C O N T E N T S

PATRAN User Manual
Part 2: Basic Functions

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Plot Set BuiltinFunctions and Plot Set Iterators

Preface

- Technical Support
- www.mscsoftware.com

Technical Support

For help regarding the use of MSC.Patran Plot Sets that is not covered in this Operation Manual please contact the following MSC.Software technical support individual during this project's development cycle.

Evry, France

Antoine Serione

Telephone: (33) (1) 69 36 95 55

After this project is complete and the product is released with MSC.Patran, the following MSC.Software technical support locations can be used.

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MSC.Patran Support
Telephone: (800) 732-7284
Fax: (714) 784-4343

MSC.Nastran Support
Telephone: (800) 732-7284

Munich, Germany
Telephone: (49) (89) 43 19 87 0
Fax: (49) (89) 43 61 71 6

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Fax: (390) (6) 5 91 25 05

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Fax: (7) (095) 236 9762

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Fax: (81) (3) 3505 09 14

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Fax: (33) (1) 69 36 45 17

Gouda, The Netherlands
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Fax: (31) (18) 2543707

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Fax: (34) (91) 5567280

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MSC.Nastran for Windows Support	mn4w.support@mscsoftware.com
MSC.Dytran Support	mscdytran.support@mscsoftware.com
MSC.Mvision Support	mscmvision.support@mscsoftware.com
MSC.Fatigue Support	mscfatigue.support@mscsoftware.com
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CHAPTER

1 Introduction & Overview

- Introduction
- What This Guide Contains

1.1 Introduction

This Plot Sets extend the current capability found in Results Templates. A Plot Set is a grouping of result plot definitions and special commands that alter global settings effecting the plots. These exist as rows of the Plot Set. The rows that represent the plot definitions include the information that is required to generate an analysis results plot with MSC.Patran. For example a typical plot definition would include the plot type (e.g. fringe, deformation, combination plot, etc.), analysis data definition (e.g. result case, subcase, and result type), plot target entities, the plot's graphic attributes, and a view specification.Once a Plot Set is created and persisted in the MSC.Patran database it can be edited, printed, deleted, or previewed.

Since the official release of Plot Sets will be included in the Patran 2004 r2 you will be required to install several XXX.plb files to allow operation of Plot Sets with the Patran 2004 r1 release. You will find detailed instructions about how to obtain these plb files and where to install them in Chapter 2 of this document.

What This Guide Contains

This guide contains all information you will need to install and configure the MSC.Patran Plot Set system. The Guide is organized into the following chapters:

- "Plot Set Installation", in Chapter 2
- "Current Operational Featues", in Chapter 3
- "Editing Plot Sets with the Plot Set Spread Sheet" in Chapter 4
- "Manual Creation and Modification of Plot Sets" in Chapter 5
- "Problems and Resolutions", in Chapter 6
- "Appendix A: Sample Plot Set Example"
- "Appendix B: Plot Set Builtin Functions and Plot Set Iterators" see "**Plot Set BuiltinFunctions and Plot Set Iterators**" on page 43.

CHAPTER
2 MSC.Patran Plot Set Installation

- Plot Set Access

2.1 Plot Set Access

Completion of the following three steps are all that is needed to allow access to Plot Sets within your MSC.Patran session.

MSC.Patran V2004r1

Since the core elements that allow Plot Sets to be controlled and persisted within the MSC.Patran database are included in the new V2004 r1 release of MSC.Patran. You are required to install this new version on you system.

XXXXX.plb

To activate the Plot Set user interface it is required that you place the, xxxxx.plb, files listed below either in your local directory for your personal use or in the MSC.Patran's p3_home directory to allow access to all users.

plot_set.plb

util.plb

These files can be down loaded from the MSC ftp site.

You will also need to create a p3midilog.pcl file in your working directory that contains the following two lines.

!!library <full path to the plb file>/plot_set.plb

!!library <full path to the plb file>/util.plb

Plot Set User Interface

Access to the Plot Set user interface can be found in the main MSC.Patran tool bar under the "Tools" pick. Choose "Results Plot Sets..." to open its main action form.

CHAPTER
3 Current Operational Features

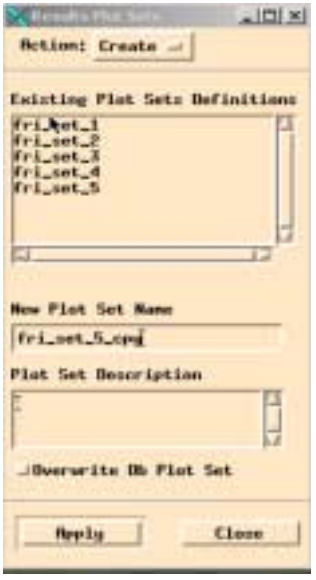
- Current Operational Features of MSC.Patran Plot Sets (r1.1)

3.1 Current Operational Features of MSC.Patran Plot Sets (r1.1)

This section describes the features of MSC.Patran Plot Sets that are supported in release 1.1.

Release 1.1 Features

Create



- The form shows the Plot Sets that exist in the MSC.Patran database.
- The form allows you enter a new Plot Set name, description, and toggle the overwrite button.
- The Plot Set names are limited to 79 characters but there is no limit to the size of the description the user can enter.

Copy

- The form shows the Plot Sets that exist in the MSC.Patran database.
- The form allows you enter a new Plot Set name and its description.
- If the name you have assigned is equal to an existing name the new Plot Set will replace it if the overwrite option has been selected.
- When the apply button is pressed a new Plot Set will be generated and the contents of the selected set will be copied to it.
- If you did not enter a Plot Set description a warning message will appear. The warning does not effect the creation of the Plot Set.

Edit

- The form shows the Plot Sets that exist in the MSC.Patran database.
- To edit a Plot Set select it from the list and press the Edit button.
- When the Edit button is pressed the Plot Set Edit Spread Sheet will appear. The Edit Spread Sheet is discussed in detail in Chapter 4.

Export

- The form shows the Plot Sets that exist in the MSC.Patran database.
- The form allows you to choose one or more existing Plot Sets to export.
- You may use the “Files...” button to select or enter the name and path to the file that will receive the exported Plot Sets. You can also just enter this information directly in the File Name data box.
- An option is present to allow over writing an existing Plot Set file.

Import

- The form allows you to enter the name of the Plot Set file you would like to import located in your current working directory or allows you to select the “Files...” submenu to specify the complete path to the file you would like to import.
- An option is present to allow the over writing of a Plot Set that exists in the MSC.Patran database. This toggle has higher precedence than any overwrite flags specified in the imported file.

Delete

- The form shows the Plot Sets that exist in the MSC.Patran database.
- To delete either single or multiple Plot Sets first select the Plot Set(s) and then press the “Apply” button.

Print

- The form shows the Plot Sets that exist in the MSC.Patran database that you can print to a JPEG file.
- The Preview Only toggle allows you to preview the plots contained in a Plot Set(s) within MSC.Patran’s graphics viewport(s) before printing them to JPEG files.
- The Save Plots To Db toggle also allows you to persist the plot definitions within the MSC.Patran database.

