10.2 Dielectric Tests Subcommittee – Loren Wagenaar, Chair; Thang Hochanh, Vice-Chair; Dennis Marlow, Secretary

The Dielectric Tests Subcommittee (DISC) met on Wednesday, April 13 at 11:00 am in the Catamaran Hotel, with 174 persons in attendance. There were 75 of 119 members, and 99 guests present. 13 of the 63 returning guests who requested membership will have their participation status reviewed prior to acceptance

10.2.1 Chair's Remarks

1. The Chair briefly reviewed highlights of the Administrative Subcommittee meeting held on Sunday. He indicated that it is possible that the review period for standard renewal may change to 10 years and that the reaffirmation process may be eliminated. He also indicated that our present IEEE program manager, Matt Ceglia has been promoted and we will have a temporary replacement. The last day for Revcom submissions is Oct 17, 2011, and this date may be critical if the new changes are adopted later this spring.

2. The Chair indicated that next meetings of the TC are:

    a) Fall 2011 October 30-November 3 (Renaissance Boston Waterfront $159) – Boston, MA - hosted by Omicron
    b) Spring 2012 , TBA USA

3. The original roll call of committee members showed 47 members were in attendance at the start of the meeting. The new quorum requirements were not met originally and it was decided to perform another role call later. This was done after the report on Impulse test procedures and with 68 members in attendance the quorum requirements were met. The membership participation will be again reviewed prior to the next meeting to include only active members. All WG and TF should update their rosters prior to the next meeting.

4. The minutes of the Fall 2010 meeting in Toronto were approved with a correction to the spelling of one members name and are available on the IEEE Transformers Committee Web Site.

10.2.2 Working Group Reports

10.2.2.1 Task Force on External Dielectric Clearances
Eric Davis, Chair; Dennis Marlow, Secretary

The TF met on April 11, 2011 at 9:30 am at the Catamaran Resort Hotel, San Diego CA. with . 74 people attended this seventh meeting, 6 members and 66 guests (26 repeat guests) were present with 5 requests from repeat guests for membership. Membership stands at 20. We did not have a quorum. Consequently, the minutes from the Toronto meeting in Oct 2010 could not be approved .The membership list will be verified further to include only those participants who have attended 2 of the last 4 meetings.

The minutes from the fall 2009 meeting in Lombard, IL and the spring 2010 meeting in Houston was sent to the active members for approval by email but we only received by 8 replies. The secretary will follow up with the unresponsive members to obtain official approval by email.

The IEEE patent disclosure requirement policy was discussed. Reference to the package posted on the IEEE Transformers Committee Web site was made. None of the members and guests present during the meeting was aware of any patents related to the work of this TF.

The Chair apologized to the membership for not circulating the survey which will be sent out to the members and interested guests plus the DI SC for review so that comments can be obtained about the proposed clearance table.

As there were many first time guests we reviewed some of the points that had been discussed at previous meetings. The following points were also discussed during the meeting:

- The clearances we are developing are not the required clearances determined by an engineered device such as the bushing to bottom flange ground nor the surge arrestor phase to phase clearances. These clearances are determined by the manufacturer of these devices.
- The surge arrestor and bushing can influence each others field if they do not have sufficient distance between them.
- Suggested clearances for two particular manufacturers of surge arresters were received from Juan Castellanos. This document gives good examples of the necessary arrester phase to phase, arrester top to bushing top and arrester bottom to bushing mounting flange clearances.
- The TF felt that the clearances provided in the table should govern unless the transformer manufacturer received approval from the Purchaser. A note will be added to the table indicating that in certain cases it may be permissible to use clearances from surge arresters and bushing less than those contained in the table.
- The table will indicate phase to ground and phase to phase clearances for various voltage classes based on required BIL and Switching surge values.
- A C57.12.00 ballot comment was referred to this TF. The comment was:
  Table 11: It is the only place that requirement for 1100 kV nominal system voltage are given. Such networks are not in service yet. It is premature to make any standardization regarding this system voltage level.
- The general consensus of the TF was that the TF should propose phase to ground and phase to phase clearances for 1100kV. The SC does not have to include these clearances in C57.12.00
- It was noted that the present table 11 did not show any phase to phase clearances for 765 and 1100 kV system voltages. Loren Wagenaar suggested that we do not included them since most transformers of this voltage class are single phase. The following note already address this point:
  - c Power transformers, at nominal system voltages of 765 kV and 1100 kV, are usually single phase so that clearances between live parts of different phases are not an issue

Meeting adjourned at 10:25 am. Respectfully submitted, Dennis Marlow

Loren Wagenaar indicated that since this TF has indicated that changes are necessary to C57.12.00 Table 11 that it will become a WG and that the change of status to a WG should be initiated. A PAR is not required since the resulting work will be included in the next revision of C57.12.00.

