MINUTES OF THE MEETING OF THE HVDC CONVERTER TRANSFORMERS & SMOOTHING REACTORS S.C. IN MONTREAL, P.Q., OCT. 23, 2006

The S.C. met in the Cartier A Meeting Room of the Delta Centre-Ville Hotel in Montreal, P.Q. on Monday, Oct. 23, 2006 from 1:45 p.m. to 3:00 p.m. There were 11 members and 13 guests present. The following are the highlights of the meeting.

1. Introductions were made.

2. The minutes of the Costa Mesa meeting were approved.

   Note: The minutes of the Montreal meeting will not be approved until the meeting in Dallas, Texas.

3. IEEE patent policy was highlighted and no patents affecting the work of the S.C. were noted.

4. The Chairman reported on the meeting of the Administrative S.C. on Sunday, Oct. 22, 2006.

5. The Chairman reported that he had finally received a WORD version of the current edition of IEEE 1277 and after about 1 week of work by his administrative assistant had a version suitable for revision and distribution to S.C. members.

6. Draft #6 of the revision of IEEE C57.129, prepared and distributed by the Chairman prior to the Montreal meeting of the S.C., was discussed. It was agreed that the revision process for IEEE C57.129 was essentially complete with the exception of the issues discussed as noted below.

   (i) A presentation on polarity reversal hold time and the impact on the dielectric system of the converter transformer bushings was made by Chris Stankowski. This is a portion of the work being carried out by CIGRE JWG A2/B4-28. The presentation will be distributed with the minutes. Since the work of the CIGRE JWG is not complete the current polarity reversal hold time will be maintained in the revision of IEEE C57.129. It should be noted that a CIGRE WG is also reviewing converter transformer failures and per S.C. members no documented failures to-date appear to be related to polarity reversal. A NOTE re the work of these CIGRE WGs will be included in the revision of IEEE C57.129. Highlights of discussions related to the presentation by Chris Stankowski are as follows.

   - Current PR hold times 90 – 95 – 45 vs 360 – 360 – 100.

   - The need for increased PR hold time is not clearly evident.

   - Oil conductivity is a factor in resultant dielectric stresses. Lower conductivity oils result in lower dielectric stresses.

   - Oil conductivity depends on the type of oil and increases as the oil ages; up to 4 orders of magnitude.

   - The same oil as used in testing should be used in service.

- The extended PR hold times should only be considered for type test and that current hold times should be for routine test.

- Normal PR times are very fast; especially under line fault conditions.

- Oil conductivity is a very important factor re dielectric stress in the insulation system and PR.

As stated previously current PR hold times will be maintained in the current revision of IEEE C57.129.

A NOTE will be included in the revision of IEEE C57.129 stressing the importance that oil of the same conductivity as used for test should be used in service.

(ii) The issue of inter-changeability or the ability to replace bushings easily on converter transformers was discussed. Bushing dimensions are an issue especially re finding replacement bushings. The issue will not be addressed in the main text. A NOTE will be included in the revision of IEEE C57.129 re bushing replacement; issues that need to be addressed.

The Chairman will produce Draft #7 of the revision of IEEE C57.129 based on the above and editorial/clarification input received based on Draft #6. Draft #7 will be sent to S.C. members and if there are no more issues it will be the draft to be formally balloted by IEEE. If possible a formal ballot of the revision of IEEE C57.129 will take place before the next S.C. meeting in Dallas.

7. The Chairman will produce Draft #1 of the revision of IEEE 1277 based on discussions at the Costa Mesa meeting of the S.C. Actioned S.C. members are requested to provide their input as soon as possible.

The meeting adjourned at 3:00 p.m.

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