

A. Appendix – User Guide

Getting Started

To Install RIFGen, the latest version of the software may be obtained from the following URL. <http://realap.codeplex.com>. After accessing the website the software may be downloaded using the download button as shown in Figure A-1. This software require Microsoft .NET frame 4.0 to be installed. The installer automatically installs the framework in case of its absence. An installation screen as in Figure A-2 would appear. This software does not require administrative privileges to install on a computer.

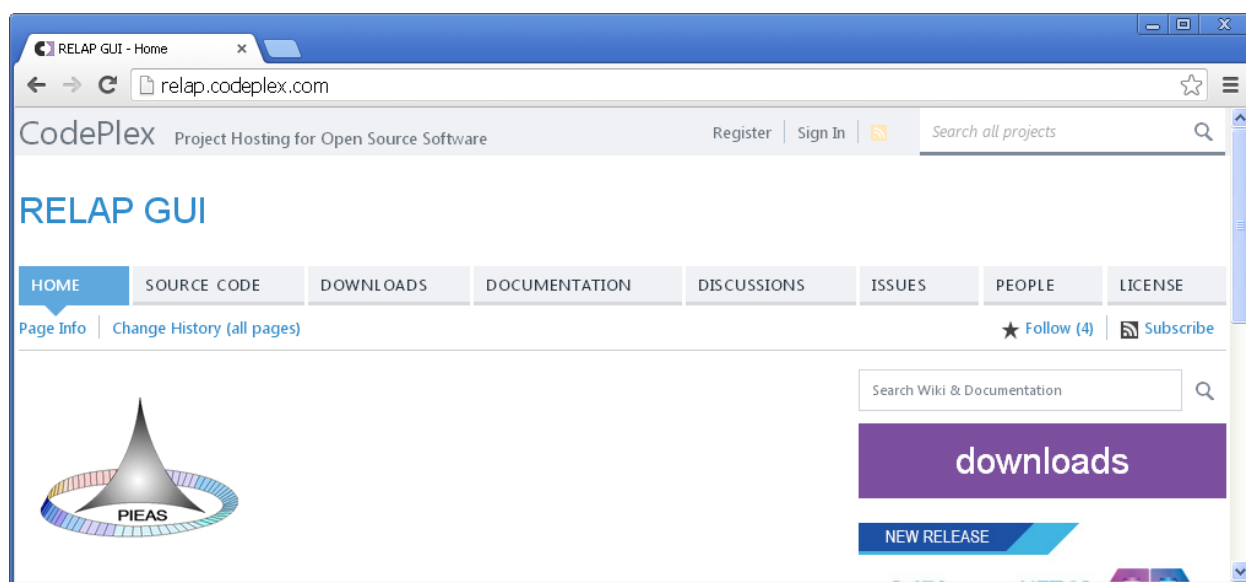


Figure A-1: RIFGen Home Page

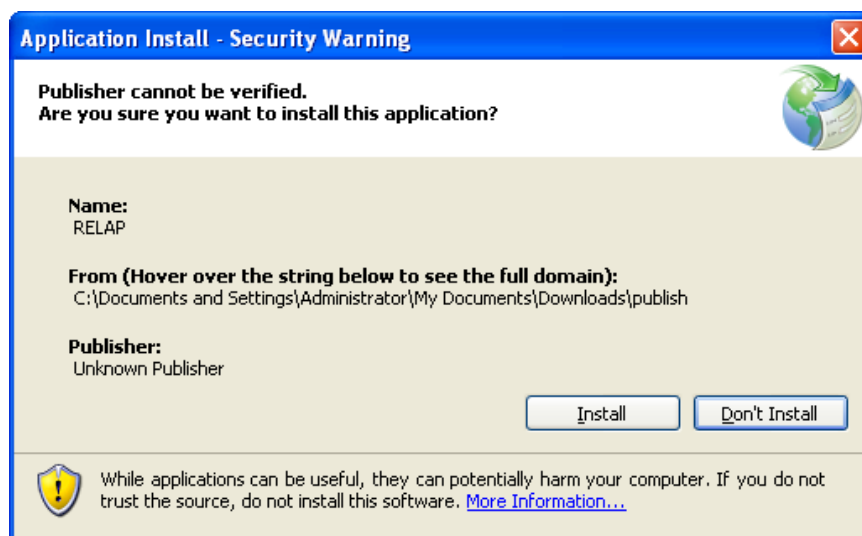


Figure A-2: Installation Screen

Create a New File

A new file may be created using two alternate paths, the new command may be access using the Menu Strip on the top using File->New as show in Figure A-3. Alternately it can be done using the toolbar button as in Figure A-4