10.2.2.2 Task Force for Partial Discharge in Bushings and Voltage/Current Transformers –Thang Hochanh, Chair; Arturo Del Rio, Secretary

The Task Force minutes are included in the WG for Low Frequency

10.2.2.3 Working Group for Revision of the Impulse Test Guides C57.98 and C57.138 Art Molden, Chair; Joe Melanson, Co-Chair

1. The meeting started at 9:30 AM on Tuesday April 12th, 2011 with 57 attendees present, of which 7 were members and 50 were guests.

2. The IEEE Patent Policies were presented and reviewed with the group. The group was polled to see if there were any known patent issues to disclose relative to this standard. None were indicated by any of the attendees.

3. There being 7 members present a quorum was declared and the minutes of the fall meeting in Toronto were approved.

4. The results of our first ballot were that of the 203 comments received, 22 were negative. Of those 22 negative comments 20 have been resolved, 2 still remain outstanding.

5. The negative comment resolutions as proposed by Chair Art Molden were presented to the members and the members agreed with the wording of those proposed resolutions. The two outstanding negative comments were then discussed.

6. One of the two outstanding negative comments was in regard to the use of a lower case “e” and an upper case “E” used to represent voltage in an equation included in the Guide. The negative voter had suggested that “V” should be used in all cases. General consensus is that either “V” or “E” can be used to represent voltage in an equation but that “E” is generally used to represent voltage sources where as “V” is generally used to represent a circuit voltage response. The members were all of the opinion that we should be consistent with our terminology and continue to use “E” and “V” as is the case elsewhere in the document.

7. The other outstanding negative was regarding the naming of a function used in the Annex section of the Guide on “Advanced Processing of Digital Records” and named a “Reliability Indicator”. The negative voter believed that the function so named was in fact the “Coherence Function” and should be named as such. Bertrand Poulin, the author of this document provided an explanation of the difference between the two functions which will be passed on to the negative voter in the hope it results in approval.

8. On receiving affirmation of approval on the two outstanding negative votes the Guide will be revised and sent out for a recirculation.

9. This completed the presentation of ballot responses, there being no more business the meeting was adjourned at 10:19 AM

   Minutes submitted by Art. Molden and Joe Melanson

COMMENTS FROM SC MEMBERS

Loren Wagenaar thanked Art Molden and his working group for the work done in the completion of this guide.

10.2.2.4 Working Group on Revision of Low Frequency Tests – Bertrand Poulin, Chair; Bill Griesacker, Secretary

The WG met on Tuesday April 12th at 1:45 pm with 14 members and 46 guests in attendance. The quorum was not met. Minutes of the past meetings could not be approved.

The report on the task force on partial measurements on bushings and instrument transformers was presented by Thang Hochang. The main topic of the TF meeting was a presentation by Alexander Kraetge on possibilities offered by processing of pd signals digitally acquired. Several ways of extracting meaningful data from noisy environments were shown. Next, Thang presented his view on the layout of the future document. Some discussions followed and several people agreed to contribute to the document. It is hoped that some of the sections would be ready for discussions before the next meeting.

Next, the Chairman mentioned that the tutorial session on partial discharge measurements would be held at the next meeting in Boston. Three members volunteered to make presentations at the tutorial.

As old business, the Chairman mentioned that a proposal for induced test on 69 kV transformers would soon be surveyed within the Subcommittee stating that 69 kV transformers must receive low frequency test as Class II transformers since a recent survey showed that the majority of transformer manufacturers were actually testing those as Class II transformers nowadays.

There were no items of new business.

The meeting was adjourned.

Submitted by Bertrand Poulin
Chairman

10.2.2.5 Working Group on Revision of Impulse Tests – Pierre Riffon, Chair; Peter Heinzig, Vice-Chair

The WG met on April 12 26, 2011, from 3:15 pm to 4:30 pm. Twenty members (20) members and eighty-seven (87) guests attended the meeting. Required quorum was met. Eighteen (18) guests requested membership. The meeting was chaired by Pierre Riffon, chair of the WG.

The agenda has been reviewed and two New Business items were added. The agenda has been approved as modified.

