

Minutes of **C37.09 Amendment 1 Working Group**

Spring 2022 meeting

April 12, 2022, Orlando, Florida

Attendance 59 people were in attendance
30 Attendees applied for membership (in addition to Chair & Vice Chair)
29 guests participated

- =====
- 1) The meeting was called to order by Chair, Jan Weisker at 16:15 EDT
 - 2) Introduction of members and guests, Chair mentioned that during initial meeting of a working group any attendee may apply for membership. Although John Webb is serving as temporary secretary for the initial meeting, it is desired to assign a permanent secretary for the balance of the work and a call for volunteers was issued.
 - 3) Presentation of Behavior rules
<https://standards.ieee.org/wp-content/uploads/import/documents/other/Participant-Behavior-Individual-Method.pdf>
 - 4) Review of Patent Slides – *No issues were voiced by the meeting attendees*
 - 5) Discussion of Copyright Rules – *No issues were voiced by the meeting attendees*
Agenda was presented
 - 6) Chair indicated that iMeet Central working group space is requested but not ready
 - 7) PAR review, work to be done was explained
 - 8) The Excel spreadsheet which was the output of the PAR Study Group was reviewed and each open item identified for Amendment 1 was identified with a lead person and supporting team. The work list is attached as an annex to these minutes.
 - 9) Schedule presented
 - 10) Meeting adjourned at 18:00 EDT.
 - 11) Next meeting to be held at Fall Switchgear Committee Meeting or sooner by electronic means at discretion of chair

Reported by:

John Webb (acting Secretary)

jcwebb@ieee.org

Attachments:

- (1) WG membership and attendance
- (2) Agenda
- (3) Item List

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Attendance

Role	First Name	Last Name	Attend S22	Remark
Chair	Jan	Weisker	x	
Secretary	John	Webb	x	
Member	Koustubh	Ashtekar	x	
Member	Arben	Bufi	x	
Member	Eldridge	Byron	x	
Member	Stephen	Cary	x	
Member	Steven	Chen	x	
Member	Andrew	Chovanec	x	Applied for membership after the meeting
Member	Michael	Christian	x	
Member	Lucas	Collette	x	
Member	Michael	Crawford	x	
Member	Sergio	Flores	x	
Member	Robert	Hanna	x	
Member	Jeremy	Hensberger	x	
Member	Roy	Hutchins	x	Applied for membership after the meeting
Member	Todd	Irwin	x	
Member	Christopher	Jarnigan	x	
Member	Thomas	Keels	x	
Member	Carl	Kurinko	x	
Member	Vincent	Marshall	x	
Member	Kevin	McGlown	x	
Member	Sumitabha	Pal	x	
Member	Craig	Polchinski	x	
Member	Anthony	Ricciuti	x	
Member	Leonel	Santos	x	
Member	Victor	Savulyak	x	
Member	Carl	Schuetz	x	
Member	Jeffrey	Scott	x	
Member	Devki	Sharma	x	

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Member	Michael	Skidmore	x	
Member	Jacob	Walgenbach	x	
Member	Casey	Weeks	x	
Member	Terry	Woodyard	x	
Member	Richard	York	x	
Member	Samuel	Zaharko	x	
Member	Chovanec	Andrew		Membership requested by email
Member	Liu	Hua		Membership requested by email
Member	Rogers	Jon		Membership requested by email
Guest	Herman	Bannink	x	
Guest	Elizabeth	Bray	x	
Guest	John	Brunke	x	
Guest	Jason	Cunningham	x	
Guest	Patrick	Di Lillo	x	
Guest	Bruce	Fennell	x	
Guest	Benjamin	Hohnstadt	x	
Guest	Bharatwaj	Jagadeesan	x	
Guest	Chang Hoon	Lee	x	
Guest	Leo	Lopez	x	
Guest	Peter	Marzec	x	
Guest	Paul	Masterson	x	
Guest	Neil	Mc Cord	x	
Guest	David	Mitchell	x	
Guest	Raj	Nayar	x	
Guest	Miklos	Orosz	x	
Guest	Thomas	Pellerito	x	
Guest	Rakesh	Ranjan	x	
Guest	Jennifer	Santulli	x	
Guest	Daniel	Schiffbauer	x	
Guest	Matthew	Siena	x	
Guest	Vernon	Toups	x	

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Guest	Joseph	Usner	x	
Guest	Lukas	Zehnder	x	
Guest	Danish	Zia	x	
Guest	Andrew	Monroe	x	

