

A. Appendix – User Guide

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-1. Alternately it can be done using the toolbar button as in Figure A-2

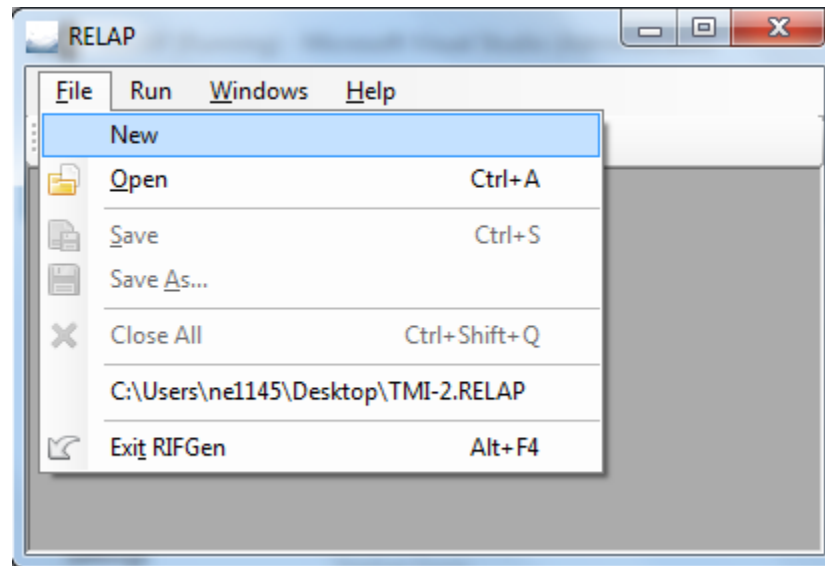


Figure A-1: Create new file from menu strip

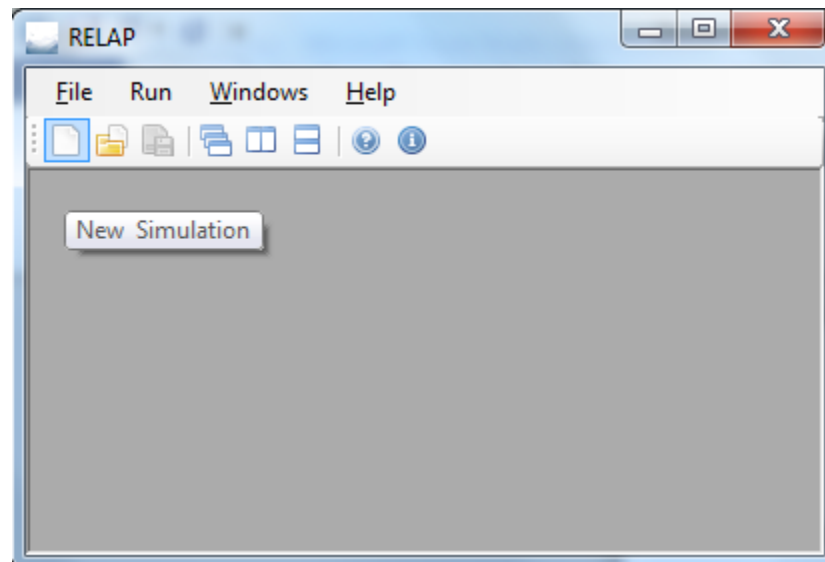


Figure A-2: Create new file from toolbar

Setting 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-3. 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-4. Settings like Non Condensable Gases, Fluid, Time Step Control, Couple Settings and CPU Tim Remaining.

