

# PC57.19.00 - WG for the Revision of IEEE Standard General Requirements and Test Procedure for Power Apparatus Bushings

11:00 AM to 12:15 PM, Monday October 28, 2019  
Hyatt Regency Columbus Hotel, Columbus, Ohio USA

## *Unapproved Meeting Minutes*

WG Chair Peter Zhao presided over the meeting, with Eric Weatherbee as Secretary. Introductions were made, and meeting rosters were circulated to record the attendance.

Total Attendance	72
Members in Attendance	31 out of 44 members, quorum attained
Guests in Attendance	41
Guests Requesting Membership	6

The WG Chair presented the agenda with the call for patents, none were received, and that copyright information can be found on the Transformer Committee website. The remaining meeting time focused on review of the comments received from the review group with the attendees. The following is a summary of those discussions and resulting disposition or follow up action to be taken:

**Review Section: 7. Test Procedure: Page 10, Table 2, 7.2.1.5** – Comment from Mr. David Geibel: description of test should include PD measurement. **Proposed Change:** Revise to: Rated frequency dry withstand with partial discharge measurement.

Discussion, disposition, and/or follow up action:

- **Accepted**

**Review Section: 7. Test Procedure: Page 10, Table 2, 7.2.1.1 & 4** – Comment from Mr. Geibel: description of both tests in Table 2 and the tests themselves should either use kV Class or BIL to be consistent. **Proposed Change:** Revise table description to use BIL - 900 BIL and below, above 900 BIL

Discussion, disposition, and/or follow up action:

- **Accepted**

**Review Section: 7. Test Procedure: Pages 11 & 12, Subclauses 7.1.4, 7.2.1.1, 2, 4** – Comment from Mr. Geibel: Std. 4 has changed, and these subclauses should be updated to correlate. **Proposed Change:** **TBD**

Discussion, disposition, and/or follow up action:

- The Chair asked for manufacturers to take the lead to review Std. 4 and 19.00 for any discrepancies or issues.
  - Mr. Duran Stacy and Dr. Shibao Zhang volunteered to review the two documents.
  - Ms. Ashley Moran stated IEEE will provide IEEE Std. 4 and the redline version so that this task can be completed.

**Review Section: 7. Test Procedure: Page 12, Subclause 7.2, Line 20** – Comment from Mr. Geibel: Remove RIV or allow it only for 34kV class and below. **Proposed Change:** above 350 BIL must use apparent charge

Discussion, disposition, and/or follow up action: **Accepted**

- The following is some of the discussion that took place regarding this proposal:
  - Suggestion was made to make the limit 46kV
  - Suggestion was made to make the limit 69kV, which is the cutoff for test tap and is the traditionally considered the low voltage bushings.

- Suggestion we should follow the transformer standard, some bushings do not have taps so measuring RIV is often done.
- Suggestion was made that we could differentiate if using a test tap or voltage tap.
  - Comment was made that we should avoid specifying per the type of tap as some bushings are manufactured that require a voltage tap per standard but are using test taps.
- It was decided that it should specify BIL as the limit to be consistent. A motion was made and passed to accept that RIV is allowable for 350 BIL and below. Or above 350 BIL must use apparent charge.

**Review Section: 7. Test Procedure: Page 13, Subclause 7.2.1.3, Line 3** – Comment from Mr. Geibel: Propose to follow IEC and type test for margin of 5% over for negative chopped waves. **Proposed Change:** Crest voltage for positive polarity is per Table 1 in 19.01 and 5% higher for negative polarity.

Discussion, disposition, and/or follow up action: **TBD**

- Mr. Geibel, the original commenter, stated he wishes to review the other standards before presenting the comment to the WG for consideration. Due to the time difference in the original submittal he must review the material before a proper discussion can take place.

**Review Section: 7. Test Procedure: Page 13, Subclause 7.2.1.5** – Comment from Mr. Geibel: Remove RIV and add it to the appendix. **Proposed Change:** Withdrawn, due to previous agreement, limit RIV to allowed for 350 BIL and below.

Discussion, disposition, and/or follow up action: **Withdrawn**

- Mr. Geibel withdrew this proposal based on the previous agreement to allow RIV for bushings 350 BIL and below.

**Review Section: 7. Test Procedure: Page 13, Subclause 7.2.3.a Line 34** – Comment from Mr. Geibel: Hot spot detection is not what we want here. **Proposed Change:** Replace detected with determined and measured

Discussion, disposition, and/or follow up action: **Accepted**

**Review Section: 7. Test Procedure: Page 14, Subclause 7.2.3.d, Line 9** – Comment from Mr. Geibel: “300mm away” is vague. **Proposed Change:** Revise to 300mm plus ½ the “D” dimension from the bushing’s centerline (+/- 50mm)

Discussion, disposition, and/or follow up action: **Accepted**

**Review Section: 7. Test Procedure: Page 14, Subclause 7.2.3, Line 23** – Comment from Mr. Geibel: Add a note to reference 19.04. **Proposed Change:** “Note: for temperature rise testing of bushings rated over 5000 Amps and operating within an enclosure, see C57.19.04.”

Discussion, disposition, and/or follow up action: **Accepted**

**Review Section: 7. Test Procedure: Page 14, Subclause 7.2.3.f, Line 17, 18** – Comment from Dr. Shibao Zhang: Change in ambient temperature affects the temperature **Proposed Change:** Change 1°C to 1K rise

Discussion, disposition, and/or follow up action: **Accepted**

**Review Section: 7. Test Procedure: Page 14, Subclause 7.3.1, Line 36** – Comment from Mr. Geibel: “300mm away” is vague. **Proposed Change:** Revise to 300mm plus ½ the “D” dimension from the bushing’s centerline (+/-50mm)

Discussion, disposition, and/or follow up action: **Accepted**

Meeting was adjourned, 12:15pm

Respectfully Submitted,

WG Secretary Eric Weatherbee