CHAPTER

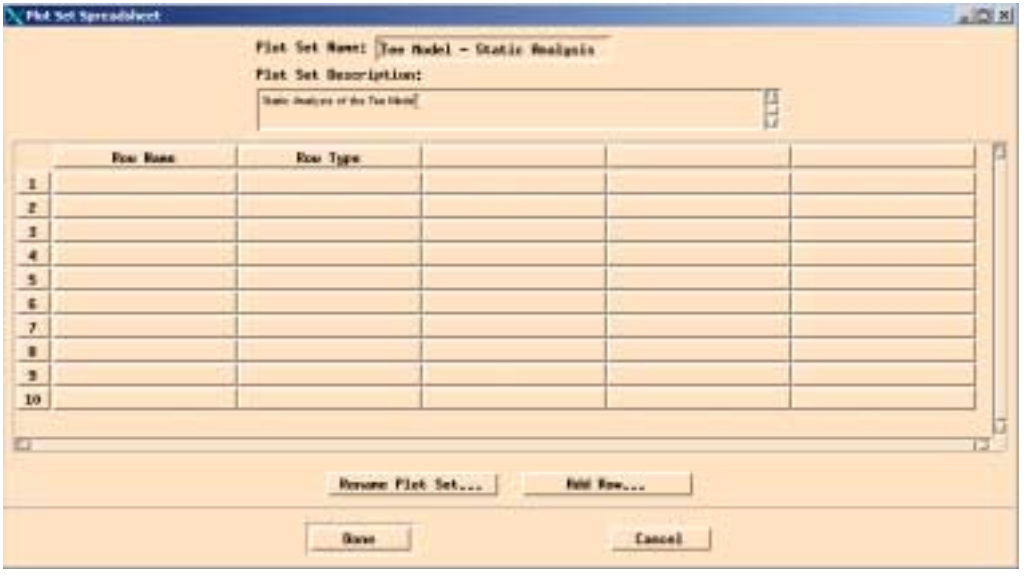
4

Editing Plot Sets with the Plot Set Spread Sheet

- Editing a Plot Set Using the Plot Set Spread Sheet
- Displaying the Contents of the Plot Set Spread Sheet
- Discussion of a Few Specific Plot Set Capabilities

4.1 Editing a Plot Set Using the Plot Set Spread Sheet

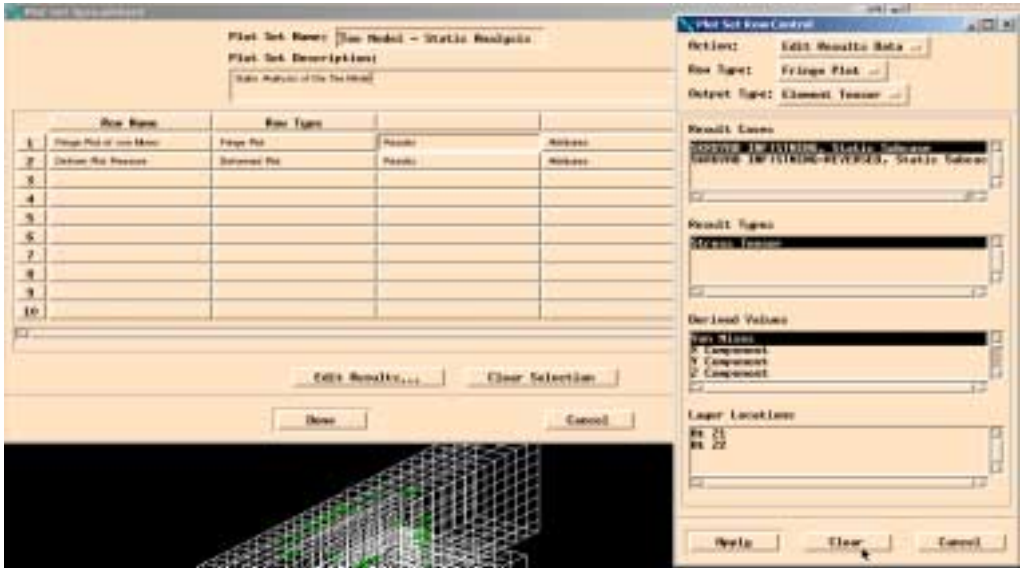
This section describes the steps that are performed to create or modify an existing plot set definition. As was mentioned above in Section 3.1 if in Plot Set Edit sub form you select an existing plot set definition then press the Edit button, near the bottom of the form, the Plot Set Spread Sheet will appear.



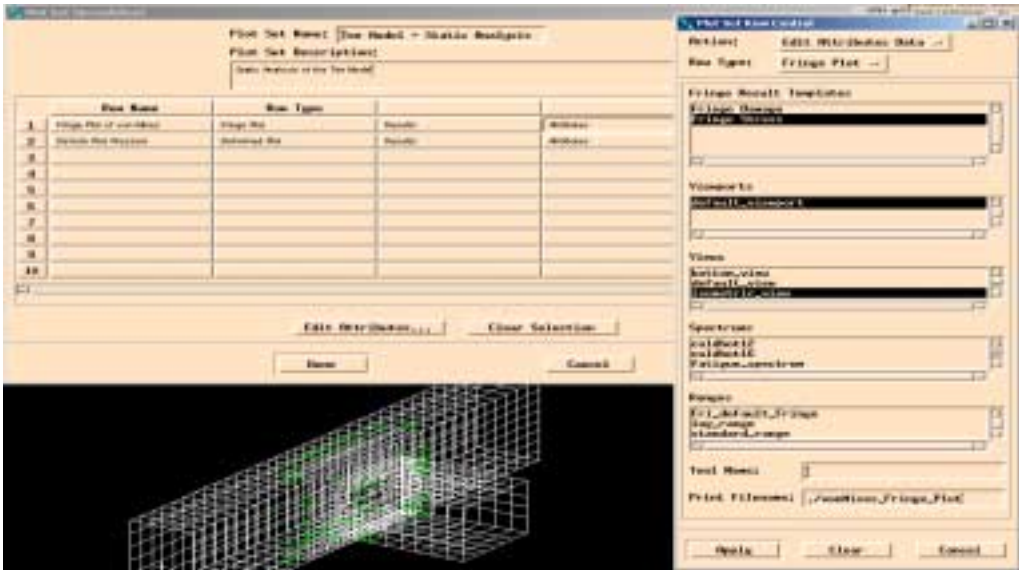
In the example shown above the “Tee Model - Static Analysis” plot set is empty. When plot sets are created using the Create user interface the user is allowed to enter the plot set name and a text description of the plot set but not the contents of the plot set. The Edit user interface has been provided to allow you to define the contents of your plot set.

To add a row to the plot set simply press the Add Row button. Once the Row Control sub form appears change the Action to Add Row, enter a row name of your choice, select a Row Type, and finally press the Apply button. Here a Fringe Plot row type is being added to the spread sheet. After creating a second row of type, Deform Plot, the spread sheet should appear as shown below.

The plot set now contains two Plot Type rows but the definition of these rows are incomplete. Plot Type rows contain columns that represent the plot's Results data, graphic Attributes, and Target entities. To define the contents of a column cell just click on that cell. Shown below is an example of editing the Results cell within the Fringe Plot row. Here a Result Case, Result Type, and Derived Value have been selected within the Result Control submenu that appeared. Clicking the Apply button will accept the selected values and close the Result Control form.



