REPORT
OVERCURRENT RELAY COORDINATION

1. INTRODUCTION

2. THEORY

3. EXPERIMENTAL METHOD

1. Calculate the current setting values (TS) of relays 1 and relays 2 with a maximum load of 100 W connected to the second busbar and a maximum of 200 W to the third busbar. (Both loads connected to the busbars are ohmic. The turn ratios of current transformers are 5:5. Relay current setting values will be taken as 20% more than the maximum load current calculated.)

2. Adjust the time delay settings (TDS) of the relays according to the current setting values you have calculated and the given Normal Inverse (IEC) curve in Figure 2. (Do not forget to set the current-time curve of the overcurrent relay to "normal inverse (IEC)" from the GEPA PC SUITE program interface. The maximum fault current values of the busbars are 15 A for the 1st bus, 10 A for the 2nd busbar and 5 A for the 3rd bus, $T_{\text{Breaker}} = 0.1\text{s}$ and $T_{\text{coordination}} = 0.3\text{s}$ will be taken.)

3. Set the load connected to the second busbar to 100 W and the load connected to the third busbar to 200 W. Open the fuse of the loads connected to the second and third busbar in order, measure and record the current and voltage values from the measuring instruments connected to the first and second busbars. (Consider the current values read from the front panel of the relays.)

1. Busbar		2. Busbar	
100W		200 W	
Voltage (V)		Voltage (V)	
Current(A)		Current(A)	

4. Set the value of the load connected to the third busbar to 300 W. Evaluate the response of relay 1 and relay 2.

5. Set the value of the load connected to the third busbar to 500 W. Relay 1 and relay 2 Observe the response of relay 1 and relay 2. How the trip time of the relay has changed.

6. Set the value of the load connected to the second busbar to 200 W. Evaluate the response of relay 1 and relay 2.

7. Set the value of the load connected to the second busbar to 400 W. Relay 1 and relay 2

Observe the response of relay 1 and relay 2. How the trip time of the relay has changed from previous case.

8. Deactivate relay 2. (By removing the supply terminals of Relay 2.) Set the value of the load connected to the third busbar to 300 W. Observe the response of relay 1.

21. Set the TDS value determined for relay 1 to relay 2 and the TDS value determined for relay 2 to relay 1. To set them, use the GEPA PC SUITE program. Set the value of the load connected to the third busbar to 300 W. Observe the response of relay 1 and relay 2.