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THE FOLLOWING CHANGES HAVE OCCURRED TO THE HARDCOPY OR ELECTRONIC MANUAL ASSIGNED TO YOU:

130 - 130 - HP II DOSE CALCULATOR: EMERGENCY PLAN-POSITION SPECIFIC PROCEDURE

REMOVE MANUAL TABLE OF CONTENTS DATE: 08/08/2002

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CATEGORY: PROCEDURES TYPE: EP
ID: EP-PS-130
REPLACE: REV:14

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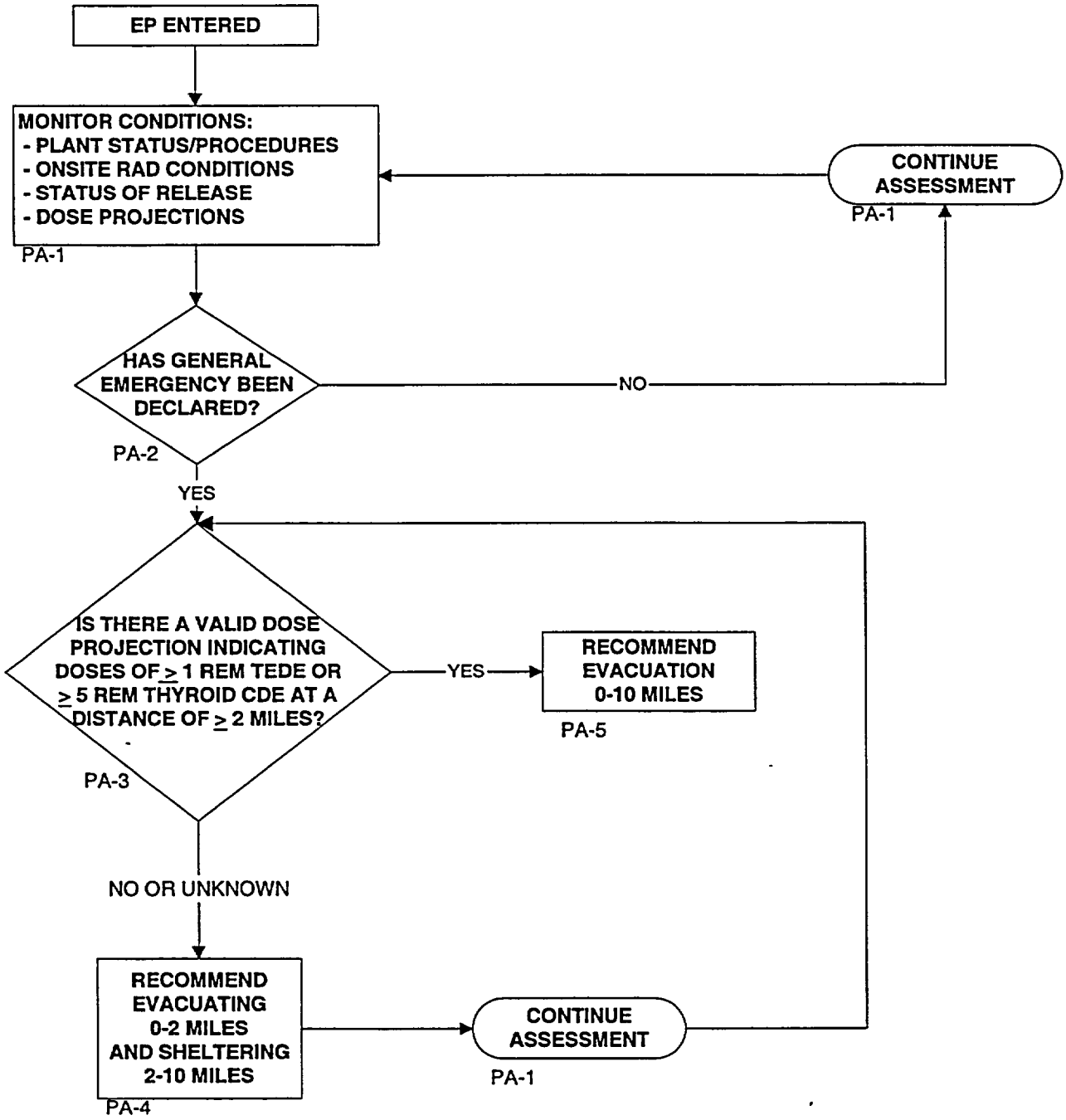
AYCLS

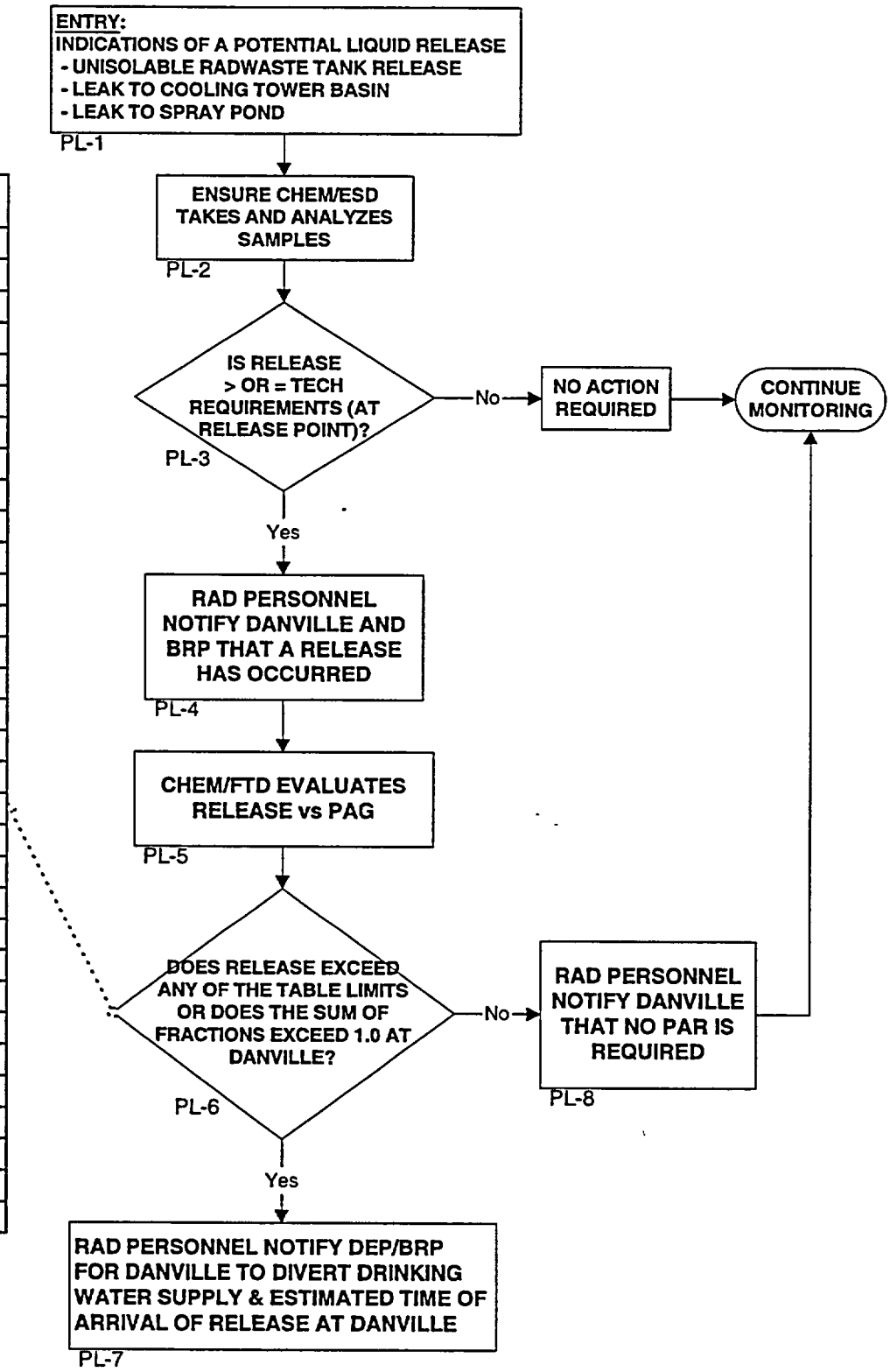
PAR AIRBORNE RELEASES



NOTES
1. PA-# CAN BE USED TO REFER TO SECTION 4.1 OF THE PROCEDURE FOR MORE DETAILED INFORMATION ON THE ACTION TO BE TAKEN.
2. DOSE PROJECTIONS DO NOT INCLUDE DOSE ALREADY RECEIVED.
3. TEDE - WHOLE BODY (TEDE) IS THE SUM OF EFFECTIVE DOSE EQUIVALENT RESULTING FROM EXPOSURE TO EXTERNAL SOURCES. THE COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE) FROM ALL SIGNIFICANT INHALATION PATHWAYS AND THE DOSE DUE TO GROUND DEPOSITION.
4. CDE - COMMITTED DOSE EQUIVALENT TO THE CHILD THYROID.

