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ATTACHMENT 10.1

SMM CONTROLLED DOCUMENT TRANSMITTAL FORM

SITE MANAGEMENT MANUAL CONTROLLED DOCUMENT TRANSMITTAL FORM - PROCEDURES

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Meteorological Information and Dose Assessment System (MIDAS)

Prepared by:

Lori Glander
Print Name


Signature

5-12-10
Date

Approval:

Brian Sullivan
Print Name


Signature

5-25-10
Date

Effective Date: May 27, 2010

This procedure excluded from further LI-100 review



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1.0 PURPOSE

To describe the methods of estimating the whole body and thyroid doses to onsite and offsite persons in the event of potential or actual accidental release of radioactivity to the environment

2.0 REFERENCES

- 2.1 MIDAS user manual (ABS consulting)
- 2.2 IP-EP-510, Meteorological, Radiological & Plant Data Acquisition System
- 2.3 IP-EP-410, Protective Action Recommendations

3.0 DEFINITIONS

- 3.1 MRPDAS - Meteorological, Radiological, and Plant Parameter Data Acquisition System – the system which provides meteorological, Reuter Stokes and certain plant parameter data (VC Temperature, VC Pressure, Plant Vent and VC High Radiation Monitors)
- 3.2 Total Effective Dose Equivalent (TEDE) – The sum of the Deep Dose Equivalent (DDE) and the Committed Effective Dose Equivalent (CEDE).
- 3.3 Committed Dose Equivalent Thyroid (CDE Thyroid) – The dose equivalent to the thyroid that will be received from an intake of radioiodine by an individual during the 50-year period following the intake.
- 3.4 CEDE - Committed effective dose equivalent is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues
- 3.5 Site Boundary - For Dose Assessment and Protective Action Recommendation purposes the Site Boundary is the closest distance at which members of the public would be exposed to a radioactive release. When the plume is traveling toward the water, the distance to the nearest point on the far shore is used.
- 3.6 MIDAS - Meteorological Information and Dose Assessment System – computer software for determining source term, atmospheric dispersion, and dose consequences
- 3.7 Source term – generic term for curies available for release or actually being released. 'Term' in mathematics is any single factor in an equation. Hence 'source term', 'dispersion term', etc are simply portions of the equation for the calculation
- 3.8 Ground level release – an effluent release point model that assumes that the release point is at ground level, with no accounting for the additional mixing from other release point factors such as height above the ground, plume temperature, and exit velocity



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4.0 RESPONSIBILITIES

Dose Assessment staff in the Control Room (CR) and in the Emergency Operations Facility (EOF) are responsible for assessing actual and potential planned and unplanned radioactive releases to the environment.

5.0 DETAILS

- 5.1 MIDAS is a menu driven computer system - menus are described below throughout Section 5
- 5.2 Step by step option selection for each menu are shown in the attachments
- 5.3 MIDAS uses a segmented plume model with terrain and meteorology specific wind fields. Displayed plumes are EXPECTED to have unusual shapes. (See Section 5.12)
- 5.4 MIDAS also uses an automated plant data collection system 'NDCIP' which runs in the background on the MIDAS computer
- 5.5 **MIDAS Startup**
 - 5.5.1 PC computer system should be running with the program "NDCIP" active

NOTE:

NDCIP provides the automated interface between the plant data sources (e.g. PI computer) and the MIDAS system for automated plant monitor and meteorological data collection and should not be closed by the user.

NOTE:

If NDCIP is not already active in the computer, it will start when MIDAS is started. In this case, there will not be recent history or current automated data available until a data collection cycle is completed.

5.5.2 Start MIDAS by 'double-clicking' on the 'MIDAS Accident Calcs' icon

5.5.3 After a few second delay with a startup screen showing a photograph of the plant, the accident dose startup menu screen will be displayed as shown in Figure 1 below.



Figure 1 Example: MIDAS Startup / Menu Screen

5.5.4 Ensure 'Indian Point' is selected for the Site Selection on the upper left

5.5.5 Ensure 'Start New Run' is selected

- 'Recap Previous Run' near the bottom left is the alternate button selection for 'Start New Run'
- 'Recap Previous Run' allows display of previously saved runs from the list at the bottom of the page
- 'Recap Previous Run' will generally not be needed in the initial phase of dose evaluation but can be used if hard copy printouts of a previous run are needed

5.5.6 Select the appropriate Unit (2 or 3) on the upper right

5.5.7 Select your location CCR or EOF

5.5.8 Select Automatic, Manual, or Simulation

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Automatic should be selected whenever possible unless it is KNOWN that the automated data is wrong, unavailable, or misleading.

NOTE:

Simulation uses automated DRILL data. Simulation should be selected whenever possible during DRILLS unless it is KNOWN that the automated drill data is wrong, unavailable, or misleading.

NOTE:

Choosing 'Automatic' will force MIDAS to use any of the effluent and radiation monitor data and meteorological data automatically collected from the plant computer system (PI computers). Manual will cause MIDAS to IGNORE this available data and will REQUIRE the user to obtain and enter this data by hand.

5.5.9 Based on the choices of CCR/EOF and Automatic (Simulator) / Manual the list of available choices in the 'Accident Run Menu Selection' will change

NOTE:

To the user, Automatic and Simulator processes are the same, only changing the data source for automatic data collection. Automatic and Simulator processes are generally referred to throughout this procedure as 'Automatic'.

5.5.10 The Automatic and Manual lists represent the same processes but using or not using the automatically collected data

5.5.11 With 'CCR' selected, only the automatic (Menu G) or manual (Menu A) quick dose projection is available as described in Section 5.5.12.

5.5.12 With 'EOF' selected the following menus are available: **Automatic**

- a. Menu G – Auto Quick dose projection – this menu uses automatically loaded data to project doses with minimal user intervention or input required.
- b. Menu H – Auto Enhanced dose projection – this menu uses automatically loaded data but allows the user to select relevant release points and other parameters
- c. Menu I – Auto Met Event Tree - uses automatically loaded meteorological data but uses a pull down event tree selection process to determine source term and release rates instead of using plant monitor data



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- d. Menu K-W – Auto Met Back Calculation – uses manually entered offsite monitoring centerline plume dose rate readings to estimate the release source term based on automatically collected meteorological data. This menu option should generally not be used if plant monitors are available.
- e. Menu L – Auto Accum. Dose Last 24 Hr – uses the automated data collected for the last 24 hours to summarize the total dose committed for that period. This menu option would not generally be used during the initial protective action phase of an event
- f. Menu N – Auto Met Isotopic Entry – uses automatically collected meteorological data and manually entered isotopic release data to project dose – requires knowledge of release by isotope, e.g. from an isotopic analysis of effluent stack samples.
- g. Menu Y – Auto All Screens – is for re-creation of past events and program testing and should not be used for emergency response

NOTE:

If the automatic process identifies missing or bad data MIDAS will prompt the user for manual inputs, even in automatic menu modes.

5.5.13 With 'EOF' selected the following menus are available: Manual

- a. Menu A –Quick dose projection – this menu assumes the release is monitored and prompts the user for input of meteorological data and.
- b. Menu B – Enhanced dose projection – this menu prompts the user for manual input of release point, meteorological data, isotopic mix, and effluent monitor readings
- c. Menu C –Event Tree - this menu prompts the user for manual input of meteorological data but uses a pull down event tree selection process to determine source term and release rates instead of using plant monitor data
- d. Menu E-W –Back Dose Calculation – uses manually entered offsite monitoring centerline plume dose rate readings and a pull down event tree selection process to determine the isotopic mix to estimate the release source term using manually entered meteorological data. This menu option should generally not be used if plant monitors are available.
- e. Menu F – Auto Accum Dose Last 24 Hr – uses the data entered for the last 24 hours to summarize the total dose committed for that period. This menu option would not generally be used during the initial protective action phase of an event



- f. Menu M –Isotopic Entry – uses manually entered meteorological data and manually entered isotopic release data to project dose – requires knowledge of release by isotope, e.g. from an isotopic analysis of effluent stack samples.
- g. Menu X – Advanced Calcs All Screens – is for re-creation of past events and program testing and should not be used for emergency response

5.6 MIDAS data input process

5.6.1 MIDAS accumulates automatically collected data or manually input data into spreadsheets. There are two sets of four primary spreadsheets, one set for manually entered data and one set for automatically collected data.

5.6.2 Meteorological spreadsheet – includes date and time, wind direction, wind speed, delta T (or stability class), and precipitation

- a. Make certain that the proper met data is being applied when entering data manually because several sets of meteorological data are available from sensors at different levels on the primary tower and from a backup tower.
- b. Because all release points are treated as ground level, the speed and direction values should be from the primary tower 10 meter sensors and the stability should be derived from the 60 – 10 delta T.
- c. The meteorological data spreadsheet is shown below in Figure 2



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Figure 2 Example: MIDAS Meteorological Data Input Sheet

Microsoft Excel - Sheet1

Date: 10/28/09

Meteorological Spreadsheet

See ID: IP
Unit ID: U2
Metric: 8

Timing	Hr	Mn	SPD10 (m/s)	DIR10M (deg)	DT60-10 (deg c) or PG A-G	RAINF L, M, H (in/15min)
	14	15				
	14	30				
	14	45				
	15	00				
	15	15				
	15	30				
	15	45				
	16	00				
Exposure Start/Rel Start/Current	16	00	123	d	d	
	16	30				
	16	45				
	17	00				
	17	15				
	17	30				
	17	45				
	18	00				
	18	15				
	18	30				
	18	45				
	19	00				
	19	15				
	19	30				
	19	45				
	20	00				
	20	15				
	20	30				

Copy Cell Down Copy Data Collection

Save to Excel Restore From Excel Cancel Previous Screen Copy Paste Clear OK

5.6.3 Radiation Monitor & Flow spreadsheet - includes date and time, and input fields for the plant effluent monitors, flow rates of release points, and the containment dome monitors as shown in Figure 3. The sheet may contain additional input columns to the right not shown in this screen view dependent on the release points selected as active.

- The content and columns displayed on this sheet are modified based on the selection of the four release points
- Columns for effluent monitors, dome monitors, flow instruments are selected based on the applicability of each sensor to the selected release points



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Figure 3 Example: MIDAS Radiation, Effluent Monitor and Flow Data Input Sheet

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Radiation Monitor & Flow Spreadsheet

See ID: IP
Unit ID: U2
Monitor: B

Time	Hr	Mn	R-44B Release (uCi/cc)	VCONTACT Release (area/hr)	PLNTVENT Flow (cfs)	R-27 Release (uCi/sec)	R-45 Release (uCi/cc)	CAEJ Flow (cfs)	R-28 Release (cpm)	R-29 Flow (lbs/hr)	R-29 Release (cpm)	R-29 Flow (lbs/hr)	R-30 Release (cpm)	R-30 Flow (lbs/hr)	R-31 Release (cpm)	R-31 Flow (lbs/hr)
	14	15														
	14	30														
	14	45														
	15	00														
	15	15														
	15	30														
	15	45														
	16	00														
Exposure Start/Rel Start/Current	16	15	1.00E-05		6.20E+04	1.10E-01	1.00E-05	8.00E+00	1.70E+01	0.00E+00						
	16	30														
	16	45														
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	19	00														
	19	15														
	19	30														
	19	45														
	20	00														
	20	15														

Copy Cell Down Copy Data Collection Copy Selected Flow Data Collection

Save to Excel Restore From Excel Cancel Previous Screen Copy Paste Clear OK

5.6.4 Mix spreadsheet - includes date and time, and input fields for the ratios of isotopes in a known mix in percent as shown below in Figure 4. The sheet contains additional input columns to the right not shown in this screen view. The sheet will adjust the input percentages to total 100, so mixes do not need to be in percent to be input.



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Figure 4 Example: MIDAS Effluent Isotopic Mix Data Input Sheet

File Edit View Options Help Sheet #7

Date: 10/28/09

Mix Spread Sheet
Percent of each isotope

Site ID: IP
Unit ID: U2
Menu: B

Timing	Hr	Mn	Already Recorded	Total Percent	H-3	C-14	AH-41	KR-83M	KR-85M	KR-85	KR-87	KR-88	KR-89	KR-90	XE-131M	XE-133M
	14	15														
	14	30														
	14	45														
	15	00														
	15	15														
	15	30														
	15	45														
	16	00														
	16	15														
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	19	15														
	19	30														
	19	45														
	20	00														
	20	15														

Exposure Start/Ref Start/Current: 16:15 100.00

Copy Cell Down Copy Paste Clear

Save to Excel Restore From Excel Previous Screen Event Tree OK

Noble Gas/Turbine: 10000
Noble Gas/Pot: 10000

5.6.5 Isotopic Data spreadsheet - includes date and time, and input fields for the concentrations or release rates and flow rates in a known mix. The sheet contains additional input columns to the right not shown in this screen view.

5.6.5.1 Before entering data, select if data is available in rate or concentration in the selection menu as shown in Figure 5.



Figure 5 Example: MIDAS Effluent Isotopic Sample Data Type Selection Menu

Type of Isotopic Values

Select Method for Entering the Isotopic Values.

☒ Enter Isotopic Release Rates

☐ Enter Isotopic Concentrations and Flow Rate

Cancel OK

- a. With release rate selected the input process requires release rate in $\mu\text{Ci}/\text{sec}$ for each isotope as shown in the input sheet in Figure 6

Figure 6 Example: MIDAS Effluent Isotopic Sample Data Release Rate Input Sheet

Isotopic Data Entry Sheet 1/1

Date: 10/28/03 Release Point: 1

Site ID: IP
Unit ID: 02
Metric: M

Timing	Hr	Min	H-2 ($\mu\text{Ci}/\text{sec}$)	C-14 ($\mu\text{Ci}/\text{sec}$)	AR-41 ($\mu\text{Ci}/\text{sec}$)	KR-85M ($\mu\text{Ci}/\text{sec}$)	KR-85M ($\mu\text{Ci}/\text{sec}$)	KR-85 ($\mu\text{Ci}/\text{sec}$)	KR-87 ($\mu\text{Ci}/\text{sec}$)	KR-88 ($\mu\text{Ci}/\text{sec}$)	KR-89 ($\mu\text{Ci}/\text{sec}$)	KR-90 ($\mu\text{Ci}/\text{sec}$)	XE-131M ($\mu\text{Ci}/\text{sec}$)	XE-133M ($\mu\text{Ci}/\text{sec}$)	XE-132 ($\mu\text{Ci}/\text{sec}$)	XE-133M ($\mu\text{Ci}/\text{sec}$)	XE-134 ($\mu\text{Ci}/\text{sec}$)
	14	30															
	14	45															
	15	00															
	15	15															
	15	30															
	15	45															
	16	00															
	16	15															
Exposure Start/Current time	16	30															
	16	45															
	17	00															
	17	15															
	17	30															
	17	45															
	18	00															
	18	15															
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	18	45															
	19	00															
	19	15															
	19	30															
	19	45															
	20	00															
	20	15															
	20	30															

Copy Cell Down

Save to Excel Restore From Excel Previous Screen Copy Paste Clear Release Point: 1 OK



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- b. With release concentration and flow selected the input process requires release rate in uCi/sec for each isotope as shown in the input sheet in Figure 7

Figure 7 Example: MIDAS Effluent Isotopic Sample Data Concentration and Flow Rate Input Sheet

ISOTOPIC DATA SHEET

Date: 10/26/09 Release Point: 1 See ID: IP
Unit ID: U2
Menu: M

Timing	Hr	Min	Fan Flow CFM	H-3 (uCi/cc)	C-14 (uCi/cc)	AR-41 (uCi/cc)	KR-83M (uCi/cc)	KR-85M (uCi/cc)	KR-85 (uCi/cc)	KR-87 (uCi/cc)	KR-98 (uCi/cc)	KR-99 (uCi/cc)	KR-90 (uCi/cc)	XE-131M (uCi/cc)	XE-133M (uCi/cc)	XE-133 (uCi/cc)	XE-135M (uCi/cc)	XE-135 (uCi/cc)
	14	30																
	14	45																
	15	00																
	15	15																
	15	30																
	15	45																
	16	00																
	16	15																
Exposure Start/End Start/Current	16	30																
	16	45																
	17	00																
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	20	00																
	20	15																
	20	30																