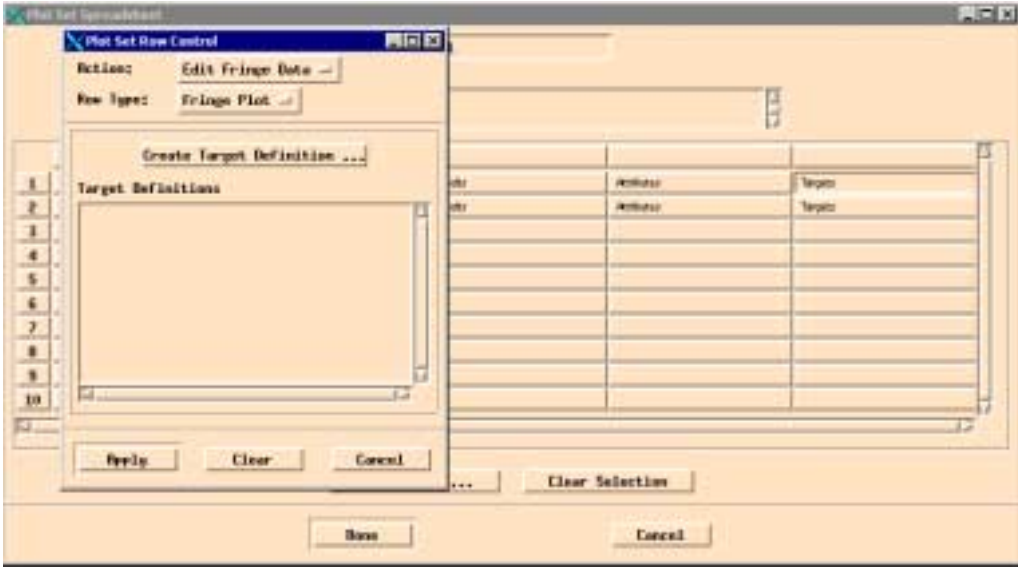
Similarly by selecting the Attributes cell within the Fringe Plot row the following Attributes Control sub form will appear.



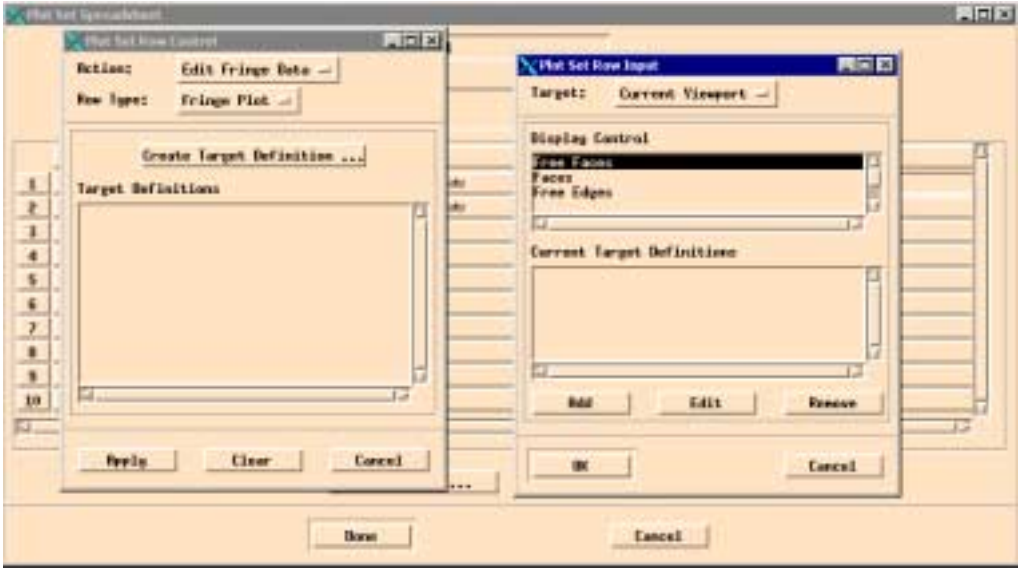
A fringe plot's graphical attributes are defined by selecting an existing Fringe Result Template that has been previously persisted in the Patran database. Any viewports, views, spectrums, or ranges that also currently exist in the Patran database are shown in the various list boxes. You are allowed to choose one or more selections from each list box. These selections will over-ride the definition that is contained in the selected Fringe Result Template. Multiple selections from any of the list boxes will influence the number of plots that will be created when you use the Plot Set Print functionality to preview or print the contents of the Plot Set Spread Sheet. See Appendix B for a detailed discussion of the two types of Plot Iterators that cause multiple plots to be rendered when multiple definitions of a plot attribute have been selected.

The Attributes Row Control form also allows you to add a plot name to the row's plot definition. By saving the plot with a name you are able to post or modify this plot when using the Patran post processor. The Print Filename edit box allows you to assign the path to and name of the image files that will be produced when you run the completed spread sheet.

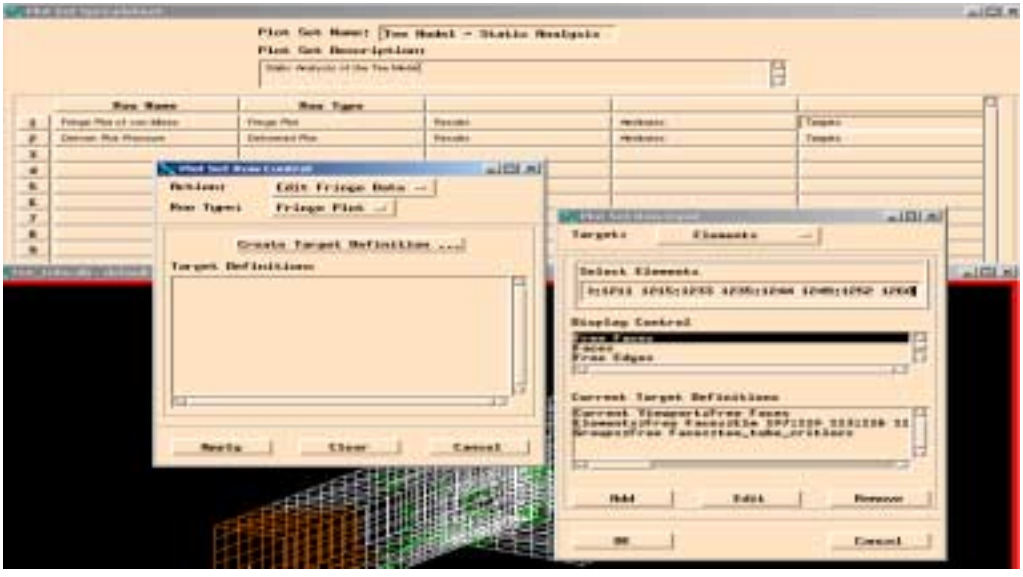
The final step to complete the definition of the fringe plot row is to enter the plot target definition. Shown below is the Target Row Control sub form that appears when you select the Target cell in the row.



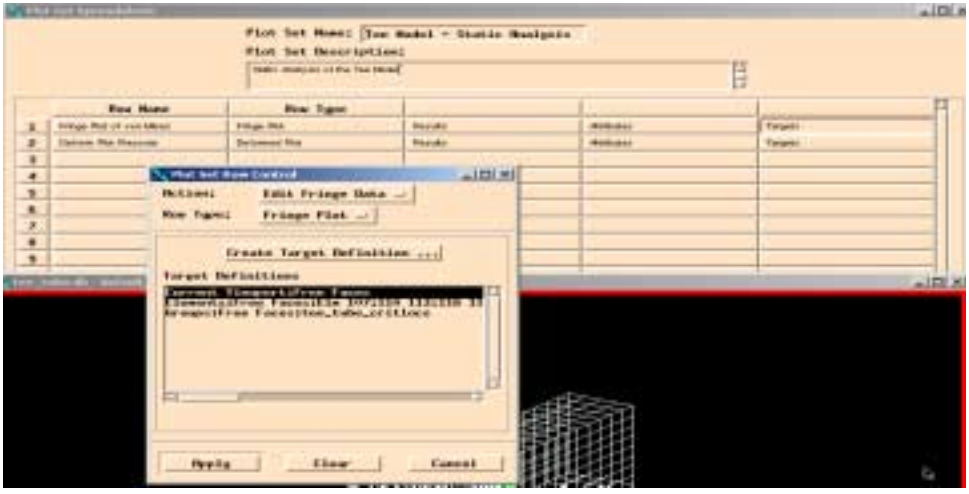
The Row Control form shown above allows you select multiple target definitions for your plot row thus allowing you to create multiple plots from a single row relative to the number of target definitions you have chosen. To create a target definition select the Create Target Definition button. The following definition form will then appear.