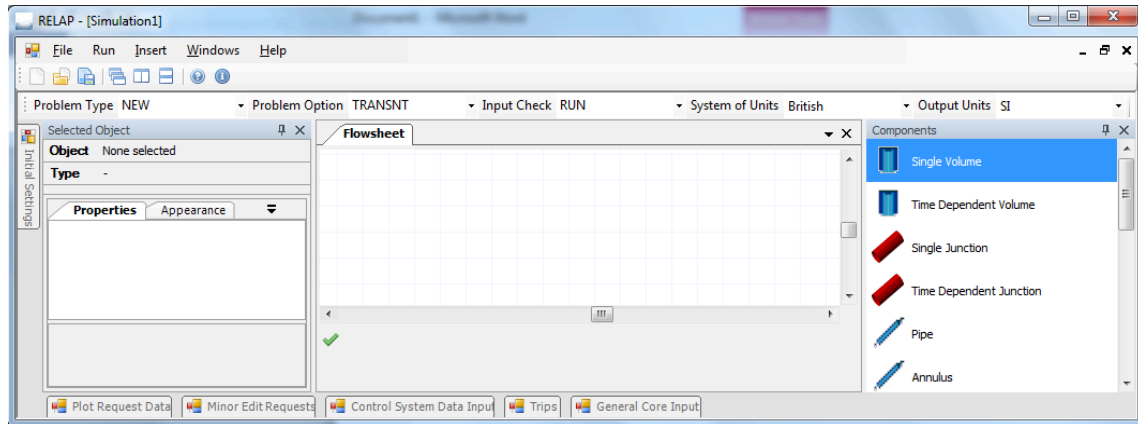


Figure A-3: Home Screen

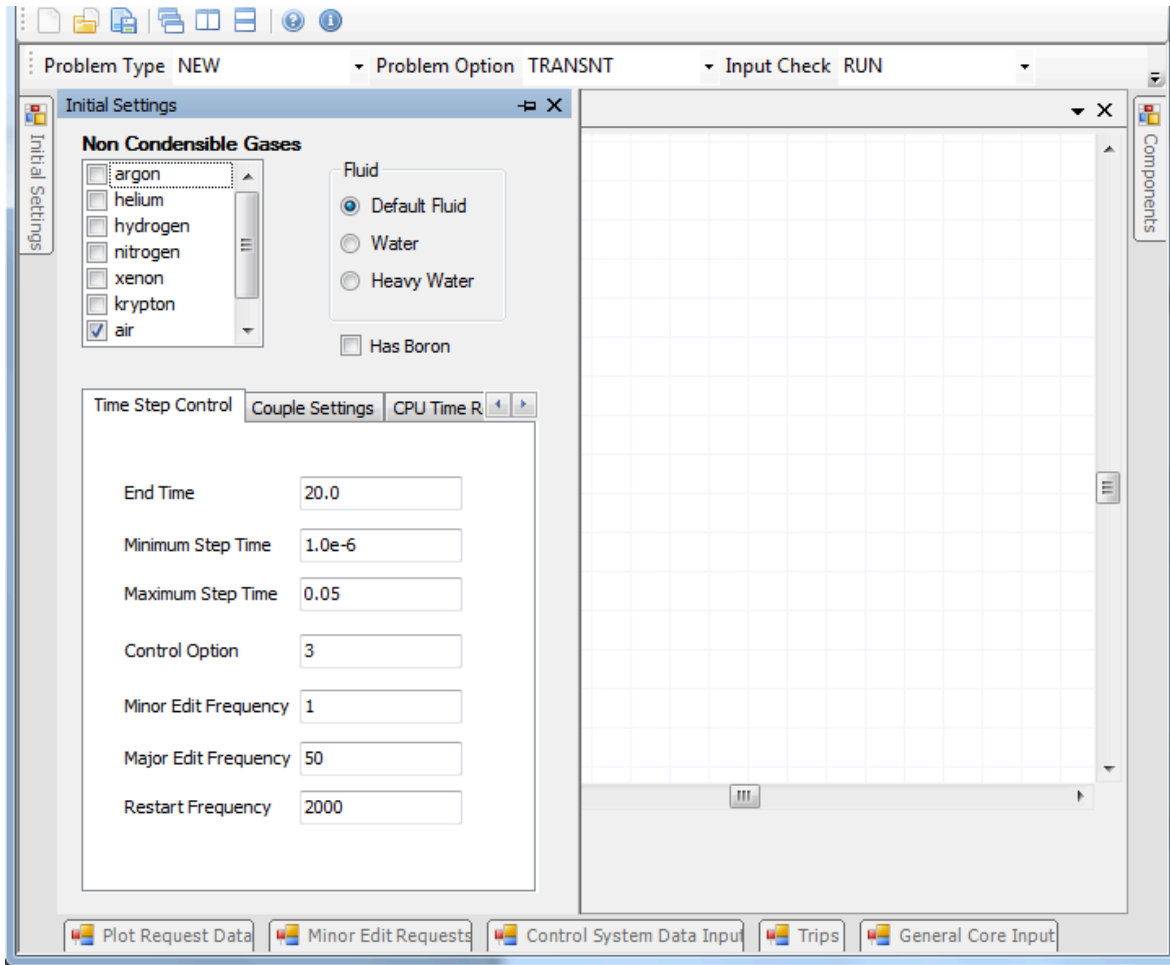


Figure A-4: Initial Setting Form

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-5.