PAR LIQUID RELEASES

RADIONUCLIDE	Isotopic Limit (uCi/ml)
Ag-110m	$1.1E^{-6}$
As-76	$7.2E^{-7}$
Ba-140	$1.1E^{-6}$
Ce-141	$3.6E^{-6}$
Co-58	$1.1E^{-4}$
Co-60	$1.2E^{-6}$
Cr-51	$7.2E^{-5}$
Cs-134	$2.4E^{-4}$
Cs-137	$2.4E^{-6}$
Fe-55	$2.4E^{-5}$
Fe-59	$2.4E^{-6}$
H-3	$2.4E^{-4}$
I-129	$1.2E^{-8}$
I-131	$3.6E^{-8}$
La-140	$7.2E^{-7}$
Mn-54	$3.6E^{-6}$
Mo-99	$7.2E^{-6}$
Na-22	$4.8E^{-6}$
Nb-95	$3.6E^{-6}$
Ni-59	$3.6E^{-6}$
Ni-63	$6.0E^{-7}$
P-32	$3.6E^{-7}$
Ru-103	$2.4E^{-6}$
Ru-106	$3.6E^{-7}$
Sb-124	$7.2E^{-7}$
Sb-125	$3.6E^{-6}$
Sr-89	$2.4E^{-7}$
Sr-90	$9.6E^{-8}$
Tc-99m	$1.1E^{-5}$
Y-90	$7.2E^{-7}$
Zn-65	$3.6E^{-6}$
Zr-95	$2.4E^{-6}$



NOTES:
1. PL-# CAN BE USED TO REFER TO SECTION 4.2 OF THE PROCEDURE FOR MORE DETAILED INFORMATION ON THE ACTION TO BE TAKEN.
2. CALLS TO DANVILLE ARE COURTESY INFORMATION CALLS ONLY. PROTECTIVE ACTION RECOMMENDATION CALLS MUST BE MADE BY DEP/BRP.

PUBLIC PROTECTIVE ACTION RECOMMENDATION GUIDE

AIRBORNE RELEASES

☐ PA-1 MONITOR CONDITIONS FOR PAR APPLICATION

The following conditions should be continuously evaluated to determine if a PAR should be implemented or changed:

- Plant status and prognosis for changes in conditions
- Onsite radiological conditions
- Status of actual or potential radioactive releases
- Offsite dose projections or actual offsite radiological conditions
- Escalation in Emergency Classification (i.e., General)

(Go to PA-2)

PA-2 HAS A GENERAL EMERGENCY BEEN DECLARED?

☐ **YES** - If a GENERAL EMERGENCY has been declared, a PAR must be made within 15 minutes of the emergency declaration. The PAR requirement is found in NUREG-0654. **(Go to PA-3)**

☐ **NO** - If a GENERAL EMERGENCY has not been declared, continue to monitor plant status, parameter trends, and prognosis for termination or escalation of the event. **(Go to PA-1)**

PA-3 IS THERE A VALID DOSE PROJECTION INDICATING DOSES OF ≥ 1 REM TEDE OR ≥ 5 REM CDE CHILD THYROID AT A DISTANCE OF > 2 MILES?

☐ **YES** – If the projected doses at 2 miles are ≥ 1 REM TEDE or ≥ 5 REM CDE child thyroid, then full evacuation (0-10 miles) is recommended.

(Go to PA-5)

☐ **NO/UNKNOWN – (Go to PA-4)**

☐ PA-4 RECOMMEND EVACUATION 0-2 MILES; SHELTER 2-10 MILES

Limited Evacuation (0-2 miles) and sheltering is appropriate for events that are significant enough to cause a General Emergency classification and dose projections are low, unknown, or below full evacuation guidelines.

☐ PA-5 EVACUATE 0-10 MILES

Full evacuation of members of the general public is recommended at this point based on the emergency classification and dose projections.

LIQUID

☐ PL-1 ENTRY

This section is entered when there are indications of a potential radioactive liquid release.

Indications of potential releases include:

- an unisolable radwaste tank release.
- leaks to cooling tower basin
- leak to spray pond

(Go to PL-2)

☐ PL-2 CHEMISTRY/ENVIRONMENTAL SAMPLING DIRECTOR (ESD) TAKES AND ANALYZES SAMPLE

(Go to PL-3)

PL-3 IS RELEASE ≥ TECHNICAL REQUIREMENTS LIMITS (AT THE RELEASE POINT)?

☐ **YES** - Releases are at or greater than Technical Requirements limits when Chemistry determines that the limits are exceeded based on methodologies described in the ODCM and applicable Chemistry procedures.

☐ **NO** - If the release is < Technical Requirements limits, then no notifications are required and monitoring should continue.

(Go to PL-4)

☐ PL-4 RAD PERSONNEL NOTIFY DANVILLE AND BRP THAT A RELEASE HAS OCCURRED

Depending on which facility is activated, the notification to Danville and BRP will be made by the RPC (TSC) or the Radiological Liaison (EOF).

DO NOT MAKE ANY PROTECTIVE ACTIONS RECOMMENDATIONS AT THIS TIME.

☐ PL-5 CHEM/FTD EVALUATES RELEASE VERSUS PAGs

The results of the sample analysis are compared to the PAGs for radionuclides in drinking water. The analysis calculates the expected concentration at Danville, taking into account the dilution afforded by the river.

PL-6 DOES RELEASE EXCEED PAGs (AT DANVILLE)?

☐ **YES** - If a single isotope exceeds the PAG or the sum of the fractions exceeds 1.0, then a protective action recommendation should be made for Danville to **DIVERT** its **DRINKING WATER** supply to a backup supply until the release has passed.

(Go to PL-7)

☐ **NO** - If the PAGs are not exceeded, monitoring should continue and the State should be notified that no PAR for the liquid release is required. **(Go to PL-8)**

☐ PL-7 RAD PERSONNEL NOTIFY DEP/BRP OF PAR

Depending on which facility is activated, the PAR notification to DEP/BRP will be made by the RPC (TSC) or the Radiological Liaison (EOF). **The PAR FORM shall be used to document the PAR.**

DO NOT COMMUNICATE THE PROTECTIVE ACTION RECOMMENDATION TO DANVILLE. THE DEP/BRP IS RESPONSIBLE FOR THIS COMMUNICATION.

☐ PL-8 RAD PERSONNEL NOTIFY DEP/BRP

No PAR is required. Depending on which facility is activated, the RPC (TSC) or the Radiological Liaison (EOF) shall notify DEP/BRP that no PAR is required.

MIDAS OPERATING PROCEDURE

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A. INTRODUCTION/SYSTEM STARTUP

1. The following conventions are used in this procedure to describe computer operations:

   a. Bold, upper case text (i.e., **CURRENT DATE**), denotes text which appears on the screen.

   b. Underlined, uppercase text (i.e., **LOGIN**) denotes text to be typed.

   c. Bracketed, upper case text (i.e., **[ENTER]**), denotes special keys which are to be pressed.

   d. Most mouse selections can be made with a single click.

      - Single click **RESET** to cancel previous screen selections.
      - Double click **RESET** to back out of present menu.
      - Double click to **EXIT** menu.

2. The met and vent spreadsheet will appear with all of the meteorological and ventilation release rate parameters across the top of the page. The current time period is highlighted in the left-hand column. The first time interval is 2 hours before the current time and the last time interval is 16 hours after the current time.

3. All required meteorological and ventilation data for MIDAS can be obtained using the MET/VENT DATA ACQUISITION OPTIONS tab.

4. To start MIDAS:

   a. Turn ON each component (monitor, computer, and printer) of the computer system on which MIDAS is loaded.

   b. At the MIDAS logon screen, enter the password **MIDAS** and **[ENTER]**.

   c. At the MIDAS MAIN MENU screen, select A: MIDAS (Dose Calculator) and **[ENTER]**.

   d. The system will then display the **CURRENT DATE**.. If the date is correct, press **[ENTER]**. If this date is incorrect, type the correct date using the format which is illustrated in the prompt and press **[ENTER]**.

