

Distribution Network Analysis

Tutorial Examples

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Lecture Objectives And Do Tasks

To increase the ability of doing a comprehensive analysis for the radial distribution networks.

The distribution network shown in figure.1 is used in such analysis. The network is a 66/22/0.4 kV voltage levels. Two power transformers are used one 66/22kV, and the other is 22/0.4kV as per data shown in figure.1. The main distribution board comprises five distribution streams.

For such sake, each student shall calculate the short circuit level at each bus for the selected distribution network sample according to point-to-point method. Then use the calculated short circuit currents for achieving the optimum setting for the associated circuit breakers achieving satisfactory selectivity (coordination). Finally, as per results obtained from short circuit calculations and selectivity settings, the associated flash hazards parameters will be calculated as per IEEE 1584. The results of above described analysis for the first stream are shown graphically in the following section. Other streams will be hand calculated during lecture activities by the student.

SIMPLE RADIAL DISTRIBUTION SYSTEM USED FOR THE TUTORIAL

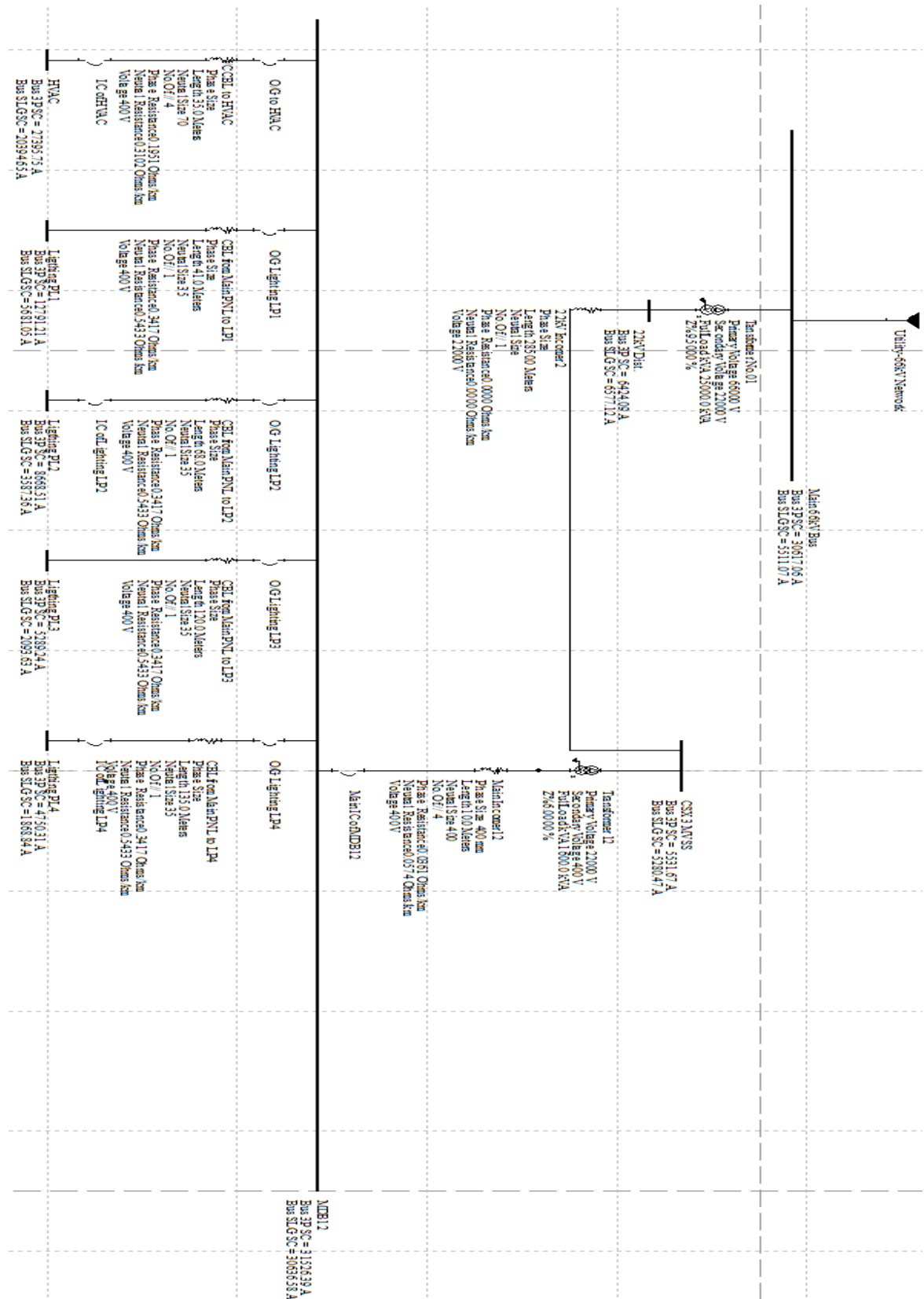
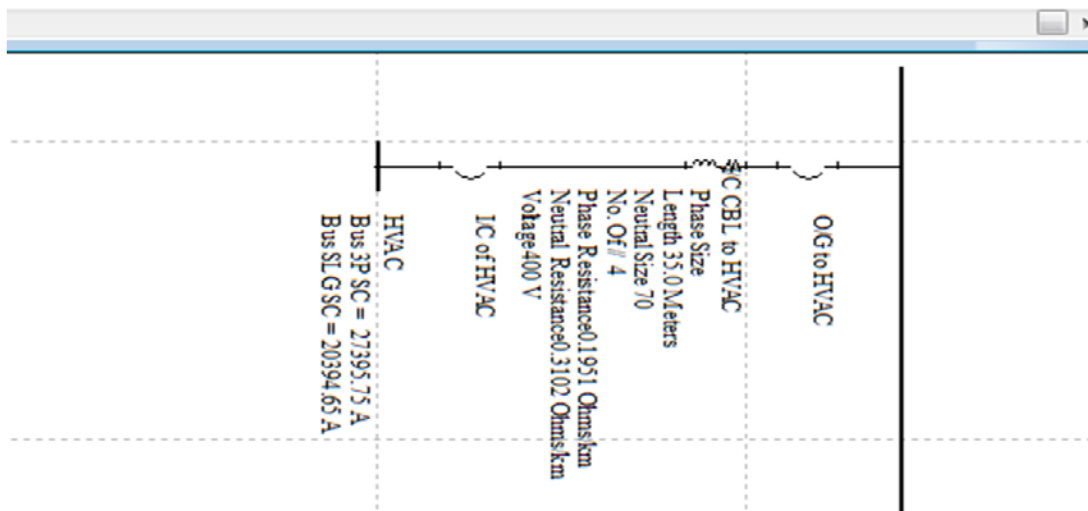
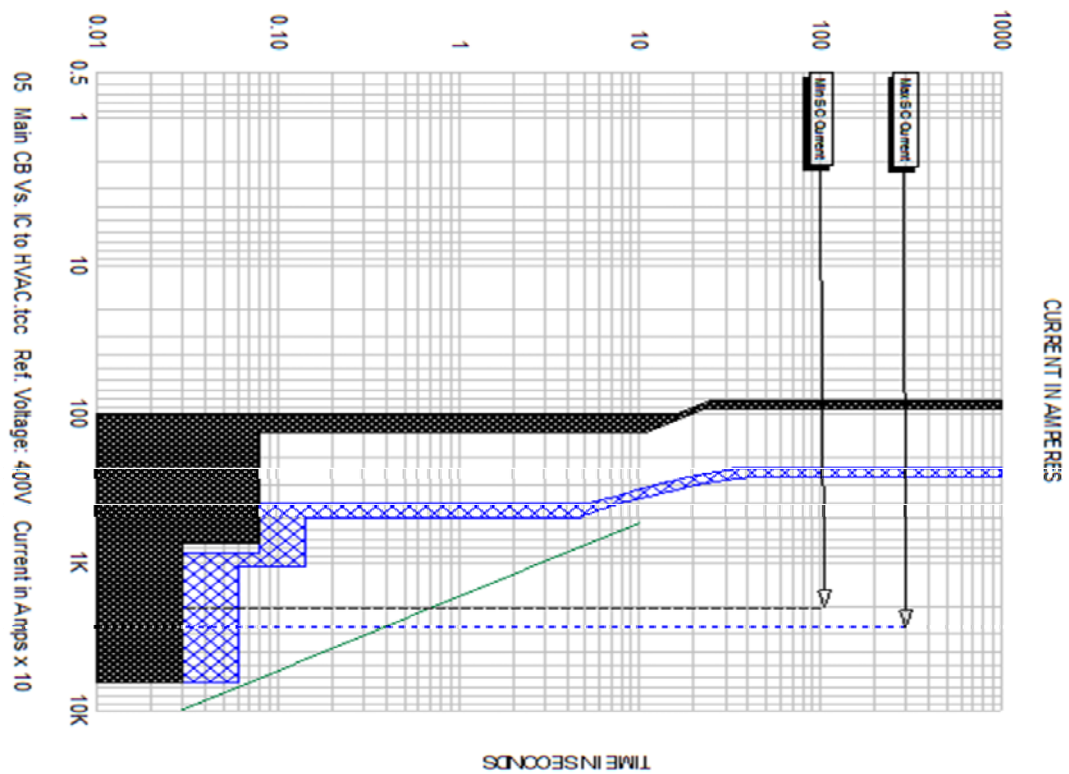