**C37.09 Standard Test Procedure for AC High-Voltage Circuit Breakers
with Rated Maximum Voltage above 1000V
- Amendment 1**

Chair: Jan Weisker

Secretary: act. John Webb

IEEE Switchgear Meeting, April 12, 2022 – Orlando/FL

Agenda

- ❑ Welcome/Call to Order
- ❑ Introductions & Membership
- ❑ Mandatory Information
- ❑ Status and Review of the PAR
- ❑ Review of the Item List from PAR Study Group
- ❑ Time Schedule
- ❑ Adjourn the Meeting

Mandatory Information

<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>

<https://standards.ieee.org/wp-content/uploads/2022/02/ieee-sa-copyright-policy.pdf>

<https://standards.ieee.org/wp-content/uploads/import/documents/other/Participant-Behavior-Individual-Method.pdf>

Project Status PC37.09 Amd1

- 1) Item List prepared by PAR Study Group (Thank you, Terry)
- 2) PAR Approval by December 8, 2021
- 3) First Meeting, April 12, 2022, Orlando/FL

PAR Review

[PC37.09a.pdf](#)

Item List Review

Item List

Schedule PC37.09 Amd1

- 1) First meeting, April 12, 2022, Orlando/FL
- 2) Collect proposals through 2022/2023
- 3) Review proposals/open points during F22 / S23
- 4) Prepare D1
- 5) Form ballot group by end of 2023
- 6) Initial Ballot beginning of 2024
- 7) Discuss Comments during S24 meeting/form CRG
- 8) Prepare D2
- 9) 1st recirculation and comment resolution before F24
- 10) Prepare D3
- 11) 2nd recirculation and finalization in 2024

(PAR expires December 31, 2025)

Motion to Adjourn

Thank you!

C37.09 - Corrigendum 1

- | Approval of Minutes of last meeting

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
10	09+04	Technical	84	4.3.18	Low-Temp Test – TL and TLL are neither defined in .09 or referenced in .04	Define TL and TLL	Ted Burse	Amendment	T Burse	Contact Ted Burse
38	09	Technical	18	4.5.5	Text to ignore breakdowns that occur during preliminary tests can be ignored	add same text to all clauses where impulse voltages are applied to open vacuum interrupters (4.5.6, 4.5.7, 4.8.5.4.3)	Jan Weisker	Amendment	J Weisker	
49	09	Technical			Shunt reactor switching interruption ratings?	Clarify that there are no ratings	Joanne Hu	Amendment	Jan W., Victor H.	
51	09	Editorial	28	4.8.2.3.3	The variable " T " is not defined in the equation. From 62271-100, it is defined as "the duration of one cycle of rated frequency"	Include the definition of " T " in the text.	Tony Ricciuti	Amendment	T. Ricciuti	
53	09	Technical	29	4.8.2.3.3	References to " $\alpha = 18^\circ$ " is directly copied from 62271-100 as the Angle difference used for determination of arcing times, and is based on 1ms at 50Hz, but 1ms at 60Hz is 21.6° . This may not be an issue for laboratory capabilities, however.	Replace with " 18° for 50Hz, or 21.6° for 60Hz"	Tony Ricciuti	Amendment	T. Ricciuti, T. Woodyard, Jan W.	
21	09	Technical			BIL requirement for (effectively) no negative tolerance – I don't believe this improves the statistical outcome of the test.	Reconsider tolerance on BIL test, currently average shall be positive	John Webb		skip	skip

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
54	09	Editorial	29	4.8.2.3.3	References to c1) and c2) do not exist in the paragraph that begins with "If the behavior of the circuit breaker is such that the required conditions of item c1) and item c2) are not fulfilled..." There are 3 required conditions described in b), d) and e) on page 28.	Change " item c1) and item c2)" to " items b), d) and e)"	Tony Ricciuti	Amendment	T. Ricciuti	
55	09	Editorial	29	4.8.2.3.3	In the paragraph that begins "If the behavior of the circuit breaker is such that...", the procedure requires that the tests be continued by changing the tripping of the circuit breaker in steps of 18°. This corresponds to 1ms at 50Hz, but 1ms at 60Hz is 21.6°.	Replace "18°" with "1ms" or drop ms reference	Tony Ricciuti	Amendment	T. Ricciuti	doubled??
22	09	Technical			Requirement to perform all interruption tests in a minimum volume enclosure?	Requiremnt to be added?	John Webb	Amendment	J Webb	
23	09	Technical			Double Earth Fault in IEEE	Test necessary?	John Webb	Amendment	J Webb Jan Weisker	
24	09	Technical			Is single-phase asymmetrical test really necessary?		John Webb	Amendment	Skip	
37	09	Technical	14	4.4.2	This prohibits continuous current tests from being conducted at LaPem Temp test have to be conducted under standard ambient conditions	Remove subclause c)	John Webb	Amendment	J Webb, T. Woodyard, Mike Crawford	

