

## Study Committee B3 “Substations”

### Terms of Reference Joint Working Group B3/C1/C2.14

**Title:** Circuit Configuration Optimisation

**Convener:** Peer Reimer

**Members:** to be nominated

#### Background

Circuit Configurations of High Voltage Substations are strongly influenced by operational requirements, such as availability, the need for sectionalizing, the control and protection system and developed standards and regulations. With the development of new switchgear components having different design principles and higher reliability or integrated functions, reliable and efficient circuit configurations of the past may not meet the requirements of availability and life-cycle-cost of the present or future. Whenever new substations are planned or existing substations are extended, refurbished or replaced, the Asset Owner has to make the decision to continue with existing circuit configurations and products or apply new products and eventually change the philosophy of circuit configuration. Although there are a growing number of conference papers, which describe examples of successful change of circuit configurations, there are to date no guidelines on how to support this decision process. The scope of this Task Force is to develop such a guideline to support the process of circuit configuration optimisation.

#### Scope

The Working Group will:

1. Analyse and summarize:
  - a) Common circuit configurations and their application
  - b) Existing successful examples of alternative circuit configuration options
  - c) Operational reliability and efficiency impacts of new configurations
  - d) Existing tools for circuit configuration design and availability calculation
2. Develop a guideline:
  - a) Requirements analysis
  - b) Development of optimised circuit configurations
  - c) Evaluation of existing and alternative circuit configuration with decision support for the optimal solution
3. Application of the guideline and description of two examples of circuit configuration optimisation

#### Deliverables/time schedule

- 1) Interim report covering items 1 a)-c) by mid 2007
- 2) Final report covering items 2) + 3) by end 2008

#### Customers

Asset Owners / Utilities; Solution Providers / Suppliers

**Approval by TC Chairman :** Aldo Bolza

**Date :**03/08/06