

1.

$$F = \frac{\mu_0 i_1 i_2 l}{2\pi}$$

Where:

F is the force due to magnetic forces between the wires [Newtons]

μ_0 is the magnetic constant of a vacuum- $4\pi \times 10^{-7}$ [Henries per Meter]

i_1 is the current in line 1 - 1000 [Amperes]

i_2 is the current in line 2 – 1000 [Amperes]

l is the effective length of the lines – 182.88 [Meters]

$$F = 6 \frac{2}{3} \text{ Newtons}$$

2.

$$C = \frac{2\pi K k l}{\ln \frac{s}{r}}$$

From Dielectric phenomena in high voltage engineering Pg. 23. A member named 'lessismore' found this equation to use.

Where:

C is the capacity of the circuit [Farads]

K is the dielectric constant of a vacuum – 8.85×10^{-9} [Farads per Meter]

k is the specific dielectric constant – 1 [Dimensionless]

l is the effective length of the lines – 182.88 [Meters]

s is the separation between transmission lines - 5.4864 [Meters]

r is the radius of the transmission line – 0.08333 [Meters]

$$C = 1.892 \times 10^{-9} \text{ Farads}$$

Now we use the C obtained here in this equation;

$$F = \frac{C v^2}{2d}$$

Where:

F is the force due to dielectric forces between the transmission lines [Farads]

C is the capacity of the wires – 1.892×10^{-9} [Farads]

v is the potential difference between the transmission lines – 1000 [Volts]

d is the separation of the wires – 5.4864 [Meters]

$$F = 0.0001724 \text{ [Newtons]}$$