

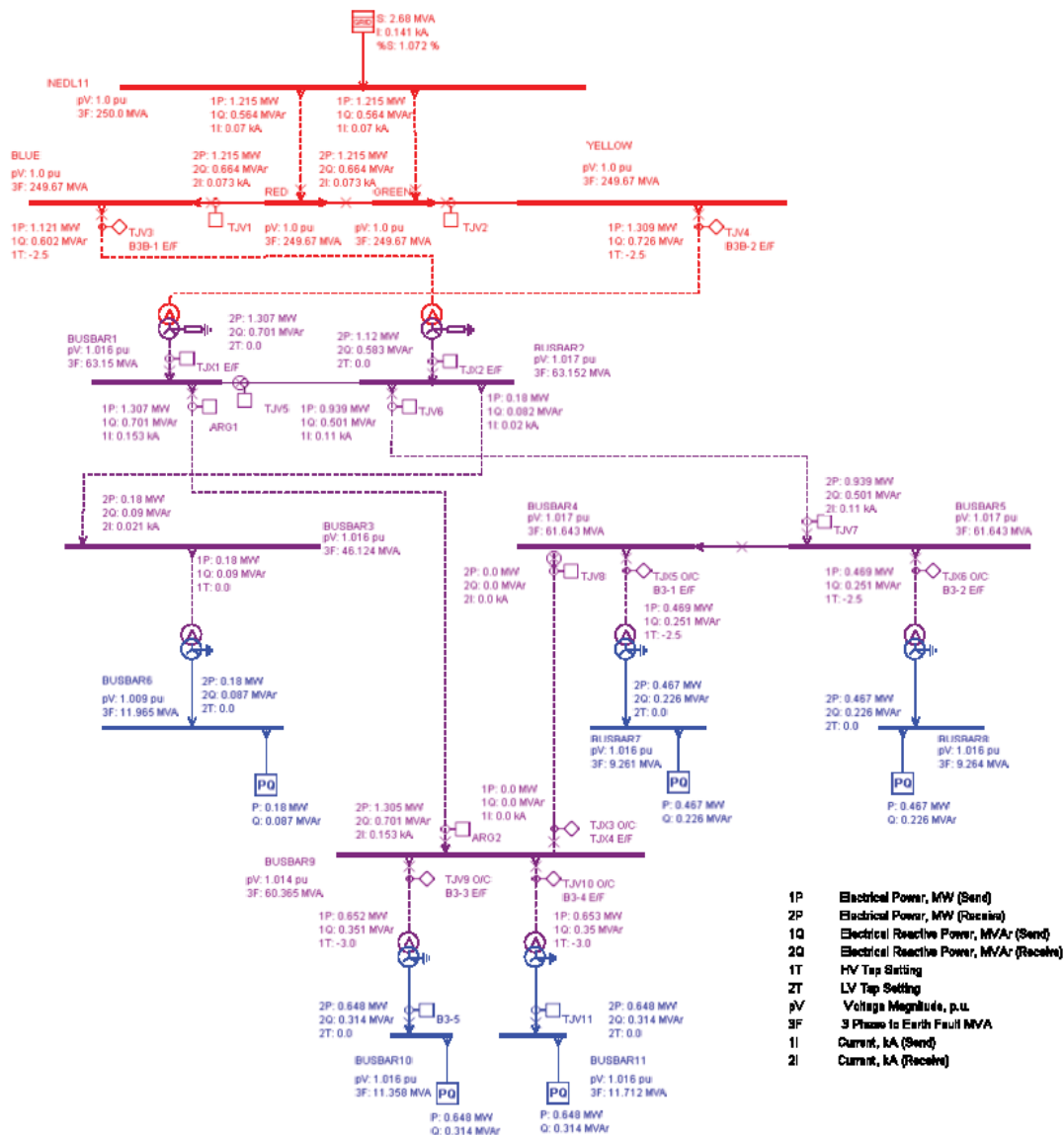
Case Study 1

Load Flow, Fault and Protection Co-ordination Analysis

Project Scope

An engineering company undergone some changes in their distribution network and required a study to investigate whether :-

