

PROPOSAL FOR CREATION OF A NEW WORKING GROUP *

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| WG* N° WG A2.42 | Name of Convenor : Asgeir MJELVE (NO) |
| Title of the Group: Guide on Transformer Transportation. | |
| <p>Scope, deliverables and proposed time schedule of the Group :</p> <p>Background :</p> <p>In the AC A2 meeting in Paris in 2008 a WG on transformer transportation damage was proposed. During the discussions in the SC it was revealed this topic was too narrow and should be extended in a guide on the broader aspect on transformer transportation. Several examples on severe transformer damage including recent events involving scrapping of transformers after derailment during rail transportation, crane and bridge collapses were mentioned. Especially SC members from Africa and Australia had experienced many mishaps and supported strongly this new WG proposal.</p> <p>Guidance on how to perform g-forces measurement during transportation and the interpretation of the measurements is not mentioned in the IEC 60076 series. Guidance on the connection between the transformers mechanical design, the design review and the rules for action when an unwanted transportation event has occurred seems necessary; At which g-forces should the transformer be internally inspected at site, moved to the factory for a more thorough inspection, and which failure modes may be expected should be addressed by the WG.</p> <p>This Working Group will liaison with the ongoing WG A2.36 <i>Guide for Transformer Procurement Process</i> where the CIGRE brochure on Design Review will be revised. Requirements on transportation issues should be included in the mechanical design review process. As relevant examples may be mentioned increased new EU rules for the height of railway station platforms have made problems for transformer transportations. Lack of maintenance of utility owned wharfs designed for special transformer transportation vessels have also caused concern.</p> <p>The bulk substations supplying the cities are historically located outside the city centres, but often “fenced in” by urbanization with increasing transportation problems. Road and police authorities are increasingly reluctant to close highways and temporarily strengthen bridges. New tunnels may not be made to previously agreed cross sections due to budget limitations. Level crossings of railroads and motorways are changed to underpasses enforcing change of transportation routes. These changes compel constant transportation planning as part of the asset management of the transformer fleet and some guidance may be needed.</p> <p>Scope:</p> <ol style="list-style-type: none">1. Prepare a brochure <i>Guide on transformer transportation</i> including but not limited to:<ul style="list-style-type: none">• Example cases of transportation damage, failure modes and their mitigation by improved design and transportation safeguarding.• Typical conditions/forces that can occur in various forms of transport and how to evaluate cases where excessive forces could occur. This includes rail, road and sea.• Means of minimizing forces during transport.• Specification and Design review requirements on transportation issues.• Measurements of g-force and possible damages to the transformer, methods and their interpretation. | |

- Recommendations for design parameters for withstanding the forces on each axis together with withstand time imposed during transportation taking into account the form of transport to be used and method of verification.
- Management of transportation, means of access, transportation modes and access roads, easily removable traffic signs, traffic lights, street furniture etc. Safe inspection guidelines before, during and after transportation

2. Liaison with the ongoing WG A2.36 *Guide for Transformer Procurement Process* where the CIGRE brochure on Design Review will be revised

3. Prepare presentations to be used in CIGRÉ contexts.

4. Prepare a short summary for Electra.

Deliverables : Brochure, presentations and a summary report to be published in Electra.

Time Schedule : Start : January 2010

Final report : 2012.

Comments from Chairmen of SCs concerned :

Approval by Technical Committee Chairman : Klaus Fröhlich **Date :** 24/11/2009

* or Joint Working Group (JWG), of Task Force (TF), of Joint Task Force (JTF), or Advisory Group (AG)