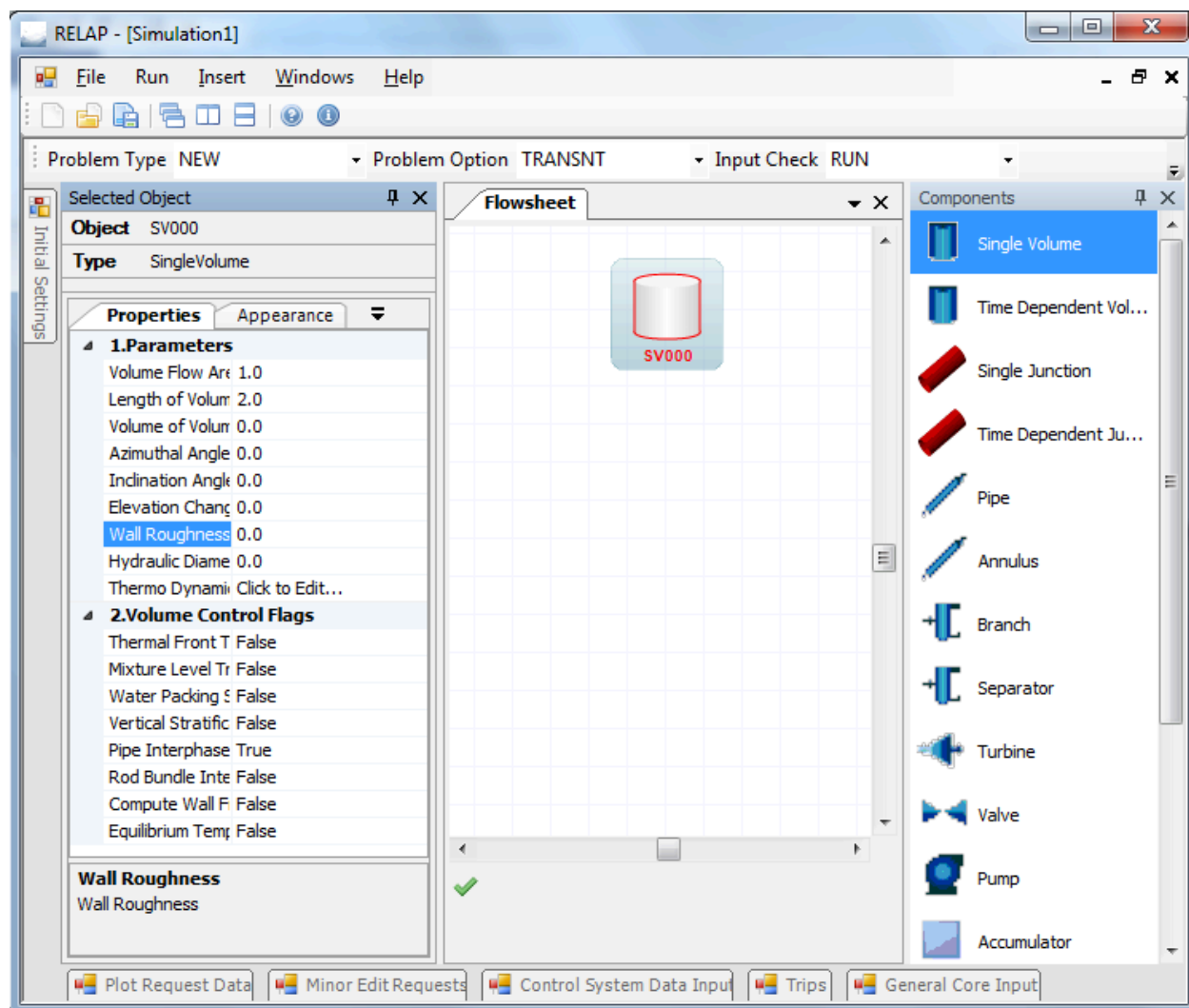


Figure A-5: Adding Components to Flow sheet

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-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-6. 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-6: Plot Request Data form

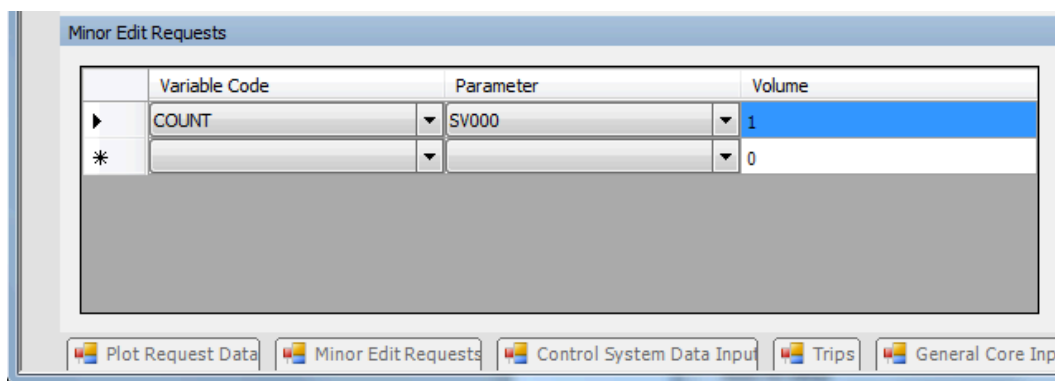
Configuring General Core Settings

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-7.

Figure A-7: 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-8. Multiple rows may be added to the Data Grid View.



Minor Edit Requests

	Variable Code	Parameter	Volume
▶	COUNT	SV000	1
*			0

Plot Request Data Minor Edit Requests Control System Data Input Trips General Core Inp

Figure A-8: 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-9. In this case we have increased the height to 90 of the Time Dependent Volume.

