



Study Committee No : B1

WORKING BODY FORM

Group No : WG B1.23

Name of Convener : Harry Orton (CA)

TITLE of the Working Group :

IMPACT OF EMF ON CURRENT RATINGS AND CABLE SYSTEMS

Background:

Numerous methods have been devised by electric utilities and various research organizations to manage power frequency magnetic field levels in the vicinity of underground cable systems. Although information will be available (ongoing work TF C4.2.04) concerning considerations for implementing the various methods, their impact on construction, their cost effectiveness, and their impact on cable ratings needs to be evaluated. In particular, there are differing opinions about the derating effects of transmission cables placed in ferromagnetic shielding structures such as pipes and casings. Past work at Cigre and elsewhere addressed magnetic field calculation procedures (with and without ferromagnetic components), however, they do not address the derating impact of the magnetic field management methods or their practical application to electric utility systems.

Terms of Reference:

- To define the correct terminology for field management techniques.
- To review practical magnetic field management methods that are currently used for underground transmission cable systems.
- To quantify the shielding effectiveness of practical methods.
- To review practical design and construction considerations relating to engineering, standardization of components, scalability, constructability, environmental suitability of component materials, impact by third party damage, reduction of rating due to air inclusions, corrosion, theft of materials, logistics, and worker skill level.
- To review the cost effectiveness of different field management methods.
- To quantify the cable ampacity de-rating aspects of the various field management methods

This working group will neither cover any environmental or biological effects of EMF, nor discuss any specific levels of EMF.

Scope of work :

The work shall focus on single conductor, high voltage, AC land cable systems, excluding pipe type cables with :

- Extruded dielectric insulation
- Laminar dielectric insulation

Deliverables:

The deliverables shall consist of an Electra article, a technical guide (containing technical data, discussion, and case studies), as well as a tutorial for presentation at CIGRE conferences and workshops.

Created: **2006** Duration : **3 years**

Members : Belgium, Brazil, Canada, France, Germany, Italy, The Netherlands, Norway, Spain, Switzerland, United Kingdom, United States

Approval by TC Chairman :Klaus Fröhlich

Date : Jan. 9th, 2007