Your choice of plot target types that you can create are those that are used within the Patran post processor (e.g. Current Viewport, Elements, Groups, Properties, and Element Types). First select a target type using the Target pull down menu. Next, select various choices that appear in the target types subordinate list boxes. Shown below is an example where the user has created three target definitions using the Current Viewport, Groups, and Elements options.

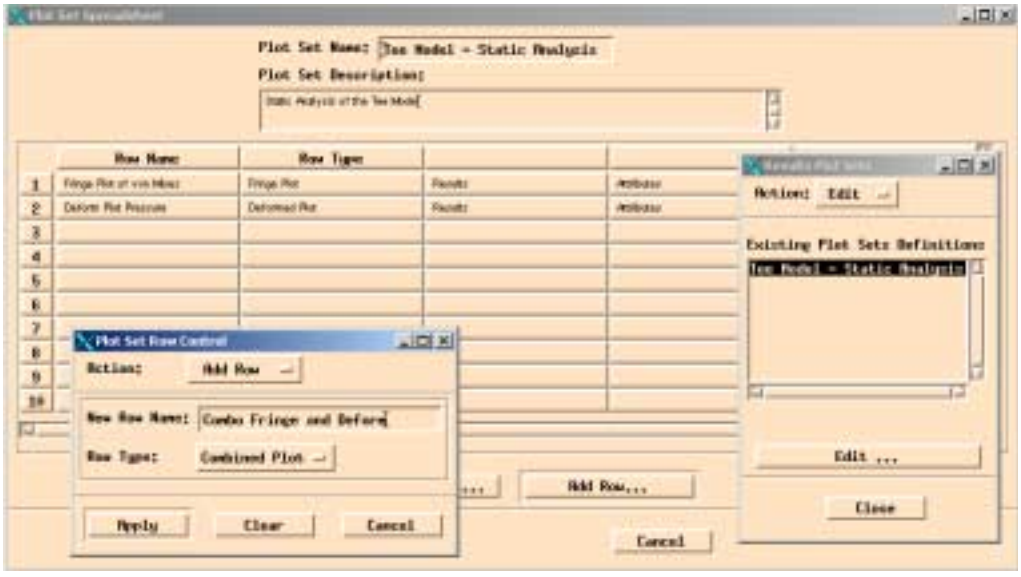


Once you press the OK button in the Row Input sub form the target definitions will appear in the Row Control form. To complete the Plot Row's target definition you must select one or more of the target definitions you have created and then press the Apply button as shown in the example below.

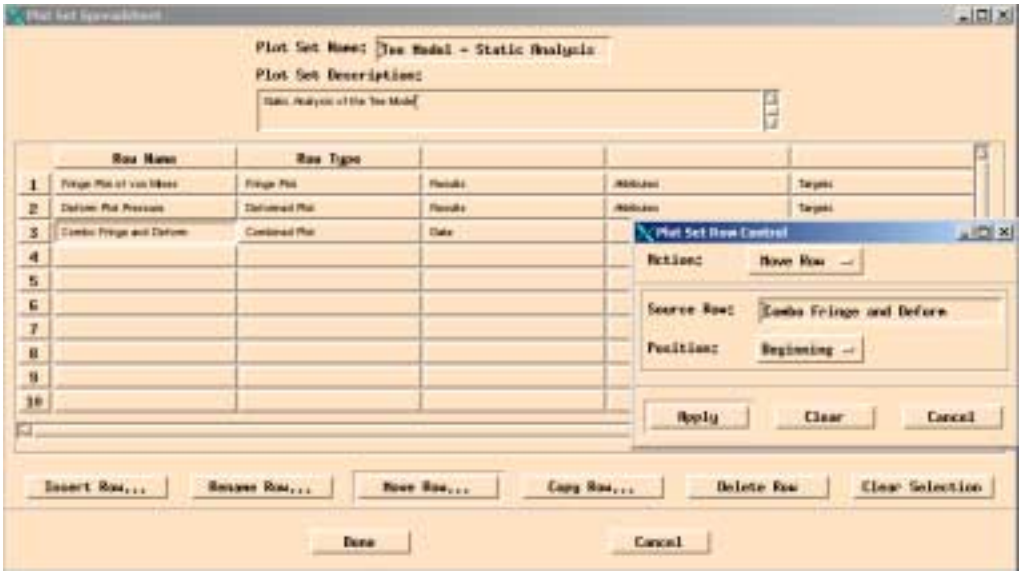


You must now perform similar operations for the Deform Plot row to complete its definition.

To create a combination plot all you need to do is add a new Plot Sheet row that is of type Combination and place that row above the plot type rows you desire to combine. To do this press the Add Row button, set the Row Type to Combined Plot within the Row Control sub form that appears, and then press the Apply button to cause the Combined Plot row to appear in the spread sheet.



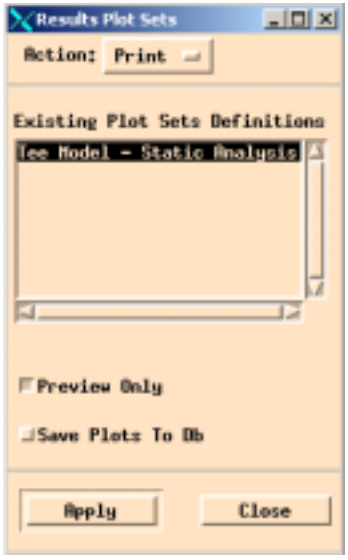
When you create the Combined Plot row it will be added as the last row in the spread sheet. You now must move the row above the plot type rows you want to combine (e.g. to row 1 position in our current example) and then edit the Combined Plot row's data, setting the number of rows that you will combine to 2. To move the row first select the Combined Plot row's Row Name cell. This will cause the selection of option buttons to change at the bottom of the spread sheet. Select the Move Row option button. The Row Control sub form that contains the various move options will appear. Select Beginning from the Position option pull down menu as shown below.