Figure.1: Simple radial distribution system

TCC Of Stream No. 01



Write down the steps and results of short circuit currents using point-to-point method


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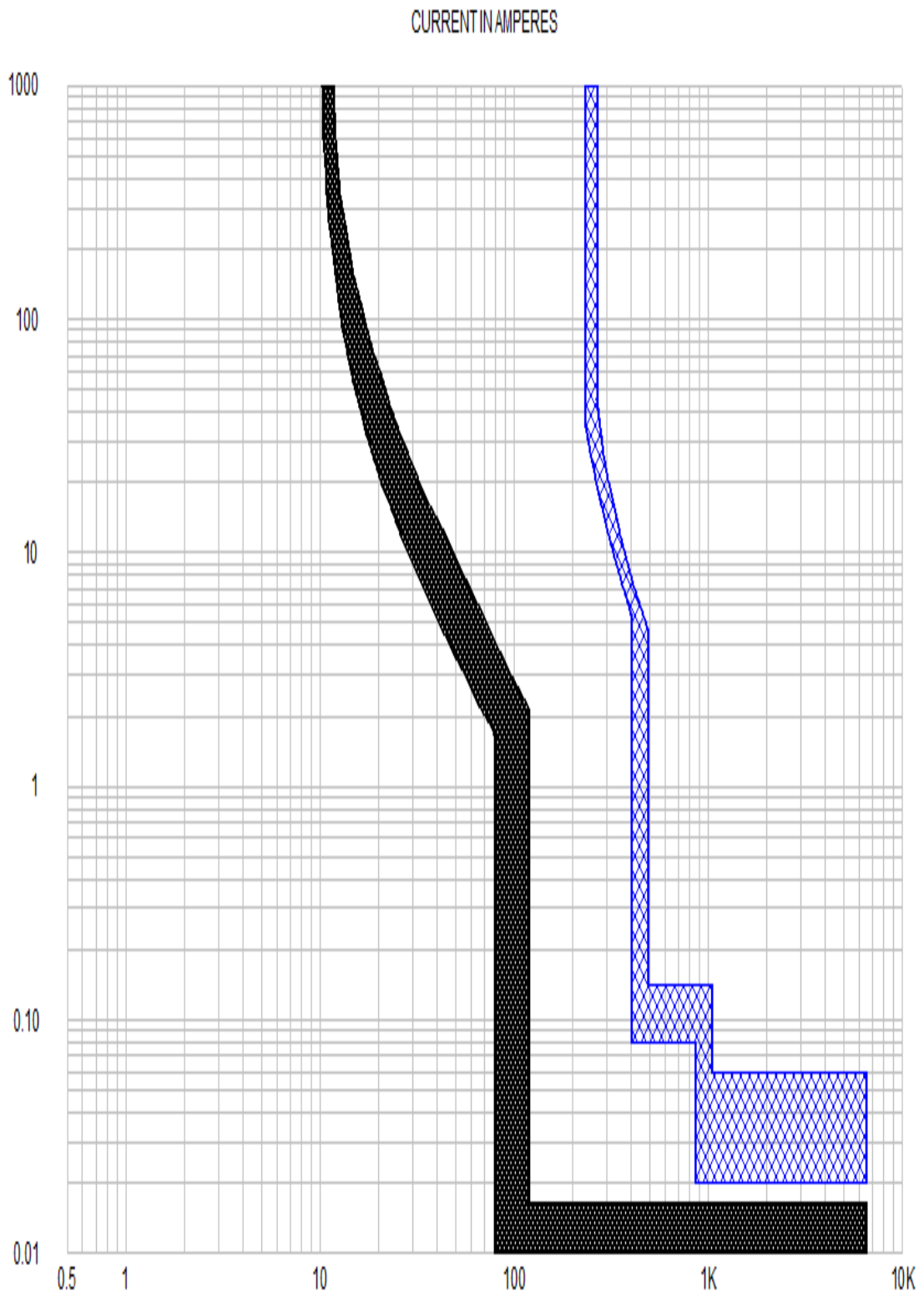
Blank lined paper with horizontal dashed lines for writing.

