ECE 470 POWER SYSTEMS I

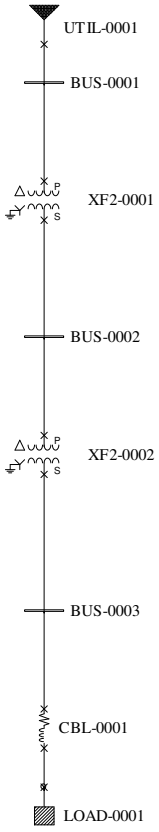
Lab # 6 – Introduction to SKM Software

This Lab will be done individually and will require the software in the **SKM Power Tools** package in the Power Lab. To run the software log on to the computer using your username and password. Then click on the **PTW32** icon.

In this lab you will run a simple tutorial to get used to entering data

Go to **Project** and click **Close,** then go back to **Project** and click **New.** In the Project Name Box type **Tutor40**. A new One-Line Diagram and Component Editor dialog box will appear. You will build the system using the one-line diagram by selecting components from the toolbar shown below.

When adding a component use the "push-pin" behavior of the mouse (not drag-drop) to place the component. Do this to build the system shown below. Remember to periodically hit the "save" icon.



When all components have been added to the one-line diagram, start entering the component values.

Go to the Component Editor dialog box and click on the **All** tab to display all components. Enter the nominal voltages at busses 1, 2 and 3. Bus 4 is connected to bus 3 by a cable, so bus 4 automatically has the same nominal voltage as bus 3.

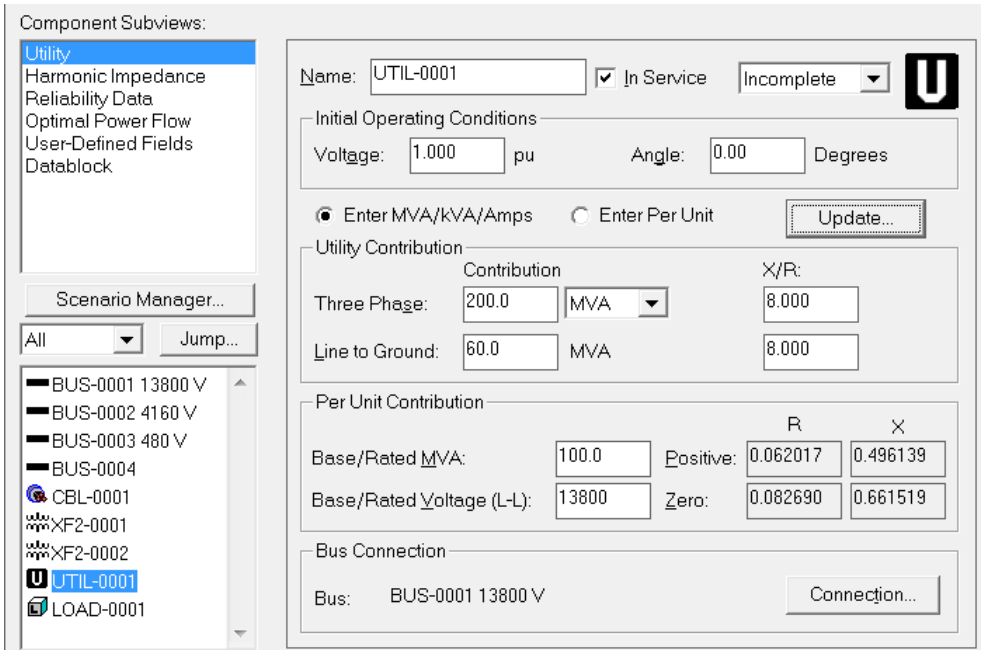
Go to cable CBL-0001 and you can either enter impedance values or go to the library and have standard values entered. Click on the library button and select Copper Magnetic THHN 60 Hz 3 Wire+Grnd, then click the **Apply** and **Close** buttons. Now select "2" in the "Cable Size" field and enter 100 in the "Length" field.

Select Transformer XF2-0001 and click on the library button. Select the Oil Air 60 Hz entry, then click the **Apply** and **Close** buttons. Select 1000 in the nominal kVA field.

