CIGRE Study Committee B1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

WG* N° B1.52	**Name of Convenor :** Robert DONAGHY (Ireland) **E-mail address**: robert.donaghy@esbi.ie
Technical Issues # (2): 9	**Strategic Directions # (3): 2**

The WG applies to distribution networks (4): Yes / ~~No~~

Title of the Group: Fault Location on Land and Submarine Links (AC & DC)

Scope, deliverables and proposed time schedule of the Group :

Background :

The increasing number of land and submarine cable assets globally has created a focus on cable fault location capabilities. All faults in cable systems are different and cable fault location depends to a great extent on applying the appropriate technique or combination of techniques. The methods for locating power cable faults require competent engineers and service providers. Guidance is therefore required for engineers on the correct application of the various techniques available.

Scope :

1. To cover fault location on the following installed cable types: MV/HV/EHV; AC/DC; land and submarine cable systems; single core, 3-core and pipe type cables.
2. To focus on main insulation & sheath faults
3. To provide overview of existing fault location techniques and underlying principles
4. For land and submarine cable systems, to provide guidance and strategies for effective fault location for a variety of installation types including but not limited to:
   - Direct buried cable systems
   - Ducted land cable systems
   - Cables between GIS bays
   - Cables installed in horizontal directional drills and tunnels
   - Cables at large burial depths
   - Cable systems with different bonding types
   - Very long cables
   - …
5. To examine the different methods of pre-location and pinpointing from an accuracy and suitability viewpoint
6. To prepare a flowchart to assist in selecting appropriate methods according to fault type and cable type
7. To examine design factors (cable design and installation method) affecting fault location capability
8. To examine safety considerations
9. To examine marine vessel and support requirements for finding submarine cable faults
10. To collect case studies of fault location experiences
11. To examine training requirements for fault location personnel
12. To examine assess applicability of on-line methods to support fault location
13. To review new and innovative fault location techniques & future developments
14. The WG should not cover:
    - Leak location in fluid filled cables
    - Gas leak location on gas compression cables
    - Diagnostic testing

- Defects in cathodic protection systems

Deliverables : Technical brochure with summary in Electra and tutorial

Time Schedule : start : 2015 **Final report** : 2017

Comments from Chairmen of SCs concerned :

Approval by Technical Committee Chairman : M. Waldron
Date : 06/02/2015

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2
(4) Delete as appropriate

Table 1: Technical Issues of the TC project "Network of the Future" (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non technical audience