Check the current setting for selectivity

	WARNING
Arc Flash and Shock Hazard Appropriate PPE Required	
49 cm	Flash Hazard Boundary
1.3	cal/cm² Flash Hazard at 46 cm
Category 1	Arc-rated FR Shirt & Pants
400 VAC	Shock Hazard when cover is removed
00	Glove Class
107 cm	Limited Approach
30 cm	Restricted Approach
3 cm	Prohibited Approach
Bus: HVAC (HVAC) Prot: I/C of HVAC	

Now, please repeat same steps for the remaining four streams. Please discuss the results and compare your hand out results with the obtained results by the used software package.

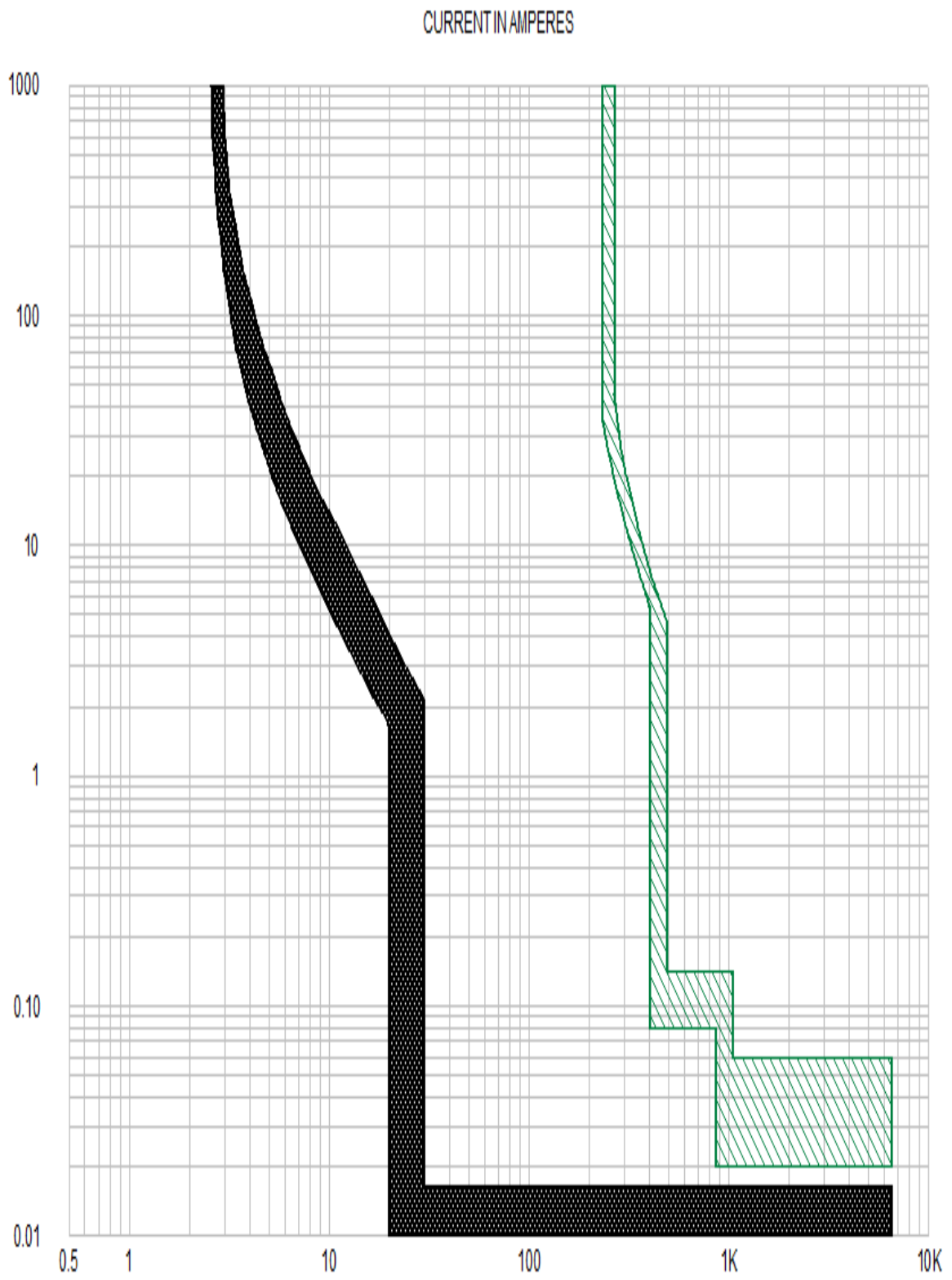
TCC Of Stream No. 02



TCC-02

01 Main CBVs. I/CLP1.tcc Ref. Voltage: 400V Current in Amps x 10

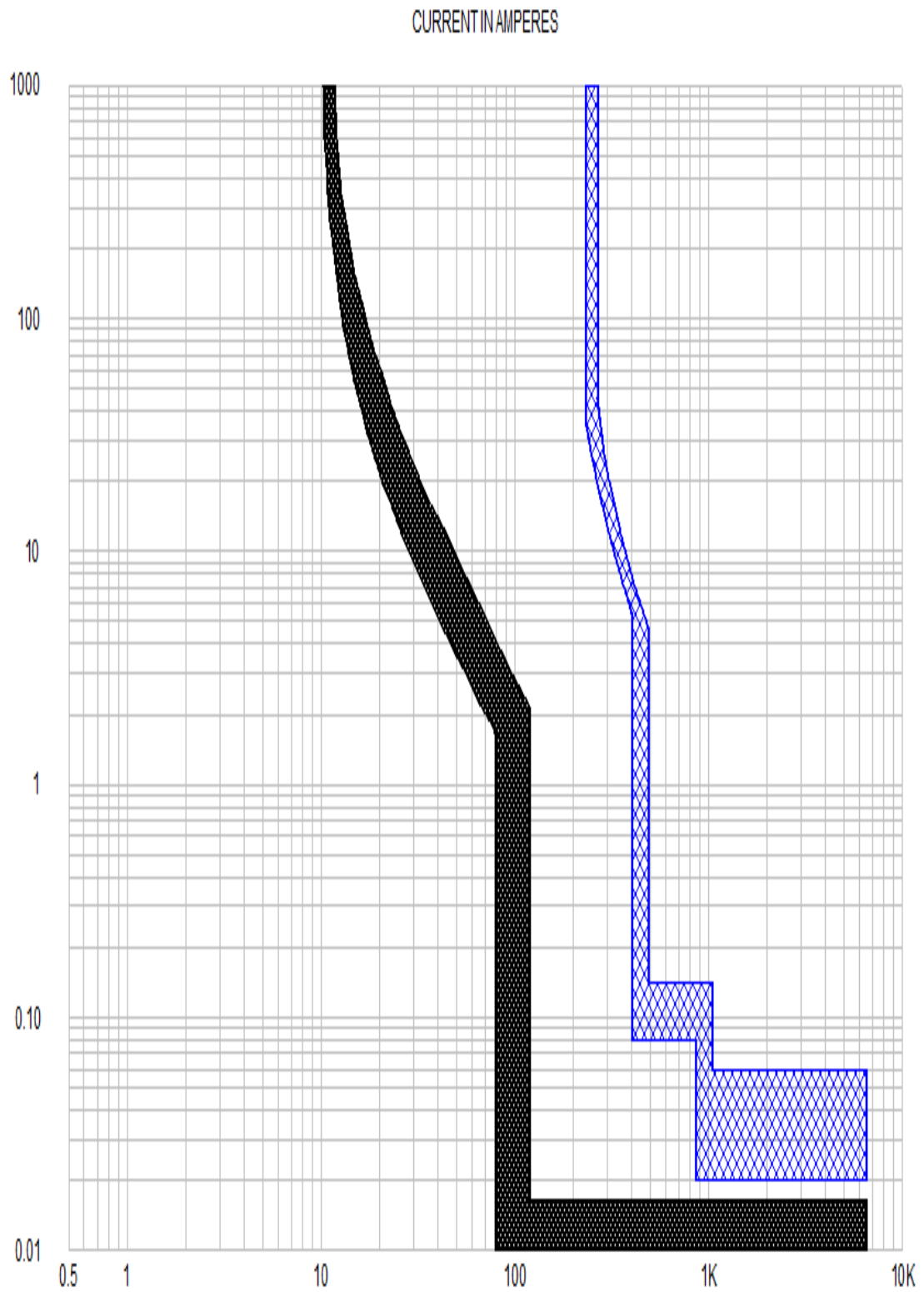
