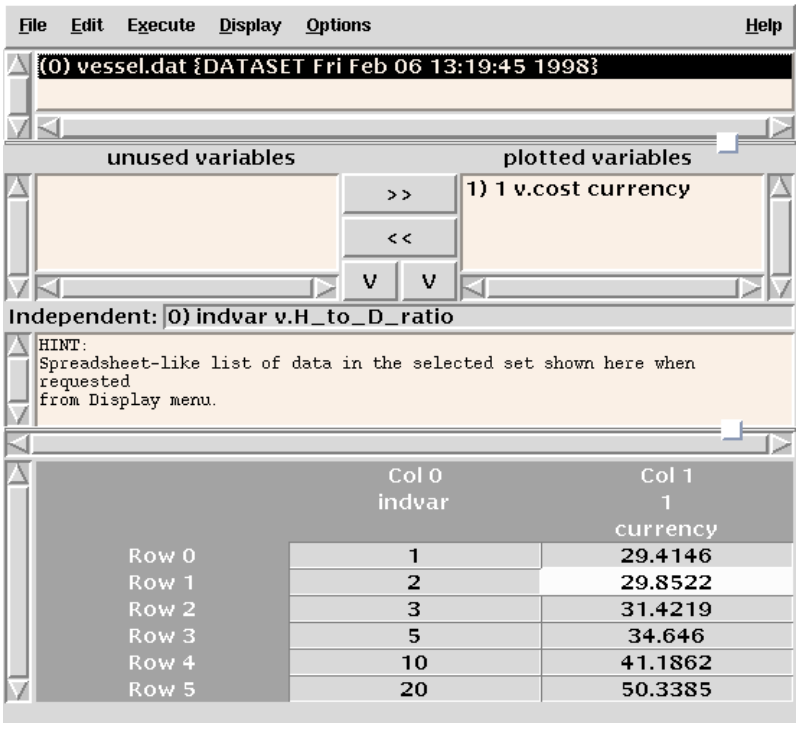
CHAPTER 8 ASCPLOT

8.1 PLOT MAKER

The following contains a description of the options available in each of the *Ascend Plot* menus. The *Ascend Plot* window shown in Figure 8-1

Figure 8-1 The Ascend Plot Window



is a result of clicking on the ascplot button from the Toolbox with the left mouse button.

8.1.1 THE EDIT MENU

From the **Edit** Menu, the following options are available when a data set has not yet been loaded: **Load data set** and **Select grapher**. The **Save data set**, **Unload data set**, and **Merge data sets** options are available after one or more data sets have been loaded into the plot window.

8.1.1.1 LOAD DATA SET

Selecting **Load data set** opens the *File select box* window. This window is used to select the file that contains the data generated from the dynamic simulation. The default file is obs.dat. This file contains the observation variables as set forth in the dynamic library models. After having selected the appropriate file, press the OK button and return to the *Ascend Plot* window.

8.1.1.2 SAVE DATA SET

This option is currently not functional.

8.1.1.3 UNLOAD DATA SET

By highlighting the desired data set and selecting **Unload data set** from the **File** menu, the user can remove the data set from the *Ascend Plot* window. The *Delete these data sets?* window appears to verify that the user wants to remove the indicated data sets.

8.1.1.4 MERGE DATA SETS

8.1.1.5 SELECT GRAPHER

Currently, the only supported grapher is Xgraph (or its tk flavored version tkxgraph). Other possible graphers are XMGR and gnuplot. Since these graphers are not distributed with the ASCEND distribution, they are also not supported.

8.1.2 THE EXECUTE MENU

To plot the variables in the plotted variables section, select **View plot file** from the **Execute** menu.

8.1.2.1 VIEW PLOT FILE

This option will plot the variables displayed in the plotted variables section of the *Ascend Plot* window.

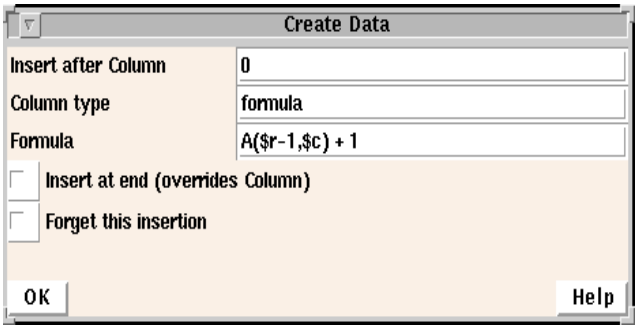
8.1.2.2 WRITE PLOT FILE

To save the output in its graphical representation, select **Write plot file** from the **Execute** menu. Selecting this option opens the *File select box*. Enter the name of the file to be saved and press the OK button. The default extension for the graph is .xgraph.