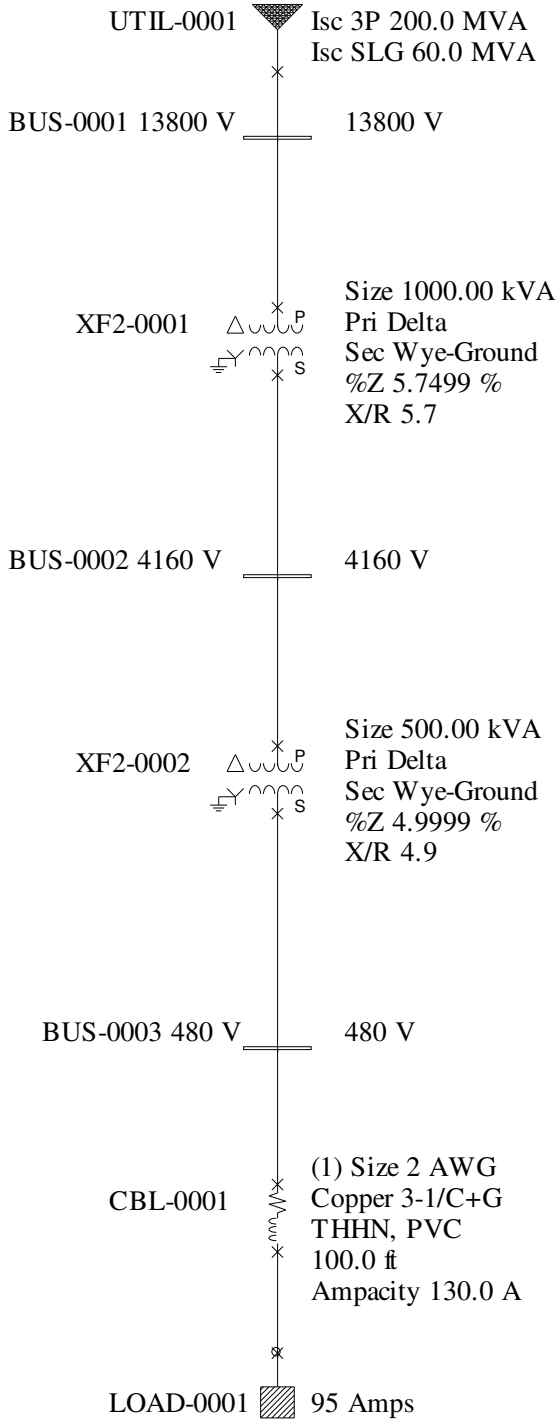
Do the same for Transformer XF2-0002 but choose a Dry Type and enter 500 kVA.

Select LOAD-0001 and enter 95 Amps and 0.8 Lag.

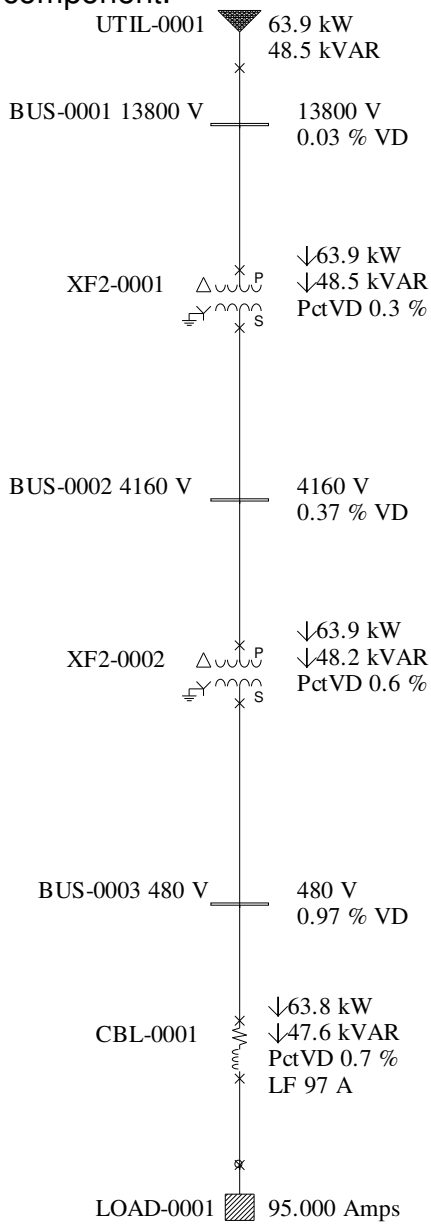
Select Utility UTIL-0001 and enter the data shown below. When you finish click **Update.**