Copy Cell Down

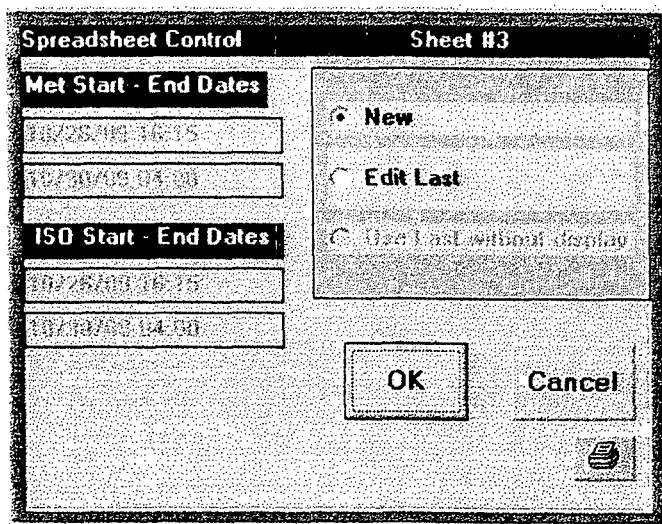
Save to Excel Restore From Excel Previous Screen Copy Paste Clear Release Point 1 OK

NOTE:

The ISOTOPIC DATA sheets are release point specific. If more than one release point is active you MUST enter data on sheets for each release point by clicking on the Release Point button to the left of the "OK" to toggle between release point sheets

- 5.6.5 Under many circumstances when release points are changed or calculation menu choices are changed MIDAS will provide a prompt to initialize ('New') or retain the old ('Edit Last') data collection spreadsheets as shown in Figure 8

Figure 8 Example: MIDAS Spreadsheet Initialization Selection Menu



- 5.6.6 The user **MUST** select 'NEW' when first starting MIDAS, otherwise the spreadsheet dates will be left over from the last time the program was used and **WILL** cause dose projection errors.
- 5.6.7 When changing menus or release points, a similar prompt may appear. If the dates of the various sheets shown are not consistent and are not appropriate for the current calculation the user **MUST** select 'NEW'.
- 5.6.8 Spreadsheet lines highlighted in the time column with **RED** are the start time of the release.
- 5.6.9 Spreadsheet lines highlighted in the time column in **LIGHT BLUE** are the start time of the dose assessment.
- 5.6.10 Because, for offsite protective action purposes, dose that has already been incurred is not used for protective action decisions, the start of release and start of dose assessment will not be the same except for initial calculations.
- 5.6.11 Make **CERTAIN** that the spreadsheets contain data in the highlighted lines. Meteorological data from previous lines is assumed to 'persist' into the current time. Release data does **NOT** 'persist' and blank lines are interpreted as **NO RELEASE**.
- 5.6.12 Buttons on the spreadsheets allow copying lines of data and pasting to new lines, clearing lines of data, and saving and retrieving sheets to / from Excel readable spreadsheet files.



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5.7 **Release Points** - There are four release points available in MIDAS

5.7.1 Release Point 1 – Plnt Vnt – (Plant Vent)

- a. represents releases from the normal plant ventilation system
- b. R-44 and R-27 (Unit 2)
- c. R-14 and R-27 (Unit 3)
- d. stack flow rate required for R14 / R44

5.7.2 Release point 2 – CAEJ – (Condenser Air Ejector)

- a. represents releases from the condenser air ejectors / vacuum system
- b. R-45 (Unit-2)
- c. R-15 (Unit 3)
- d. offgas flow rate required

5.7.3 Release Point 3 – Stm Dmp – (Steam Dump)

- a. represents releases from atmospheric steam reliefs and dump valves
- b. R-28, R-29, R-30, and R-31 (Unit 2)
- c. R-62A, R-62B, R-62C, R-62D (Unit 3)
- d. estimates of steam flow through the open valves is required
 - 1. Flow instrumentation may not give valid values for atmospheric releases through open ADVs or Safeties
 - 2. Initial flow rates at high temperature and pressure may greatly overestimate the total release if long durations are assumed

5.7.4 Release Point 4 – Vap Cont – (Vapor Containment)

- a. represents releases direct from the containment including damage to containment and containment bypass releases
- b. possible unmonitored pathways
- c. Containment dome monitors R-25, R-26 (Unit 2)
- d. Containment dome monitors R-25, R-26 (Unit 3)
- e. Estimate of flow rate required

5.7.5 All four release points are treated as ground level releases



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- a. application of ground level release point model to station vent will likely cause underestimate of offsite mixing and overestimate of dose consequences of release
- b. application of ground level release point model for the condenser off-gas release is probably the best reasonable model
- c. application of a ground level release to the atmospheric steam relief release may significantly underestimate the offsite mixing DURING THE FIRST SEVERAL MINUTES of a release and will overestimate offsite dose consequences. After the steam system is substantially depressurized, the ground level release model is more appropriate
- d. application of the ground level release for vapor containment building leakage is likely the most appropriate model given uncertainty in flow, height above the ground, and other relevant parameters.

5.8 Times and timing in MIDAS

5.8.1 There are several timing concepts important to successful MIDAS dose projections

5.8.2 Meteorological data

- a. Always provided in 15 minute average data
- b. Averages are CENTERED on the 15 minute clock time e.g. the 1300 average is accumulated from 12:52:30 to 13:07:30
- c. Manually entered data COULD be in instantaneous values but may not represent the long term dispersion

5.8.3 **Start Date of Exposure –**

- a. The date and time for the beginning of calculation of dose consequences
- b. Because dose already incurred is irrelevant to protective actions, this is typically set to the current time
- c. Defaults times will be set to Meteorological times – e.g. HH: 08, HH: 23, HH: 38, HH: 53

5.8.4 **Trip/Shutdown**

- a. The date and time of the plant trip or shutdown
- b. Used to decay default and other isotopic information to adjust isotopic mixes and monitor response factors based on mix
- c. Should be set once at start of event
- d. MIDAS will remember this value



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5.8.5 Release time

- a. The date and time of the start of the release
- b. Different from start of exposure because previous releases are kept track of in MIDAS and doses for the activity already in the environment may be included in the dose assessment
- c. Should be set to the earliest time of significant releases – should NOT be the current time except for the first calculation.
- d. Should be set once at start of event
- e. MIDAS will remember this value

5.8.6 Remaining duration

- a. Represents the approximate remaining duration of significant releases
- b. Used to 'persist' releases into the future
- c. Four hours is the typical default.

5.8.7 Exposure time to be calculated


- a. Specific times that projections will be provided for
- b. Provides basis for plume plots, long term projections
- c. At least one value should be 4 in order to provide specific projection at the default duration

5.8.8 Daylight savings time

- a. MET data is maintained in Eastern Standard Time (EST)
- b. The PI computer tags data strings with eastern daylight time (EDT) when applicable
- c. Conflicting times will cause problems with auto data collection
- d. MIDAS contains a data file (DST.txt) that tells MIDAS when to assume EDT.
- e. This file MUST be maintained annually due to possible changes in EDT/EST changeover as federally mandated
- f. MIDAS will subtract 1 hour from the PI reported met string during EDT based on the period defined in the DST.txt file.

5.9 Automated Data collection

- 5.9.1 Automated collection of data is obtained from the EOFPI, U2PI, and U3PI servers.

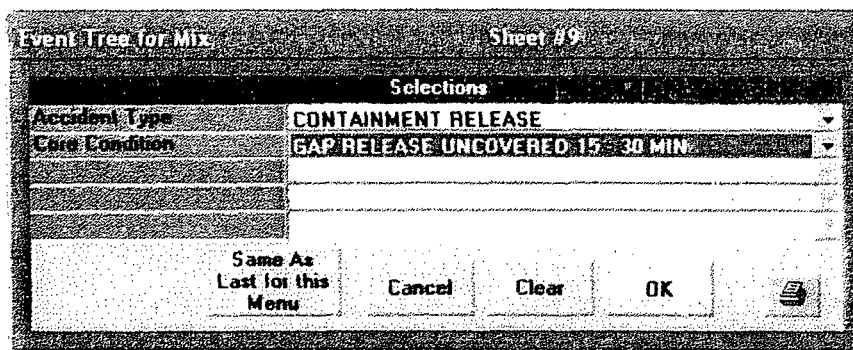
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- 5.9.2 Short delays are expected between data collection at the source and the availability of the data in the PI servers.
- 5.9.3 MIDAS delays acquisition of data for about 75 seconds to ensure data is updated. IF data collection is delayed longer than 75 seconds or there are errors in the time in the computers, automatic data collection will fail.
- 5.9.4 Because the data collection into the PI computers is dependent on the time and timing of multiple PI servers as well as other plant computers and data loggers (met towers) bad or old data may be collected due to delays in the data transfer path before MIDAS tries to acquire the data.

5.10 Event Trees

- a. In some events source term may be developed or enhanced by selection of plant conditions from an 'event tree'
- b. The event tree is based on the event trees in the NRC Response Technical Manual but applies only the default noble gas to iodine mixes of 10000:1 or 100: in use at IPEC.
- c. As the name suggests, the event tree is a branching process that asks questions based on previous answers
- d. The event tree may have one or two branches after the initial trunk question as shown in the example in Figure 9 below.

Figure 9 Example: MIDAS Event Tree Menu



- e. Each line is based on a pull-down selection list with the next branch typically dependent on the answer to the previous branch.
- f. There are four accident types, three isotopic mixes, and for steam generator releases, two possible flow rates in event tree. The tree selections are shown in detail in Attachment 9.1



- g. The event tree selects the isotopic mix and / or the curies available for release by determining core condition, release conditions (flow rates etc) and adjustments for the default Noble Gas to Iodine ratios for each accident type.
- h. For unmonitored releases, the event tree will derive isotopic release rates (mix and magnitude)
- i. For releases with monitor data, the event tree will determine the isotopic mix which is then applied to the total activity applicable for the monitor reading to determine the magnitude of the release
- j. The selection of release point does NOT limit the event tree menu choices. Therefore the user must ensure that the release point and the accident type in the event tree are consistent. E.g. do not select release point 1 and a steam generator tube failure event tree (more appropriate for release point 3).

5.11 MIDAS Main input control page

NOTE:

Each time the NEXT arrow is selected, MIDAS will inspect the input parameters to test if there is valid complete data for a successful dose projection and will provide warnings if data is incomplete or invalid. Some of these warnings are informational and some are critical. The warnings messages must be reviewed to determine if they are critical or not.

- a. MIDAS uses a main input control page to sequence the user through the input process. At each step, additional panes are shown as required as described below for individual parameter input
- b. The input control page is divided into four sections horizontally
- c. The first section allows selection of release points and plume plot display distance as shown in Figure 10. Default for the initial display radius is 16 miles


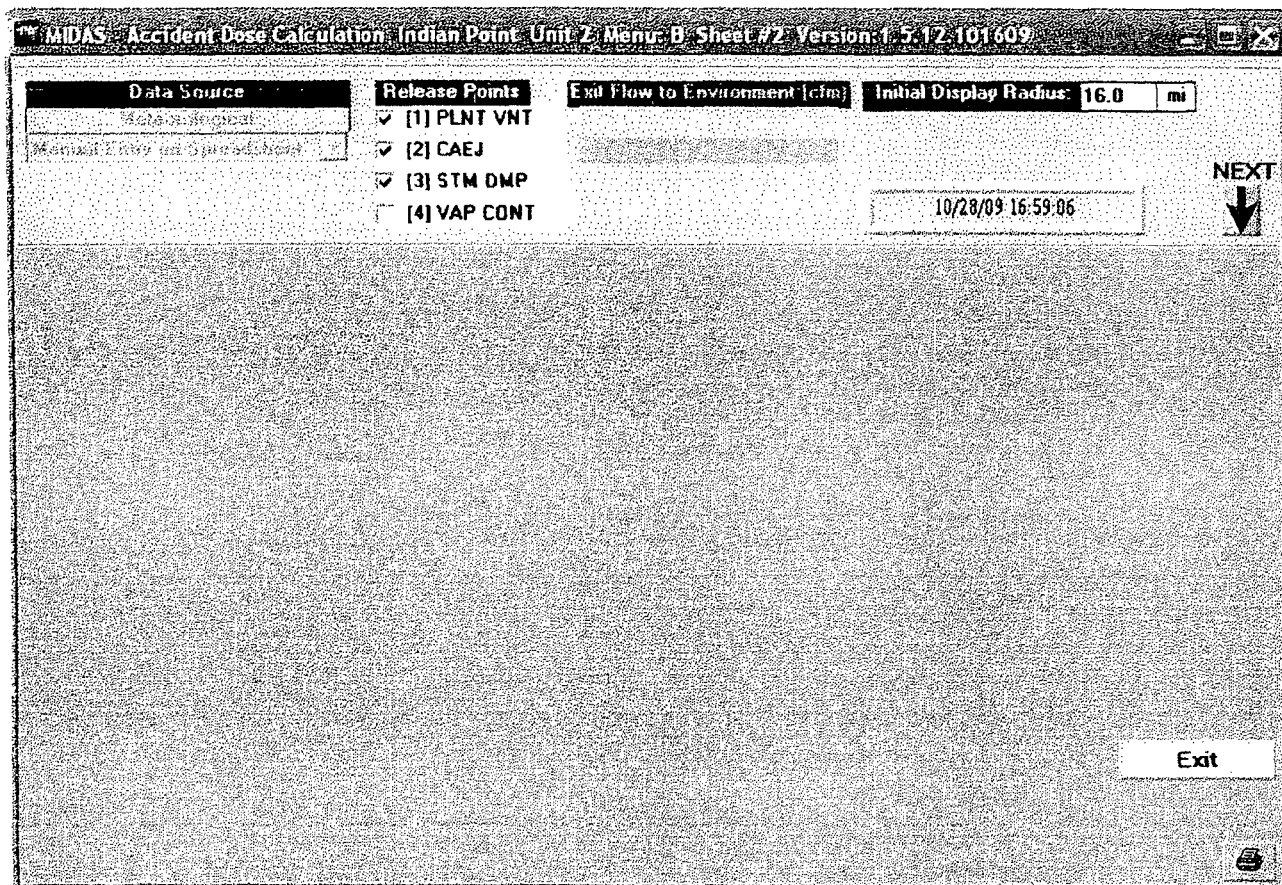
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Figure 10 Example: MIDAS Main Input Page, first quarter pane section



- d. CLICK on the NEXT down arrow to continue – the arrow label will change to DONE and will turn green
- e. 'Exit' terminates MIDAS and must be clicked TWICE to exit

NOTE:

Gray items are not used in the selected menu. Most users will not need these items during emergency response activities

- f. The second quarter pane of the screen inputs exposure start date/time and desired calculation times and is shown in Figure 11 below. At least one of these times should be 4 hours


