



**DEPARTMENT OF VETERANS AFFAIRS
VA MEDICAL CENTER – ERIE, PA**

Contract No. V244-P-1779
TWN Project No. 2113994

August 2011

Fault Current Study and Arc Flash Analysis

SECTION 5

STUDY MODEL

5.0 STUDY MODEL

5.1 Explanation of Model Short Circuit Single-Line Diagrams

The short circuit computer model allows changes to show many short circuit conditions or single-line configurations. Figures one (1) through three (3) show portions of a sample facility single-line drawing generated from the computer model program.

5.2 Single-Line Display View

Figure 1.1 illustrates the Display View with all electrical devices identified. The Power Tools for Windows® computer program allows the program user to illustrate those electrical devices as are needed for single-line clarity. Single-Line Display Views are located in Appendix V.

5.3 Single-Line Short Circuit View

Figure 2.2, illustrates a typical single-line drawing where all buses have been subjected to a three-phase (3P) and single-line-to-ground (SLG) bus fault. Transformer XF2-0002 shows the fault current on both the primary side (I_{SC} 3P 187A, I_{SC} SLG 125A) and secondary side (I_{SC} 3P 7403A, I_{SC} SLG 8690A). Single-Line Short Circuit Views are located in Appendix V.

5.4 Single Line Arc Flash View

Figure 3.3, illustrates a typical single-line drawing with the Arc Flash (AF) label information. In this view the incident energy and distance is shown first. For Bus-0003, which could be a Panel or MCC and is located downstream from transformers XF2-0002, the incident energy is 2.5 Cal/cm^2 at a distance of 18". Additional information shown in this view includes the category of Personal Protective Equipment (PPE) required and the label number that will be generated from the software program. Single-Line Arc Flash Views are located in Appendix V.

5.5 Single Lines available

SKM's Power Tools for Windows allows the user many additional views depending on the needs of the facility. Additionally, each of the views mentioned above can be modified to show more or less information depending on the user's needs.