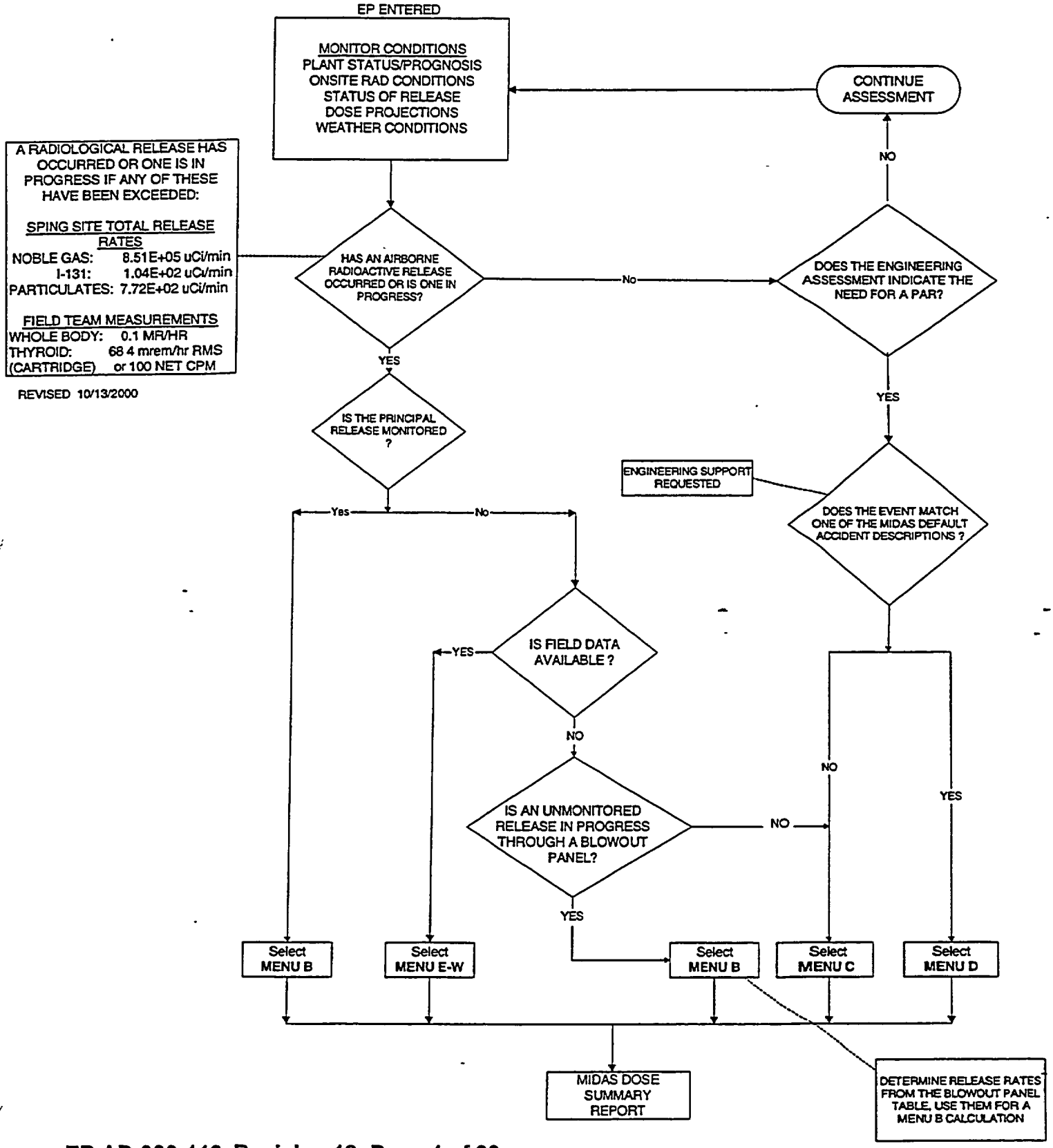
   e. The system will then display the **CURRENT TIME**, which is stored in the computer system's clock (24-hour clock format). If the time is correct, press **[ENTER]**. If this time is incorrect, type the correct time using the format which is illustrated in the prompt and press **[ENTER]**.

f. The MIDAS logon screen will now appear for 20 seconds.

g. The **ACCIDENT MENU SELECTION** screen will appear. Use the AIRBORNE DOSE ASSESSMENT FLOWCHART to select the appropriate calculation option and **CONFIRM** your selection.

5. To exit MIDAS, double-click **EXIT** on each menu screen that appears. At the **SECURITY MENU**, press [F8] to log off.

AIRBORNE DOSE ASSESSMENT FLOW CHART



EVALUATION OF UNMONITORED RELEASES FROM STATION BLOWOUT PANELS

DIRECTIONS

1. Select the appropriate station blowout panel location.
2. Select an appropriate accident source term mix.
3. Use the corresponding design base release rates for input into MENU B.
4. Enter the release rates for one (1) fifteen-minute time period.

NOTE: If Clad Failure or Fuel Melt mixes are selected, multiply the site total noble gas, I-131, and particulate release rates by the appropriate fraction of clad failure or fuel melt prior to entering the values onto the vent spreadsheet (e.g., the multiplier for 50% FUEL MELT would be 0.5).