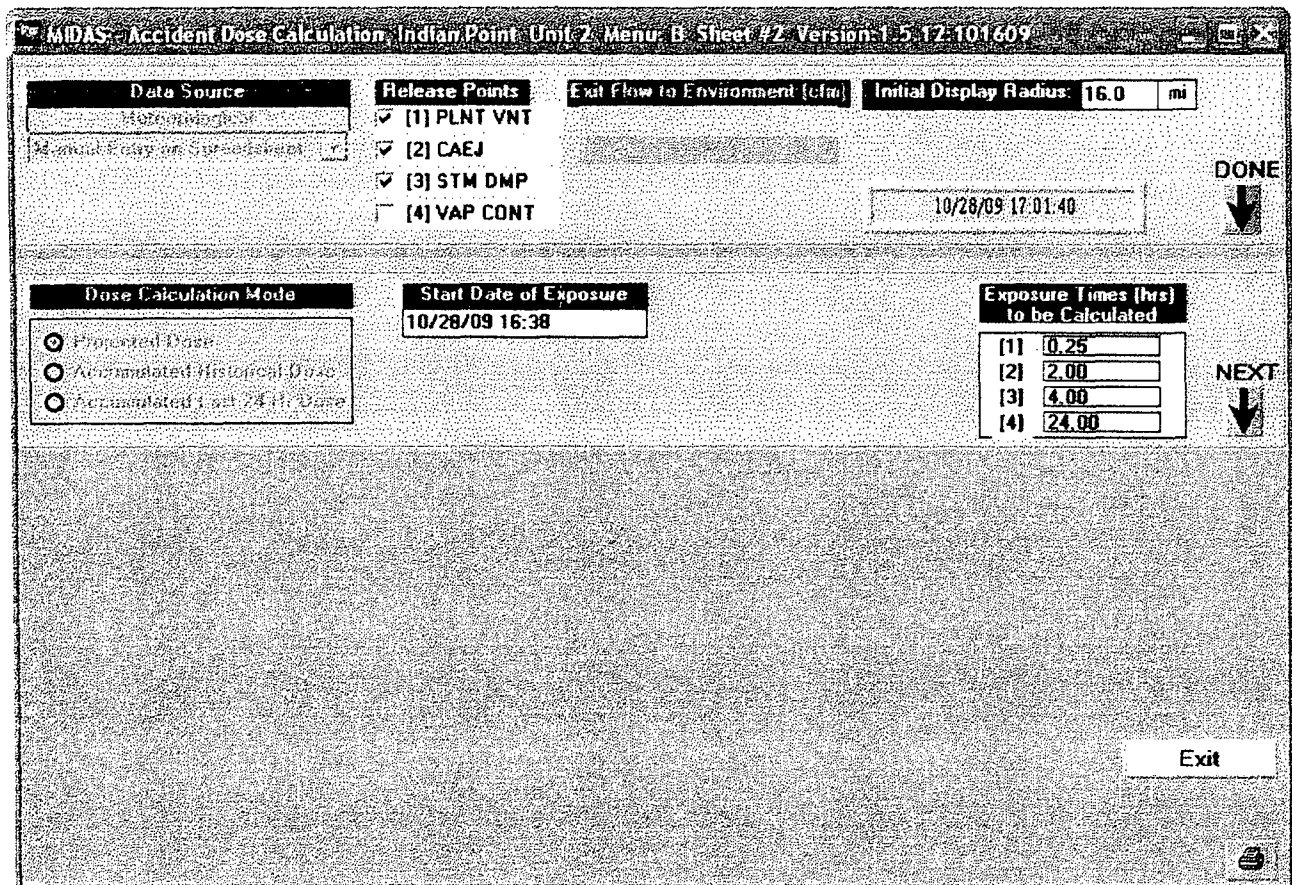
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Figure 11 Example: MIDAS Main Input Page, second quarter pane section



MIDAS - Accident Dose Calculation: Indian Point, Unit 2, Menu: B, Sheet #2, Version: 1.5.17-101609

Data Source
 Hazardous
☐ Manual Entry or Spreadsheet

Release Points
☒ [1] PLNT VNT
☒ [2] CAEJ
☒ [3] STM DMP
☐ [4] VAP CONT

Exit Flow to Environment (cfm)

Initial Display Radius: 16.0 mi


Dose Calculation Mode
☒ Projected Dose
☐ Accumulated Historical Dose
☐ Accumulated 1-yr 24-hr Dose

Start Date of Exposure
 10/28/09 16:38

Exposure Times (hrs) to be Calculated
 [1] 0.25
 [2] 2.00
 [3] 4.00
 [4] 24.00

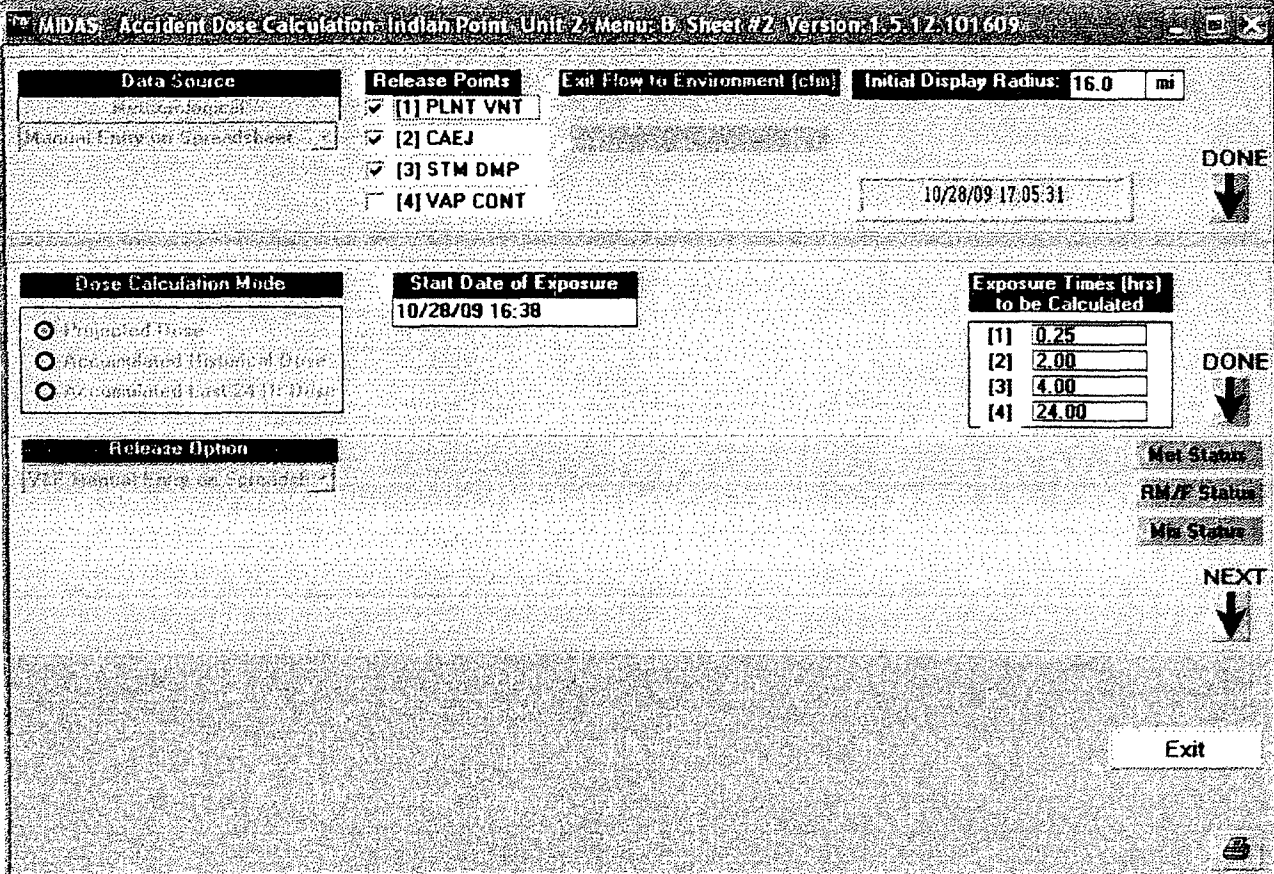
DONE (with down arrow)
NEXT (with down arrow)
Exit

- g. CLICK on the NEXT down arrow to continue
- h. DEPENDING on the initial menu selection, the manual input spreadsheets or the event tree will now be displayed
- i. After completing the spreadsheets or event tree, or if automated data is available, the previous Next down arrow will turn green and be relabeled DONE.
- j. Click boxes are displayed on the right of the third input page section for each spreadsheet used as shown in Figure 12 below.
 1. If all boxes are GREEN, MIDAS has determined that the input data is usable for calculations – i.e. there is sufficient valid data for a projection at the current projection time

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2. If any box is RED, MIDAS has determined that the data for that input item may not be usable.
3. If any box is RED, click on that box to repeat the input process for that item.

Figure 12 Example: MIDAS Main Input Page, third quarter pane section



- k. CLICK on the NEXT down arrow to continue – the arrow label will change to DONE and the arrow will turn green
- l. The final section of the input page allows changing the Trip and Release Start times, as well as the release duration as shown in Figure 13 below.





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Figure 13 Example: MIDAS Main Input Page, fourth quarter pane section

MIDAS: Accident Dose Calculation, Indian Point, Unit 2, Menu: B, Sheet #2, Version: 1-5-12-101609

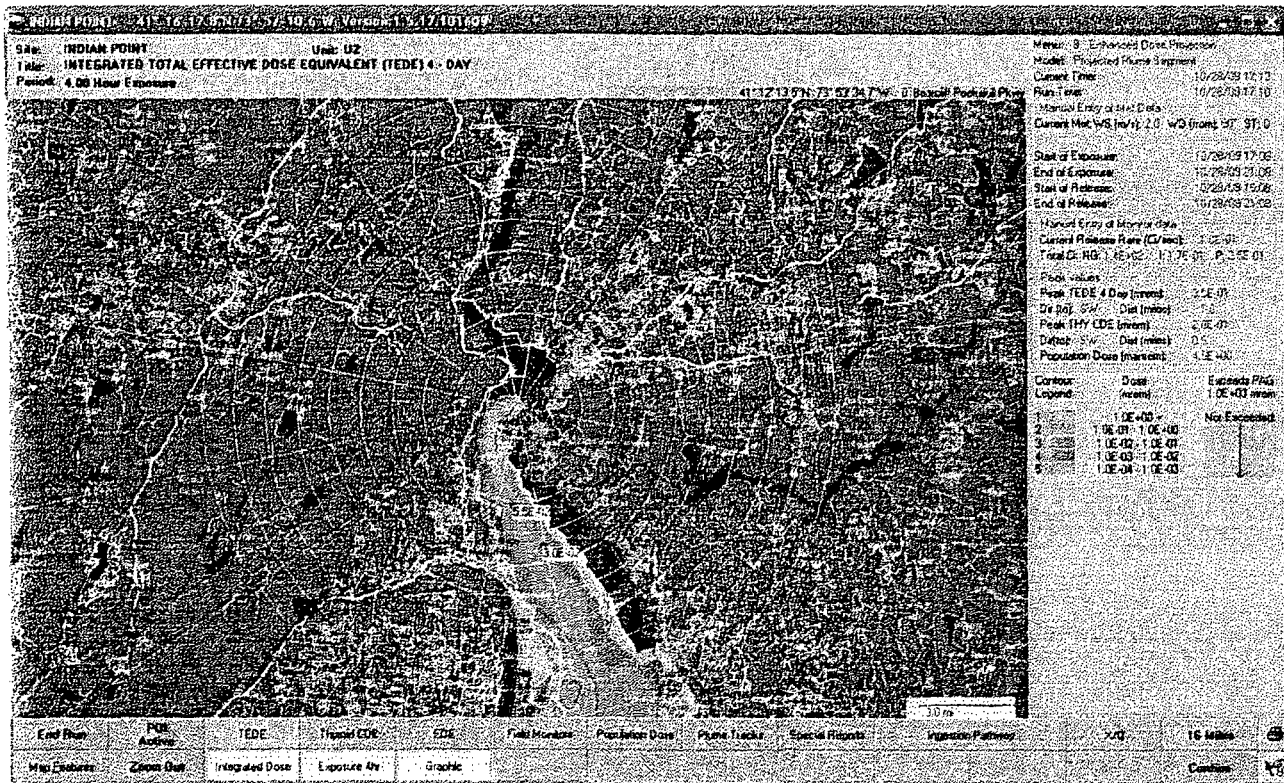
Data Source Historical Data Monitor Data on External Tool	Release Points <input checked="" type="checkbox"/> [1] PLNT VNT <input checked="" type="checkbox"/> [2] CAEJ <input checked="" type="checkbox"/> [3] STM OMP <input type="checkbox"/> [4] VAP CONT	Exit Flow to Environment (cfm) Initial Display Radius: 16.0 mi	10/28/09 17:07:10 DONE 
Dose Calculation Mode <input checked="" type="radio"/> Projected Dose <input type="radio"/> Accumulated Historical Dose <input type="radio"/> Accumulated Ext. of H. Dose	Start Date of Exposure 10/28/09 16:38	Exposure Times (hrs) to be Calculated [1] 0.25 [2] 2.00 [3] 4.00 [4] 24.00	DONE 
Release Option VLE Manual Entry on Spreadsheet	Not Status RM/F Status Map Status		DONE 
Date/Time of Trip/Shutdown 10/28/09 16:08	Start Date of Release 10/28/09 16:08	Remaining Duration (hrs) 4.00 Remaining Release Duration from Current Time	Exit Start Calc
<input type="checkbox"/> at Current Time <input checked="" type="checkbox"/> at Start of Release	<input type="checkbox"/> Trip Date <input type="checkbox"/> Minutes Since Trip		

- m. Click 'Start Calc' to continue and start the offsite dose calculations
- n. Calculations may take several seconds and are not complete until the text displays are shown on the right side of the screen view.
- o. MIDAS will complete calculations and show the default results page, a plume plot of the integrated TEDE dose at 4 hours.

5.12 MIDAS Output

5.12.1 MIDAS will display various plume plots depending on user selected options as shown in Figure 14 below.

Figure 14 Example: MIDAS Plume Plot Output Display Page



NOTE:

MIDAS uses site-specific variable wind fields so the plume may not be linear.

NOTE:

MIDAS plot screen can be printed by clicking on the printer icon on the lower right

5.12.2 In addition to the plume plot, various input and calculated parameters are displayed on the right side of the output page.

5.12.3 Numerous plume display options are available by selecting the buttons at the bottom of the frame. Clicking on these buttons activates additional features or toggles display options



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NOTE:

Most of the plume display option buttons require clicking on the CONFIRM button on the lower right to redraw the display. The CONFIRM button will blink when required.

- 5.12.4 POI activates a Point of Interest pointer. Selecting POI and clicking on any point on the active plot will cause a point specific value to be shown on the plume plot.

NOTE:

Changing the plume display by selecting a different plume or zooming the display will clear the points of interest. Two points of interest are shown in the plume plot in Figure 14 above

- 5.12.5 TEDE will display various options for the Total Effective Dose Equivalent calculation based on the yellow buttons below (see Sections 5.12.6 through 5.12.8)
- 5.12.6 Integrated dose button toggles between integrated dose and dose rate display
- 5.12.7 Exposure 4 hr toggles between the four calculation display times previously input in the second section of the input page
- 5.12.8 Graphic toggles between graphic on tabular display. Generally the graphic display is more useful for emergency response; tabular reports are available elsewhere (see below)
- 5.12.9 Thyroid CDE (previously referred to as TODE) will display various options for the thyroid specific organ dose calculation based on the yellow buttons above (see Sections 5.12.6 through 5.12.8)
- 5.12.10 EDE will display various options for the external photon dose based on the yellow buttons above (see Sections 5.12.6 through 5.12.8)
- 5.12.11 Field Monitors will display various options for external photon dose rates with overlay projected photon dose and measured dose (or dose rate) at the Reuter Stokes monitors and field monitoring points as shown in Figure 15 below (view zoomed in compared to the view above)
- 5.12.12 Points with two values are Reuter Stokes locations
- C – MIDAS calculated value
 - M – Reuter Stokes monitor reported value (in this case M values are zero because the data was not being collected)
 - Calculated values (dose or dose rate) for predefined field monitoring points are shown at the 'circle and plus' crosshairs



