CIGRE Study Committee A3 (Substation Equipment) Report to CIGRE – UK for 2009-10.

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This is based on notes from the A3 Meeting Held in Paris on September 2010.

Summary of Key Points:

Session Publications;

- Due to the fact that more and more contributions come in for publication and for the session, a system change is under discussion. A key proposal is that the Chairmen will get more power to reject national papers which are up to now selected by the NCs.
- The CO informed that the financial situation of CIGRE is very well at the moment, so that CO is able to assist NCs for technical events.
- Concerning the SC A3 group discussion, Schmitt stated that 66 contributions had been too much again and asked for possibilities to change the procedure for the session. The chairman will discuss the matter in the next TC meeting and indicated that generally there is the possibility for poster sessions.

Strategic Plan, Action Plan

- The CIGRE Strategic Plan has been finalized and will be placed in the A3 web site.
- The Strategic Plan of SC A3 has to be revised until April 2010. The content should be shorter and sharper.

Recently approved WGs

Two new groups have been approved recently by the TC:

WG A3.29 Detoriation of ageing substation equipment and possible mitigation techniques,
Convener Ankur Maheshwari, Australia

WG A3.30 Impact of overstressing of substation equipment,
Convener Antonio Carvalho, Brazil

The call for experts for both groups is still running. These are important subjects and we need to nominate experts if we are to obtain the maximum benefits of these activities.

Report of Working Groups

WG A3.06 - Reliability of HV equipment

The data base is in the very final stage and the analysis is starting within task forces which are focused on specific equipment. A draft report on the first results is planned for the end of 2010 to be circulated within SC A3.

WG A3.15 - NCIT
A Draft TB has been send in to the chairman for approval. He is working on the final editorial matters in the text. The draft for the Electra summary will be provided within September 2010. It was stated that an Electra article is necessary for any publication and without any output a disbanding of the WG is not possible!

WG A3.17 – Surge Arrester
The draft TB and Electra paper will be finalized within the next weeks and ready for distribution within the SC in September. The Chairman stated that all should be ready for handover to CO at least in December. This WG also cannot be disbanded without any output.

WG A3.21 – Non-ceramic insulators
It was reported that the WG is effectively closed. The revised TB and an Electra article has been send to the Chairman. He has still to clarify some questions with De Nigris and then the publications will be send to CO within the next weeks.

WG A3.22 – UHV-Equipment
The draft of the second TB including Electra article were already revised and sent to the Chairman for approval. They will be handed over to CO soon.

WG A3.23 – Guidelines and selection of FCL
The work of the WG is going well and publications are planned for the next year. The close relationship with IEEE was noted. A member of the WG is Convener of an IEEE WG, preparing a guide with the topic "How to test FCL". The number of the IEEE draft is PC37.302 (when approved it will be C37.302).

WG A3.24 – Simulating internal arcs and current withstand testing
There is a change of Convenership from Kriegel to Nenad Uzelac. The work of the WG is progressing well.

WG A3.25 – MO varistors and surge arresters for emerging system conditions
The work of the WG is going well. Maheshrawi mentioned that the issue "Ageing of SA" will be interesting for his new WG and information exchange will be helpful.

WG A3.26 – Capacitor bank switching and impact on equipment
The scope was modified slightly to include series reactors and now the WG activities are progessing.

WG A3.27 – The impact of the application of vacuum switchgear at transmission voltages
A number of meetings have been held, the most recent in Paris during the CIRGE Sessions and the work is progressing well.

New: WG A3.28 – Switching phenomena and testing requirements for UHV & EHV equipment
Convener Ito presented his list of members for this new WG. The kick-off meeting was held the day after the SC meeting in September.

Report of Advisory Groups

AG A3.01 - Strategic Planning
AG A3.01 meets once a year in between the SC meetings. The WG-Convenors and some exmembers are active in this group.

