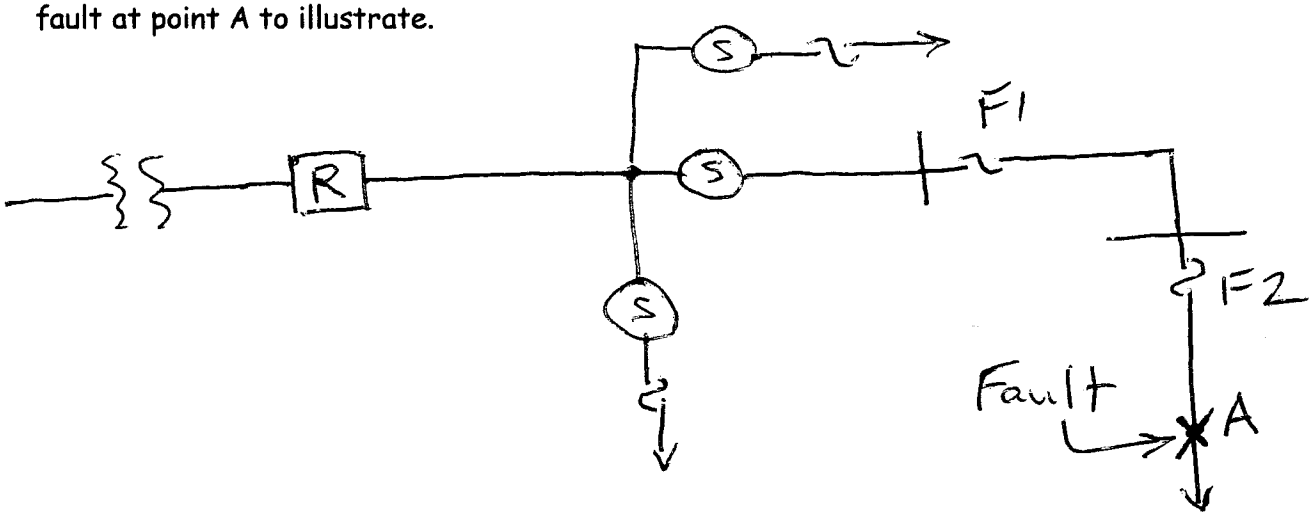
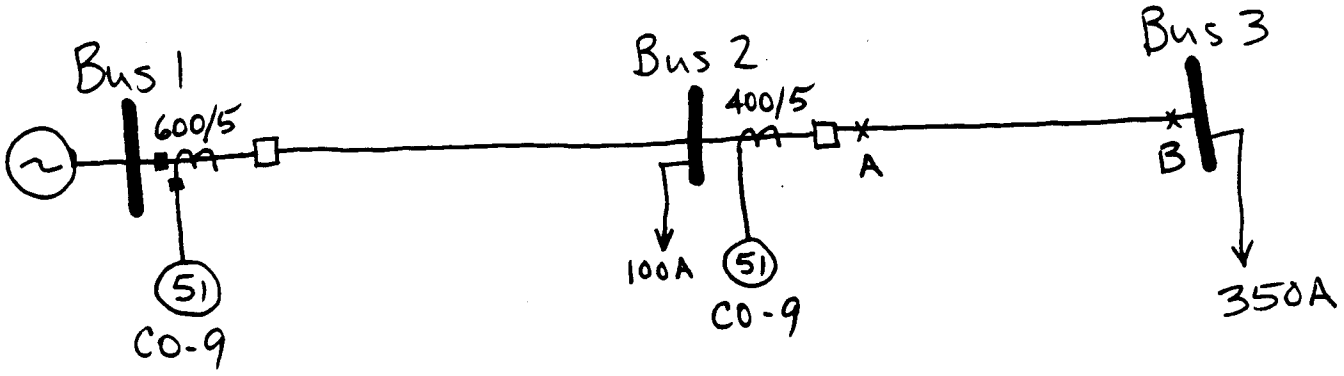
EE 5223 - Assignment # 4 - Due Feb 12, 2021 - 5pm ET (extension to following Mon possible)

At your option, this may be done as individual or partnered (one partner) assignment.

1 [13 pts] Explain how the recloser, sectionalizer, and fuses are coordinated. Use a fault at point A to illustrate.