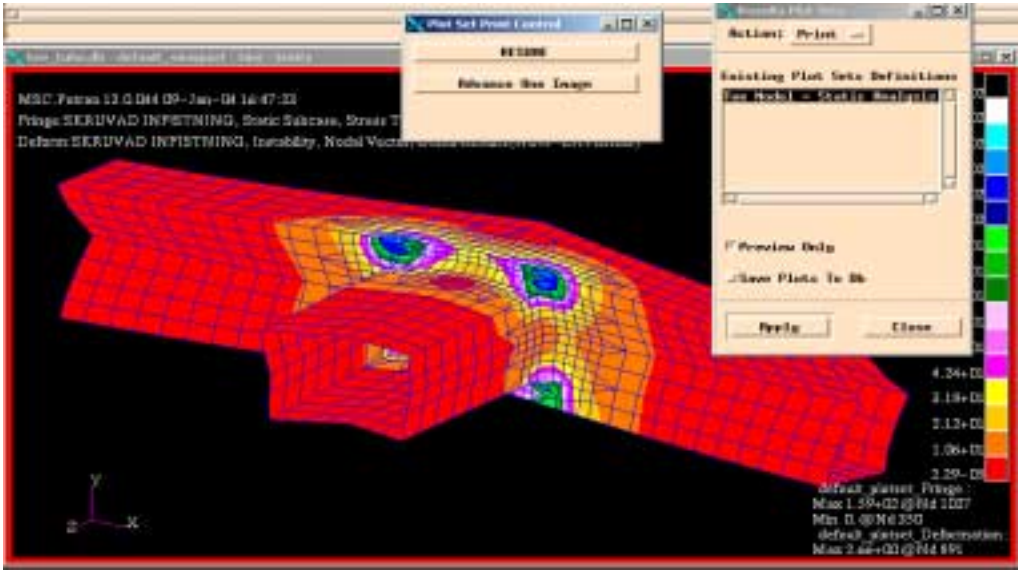
Pressing the Apply button will cause the Combined Plot row to move to the row 1 position and the Fringe and Deform plot rows to shift down one position. Next, select the Data cell in the Combined Plot row. When the Row Control sub form appears enter 2 in the Number of Rows list box. This causes the following two plot type rows to be used to form the combined plot.

4.2 Displaying the Contents of the Plot Set Spread Sheet

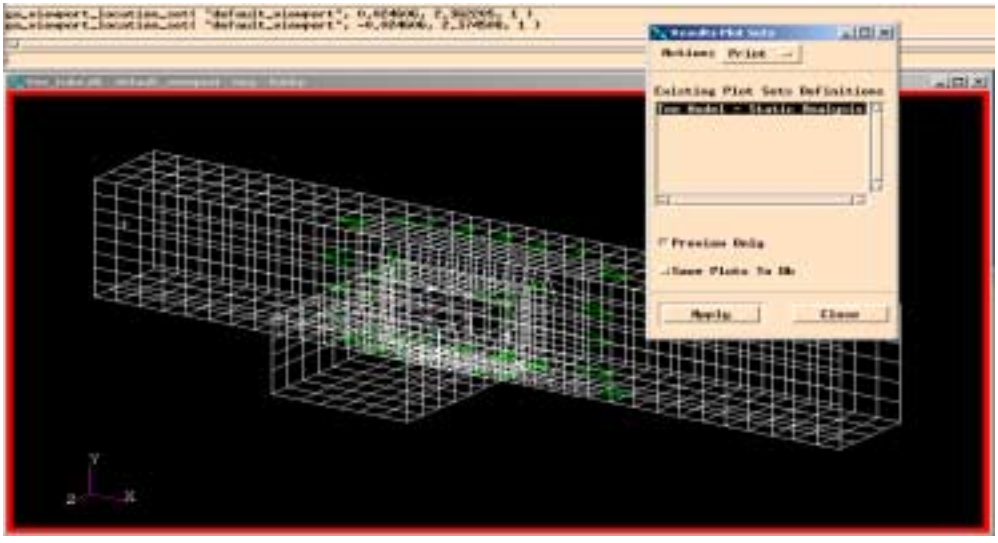
When you are finished configuring your plot set the Plot Set Print function gives you the capability to preview your images before they are written to image files. To preview the contents of your plot set close the Plot Set spread sheet by selecting the Done button then change the Action option on the main Results Plot Sets form to Print. Select the Plot Set Definition to preview and the Preview Only radio button.



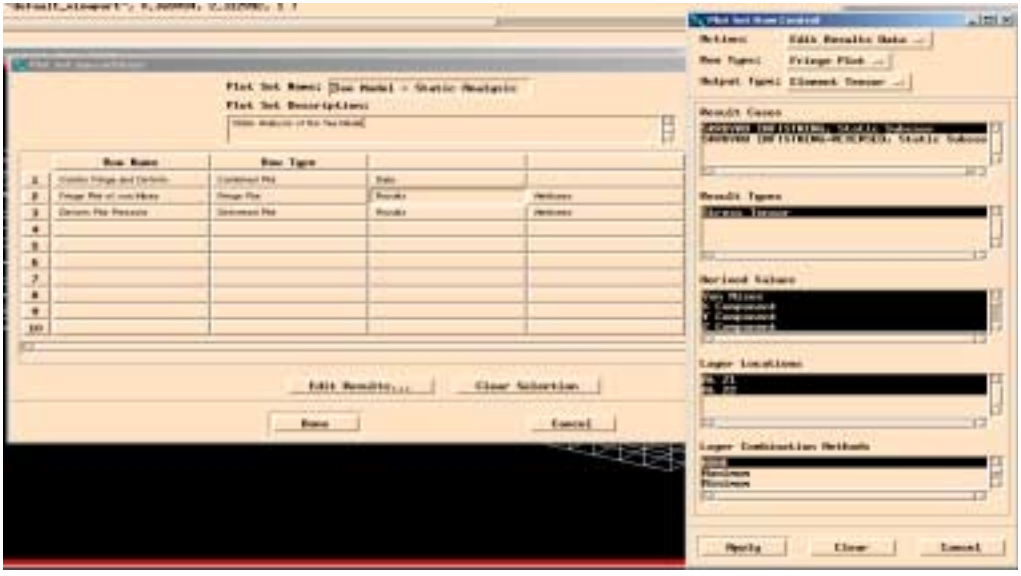
When the Apply button is pressed the Print Control submenu and the first image defined by the Plot Set contents will appear as shown below.



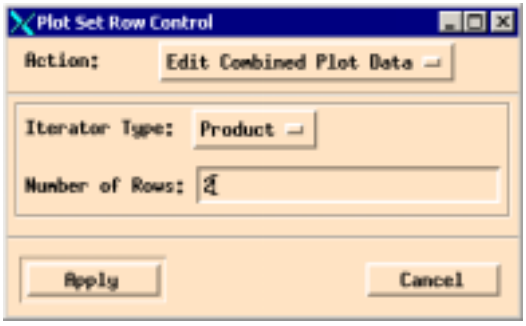
If your Plot Set definition defines more than one plot press the Advance One Image button to advance to the next plot. Pressing the RESUME button will cause Patran to quickly render the remaining plots defined by your Plot Set. When you have finished reviewing the last Plot Set image the Print Preview sub form will close and the Print function will try to return Patran's display back to its initial state before you started the Plot Set preview as shown in the example below.



In the example we have been following above we defined a plot set that contained a single combined fringe and deformed shape plot. With very few changes we can modify this example to produce several plots with out adding another plot set row. In the example shown below the Plot Set is edited by selecting Fringe Plot Results cell to cause the Results Row Control form to reappear. In addition to our initial selection of the von Mises Derived Result all six stress components of the symmetric stress tensor have been selected at both the Z1 and Z2 positions.