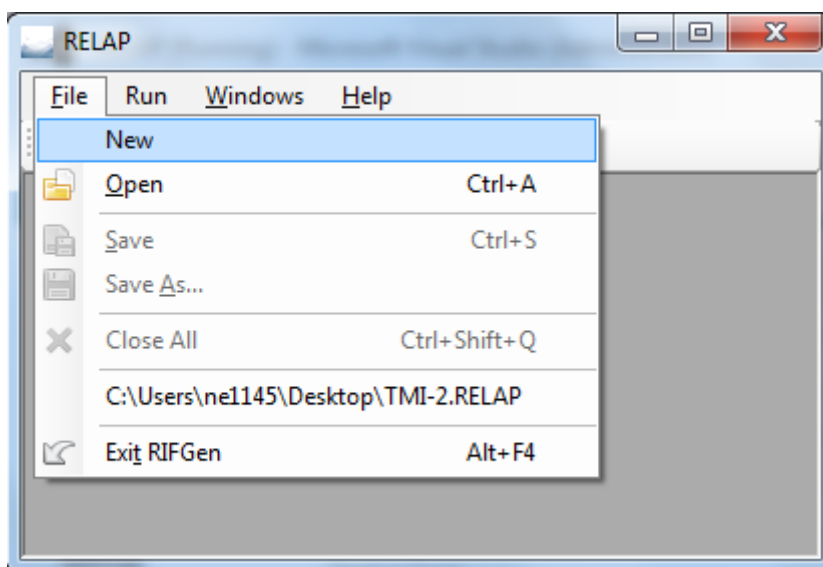


Figure A-3: Create new file from menu strip

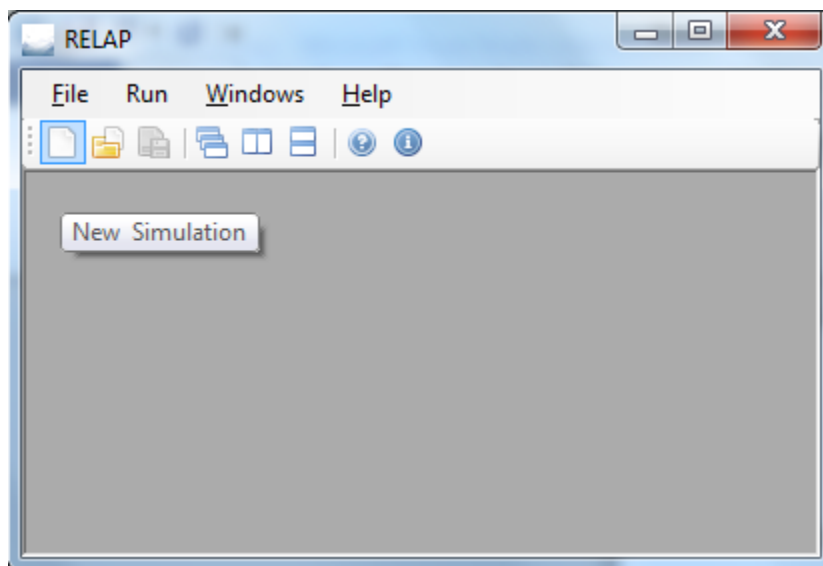


Figure A-4: Create new file from toolbar

Configuring Initial Settings

Initial settings for the RELAP5 simulation may be set using the “Initial Settings” form, this is achieved by first starting a new simulation as in Figure A-5. After the main form is loaded the

initial settings form on the left may be clicked to open. The “Initial Settings” form is shown in Figure A-6. Settings like Non Condensable Gases, Fluid, Time Step Control, Couple Settings and CPU Tim Remaining.