2. [20 pts] Two time-overcurrent relays protect adjacent sections of a radial system. Bus 3 is at the **end** of the radial line. 7000 amps of fault current will flow for a fault at point A; 5000 amps for a fault at point B. Load currents at buses 2 and 3 are 100A and 350A respectively. Loads at buses 2 and 3 have the same power factor.



a) Determine the tap settings for the relays at buses 1 and 2. Assume that taps can be set so they are just above rated load current. Available tap settings are: 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 7.0, 8.0, 10.0, and 12.0 amps.

b) Keeping in mind that the relay at bus 2 protects the last section at the end of the line, what must its time dial setting be? Why?

c) Based on the fault at point A, what should the time dial setting be for the relay at bus 1? Assume that the circuit breakers operate in 4 cycles, and that the CTI is 0.25 seconds.

d) How long will it take for the relay at bus 1 to pick up for a fault at point B if the relay at bus 2 fails to operate?

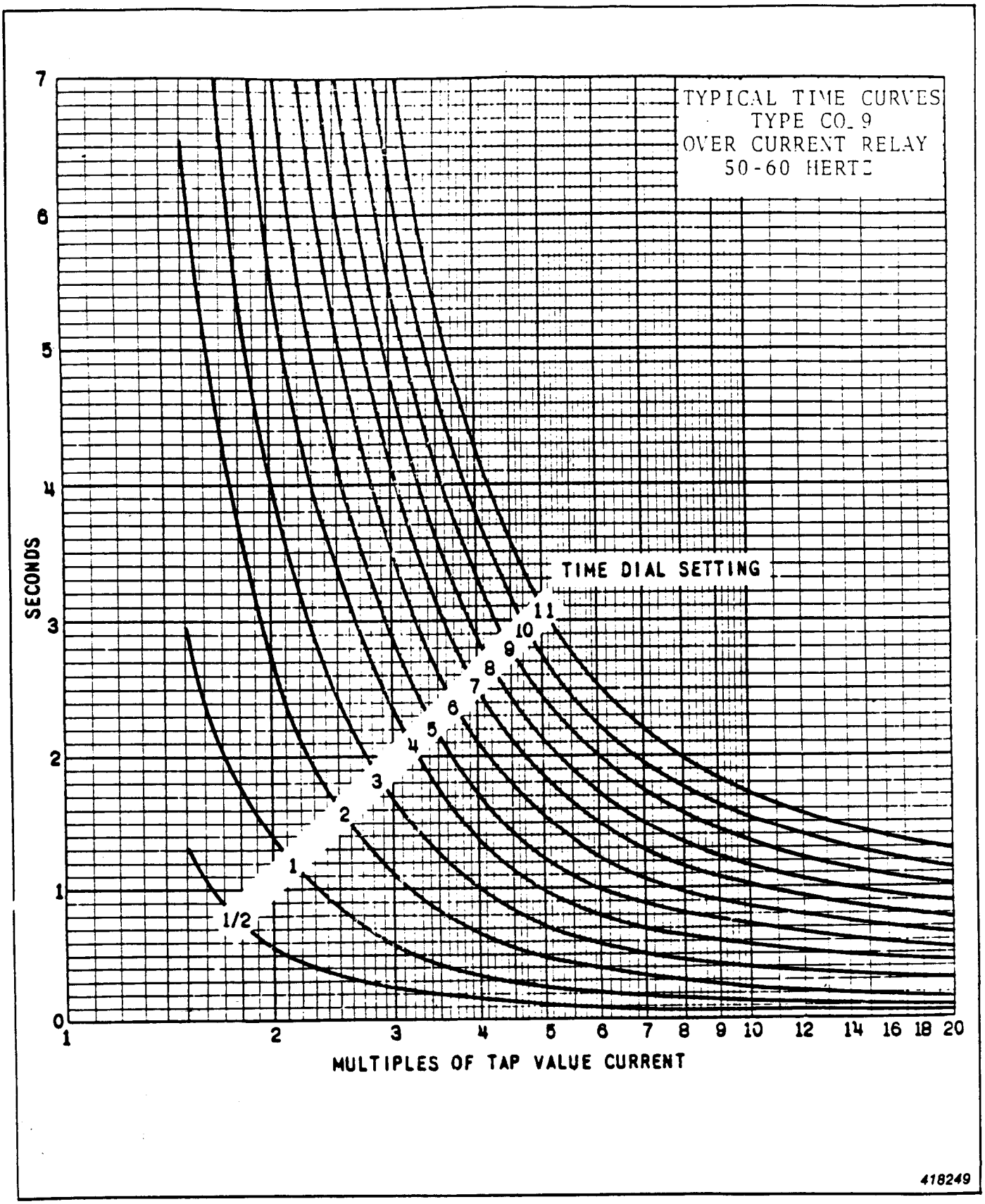


Fig. 15. Typical Time Curve of the Type CO-9 Relay