

MINUTES OF THE MEETING OF THE HVDC CONVERTER TRANSFORMERS & SMOOTHING REACTORS S.C. IN LAS VEGAS, NEVADA, OCT. 25, 2004

The S.C. met in the Estancia D Meeting Room of the Green Valley Resort Hotel in Las Vegas, Nevada on Oct. 25, 2004 from 1:45 p.m. to 3:00 p.m. There were 15 members and 11 guests present. Since the San Diego meeting 2 new members have been added; Jan Hajek of ABB and Ugo Piovan of EHV Weidmann. The following are the highlights of the meeting.

1. Members were encouraged to attend the tutorial session on the modeling of polarity reversal dielectric stresses in converter transformers; Ugo Piovan of EHV Weidmann prime presenter. The results of Ugo's work will be taken into consideration in the revision of IEEE C57.129; polarity reversal.
2. The corrected minutes of the S.C. meeting in San Diego were approved. The minutes from the Las Vegas meeting will not be approved until the S.C. meeting in Jackson, Mississippi.
3. IEEE patent policy was reviewed; details in registration package. No patents affecting the implementation of IEEE C57.129 were noted.
4. The PAR for the revision of IEEE C57.129 was approved at the June 24, 2004 meeting of the IEEE Standards Board. The life of the PAR is to Dec. 2008.
5. Peter Heinzig and Ugo Piovan are members of the CIGRE Joint T.F. that is reviewing converter transformers service experience and has the task of making recommendations that will improve reliability. A report should be available in 2006. Peter and Ugo will keep the S.C. informed of developments.
6. D #3 of the revision of IEEE C57.129, prepared by the Chairman based on inputs from Les Reckseidler, Pierre Riffon, Peter Heinzig and Tony Weekes, was reviewed. The following are key points of discussions/agreed actions.
 - (i) Input from Sten Andersson (Sept. 29 and Oct. 30), Lars-Erik Juhlin and Gene Wolf will be included in D #4.
 - (ii) The Chairman reminded SC/WG members that the standard should be test code focused and not design orientated. A lot of comments have been received related to design issues. It was agreed that such comments should be included in NOTES or in an annex. Comments should also be kept general; not design specific. Peter Heinzig's e-mail of Oct. 21, 2004 will be used as a basis on how to treat design issues. The best approach may be to cover all design related comments/issues in an appropriate annex. IEC 61378-3 is an HVDC application guide that is

being prepared. It should be referenced. It is at the CVD stage and could be published at the end of 2006. Ugo Piovan, who is a member of the W.G., will provide a copy of the CVD draft. The Chairman will attempt to collect all design related comments etc. in an annex for D #4.

- (iii) The polarity reversal test was discussed. Pierre Riffon recommended it be left as is. Model studies such as those carried out by Ugo Piovan can be used to refine the design and possibly provide insight into possible test code changes. It was also noted that DC systems operate differently today vs the past; more polarity reversals due to changes in power flow. Polarity reversals also occur due to fault conditions. It was noted that there have been no converter transformer failures directly related to polarity reversal; CIGRE publication. All converter transformer manufacturers will provide input re their model studies of polarity reversal dielectric stresses and any possible input/concerns re the current test code.
- (iv) Measurement of FURANS during the 48 hour test described in Annex B is considered to be of no value.
- (v) Detailed specs re replacement bushings should not be included but general guidance etc. may be appropriate.
- (vi) Peter Heinzig presented information on gassing; type and rate. He will distribute his presentation for comments. No evolution of acetylene should be allowed due to testing; < 1 ppm. Peter will modify Annex D.
- (vii) Jan Hajek made an excellent presentation on the impact of oil quality on converter transformer service life; level of refining/processing and source of the crude (sulfur content). This presentation will be included with the minutes; to S.C. members only. Should any of the information in Jan's presentation be included in the revision of IEEE C57.129? At the very least his paper should be included in a bibliography.

The meeting adjourned at 3:00 p.m.

R. Dudley

RFD:jl
(04181)