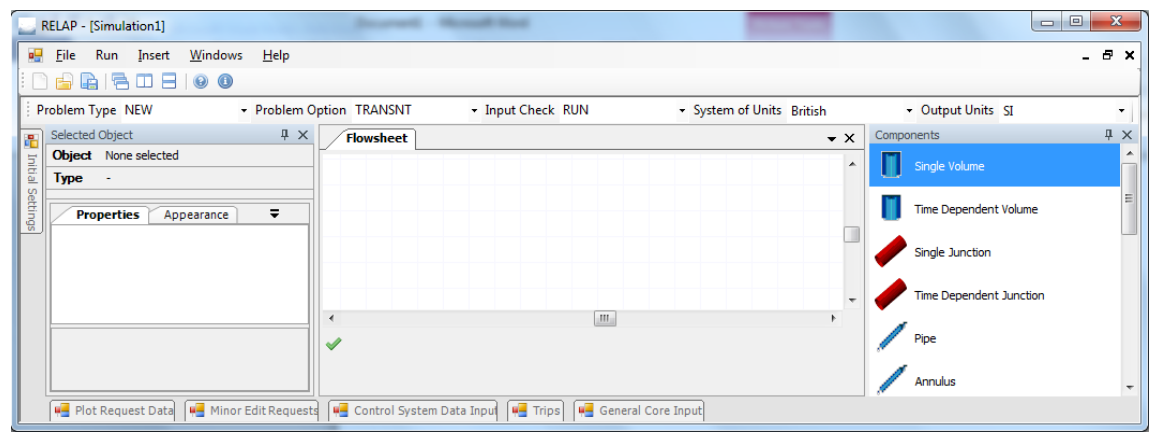


Figure A-5: Home Screen

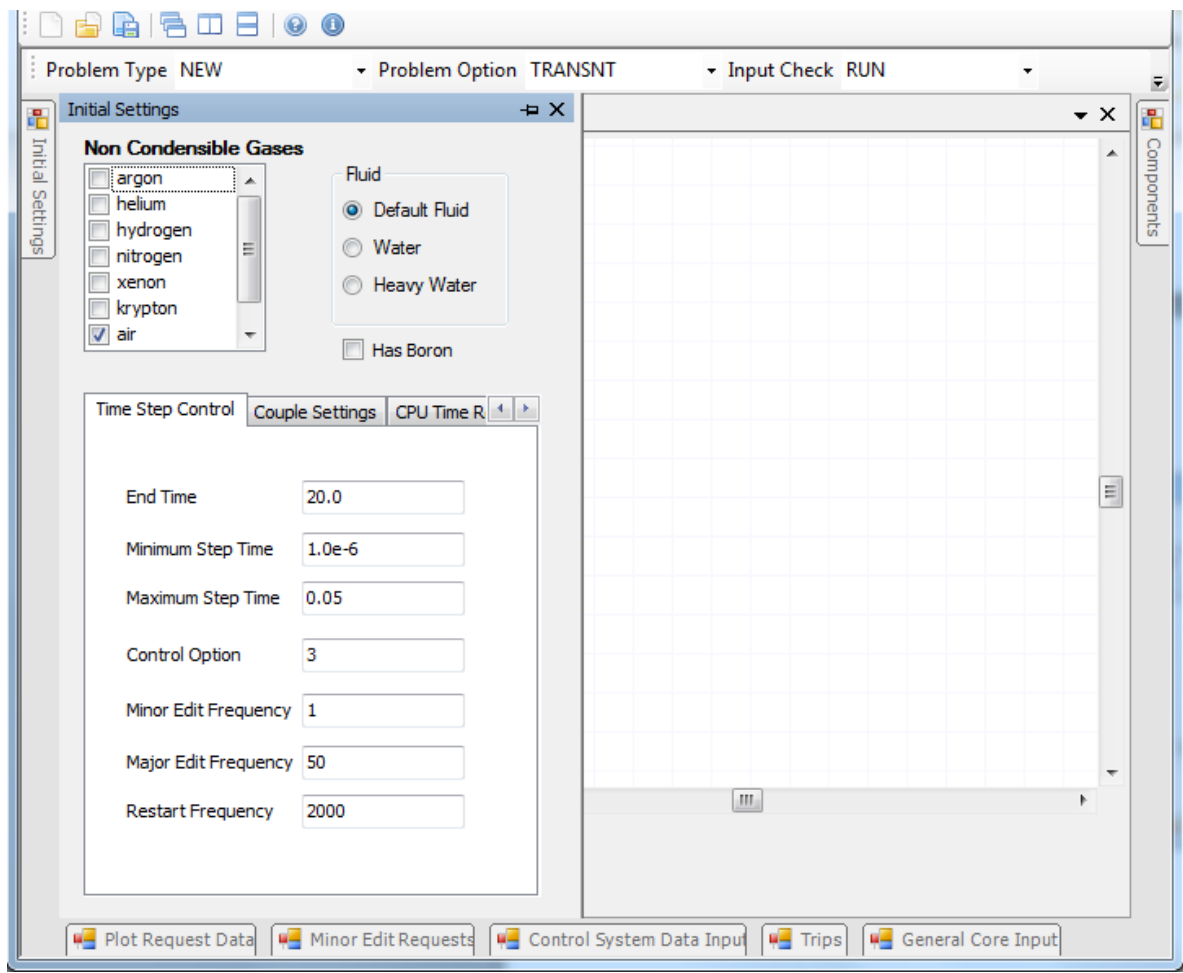


Figure A-6: Initial Setting Form

Adding Components to the Flow Sheet

This can be achieved using simple drag and drop. The component from the component list on the right may be selected and dragged-dropped to the drawing canvas to add a new component. This is illustrated in Figure A-7.

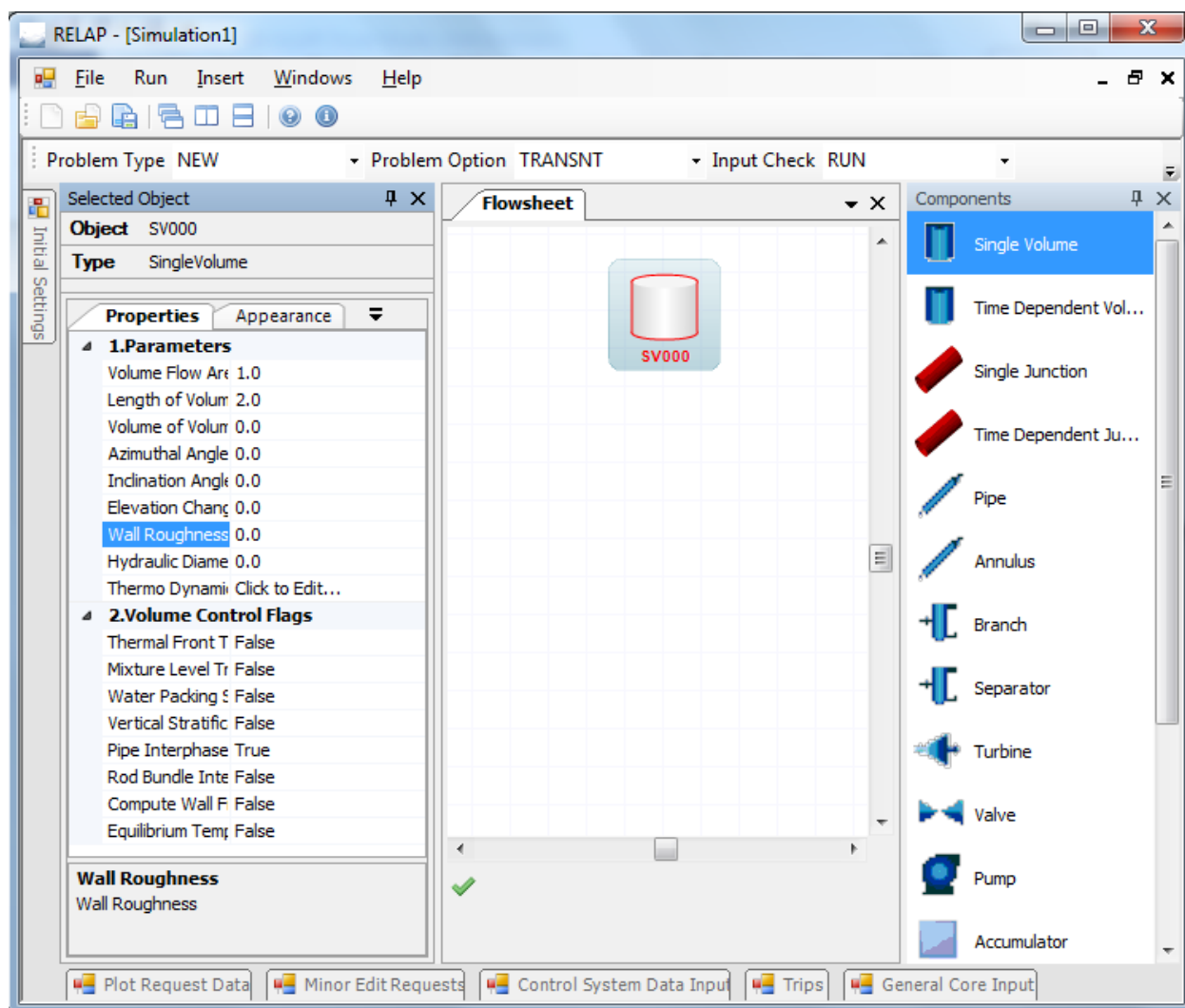


Figure A-7: Adding Components to Flow sheet

Changing Component Properties

The properties of a component may be changed from the property grid on the left of the screen; this can be seen in Figure A-7. Figure A-5.