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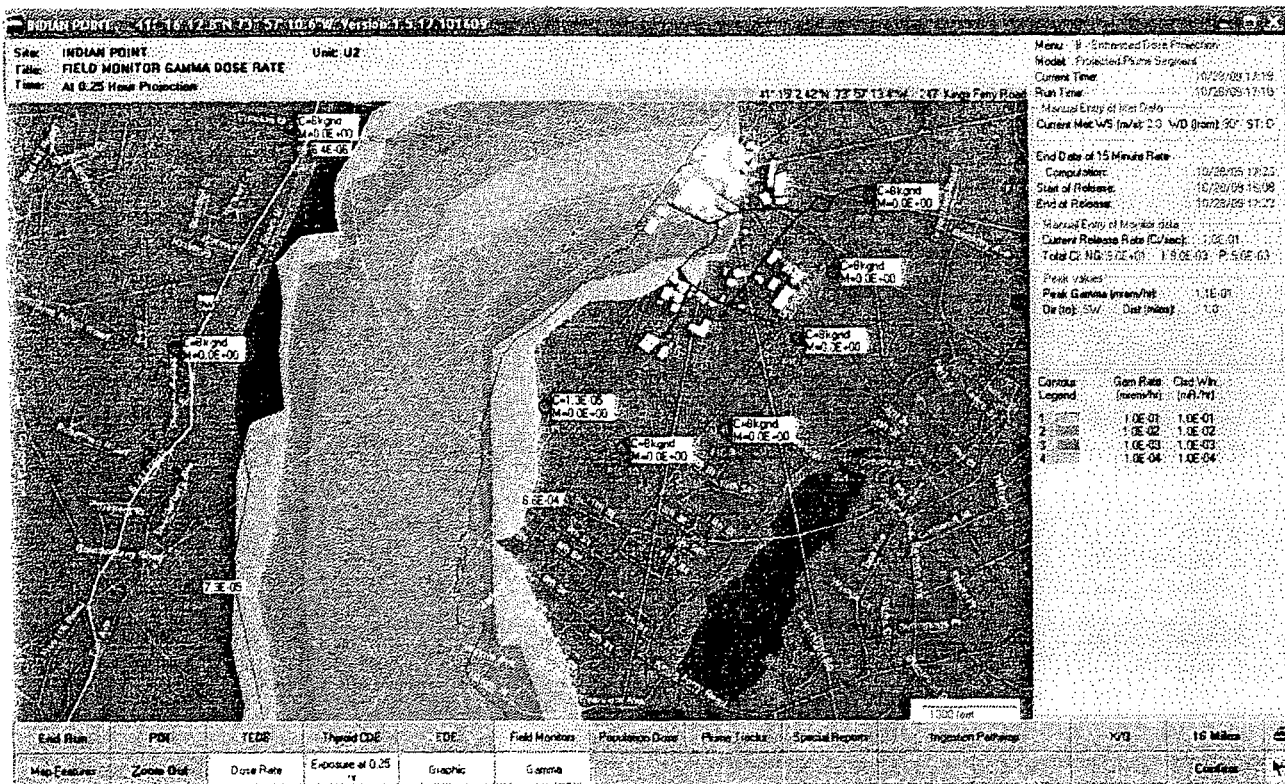
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Figure 15 Example: MIDAS Plume Display with Reuter Stokes and Monitoring Location Data



- 5.12.10 Population Dose will display a plot of integrated population dose
- 5.12.11 Plume Tracks is a simplified display of the plume. This is useful to highlight the possible meander of the plume. Lateral contours are not shown.
- 5.12.12 Special Reports will generate text reports of input and output parameters which can be printed and will start the Form 1 input process
- 5.12.13 Dose Summary provides the simplified dose and release summary including affected sector and affected ERPAs in a single page. This is probably the most useful report and is shown in Figure 16 below.

Figure 16 Example: MIDAS Dose Summary Report



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Dose Assessment and PAR Summary

1 / 1+ 70% BusinessObjects

Dose Assessment Summary Indian Point Station Unit 2

Name: Run Time: 05:10 PM Date: 28-Oct-09

Current Meteorological Data

Wind Direction (from): 90
Affected Sector: 8
Wind Speed (m/s): 2.0
Stability Class: D

Current Active Release Locations

☒ Release From Plant Vent
☐ Release From the Air Ejectors
☐ Release From the Main Steam Lines
☐ Release From the Containment

Remaining Release Duration (hours): 4.0

Current Release Rates

Noble Gases (Ci/sec): 1.0E-01
Particulates (Ci/sec): 1.0E-05
Radioiodines (Ci/sec): 1.0E-05

Peak Values

	Site Bndry	2 Miles	5 Miles	10 Miles
Integrated Dose @ 4 hours (mrem)	TEDE: 9.0E-03	1.6E-01	4.1E-02	6.5E-02
	Thy CDE: 2.1E-05	7.0E-02	1.7E-02	5.7E-03
Current Dose Rate (mrem/hr)	TEDE: 3.9E-03	5.3E-02	1.7E-07	2.5E-06
	ThyCDE: 6.5E-06	1.0E-02	4.5E-07	1.5E-07
Dispersion (sec/m ³)	X/Q: 2.3E-08	5.5E-06	1.7E-06	7.2E-07

The following Protective Actions are recommended to be implemented as soon as practicable:

B. Alert

A. NO NEED for PROTECTIVE ACTIONS outside the site boundary.

5.12.14 Ingestion Summary provides information on the dose and concentrations through the ingestion pathways the longer term response.



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- 5.12.15 Met/Rad Summary provides a summary page of the Meteorological conditions used and the readings from any radiation or effluent monitors used for the projection
- 5.12.16 RMP provides a summary report for the calculated values at offsite radiation monitoring points
- 5.12.17 Projection Summary provides a summary of the dose compared to PGA and dose broken out by pathway
- 5.12.18 Plume Arrival provides a tabular estimate of the arrival time of the plume at various distances based on assumption of last meteorological data persists
- 5.12.19 Ingestion Pathway displays a plume of the ingestion pathway concentrations for based on the isotopes and pathways selected using the yellow buttons below
- 5.12.23 X/Q (chi over Q) displays various dispersion parameter plots based on the selection from the yellow button below.
- 5.12.24 XX Miles activates an input box to change the downwind distance limit of the calculation.
- This actually recalculates the plume, not just resizes the display.
 - This can be useful to improve the display precision for close in to the plant.
 - End Run will exit the current calculation.
 - An exit option menu will appear as shown in Figure 17 below

Figure 17 Example: MIDAS Exit Option Menu

Enter Run Title:
IP0910281723


☒ Run & Exit Time Remaining: 08:01

☐ Save Run & Exit

☐ Exit without saving

☐ Save without exiting

Cancel OK

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NOTE:

Depending on the initial menu choice, not all of these four exit menu choices will be available.

- e. Run Next Time Step will rerun the current calculation with new data for a new 15 minute average. If the next 15 minute interval is not yet available, the choice will be red with a count down timer
- f. Save run and exit will save all of the parameters for the current run to the computer hard drive in a file based on the name the user enters in the box at the top and then terminate MIDAS.

NOTE:

In order for 'RECAP' in the main startup screen to redisplay runs, the runs **MUST** have been saved using this process

- g. Exit without saving will terminate MIDAS and not save a RECAP file
- h. Save without exit will save the RECAP file and return to the main startup menu

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5.13.1 MIDAS results should be compared to existing limits and protective action guidelines to determine appropriate response.

5.13.2 Use EP-410 to determine protections action recommendations based on MIDAS dose assessment results

5.13.3 Use the PART1 communication system to complete notifications

5.13.4 Release rates calculated by MIDAS that exceed technical specification limits need to be identified in the notifications.

6.0 INTERFACES

6.1 IP-EP-230, Operations Support Center

6.2 IP-EP-240, Security

6.3 IP-EP-410, Protective Action Recommendations

7.0 RECORDS

All logs, completed forms, and other records generated during an actual emergency **SHALL** be considered quality records and maintained for the life of the plant.

8.0 REQUIREMENTS AND COMMITMENT CROSS-REFERENCE

None

9.0 ATTACHMENTS

9.1 Event trees

9.2 Flow charts

9.3 Plant and Site Specific Parameters

9.4 Quick Guides for MIDAS Operation



Attachment 9.1

Event Trees

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- 1.0 Accident type – four choices
 - 1.1 Containment release
 - 1.2 Steam Generator Tube Rupture
 - 1.3 Containment Bypass
 - 1.4 Spent Fuel Pool release
- 2.0 Core Condition – six choices in two sets of three – one set applies to operating core accidents, one set to spent fuel
 - 2.1 For containment, containment bypass, and Steam Generator releases:
 - 2.1.1 Gap release 15-30 min – represents 5 % core activity release from gap activity with some core damage
 - 2.1.2 In-vessel severe core damage uncover >30 minutes – represents core melt in vessel
 - 2.1.3 Normal coolant with 100x spike – normal coolant activity with iodines and particulates multiplied by 100 to represent worst case normal trip
 - 2.2 For spent fuel pool releases:
 - 2.2.1 Zircaloy Fire in one three month batch
 - 2.2.2 Gap release from one three month batch
 - 2.2.3 Gap release from a full pool
- 3.0 Tube Leak Rate – two choices - used for the steam generator tube rupture to identify the RCS to steam side transfer rate
 - 3.1 1 tube at high pressure – initial condition of a single full tube failure
 - 3.2 Charging pump flow – lower pressure condition assuming equilibrium with one