5.6 MODEL INPUT/OUTPUT DATA SHEETS (See Appendix V)

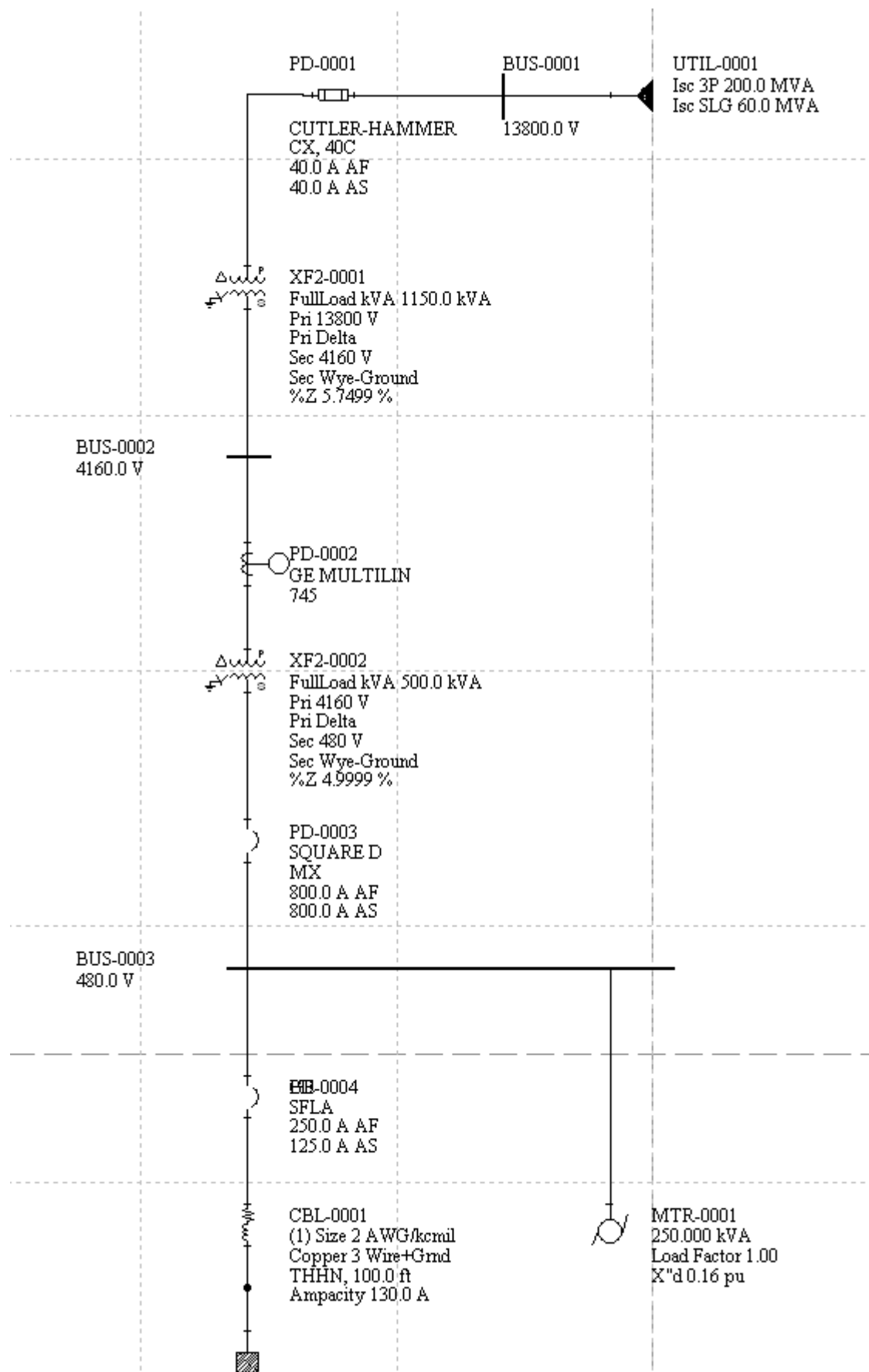


Figure 1.1 Display View

