

C37.09a meeting minutes

Oklahoma City, OK

October 14, 2024

#### Welcome/Call to Order

Jan Weisker called the meeting to order at 1:30 pm.

Agenda was presented

#### Introductions & Membership

The attendees introduced themselves along with their affiliation.

41 members out of 59 were present for the meeting which met the quorum requirements. There were 87 people present in the meeting.

#### Approval of Agenda

Motion to approve – Andreas Bartels

2<sup>nd</sup> – John Webb

#### Mandatory Information

IEEE Copyright slide was presented.

The essential patent claim slide was presented. No essential patent claims were voiced during the call.

Other Guidelines slide was presented.

#### Approval of Minutes of last Meeting (May 30, 2024 virtual meeting)

Motion to approve – Vincent Marshall

2<sup>nd</sup> – John Webb

The minutes were approved by unanimous consent.

#### Project Status

A project status update was given summarizing the previous meetings.

Ballot results were shown.

Comment Resolution group was shown.

#### Comment Review

##### 4.4.2 comment

Altitude correction for current carrying test at labs above 1000 m.

The proposed change submitted by Ted Burse was presented. The proposed change was accepted by the group by unanimous consent.

##### Ambient air flow

A proposal was made to change the wording to "The air velocity shall be limited to no more than 0.5 m/s."

The proposed change was accepted by the group by unanimous consent.

##### Comments on 4.8.1 Table 1

The comment was to change from O-O-O to O-CO-CO. There was discussion regarding the comment. The group decided to reject the change based on there was no technical reason to make the change.

#### Comment on 4.8.4.2

Test duty T10 time  $t_3$  discussion on whether to allow exception if the value can't be met in the lab. There was discussion with comments on both sides to remove the  $t_3$  requirement. There was vote with 15 members to accept the proposed change and no abstentions. This did not meet 50% of the members present, so the proposed change was rejected. The standard will revert to how it was written previously.

#### Comment on 4.8.5.4.3

The group decided to use "insulating medium" to replace "SF6".

#### Comment on 4.13.9

F is used for two different values. Peak current factor and leakage rate. The working group decided to differentiate using subscripts.

#### Comment on 4.8.5.4.3

The group agreed it should be applied 90% of the rated switching impulse when performed as condition check.

#### Comment on 4.10

The rated line charging and cable charging comments were left in C37.04. The group decided to leave them in C37.09 to match. The newly made change will be removed from the amendment.

#### Comment on 4.13.3.1

A group was formed to reword this section.

Leslie Falkingham

Ted Burse

Andy Chovanek

Andreas Bartels

#### Time Schedule

A planned time schedule was presented to the working group. The PAR expires December 31, 2025.

#### Comment Resolution Group

There were no objections by the working group to empower the comment resolution group to make decisions on behalf of the working group.

#### Adjourn the Meeting

The agenda was completed and the meeting was adjourned at 2:47 pm

Minutes created by

Chris Jarnigan

#### Annexes:

- Agenda
- Attendance



PC37.09a Standard Test Procedure for AC High-Voltage Circuit  
Breakers with Rated Maximum Voltage above 1000V  
- Amendment 1

Chair: Jan Weisker  
Secretary: Chris Jarnigan

IEEE Switchgear Committee Meeting, October 14/15, 2024 – Oklahoma City/OK

# Agenda (approval needed)

- Welcome/Call to order
- Introductions and Declaration of Affiliation  
*Affiliation FAQs: <http://standards.ieee.org/faqs/affiliation.html>*
- IEEE SA Patent Policy: Call for Patents  
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>
- IEEE SA Copyright Policy:  
<https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/copyright-policy-WG-meetings.potx>
- Approval of Minutes of last Virtual Meeting
- Review of Work of CRG
- Review of Comments of Initial Ballot on Draft D1.2 (to be continued in second session)
- Time Schedule
- Adjourn the Meeting

# Introduction & Membership

Chair: Jan Weisker

Koustubh	Ashtekar
Ganesh	Balasubramanian
Herman	Bannink
Andreas	Bartels
Bob	Behl
Dan	Benedict
Craig	Bryant
Arben	Bufi
Stephen	Cary
Steven	Chen
Andrew	Chovanec
Michael	Christian
Lucas	Collette
Michael	Crawford
Federico	Di Michele
Sergio	Flores
Robert	Hanna
Jeremy	Hensberger
Victor	Hermosillo

Voting Members

Jennifer	Hunter
Todd	Irwin
Thomas	Keels
Dwight	Krause
Carl	Kurinko
Chang Hoon	Lee
Yong Woo	Lee
Vincent	Marshall
Paul	Masterson
Steven	May
Neil	Mc Cord
Henning	Milnikel
Fernando	Ordein
Sumitabha	Pal
Lalit	Patil
Isaac	Pounders
Aaron	Rexroad
Anthony	Ricciuti

Secretary: Chris Jarnigan

Ryan	Rowe
Leonel	Santos
Victor	Savulyak
Ben	Sax
Carl	Schuetz
Jeffrey	Scott
Devki	Sharma
Michael	Skidmore
Donald	Steigerwalt
Vernon	Toups
Jacob	Walgenbach
John	Webb
Casey	Weeks
Dan	Wolfe
Terry	Woodyard
Richard	York
Marcus	Young
Mina	Youssef
Li	Yu
Samuel	Zaharko

57 Members (59 Votes → Quorum = 30)

# Approval of the agenda



Motion to approve....