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
39	09	Technical	51	4.8.4.3	T100s can be performed separately into T100s(a) and T100s(b). However, no description how to perform these and no requirements for T100s(a) regarding closing at voltage peak and voltage zero (leads to asymmetry current).	follow IEC 62271-100.	Jan Weisker	Amendment	H. Bannink, Jan Weisker	
40	09	Technical	56	4.8.6.6	there are no requirements to test the integrity of Vacuum Interrupter (VI) unit in an enclosure filled with SF6		Jan Weisker	Amendment	H Bannink, Henning M., Eldrige Byron	
41	09	Technical	66	4.10.9.1.7	Predefined operations for test duty 1 and 2 of three-phase LC/CC tests class C2. but there is no maximum number of tests if breakers prevent accurate control.		Jan Weisker	Amendment	H Bannink, Neil, Jan	Copy of IEC
42	09	Technical	70	4.10.9.2.7	Predefined operations for test duty 1 and 2 of three-phase LC/CC tests class C2. There is no maximum number of tests if breakers prevent accurate control. The 6 distributed shots on one polarity is achieved by step of 30°. This won't be possible in three phase tests. The second 6 shots for maximum arcing time at another polarity.		Jan Weisker	Amendment	H Bannink, Neil, Jan	

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
43	09+04				Testing covering kpp=1.3 & kpp=1.5; Previously, IEEE always considered kpp=1.5 covering kpp=1.3. How to cover metal-clad switchgear (S1) applications if system is grounded (kpp=1.3)?	Clarify.	John Webb (ht. Ted Burse)	Amendment	J. Webb and T Burse, Victor	
44	09	Technical	87	4.14	mention of high temp tests but not defintion/procedure	Check C37.016-2018, clause 7.11.5.3 for common clause	Andrew Chovanec	Amendment	Henning M., Andrew	
45	09	Technical			add references to C37.100.2	Refer Cap Sw tests to 100.2	Neil McCord	Amendment	J. Webb, N. McCord, R. Alexander	
46	09	Technical			consider appropriateness of determining minimum clearing time	align .09 with -100 as related to min arcing time	Ted Burse	Amendment	T. Burse, J. Webb, H. Bannik, T. Woodyard, D. Edwards, Jan W.	

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
47	09	Technical			formulas for calculating asymmetrical %DC for T100a 1ph need to be clarified	T100a 1ph needs to be clarified as compared to TD 7 defintion in 1999 version	Sergio Flores	Amendment	S. Flores, J. Webb, A. Chovanec	Informative Annex in 09? Move explanation to 010
52	09	Technical	28	4.8.2.3.3	The third asymmetry criteria (The product of the prospective short-circuit current peak value and the loop duration must be equal to or higher than 100% of the product of the specified values. Refer to Table 2 and Table 3" presents an impossible condition. If one of the previous asymmetry criteria is at the minimum of 90%, then even if the other criteria is at maximum of 110%, the product can only be 99%. This third asymmetry criteria requirement is not a part of the IEC 62271-100 test procedure on which it is based, so the requirement of the product is unprecedented.	Change the requirements to eliminate the impossible condition. Options could include: - reduce product to 99% - increase minimums to 91% - use other WG chosen values - eliminate this requirement	Tony Ricciuti	Amendment	T. Ricciuti, T. Woodyard, Jan W.	
56		Technical			Entity Par submitted to cover Short-Circuit current-restricting circuit breaker rated above 72.5kV	This falls under scope of .04 and .09	Terry Woodyard	Amendment	T. Woodyard, J. Webb	
60	09	Technical		4.5.2 i)		expand allowance to take advantage of symetry during chopped wave test	Mauricio	Amendment	Mauricio, J. Webb	

Amendments to C37.04 and 09

No	Std.	Category	Page	Sub-clause	Comment	Proposed Change	Proposer	Remark	to be prepared by	Remark S22
61	09	Technical		4.4.5		clarify accessible spots for temperature measurements	John Webb	Amendment	J. Webb, Henning M., Mike Crawford, Jake	
62	09+04	Technical			Utilities are making C37.06.1 mandatory and it is presently a recommended practice	incorporate requirements into C37.04 and C37.09 as an optional rating	N. McCord	Amendment		Move to 04