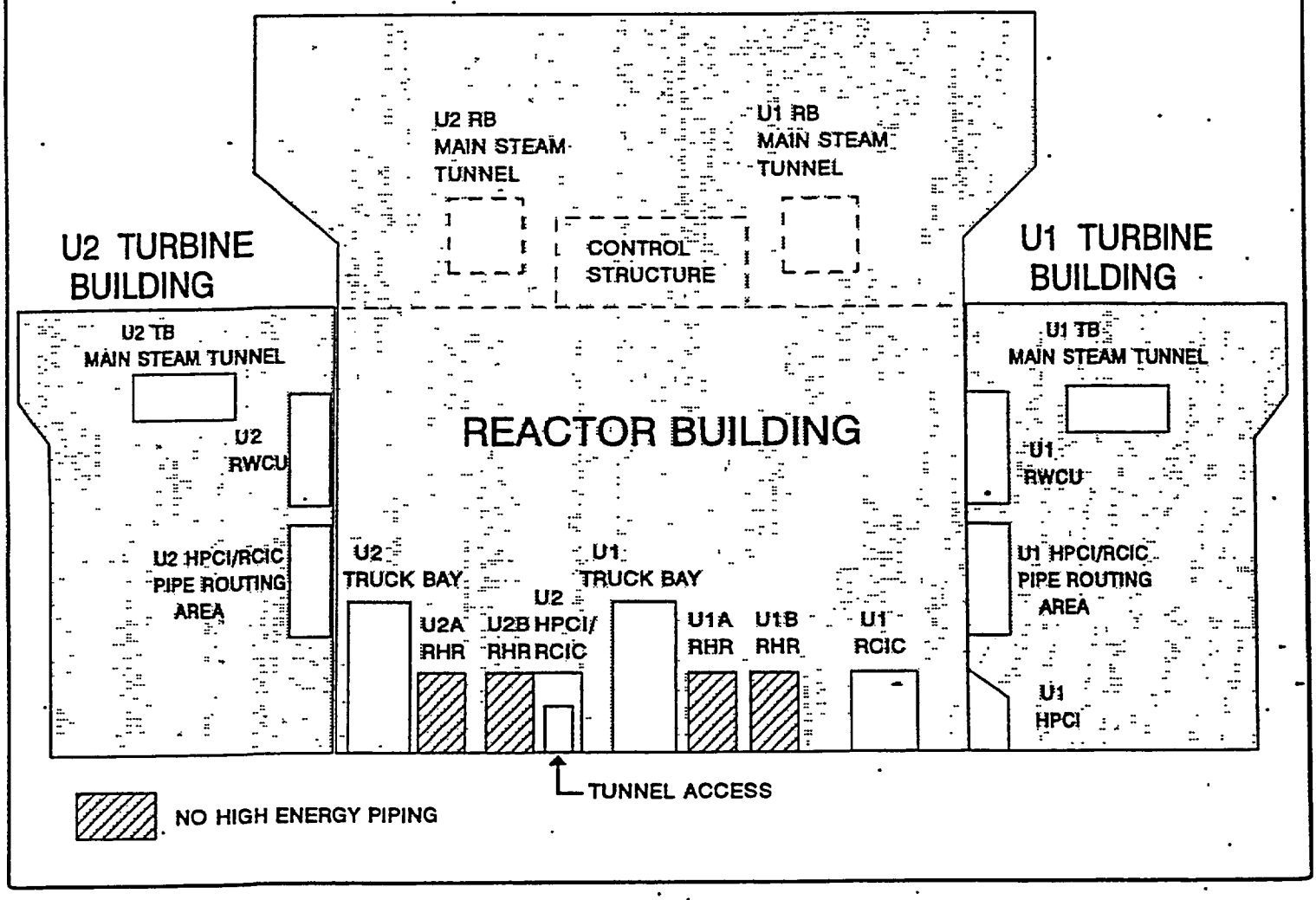
[1] BLOWOUT PANEL LOCATION	[3] DESIGN BASIS (SITE TOTAL) RELEASE RATES		
	NOBLE GAS	I-131	PARTICULATE
RCIC PUMP ROOM	(µCi/min)	(µCi/min)	(µCi/min)
[2] ACCIDENT SOURCE TERM			
Normal Reactor Coolant Activity	1.2E+02*	1.8E+02	1.1E+03
(LOCA) Reactor Depressurization-No FD	2.6E+06	8.4E+04	2.2E+04
(LOCA) 100% Clad Failure	2.1E+09	2.4E+08	9.1E+07
(LOCA) 100% Fuel Melt	4.3E+10	1.3E+09	1.7E+09
HPCI PUMP ROOM	(µCi/min)	(µCi/min)	(µCi/min)
Normal Reactor Coolant Activity	2.1E+03*	3.2E+03	1.9E+04
(LOCA) Reactor Depressurization-No FD	4.6E+07	1.5E+06	3.8E+05
(LOCA) 100% Clad Failure	3.7E+10	4.3E+09	1.6E+09
(LOCA) 100% Fuel Melt	7.5E+11	2.3E+10	3.0E+10
HPCI/RCIC ROUTING AREA	(µCi/min)	(µCi/min)	(µCi/min)
Normal Reactor Coolant Activity	3 2E+03*	4.9E+03	2.9E+04
(LOCA) Reactor Depressurization-No FD	7.0E+07	2.2E+06	5.8E+05
(LOCA) 100% Clad Failure	5.7E+10	6.5E+09	2.4E+09
(LOCA) 100% Fuel Melt	1.1E+12	3.5E+10	4.6E+10
RWCU PENETRATION ROOM	(µCi/min)	(µCi/min)	(µCi/min)
Normal Reactor Coolant Activity	7.3E+03*	5.8E+03	6.6E+04
(LOCA) Reactor Depressurization-No FD	1.6E+08	2.6E+06	1.3E+06
(LOCA) 100% Clad Failure	1.3E+11	7.6E+09	5.5E+09
(LOCA) 100% Fuel Melt	2.6E+12	4.1E+10	1.0E+11
RB/TB MAIN STEAM TUNNEL	(µCi/min)	(µCi/min)	(µCi/min)
Normal Reactor Coolant Activity	2.6E+04*	3.9E+04	2.3E+05
(LOCA) Reactor Depressurization-No FD	5.6E+08	1.8E+07	4.7E+06
(LOCA) 100% Clad Failure	4.6E+11	5.2E+10	1.9E+10
(LOCA) 100% Fuel Melt	9.1E+12	2.8E+11	3.7E+11

FD = FUEL DAMAGE

* Value less than that defining a release (See previous page).

REFERENCE: EC-RADN-1018, Evaluation of Unmonitored Releases from Station Blowout Panels, Revision 2, File R2-1.

SSES BLOWOUT PANEL LOCATIONS



B. MENU B: FORWARD CALCULATIONS

REQUIRED INPUTS

ENGINEERING OR OPERATIONS SUPPORT IS REQUESTED FOR THESE CALCULATIONS.

PLANT CONDITIONS

- TIME OF REACTOR SHUTDOWN
- RELEASE START TIME
- DURATION OF RELEASE
- PROJECTION TIME
- ACCIDENT SOURCE TERM SELECTION

MET DATA

- 10 M WIND SPEED
- 10 M WIND DIRECTION
- STABILITY CLASS
- PRECIPITATION RATE

VENT DATA

- SITE TOTAL NOBLE GAS RELEASE RATES
- SITE TOTAL I-131 RELEASE RATES
- SITE TOTAL PARTICULATE RELEASE RATES

1. The **MET/VENT DATA CONTROL TABLE** screen will appear.

   a. Select **START NEW SCENARIO** and then **CONFIRM**, **OR**

   b. If you have already initiated calculations and wish to modify either the existing met spreadsheet file or vent spreadsheet, select **CURRENT SCENARIO EDIT** and **CONFIRM**.

   c. Other options are available in the lower right hand section of the display if you wish to **RESET** or change your initial selection or **EXIT** the screen.

2. The **METEOROLOGICAL DATA** spreadsheet will appear with all of the required meteorological parameters across the top of the page. Place the cursor on the data period corresponding to the start of release. Input the following met data:

NOTE 1: If the met data remains the same for successive time periods, the operator need only enter the met data once. MIDAS will persist the data to future time periods automatically.

NOTE 2: Any time historical data is being used in MIDAS (i.e., met and vent data entered into the spreadsheets within the two-hour period up to and including the current time), all met and vent data must be manually entered over all affected time periods up to and including the current time.

If a value is to be repeated in a field it can still be manually copied down the spreadsheet using the **K** (copy last) key while that value is highlighted.

a. In the column labeled **10M SPD**, enter the wind speed from the 10 meter onsite (primary) meteorological tower in MILES PER HOUR (MPH).

NOTE 1: If the primary meteorological tower data is not available, refer to the Met Vent Data Acquisition Options tab for other options.

b. In the column labeled **10M WD**, enter the wind direction from the 10-meter onsite (primary) meteorological tower in DEGREES FROM (DEG FM).

c. In the column labeled **STAB CLS**, enter the actual value for ΔT in DEGREES CENTIGRADE (preferred method) or the wind speed corrected stability class (Letter Code) if the primary tower data is not available. MIDAS will convert the letter entry to a numerical value.

d. In the column labeled **RAIN-LMH**, enter the precipitation rate in INCHES PER 15 MINUTES (IN/15M). Divide the PICSY precipitation rate (inches/hr) by 4. If the precipitation rate is not available, estimation may be made by using the following table:

NO PRECIPITATION	**0(zero)**
DRIZZLE or MIST	**LIGHT**
STEADY RAIN	**MEDIUM**
HEAVY DOWNPOUR	**HEAVY**

e. Type **X** when all data has been entered to save the data and exit out of the meteorological spreadsheet.

3. A **WEATHER SELECTION** screen will appear if any of the meteorological data inputs are missing from the spreadsheet.

a. If this screen appears, select **RESET** until you have returned to the **MET/VENT DATA CONTROL TABLE** screen.

b. Select **CURRENT SCENARIO EDIT** and enter any missing meteorological values on the spreadsheet.

c. Type X when all data has been entered to save the data and exit out of the meteorological spreadsheet.

4. The vent (GASEOUS VENT AND FLOW) spreadsheet will appear next. Enter vent data from the **START OF RELEASE**. The data entry for each 15-minute period is as follows:

NOTE: Vent data may be entered in a regular numerical presentation (10000) or in scientific notation (1.0E+04).

a. In the column labeled **TOT NG RELEASE**, enter the site total noble gas release rate in μCi/min.

b. In the column labeled **TOT I-131 RELEASE**, enter the site total I-131 release rate in μCi/min.

c. In the column labeled **TOT P RELEASE**, enter the site total particulate release rate in μCi/min.

d. When the data entry is complete, press the X key to save the information and exit the spreadsheet.

5. From the **ACCIDENT SOURCE TERM SELECTION** screen, select an appropriate accident source term, then **CONFIRM**. Select **RESET** if you wish to change your previous selection.

If no specific information on the type of release is available from Engineering, use the following as a guide in the selection of an appropriate accident source term.

a. Obtain Reactor Power from Engineering, Operations or as follows:

1. From PICSY, select Unit #1 or Unit #2 formats to view affected unit
2. Type STA and press **[ENTER]**
3. "Reactor Power" is in the top left section
4. Click on **MET VENT** to return to the Met/Vent data display

b. If the reactor is operating at or greater than 10% power, select the **ATWS** source term.

c. If reactor power is at less than 10%, select the **LOCA (Clad Failure)** source term.

d. If conditions indicate a fuel handling incident and a release from the refueling floor (Reactor Building floor 818'), select **Fuel Handling Accident**.