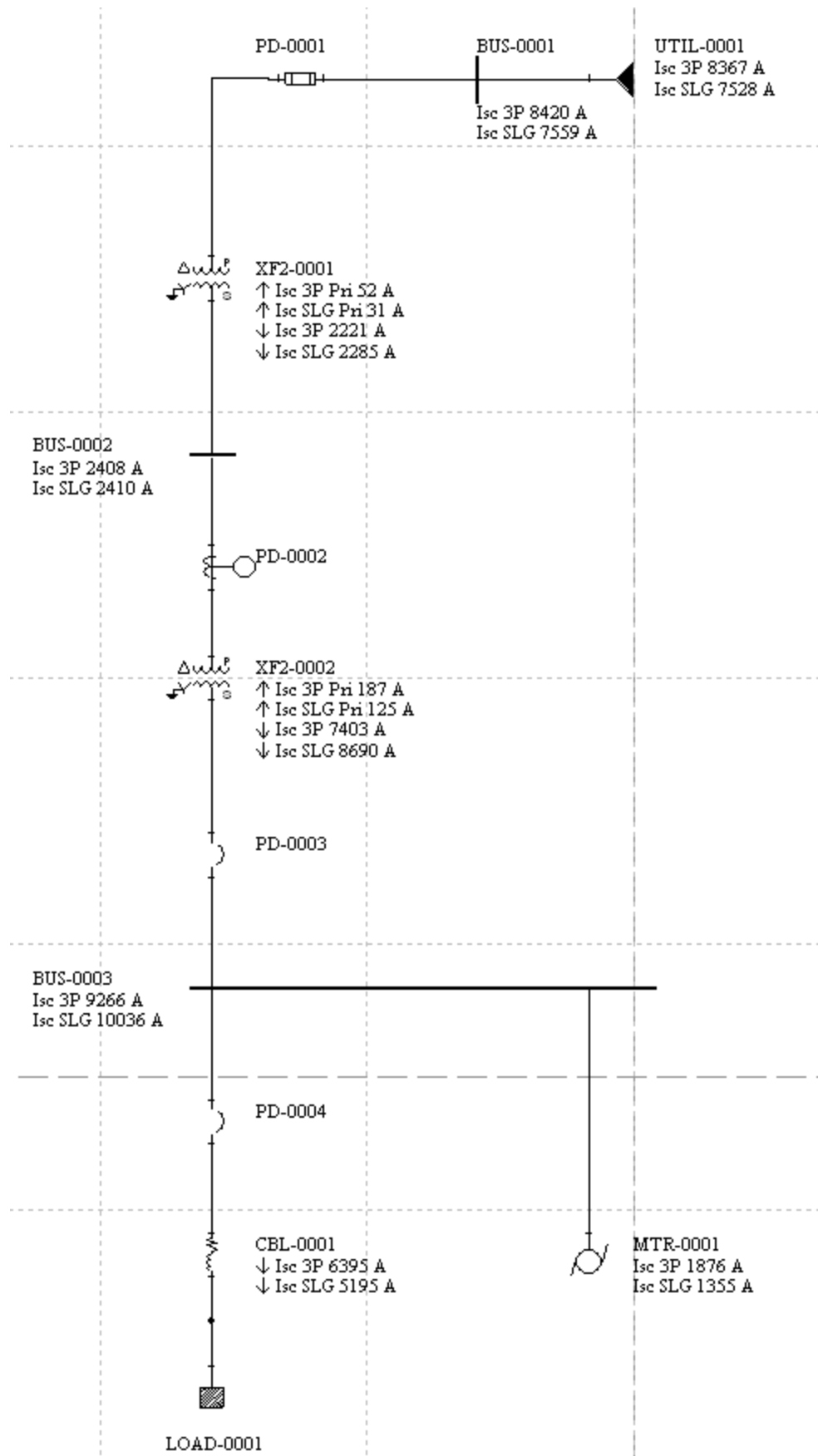


Figure 2.2 Short Circuit View

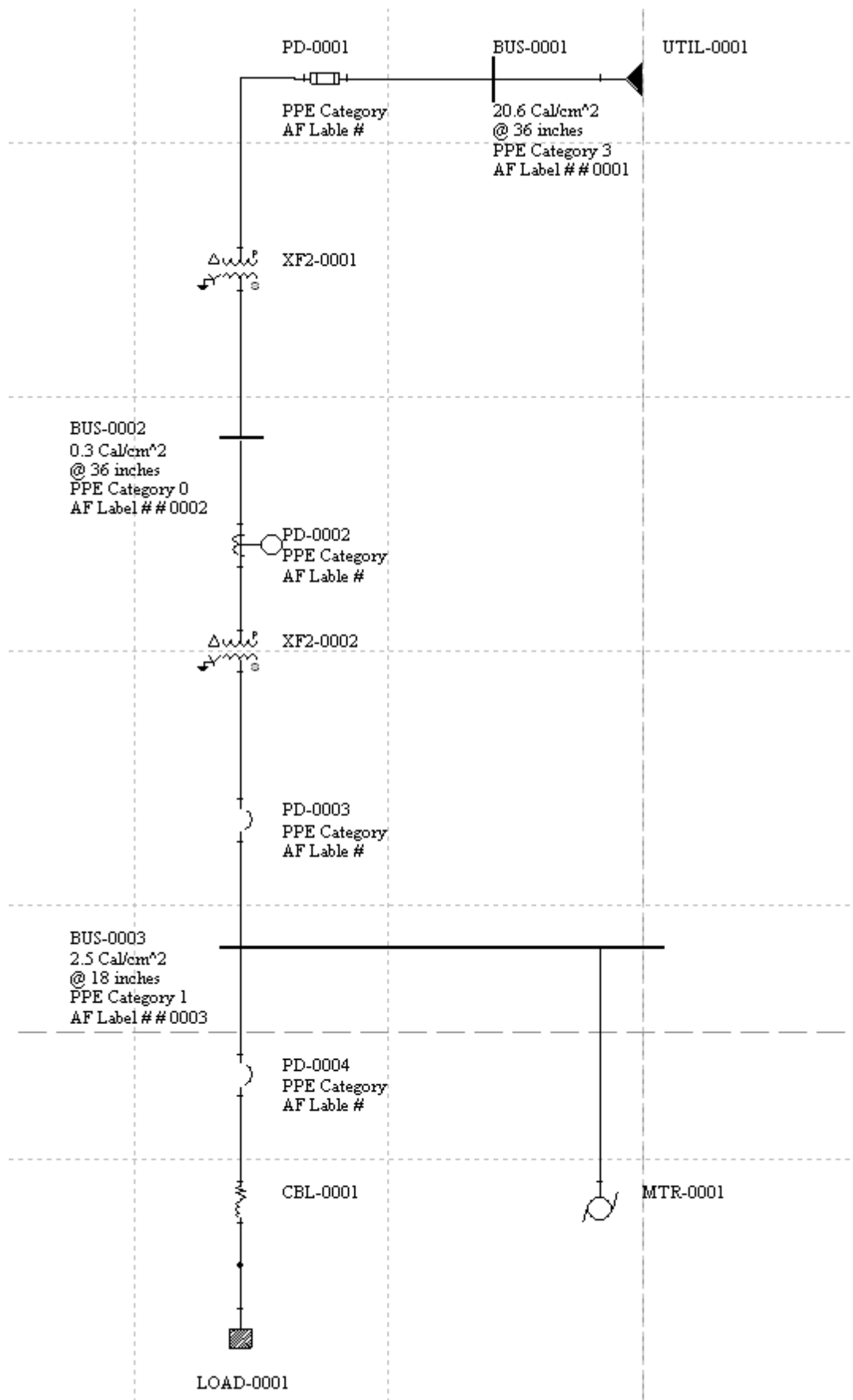


Figure 3.3 Arc Flash View