8.1.2.3 INSERT COLUMN

Selecting the **Insert column** option from the **Execute** menu opens the *Create Data* window. This window is shown in Figure 8-2.

Figure 8-2 The Create Data Window



There are several options available from the *Create Data* window.

8.1.2.3.1 Insert after Column

This can be any number between 0 and the maximum number of variables in the observation file. For example, if the user wishes to add a column after the third column, the user should enter a 3 in this space.

8.1.2.3.2 Column type

The default value for Column type is data, however by placing the cursor over the data box and pressing the left mouse button, another option is reveiled. The other option is formula. The user should select data if no formula can be used to describe the information to be added to the spreadsheet. The user should select formula if that is appropriate. In this case, a column was inserted after Column 0 and we are using the formula Column type.

8.1.2.3.3 Formula

If the data option was selected in the previous section, then this does not apply. However, if the formula option was selected, then the user can edit the default formula. The default formula takes the value of the variable in the current row ($r) and the column before the new column ($c-1) and adds one (+1) to it.

8.1.2.3.4 Insert at end (overrides Column)

The user can select this box to place the new column after the last column in the spreadsheet. This will override anything in the Insert after Column line.

8.1.2.3.5 Forget this insertion

The user can select this box to ignore the changes made to the spreadsheet.

8.1.2.4 RECALCULATE COLUMN

This option is currently not functional.

8.1.2.5 INSERT ROW

The insert row option has the same options as the Insert Column option. Note that the formula take the value from the row immediately before it ($r-1) and the current column ($c) and adds one (+1) to it.

8.1.2.6 RECALCULATE ROW

This option is currently not functional.

8.1.3 THE DISPLAY MENU

The **Display** menu has various features which include showing and hiding the data in the spreadsheet, setting plot titles, loading old plots, updating existing plots, and deleting plots.

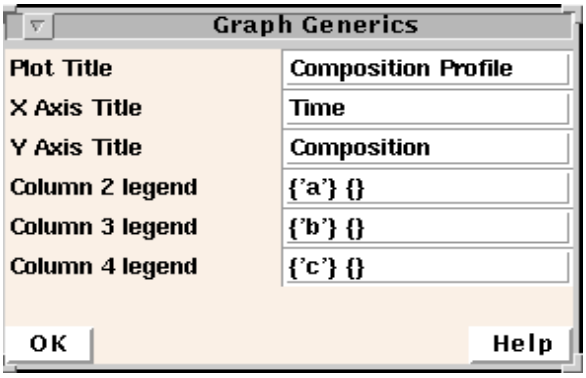
8.1.3.1 SHOW DATA / HIDE DATA

Selecting the **Show data** option from the **Display** menu loads the data into the spreadsheet in the bottom section of the *Ascend Plot* window. This option then toggles to **Hide data**. Selecting this option will hide the data just loaded into the spreadsheet section of the window.

8.1.3.2 SET PLOT TITLES

Selecting the **Set plot titles** option from the **Display** menu opens the *Graph Generics* window. This window is shown in Figure 8-3.

Figure 8-3 The Graph Generics Window



There are several options within this window depending on the number of variables being plotted.

8.1.3.2.1 Plot Title

The user can change the default title (AscPlot) to something that is more descriptive and meaningful for the given data. In this case, we set the title to be Composition Profile since we are plotting the mole fractions of the components in the system.

8.1.3.2.2 X Axis Title

The user can change the default title (X) to something more descriptive. In this case, we are plotting the time on the x-axis.

8.1.3.2.3 Y Axis Title

The user can change the default title (Y) to something more descriptive. In this case, we are plotting the Composition on the y-axis.

8.1.3.2.4 Column # legend

In this case, (#) is the number of the variable being plotted. If variables 2, 3, and 4 are being plotted, the will be entries in the *Graph Generics* window entitled Column 2 legend, Column 4 legend, and Column 4 legend. These entries can be changed to something less descriptive than the default. Usually the default for this field is a bit much. In this case, the legend was changed to ‘a’, ‘b’, and ‘c’.

8.1.3.3 LOAD OLD PLOT

This option is currently not functional.

