



**CIGRE SC B2**

**OVERHEAD LINES**

**2004 ACTIVITY REPORTS**

## 1. Highlights

SC B2 is a very active Study Committee involving :

- 8 WG centred on the design, construction, maintenance, operation and refurbishment of Overhead Lines for power transmission, including all mechanical and electrical aspects,
- 2 JWG : one on economics of HVDC lines with B4 & C1, another one on increasing capacity of Overhead lines with C1
- and one Task Force on geographical information System with D2.

In 2004, SC B2 has held his administrative and technical meeting in Paris, France, and has produced numerous results among which the publication of 4 Electra Articles, 1 technical Brochure and 4 tutorials.

At the meeting, SC B2 was chaired by new chairman Mr. Bernard Dalle and new secretary, Mr. Normand Bell, who took over from MM. Stephen and Pramayon.

## 2. Status of SC reference model implementation

The main change to the SC was the issue of non permanent working groups. The SC has accepted shorter term (4 year) life of working groups. An action plan was drawn ensuring that the productivity is increased, that networking is maintained and that information from old working groups is not lost. The action plan stated that:-

- Each WG (irrespective of period of existence) is to produce a revised TOR with a list of tasks that are to be completed by 2007.
- Those in 2007 new working groups are to be proposed with tasks focused for the next 3 years. If required the same chairman and secretary can remain.

The action plan forces a focus of tasks as well as structured formation of new working groups.

Three activity groups dealing with Strategic direction, Customer needs and publications and tutorials was formalised to ensure better participation from the SC members.

## 3. Main technical directions currently being pursued by the SC

The main technical directions are driven by the overall evolution of the electricity sector which requires from OHL equipments higher reliability on increasing utilisation and load conditions, less expensive maintenance overall costs and longer life

expectancy. Thus, the non exhaustive list of the directions currently being pursued by the SC is the following:

- Methods for increasing the reliability of lines, as well as knowledge on the factors that affect reliability,
- Methods for increasing life span of existing lines as well as methods to better optimise their maintenance,
- Factors that limit the power transfer in OHL as well as methods to increase this power transfer capability,
- Assessment of the condition of lines components, estimation of failure modes and development of adequate diagnostic tools including Geographical Information System,
- Use of OHL structures to perform additional functions to the main power transmission meaning,

#### 4. SC Working Groups and Task Forces

SC B2 currently hosts eight WGs.

- Three general WGs, all dealing with general aspects and principle of OHL design and associated hardware : Principles of OHL Designs (B2-06), Electrical Aspects of OHL (B2-12), Management of Existing OHL (B2-13);
- Five WGs focused on specific technological aspects: Insulators (B2-03), Foundations (B2-07), Overhead Structures (B2-08), Mechanical Behaviour of Conductors and Fittings (B2-11) and Meteorology for OHL (B2-16);

Each WG has a number of Internal Task Forces which aim at addressing some specific problems in the scope of their respective WG.

#### 5. Joint Working Groups and Task Forces

SC B2 takes an active role in the following groups:

HVDC line costs (new) (**SCB2-JWG17/B4/C1**). The convener for this group is from SC B2. He will start the work in 2005 and prepare a progress report for the next meeting in Brazil (sept. 2005).

OHL geographical and asset I.S. (**SCB2-TF18/D2**). This is a two years duration group, a report and contribution to the 2006 session preferential subject.

Increasing capacity of overhead lines (**SCB2-JWG19/C1**). This JWG will start them activities in 2005.

## 6. SC Publications and publication plan

2004 publications include one technical Brochure and four technical reports:

- Environmental Management Plans (EMP) for activities associated with overhead lines (B2-15), art. N<sup>o</sup> 212.
- Brittle fractures of composites insulators – Field experience, occurrence and risk assessment (B2-03), art. N<sup>o</sup> 214.
- Brittle fractures of composites insulators – Failure mode chemistry, influence of resin variations and search for a simple insulator core evaluation test method (B2-03), art. N<sup>o</sup> 215.
- Life cycle assessment of overhead lines (B2-15) art. N<sup>o</sup>
- Life cycle assessment of overhead lines (B2-15), Brochure ref. 265

As to increase the distribution of technical brochure and to promote CIGRE work through industry, WG are required to produce tutorials based on technical brochures or other already published documents. Four tutorials was presented at the Paris session.

- Probabilitistic design of OHL (WG06)
- High intensity winds (WG16)
- Assessment of existing overhead line support (WG08)
- Fiber optic (WG11)

## 7. SC Website

SC B2 has its own web site [<http://www.cigre-B2.org>] in which all documents are attached and may be downloaded. The web site has been receiving an average of 10000 hits per year. Two WGs have their own web site accessible from SC B2 web site.

## 8. SC Strategic Plan and Action Plan

SC B2 strategic plan which spans over a period of ten years was updated as to adapt itself to the new developments and trends concerning both the overall Electricity Sector environment and the CIGRE work organisation.

Concerning the changes affecting the whole electricity sector, SC B2 identifies the necessity to closely stick to evolutions in :

- the operational environment: updating and upgrading of existing OHL, extension in equipment life expectancy, optimisation of maintenance... ;
- the environmental changes: visual impact of lines, reduction on losses, EMF, noise, pollution... ;

- the changes in the business environment : deregulation, unbundling of generation, transmission and distribution business, changes in the political and financial structure of assets owners,
- the evolution of the technology : use of FACTS which modify lines utilisation set point, use of new type of conductors allowing power flow increase or other monitoring equipment which lead to higher line utilisation rate.

Observing the opportunities and trends brought by this overall environment, the strategic plan considers the SC strengths and weaknesses and defines its technical objectives and its strategic administrative and technical directions. This strategic plan also describes the changes to the operation of the SC established in line with the requirements of CIGRE organisation. Finally, it edicts some rules applicable to all WG and defines the role of Advisory Groups.

Action plans which outline the main actions of WG are given in the document as well as list of tutorials to be organised by each WG.

## 9. SC Meetings

The Technical and Administrative meeting was held in Paris on August 30<sup>th</sup> - 31<sup>st</sup>, 2004.

## 10. SC Participation to Regional Meetings and Symposia

Since the CIGRE SC B2 participation with Yugoslavian CIGRE Committee (JUKO) at Colloquium on "Overhead Lines Revitalization" in Belgrade on May 6-8, 2003, no other participating meeting has been organised.

## 11. Relations with other Organisations

WG of SC B2 have regular exchanges with IEC TC 11, TC 36 and one WG share information with IEEE TF. Links with CEA may also be pursued.