C57.13 Instrument Transformers – J. Smith – Unapproved Minutes

1. Chair's Remarks & Announcements

The Instrument Transformer Subcommittee met on Tues, Oct 25 at 8:00 AM.
6 members and 11 guests attended. The meeting was chaired by R. McTaggart.

A special presentation was made by Donald Fallon summarizing the subjects discussed in the Administrative Subcommittee on Sunday. Most of the attendees had never attended one of these meetings and really appreciated this opportunity.

The previous meeting's minutes were approved as written and there were no Patent issues.

2. Working Group Reports

2.1 Working Group on Test Requirements for High Voltage Instruments Transformers Rated 115 kV and above

The WG met on October 24, 2006. Six members and seven guests attended the meeting. The meeting was co-chaired by Mr. P. Riffon and Mr. R. McTaggart.

The agenda was approved as written.

Minutes of the Costa Mesa meeting were approved as written.

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 the WG.

Vladimir Khalin sent proposals for changes to the actual C57.13.5 in order to try to harmonize it with IEC 60044-1. Among his various proposals, the following subjects were discussed:

- Capacitance and dielectric dissipation factor measurement. It has been agreed upon that the wording of indent b) of clause 7.2 will be changed from "Maximum rated voltage" to "Rated maximum line-to-ground voltage". This wording will be in line with the IEEE Bushings Standard.

  In clause 7.1, the maximum limits regarding the dissipation factor of gas insulated instrument transformers have been discussed. This measurement will be probably dropped down in the next revision of IEC 60044-1 while it is still kept in the latest edition of IEC 60137 (bushings standard). Values given in IEEE C57.13.5 are coming from IEC 60137. Manufacturer representatives agreed to look once more with the values stated in the actual document and make comments or proposals for the next meeting.

- Inter-turn voltage test: IEC requests to test all types of CT secondary windings (metering and relaying) to 4,5 kV peak. IEEE C57.13.5 does specify different voltage levels depending if the CT is intended for metering or

relaying. For metering, IEEE C57.13.5 specifies 280 Volts peak while for relaying the voltage shall be 2,8 times the terminal voltage rating. After discussion, it has been agreed upon that the inter-turn test voltage required for metering CTs will remain to 280 Volts peak while the test voltage for relaying CTs will be increased to 4,5 kV for all relaying CT ratings. For metering CTs, it has been agreed upon that the IEEE inter-turn test voltage is more than enough because the burden normally applied to metering CTs is generally very low and that the magnetic circuit of such CTs will normally saturate during fault conditions and thus, limiting the secondary voltage level.

- Endurance chopped wave test: IEC is now proposing a test voltage of 70% of the rated BIL while IEEE C57.13.5 is specifying 80% of the rated BIL. After discussion, the value proposed by IEC was a kind of compromise between the former IEC value of 60% and the IEEE value of 80%. Also, for technical reasons, the test voltage may need to be changed depending of system voltage because the protective margins given by the surge arresters are larger for lower system voltages than for EHV system voltages. Pierre Riffon will make a proposal for the next meeting considering different test voltages for 345 kV, 500 kV and 800 kV systems. Also, the IEC alternative requirement of limiting the number of chopped waves to 100 will be introduced as an alternative test method.

The meeting ran out of time and the non covered items on the agenda will be part of the next meeting agenda. The meeting adjourned at 9:25 am on October 24, 2006.

2.2 WG on C57.13 Revision – Tom Nelson

This WG had not met but it the history and status was reviewed as well as part of the last draft. Very little progress has been made in the past couple of years and the consensus was that the WG needs to become more proactive to expedite the revision of this document. Since the WG Chair has missed several meetings it was suggested that a co-chair be appointed. Mr C. Smith expressed interest and will be recommended to the SC Chair.

In a discussion of cl 8.1 (Partial Discharge Requirements) it was apparent that the SC felt that this section needed to be revised. Reference documents will be circulated to the WG, including IEEE C57.113 and IEC 60270. It was also noted that Instrument Transformers are often tested in a balanced bridge configuration.

2.3 PAR P1601 Optical Current and Voltage Sensing Systems

Session chaired by: F. Rahmatian (TC/ITSC)

Attendees: E. So, M. Haas, P. Millward, P. Zhao, R. McTaggart, V. Khalin, B. Henning, R. Gomez, G. Kennedy, C. Smith, P. Picher, V. Aresteanu, S. Shull, R. Lings, G. Swift, U. Radbrandt.

- IEEE disclosure requirements regarding patent issues related to the WG work were presented
    - Mr. Rahmatian asked if anyone is aware of patents relating to the content of PAR 1601 work. There were no responses. It was noted that no patent or IP was disclosed or identified as relevant to P1601 work.
- Minutes of meeting #13 and #14 of P1601, March 20, 2006, Costa Mesa, CA, and June 21, 2006, Montreal, Quebec, respectively, were reviewed and approved.
- Update on other standards/industry Activities was given:
    - IEC 61869-x series – to become new IEC instrument transformer standards, mostly editorial re-organization of 60044-x series. Last meeting was in October in Arnhem, Netherlands.
    - CSA standards for instrument transformers are balloted and approved. Publication in early 2007.
    - IEC 61850-9-2 and IEEE/UCA Guide (rev 3) for digital interface to instrument transformers.
    - CIGRE WG A3.15 on non-conventional instrument transformers, next editorial meeting in December in Paris, France.

Update on activity and status of the draft:

- Balloting to start in Dec 2007 or sooner (targeting Dec 2006 for survey)
- Most of the reviews (3 pages per attendees assigned in meeting #13) have been received by F. Rahmatian. They all have been implemented in draft 7 (D07).
- Draft D07 of PAR 1601 was sent to Working group members and all guests whose emails were available for review and comment on Oct 20, 2006. Any guest or member who hasn't received a copy and is interested in receiving a copy should contact F. Rahmatian at frahmatian@nxtphase.com for a copy. All comments due by December 15, 2006, to the same email address.
- It was suggested by Dr. So, and accepted by the present members to modify uncertainty requirements for calibration test set up on page 13 of Draft 06, from being at least 1/3rd of the accuracy class error to 1/4th of the accuracy class error, consistent with best practices. This issue also to be considered and addressed in IEEE C57.13.5 – Action: R. McTaggart, Oct. 24, 2006.
- Figures 1, 3, 4, and 5 require formatting improvement. Action: F. Rahmatian, Dec. 15, 2006.
- Some text/content for accuracy testing to be provided by Dr. So for the Appendix A2.1, including reference to published papers on this issue. Action: E. So, Nov. 30, 2006.

Next Scheduled Working Group Meeting

- IEEE/PES Transformers Committee Meeting, Mar. 12, 2007, Dallas, TX

4. Old Business
    - V. Khalin provided some information on the working group on Transformer Monitoring and will forward the draft to RM or JS to circulate amongst the SC members.

5. New Business
    - None

6. Adjournment

The meeting was adjourned at 9 AM