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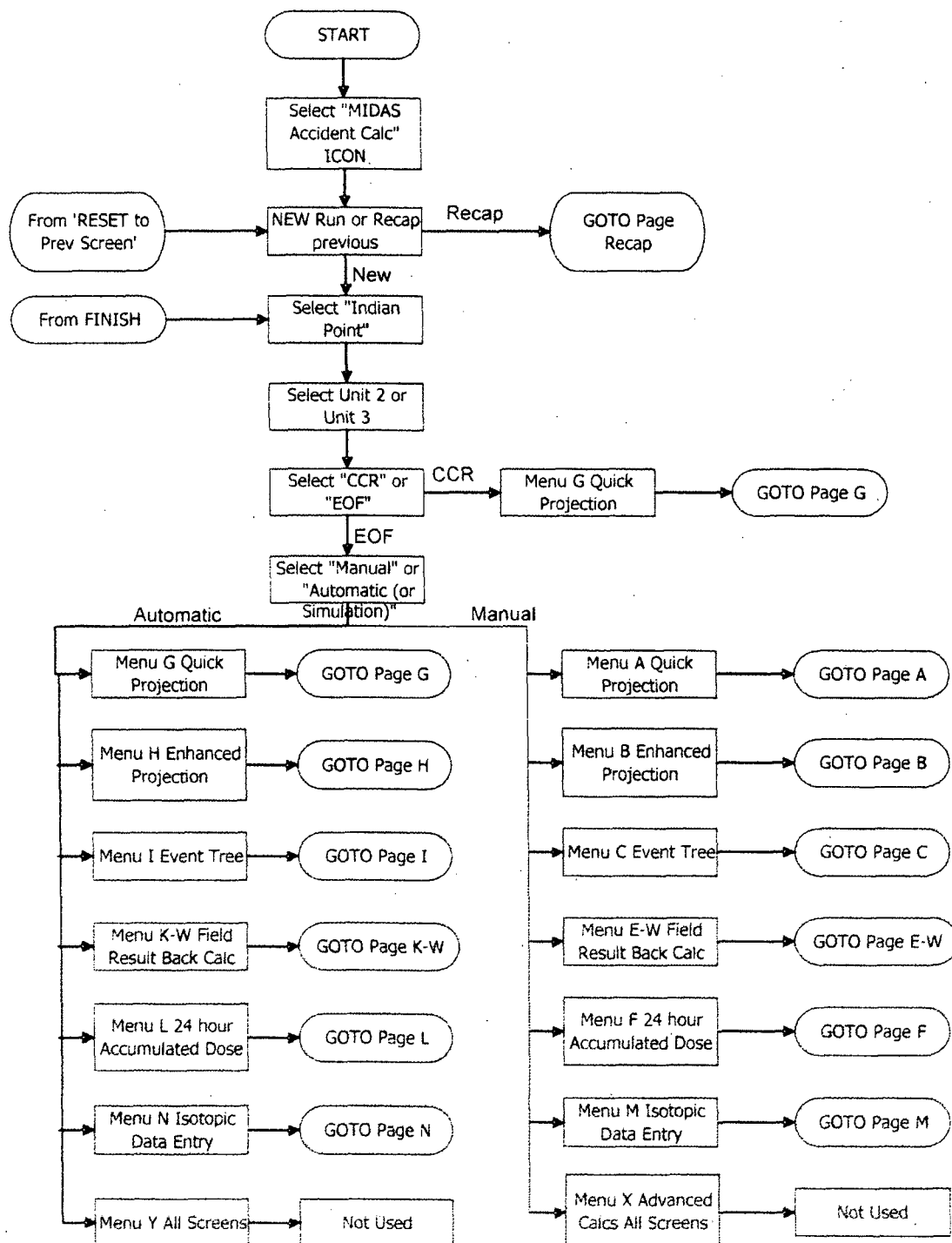
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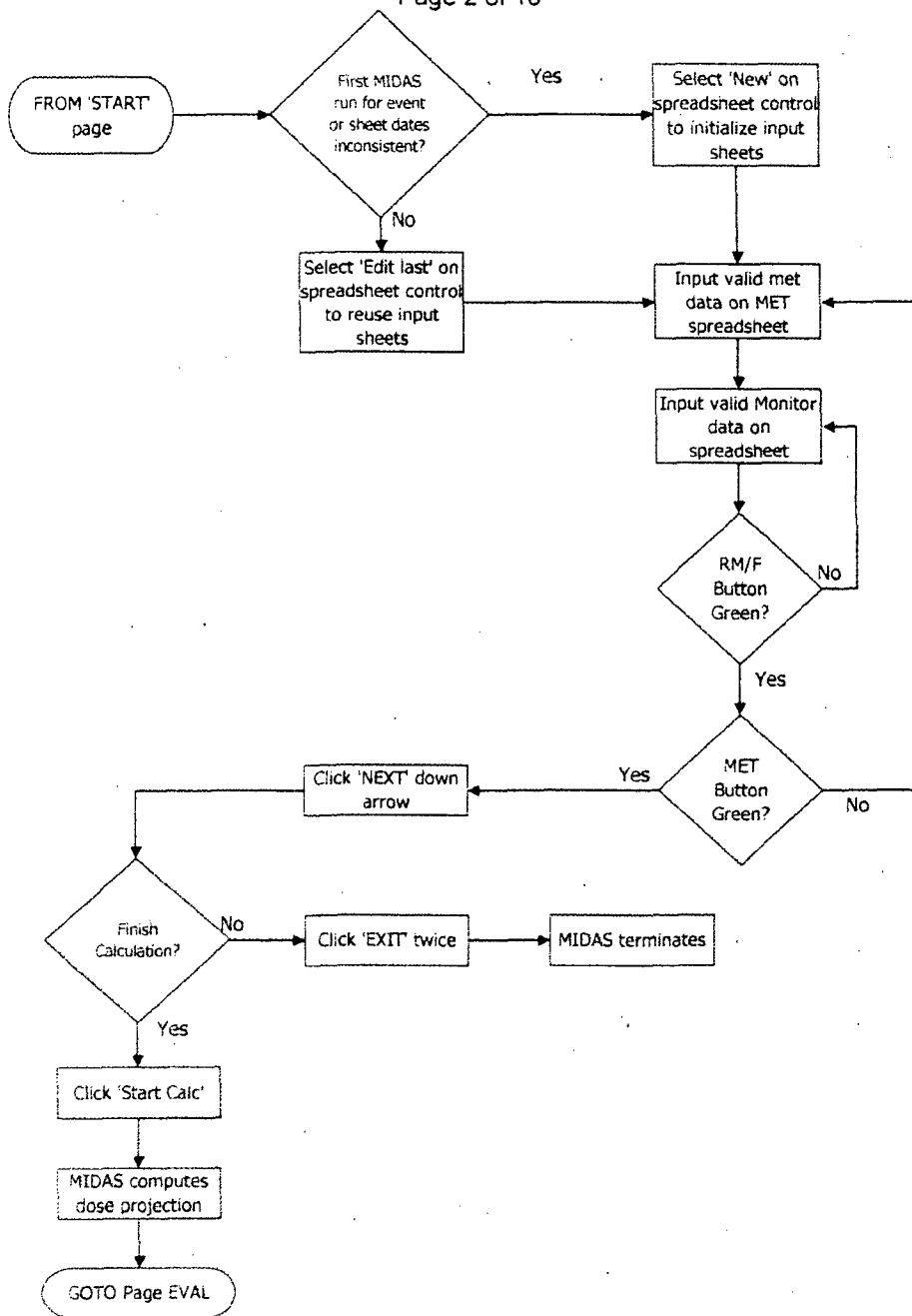
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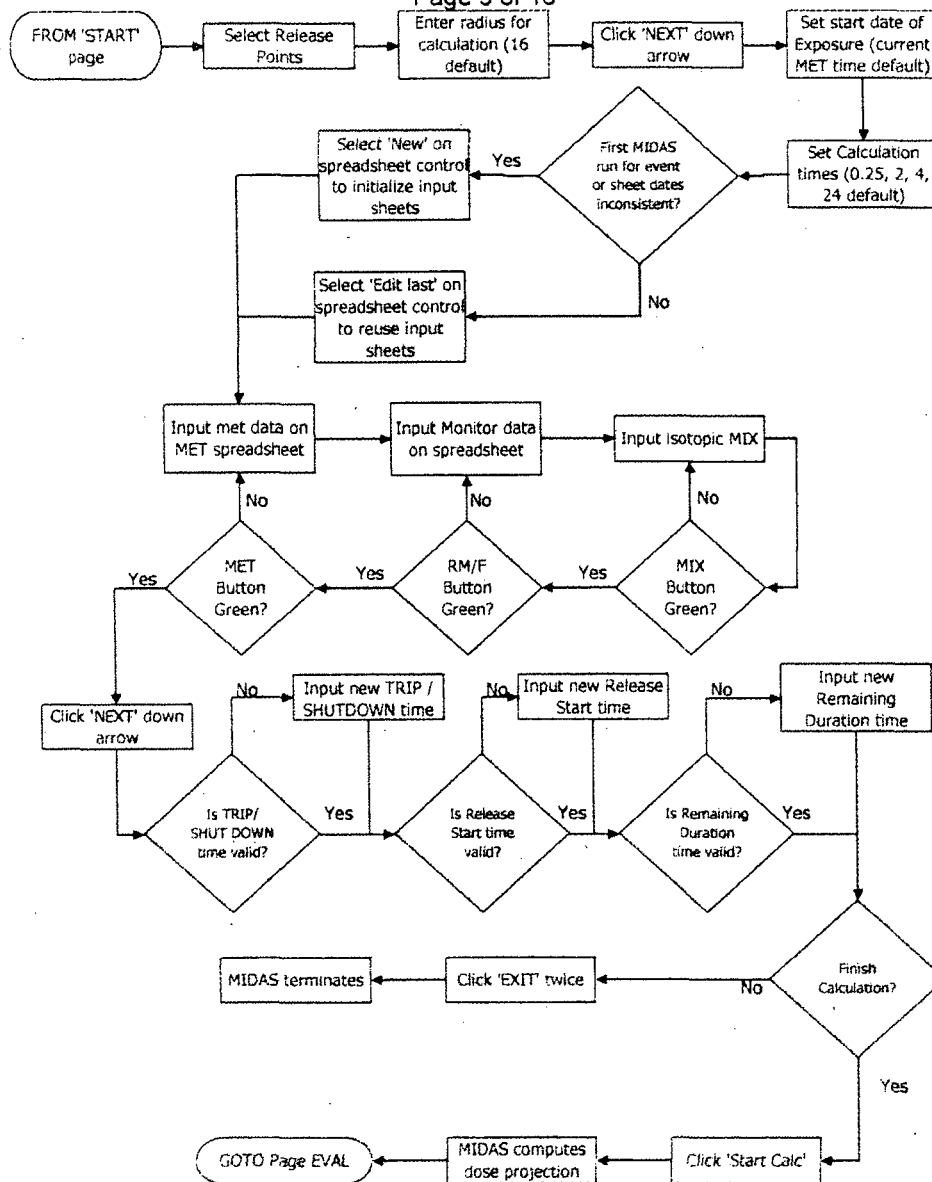
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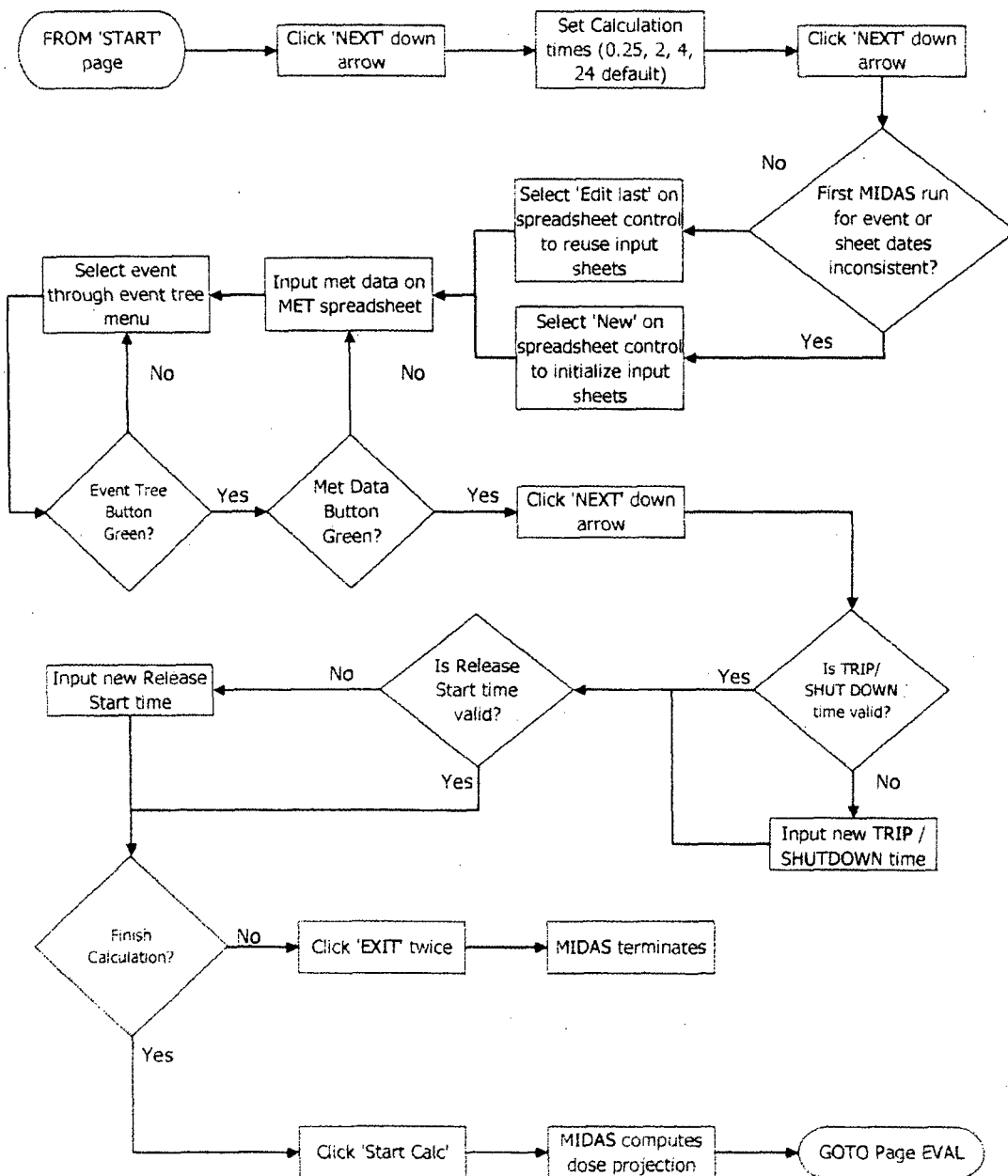
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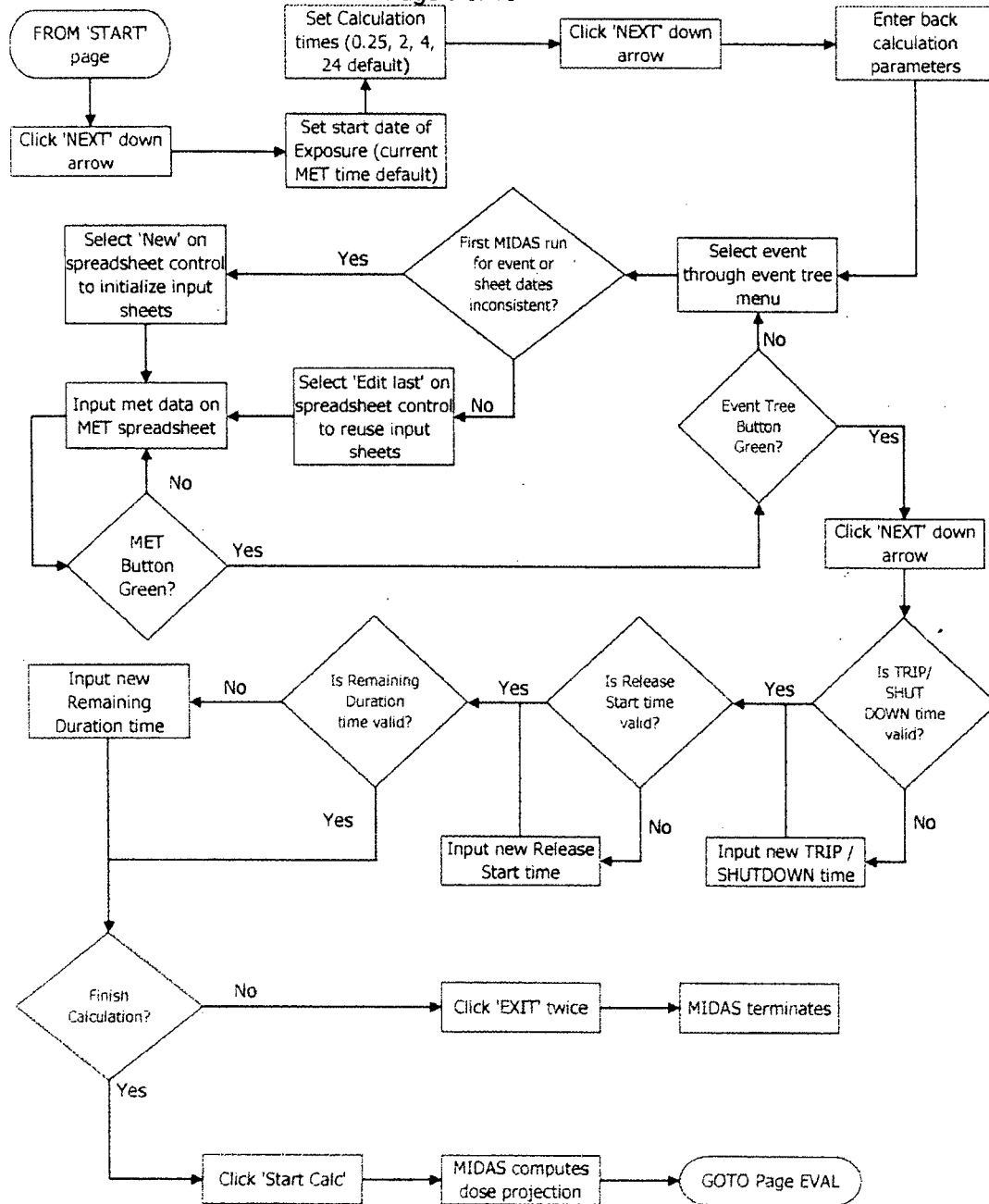
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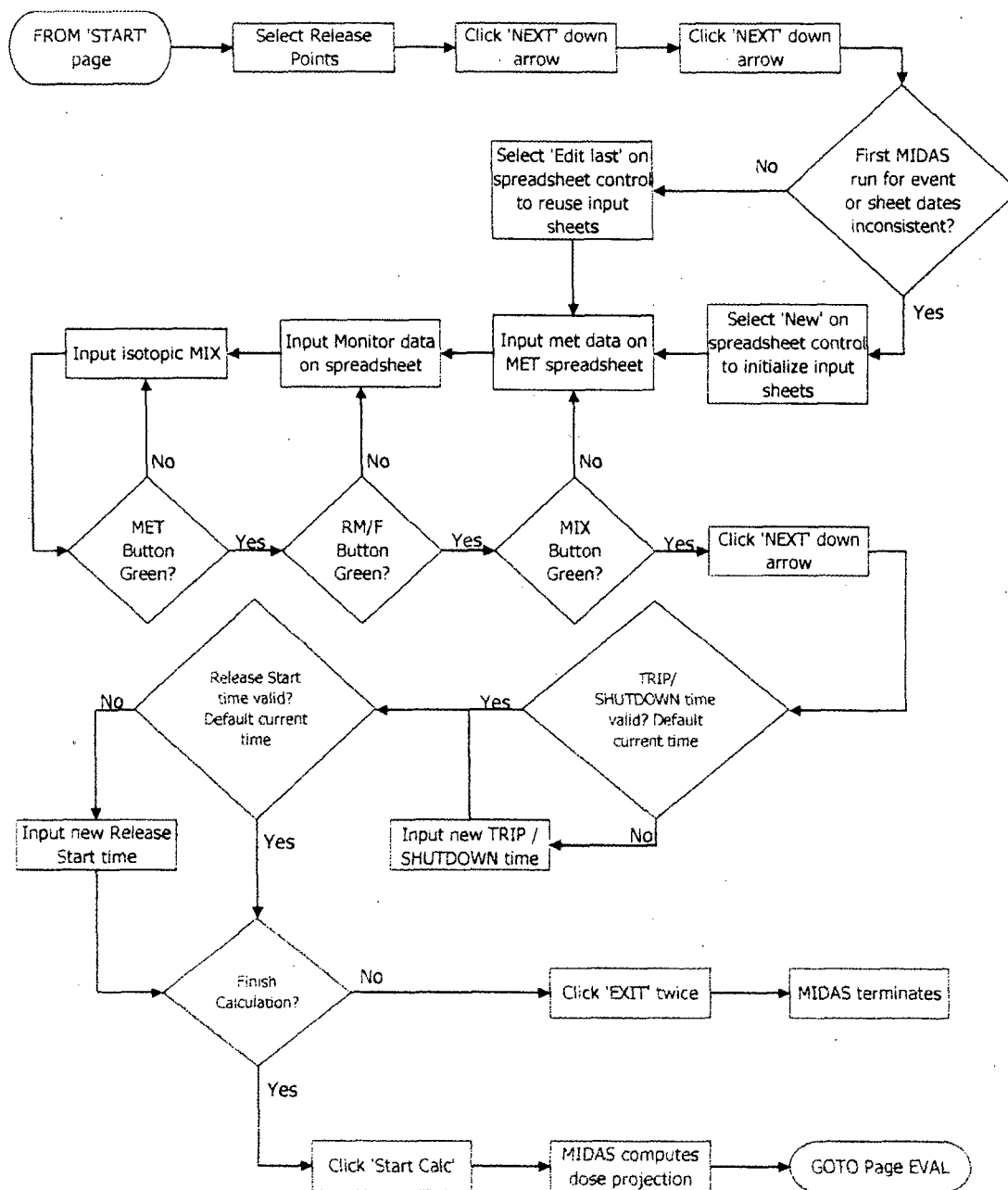