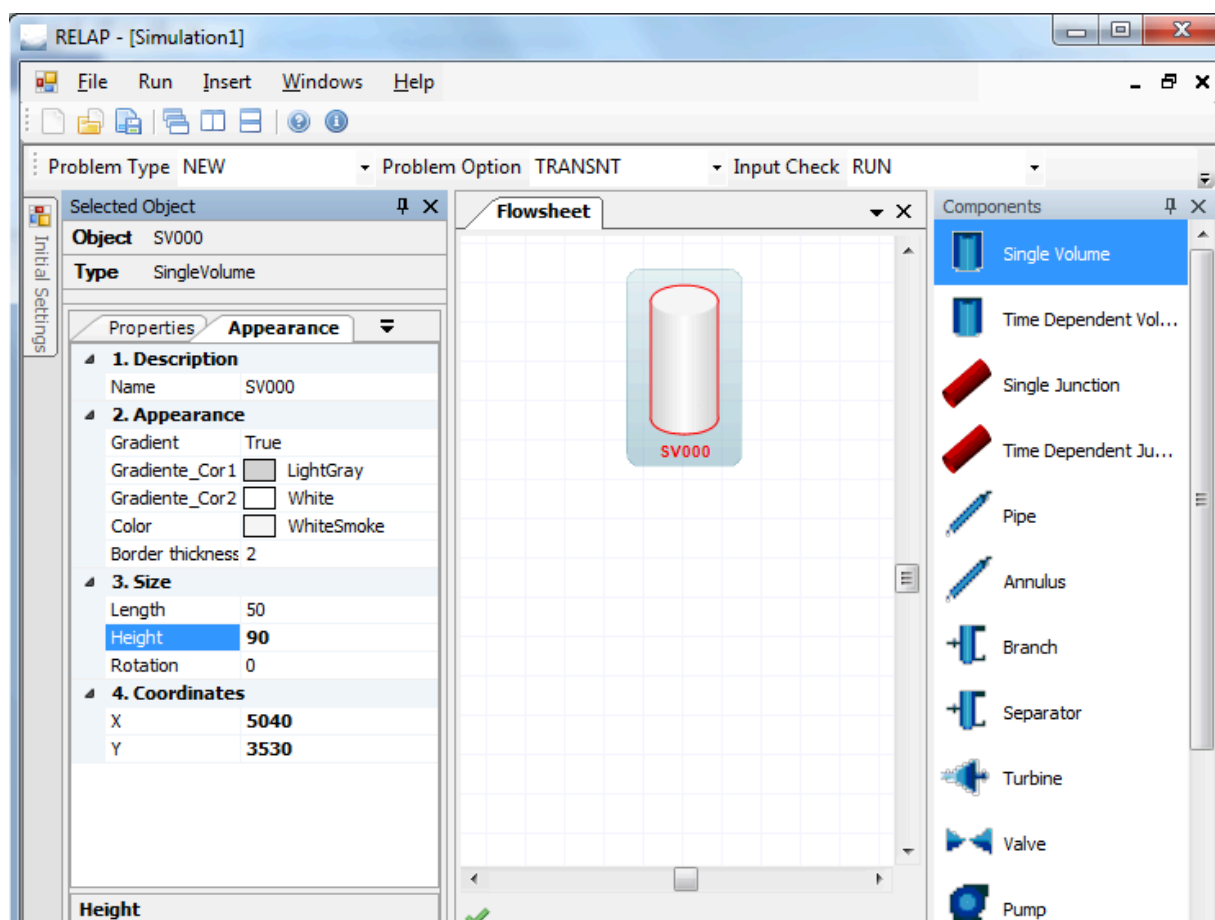


Figure A-9: Modifying Component Graphical Appearance

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-10. In this case SV000 is connecting to SJ000. One is a Single Volume and the other is a Single Junction. In Figure A-11 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.

