Basic Arc Flash Study Steps

A. One Line Diagram Work
1. Identify Locations to be analyzed
2. Determine which locations that are "in the box" or in open air

B. Short Circuit Model Work
1. Identify all locations voltages
2. Identify all transformers including
   a. Primary and secondary voltage
   b. Connection type, i.e. delta-wye, wye-wye, etc.
   c. Impedance
   d. Method of grounding primary and secondary windings
3. Identify feeder properties
   a. Ferrous or nonferrous raceway
   b. Copper or aluminum conductor
   c. Gauge
   d. Length
4. Motors
   a. At each node sum all small motors less than 50 HP, model as 1 motor
   b. For all motors over 50 HP, add to model as a separate item
5. Utility power source
   a. Contact utility company about system characteristics
6. Enter all collected data into SKM modeling program
   a. System check a few locations to verify software is working correctly.
   b. Do a reality check, are these currents and incident energy values what you would expect?

C. Protective Device Characteristics
1. Collect specific data for all protective devices
   a. Fuses
   b. Protective relay
   c. Low voltage circuit breakers
   d. Reclosers
2. For each location studied, input into model data

D. Arc Current Calculations
1. At each location, compute arc current using SKM model or equations found in 1584 standard.
2. Enter the time-current curve with the arc current, determine fault clearing time
3. Using SKM model or IEEE equations in 1584 determine arc flash boundary for a given cal/cm2 PPE. e.g. 8 cal/cm2, 25 cal/cm2 or 40 cal/ cm2.

E. Documentation

1. Short circuit listing
2. Update Arc Flash model drawings adding location specific information to the drawing to help the reader understand the incident energy and short circuit listing to the location in the network.
3. Utility information
4. Time-current curves if required for mis-coordination
5. Arc current calculation
6. Energy levels at each node
7. Arc Flash labels at each location with energy information per NFPA70E