

## **CIGRE and the ICC**

### **A Brief White Paper on CIGRE What it is, what it does, and how it relates to the IEEE ICC With a focus on CIGRE Study Committee B1 “High Voltage Cables”**

#### **1. What is CIGRE SC B1?**

CIGRE stands for “International Council on Large Electric Systems”. CIGRE consists of a number subcommittees dealing with components, subsystems and systems that are a part of the total electricity supply system. CIGRE SC B1 deals in particular with high voltage cables. The mission of SC B1 summarized as follows:

- to facilitate and develop the exchange of engineering knowledge and information between engineering personnel and technical specialists in the field of insulated cables
- to add value to the knowledge and information exchange by synthesizing state-of-art and world practices
- to make Electric Power Industry managers, decision-makers and regulators aware of the syntheses of SC B1’S work in the field of insulated cables

SC B1 consists of a chairman, a secretary, 24 regular members and 8 observer members. The total membership (34) represents 32 different countries and originates from utilities (11), manufacturers (15) and universities/institutes (8).

#### **2. What does it cover?**

The field of activity of SC B1 concerns the development and operation of all types of AC and DC insulated cable systems for land and for submarine power transmission, using solid/liquid, solid and gaseous insulation. It is focused mainly on high voltage and extra high voltage applications, however, whenever appropriate, lower voltage (preferably medium voltage cable applications for power distribution) are also considered.

Within this field, the scope of work of SC B1 covers theory, design, applications, manufacture, installation, testing, operation, maintenance and diagnostic techniques of insulated cables.

Accordingly, the core technologies of SC B1 can be defined as insulated components and equipment (preferably HV and EHV cables and accessories) for power transmission. Supporting technologies are materials, operational and environmental management.

### **3. What is being produced?**

The knowledge, experience and commitment of its members, working groups and task forces have made the SC, since its establishment in 1927, an internationally recognized forum on all technical matters related to HV cable systems and a major contributor to the advancement of the associated technologies. SC B1 strives for maintaining and enhancing its role as the world-wide leading organization on power cables and the acknowledgement by its customers for covering all their engineering needs.

Over the years CIGRE SC B1 has carried out a great number of studies on a great variety of subjects, including: new testing methods/procedures, new technology (GIS, HTS), accessories, new installation methods, diagnostic/maintenance methods, environmental issues etc. The related reports have been published in Electra magazine, and are being used as a first step towards international standardization and as guides to use of high reputation.

### **4. What are the present activities?**

The present working groups and taskforces demonstrate a whole range of subjects of attention:

- Thermal monitoring of cables
- Calculation of resistance of very large conductors and composite screens
- Maintenance of underground cables and accessories
- Transients in long cables
- Revision of qualification procedures
- Special bonding of cables
- Technical and environmental issues regarding the integration of HV underground cables in the network
- Thermal rating of accessories
- Statistics on underground cable in transmission networks
- Electromagnetic fields and the impact of proposed exposure limits (in cooperation with other SC's)

Furthermore, SC B1 has recently established a strategic advisory group (advising the chairman on strategic issues), and a customer advisory group (advising the SC B1 members how to communicate effectively with those organizations that ultimately should benefit from CIGRE: the customers, of which the utility is the most important category).

SCB1 also paid attention to work done in the past, with the relevant question: "What is still of value but has to be updated?"(Adhoc TF White Book)  
Finally SC B1 is closely cooperating with other CIGRE SC's and has liaisons with important international organizations such as IEC, ICC, CENELEC,

JICABLE, with the aim to benefit mutually from the added value of international cooperation.

## **5. What are the future activities?**

CIGRE SC B1 is going to continue its activities in the broad field of cable technology, possibly with more international participation than has occurred to date. More countries and hopefully more active participation from outside Europe may be expected, because CIGRE is not a European but an international organization.

Next to the present subjects, new subjects of interest will require attention for the coming years:

- Cables installed in multi purpose tunnels
- Remaining life of existing cables
- Up rating and upgrading of existing cables
- Reviewing of recommendation for tests for DC cable up to 800 kV

Prepared by Willem Boone  
April 2004