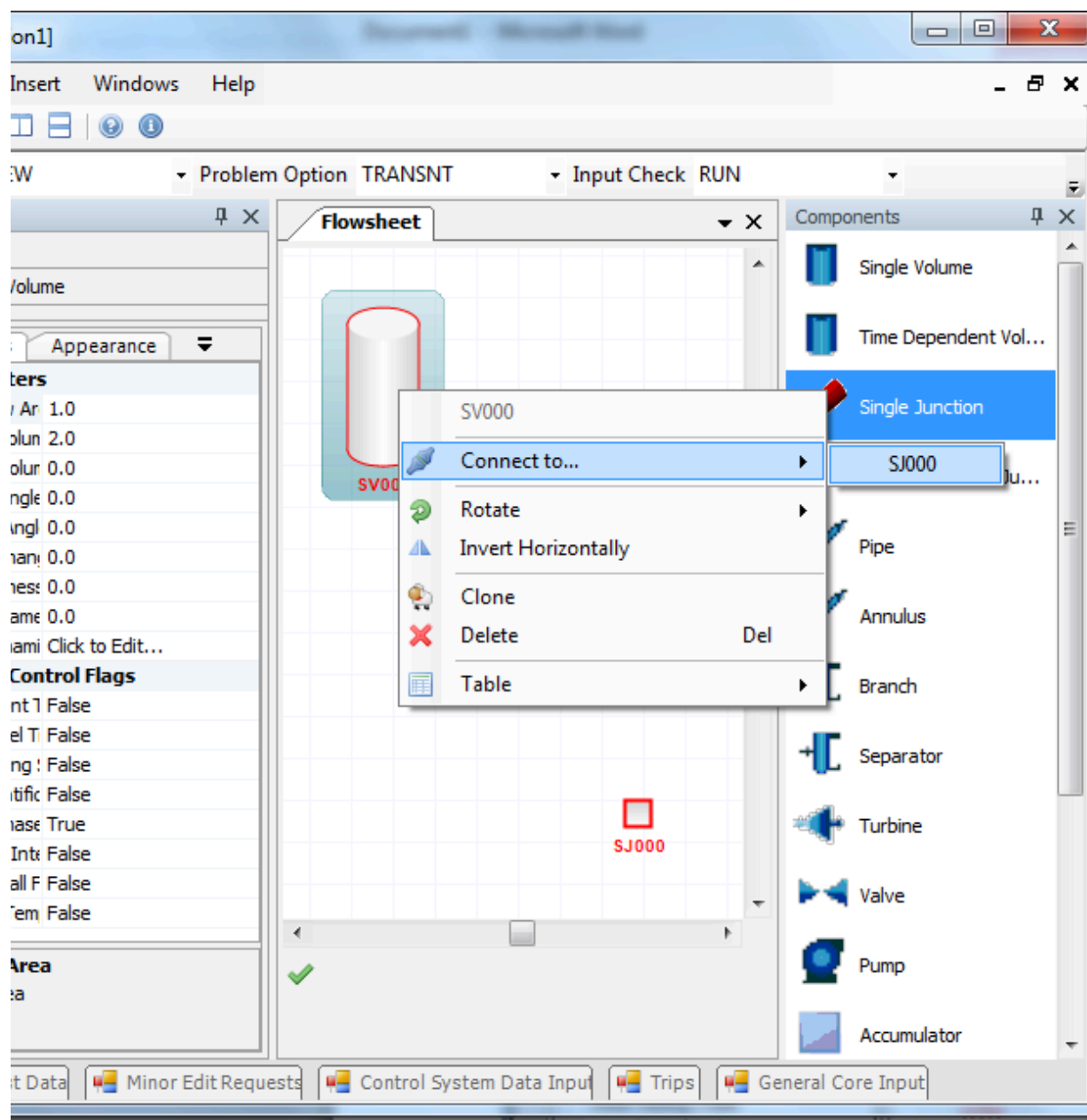


Figure A-10: Connecting Components

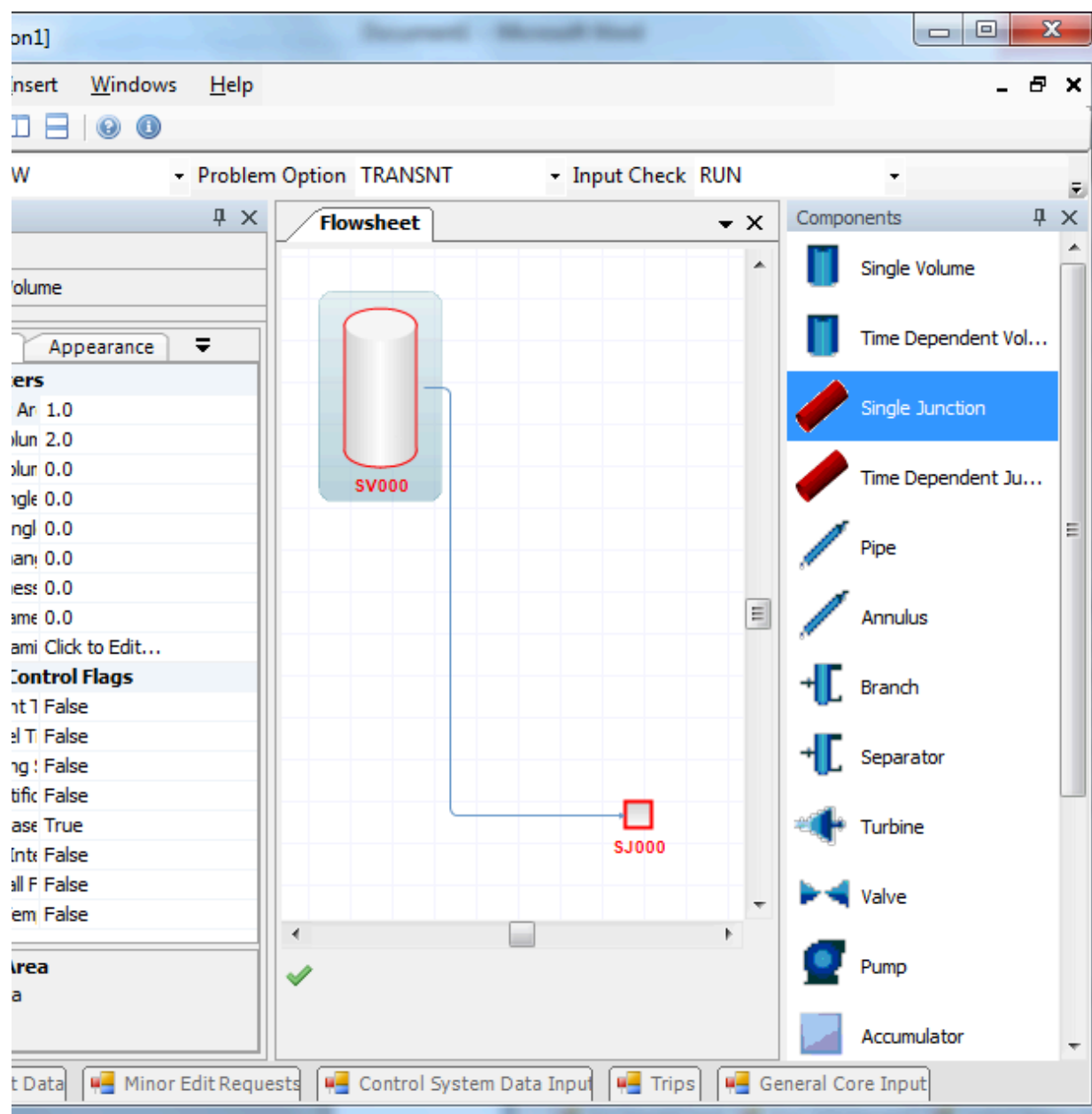


Figure A-11: Connected Components

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-12, 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.

