### Working Group for Application of High-Temperature Materials IEEE P-1276 – Roger Wicks

Marriott Downtown – Louisville, KY USA

Room – Marriott 1-3

October 31, 2017, 3:15 - 4:30 pm

1. Welcome & Chairman's Remarks R. Wicks

Roger opened the meeting at 3:15 pm with a brief description of the status of the Working Group.

1. Circulation of Attendance Rosters J. Arteaga

Circulated

1. Attendance for Quorum J. Arteaga

24 members were in attendance meeting the quorum requirement a minimum of 20 members. 47 guests were presented and 8 requested membership.

1. Approval of Spring 2017 Meeting Minutes – New Orleans, LA J. Arteaga

Marion Jaroszewski made a motion to approve the minutes and Bruce second it. The group unanimously approved the minutes.

1. Approval of agenda

Alan Sbravati made the motion to approve the agenda and Marion Jaroszewski second it. The group unanimously approved the agenda.

1. Patent Disclosure R. Wicks

There were not issues related to Patent Assurance brought up by attendees in the meeting.

1. Discussion R. Wicks

Chair presented the results of testing using the sealed tube method with a pressure relief device rated at 10PSI, and a 3-point evaluation as outlined in IEEE Std. C57.100. It was noted that the ratio of materials utilized for the test has an impact in the results. The ratio of materials for distribution transformers results on a tensile strength retention of 16% to 20%, as with ratio of materials for power transformers this value is between 11% and 13%. The results showed that the thickness of the material used for insulation does not have as much of an effect on the results.

Alan Sbravati indicated that in his experience the sealed tube without a pressure relief device represents better the condition of degradation due to the catalytic effect under pressure, which has a large effect, and suggested that the use of bellows can compensate for the changes in pressure. The chair mentioned that in the transformers there is a pressure relief device making the use of the relief device in the sealed tubes more representative of the conditions of the transformer in operation. Also, the use of bellows make the test more difficult to conduct.

John Luksich and Roger Wicks will provide examples for Clause 8, loading guidelines, using the methodology described in C57.100 to provide the loading guidelines for other fluids and insulation systems.

It was commented that the material compatibility of materials, like gaskets, made need to addresses similarly as in standard ASTM D3455. Roger Wicks indicated that this standard addresses the chemical compatibility of the insulating materials with mineral oil at lower temperatures (100˚C), but does not cover their performance at higher temperatures. Tom Golner mentioned that these materials are already covered in this document.

Alan Sbravati requested to include overload guidelines for the performance of de-energized tap changer and bushings. Roger Wicks indicated that due to time constrains this requirement may not be include now if the material is not already available.

Marion Jaroszewski made the motion to made a straw ballot within the WG starting by November 17 using the current document with the changes discussed today. David Sundin second it and the group approved unanimously. The significant changes discussed included combining Clause 4 and 7, incorporating a generic loading guide method using the aging example from IEEE C57.100 and incorporating the loading guide from IEEE 1276-1997 (aramid in mineral oil) and an updated version of the loading guide on natural esters into an informative annex linked to this method described in the main body of the document. Additionally, some of the information in the Annex on materials in the Annex will be condensed as no work has been done on this section.

A ballot resolution group formed by Roger Wicks, Marion Jaroszewski, Clair Clairborne and Alan Sbravati will review and resolve the ballot results and present the resolution the WG for approval and proceed to have a vote at the subcommittee level to allow us to proceed to have a sponsor ballot.

It is expected to complete this process before October of next year, before the current guide expires.

David Sundin made a motion to adjourn the meeting, Bruce Forsyth second the motion, all members approved it, and the meeting adjourned at 4:30 PM.

Roger Wicks – Chair Javier Arteaga - Secretary