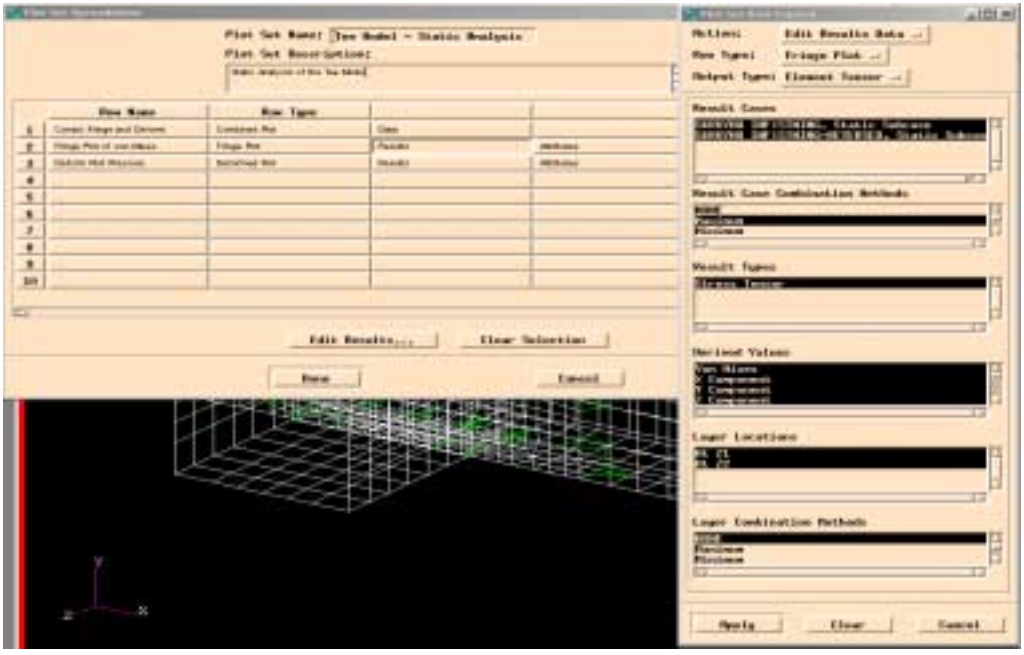


Our final edit will be to change the default Tuple iterator to the Product Iterator. This is done by selecting the Data cell of the Combine Plot row to cause the Combine Plot Row Control sub form to appear. The Iterator Type option is used to change to the desired Product Iterator type. See Appendix B for a detailed discussion of the different Iterator Types. The changes we have just made will cause 14 combination plots to be rendered. The Product Iterator forms the combination plots from the single displacement plot with the 14 possible fringe plots.



4.3 Discussion of a Few Specific Plot Set Capabilities

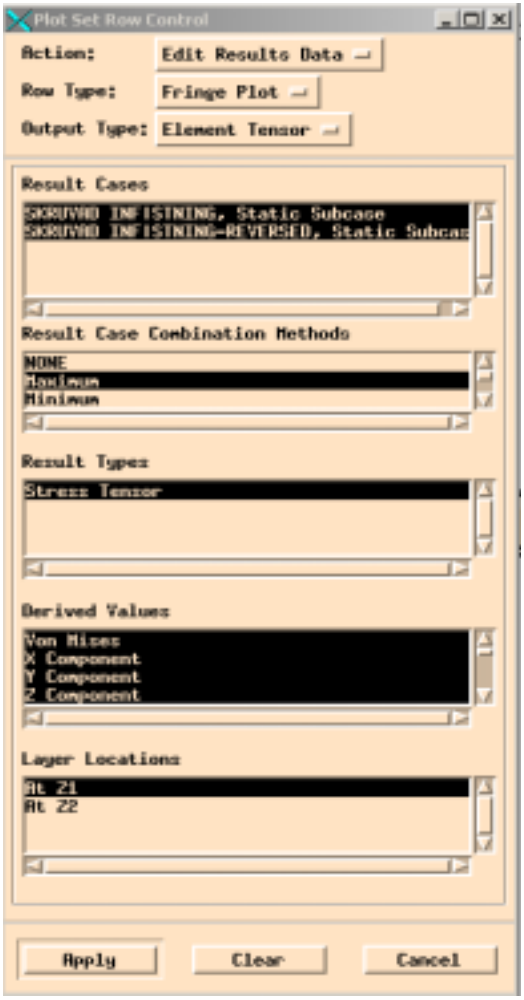
In Section 4.2 above it was mentioned that by choosing multiple selections within the list boxes of the Result Row Control form you could cause multiple plots to be generated from very few Plot Set Rows. A feature that was not discussed was that as you select multiple entries from either the Result Cases or Layer Locations list boxes you will see the Row Control form reformat to include Result Case Combination Methods and / or Layer Combination Methods list boxes. The options that appear in these list boxes allow you to control how combinations of result cases or layer locations (but not both simultaneously) are formed for a specific plot. At this time the interface allows you to pick multiple selections in both list boxes. If this is done it will result in a failure to generate plots that would be defined by using the Plot Set row that contained the multiple selection from both Result Case and Layer Locations list boxes. Examples that contain correct selection methods are described below.



Example 1: If you select multiple entries in either the Result Cases or Layer Locations list box and then select the NONE option from the associated Combination Methods list box, multiple plots for the different selections will be generated relative to the Iterator type you have defined in the Combination Plot row's Data cell.

Example 2: If you select multiple entries in either the Result Cases or Layer Locations list box and then select the NONE option from the associated Combination Methods list box, then the selected data sets will be used to form a single data set whose entries are the point by point maximum of the data contained within the selected data sets.

In the Result Row Control form shown to the right multiple Result Cases have been selected. When multiple Result Cases are selected the Result Type entries that appear are the intersection of the results types contained in the data sets identified by the selected Result Cases (for a selected Output Type). Likewise, the Layer Location entries that appear are an intersection of the layer locations contained within the data sets identified by the selected Result Types and Cases.



CHAPTER 5

Manual Creation and Modification of Plot Sets

- Plot Set Definition

5.1 Plot Set Definition

This section describes the MSC.Patran's Plot Set syntax. An experienced MSC.Patran user can easily understand how a Plot Set is defined by visualizing a spread sheet that holds the typical data that can be found in the PCL commands that create and post an analysis plot in MSC.Patran. The Plot Set rows typically represent plot definitions and the row's columns hold the data that support the plot's definition. For example, the columns for a fringe plot definition row would contain information describing the analysis data keys that are needed to identify the analysis data set to be rendered, the plot's target definition, graphic attributes of the plot, numerical operations that will transform the input data to its final state, range, and spectrum names to specify the plot's colored regions with respect to the analysis data numeric intervals.

Sample Plot Set Example

Shown in Appendix A is a simple Plot Set that contains two plots. We will use exerts from the sample in this section to describe the elements of a Plot Set, its syntax, and the options that exist for each element. Appendix B contains complete descriptions of all current Plot Set row types and their supporting data entries.

Take a moment to review the Plot Set example in Appendix A before reading the following steps that describe its contents.

1. At the top of the example Plot Set you will see the following PCL declarations for the variables used in the file. As you can see the plot names are limited to 79 characters.

   ```
   INTEGER plot_set_id, status
   INTEGER row_id
   STRING plot_set_name [ 79 ]
   ```

2. At the start of each Plot Set definition you must specify the Plot Set name and call the function that creates the new Plot Set within MSC.Patran's database.

   ```
   plot_set_name = "combo_plot_1"
   status = res_plot_set_create_over( plot_set_id , FALSE , plot_set_name , @
     "Deformed fringe plot" )
   IF( status == 0 ) THEN
           <lines that represent the Plot Set definition go here>
   END IF
   ```

   If the create function returns a successful status then, as we will describe in the next point, the Plot Set row definitions will be exercised to provide the content of the Plot Set definition.