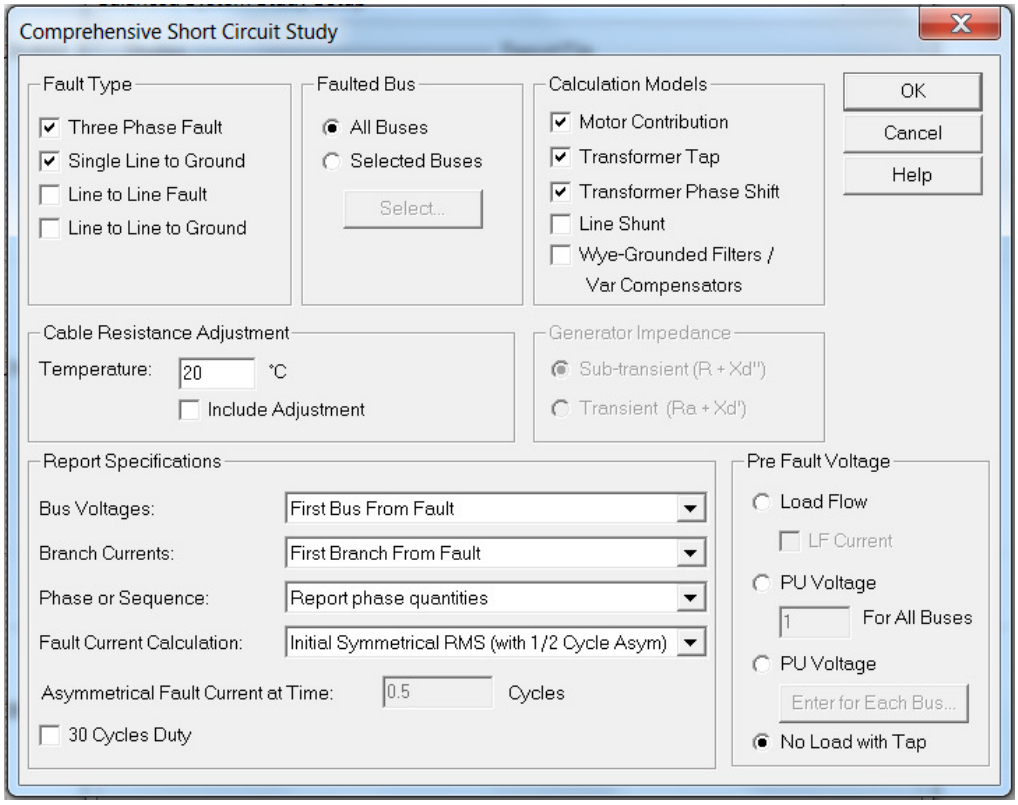
Use the datablock display to update the diagram. Click on the one-line diagram then select the **Run>Datablock Format** option. Select **Input Data** then click the **Apply** and **Close** buttons. The one-line diagram will display the input data next to each component.

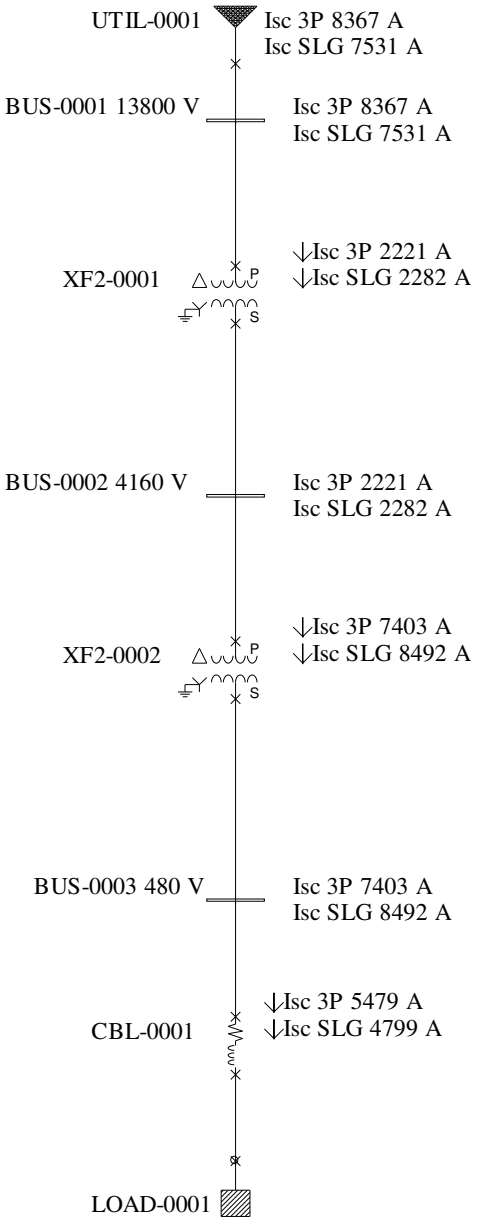


You are now ready to run the Load Flow Study for this simple system. Click on the one-line diagram then select the **Run>Balanced System Studies** option. Check the **Load Flow** box and click **Run**. The **Study Messages** window will appear and when the study is complete, click **Close**. To review the results, select the **Document>Report** option and open Lf.rpt and the results will be displayed in tabular form. A summary of the results can be displayed on the one-line diagram by selecting **Run>Datablock Format** then selecting "Load Flow Power Data" then click the **Apply** and **Close** buttons. The one-line diagram will display a summary of the load flow data next to each component.



When you have completed the Load Flow Study you can move on to the Fault Study for this system. Click on the one-line diagram then select the **Run>Balanced System Studies** option. Uncheck the **Load Flow** box and check the **SC Comprehensive** box, click on **Setup** and confirm the following options are selected:





Click **OK** and then click **Run**. The **Study Messages** window will appear and when the study is complete, click **Close**. To review the results, select the **Document>Report** option and open **SC.rpt** and the results will be displayed in tabular form. A summary of the results can be displayed on the one-line diagram by selecting **Run>Datablock Format** then selecting **Branch Fault Currents (Comprehensive)** then click the **Apply** and **Close** buttons. The one-line diagram will display a summary of the Fault Level data next to each component.