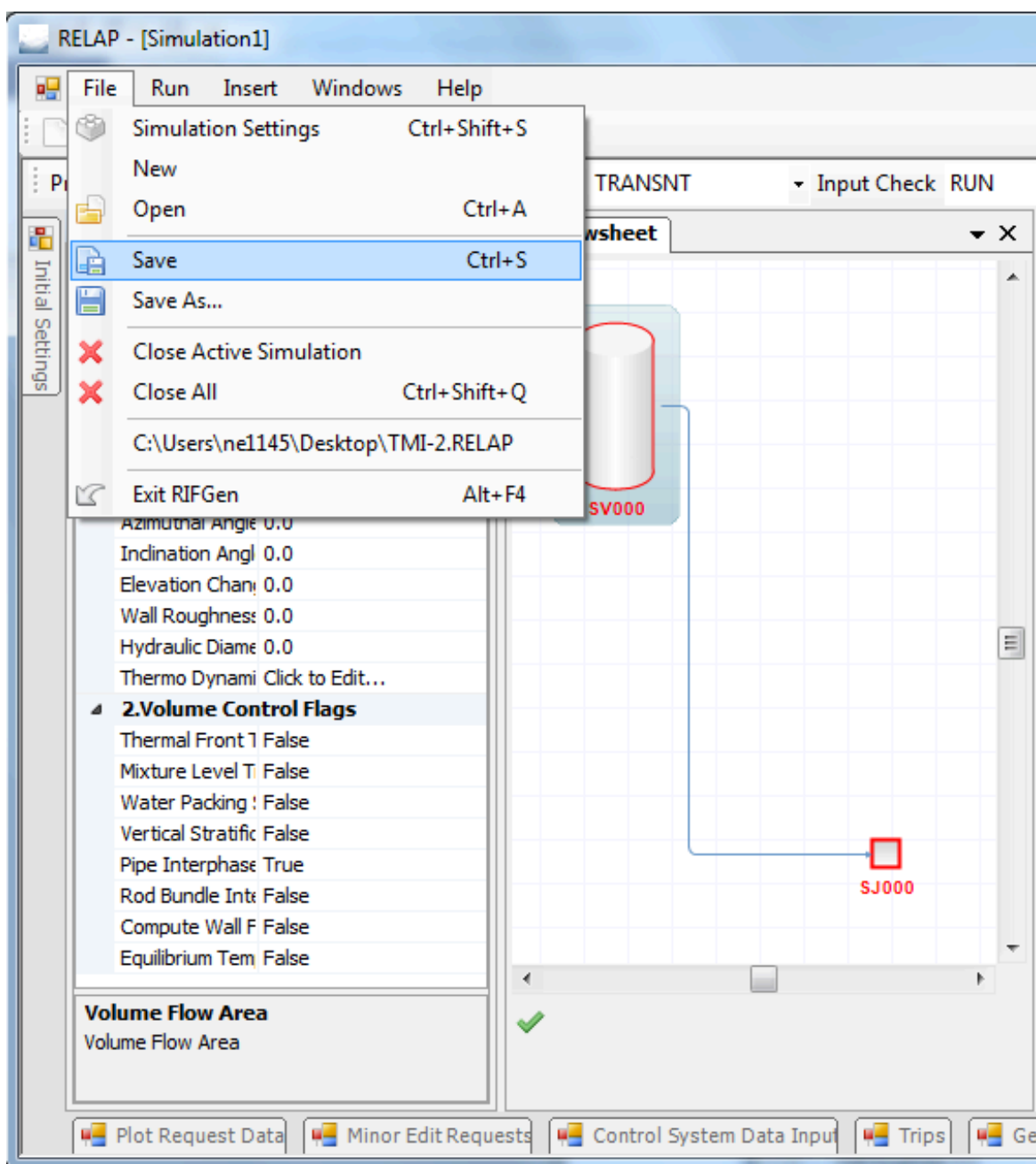
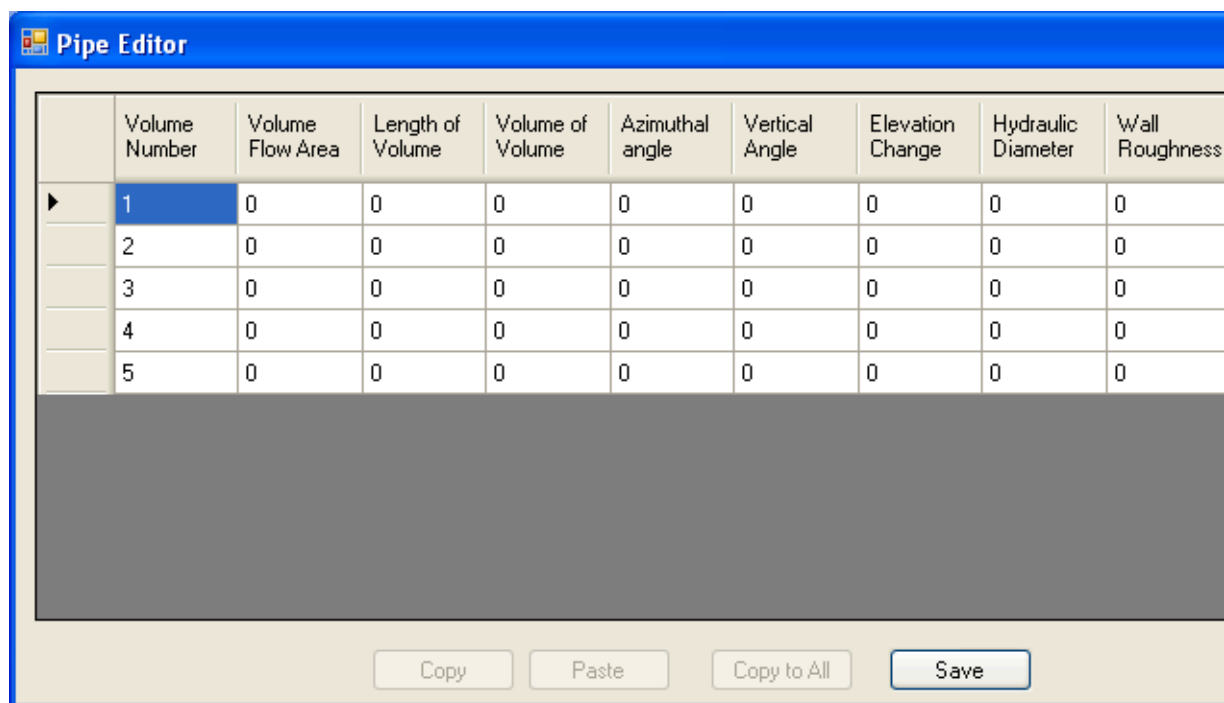