Setting Plot Request Data

The plot request data may be set using the “Plot Request Data” form. This form may be accessed from the bottom of the screen. After clicking on it, this is shown Figure A-8. It has the Restart

Plot Settings, and a Data Grid View to add components and their Plot Variable Name, Plot scale and Position. Additional functionality into the Expanded Plot variables is under progress and may be available in the next version of RIFGen.

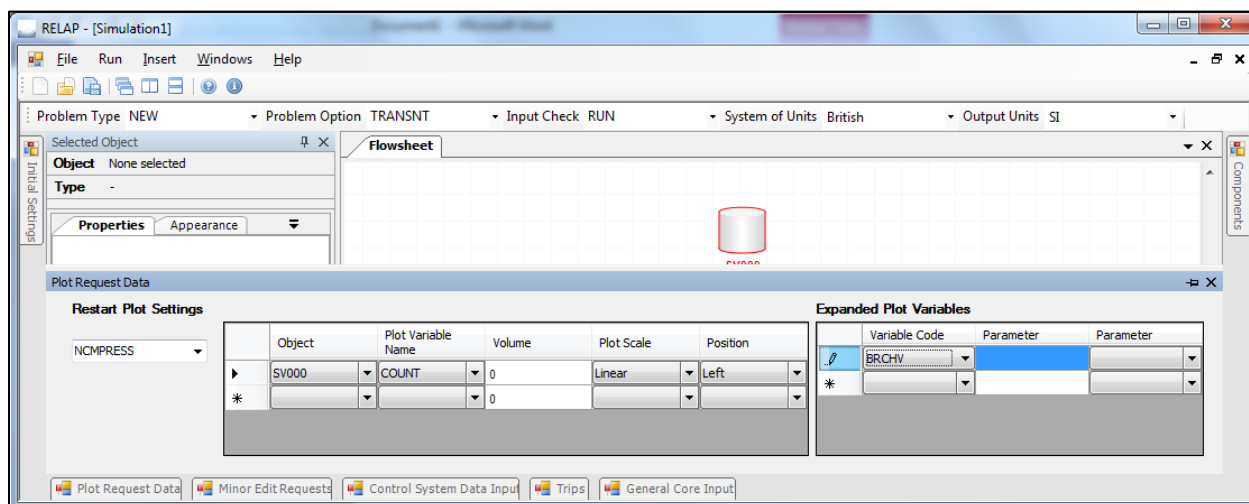


Figure A-8: Plot Request Data form

Configuring General Core Settings

The “General Core Settings” form is a prerequisite for the adding the Core components like Fuel Rod and Control Rod Components. It has various tabs including SCDAP Control, Axial Node Heights, Oxide Shell Stability, Metallic Meltdown, Molten Pool, Core Fragmentation, Gamma Heating, Cladding Deformation, Source of Component Power Data, Grid Spacer, Core Slumping Model and Core Bypass Volumes. This can be seen in Figure A-9.

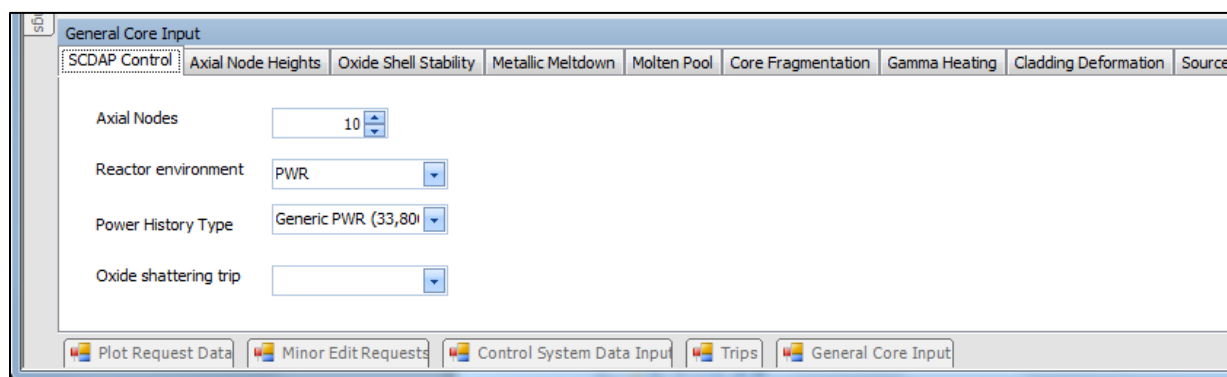


Figure A-9: General Core Settings

Configuring the Minor Edit Requests

This form is located on the bottom of the screen. The Minor Edit Requests form is used by selecting the Quantity Variable Code from the Combo box in the Data Grid View. This can be

seen in Figure A-10. Multiple rows may be added to the Data Grid View.

