor Reading from the "NG Basis" drop down menu.
4. Verify calculated Release Rates (i.e. NG, Iodine, and Particulate) are filled in (on the "Source Term Data Input" screen).
5. Once release rates are entered and self-checked, click OK.
6. Click on "Perform Calculations."
7. Click on "Go to Report Menu."
8. Click on "View Summary Report."
9. Under the "Potential Projection" report, obtain the "Override CHRRM Monitor Reading.
10. If the actual current CHRRM monitor reading is higher than the "Override Monitor" reading, advance to the next higher Source Type. For example, if the current CHRRM reading is 45,000 R/hr and the "Override Monitor" CHRRM reading is 40,000 R/hr (for a Gap Source Type), then advance to the Core Melt Source Type.
11. If the actual current CHRRM monitor reading is not higher than the "Override Monitor" reading, continue with the currently selected Source Type.
12. Continue to monitor CHRRM readings. If CHRRM readings are elevating, this may prompt a Source Type change.

### SOURCE AIR SAMPLE ANALYSIS

The **Source Air Sample (SRC SAMP)** option can be used whenever airborne fission products are present in the plant and an actual effluent air sample is obtained and analyzed for isotopic composition.

These air samples represent an actual mix of isotopes being present, therefore, can be used to calculate release rates in-lieu of default Source Types (i.e. Coolant, Gap, and Core Melt). Source air samples are directly related to the building in which they are obtained. For example, the source air sample for the LOCAC Accident Type is a Primary Containment (PASS) atmosphere sample. Each Accident Type (except Fuel Handling Accident) has a corresponding source air sample based on the building it represents. The air sample analysis screen requires a Sample Time (defaults to previous time step). The user must enter the date/time the sample was taken. This enables Raddose-V to decay corrects the isotopes.

To perform dose assessment using the SRC SAMP option, perform the following:

1. Select SRC SAMP from the Source Type drop down menu.
2. Enter airborne isotopic concentrations (in uCi/cc).
3. Enter date and time when sample was obtained.

**NOTE:** Raddose-V generates a pop-up message box asking the user if the isotopic mix will be used in subsequent time steps. If yes, the isotopic mix is carried forward and decay corrected. If no, the user will need to select new source term data inputs on the next time step.

- a. Once concentrations and sample date and time are entered and self-checked, click OK.
4. Return to Enclosure C, step 18 to continue Manual Mode operations.

**END**