



IEC/TC or SC TC11	Secretariat South Africa	Date 2007- 11-13
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Title of TC Overhead Lines

<p>A. Background</p> <p>A1 Scope To prepare International Standards for Overhead Lines above 1 kV Nominal Voltage.</p> <p>These Standards will provide design criteria that may serve as a guide to national regulations differing from each other only in the local conditions and in the assumed safety level.</p> <p>These Standards will deal with mechanical loadings and strength of the line, with clearances and with tests on structures, fittings and foundations.</p> <p>Note.- Excluded from the scope are:</p> <ul style="list-style-type: none">- Recommendations for the design method of the various elements of the line, i.e. how these elements have to be designed to withstand the required mechanical loadings.- Recommendations dealing with tests on conductors and insulators established respectively by Technical Committees Nos 7 and 36. <p>A2 This Technical Committee (TC) was set up in 1972, with the main purpose of establishing the design criteria to be used as framework for National regulations deferring from each other only in the local conditions and in the assumed safety level. TC11 deals with design and testing of the components of the overhead lines (towers, foundations, fittings), which are not covered by other technical committees.</p> <p>Regarding conductors and insulators, which are dealt with TC7 and TC36 respectively, TC11 covers only the aspects relating to the structural design criteria of the above components. The TC11 scope concerns the reliability of overhead lines, but deals also with the safety aspects, including the definition of the clearances, the test on structure, foundations and fittings and erection methods.</p> <p>The increasing needs to establish Standards on testing of each component of the line make it necessary o ensure co-ordination of work with other organisations inside and outside of IEC:</p> <ul style="list-style-type: none">• Tests on fittings IEC TC36, IEC TC7, CIGRE B2• Conductor behaviour IEC TC7• Tests on foundations CIGRE B2• Maintenance criteria IEC TC78, CIGRE B2• Ice loading on structures ISO 98• Clearances IEC TC28, IEC TC78, CIGRE C4• Electro-magnetic fields IEC TC106• Overhead lines CENELEC TC11 <p>The total of 24 participating (P) members of TC11 are listed below (in alphabetical order): Australia, Austria, Belgium, Canada, China, Czech Republic, Denmark, Finland, France, Germany, India, Italy, Japan, Korea (Republic of), Netherlands, Norway, Romania, Russian Federation, South</p>

Africa, Spain, Sweden, Switzerland, United Kingdom, United States of America.

B. Environment

B.1 Business environment

Electrical Utilities, Consultants and Contractors are all involved in the IEC TC11 works. The environment under which IEC TC11 is currently working has recently changed essentially due to:

- Harmonization between ISO and IEC
- IEC CENELEC parallel voting
- New procedure to accelerate the IEC work
- Co-operation with other TC such as TC7, TC36 and TC78, for which formal liaison has been established
- New type of overhead lines for matching requirements of reducing or minimizing environmental impact (magnetic field, visual impact etc.)
- Restructuring in power system business
- Safety of workers involved in erection and maintenance of overhead lines

B.2 Market demand

Regularly updated IEC standards are widely demanded in the field of transmission lines. TC11 has extended to lines between 1 kV and 45 kV and will deal in the future with the influence on overhead line design of electric and magnetic field constraints.

In the future, TC11 environment may be changed by the trend and present modifications in climatic events.

B.3 Trends in technology and trade

New lines are needed in developing countries, while in other countries, due to increasing difficulties in building new lines, there is a tendency to maximize the utilization of the existing lines using new technologies and advanced methods of maintenance engineering.

B.4 Ecological environment

An optimum design can minimize or reduce the impact of overhead lines on the natural environment and can ensure a maximum reliability in the face of meteorological events. The present and future planned activities of TC11 include the loadings for which a line has to be designed, new design method, above-ground clearances, the performance of towers, foundations and fittings (by using appropriate test procedures). Within TC11 scope, items required for optimum design are covered.

C. Work programme

C.1 Current work

Priorities of current work of TC11 will follow the present necessities, dealing first with the line voltages above 45 kV

TC11 deals with the general requirements of overhead line design under mechanical and electrical aspects for voltages higher than 1 kV

The mechanical problems affect two aspects:

- 1) The definition of loading and mechanical strength of components with largely based probabilistic approach (due to meteorological data)
- 2) The definition of tests on the components, which are under the responsibility of the Committee.

Work completed includes:

- General requirements of loading and mechanical strength
- Tests on towers
- Tests on foundations
- Meteorological data for design purposes in connection with loading
- Tests on fittings
- Tests on spacers
- Tests on dampers
- Electrical component clearances to obstacles

Twenty-four countries are involved in TC11 work as P members. A permanent editing committee and Maintenance Team deal with TC11 tasks. Taking into account the future planned TC11 work program, the next TC11 meeting will be held in 2009.

C.2 Resources/infrastructure needed

- Liaison between TC11 and IEC TC 106 to be established
- A French mother tongue expert is needed in the editing committee
- Liaison to be established between IEC TC11 and CENELEC TC11
- Invitation for the 2009 TC11 meeting

C.3 Safety aspects (only for committees which do not have a reference to safety in their scope)

D. Future work

- Requirements and tests on fittings for optical cables
- Upgrading and up-rating of existing lines by using new conductor types
- Refurbishment and maintenance, life extension and life-cycle assessment of existing overhead lines
- Standard on line clearances based on electro-magnetic field considerations
- Influences of overhead lines on metallic pipelines (based on CIGRE work)
- Corona and RIV effects
- Tower top and mid span geometry
- Loading and strength requirements for structures in seismic areas
- Erection methods
- Imaging technology for construction, operation and maintenance

E. Maintenance cycle

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
60826	2003-10	2009	2011	MT1
61774	1997-08	2008	2010	MT1
61284	1997009	2009	2011	MT1
61854	1998-09	2009	2011	MT1
61897	1998-09	2009	2011	MT1
61773	1996-11	2008	2009	MT1
61865	2001-07	2010	2012	MT1

Name or signature of the secretary

BD Taylor