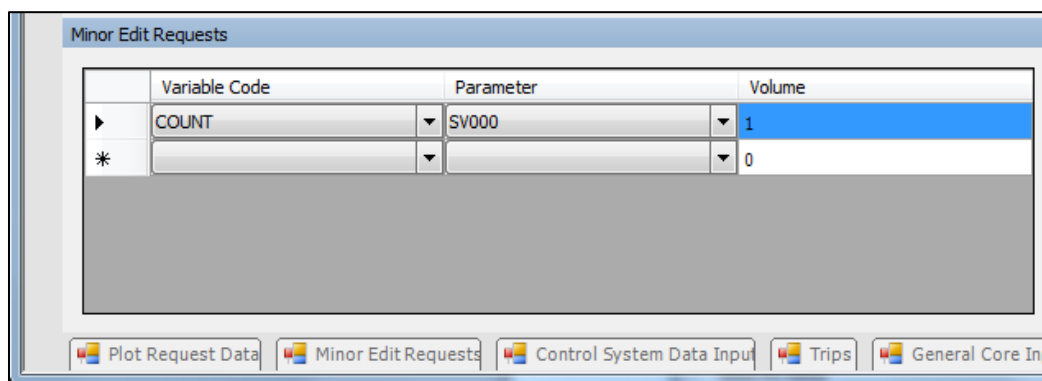


Figure A-10: Minor Edit Requests form

Modifying Component Graphical Appearance

The appearance of a component may be modified by selecting the appearance tab in the properties grid on the left of the screen; this can be seen in Figure A-11. In this case we have increased the height to 90 of the Time Dependent Volume.

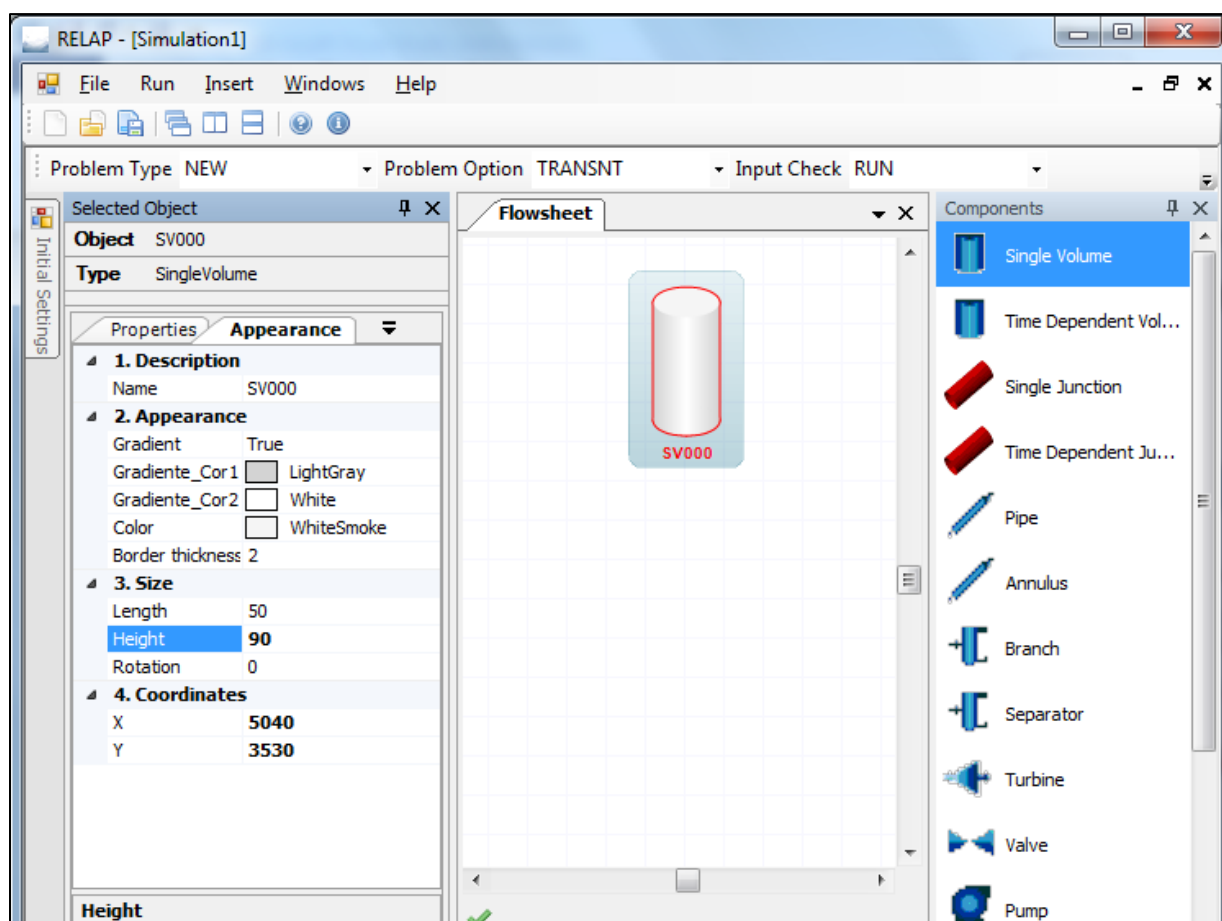


Figure A-11: Modifying Component Graphical Appearance

Connecting Components

Two components may be connected to each other by simply right clicking on the first component and then hovering over the “Connect to” context menu item and then finally select the second component. This can be seen in Figure A-12. In this case SV000 is connecting to SJ000. One is a Single Volume and the other is a Single Junction. In Figure A-13 we can see that both components are connected with each other using a blue connector line. The “to” and “from” properties of the Single Junction are automatically populated after the connection is made.