6. The **RELEASE TIMING SELECTION** screen will appear next. There are three lines to the screen.

   a. On Line 1, select **TRIP DATE** (date and time of reactor trip). Using the calendar wheel, enter the appropriate date and time of reactor trip. **CONFIRM** to close the calendar wheel.

      1) The time of reactor trip must be equal to or earlier than the **START OF RELEASE**.

      2) The time of reactor trip can be set up to roughly one year (8,190 hours) prior to the **START OF RELEASE**.

      NOTE 1: .MIDAS assumes the reactor must be shutdown before a release can occur. The **TRIP DATE** triggers the start of decay for the accident mix.

      NOTE 2: Even during an **ATWS**, where a release is in progress and the reactor has not shut down, a **TRIP DATE** must be entered to run MIDAS. It is recommended the same date and time for the **START OF RELEASE** be used for the **TRIP DATE.** Entering a date and time for reactor trip has no impact on decay of the **ATWS** mix.

   b. On Line 2, select **START OF RELEASE DATE.** Using the calendar wheel, enter the appropriate date and time of the start of release. **CONFIRM** to close the calendar wheel.

      NOTE: The **START OF RELEASE** is defined as the date and time of the first vent data entry. This time range includes the two-hour period prior to and including the current time.

   c. On Line 3, select **REMAINING DURATION of the release**. Using the NUMPAD enter the duration of release, in minutes, and select **EN** or press **[ENTER]** to close the numpad. If the duration of release is not known, use the default of 360 minutes, except that for blow-out panel calculations, the assumed release duration is 15 minutes.

      NOTE: The **REMAINING DURATION** (DURATION OF RELEASE) can use forecasted or persisted data for up to 16 hours into the future.

d. Select **CONFIRM** to continue with the calculation or **RESET** to change any of your previous choices.

7. The **PPL SUMMARY DATA SELECTION** screen allows the user to select different options for the **MIDAS DOSE SUMMARY REPORT.**

   a. Select the projection time from the left-hand column if other than the default of six hours is needed.

   b. Select the **PEAK SECTOR** dose rate option if other than the default **CURRENT AFFECTED SECTOR** is required; then **CONFIRM.** If you wish to change any of your previous choices, select **RESET.**

      NOTE: The **PEAK SECTOR** is used to determine the highest dose rate in all 16 sectors. The **CURRENT AFFECTED SECTOR** is used to estimate dose rates based on current wind speed and direction.

8. After the calculations have completed, the **MIDAS DOSE SUMMARY REPORT** will be displayed on the screen.

   a. If you want to select a different projection time or sector designation from the **PPL SUMMARY DATA SELECTION** screen, select **RESTART REPORT.**

   b. If you wish to view additional report options, select **CONTINUE** and, on the next page, **MORE REPORTS.**

   c. If you wish to continue with the next calculation, double click **EXIT.** This will return you to the **ACCIDENT MENU SELECTION** screen where the dose calculation process can be repeated using updated input values.

   d. If a hard copy is desired of any printout or plot displayed on the screen, press **[PRINT SCRN].**

      NOTE: If a hard-copy printout is made of the **MIDAS DOSE SUMMARY REPORT**, be sure to fill in the required information documenting the name of the dose calculator, reviewer, and date the calculation was performed.

C. MENU C: EVENT TREE NUREG-1228 CALCULATIONS

REQUIRED INPUTS

ENGINEERING OR OPERATIONS SUPPORT IS REQUESTED FOR THESE CALCULATIONS.

PLANT CONDITIONS

- RELEASE PATHWAY
- CORE CONDITION
- CONTAINMENT CONDITIONS
- FILTRATION
- PROJECTION TIME

MET DATA

- 10 M WIND SPEED
- 10 M WIND DIRECTION
- STABILITY CLASS
- PRECIPITATION RATE

1. The **EVENT TREE NUREG-1228 SELECTION** screen will appear.

   a. Using information provided by Engineering Support or Operations, select one cell in each row of the menu. When a cell in the current row is selected, the next row then appears.

   b. **[PRINT SCREEN]** when final selections are made on the **EVENT TREE NUREG-1228 SELECTION** screen to document the calculation inputs.

   c. **CONFIRM** entries to continue with the calculation or **RESET** if you wish to change any of your selections. You may also double-click **EXIT** to return to the **ACCIDENT MENU SELECTION** screen.

2. The **MET/VENT DATA CONTROL TABLE** screen will appear.

   a. Select **START NEW SCENARIO** and then **CONFIRM, OR**

   b. If you have already initiated calculations and wish to modify the existing met spreadsheet file, select **CURRENT SCENARIO EDIT** and **CONFIRM.**

   c. Other options are available in the lower right hand section of the display if you wish to **RESET** your initial entries or **EXIT** the screen.

3. The **METEOROLOGICAL DATA** spreadsheet will appear with all of the required meteorological parameters across the top of the page.

   NOTE: Ensure met data is entered for the current time. MIDAS will persist the data to future time periods automatically.

   a. In the column labeled **10M SPD**, enter the wind speed from the 10-meter onsite (primary) meteorological tower in MILES PER HOUR (MPH).

      NOTE 1: If the primary meteorological tower data is not available, refer to the Met Vent Data Acquisition Options tab for other options.

   b. In the column labeled **10M WD**, enter the wind direction from the 10-meter onsite (primary) meteorological tower in DEGREES FROM (DEG FM).

   c. In the column labeled **STAB CLS**, enter the actual value for ΔT in DEGREES CENTIGRADE (preferred method) or the wind speed corrected stability class (Letter Code) if the primary tower data is not available. MIDAS will convert the letter entry to a numerical value.

   d. In the column labeled **RAIN-LMH**, enter the precipitation rate in INCHES PER 15 MINUTES (IN/15M). Divide the PICSY precipitation rate (inches/hr) by 4. If the precipitation rate is not available, estimation may be made by using the following table:

NO PRECIPITATION	**0(zero)**
DRIZZLE or MIST	**LIGHT**
STEADY RAIN	**MEDIUM**
HEAVY DOWNPOUR	**HEAVY**

   e. Type **X** when all data has been entered to save the data and exit out of the meteorological spreadsheet.

4. A **WEATHER SELECTION** screen will appear if any of the meteorological data inputs are missing from the spreadsheet.

   a. If this screen appears, select **RESET** until you have returned to the **MET/VENT DATA CONTROL TABLE** screen.

   b. Select **CURRENT SCENARIO EDIT** and enter any missing meteorological values on the spreadsheet.

   c. Type **X** when all data has been entered to save the data and exit out of the meteorological spreadsheet.

5. The **PPL SUMMARY DATA SELECTION** screen allows the user to select different options for the **MIDAS DOSE SUMMARY REPORT**.

   a. Select the projection time from the left-hand column if other than the default of six hours is needed.

   b. Select the **PEAK SECTOR** dose rate option if other than the default **CURRENT AFFECTED SECTOR** is required; then **CONFIRM**. If you wish to change any of your previous choices, select **RESET**.

      NOTE: The **PEAK SECTOR** is used to determine the highest dose rate in all 16 sectors. The **CURRENT AFFECTED SECTOR** is used to estimate dose rates based on current wind speed and direction.

6. After the calculations have completed, the **MIDAS DOSE SUMMARY REPORT** will be displayed on the screen.

   a. If you want to select a different projection time or sector designation from the **PPL SUMMARY DATA SELECTION** screen, select **RESTART PROGRAM**.

   b. If you wish to view additional report options, select **CONTINUE** and, on the next page, **MORE REPORTS**.

   c. If you wish to continue with the next calculation, double click **EXIT**. This will return you to the **ACCIDENT MENU SELECTION** screen where the dose calculation process can be repeated using updated input values.

   d. If a hard copy is desired of any printout or plot displayed on the screen, press **[PRINT SCRN]**.

      NOTE: If a hard-copy printout is made of the **MIDAS DOSE SUMMARY REPORT**, be sure to fill in the required information documenting the name of the dose calculator, reviewer, and date the calculation was performed.

D. MENU D: DEFAULT ACCIDENT CALCULATIONS

REQUIRED INPUTS

ENGINEERING OR OPERATIONS SUPPORT IS REQUESTED FOR THESE CALCULATIONS.

