MINUTES OF THE MEETING OF THE HVDC CONVERTER TRANSFORMERS & SMOOTHING REACTORS S.C. IN BOSTON, MASSACHUSETTS, OCT 31, 2011

On October 31, 2011, the HVDC Converter Transformers and Smoothing Reactors S.C. met at 1:45 p.m., in the Pacific C Meeting Room of the Renaissance Waterfront Hotel, in Boston, Massachusetts. There were 9 members and 17 guests present. The total membership of the SC is 26, but currently includes 8 corresponding members. (Note that the chairman will review the current membership and especially the status of members who have not recently participated in the business of the SC; especially those who are corresponding members.) Therefore there was a quorum. The following are the highlights of the meeting:

1. Introductions were made and the attendance list circulated.

2. Although a quorum was not initially achieved a few late arrivals allowed a quorum to be reached. As there were no dissensions the minutes of the San Diego, California meeting are considered to be approved.

   Note: The minutes of the Boston MA meeting will not be approved until the SC meeting in Nashville.

3. IEEE patent policy was reviewed and no issues were raised.

4. The Chairman provided a synopsis of the Administrative SC meeting.

5. The chairman reviewed the status of his search for individuals who would be willing to volunteer to take over management responsibility for the HVDC SC. After many requests and discussions with members only one individual has agreed to assume the position of chairman; Mike Sharp. Les Recksiedler has agreed to be vice-chairman. (Note that approval of these positions is made by the executive of the Administrative SC) (Also note that following the HVDC SC meeting two individuals volunteered to be secretary and a long time member and significant contributor, Ulf Radbrandt, was accepted.) (Note that prior to the Thursday General Meeting all three individuals were approved by the AdCom executive.) (The outgoing chairman, Richard Dudley, subsequently volunteered to provide all necessary ongoing support to the new team in order to provide a smooth transition.)

6. At the San Diego meeting it was agreed that since HVDC projects are now in service at 666kV and 800 kV the focus of revision work on IEEE C57.129 and IEEE 1277 should be to extend the applicability to 1100 kV. To help answer the question as to whether standard insulation levels should be introduced for the highest dc voltage levels or if insulation levels should be specified on a project basis Ulf Radbrandt volunteered to make a presentation at the Boston SC meeting on systems aspects of insulation levels. The focus of the Boston meeting was the presentation by Ulf Radbrandt. The presentation will be posted on the Trx Com web site with these meeting minutes. Some of the highlights of discussions re the presentation are as follows.

(i) Protective margins are mainly required to compensate for the physical location of surge arresters, i.e. distance effects.
(ii) Insulation levels are very project specific and are system design related.
(iii) Utilities may favor standard insulation levels as it may result in some equipment standardization. However it could result in higher insulation levels. There could be cost implications; specific equipment, such as converter transformers (internal insulation costs, including oil volume, and external insulation, including bushing cost and dielectric clearances), but also overall system costs. Higher insulation levels may also generally impact external dielectric clearances.
(iv) Higher insulation levels may have an impact on test lab capabilities.
(v) HVDC converter stations are essentially “tailor made” and insulation levels for components are part of the system design process.
(vi) “IEC 60076-5 Insulation co-ordination – Part 5: Procedures for high voltage direct current (HVDC) converter stations” is only specific re insulation levels for the ac side and the remainder of the converter station is less standardized.
(vii) The insulation levels for the ac side of the converter transformer can be lower than the insulation levels for the other equipment on the same ac system. The reason is that surge arresters are normally located very close to the converter transformer and the protection levels of those arresters are very low (in order to not overstress other arresters in the ac network and to limit the stresses to the converter valves).

Based on the presentation and discussions, consensus was reached that insulation levels should not be standardized and that an annex should be added to IEEE C57.129 and IEEE 1277 explaining the rationale. Ulf Radbrandt agreed to produce the first draft of an annex on insulation co-ordination and non-standard insulation levels.

7. Presentations on future work and revisions were discussed. It was agreed that the focus should be on additions to existing document versus new documents.

The Chairman requested that SC members prepare presentation material on future work for the Nashville meeting as a basis for discussion and to provide more direction for future revision work on IEEE C57.129 and IEEE 1277 and/or guides on design review and life assessment.

The meeting adjourned at 3:00 p.m.

Richard Dudley, Chairman
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