AG A3.04 - Tutorials
Around two tutorials per year have been organized. Popular topics of high interest are : Surge Arresters, Reliability and UHV-matters. For the future, tutorials will be offered in combination with the CIRED-Conference in Frankfurt, Germany (June 2011) and the Cigre-Symposium in Bologna, Spain (September 2011).

Information upon other Groups/Organizations

SC B3 activities
Special attention will be paid on possible overlap between A3 and B3 and in some topics a close cooperation is necessary.

IEC SC 17A
IEC 17A is working on a revision to 62271-100 related to the work of SC A3, mainly A3.22 concerning the UHV-topics.

CIRED
The Conference next year will be in Frankfurt, Germany (June 6-9).

Current Zero Club
The Chairman Rene Smeets reported upon the organization and activities of the Current Zero Club and noted the growing interest correlating with the increase of membership.

New work items
NCIT:
A draft TOR has been written by Tantin, titled “Instrument Transformers with digital output”. The subject was taken out from the original task of WG A3.15.
Farnoosh Rahmatian, was appointed convener. A possible overlap with B3 in this subject will be clarified in parallel to the circulation of the draft TOR within the SC.

Delayed zero
A new work item on short-circuit currents with delayed zero, titled “Requirements for Interruption of Short-Circuit Currents with Delayed Zeros” was discussed, specifically whether this subject is within the scope of SC A3 or better in the network modeling area. Because the outcome will be directly related to circuit-breakers and therefore of high interest for the equipment side the Chairman decided that Amon and Janssen should prepare a draft TOR.

DC-Equipment
Question came up whether it is the right time to start work on DC equipment. Interest is there already for DC circuit-breaker and the measurement of DC current and voltage will be also a topic. DC related questions are generally treated in SC B4. It was decided to postpone this subject, wait for a formal question, collect information

and discuss it at the next meeting again. The Chairman will discuss the topic directly with the Chairman of SC B4.

Transformer limited fault

There is not enough information available today, more should come from SC A2. Within A3.28 it needs to be clarified what A2 is doing in that direction.

Exploding current transformers

Some recent events have raised the question whether this is a topic for future work. The information concerning explosions varies, however diagnostic techniques such as gas in oil analysis are already available. WG A3.06 has no indication of increasing failure rates, therefore this subject will not be progressed further at this stage.

Further ideas for new work

- Voltage above rated voltage (will be covered in A3.30)
- Network-topologies with the keywords: TRV, radial or meshed, cable and lines , transients in networks,
- VFT in respect of transformers, calculation and measurement
- VFTO from AIS disconnectors (rare occurrence)

Future Events

SC A3 meeting 2011

Due to the fact that it was desirable to hold the meeting in Europe, and that the Austrian NC wished to promote greater engagement with CIGRE, the invitation from Austria has been chosen. It will consist of the SC A3 meeting and a colloquium of minimum half a day.

A team for the organization was nominated: Widl, Maheshrawi, Janssen, Fernandez, Peelo and Brian Cheung (a UK NGN member)

As preliminary date for the event September 07-09, 2011 was fixed.

Preferential Subjects for 2012

Out of a brainstorming the following preliminary Preferential Subjects have been formulated:

• **Equipment design to facilitate network developments**

– Design & testing of equipment for HVDC

– Role of intelligence within equipment

– UHV

– Impact of changes in AC network design & operation

• **Reliability & lifetime of HV equipment**

– Experience & trends in reliability of HV equipment

– Prediction & management of end of life due to age and/or potential overstressing

– Role of condition monitoring & condition assessment

• **Environmental suitability of high voltage equipment**

– Designs to minimise environmental impact

– Design & testing for extreme of ambient conditions (temperature, seismic levels, pollution . . .)

– Design for offshore/marine environments

Body of knowledge

Maheshwari presented the idea of preparing a knowledge base concerning the topics related to SC A3 by listing of publications (Technical Brochures, Electra-papers, otherpapers under our scope). The beginning of the list is included in the presentation of the idea. Additions to the listing are expected from the SC members.
Aim of the knowledge base is to find topics and titles in the list from the SC A3 web siteand order them from the Cigre book-store.