MET DATA

- 10 M WIND SPEED
- 10 M WIND DIRECTION
- STABILITY CLASS
- PRECIPITATION RATE

SOURCE TERM

- ACCIDENT SOURCE TERM SELECTION
- PERCENT OF CLAD FAILURE OR FUEL MELT
- PROJECTION TIME

1. The **MET/VENT DATA CONTROL TABLE** screen will appear.

   a. Select **START NEW SCENARIO** and then **CONFIRM**.

   b. If you have already initiated calculations and wish to modify the existing met spreadsheet file, select **CURRENT SCENARIO EDIT** and **CONFIRM**.

   c. Other options are available in the lower right hand section of the display if you wish to **RESET** your initial entries or **EXIT** the screen.

2. The **METEOROLOGICAL DATA** spreadsheet will appear with all of the required meteorological parameters across the top of the page.

   NOTE: Ensure met data is entered for the current time. MIDAS will persist the data to future time periods automatically.

   a. In the column labeled **10M SPD**, enter the wind speed from the 10-meter onsite (primary) meteorological tower in MILES PER HOUR (MPH).

      NOTE 1: If the primary meteorological tower data is not available, refer to the Met Vent Data Acquisition Options tab for other options.

   b. In the column labeled **10M WD**, enter the wind direction from the 10-meter onsite (primary) meteorological tower in DEGREES FROM (DEG FM).

c. In the column labeled **STAB CLS**, enter the actual value for ΔT in DEGREES CENTIGRADE (preferred method) or the wind speed corrected stability class (Letter Code) if the primary tower data is not available. MIDAS will convert the letter entry to a numerical value.

d. In the column labeled **RAIN-LMH**, enter the precipitation rate in INCHES PER 15 MINUTES (IN/15M). Divide the PICSY precipitation rate (inches/hr) by 4. If the precipitation rate is not available, estimation may be made by using the following table:

NO PRECIPITATION	**0(zero)**
DRIZZLE or MIST	**LIGHT**
STEADY RAIN	**MEDIUM**
HEAVY DOWNPOUR	**HEAVY**

e. Type **X** when all data has been entered to save the data and exit out of the meteorological spreadsheet.

3. A **WEATHER SELECTION** screen will appear if any of the meteorological data inputs are missing from the spreadsheet.

   a. If this screen appears, select **RESET** until you have returned to the **MET/VENT DATA CONTROL TABLE** screen.

   b. Select **CURRENT SCENARIO EDIT** and enter any missing meteorological values on the spreadsheet.

   c. Type **X** when all data has been entered to save the data and exit out of the meteorological spreadsheet.

4. From the **ACCIDENT SOURCE TERM SELECTION** screen, select an appropriate accident source term, then **CONFIRM**.

5. A **PERCENT FAILURE FOR LOCA** screen will appear if the clad failure or fuel melt accident source term is selected. Input the percent of clad failure or fuel melt using the numpad and **CONFIRM**.

6. The **PPL SUMMARY DATA SELECTION** screen allows the user to select different options for the **MIDAS DOSE SUMMARY REPORT**.

   a. Select the projection time from the left-hand column if other than the default of six hours is needed.

   b. Select the **PEAK SECTOR** dose rate option if other than the default **CURRENT AFFECTED SECTOR** is required; then **CONFIRM**. If you wish to change any of your previous choices, select **RESET**.

NOTE: The **PEAK SECTOR** is used to determine the highest dose rate in all 16 sectors. The **CURRENT AFFECTED SECTOR** is used to estimate dose rates based on current wind speed and direction.

7. After the calculations have completed, the **MIDAS DOSE SUMMARY REPORT** will be displayed on the screen.

   a. If you want to select a different projection time or sector designation from the **PPL SUMMARY DATA SELECTION** screen, select **RESTART PROGRAM.**

   b. If you wish to view additional report options, select **CONTINUE** and, on the next page, **MORE REPORTS**.

   c. If you wish to continue with the next calculation, double click **EXIT**. This will return you to the **ACCIDENT MENU SELECTION** screen where the dose calculation process can be repeated using updated input values.

   d. If a hard copy is desired of any printout or plot displayed on the screen, press **[PRINT SCRN]**.

      NOTE: If a hard-copy printout is made of the **MIDAS DOSE SUMMARY REPORT**, be sure to fill in the required information documenting the name of the dose calculator, reviewer, and date the calculation was performed.

E. MENU E-W: BACK CALCULATIONS

REQUIRED INPUTS

ENGINEERING OR OPERATIONS SUPPORT IS REQUESTED FOR THESE CALCULATIONS.

PLANT CONDITIONS

- TIME OF REACTOR SHUTDOWN
- RELEASE START TIME
- DURATION OF RELEASE
- ACCIDENT SOURCE TERM SELECTION
- PROJECTION TIME

MET DATA

- 10 M WIND SPEED
- 10 M WIND DIRECTION
- STABILITY CLASS
- PRECIPITATION RATE

FIELD DATA

- 3 FT (CW) SURVEY METER READING
- DISTANCE FROM PLANT
- IODINE CARTRIDGE NET CPM OR DEFAULT IODINE MIX

1. The **MET/VENT DATA CONTROL TABLE** screen will appear.

   a. Select **START NEW SCENARIO** and then **CONFIRM**.

   b. If you have already initiated calculations and wish to modify the existing met spreadsheet file, select **CURRENT SCENARIO EDIT** and **CONFIRM**.

   c. Other options are available in the lower right hand section of the display if you wish to **RESET** your initial entries or **EXIT** the screen.

2. The **METEOROLOGICAL DATA** spreadsheet will appear with all of the required meteorological parameters across the top of the page.

   NOTE: Ensure met data is entered for the current time. MIDAS will persist the data to future time periods automatically.

   a. In the column labeled **10M SPD**, enter the wind speed from the 10-meter onsite (primary) meteorological tower in MILES PER HOUR (MPH).

NOTE 1: If the primary meteorological tower data is not available, refer to the Met Vent Data Acquisition Options tab for other options.

b. In the column labeled **10M WD**, enter the wind direction from the 10-meter onsite (primary) meteorological tower in DEGREES FROM (DEG FM).

c. In the column labeled **STAB CLS**, enter the actual value for ΔT in DEGREES CENTIGRADE (preferred method) or the wind speed corrected stability class (Letter Code) if the primary tower data is not available. MIDAS will convert the letter entry to a numerical value.

d. In the column labeled **RAIN-LMH**, enter the precipitation rate in INCHES PER 15 MINUTES (IN/15M). Divide the PICSY precipitation rate (inches/hr) by 4. If the precipitation rate is not available, estimation may be made by using the following table:

NO PRECIPITATION	**0(zero)**
DRIZZLE or MIST	**LIGHT**
STEADY RAIN	**MEDIUM**
HEAVY DOWNPOUR	**HEAVY**

e. Type X when all data has been entered to save the data and exit out of the meteorological spreadsheet.

3. A **WEATHER SELECTION** screen will appear if any of the meteorological data inputs are missing from the spreadsheet.

a. If this screen appears, select **RESET** until you have returned to the **MET/VENT DATA CONTROL TABLE** screen.

b. Select **CURRENT SCENARIO EDIT** and enter any missing meteorological values on the spreadsheet.

c. Type X when all data has been entered to save the data and exit out of the meteorological spreadsheet.

4. From the **ACCIDENT SOURCE TERM SELECTION** screen, select an appropriate accident source term, then **CONFIRM**.

If no specific information on the type of release is available from Engineering, use the following as a guide in the selection of an appropriate accident source term:

a. Obtain Reactor Power from Engineering, Operations or as follows:

1. From PICSY, select Unit #1 or Unit #2 formats to view affected unit

2. Type STA and press **[ENTER]**
3. "Reactor Power" is in the top left section
4. Click on **MET VENT** to return to the Met/Vent data display

b. If the reactor is operating at or greater than 10% power, select the **ATWS** source term.

c. If reactor power is at less than 10%, select the **LOCA (Clad Failure)** source term.

d. If conditions indicate a fuel handling incident and a release from the refueling floor (Reactor Building floor 818'), select **Fuel Handling Accident**.

5. The next screen is the **FIELD MONITOR PARAMETER SELECTION** screen. Select the appropriate cells and input the information requested using the numpad on the screen or enter the data using the computer keyboard. Once the data entry is complete, **CONFIRM** to continue with the calculation.

   a. If air sample data is available, enter either the **IODINE CARTRIDGE** reading in net counts per minute or an **IODINE CONCENTRATION** value in μCi/cc. A zero (0) value may be entered for the net count per minute or the μCi/cc measurement, if indicated.

   b. Select the **DEFAULT MIX** option if you wish to characterize the iodine source term when air sample data is not available.