1. Cables were rated accordingly
2. Transformer tapping range was adequate
3. Investigation of outage conditions and how equipment ratings are affected
4. All circuit equipment were adequately rated for short circuit currents
5. The backup protection scheme had adequate discrimination margins between successive relays



Modelling

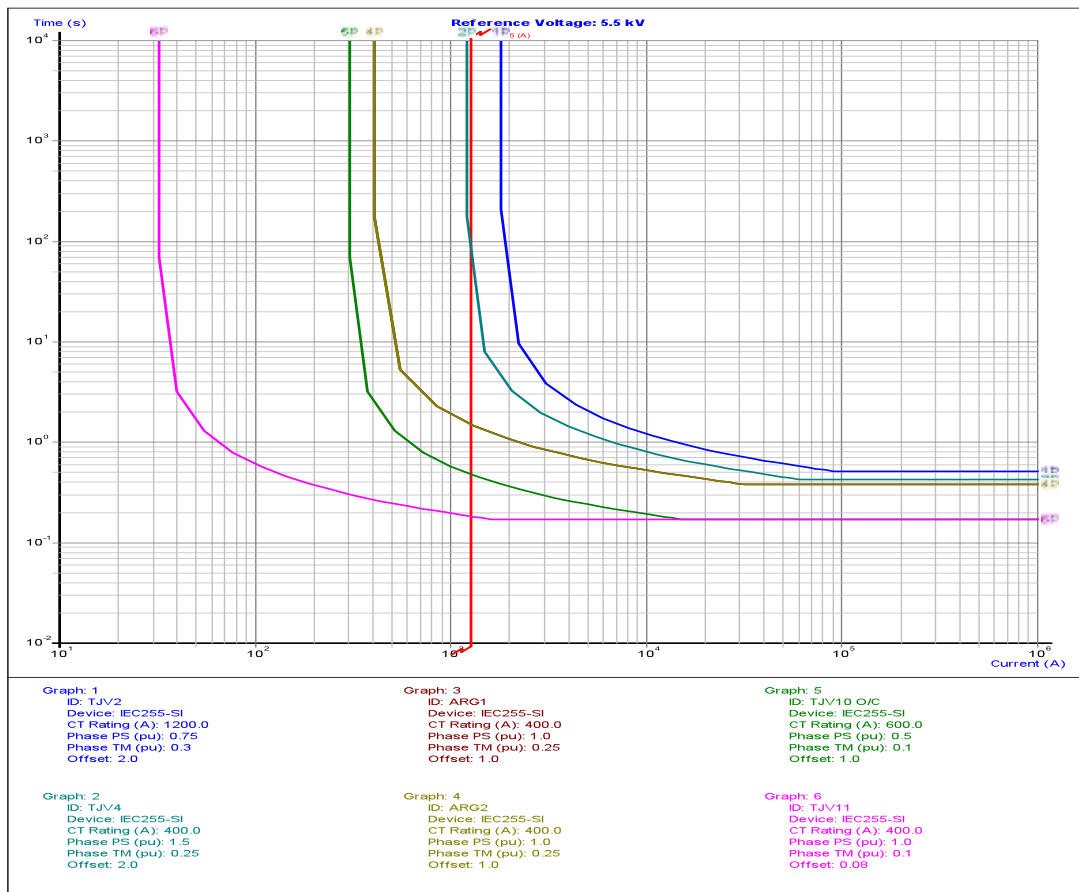
The following network equipment was modelled using ERACS software.

- Grid Supply
- 11kV & 5.5kV Underground Cables
- 7.5MVA, 750kVA & 560kVA Transformers
- Static Load
- Circuit Breakers
- Relays

Load flow, fault and protection co-ordination studies were performed for various system outage conditions.

Results

Graph showing relay protection grading curves



Narec Power System Analysis Section demonstrated to the client that for all conditions studied all equipment was within ratings. A single set of protection settings was recommended which would achieve the best security for the system network.