

# Distribution Transformer Subcommittee Task force / Working Group Report

Document #: C57.12.32

Document Title: 

Enclosure Integrity
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Chair: Dan Mulkey Vice-Chair: Jerry Murphy

Secretary: Jeremy Van Horn

Current Draft Being Worked On: D2.3 Dated: October 2017

Meeting Date: 31 Oct 2017 Time: 8:00 AM

Attendance:	Members	<u>27</u>
	Guests	<u>27</u>
	Total*	<u>54</u>

\* For details of attendance, please refer to AMS system of the Transformers Committee

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## **Meeting Minutes / Significant Issues / Comments:**

1. Dan Mulkey called the meeting to order at 8:01 AM.
2. Introductions were performed.
3. Membership changes were noted.

The following six guests were added to membership:

- John Crotty
- Dwight Parkinson
- Igor Simonov
- Travis Spoone
- John Vartanian
- Lee Welch

The following members were removed from membership:

- Michael Faulkenberry
- Michael Miller
- Richard Smith
- Christopher Sullivan

4. Quorum was verified. The working group consisted of 44 members, requiring 22 for quorum. 22 members were confirmed at the time of counting. 27 members were confirmed afterwards through the roster.
5. Dan Mulkey made the call for any opposition to unanimous approval of the minutes. No opposition was raised so the minutes were unanimously approved.
6. Dan Mulkey made a call for essential patent statements and responses. None were brought forth.
7. Dan Mulkey made the call for any opposition to unanimous approval of the agenda. No opposition was raised so the agenda was unanimously approved.
8. Status of Standards:

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- a. C57.12.28 Standard for Pad-Mounted Equipment – Enclosure Integrity, Published July15, 2014, Revision Due: 12/31/2024
- b. C57.12.29 Standard for Pad-Mounted Equipment – Enclosure Integrity for Coastal Environments, Published August 8, 2014, Revision Due date 12/31/2024
- c. C57.12.31 Standard for Pole Mounted Equipment – Enclosure Integrity, Published September 20, 2010, Revision Due: 6/17/2020, Corrigenda approved May16, 2014
- d. C57.12.32 Standard for Submersible Equipment – Enclosure Integrity, Reaffirmed 3/7/2008, Revision Due: 12/31/2018, PAR expiration: 12/31/2019

### 9. Old Business:

- a. QUV presentation

Scott Abbott presented the final results from the QUV test that had been run by PPG and Sherwin-Williams. The purpose of the test was to understand QUV tests and determine if one could be used to replace the existing FS-40 bulb test. Both QUV-A and QUV-B bulbs were tested.

The QUV-B test, using a UVB-313EL bulb, is a very aggressive test which can cause degradation and loss of gloss that doesn't necessarily correlate to natural weathering according to Florida testing. This aggressiveness is due to the spectral distribution of QUV-B.

The QUV-A test, using a UVA-340 bulb, is a suitable test to weed out poor performing systems, if the test is performed correctly. The spectral distribution of QUV-A better matches daylight and has a better correlation to outdoor performance.

Based on the test results, Scott provided a proposed pass / fail requirement for both the QUV-A and QUV-B bulbs. For QUV-A, he proposed requiring either >70% gloss retention at 1000 hours or >50% gloss retention at 1500 hours for a passing result. For QUV-B he proposed >50% gloss retention at 500 hours for a passing result.

Scott mentioned that the QUV-A bulb is not currently used for preparing samples for SCAB testing and recommended proceeding with the QUV-B test as they have experience using this to prepare samples for SCAB testing.

A **motion** was made by Alan Wilks and seconded by Ed Smith to accept the wording in section 4.4.6 as proposed in the draft standard 2.3 which includes the use of the UVB-313EL bulb. A brief discussion followed where it was indicated that various ASTM tests are performed to test various parameters of the coatings. The motion passed unanimously.

### 10. New Business:

- a. Section 4.4.3 – Soak Test

Carlos Gaytan gave a presentation reviewing the soak test requirement in section 4.4.3 and his investigation into the comment made by RODE regarding Harrison's solution that is used in the soak test. He reviewed standard C37.100.1, C37.60 and C37.74 as part of the review.