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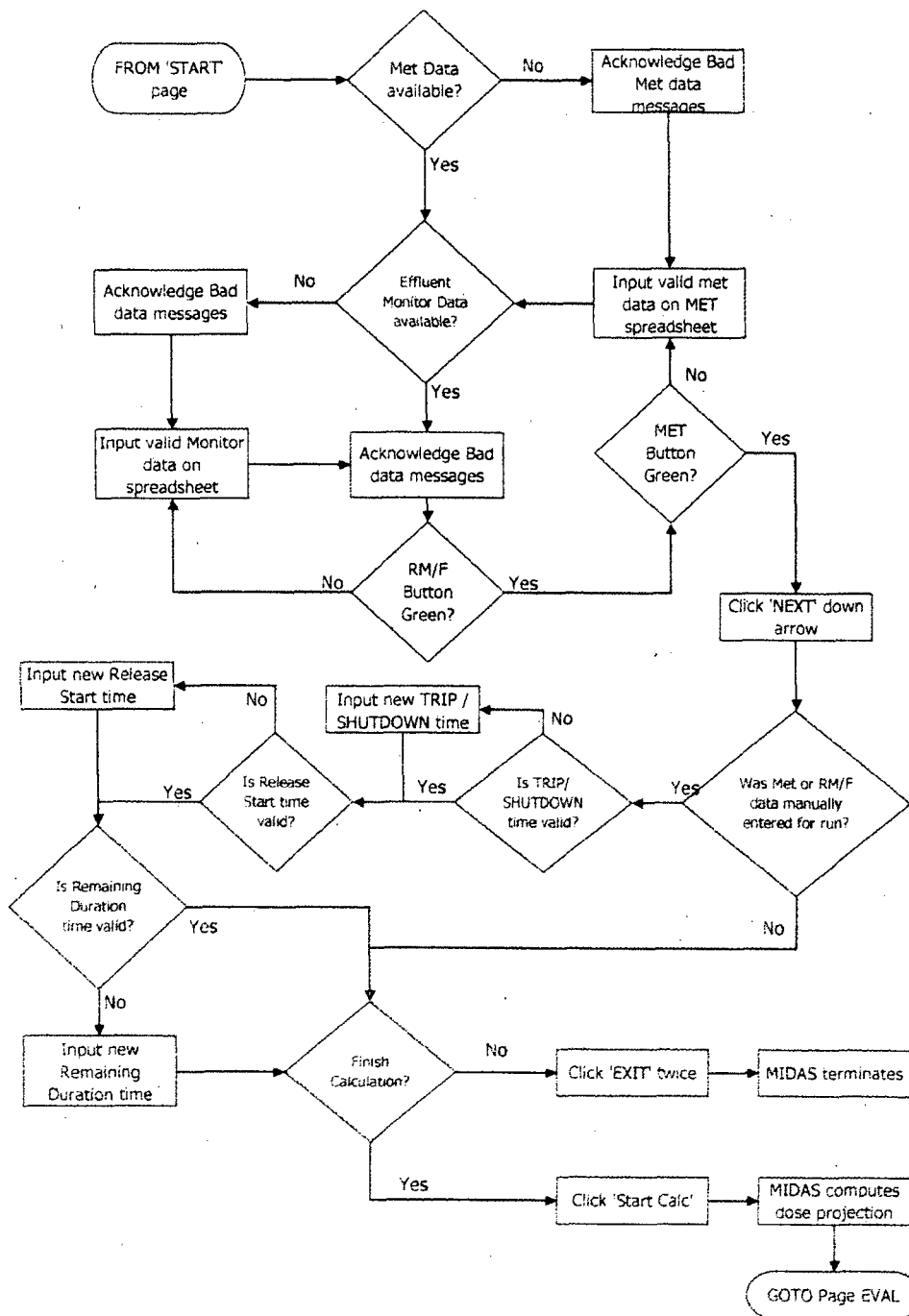
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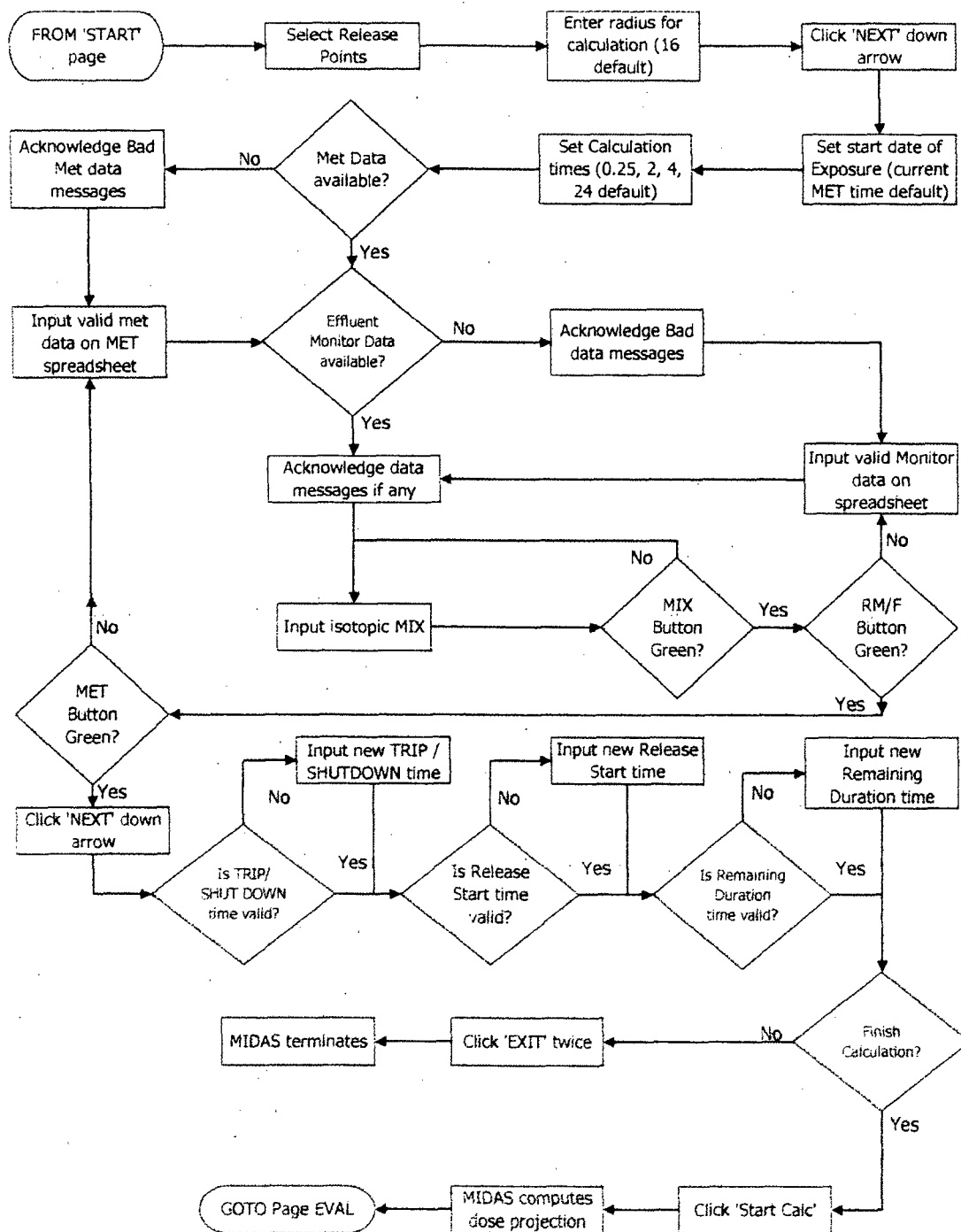
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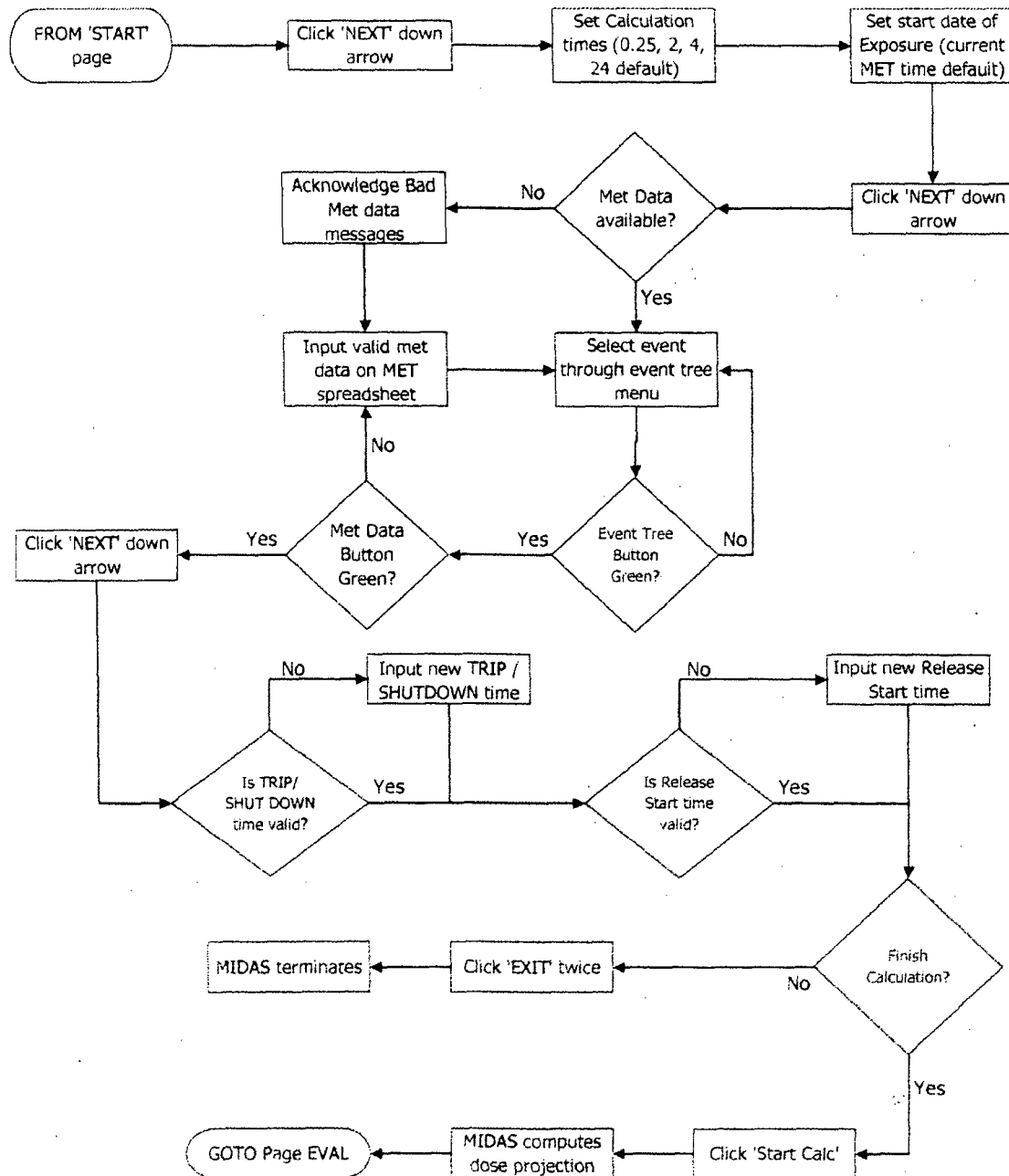
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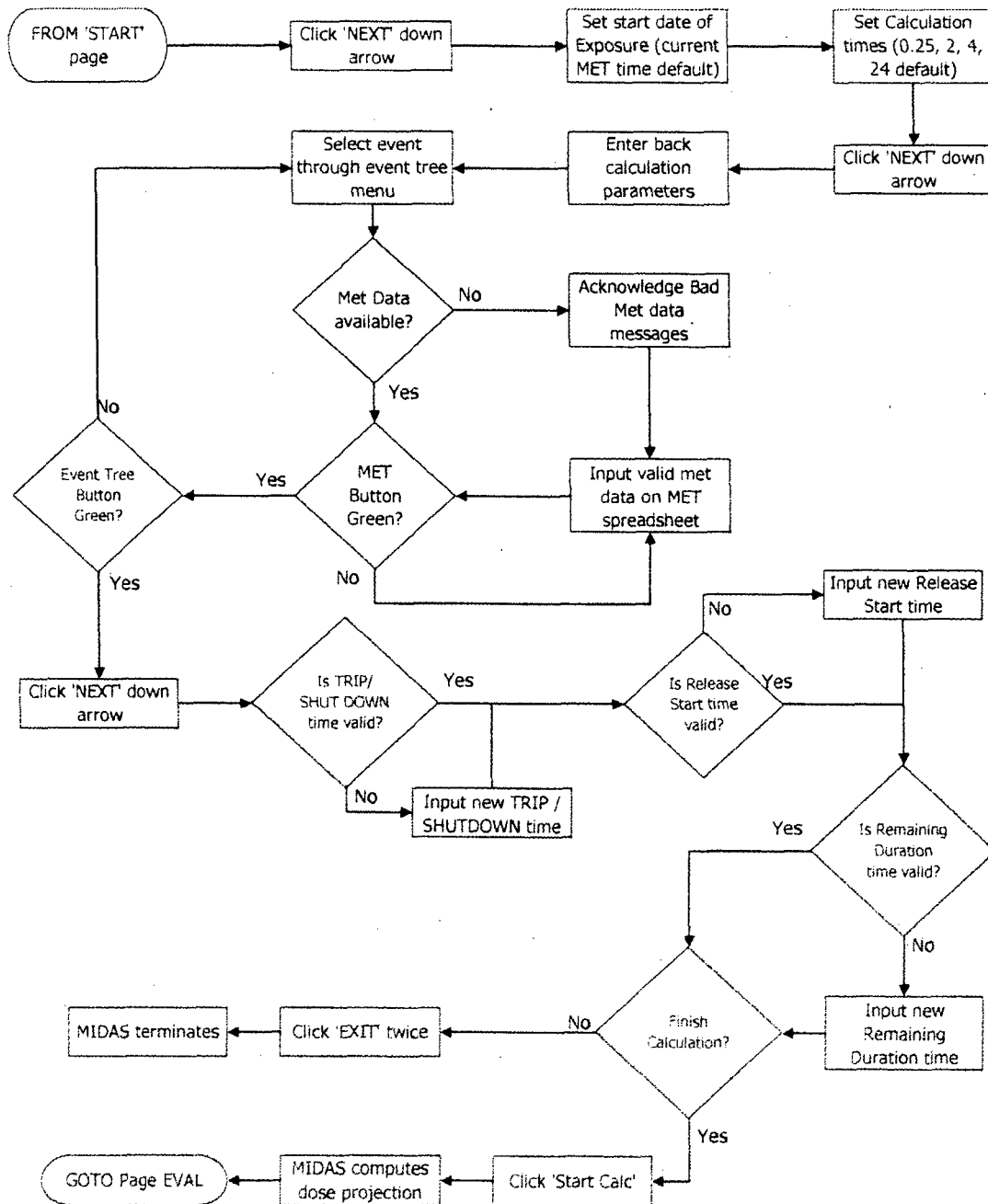
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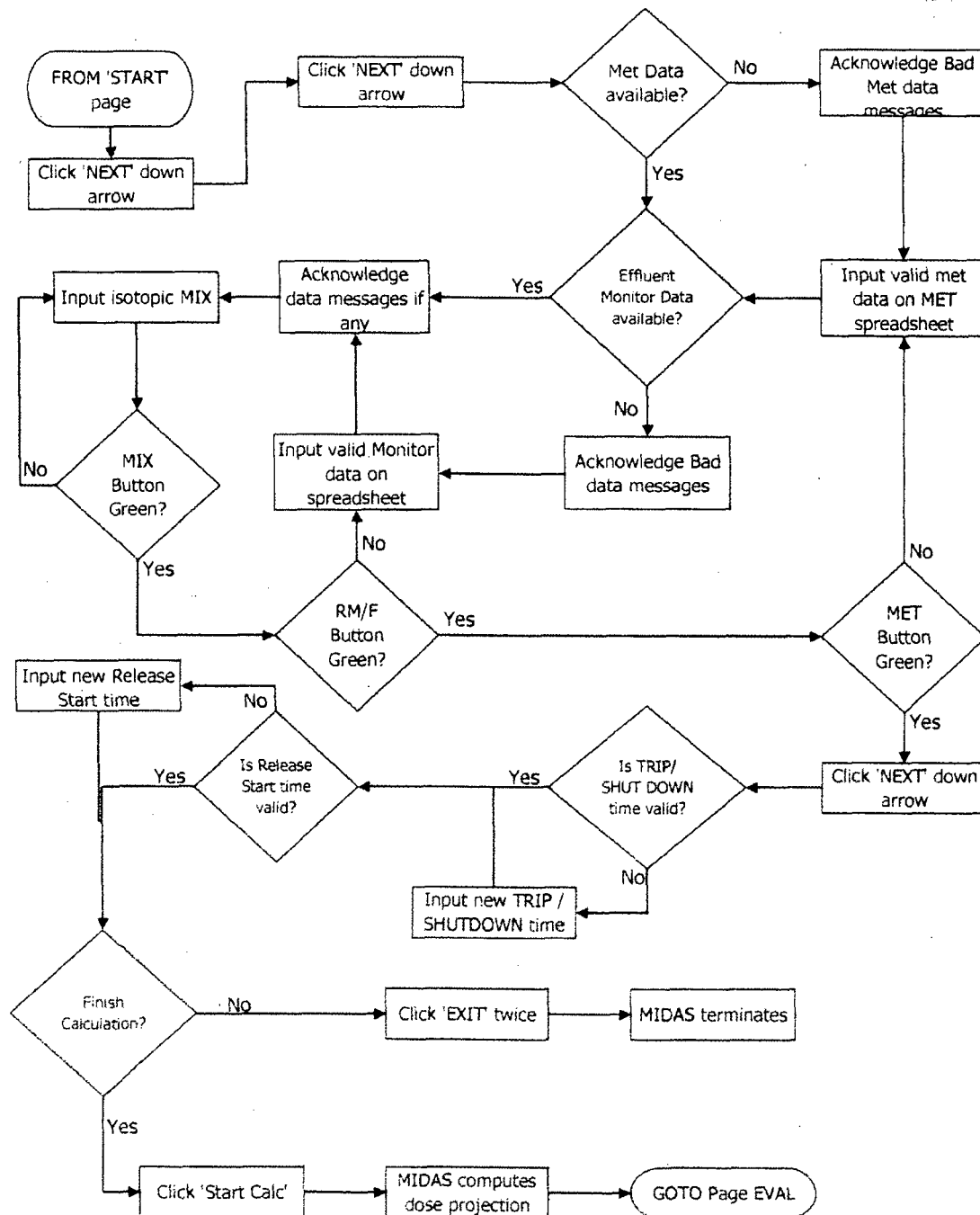
