Mishap Analysis & Prevention System (MAPS)

User’s Manual

Revision 0
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Installation

Installation of the MAPS Software is straightforward. However, the following steps must be performed to assure that the software functions properly. MAPS will run on personal computers using either Microsoft Windows or Mac OS, but the proper software package must be selected.

1. If any version of MAPS was previous loaded on your computer you will need to find and delete the file “MORT Data.mrt”. This is a program generated system file that may cause issues with newer versions if not properly removed. Please note that other .mrt files may exist and these files can be retained.
2. Copy the program zip files to the desired location on your computer.
3. Expand the appropriate zip file and select the MAPS icon to proceed.
4. From the opening screen, select continue to acknowledge the copyright protection and proceed to the main menu Figure 1.
The MAPS software contains six individual applications that facilitate the performance and documentation of analyses using the various analytic tools.

**General Operation and Navigation**

Each of the six MAPS applications opens to an example showing the basic capabilities of the program. Opening an application also produces a menu box at the lower left of the window as shown below in Figure 2. The following sections of this manual will provide further details associated with each of the applications.
Program Operation: Events and Causal Factors (E&CF)

Opening the E&CF Application

The E&CF module opens to an example E&CF chart and the menu box as shown in Figure 2. The available commands are:

- **SCALE**: This allows adjusting the size of the image on your screen.
- **NEW**: This removes the current image and starts a new file.
- **SELECT**: Select allows the use of your mouse to copy or cut elements on your screen.
- **SAVE AS**: Allows you to save a file.
- **LOAD**: Allows you to load a previously saved file.
- **PRINT**: Provides the capability to print your image and notes.

Figure 2 – E&CF Menu Box

Using the E&CF Application

Using the mouse, select any existing or blank cell on the workspace. The result is a pop-up edit box as shown in Figure 3. This edit box allows you to select shapes, lines, add text and provide detailed notes.

The two down carrots circled in on the Figure indicate areas to access additional functions such as notes, text, or various line and shape options.

Notes do not appear on the screen, but are saved and printed as a supporting document for your E&CF.

Figure 3 - E&CF Edit Box
Cut/Paste/Copy

MAPS allows users to select portions of their E&CF (or Fault Tree) charts and move or copy the selected portions. After clicking select on the left menu bar, users can use the mouse to select the block of symbols they want to move or copy. See Figure 4 below.

TIP: After selecting your block of symbols, and prior to selecting cut or copy, use your mouse to left click on an alignment point you intend to use when placing the cut or copied block. The “+” in the red circle appears and will remain visible once cut or copied.

Next, select cut or copy and move the selection using your “+” as an alignment guide. See Figure 5.

Note that in the example, the selection box was moved to the left and the alignment mark is visible.

Once aligned, double click to bring up the menu box shown in Figure 6. Selecting paste completes the function.
Program Operation: Change Analysis (CA)

Opening the Change Analysis (CA) Application

The CA module opens to an example CA Worksheet and the menu box as shown in Figure 7.

The available commands are:

- **SCALE**: This allows adjusting the size of the image on your screen
- **NEW**: This removes the current image and starts a new file.
- **ROW**: This adds a blank row to your worksheet
- **SAVE AS**: Allows you to save a file.
- **LOAD**: Allows you to load a previously saved file.
- **PRINT**: Provides the capability to print your worksheet.

![Figure 7 – CA Menu Box](image)

Using the CA Application

Using the mouse, select the area on the worksheet you would like to edit. Selecting the eyedropper icon in the lower right of the text boxes allows you to color code these boxes.
Program Operation: Fault Tree Analysis (FTA)

Opening the FTA Application

The FTA module opens to an example fault tree and the menu box as shown in Figure 8. The available commands are:

- **SCALE**: This allows adjusting the size of the image on your screen.
- **NEW**: This removes the current image and starts a new file.
- **SELECT**: Select allows the use of your mouse to copy or cut elements on your screen.
- **SAVE AS**: Allows you to save a file.
- **LOAD**: Allows you to load a previously saved file.
- **PRINT**: Provides the capability to print your image and notes.

Figure 8 – FTA Menu Box

Using the FTA Application

Using the mouse, select any existing or blank cell on the workspace. The result is a pop-up edit box as shown in Figure 9. This edit box allows you to select shapes, lines, add text and provide detailed notes.