TCC Of Stream No. 03



02 Main CBVs. I/CLP2.tcc Ref. Voltage:400V Current in Amps x10

T.M.A. ENGINEERS

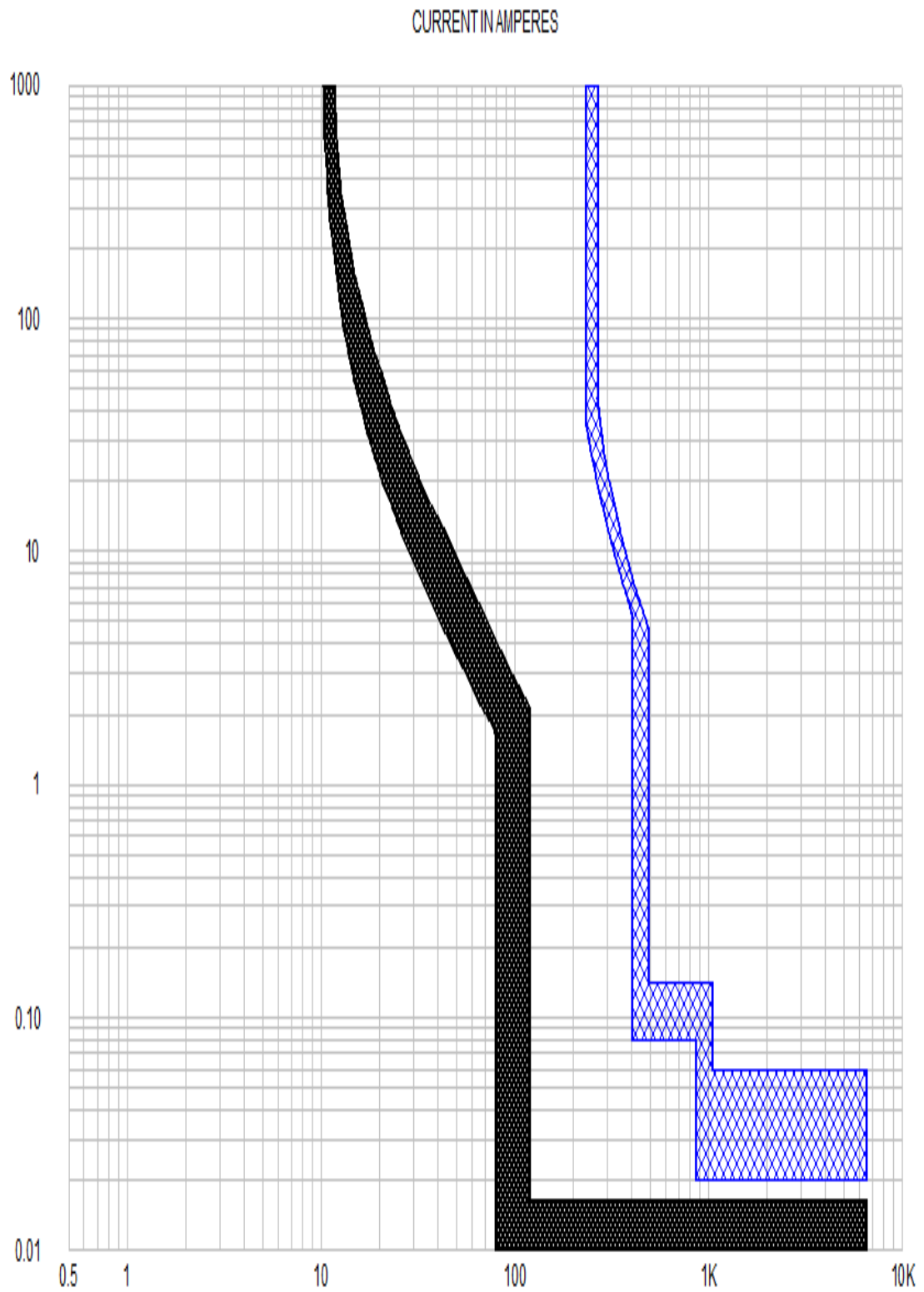
TCC Of Stream No. 04



11-REQUIS

01 Main CBVs. I/CLP1.tcc Ref. Voltage: 400V Current in Amps x 10

TCC Of Stream No. 05



01 Main CBVs. I/CLP1.tcc Ref. Voltage: 400V Current in Amps x 10

TCC