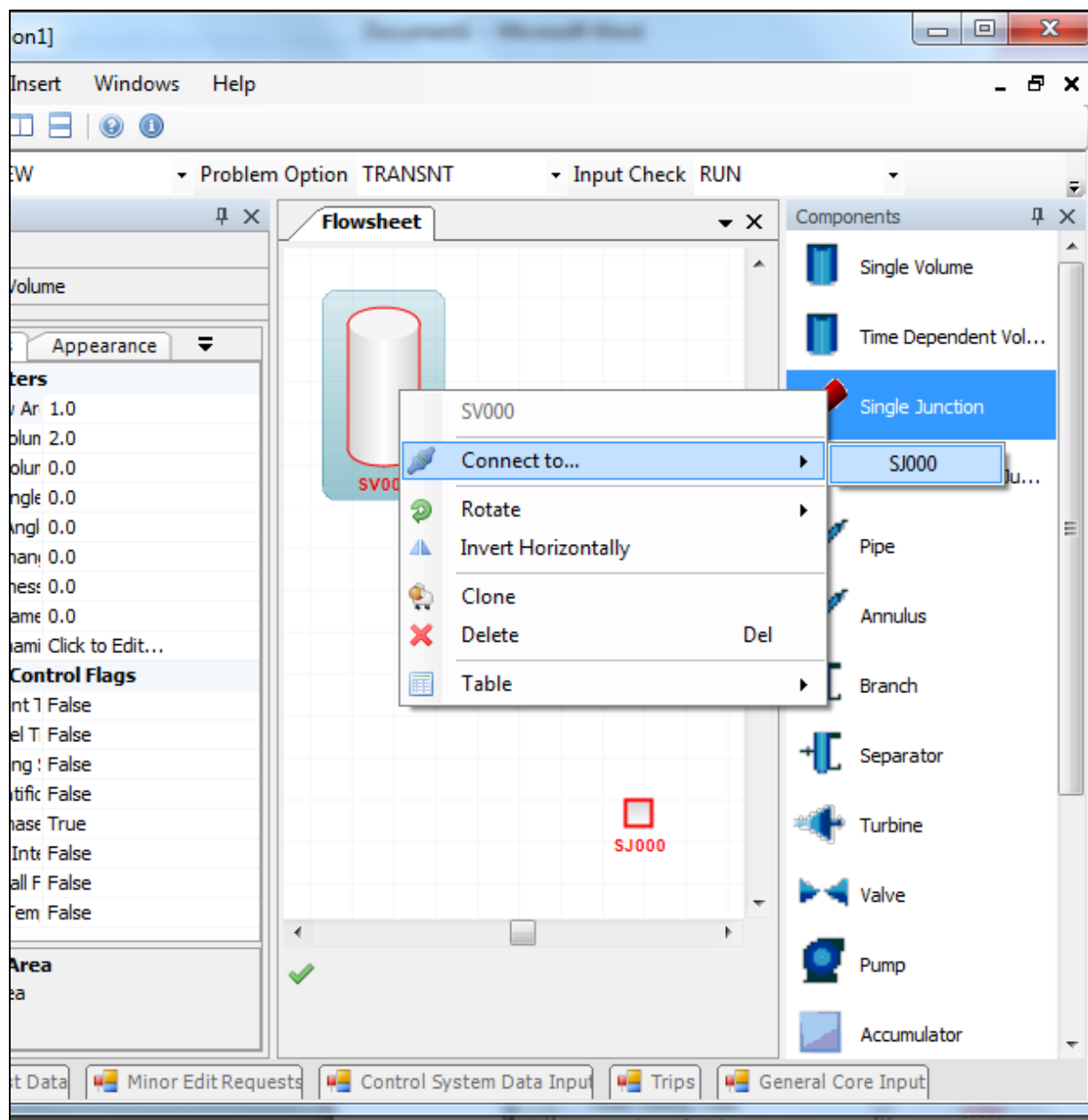


Figure A-12: Connecting Components

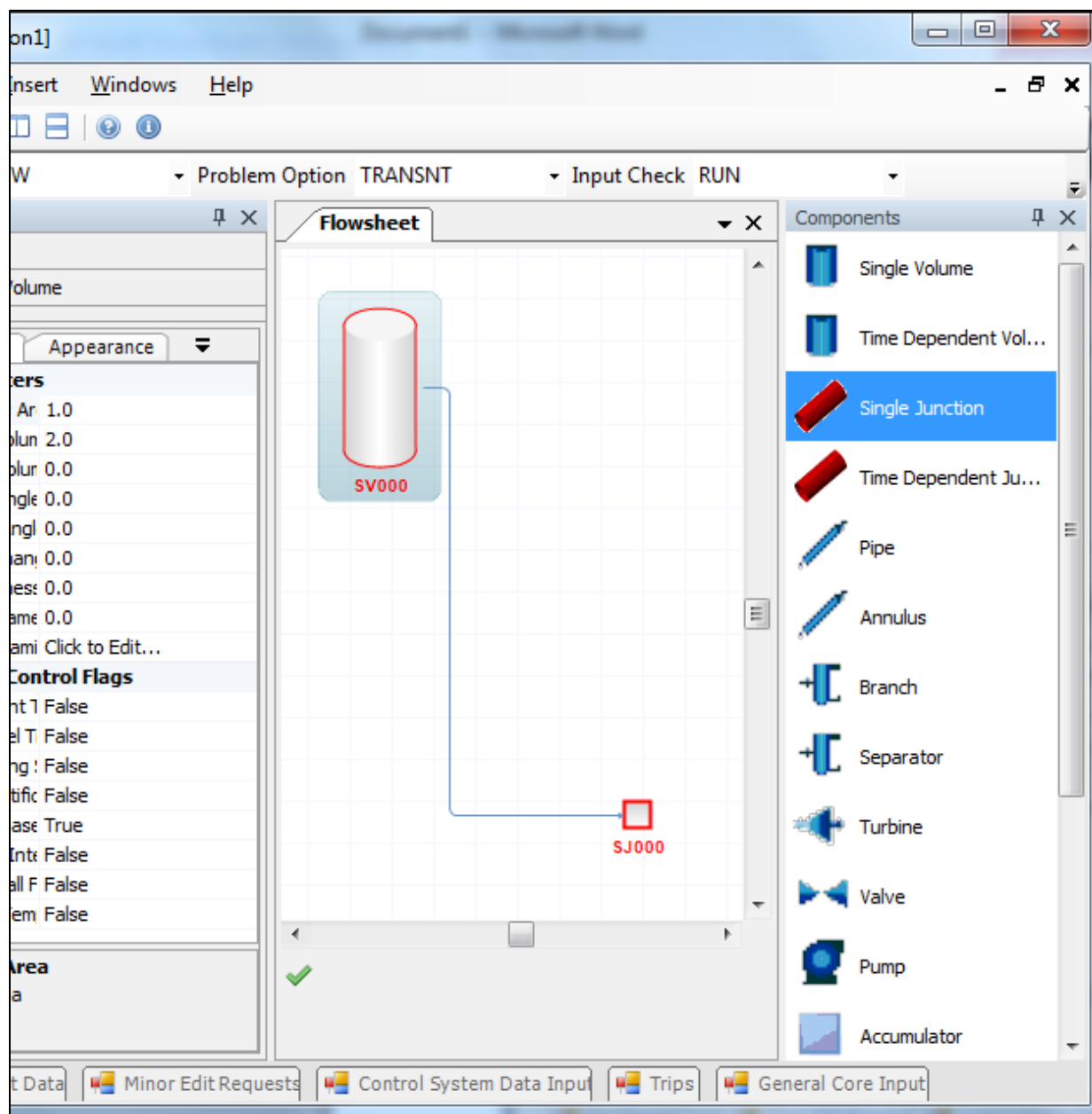


Figure A-13: Connected Components

File Save and Load

Files may be saved and loaded like in any other Windows based application. The save option may be accessed via the menu strip or the toolbar. This is shown in Figure A-14, similarly we can Open/Load an existing file using the menu strip and toolbar. RIFGen saves files with extension “.RELAP”. These saved files may be later used to reopen the existing project and make amendments to it.