The two down carrots circled in on the Figure indicate areas to access additional functions such as notes, text, or various line and shape options.

Notes do not appear on the screen, but are saved and printed as a supporting document for your E&CF.

The radio buttons selected on the lower left of the FTA Edit Box allow you to color the cell. This is useful for depicting the actual failure path.

Figure -9- FTA Edit Box
Cut/Paste/Copy

Please see the discussion in E&CF, for a detailed description of these features.
Opening the (HBT) Application

The HBT module opens to an example HBT Worksheet and the menu box as shown in Figure 10. The available commands are:

- **SCALE**: This allows adjusting the size of the image on your screen.
- **NEW**: This removes the current image and starts a new file.
- **ROW**: This adds a blank row to your worksheet.
- **SAVE AS**: Allows you to save a file.
- **LOAD**: Allows you to load a previously saved file.
- **PRINT**: Provides the capability to print your worksheet.

![Figure 10 – HBT Menu Box]

Using the HBT Application

Using the mouse, select the area on the worksheet you would like to edit. Selecting the eyedropper icon in the lower right of the text boxes allows you to color code these boxes.
Program Operation: Management Oversight and Risk Tree (MORT)

Opening the MORT Application

The MORT module opens to an example MORT logic tree and the menu box as shown in Figure 11. The available commands are:

- **SCALE**: This allows adjusting the size of the image on your screen.
- **NEW**: This removes the current image and starts a new file.
- **HOME**: Selecting this icon takes you to the top of the MORT chart.
- **SHOW ALL**: This button loads the entire image of the MORT chart on the workspace.
- **SAVE AS**: Allows you to save a file.
- **LOAD**: Allows you to load a previously saved file.
- **PRINT**: Provides the capability to print your image and notes. The print options will be discussed further below.

Figure 11 – MORT Menu Box
Using the MORT Application

Using the mouse, select any block on the MORT chart. The result is a pop-up box as shown in Figure 12. This pop-up box allows you to classify events, provide detailed notes and navigate the MORT chart.

The top area of the pop-up allows coloring of the MORT chart elements using the radio buttons.

The Manual portion of the pop-up provides the applicable text from the MORT user’s manual. This text is identical and precludes the need for referencing the bound copy.

The CASE selector allows you to work multiple portions of the MORT chart in a single MORT file. Selecting a case applies to the entire chart and stays selected until you change it.

The blank space below CASE is for your notes. The notes should be used to define the full context of the question you are evaluating. You should also provide your facts and logic for your color selection. Notes do not appear on the screen, but are saved and printed as a supporting document for your evaluation.

The left and right carrot buttons at the bottom of the box facilitate navigation through the chart. They follow the protocol of “Top to Bottom, Left to Right”. You can also navigate the chart by selecting any cell.

Figure 12 MORT pop-up box

Printing the MORT Chart

As you guessed, fitting the mort chart into an 8.5 by 11 inch format is not an easy task. The solution provided allows the printing of graphics, either the full chart or individual branches. In “Print Branch” mode you can select “scale to one page” as an option. Although all branches of the chart will not be legible at this resolution, it will display the color patterns. Each of the options also prints the notes indexed by the MORT identifying block numbers. Additionally, after printing or saving the PDF image file, a file management box will pop up asking for a file name.
This will save the notes as a text file to facilitate their use in a report. We recommend that you preview your printouts to find the solution that fits your needs.

**Program Operation: Failure Modes and Effects Analysis (FMEA)**

**Opening the FMEA Application**

The FMEA module opens to an example FMEA Worksheet and the menu box as shown in Figure 13. The available commands are:

- **SCALE:** This allows adjusting the size of the image on your screen.
- **NEW:** This removes the current image and starts a new file.
- **ROW:** This adds a blank row to your worksheet.
- **SAVE AS:** Allows you to save a file.
- **LOAD:** Allows you to load a previously saved file.
- **PRINT:** Provides the capability to print your worksheet.

Figure 13 – FMEA Menu Box

**Using the FMEA Application**

Using the mouse, select the area on the worksheet you would like to edit. Selecting the eyedropper icon in the lower right of the text boxes allows you to color code these boxes.