

**PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP<sup>1</sup>**

<b>WG N° B2.70</b>	<b>Name of Convenor:</b> Naji SAHLANI (USA)	
<b>Strategic Directions #<sup>2</sup>:</b> 2,3		<b>Technical Issues #<sup>3</sup>:</b> 8
<b>The WG applies to distribution networks<sup>4</sup>:</b> Yes		
<b>Potential Benefit of WG work #<sup>6</sup>:</b> 1,2,3,5,6		
<b>Title of the Group:</b> Aircraft warning markers and bird flight diverters for Overhead Lines – Experience and recommendations		
<p><b>Scope, deliverables and proposed time schedule of the Group:</b></p> <p><b>Background:</b></p> <p>Aviation regulations require marking of overhead lines (OHL) by means of aircraft warning markers (AWM). Besides, the importance of bird protection is growing and requires enhancement of visibility of OHL for the birds by means of bird flight diverters (BFD). There is a lack of standards for requirements and tests of such visual warning fittings. A CIGRE Technical Brochure is desirable which gives guidelines regarding requirements and tests of these devices. These visual warning fittings include aerial markers for aerial navigation and water crossings.</p> <p>The active WG C3.16 ‘Interactions between electrical infrastructure and wildlife’ already covers part of the subject focusing on wildlife and mainly avian interactions. It doesn’t appear to cover Aircraft Warning Markers, their expected loadings, or testing requirements to illustrate the effects to the system. The mechanical interactions of bird diverters and their effect on the design, performance, and life of the lines are also not covered. It will be beneficial to share data and collaborate between WG C3.16 and this new working group. The Convenor of C3.16 has already agreed to share information between the two groups.</p> <p>Interesting work was already done by B2 [CIGRE TF B2.11.03, 2006 - ‘State of the art survey on aircraft warning markers – Experience with current practice’.] but didn’t cover testing required to qualify diverters nor did it cover additional mechanical loading induced on the line as a result of the diverter installation. Regarding the topics covered, there may have been progress during the last decade.</p> <p><b>Scope:</b></p> <p>This proposal aims at making recommendations that could be the basis of a standard that sets the quality requirement in regards to product materials, product application, product performance, required testing, and how to eliminate conductor and shield wire damage over the life of the system. The following topics will be covered:</p> <ol style="list-style-type: none"> <li>1. Introduction (including background information showing the differences between the work done by TF B2.11.03 and the requirements of the new working group).</li> <li>2. Requirements             <ol style="list-style-type: none"> <li>a. Functional requirements                 <ol style="list-style-type: none"> <li>i. Bird flight diverters</li> <li>ii. Aircraft warning markers</li> <li>iii. Other warning fittings (i.e. Warning Lights installed on conductors)</li> </ol> </li> </ol> </li> </ol>		

- b. Technical requirements
  - i. General requirements
  - ii. Environmental requirements
  - iii. Mechanical requirements
  - iv. Electrical requirements
- 3. Types of fittings and state of the art
  - a. Bird flight diverters
  - b. Aircraft warning markers
  - c. Other warning fittings (i.e. Warning Lights installed on conductors)
- 4. External loadings and the effects on the overhead line and attachments (Survey on existing standards and specifications)
  - a. Ice loads
  - b. Wind loads
  - c. Loads due to increased weight from installed AWMs and BFDs
- 5. Tests
  - a. General
  - b. Dimensions, materials and corrosion protection
  - c. Mechanical testing
  - d. Electrical testing
  - e. Environmental testing
- 6. Installation
- 7. Maintenance (Product durability, conductor/OPGW wear, repair/replacement methods)

Note: Warning Lights installed on towers/structures and warning systems based on GPS coordinates and satellite are not part of the scope

**Deliverables:**

- Technical Brochure and Executive summary in Electra
- Electra report
- Tutorial<sup>5</sup>

**Time Schedule:** start: February 2018

**Final Report:** September 2020

**Approval by Technical Committee Chairman:**

**Date:** 11/02/2018



Notes: <sup>1</sup> or Joint Working Group (JWG), <sup>2</sup> See attached Table 2, <sup>3</sup> See attached Table 1, <sup>4</sup> Delete as appropriate, <sup>5</sup> Presentation of the work done by the WG, <sup>6</sup> See attached table 3

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

<b>1</b>	Active Distribution Networks resulting in bidirectional flows
<b>2</b>	The application of advanced metering and resulting massive need for exchange of information.
<b>3</b>	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.
<b>4</b>	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.
<b>5</b>	New concepts for system operation and control to take account of active customer interactions and different generation types.
<b>6</b>	New concepts for protection to respond to the developing grid and different characteristics of generation.
<b>7</b>	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
<b>8</b>	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
<b>9</b>	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.
<b>10</b>	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 (ref. Electra 249 April 2010)**

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

**Table 3: Potential benefit of work**

<b>1</b>	Commercial, business or economic benefit for industry or the community can be identified as a direct result of this work
<b>2</b>	Existing or future high interest in the work from a wide range of stakeholders
<b>3</b>	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
<b>4</b>	State-of-the-art or innovative solutions or new technical direction
<b>5</b>	Guide or survey related to existing techniques. Or an update on past work or previous Technical Brochures
<b>6</b>	Work likely to have a safety or environmental benefit