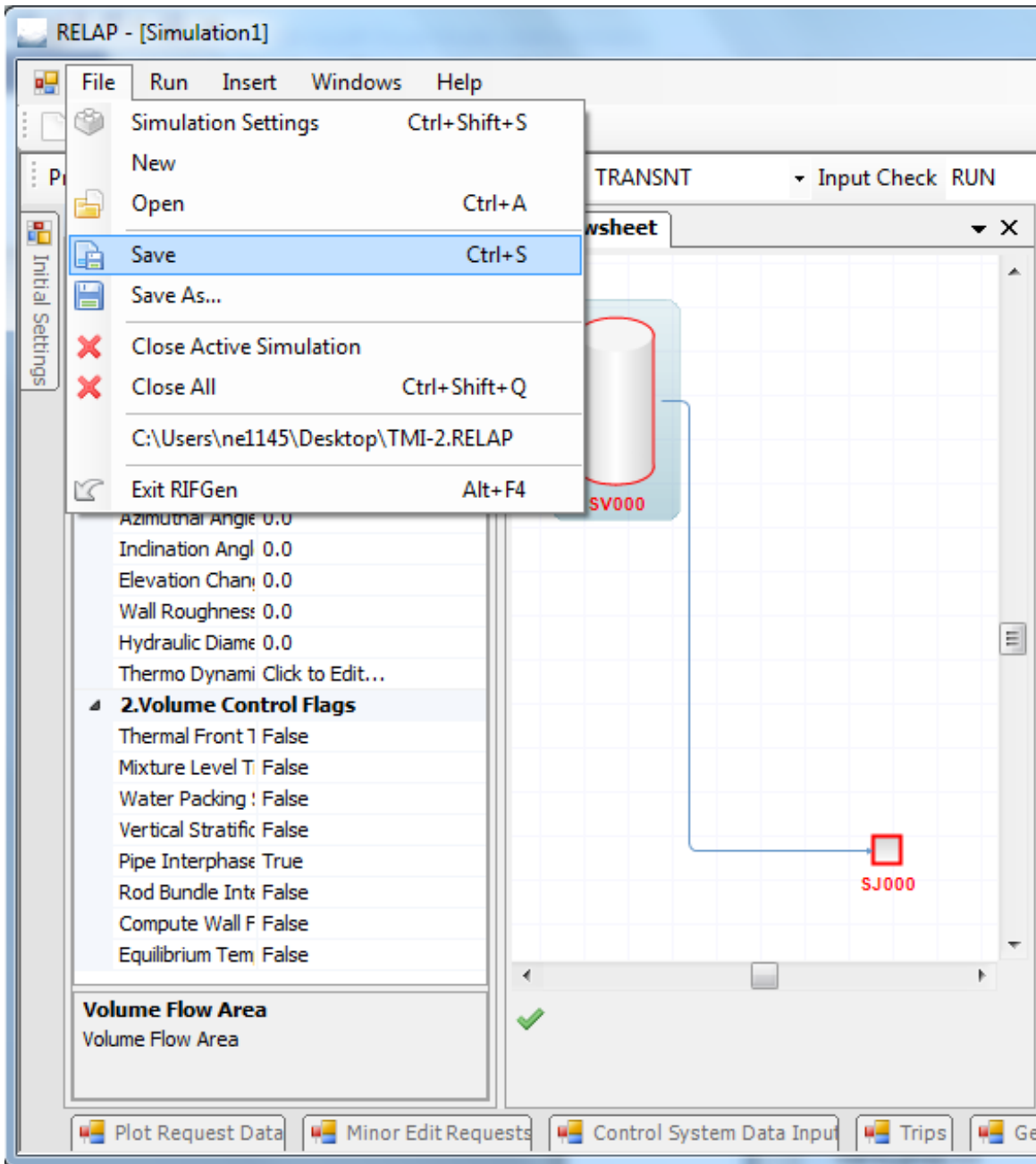


Figure A-14: File Save

Using the Data Grid View

The Data Grid View in RIFGen has been implemented in a manner that will assist data entry by the user. It enables the user to copy rows, this can be done by entering data into the cells of the table as in Figure A-15. After the data has been entered, the complete row may be selected from the left most cell. After clicking that, the copy, paste and copy to all buttons are enabled. The “Copy to All” button has been pressed in this case and the resultant Figure A-16 is shown.

