C37.74 Working Group Meeting Minutes

February 2nd, 2023 10:00 AM – Virtual.

Chair: Kennedy Darko

Secretary: Travis Johnson

Notes taken by Karla Trost and Frank DeCesaro

Meeting Minutes

1. Call to Order — K Darko

The meeting was called to order at 10:04AM CST.

2. Call for Patents — K. Darko

a. Patent Slides

b. Copyright Slides

The slides were shown and no items were brought to the chair's attention.

3. Introduction of Members and Guests — K Darko

Introductions were entered into the meeting chat.

4. Attendance and quorum check — T. Johnson

13 members (of 18) and 1 guest were present in the meeting.
Quorum was achieved.

5. Approval of Agenda — K. Darko

C. Riley made a motion to approve the agenda. K. Trost seconded. Agenda was approved by consensus.

6. Approval of Previous meeting minutes — T. Johnson

The minutes will be edited and approved at the next meeting.

7. Action Items — K. Darko

I. Quick project schedule review

II. Editorial and Technical proposals / reviews draft D1.3

- Sub-clause 7.7.5.2 power-frequency current measurements.
    i. Proposal "substantially free of energization transients and DC offset currents (<=20%). DC offset >20% is allowed with agreement from the manufacturer is TRV requirements are met."
    ii. Note – substantially free needs to be defined and entered into this subclause.
    iii. ***The proposal was approved by consensus***.
- Sub-clause 7.7.4.6.2 Rated fault-making current test with fuses
    i. Proposal: Remove the underline words: If a switch is tested for a fault-making current rating with a fuse, then the test shall be the same as in IEEE

Std C37.30.4-2018 (subclause8.2) except the duration and the peak current may be limited by the fuse and the peak withstand current test (subclause 6.7.4.3) may be deleted.

ii. Proposal 2: Add note to 7.7.4.3 to indicate the test is not applicable to fused switches (maybe not needed).

iii. ***This will be reviewed in the next meeting so members can review in more detail.***

- Sub-clause 7.7.4.3 Peak withstand test.
  i. Proposal: replace the "f) rms symmetrical component" bullet with:

  The average rms symmetrical component of the current at the tenth cycle shall not be less than the rated short-circuit withstand current. For three-phase tests, the current in any phase shall not vary from the average of the currents in the three phases by more than 10%.
  OR
  Per C37.100.1-2018 (7.7.3): For three-phase tests, the ac component of the current in any phase shall not vary from the average of the currents in the three phases by more than 10%. The average of the rms values of the ac component of the tests currents shall be not less than the rated value.

  ii. Discussion on the intent of the original text – to ensure that the value of the current shall remain above the rated current. The addition (three phase variance) is not believed to be the same intent.
  iii. After discussion, the second proposal was rejected.
  iv. There was no opposition and no abstentions. ***The proposal was accepted.***
- Sub-clause 7.7.6 Thermal Runaway test
  i. Proposal to amend the current statement (SF6 switches shall not be opened or the SF6 gas and by-products released before thermal run-away tests) to address alternative gases and oils:

  Fluid (Example:SF6) insulated switches shall not be opened or the Fluid and by-products released before thermal run-away tests.

  ii. One member preferred that this statement be left to gases (vs inclusion of liquids.) "Gas insulated switches shall not be opened or the gas and by-products released before thermal run-away tests."
  iii. Suggestion that the statement need not be limited at all. "Switches shall not be opened before thermal run-away tests." It is believed this will cause confusion (open is a position.)
  iv. Motion by F. DeCesaro (C. Riley seconded) to use "Gas insulated switches shall not be opened or the gas and by-products released before thermal run-away tests.".
    1. ***There was no opposition and no abstentions. The proposal was accepted.***

- Sub-clause 7.33 and 7.76 Thermal Runaway Test
    i. Proposal to Either use 120% and 200% or 20% and 100% for consistency.

    7.3.3 states "The means of showing ability to carry rated current may be accomplished by means of a dc resistance test performed per 8.1, comparing the results to the resistance measurements taken before the short-circuit tests. Variance >20% on any phase would require a continuous current test to be performed"

    7.7.6 states "The means of showing ability to carry rated current at a stable temperature may be accomplished by means of a DC resistance test performed with at least 100 A is flowing, comparing the results to the resistance measurements taken before test 1 through test 6 of 7.4.2. Variance of >200% on any phase would require a Thermal runaway test to be performed"

    Discussion was clear that we want to be consistent in how we discuss the variance. **Kennedy will draft wording to present at next meeting using 120 and 200 values along with modified verbiage per 7.7.6.**

- Sub-clause 7.7.4.6 Switch operation following fault making test.
    i. Fault-making current tests shall be performed in accordance with IEEE Std 1247-2005 (subclause 8.5) except that three closing operations are required on the same specimen. Alternative methods of preconditioning as defined in IEEE Std 1247 shall not be allowed.

    Proposal: "Fault-making current tests shall be performed in accordance with IEEE Std C37.30.4-2018 (subclause 8.2) except that three closing operations are required on the same specimen. *The interval between the three tests shall not be less than 10 minutes unless the manufacturer agrees to a shorter interval. The DSG shall be allowed to cool for at least 5 min, and then it shall be opened under no-load conditions to demonstrate that welding of the contacts has not occurred. Only a single no load operation is allowed between the closing operations*.
    See example: C37.74 subclause 7.7.4.3 note (c).
    Need reference standard for no load operation."

    A question was asked "why have a set cooling period of 5 min". Manufacturers may not see that performing the no load operation before the 5 minutes is an issue with their design. It was commented that this allows micro welds time to cool.

A question was asked does the no load operation mean? Can a no load operation mean does the contact open with one pulling application or can it mean that it can open even if there are multiple pulls on it. Since it opens, isn't that still one operation?

Kennedy decided to table this item for now since the meeting time was expired. He will draft a two-part recommendation, one on the cooling time and the other regarding what a no load operation is and present at our next

7. Next Meeting: 02/10/2023 Virtual

8. **Adjournment**

- Caryn Riley moved to adjourn. Harm Bannink seconded. Meeting adjourned at 11:30 AM

Attendees:

Role		First Name	Last Name	Company Name	Virtual
Member		Donald	Martin	G&W Electric Co.	
Member		Francois	Soulard	Hydro-Quebec	X
Member		Jeffrey	Gieger	ABB/Elastimold	X
Member		Harold	Hirz	G&W	
Member		Harm	Bannink	G&W	X
Member		David	Beseda	S&C Electric Co.	X
Secretary		Travis	Johnson	Xcel Energy	X
Member		Karla	Trost	G&W Electric	X
Member		Ian	Rokser	Eaton Corp	
Member		Rahul	Jain	S&C Electric Company	X
Chair		Kennedy	Darko	G&W Electric Co	X
Member		Edwin	Almeida	Southern California Edison	X
Member		Caryn	Riley	Georgia Tech/NEETRAC	X
Member		Stephen	Pell	Siemens	
Member		Grant	Ringham	BC Hydro	
Member		Frank	DeCesaro	DeCesaro Consulting Services, LLC	X
Member		Joseph	Stemmerich	Trayer Engineering Corporation	x
Member		Victor	Savulyak		X