Revision1 of the minutes of the Toronto meeting were approved as modified (name spelling corrected).

The IEEE patent disclosure requirement policy was discussed. None of the members and guests present during the meeting were aware of any patents related to the work of this WG.

The first technical item of business was to discuss the results and comments received from the 2nd survey made within the WG and the Dielectric Tests SC on the number of impulses to be applied during impulse tests. The proposal requests to increase the number of full impulses from one to three as required by IEEE and IEC standards on insulation coordination and HV testing and to align the impulse testing procedure with IEC 60076-3. This survey was made in March 2011. The return rate was 25.9% and approval rate was 82.7%.

Comments received were discussed and the following decisions were taken:

- Coordination with the Bushings SC will be made;

- No specific time interval will be specified between the last chopped-wave and the following first full-wave. The wording will only say that this time shall be minimized;

- Front time for impulses applied on neutral terminals will be put as a New Business for future meetings;

- Tail time tolerances for impulses on neutral terminals will be added;

- Tap position for impulses applied on neutral terminals will be put on New Business for future meetings;

- Two full-wave impulses will be specified after chopped-wave tests during the lightning impulse test sequence defined when protective devices are an integral part of the transformer. This modified proposal will be surveyed within the WG and the Dielectric Tests SC prior to the next meeting;

- Both chopped-wave tests and full-wave tests will be required for design, duplicate units and routine tests;

- Most of the negatives received cannot be resolved because there is no compromise possible;

The majority of WG members presents during the meeting agree to send the proposal to Steve Antosz for inclusion in the next draft of C57.12.90 that will be circulated for ballot.

On new business, there were two subjects. The first was related to the comments received on the last C57.12.00 ballot. Comment received from Kimberly Mosley was discussed and the WG agreed that proper references to clause 5.10.7.2 to be added. A proposal will be circulated to the WG prior to the next meeting.

The second new business was related to a request from Dennis Marlow to discuss the need or not to specify a mandatory order between lightning impulse tests and switching impulse tests. This subject has been slightly discussed but the WG ran out of time and this discussion will be resumed at the next WG meeting in Boston.

The meeting adjourned at 4:30 pm on April 12, 2011.

Pierre Riffon P. Eng. WG Chair

10.2.2.6 Task Force on Electrical Partial Discharge Measurements Guide C57.113 - E. Lemke Chair

The TF did not meet as the document is being published

10.2.3 Liaison Reports

10.2.3.1 High Voltage Test Techniques (HVTT), IEEE Standard 4 - Arthur Molden

The latest draft of the revised IEEE Standard 4 and 4 of the 5 Annexes that will be included with it, are presently being reviewed by the members of the working group. Depending on the outcome of the members review the document will then be prepared for its first ballot.

Respectfully Submitted: Art Molden.

Bertrand Poulin noted that the new method of analysis of the oscillations on the impulse wave is being changed by both IEC and IEEE. The software for the K factor will need to be changed when the new impulse standard is approved. A member from Europe indicated that there may be some delay in issuing this change in the relative IEC standards and also that the manufacturers may have a delay in updating the software. It is thus anticipated that there may be a period of grace before it is compulsory to adopt the new K factor

10.2.4 Old Business

10.2.4.1 There will be a tutorial on PD measurements at the Fall 2011 meeting.

10.2.4.2 George Frimpong is chairing a new TF for Dielectric Frequency Response Testing presently under the PCS SC. The purpose of the TF is to establish whether the science involved is ready to be put into a guide or a standard, and if so, the TF will recommend the proper SC in which the resulting WG will be placed. He has been given a time limitation of 3 meetings to complete his report and has made good progress after only one meeting. George will give a liaison report at the next meeting.

10.2.5 New Business :

There were several comments received from the last revision of C57.12.00 ballot. Pierre Riffon and Eric Davis are addressing these comments in their WG/TF sessions at this meeting.

10.2.5.1 There were 3 comments about the Dielectric Test Tables which still need to be resolved. Phil Hopkinson will address these comments with an Ad Hoc committee and report back to the SC at the next SC meeting

10.2.5.2 **Thang Hochanh** brought to the attention of the SC that there appears to be a problem with the calibration of new PD equipment when used for RIV (microvolt reading) This should be calibrated according to NEMA 107. He has offered to organize an inter laboratory comparison method and will provide a standard means of making this comparison between test labs. He has seen results which can be as high as 6 times the actual at 100 microvolt reading..

10.2.6 Meeting adjourned 12.15 PM Minutes respectfully submitted: Dennis Marlow