Pipe Editor

	Volume Number	Volume Flow Area	Length of Volume	Volume of Volume	Azimuthal angle	Vertical Angle	Elevation Change	Hydraulic Diameter	Wall Roughness
▶	1	1	2	3	4	5	6	0	0
	2	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0

Copy Paste Copy to All Save

Figure A-15: Add data to Data Grid View

Pipe Editor

	Volume Number	Volume Flow Area	Length of Volume	Volume of Volume	Azimuthal angle	Vertical Angle	Elevation Change	Hydraulic Diameter	Wall Roughness
▶	1	1	2	3	4	5	6	0	0
	2	1	2	3	4	5	6	0	0
	3	1	2	3	4	5	6	0	0
	4	1	2	3	4	5	6	0	0
	5	1	2	3	4	5	6	0	0

Copy Paste Copy to All Save

Figure A-16: Copying Data in Data Grid View

Generating Input File

To Generate the RELAP5 Input file using RIFGen, we simply click on the “Generate Input File” Menu item on the top of the program(as in Figure A-17) after creating the nodalization diagram.

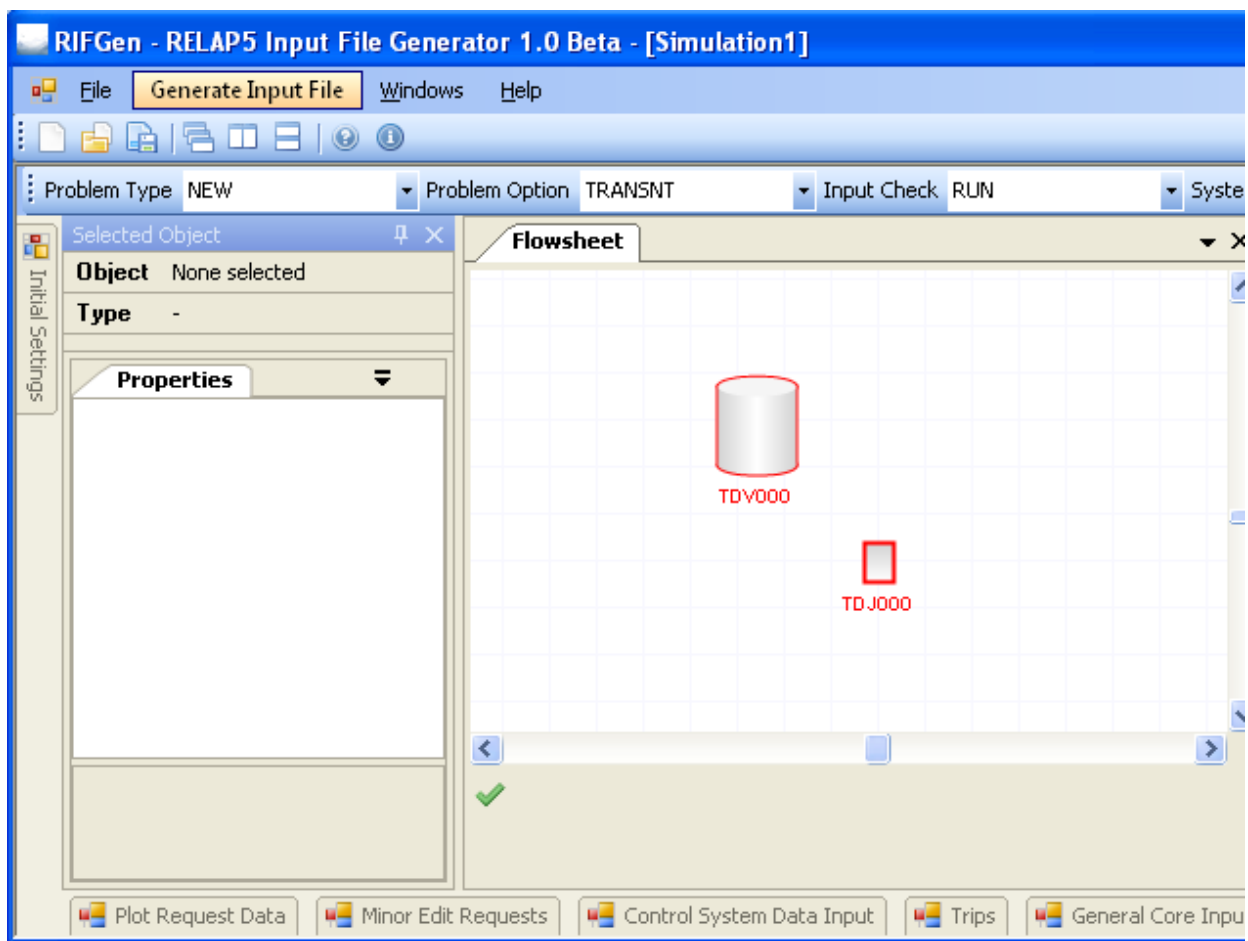


Figure A-17: Generate Input File