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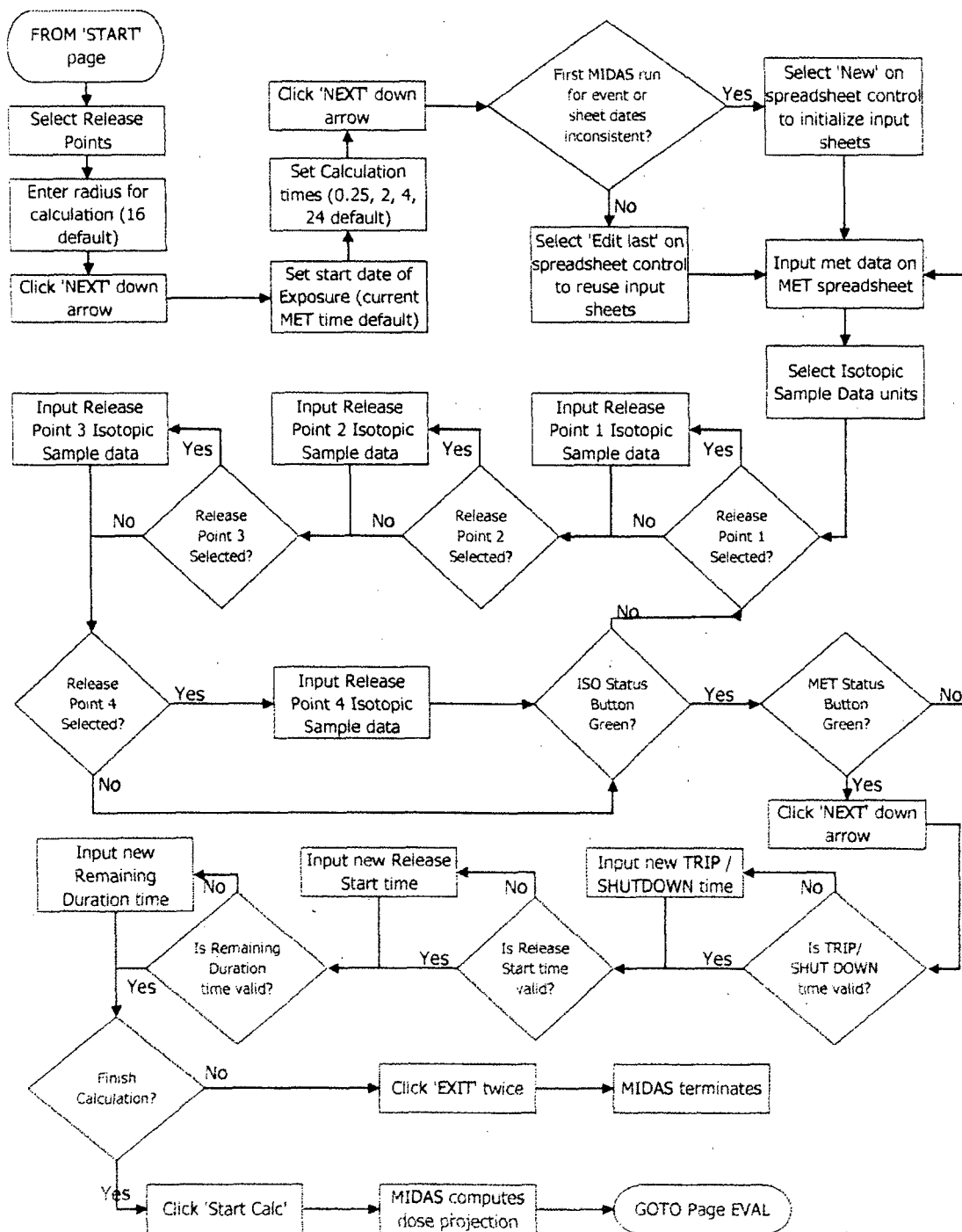
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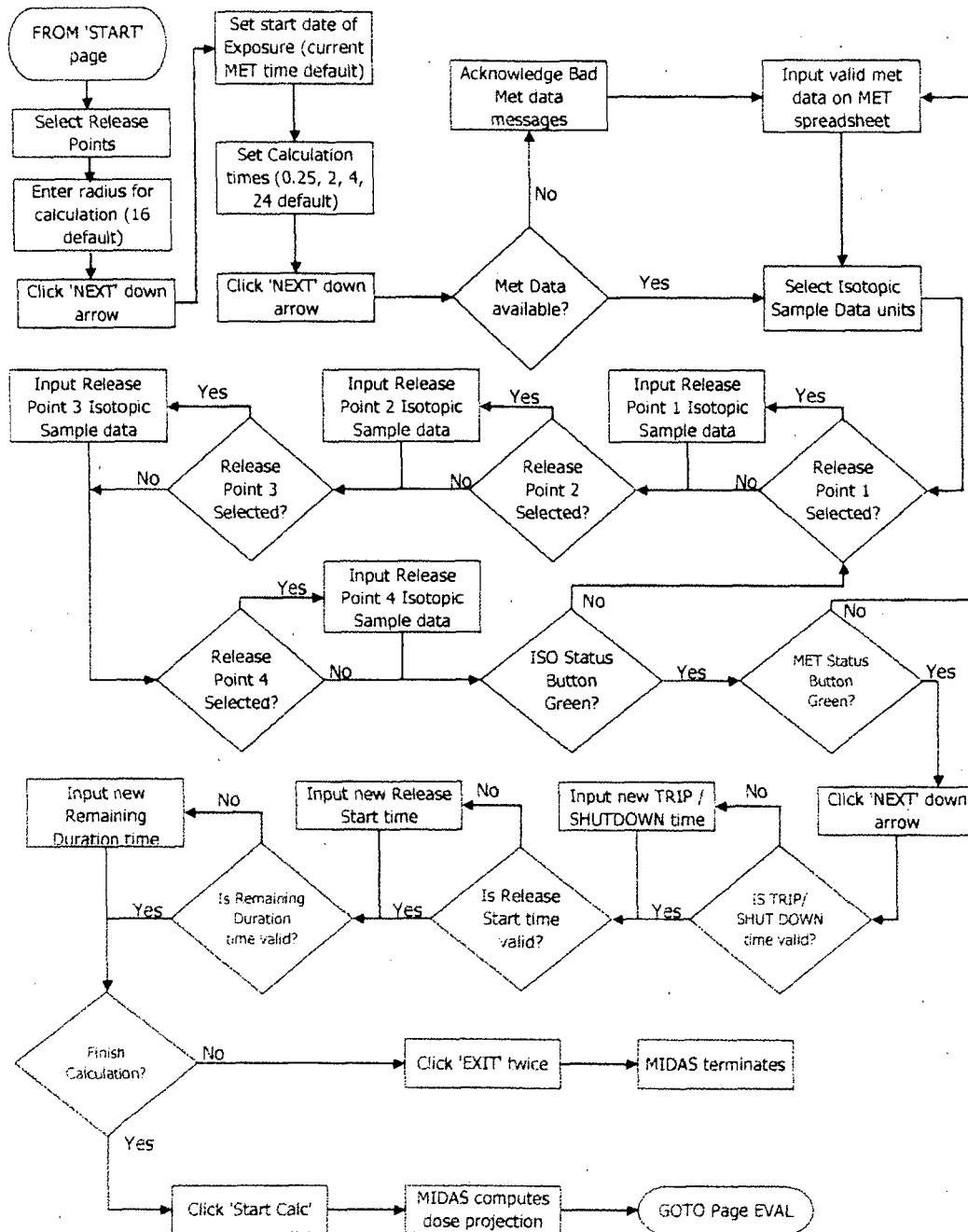
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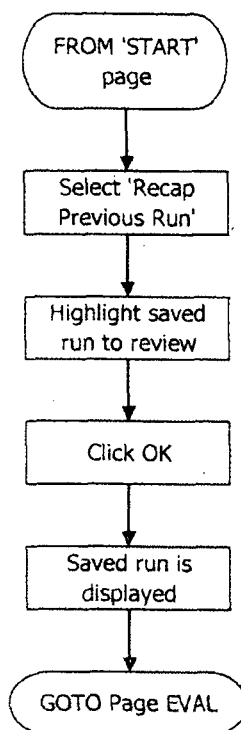
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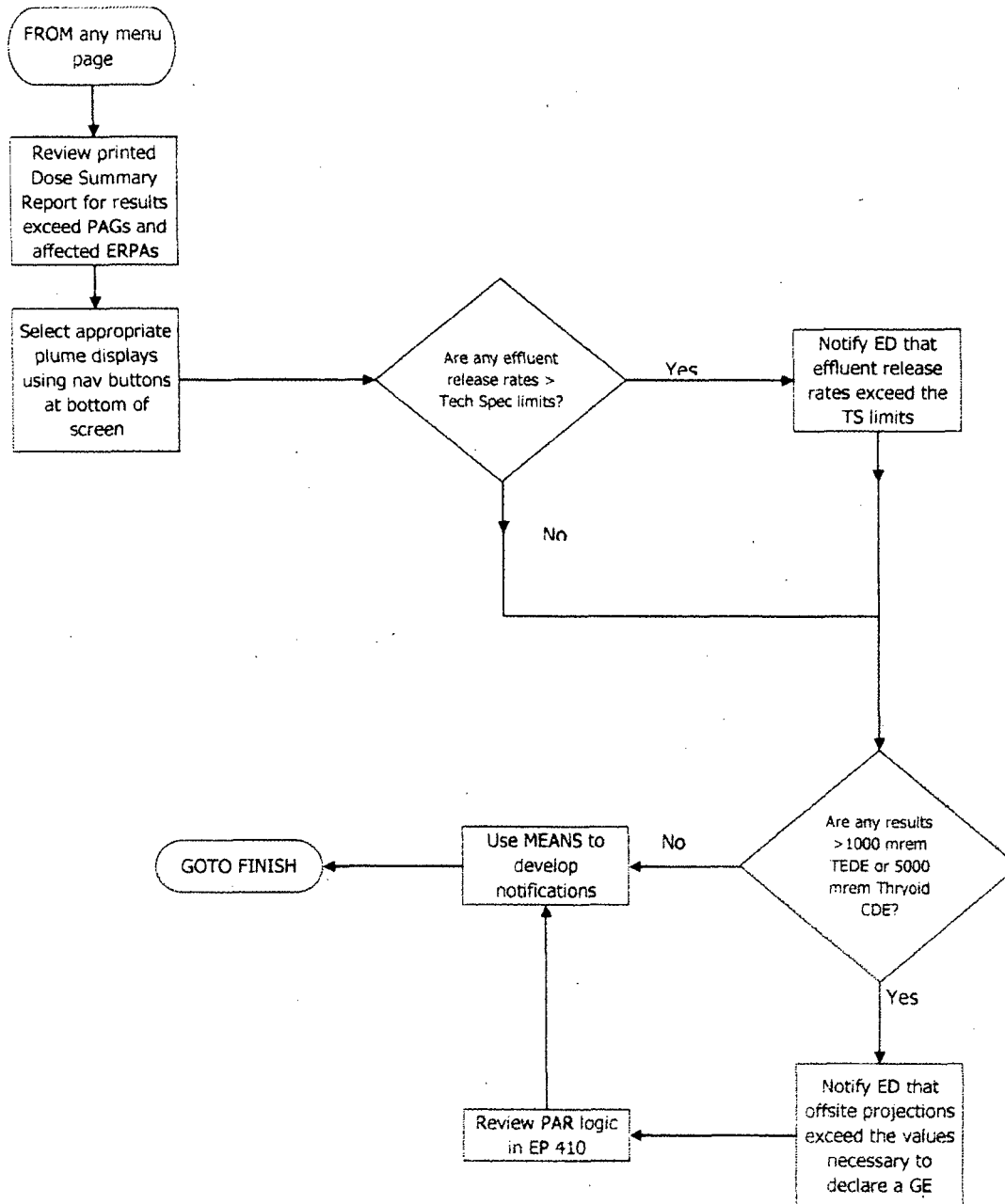
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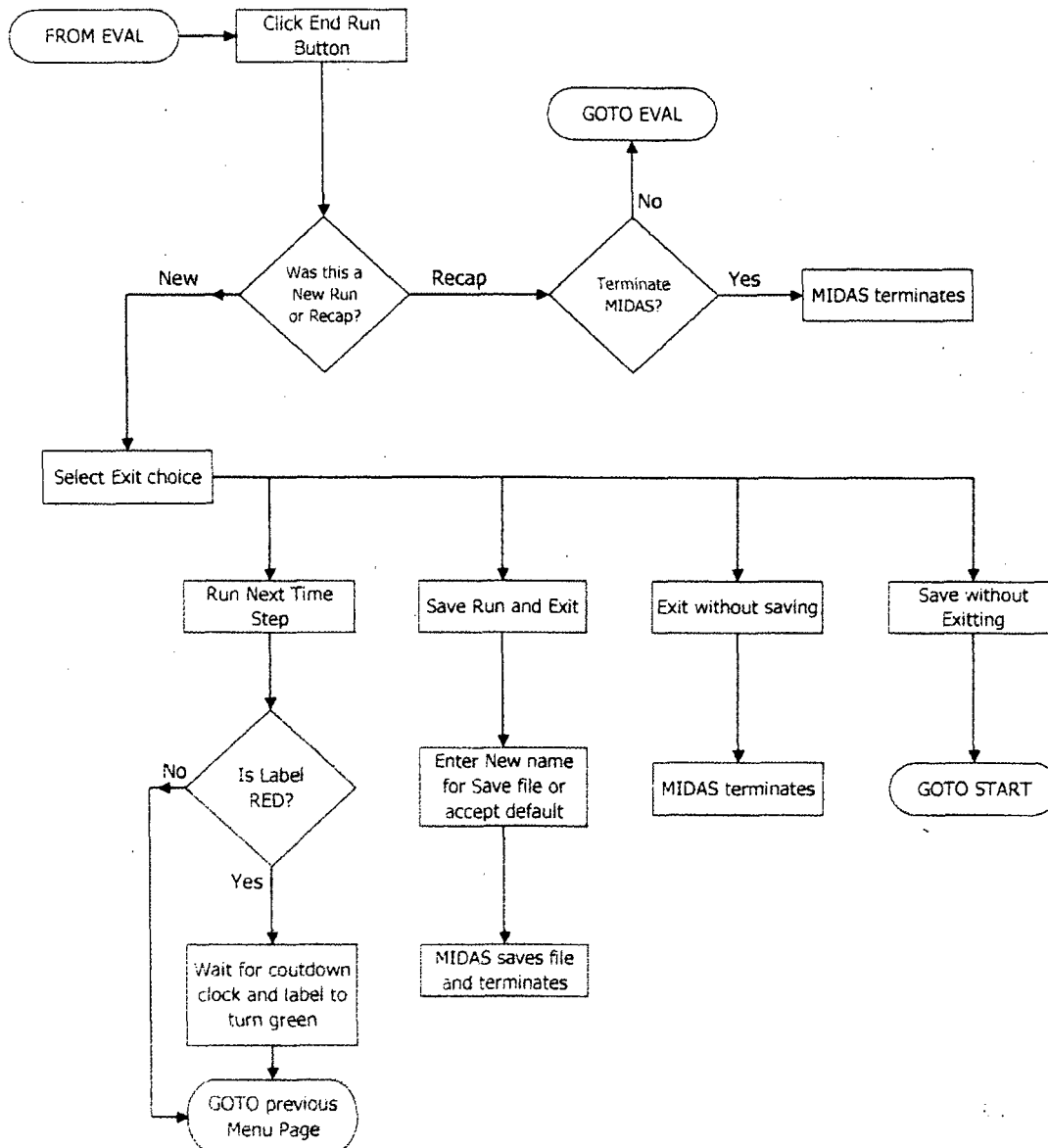
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Radiation monitors, flow data, and conversion factors

