2. For the utility radial distribution system shown on below Figure (only generator is at 138kV). All impedances are in per unit on a 100MVA base and nominal voltage shown. All transformer connected taps equal nominal voltage shown. All breakers and switches are closed unless marked with N.O. (Normally Open). Calculate fault current magnitudes in rms symmetrical amps at the following locations (faults are bolted, one at a time, not simultaneous.) a. Three phase (3ph), phase to phase, and single line to ground (SLG) at 138kV bus.

* 1. b. 3ph, and SLG at 34.5kV bus. 138/34.5 transformers have the same Z and are in parallel.
  2. c. 3ph, and SLG at 34.5kV at 34.5/12.47 substation high side.
  3. d. 3ph, and SLG at 12.47kV bus
  4. e. 3ph, and SLG at 12.47kV tap
  5. f. 3ph, and SLG at 12.47kV end of line (EOL)
  6. g. State the 138kV source (generator) amps for the 3ph at 12.47kV EOL fault.

Diagram, schematic

Description automatically generated