The investigation reached the following conclusions:

1. The findings are that these standards do not specify a corrosion evaluation by means of a soak test or a soaking solution to be used other than Harrison's
2. The format in Annex C of C37.100.1, referenced in the comment, applies to pollutants in air, to define minimum creepage distance of glass and ceramic insulators

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3. The standards under the RODE scope do not include a soak test requirement
4. The current requirements in C57.12.32 are not lacking in scope for evaluation of submersible equipment
5. Based on this, it can be concluded that the RODE comment does not provide a specific proposed change, and any further consideration would require additional work to establish concrete definition to be evaluated by the WG C57.12.32, possibly including resistance to solvents present in urban runoff

Carlos also discovered a typo in the definition of Harrison's solution. The ratio between ammonium sulfate and sodium chloride had been stated as 3.5 to 0.05 instead of 3.5 to 0.5. Checking with other references, he confirmed the 3.5 to 0.5 ratio is correct.

A **motion** was made by Alan Wilks and seconded by Ron Stahara to accept the change to section 4.4.3 Soak Test as proposed in Draft Standard 2.3 which included the corrected definition of Harrison's solution. The motion passed unanimously.

An **action** was given to Jeremy Van Horn to review the remainder of the document for other incorrect references to Harrison's solution.

Patrick Ho asked if there was a hydrocarbon test that could be implemented into the standard in the future. It was suggested that this be considered for a future version of the document.

b. Annex B – SCAB test

Dan Mulkey mentioned that the same wording for QUV testing is used in Annex B for the set-up of the SCAB testing. Some experience is needed before this can be changed from a UV-B to a UV-A bulb.

c. Section 4.4.7 – SCAB test

There was a prolonged discussion regarding the SCAB test. Dan Mulkey summarized that the only change to the proposed wording is to include the two bulbs available for this test.

Dan Mulkey mentioned it is the only accelerated test where the failures actually look like failed equipment that comes back to the shop. Rebecca Giang mentioned this is the hardest test for a coating to pass.

Justin Minikel suggested that the 2005 and 2008 revisions of ASTM1654 are significantly different. It is easier for a system to pass the 2008 standard than the 2005 standard. The biggest difference between the revisions is the inspection criteria. The 2008 standard only looks at discoloration from rust, but does not consider delamination, blistering, loss of adhesion, etc.

It was noted that certified labs may only have access to the latest version of the standard or equipment that can only test to the latest version of the standard and suggested that the most recent version should be referenced. It was also noted that the date needs to be included in the reference if a specific version of the standard is to be referenced. It was mentioned that the ASTM standard is believed to be updated or reviewed every 5 years.

An **action** was given to Justin Minikel to prepare a sentence proposal for section 4.4.7 to include blisters and loss of adhesion.

d. Section 4.4.8 – Abrasion Test

Dan summarized that the proposed change is to add the first sentence in line 538 of the draft standard. It was discussed that it should not state "red" rust because not all rust is red, for example in the case of zinc or galvanized. It was also

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suggested that the word “substrate” should be used instead of “metal” since the substrate may not necessarily be metal.

A **motion** was made by Alan Wilks and seconded by Ron Stahara to change the multiple instances in the document where the evaluation criteria is listed as “no visible red rust” to “no visible rust” and where it states “no bare metal” to “no bare substrate”. The motion was unanimously approved.

It was suggested by Rebecca Giang that the thickness of the coating should be stated. Alan Wilks mentioned that the current specification is to run the test at the minimum coating thickness. It was clarified that the thickness refers to the thickness of the total coating system.

Patrick Ho suggested that the term “rust” be defined in the document, or replaced with the term “corrosion”.

Justin Minikel suggested that language be added to explain the intent of the test.

e. Section 4.4.9 – Gravelometer test

Dan Mulkey clarified that the purpose of the test is for when the transformer is sitting in the utility yard, not necessarily when it is in its service life.

Alan Wilks suggested that the pass / fail criteria is too subjective, but it is difficult to find another way to do it. Rebecca Giang agreed that it is subjective and that it is an easier test to pass than the version in C57.12.29.

An **action** was given to Jeremy Van Horn to check the C57.12.29 standard and ensure the language is consistent between the documents.

It was noted that the word “mini-mum” in line 553 doesn’t need a hyphen.

11. Next meeting—MAR 27, 2018 in Pittsburgh, PA, USA

Copies of the two reports will be posted to the website along with these minutes.

Submitted by:     Jeremy Van Horn

Date:                10/31/2017