Unit 2

Monitor	Units	Conversion	Range low	Range hi	Flow units	Flow lo	Flow hi
R-44G	uCi/cc	1	1.00E-06	1	CFM	0	200000
R-27	uCi/sec	1	1	1.00E+13	CFM	0	200000
R-45	uCi/cc	1	1.00E-07	1	CFM	0	100
R-25	R/hr	0	1.00E+01	1.00E+07	CFM	0	2000
R-26	R/hr	0	1.00E+01	1.00E+07	CFM	0	2000
R-28	cpm	2.70E-03	1.00E+00	5.00E+06	MLB/HR	50	1.00E+06
R-29	cpm	2.70E-03	1.00E+00	5.00E+06	MLB/HR	50	1.00E+06
R-30	cpm	2.70E-03	1.00E+00	5.00E+06	MLB/HR	50	1.00E+06
R-31	cpm	2.70E-03	1.00E+00	5.00E+06	MLB/HR	50	1.00E+06

Unit 3

Monitor	Units	Conversion	Range low	Range hi	Flow units	Flow lo	Flow hi
R-14G	uCi/cc	1	1.00E-06	0.1	CFM	0	150000
R-27	uCi/sec	1	1.10E+01	1.00E+13	CFM	0	150000
R-15	uCi/cc	1	1.00E-06	1.00E+00	CFM	0	100
R-25	R/hr	0	1.00E+01	1.00E+08	CFM	0	2000
R-26	R/hr	0	1.00E+01	1.00E+08	CFM	0	2000
R62A	uCi/cc	1	1.00E-03	1.00E+03	MLB/HR	50	5.00E+06
R62B	uCi/cc	1	1.00E-03	1.00E+03	MLB/HR	50	5.00E+06
R62C	uCi/cc	1	1.00E-03	1.00E+03	MLB/HR	50	5.00E+06
R62D	uCi/cc	1	1.00E-03	1.00E+03	MLB/HR	50	5.00E+06

Met data

Data priority	Release point	Speed	Direction	Stability class	precipitation
Primary	Ground	SPD 10	DIR10	DT 60-10	Rain1

Release Points – both units

Point	Type
1 – station vent	Ground
2 – condenser offgas	Ground
3 – steam dumps	Ground
4 – containment leakage	Ground

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CCR –Auto G


- 1) Start MIDAS by clicking on the "MIDAS Accident Calcs" ICON
- 2) MIDAS Accident Dose Calculation menu will display after a few seconds
- 3) Select/verify the correct UNIT, upper right
- 4) Select CCR
- 5) Select Automatic
- 6) 'Accident Run Menu Selection' section will show: "AUTO QUICK DOSE PROJECTION (MENU G)"
- 7) Click green OK button, bottom right
- 8) MIDAS will display a 'Meteorological Edit' Spreadsheet. DATA should be automatically populated. Click on green OK button.
- 9) If data is NOT present, type in current displayed data from met tower display. IF data was changed click green YES on 'data collection values control form'
- 10) MIDAS will display a 'Rad Monitor & Flow Data Edit' sheet. DATA should be automatically populated. In Unit 2 enter station vent flow rate. This value is not automated. Click the green OK button.
- 11) If data is NOT present, type in current displayed data from control room indications, MRPDAS or other data source. IF data was changed click green YES on 'data collection values control form'
- 12) IF a warning message is displayed that there is only good data for one release point, this is because there is data missing for EITHER the station vent or condenser offgas. Select YES to continue, NO to review rad monitor and flow data.
- 13) A map of a plume plot will be displayed. There are many possible combinations of information that could be displayed. Check the YELLOW boxes at the bottom to verify what information is being displayed and click these buttons to change the display.
- 14) IF a different display is needed / desired, click the purple CONFIRM button bottom right after changing yellow button selections
- 15) Click GREY "SPECIAL REPORTS" button. It will turn green and the button below it will turn yellow.
- 16) Click the yellow button below SPECIAL REPORTS unless/until it reads "Dose Summary". Click purple CONFIRM button.
- 17) A Part 1 input form will be displayed. Fill in ALL yellow areas of the form and click OK
- 18) A part 1 and part 2 form will be displayed. Click on the arrow buttons top left to toggle between the part 1 and part 2
- 19) The part 1 and part 2 can be printed or faxed.
- 20) Click on the window "X", upper right, the MIDAS dose summary will be shown. Click on the window "X" to close the summary.
- 21) On the MIDAS plume display page, click "END RUN" bottom left, to terminate this run. This will allow closing MIDAS or running another calculation.

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EOF –Auto H

- 1) Start MIDAS by clicking on the "MIDAS Accident Calcs" ICON
- 2) MIDAS Accident Dose Calculation menu will display after a few seconds
- 3) Select/verify the correct UNIT, upper right
- 4) Select EOF
- 5) Select Automatic
- 6) Using the 'Accident Run Menu Selection' section Select: "AUTO ENHANCED DOSE PROJECTION (MENU H)"
- 7) Click green OK button, bottom right
- 8) MIDAS will begin to step through a four-part input panel, beginning with a release point prompt. Turn on or off release points by clicking in the check boxes.
- 9) Click the grey NEXT down arrow button. It will turn green.
- 10) The next section of the input panel will display the current met time as the start of exposure, and four time periods for displaying results. Unless there is a particular reason to change them, leave these values as MIDAS assigns them. Click the GREY DOWN ARROW to continue. It will turn green.
- 11) The FIRST time a calculation is run for the event, there may be several 'initialization' prompts. Select YES to initialize the data collection sheets if prompted.
- 12) MIDAS will display a 'Meteorological Edit' Spreadsheet. DATA should be automatically populated. Click on green OK button.
- 13) If data is NOT present, type in current displayed data from met tower display. IF data was changed click green YES on 'data collection values control form'
- 14) MIDAS will display a 'Rad Monitor & Flow Data Edit' sheet. DATA should be automatically populated. In Unit 2 enter station vent flow rate. This value is not automated. Click the green OK button.
- 15) If data is NOT present, type in current displayed data from control room indications, MRPDAS or other data source. IF data was changed click green YES on 'data collection values control form'
- 16) IF a warning message is displayed that there is only good data for one release point, this is because there is data missing for at least ONE of the release points selected earlier. Select YES to continue, NO to review rad monitor and flow data.
- 17) MIDAS will display a 'Mix Edit' sheet. DATA in the mix sheet is not automatically populated.
- 18) Type in current available mix data or use the EVENT TREE button to define the mix. Click the green OK button
- 19) The third section of the input panel will display.
- 20) IF the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are green, MIDAS has accepted all input as valid. Click on the grey NEXT arrow. It will turn green.

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EOF -Auto H

- 21) IF any of the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are red, MIDAS has determined that there is incomplete or invalid data for that input. Click on the red button to review or modify the input. MIDAS will NOT proceed to dose calculation of any of these buttons are still red.
- 22) The fourth part of the input panel will display. Date Time of trip is normally set once at the beginning of the event to the actual trip time. Start date of release should be set to the time when actual plant release began. Remaining duration should default to 4, or should be changed if there is good information on the expected duration until termination of the release.
- 23) Click the green START CALC button.
- 24) A map of a plume plot will be displayed. There are many possible combinations of information that could be displayed. Check the YELLOW boxes at the bottom to verify what information is being displayed and click these buttons to change the display.
- 25) IF a different display is needed / desired, click purple CONFIRM button bottom right after changing yellow button selections
- 26) Click GREY "SPECIAL REPORTS" button. It will turn green and the button below it will turn yellow.
- 27) Click the yellow button below SPECIAL REPORTS unless/until it reads "Dose Summary". Click purple CONFIRM button.
- 28) A Part 1 input form will be displayed. Fill In ALL yellow areas of the form and click OK
- 29) A part1 and part 2 form will be displayed. Click on the arrow buttons top left to toggle between the part 1 and part 2
- 30) The part1 and part 2 can be printed or faxed.
- 31) Click on the window "X", upper right, the MIDAS dose summary will be shown. Click on the window "X" to close the summary.
- 32) On the MIDAS plume display page, click "END RUN" bottom left, to terminate this run. This will allow closing MIDAS or running another calculation.

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Offsite users –Auto H

- 1) Log into the Entergy Citrix Server process and connect to the MIDAS server.
- 2) Start MIDAS by clicking on the "MIDAS Accident Calcs" ICON
- 3) MIDAS Accident Dose Calculation menu will display after a few seconds
- 4) Select/verify the correct UNIT, upper right
- 5) Select EOF
- 6) Select Automatic
- 7) Using the 'Accident Run Menu Selection' section Select: "AUTO ENHANCED DOSE PROJECTION (MENU H)"
- 8) Click green OK button, bottom right
- 9) MIDAS will begin to step through a four-part input panel, beginning with a release point prompt. Turn on or off release points by clicking in the check boxes.
- 10) Click the NEXT down arrow button. It will turn green.
- 11) The next section of the input panel will display the current met time as the start of exposure, and for time periods for displaying results. Unless there is a particular reason to, leave these values as MIDAS assigns them. Click the GREY DOWN ARROW to continue. It will turn green.
- 12) The FIRST time a calculation is run for the event, there may be several 'initialization' prompts. Select YES to initialize the data collection sheets if prompted.
- 13) MIDAS will display a 'Meteorological Edit' Spreadsheet. DATA should be automatically populated. Click on green OK button.
- 14) If data is NOT present, type in current displayed data from met tower display. IF data was changed click green YES on 'data collection values control form'
- 15) MIDAS will display a 'Rad Monitor & Flow Data Edit' sheet. DATA should be automatically populated. In Unit 2 enter station vent flow rate. This value is not automated. Click on green OK button.
- 16) If data is NOT present, type in current displayed data from control room indications, MRPDAS or other data source. IF data was changed click green YES on 'data collection values control form'
- 17) IF a warning message is displayed that there is only good data for one release point, this is because there is data missing for at least ONE of the release points selected earlier. Select YES to continue, NO to review rad monitor and flow data.
- 18) MIDAS will display a 'Mix Edit' sheet. DATA in the mix sheet is not automatically populated.
- 19) Type in current available mix data or use the EVENT TREE button to define the mix. Press the green OK button
- 20) The third section of the input panel will display.
- 21) IF the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are green, MIDAS has accepted all input as valid. Click on the grey NEXT arrow.

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Offsite users –Auto H

- 22) IF any of the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are red, MIDAS has determined that there is incomplete or invalid data for that input. Click on the red button to review or modify the input. MIDAS will not proceed to dose projection if any of these buttons are red.
- 23) The fourth part of the input panel will display. Date Time of trip is normally set once at the beginning of the event to the actual trip time. Start date of release should be set to the time when actual plant release began. Remaining duration should default to 4, or should be changed if there is good information on the expected duration until termination of the release.
- 24) Click the green START CALC button.
- 25) A map of a plume plot will be displayed. There are many possible combinations of information that could be displayed. Check the YELLOW boxes at the bottom to verify what information is being displayed and click these buttons to change the display.
- 26) IF a different display is needed / desired, click purple CONFIRM button bottom right after changing yellow button selections
- 27) Click GREY "SPECIAL REPORTS" button. It will turn green and the button below it will turn yellow.
- 28) Click the yellow button below SPECIAL REPORTS unless/until it reads "Dose Summary". Click purple CONFIRM button.
- 29) The MIDAS dose summary will be shown. Click on the window "X" to close the summary.
- 30) On the MIDAS plume display page, click "END RUN" bottom left, to terminate this run. This will allow closing MIDAS or running another calculation.



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MANUAL B – no automated data

- 1) IF connecting from Offsite, Log into the Entergy Citrix Server process and connect to the MIDAS server.
- 2) Start MIDAS by clicking on the "MIDAS Accident Calcs" ICON
- 3) MIDAS Accident Dose Calculation menu will display after a few seconds
- 4) Select/verify the correct UNIT, upper right
- 5) Select EOF
- 6) Select MANUAL
- 7) Using the 'Accident Run Menu Selection' section Select: "MANUAL ENHANCED DOSE PROJECTION (MENU B)"
- 8) Click green OK button, bottom right
- 9) MIDAS will begin to step through a four-part input panel, beginning with a release point prompt. Turn on or off release points by clicking in the check boxes.
- 10) Click the NEXT down arrow button
- 11) The next section of the input panel will display the current met time as the start of exposure, and for time periods for displaying results. Unless there is a particular reason to, leave these values as MIDAS assigns them. Click the GREY DOWN ARROW to continue.
- 12) The FIRST time a calculation is run for the event, there may be several 'initialization' prompts. Select YES to initialize the data collection sheets if prompted.
- 13) MIDAS will display a 'Meteorological Edit' Spreadsheet. DATA WILL NOT be automatically populated. Enter met data and click on the green OK button.
- 14) MIDAS will display a 'Rad Monitor & Flow Data Edit' sheet. DATA WILL NOT be automatically populated.
- 15) Type in current displayed data from control room indications, MRPDAS or other data source and click on the green OK button
- 16) IF a warning message is displayed that there is only good data for one release point, this is because there is data missing for at least ONE of the release points selected earlier. Select YES to continue, NO to review rad monitor and flow data.
- 17) MIDAS will display a 'Mix Edit' sheet. DATA in the mix sheet is not automatically populated.
- 18) Type in current available mix data or use the EVENT TREE button to define the mix. Press the green OK button
- 19) The third section of the input panel will display.
- 20) IF the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are green, MIDAS has accepted all input as valid. Click on the grey NEXT arrow.

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 Manual B – no automated data

- 21) IF any of the 'MET STATUS', 'RM/F STATUS', and 'MIX STATUS' buttons are red, MIDAS has determined that there is incomplete or invalid data for that input. Click on the red button to review or modify the input. MIDAS will not proceed to dose projection if any of these buttons are red.
- 22) The fourth part of the input panel will display. Date Time of trip is normally set once at the beginning of the event to the actual trip time. Start date of release should be set to the time when actual plant release began. Remaining duration should default to 4, or should be changed if there is good information on the expected duration until termination of the release.
- 23) Click the green START CALC button.
- 24) A map of a plume plot will be displayed. There are many possible combinations of information that could be displayed. Check the YELLOW boxes at the bottom to verify what information is being displayed and click these buttons to change the display.
- 25) IF a different display is needed / desired, click purple CONFIRM button bottom right after changing yellow button selections
- 26) Click GREY "SPECIAL REPORTS" button. It will turn green and the button below it will turn yellow.
- 27) Click the yellow button below SPECIAL REPORTS unless/until it reads "Dose Summary". Click purple CONFIRM button.
- 28) IF connected to a MIDAS Server from OFFSITE, The MIDAS dose summary will be shown. Click on the window "X" to close the summary.
- 29) IF using an ENTERGY MIDAS computer, A Part 1 input from will be displayed. Fill In ALL yellow areas of the form and click OK
- 30) A part1 and part 2 form will be displayed. Click on the arrow buttons top left to toggle between the part 1 and part 2
- 31) The part1 and part 2 can be printed or faxed.
- 32) Click on the window "X", upper right, the MIDAS dose summary will be shown. Click on the window "X" to close the summary.
- 33) On the MIDAS plume display page, click "END RUN" bottom left, to terminate this run. This will allow closing MIDAS or running another calculation.