8.1.3.4 UPDATE PLOT

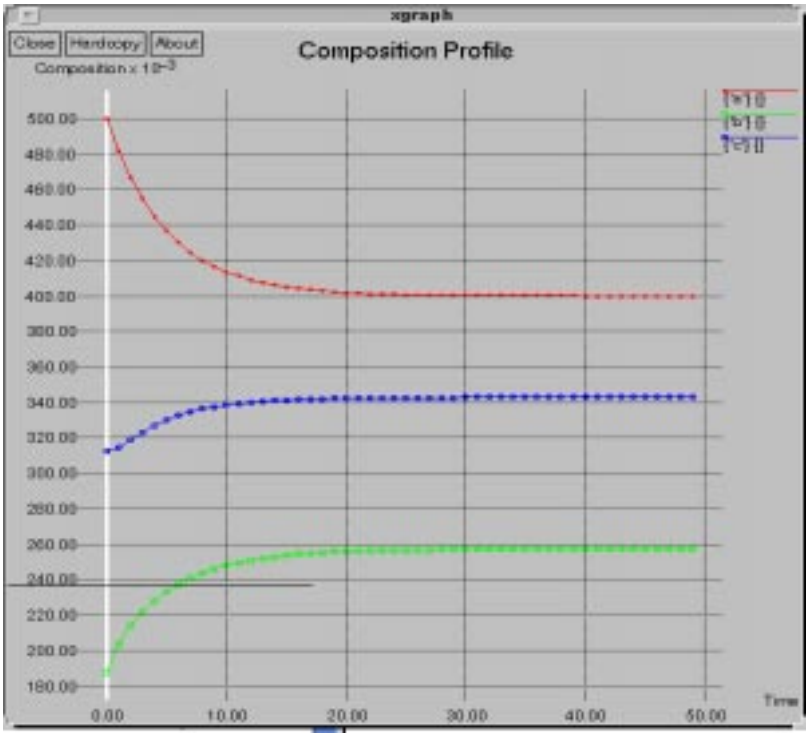
This option is currently not functional.

8.1.3.5 DELETE PLOT

This option is currently not functional.

The plot of the completed graph is shown in Figure 8-4.

Figure 8-4 Complete Plot



8.1.3.6 THE GRILL 

The grill is located directly to the right of PLOT MAKER. Clicking on this button with the left mouse button opens the *XGraph Control* window. By clicking on the More button located at the bottom of the window, the user can scroll through numerous available options for the graphs. Some of these options include line color, fonts, graph type (i.e. log or semilog), and marker types. These are left to the user to explore.

8.2 NAVIGATION

Open a file using the **Load data sets** option from the **File** menu. You will notice that the selected file is now displayed in the top section of the *Ascend Plot* window. By double-clicking on the file name with the left mouse button, the observation variables are now placed in the section entitled unused variables. The unused variables are the list of variables that the user does not want to look at in the current graph.

To select a variable to plot, highlight the desired variables using the left mouse button and click on the (>>) button. This will move the variable from the unused variables list to the plotted variables list. Once this is done, you can now plot the variable.

The two buttons separating the unused variabes section and the plotted variables section are used to add (>>) and remove (<<) variables to and from the plotted variables list.

You will notice that there is a section of the *Ascend Plot* window entitled Independent. Here the independent variable is time. This was set in the dynamic library file. If the user desires to look at the phase plot of two of the compositions, the user must move one of the compositions into the Independent variable position.

To do this, let's assume that all of the variables are currently in the unused variables list and we wish to plot the composition of component 'c' versus the composition of component 'b'. Thus, component 'c' is now going to be our independent variable. Highlight component 'c' in the unused variables list and press the (V) button. This button is one of two buttons located directly under the (>>) and (<<) buttons. The (V) button on the left is used to move variables between the unused variables list and the Independent variable list while the (V) button on the right is used to move variables between the plotted variables list and the Independent variable list. Therefore, we are going to use the (V) button on the left.

By doing this, we see that the composition of component 'c' is now the independent variable and the time is now an unused variable. Select the composition of component 'b' and press the (>>) button to move the variable from the unused variables list to the plotted variables list. The only remaining task is to edit the plot title and axes using the **Set plot titles** option from the **Display** menu. Assuming we have done this as described above, the resulting graph is shown in Figure 8-5.

The remaining section of the *Ascend Plot* window is the HINT: section. This section contains a brief description of the various buttons and sections of the Ascend Plot window.

Figure 8-5 Phase Diagram