Figure A-12: File Save

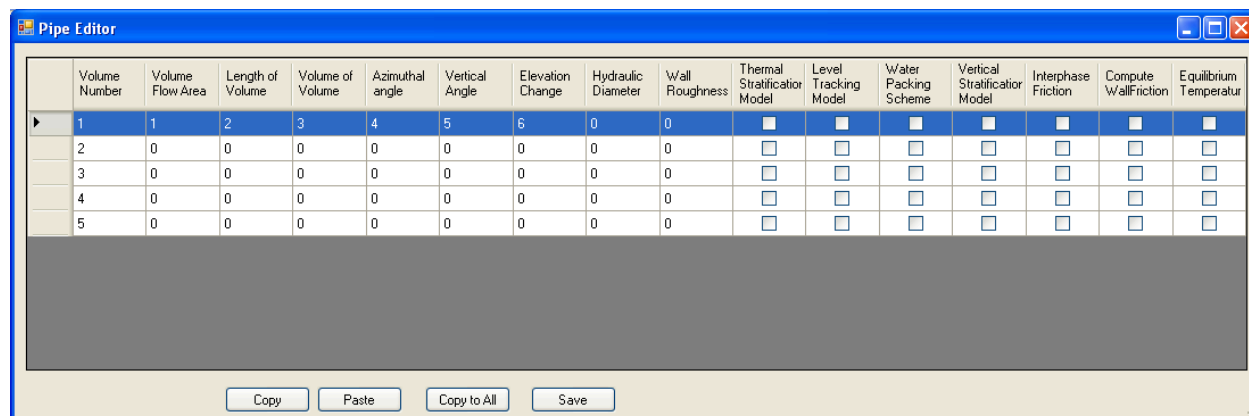


The image shows a software window titled "Pipe Editor" with a blue title bar. Inside, there is a data grid with 10 columns: Volume Number, Volume Flow Area, Length of Volume, Volume of Volume, Azimuthal angle, Vertical Angle, Elevation Change, Hydraulic Diameter, and Wall Roughness. The first row is selected, showing values of 1, 0, 0, 0, 0, 0, 0, 0, and 0. Below the grid is a large gray rectangular area. At the bottom, there are four buttons: Copy, Paste, Copy to All, and Save.

	Volume Number	Volume Flow Area	Length of Volume	Volume of Volume	Azimuthal angle	Vertical Angle	Elevation Change	Hydraulic Diameter	Wall Roughness
▶	1	0	0	0	0	0	0	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-13: Data Grid View



The image shows the same "Pipe Editor" window, but with an expanded data grid. It now has 17 columns, adding: Thermal Stratification Model, Level Tracking Model, Water Packing Scheme, Vertical Stratification Model, Interphase Friction, Compute Wall Friction, and Equilibrium Temperature. The first row is selected, showing values of 1, 1, 2, 3, 4, 5, 6, 0, 0, 0, 0, 0, 0, 0, 0, 0, and 0. Below the grid is a large gray rectangular area. At the bottom, there are four buttons: Copy, Paste, Copy to All, and Save.