6. On the **RELEASE TIMING SELECTION** screen, enter the estimated remaining duration for the release, then **CONFIRM**. If the duration of release is not known, use the default of 360 minutes.

7. The **PPL SUMMARY DATA SELECTION** screen allows the user to select different options for the **MIDAS DOSE SUMMARY REPORT**.

   a. Select the projection time from the left-hand column if other than the default of six hours is needed.

   b. Select the **PEAK SECTOR** dose rate option if other than the default **CURRENT AFFECTED SECTOR** is required; then **CONFIRM**. If you wish to change any of your previous choices, select **RESET**.

      NOTE: The **PEAK SECTOR** is used to determine the highest dose rate in all 16 sectors. The **CURRENT AFFECTED SECTOR** is used to estimate dose rates based on current wind speed and direction.

8. After the calculations have completed, the **MIDAS DOSE SUMMARY REPORT** will be displayed on the screen.

   a. If you want to select a different projection time or sector designation from the **PPL SUMMARY DATA SELECTION** screen, select **RESTART PROGRAM.**

   b. If you wish to view additional report options, select **CONTINUE** and, on the next page, **MORE REPORTS.**

   c. If you wish to continue with the next calculation, double click **EXIT.** This will return you to the **ACCIDENT MENU SELECTION** screen where the dose calculation process can be repeated using updated input values.

   d. If a hard copy is desired of any printout or plot displayed on the screen, press **[PRINT SCRN].**

      NOTE: If a hard-copy printout is made of the **MIDAS DOSE SUMMARY REPORT**, be sure to fill in the required information documenting the name of the dose calculator, reviewer, and date the calculation was performed.

   e. Remote Monitoring System perimeter monitoring location dose rates can be displayed by MIDAS using the perimeter monitoring dose rate screen option.

      NOTE: The displayed values are only numeric dose estimates based on MIDAS calculations. They are not "real-time" readings from the perimeter monitor system.

      Directions for accessing the MIDAS perimeter monitor dose rate screen option are as follows:

      1) At the **MIDAS DOSE SUMMARY REPORT** screen, select **CONTINUE.**

      2) On the next screen select **MORE REPORTS.**

      3) From the **MORE REPORTS SELECTION** screen, select **FM GAMMA DOSE RATE PLOT** and **CONFIRM.**

      4) From the **REPORT PARAMETER SELECTION** screen, choose the appropriate projection time and **CONFIRM.**

5) From the **MAP SELECTION** screen, select **MAP SCALE** and input 1.25 miles, then **CONFIRM**.

6) On the next screen, select **MAP FEATURES**.

7) On the next screen, select **CALCULATED PERIMETER MON DOSE RATES** and **CONFIRM**.

8) To exit, select **CONTINUE**, **MORE REPORTS**, and **EXIT**.

F. DESCRIPTION OF INFORMATION PROVIDED ON THE MIDAS DOSE SUMMARY REPORT

1. PRINT DATE/TIME

Date and time MIDAS DOSE SUMMARY REPORT was printed.

2. CURRENT TIME PERIOD

Current meteorological time period used for dose projections provided on quarter hour increments to match met spreadsheet entries.

3. REACTOR SHUTDOWN

Date and time of reactor shutdown.

4. START OF RELEASE

This is the date and time of first dose calculation as indicated by the first positive vent release rate value entered on the vent data spreadsheet or if the vent spreadsheet is not used, the date and time of the met data used for the current projection period.

NOTE: For MENU C: NR-1228 CALCULATIONS, MENU D: DEFAULT CALCULATIONS, and MENU E-W: BACK CALCULATIONS, it is conservatively assumed that the date and time of reactor shutdown is concurrent with the start of release.

5. MENU SELECTION

Identifies the dose calculation option used for the current dose projection summary report. Choice of four options:

- MENU B: FORWARD CALCULATIONS
- MENU C: NR-1228 CALCULATIONS
- MENU D: DEFAULT CALCULATIONS
- MENU E-W: BACK CALCULATIONS

6. SOURCE TERM

Identifies the source term used for the current dose projection summary report calculations. Choice of six options:

- ATWS-Normal Reactor Coolant Activity (UNDECAYED)
- Normal Reactor Coolant Activity (DECAYED)

- (LOCA) Coolant Activity Leak with Depressurization Spike-No Fuel Damage
- (LOCA) Cladding Failure-Gap Release
- (LOCA) Fuel Melt-Early In-Vessel Release
- Fuel Handling Accident

7. MET DATA

Meteorological data (wind speed, wind direction, stability class, and precipitation rate) used for the summary report dose projections.

8. CURRENT AFFECTED SECTOR OR PEAK SECTOR DOSE RATES

This table provides the TEDE, EDE, and THYROID CDE dose rates calculated at the OSCAR and EPB distances. These rate calculations are based on a variable projection/integration period for the current affected sector or peak sector.

9. PROJECTED DOSES

This table provides a TEDE and THYROID CDE dose projection calculated at the OSCAR, EPB, 2-mile, and 10-mile distances for varying projection times. The projection time will appear in the header line e.g., 4 HOUR PROJECTED DOSES on the MIDAS DOSE SUMMARY REPORT. The sector designation for this dose projection is based on the maximum calculated dose determined from all sixteen sectors for the given projection time. Information for distances between 10 and 50 miles is available using the "More Reports" feature.

10. CALCULATED/REVIEWED BY

The sign-off for review of calculation results is done for documentation purposes. The intended review does not necessarily mean an independent verification of each input to the calculation but more an interactive discussion between the RPC/HP Level II Dose Calculator and/or DASU/DAST (or dose calculator) to ensure the calculated results are reasonable based on current plant and environmental information.

This review should occur before the calculated results are used for any emergency classification determinations or protective action recommendations.

11. COMMENTS

Section added to provide space for additional statements of qualification or background information pertaining to the dose projections.

MIDAS DOSE SUMMARY REPORT

(1) PRINT DATE/TIME: 8/19/97 11:25 (2) CURRENT TIME PERIOD: 8/19/97 11:30

MIDAS DOSE SUMMARY REPORT

(3) REACTOR SHUTDOWN: 8/19/97 10:53
(4) START OF RELEASE: 8/19/97 10:53
(5) MENU SELECTION: FORWARD CALCULATIONS
(6) SOURCE TERM: LOCA (CLAD FAILURE)

(7) WIND SPEED (MPH): 5
WIND FROM (DEG): 120 (ESE)
STABILITY CLASS: D
PRECIPITATION: NO

CURRENT (SITE TOTAL) RELEASE RATE (uCi/min)

NOBLE GAS	I-131	PARTICULATES
6.98E+09	9.96E+01	9.96E+01

(8)

CURRENT AFFECTED SECTOR DOSE RATES				
LOCATION	OSCAR		EPB	
UNITS	DOSE RATE (mrem/hr)	AFFECTED SECTOR	DOSE RATE (mrem/hr)	AFFECTED SECTOR
TEDE RATE	883.42	WNW	775.90	WNW
EDE RATE	883.42		775.90	
THY CDE RATE	0.22		0.16	

(9)

6.00 HOUR PROJECTED DOSES								
DISTANCE	OSCAR		EPB		2 MILE		10 MILE	
UNITS	DOSE (mrem)	PEAK SECTOR	DOSE (mrem)	PEAK SECTOR	DOSE (mrem)	PEAK SECTOR	DOSE (mrem)	PEAK SECTOR
TEDE	3.39E+03	WNW	3.02E+03	WNW	1.03E+03	WNW	29.96	WNW
CEDE	0.05		0.04		8.11E-03		2.66E-04	
PLUME	3.39E+03		3.02E+03		1.03E+03		29.96	
GND 4-DAY	0.02		0.02		3.36E-03		9.17E-05	
THY CDE	1.48	NW	1.01	NW	0.20	WNW	5.56E-03	WNW

(10) CALCULATED BY: _____ DATE: _____
(11) REVIEWED BY: _____ DATE: _____
COMMENTS:

RESTART REPORT	CONTINUE

G. INFORMATION FOR DISTANCES BETWEEN 10 AND 50 MILES

1. From the **MIDAS DOSE SUMMARY REPORT** screen, select **CONTINUE** and, on the next page, **MORE REPORTS**.

2. Select **TEDE 4-DAY DOSE REPORT** or **THYROID CDE DOSE REPORT**, depending on which **PAR** guide has been exceeded at the 10-mile distance.