The arguments of the *res_plot_set_create_over* function are as follows.

plot_set_id	An output variable the returns the id of the new Plot Set.
FALSE (or *TRUE*)	A logical that specifies if the command is allowed to over write an existing Plot Set definition if the Plot Set names are identical. (TRUE = over write allowed)
plot_set_name	The new Plot Set name to be created.
Deformed fringe plot	The Plot Set's text description.

3. Within this samples Plot Set's IF-block are placed *res_create_plot_set_row* commands. These commands provide the combination plot's specification and the fringe and deform plots that define the combo plot. Described below are the rows specifying the combination plot and its fringe plot. The specification for the deformed plot is similar to the fringe plot and therefore will not be described.

   The arguments of *res_create_plot_set_row* function for the combination plot specification are as follows.

row_id	Output variable that returns the id of the new Plot Set row.
plot_set_name	The Plot Set name that the row belongs to.
1	The row index within the Plot Set.
Combined Plot	The row type. Options are, "Fringe Plot", "Deformed Plot", "Vector Plot", "Tensor Plot", "Image Data", "Default Values", Column Order", "Combined Plot", and "Saved Plot".
3	The number of data columns that are needed to support the row type.

Combined Plot Data Columns: The data column syntax is defined to be, column_type_name, num_values, value1, value2, ..., valueN. Appendix B shows the data necessary to support the various row types.

Num Combo Plots / Num Combo Rows / Iterator Type

These are the column_type_name selection for the combo plot row columns. They must be used in the order shown.

1 — Number of data specifications to follow.

2 / 2 / product — The first value represents the number of plots that define the combination plot. The second value represents the number of total rows that are used to define the combination plot. The number of plots and the number of rows might be different since extra rows can be interspersed between the plot definition rows to alter global parameters that effect all plot types. In the first release, interspersed rows are not supported and the number of plots and rows should be the same. The final value, product, represents the iterator type used to generate the combined plots. Iterator types are described in detail in Appendix B.

0 — The stride specifies how column data must be indexed. If the stride value is less than or equal to 0 then data indexing is assumed to be num_values + 2 strings. If stride is greater than 0 then the stride value represents the index jump size. This allows the data to be given in a two dimensional array. In this case stride is the size of the first dimension. It should be at least the largest of the num_values +2. The second dimension should be at least the number of columns in the row.

The arguments of *res_create_plot_set_row* for the fringe plot specification are as follows.

row_id	Output variable that returns the id of the new Plot Set row.
plot_set_name	The Plot Set name the row belongs to.
2	The row index within the Plot Set.
Fringe Plot	The row type. Options are, “Fringe Plot”, “Deformed Plot”, “Vector Plot”, “Tensor Plot”, “Image Data”, “Default Values”, Column Order”, “Combined Plot”, and “Saved Plot”.
14	The number of data columns that are needed to support the row type.
Fringe Plot Data Columns:	The data column syntax is defined to be, column_type_name, num_values, value1, value2,..., valueN. Since these are labeled data entries they can be entered in any order. Appendix B shows the data necessary to support the various row types.
Loadcase	Column specification used to identify the analysis results data set.
1	Number of load cases.
Combine	Load case name.
Subcase	Column specification used to identify the analysis results data set.
1	Number of subcases.
Subcase 3	Subcase name. Used to identify the analysis results data.

Primary Result	Column specification used to identify the primary results type name.
1	Number of primary results types.
Nodal Vector	Primary specification of results to be rendered. Typical options are, “Displacement”, “Stress”, “Strain”, “Constraint Forces”, “Strain Energy”, etc.
Secondary Result	Column specification used to identify the secondary results type name.
1	Number of secondary results types.
Demo Result1	Secondary specification of results to be rendered. Typical options are, “Translational”, “”, “Energy”, “Moment Resultant”, “Energy Density”, etc.
Layer Location	Column specification used to identify the data layer location.
1	Number of layer ids specified for the plot.
“ “	Nonlayered data. Typical options are, “Z2”, “Layer 1”, “At Middle”, etc.
Derived Quantity	Column specification used to identify the derivation to be applied to the analysis data.
1	Number of derivations specified.
ZZ	Extract the ZZ component. Typical options are, “von Mises”, “tresca”, “Min Principal”, “Magnitude”, etc.
Target	Column specification used to identify the of entities to render the plot upon.
1	Number of target specifications.
FreeFaces,0	Render on the nodes posted in the view port that lie on the element’s free faces. Typical options are, “Elements,0”, “Nodes,0”, etc.

Template	Column specification used to identify the associated plot template that is to be retrieved to provide the plots graphics attributes and numerical operation options.
1	Number of templates that are specified.
fringe_template	Template name to retrieve.
Save As	Column specification used to allow the plot to be persisted with a name
1	Number of plot names specified
“ “	Blank specifier implies the default name will be used (e.g. default_Fringe).
Filename	Column specification used to allow the user to provide a print file name for the plot.
1	Number of print file names that are provided
“ “	If left blank as it is here the Plot Set name will be used as the default print file name.
Title	Column specification that allows user to enter a plot title.
1	Number of title specifiers
“ “	Since a blank title has been specified the title that is specified in the template file will be used. Titles are limited to 159 characters.
Range	Column specification of the range name that will be used for the plot.
1	Number of range specifiers
“ “	Since a blank range name has been specified the plot will use the range tool’s default range (e.g. Fri_default_Fringe, Vec_default_Vector, etc.).
Spectrum	Specification of the spectrum name that will be used for the plot.
1	Number of spectrum specifiers

“ “	Since a blank spectrum name has been specified the plot will use the default spectrum (i.e. standard_spectrum).
Viewport	Column specification of the viewport the plot will be rendered within.
1	Number of viewport specifiers
“ “	Since a blank viewport name has been specified the plot will be rendered in the current viewport.

CHAPTER

6 Problems and Resolutions

- Known Problems and Resolutions

6.1 Known Problems and Resolutions

This section lists the known problems and resolutions within the MSC.Patran Plot Set system.

Problem 1:

Resolution1:

Problem 2:

Resolution2:

Problem 3:

Resolution3:

Problem 4:

Resolution4:

Problem 5:

Resolution5:

APPENDIX

A

Sample Plot Set Example

- Simple Plot Set Containing a Combination Plot

A.1 Simple Plot Set Containing a Deformed Fringe Plot

```
INTEGER plot_set_id, status
INTEGER row_id
STRING  plot_set_name [ 79 ]
plot_set_name = "combo_plot_1"
status = res_plot_set_create_over( plot_set_id , FALSE , plot_set_name , @
  "Deformed fringe plot" )
IF( status == 0 ) THEN
res_create_plot_set_row( row_id , plot_set_name , 1 , @
  "Combined Plot" , 3 , @
 [ "Column Index"     , "1" , @
    "2" , @
   "Column Index"     , "1" , @
    "2" , @
   "Column Index"     , "1" , @
    "product" ] , 0 )
res_create_plot_set_row( row_id , plot_set_name , 2 , @
  "Fringe Plot" , 14 , @
 [ "Loadcase"        , "1" , @
    "Combine" , @
   "Subcase"         , "1" , @
    "Subcase 3" , @
   "Primary Result"   , "1" , @
    "Nodal Vector" , @
   "Secondary Result"  , "1" , @
    "Demo Result1" , @
   "Layer Location"   , "1" , @
    "" , @
   "Derived Quantity"  , "1" , @
    "ZZ" , @
   "Target"          , "1" , @
    "FreeFaces,0," , @
   "Template"        , "1" , @
    "fringe_template" , @
   "Save As"         , "1" , @
    "" , @
   "Filename"        , "1" , @
    "" , @
   "Title"           , "1" , @
    "" , @
   "Range"           , "1" , @
    "" , @
```

```
   "Spectrum"        , "1" , @
     "" , @
   "Viewport"        , "1" , @
     "" ] , 0 )
res_create_plot_set_row( row_id , plot_set_name , 3 , @
  "Deformed Plot" , 14 , @
 [ "Loadcase"        , "1" , @
     "Derived Results" , @
   "Subcase"         , "2" , @
     "Demo" , @
     "DemoElem" , @
   "Primary Result"   , "1" , @
     "Nodal Vector" , @
   "Secondary Result" , "1" , @
     "Demo Result1" , @
   "Layer Location"   , "1" , @
     "" , @
   "Show As"         , "4" , @
     "Resultant,x" , @
     "Component,on,off,off" , @
     "Component,off,on,off" , @
     "Component,off,off,on" , @
   "Target"          , "2" , @
     "Elements,0," , @
     "Nodes,0," , @
   "Template"        , "1" , @
     "def_tmpl" , @
   "Save As"         , "1" , @
     "" , @
   "Filename"        , "1" , @
     "" , @
   "Title"           , "2" , @
     "$Use_Default_Title" , @
```