	Volume Number	Volume Flow Area	Length of Volume	Volume of Volume	Azimuthal angle	Vertical Angle	Elevation Change	Hydraulic Diameter	Wall Roughness	Thermal Stratification Model	Level Tracking Model	Water Packing Scheme	Vertical Stratification Model	Interphase Friction	Compute Wall Friction	Equilibrium Temperature
▶	1	1	2	3	4	5	6	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	2	0	0	0	0	0	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3	0	0	0	0	0	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4	0	0	0	0	0	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5	0	0	0	0	0	0	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Copy Paste Copy to All Save

Figure A-14: Add data to Data Grid View

Pipe Editor

	Volume Number	Volume Flow Area	Length of Volume	Volume of Volume	Azinuthal angle	Vertical Angle	Elevation Change	Hydraulic Diameter	Wall Roughness	Thermal Stratification Model	Level Tracking Model	Water Packing Scheme	Vertical Stratification Model	Interphase Friction	Compute WallFriction	Equilibrium Temperatur
▶	1	1	2	3	4	5	6	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	1	2	3	4	5	6	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3	1	2	3	4	5	6	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4	1	2	3	4	5	6	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5	1	2	3	4	5	6	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Copy Paste Copy to All Save

Figure A-15: Copying Data in Data Grid View

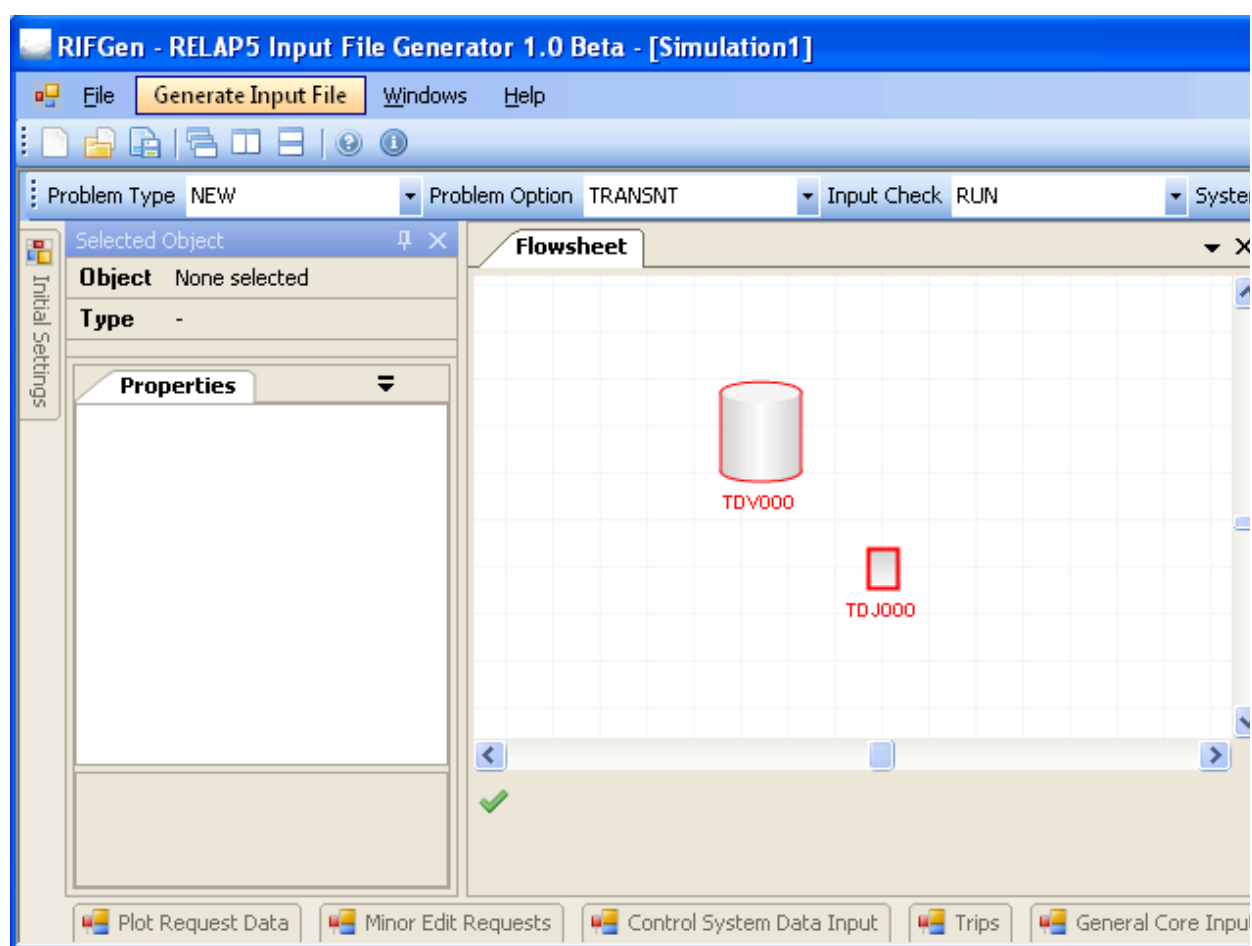


Figure A-16: Generate Input File

Appendix 2 – Installation Guide