

**B) Fault Condition:**

**I** = the fault current = 40000 A

**a. Three Phase Symmetrical Voltage**

$$E = j\omega I (2 \times 10^{-7}) \ln (2S/d) = 2.7 \text{ V/m}$$

**b. Phase to Phase Fault**

$$E = j\omega I (2 \times 10^{-7}) \ln (2S/d) = 2.7 \text{ V/m}$$

**c. Single Phase to ground fault**

$$S_{ag} = 150 \text{ mm}$$

The fault current will be shared by the three parallel ground continuity cables (PGCC) so the induced voltage will be calculated at single phase to ground fault current = 13.3 kA

The sheath voltage gradients are given by:

$$E = I \left[ R_g + j\omega(2 \times 10^{-7}) \ln \left( \frac{2S_{og}^2}{dr_g} \right) \right] = 4.2 \text{ V/M}$$