APPENDIX

B

Plot Set BuiltinFunctions and Plot Set Iterators

- Function Descriptions
- Iterator Descriptions

B.1 Function Descriptions

Session file commands

res_plot_set_create_over (plot_set_id, overwrite_plot_set, name, desc)

Description:

This function creates a new Plot Set and persists it in the MSC.Patran database. An overwrite specifier is included to allow the command to overwrite an existing Plot Set if it uses the same name as the new name provided with this command.

Input:

LOGICAL	overwrite_plot_set	TRUE forces overwriting. FALSE causes the copy to fail if an existing Plot Set already uses the input new_name.
STRING	name[max 79]	New Plot Set name.
STRING	desc[VIRTUAL]	Plot Set description.

Output:

INTEGER	plot_set_id	Internal database id of the newly created Plot Set.

Error Conditions:

MSG_RES_PLOT_SET_DOES_NOT_EXIST

DbErrorNotFound

DbOtherFailure

Remarks:

None

res_plot_set_copy_over (new_id, overwrite_plot_set, new_name, new_desc, old_id, old_name)

Description:

This function copies an existing Plot Set and persists it in the MSC.Patran database. An overwrite specifier is included to allow the command to overwrite an existing Plot Set if it uses the same name as the new name provided with this command.

Input:

LOGICAL	overwrite_plot_set	TRUE forces overwriting. FALSE causes the copy to fail if an existing Plot Set uses the input new_name.
STRING	new_name[max 79]	New Plot Set name.
STRING	new_desc[VIRTUAL]	Plot Set description.
INTEGER	old_id	Internal database id of the Plot Set to be copied.
STRING	old_name[max 79]	Plot Set name to be copied.

Output:

INTEGER	new_id	Internal database id of the newly created Plot Set.

Error Conditions:

MSG_RES_PLOT_SET_DOES_NOT_EXIST
MSG_RES_PLOT_SET_LONG_NAME
MSG_RES_PLOT_SET_NULL_NAME
MSG_RES_PLOT_SET_EMPTY_NAME
MSG_RES_PLOT_SET_BLANK_NAME
MSG_RES_PLOT_INVALID_NAME
DbErrorNotFound
DbOtherFailure
DbNotADatabase
DbOutOfMemory

Remarks:

If old_name is not blank it will be used to look up the existing Plot Set and the old_id will be ignored. Otherwise, old_id will be used to lookup the existing Plot Set in the database.

res_create_plot_set_row (row_id, plot_set_name, row_index, row_type_name, num_cols, a_col_vals, stride)

Description:

This function creates a plots set's row definition.

Input:

STRING	plot_set_name[max 79]	Plot Set name the row is associated to.

INTEGER	row_index	Position of row within the Plot Set definition.
STRING	row_type_name[ ]	Specification of the rows purpose. The options are: “Fringe Plot”, “Deformed Plot”, “Vector Plot”, “Tensor Plot”, “Image Data”, “Default Values”, “Column Order”, “Combined Plot”, and “Saved Plot”.
INTEGER	num_cols	Number of data column sets that are required to support the row type.
STRING	a_col_vals	Data required to support the row type. Each data column must have the following data within the column: column_type_name, num_values, value1, value2, ..., valueN. For example: Iterator Type, 1, product
INTEGER	stride	The stride specifies how column data must be indexed. If the stride value is less than or equal to 0 then data indexing is assumed to be num_values + 2 strings. If stride is greater than 0 then the stride value represents the index jump size. This allows the data to be given in a two dimensional array. In this case stride is the size of the first dimension. It should be at least the largest of the num_values +2. The second dimension should be at least the number of columns in the row.

Output:

INTEGER	row_id	Internal database id of the newly created Plot Set row.

Error Conditions:

MSG_RES_PLOT_SET_DOES_NOT_EXIST

MSG_RES_PLOT_SET_LONG_NAME

MSG_RES_PLOT_INVALID_NAME

MSG_RES_PLOT_SET_NULL_NAME

MSG_RES_PLOT_SET_EMPTY_NAME

MSG_RES_PLOT_SET_BLANK_NAME

DbInstanceNotFound

DbOutOfMemory

DbNotADatabase

DbOtherFailure

Remarks:

a_col_vals is either a one dimensional array with data packed sequentially (stride <= 0) or the equivalent of a two dimensional array dimensioned (num_cols)(stride).

B.2 Iterator Descriptions

When you define your Plot Set rows with the, res_create_plot_set_row, command you must provide one or more “a_col_vals” which represents the data required to support the row type. The syntax for a_col_vals is, column_type_name, num_values, value1, value2, ..., valueN. If you specify num_values greater than 1and provide the corresponding number of data values the Plot Set system iterate across these values to produce the Plot Set’s analysis plots. Currently there are two iteration methods available. They are, outer product iterator, abbreviated “product” and tuple iterator, abbreviated “tuple”.

Outer Product Iterator

The outer product iterator will provide individual plots for every possible combination that can be generated by Plot Set’s row’s column data. For example, if your Plot Set contains a single combination plot of a fringe and deform plot where you have specified the required data for each plot as single valued except for,

Fringe Plot: 2 Titles

Deform Plot: 2 Subcases, 4 Show As, 2 Targets, 2 Titles, 4 Viewports

the Plot Set system would then produce 256 plots.

Tuple Iterator (default)

The tuple iterator will produce individual plots for each possible pairing of the data values needed to describe each plot included in the Plot Set. For the tuple iterator to function properly it is required that each plot have an equal number of data values that vary and that the variance be equal. The following examples show a correct and an incorrect Plot Set definition relative to the successful operation of the tuple iterator.

Example 1 (correct):

Fringe Plot: 2 Loadcases, 4 Targets, 2 Viewports

Deform Plot: 2 Subcases, 4 Show As, 2 Titles

Example 2 (incorrect):

Fringe Plot: 2 Loadcases, 4 Targets, 2 Viewports

Deform Plot: 2 Subcases, 4 Show As, 3 Titles

In the first example the Tuple iterator will successfully create 16 plots by selecting from each plot type a different varying value to define the plot. In the second example the Tuple iterator will fail since it does not have 3 viewport selections to pair with the 3 title selections.

For individual plots (not part of a combination Plot Set definition) there is no difference between the Outer Product Iterator and the Tuple Iterator.

I N D E X