3. On the **REPORT PARAMETER SELECTION** screen, select **PROJECTION TIME** until the appropriate **PROJECTION TIME** (0.25, 4, 6, or 9 hours) is displayed on the screen; then select **CONFIRM**.

4. The screen will now display projected doses at the **EPB** and at 2, 5, 10, 25, and 50 miles. To obtain finer increments of distance, select **CONTINUE** until the desired range of distances is displayed.

   NOTE: An objective is to determine the approximate distance from the plant at which dose projections are less than 1 rem **TEDE** and 5 rem **THYROID CDE**. A **PAR** is then likely to be issued to the next furthest 5-mile distance increment from the plant.

   Example: A **PAR** for distances to 30 miles may be selected if projected doses become less than the **PAG** values (1 rem **TEDE**, 5 rem **THYROID CDE**) between 25 and 30 miles from the plant.

H. ACCIDENT DESCRIPTIONS

A. DEFAULT ACCIDENT DESCRIPTIONS (MENU B AND MENU D)

1. NORMAL REACTOR COOLANT ACTIVITY

This accident scenario is defined as the release of reactor coolant system liquid and steam activity from the primary coolant system with no damage to the fuel and no activity spiking. The source term for this accident is normal reactor coolant system liquid and steam activity.

2. LOCA (RX DP-NO FD)

This accident scenario is defined as the release of reactor coolant system liquid and steam activity from the primary coolant system. Depressurization of the primary coolant system is assumed, resulting in an activity spike in the reactor coolant. The source term for this accident is normal reactor coolant liquid and steam activity plus the depressurization activity spike. There is no fuel damage.

3. LOCA (CLAD FAILURE)

This accident scenario is defined as a Loss-of-Coolant Accident which results in damage to the reactor fuel cladding. The source term for this accident is normal reactor coolant liquid and steam activity and a percentage of the activity in the fuel clad gap. For Menu D calculations, that percentage is entered as part of the calculation process. For Menu B calculations, the valid vent data entered define the severity of the event.

4. LOCA (FUEL MELT)

This accident scenario is defined as a Loss-of-Coolant Accident which results in damage to the reactor fuel. The source term for this accident is normal reactor coolant liquid and steam activity and a percentage of the activity in the reactor fuel. For Menu D calculations, that percentage is entered as part of the calculation process. For Menu B calculations, the valid vent data entered define the severity of the event.

5. FUEL HANDLING ACCIDENT

This accident scenario is defined as a fuel handling accident which results in the release of spent fuel activity. The source term for this accident is spent fuel gap activity assuming a decay time after shutdown of 24 hours.

6. **ATWS**

This accident scenario is used for releases from a reactor unit continuing to operate at or greater than 10% power. The source term for this accident is normal reactor coolant system liquid and steam activity. The source term is undecayed; that is, no reactor trip is assumed to have occurred.

NOTE: For Menu D calculations, design basis assumptions are utilized. For example, design basis leakage rates are assumed and iodine filtration efficiency of 99% is assumed in those pathways for which filters are in place.

NOTE: The source term for Menu D accident types is fixed. Release rate is calculated by MIDAS by dividing the total activity released by a predetermined release duration (6 hours for all but fuel handling accidents, for which release duration is 2 hours).

B. NUREG 1228 ACCIDENT TYPES (MENU C)

1. **LOCA - DRYWELL RELEASE**

This accident is a Loss-of-Coolant Accident with an activity release into the drywell which bypasses the suppression pool for which filtration of activity by the Standby Gas Treatment System takes place before release to the environment.

2. **LOCA - WETWELL RELEASE**

This accident is a Loss-of-Coolant Accident with an activity release through the suppression pool for which filtration of activity by the Standby Gas Treatment System takes place before release to the environment.

3. **LOCA - CONTAINMENT BYPASS RELEASE**

This accident is a Loss-of-Coolant Accident with an activity release to the environment that bypasses the containment and the Standby Gas Treatment System.

4. **ZIRCALLOY FIRE IN ONE THREE MONTH OLD BATCH**

This accident is a zircalloy fire in spent fuel that results in an activity release similar to a core melt. It assumes that the activity is filtered by the Standby Gas Treatment System prior to release.

5. SPENT FUEL GAP RELEASE

This accident is a release of fuel gap activity from the spent fuel pool with treatment by the Standby Gas Treatment System prior to release.

NOTE: Menu C (from NUREG-1228 Event Tree Analyses) is used to relatively quickly provide a bounding estimate of offsite dose, for situations where there are substantial uncertainties in prediction of source term and any resultant doses.

NUREG 1228 MENU STRUCTURE FOR DRYWELL RELEASE

DRYWELL RELEASE	WETWELL RELEASE	CONTAINMENT BYPASS RELEASE	SPENT FUEL POOL RELEASE
(100% Clad Failure) GAP RELEASE UNCOVERED 15-30 MIN	(100% Fuel Melt) IN-VESSEL SEVERE DAMAGE UNCOVERED > 30 MIN	(100% Fuel Melt) VESSEL MELT THROUGH	Core Condition
SPRAY ON	SPRAY OFF		Status of Drywell Containment Spray
HOLDUP TIME <1 HOUR	HOLDUP TIME 2-12 HOURS	HOLDUP TIME 24 HOURS	Drywell Holdup Time: Time from Release into Containment to Start of Release into Environment

LEAK RATE 100% HOUR	LEAK RATE 100% DAY UNFILTERED	LEAK RATE 100% DAY FILTERED	DESIGN LEAK RATE UNFILTERED	DESIGN LEAK RATE FILTERED
Catastrophic Containment Failure	Failure to Isolate Containment			1% Day

NUREG 1228 MENU STRUCTURE FOR WETWELL RELEASE

DRYWELL RELEASE	WETWELL RELEASE	CONTAINMENT BYPASS RELEASE	SPENT FUEL POOL RELEASE
(100% Clad Failure) GAP RELEASE UNCOVERED 15-30 MIN	(100% Fuel Melt) IN-VESSEL SEVERE DAMAGE UNCOVERED > 30 MIN	(100% Fuel Melt) VESSEL MELT THROUGH	Core Condition
SATURATED	SUB-COOLED		Conditions in Suppression Pool
HOLDUP TIME <1 HOUR	HOLDUP TIME 2-12 HOURS	HOLDUP TIME 24 HOURS	Wetwell Holdup Time: Time from Release into Wetwell to Start of Release into Environment

LEAK RATE 100% HOUR	LEAK RATE 100% DAY UNFILTERED	LEAK RATE 100% DAY FILTERED	DESIGN LEAK RATE UNFILTERED	DESIGN LEAK RATE FILTERED
Catastrophic Containment Failure	Failure to Isolate Containment			1% Day

NUREG 1228 MENU STRUCTURE FOR CONTAINMENT BYPASS RELEASE

DRYWELL RELEASE	WETWELL RELEASE	CONTAINMENT BYPASS RELEASE	SPENT FUEL POOL RELEASE
(100% Clad Failure) GAP RELEASE UNCOVERED 15-30 MIN	(100% Fuel Melt) IN-VESSEL SEVERE DAMAGE UNCOVERED > 30 MIN	(100% Fuel Melt) VESSEL MELT THROUGH	Core Condition
UNFILTERED	FILTERED		Is Release Filtered?
RELEASE RATE 100% HOUR	RELEASE RATE 100% DAY	TYPICAL DESIGN RELEASE RATE	Release Rate, in Terms of Percent of Core Inventory
Catastrophic Containment Failure	Failure to Isolate Containment	1% Day	

NUREG 1228 MENU STRUCTURE FOR SPENT FUEL POOL RELEASE

DRYWELL RELEASE	WETWELL RELEASE	CONTAINMENT BYPASS RELEASE	SPENT FUEL POOL RELEASE
ZIRCALLOY FIRE IN ONE 3 MONTH OLD BATCH	GAP RELEASE FROM ONE 3 MONTH OLD BATCH	GAP RELEASE FROM 15 BATCHES (TOTAL POOL)	Condition of Spent Fuel
SPRAY ON	SPRAY OFF .(Default)		Status of Containment Spray into Pool
HOLDUP TIME <1 HOUR	HOLDUP TIME 2-12 HOURS		Time from Release from Fuel to Start of Release into Environment
LEAK RATE 100% HOUR	LEAK RATE 100% DAY UNFILTERED	LEAK RATE 100% DAY FILTERED	Release Rate, in Terms of Percent of Source Inventory

Catastrophic Failure of Containment