# **IEEE SA COPYRIGHT POLICY**

**By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

# **IEEE SA COPYRIGHT POLICY**

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
  - IEEE SA Copyright Policy, see
    - Clause 7 of the IEEE SA Standards Board Bylaws  
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
    - Clause 6.1 of the IEEE SA Standards Board Operations Manual  
<https://standards.ieee.org/about/policies/opman/sect6.html>
  
- IEEE SA Copyright Permission
  - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
  
- IEEE SA Copyright FAQs
  - <https://standards.ieee.org/faqs/copyrights/>
  
- IEEE SA Best Practices for IEEE Standards Development  
[http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best\\_practices\\_for\\_ieee\\_standards\\_development\\_051215.pdf](http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best_practices_for_ieee_standards_development_051215.pdf)
  
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
  - <https://standards.ieee.org/about/policies/opman/sect6.html>



## **PARTICIPANTS HAVE A DUTY TO INFORM THE IEEE**

- Participants **shall** inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants **should** inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**

## **WAYS TO INFORM IEEE**

- **Cause an LOA to be submitted to the IEEE SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or**
- **Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or**
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

## **OTHER GUIDELINES FOR IEEE WORKING GROUP MEETINGS**

- All IEEE SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
  - Don't discuss specific license rates, terms, or conditions.
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
    - Technical considerations remain the primary focus.
  - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
  - Don't discuss the status or substance of ongoing or threatened litigation.
  - Don't be silent if inappropriate topics are discussed. Formally object to the discussion immediately.

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For more details, see *IEEE SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

## **PATENT-RELATED INFORMATION**

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE SA Standards Board Bylaws***  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- ***IEEE SA Standards Board Operations Manual***  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the IEEE SA  
Standards Board Patent Committee  
Administrator at [patcom@ieee.org](mailto:patcom@ieee.org)**

# Approval of MoM

## Virtual Meeting 05/30/24

**C37.09a meeting minutes**

**Virtual meeting**

**May 30, 2024**

**Welcome/Call to Order**

Jan Weisker called the meeting to order at 9:30 am CDT.

**Introductions & Membership**

The attendees introduced themselves along with their affiliation.

27 members out of 59 voting members were present for the meeting, which did meet the quorum requirement of 26 with a membership greater than 50. There were 39 people present in the meeting.

**Agenda**

The agenda was reviewed.

**Mandatory Information**

IEEE Copyright slide was presented. The essential patent claim slide was presented. No essential patent claims were voiced during the call. The meeting guidelines slide was presented.

**Approval of Minutes from previous meeting**

Terry Woodyard made a motion to approve the minutes from the Fort Lauderdale, FL meeting.

Casey Weeks seconded the motion.

The motion was carried by unanimous consent.

**Project Status**

Project status update was provided.

# Project Status PC37.09 Amd1



- First Meeting, April 12, 2022, Orlando/FL
- Second Meeting, October 18, 2022, Burlington/VT
- Third Meeting, April 18, 2023, Clearwater/FL
- Forth Meeting, October 10, 2023, San Diego/CA
- Fifth Meeting, March 12, 2024, Virtual
- Sixth Meeting, April 2, 2024, Fort Lauderdale, FL
- Seventh Meeting, April 30, 2024, Virtual

# Project Status PC37.09 Amd1

- Initial Ballot  
08/05/24 to 09/04/24
- CRG formed by e-mail

Chris Jarnigan	Utility
Mike Crawford	Manufacturer
Ted Burse	Manufacturer
John Webb	Manufacturer
Dave Mitchell	Consultant
Dan Schiffbauer	Manufacturer
Dan Benedict	Utility

- CRG met virtually:
  1. 10/01/24
  2. 10/07/24

**Ballot Group Members** 111  
Minimum should be 10



<u>Votes counted in approval rate:</u>		<u>Votes not counted in approval rate:</u>	
Approve	74	Disapprove Without MBS	1
Disapprove With MBS	10	Comment(s)	
Comment(s)		Abstentions	4
<b>Total</b>	<b>84</b>	<b>Total</b>	<b>5</b>

<b>Total Votes:</b>	89	<b>Total Comments:</b>	229
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# Comment review



I-1	Bergman, W.J. (Bill)	Approve	Technical	10	4.4.2	65	<p>b) If ambient air flow can affect the test results, the air velocity should be limited to no more than 0.5 m/s.</p> <p>It is almost impossible to exclude some situation where ambient air flow can NOT affect the test results or it's effect is unknown.</p>	No	<p>Change this subclause to read b) If ambient air flow can affect the test results OR IS UNKNOWN OR UNPROVEN, the air velocity SHALL be limited to no more than 0.5 m/s.</p>
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# Comment review



I-108	Woodyard, Terry	Disapprove	Technical	10	4.4.2	67	This is very ambiguous as written, it needs to be specific.	Yes	The circuit breaker shall be tested under the usual service conditions prevailing at the test facility (refer to IEEE Std C37.04), except as stated in item a). No altitude correction factors need to be applied, but the test altitude should be noted in the test report if above 1000 m.
I-121	Webb, John	Disapprove	Technical	10	4.4.2	68	"Altitude correction is not necessary" implies that it may be permitted, however (1) neither C37.04, C37.09 nor C37.010 include altitude correction factors for continuous current (they do exist in C37.20.2, C37.20.1, as well as C37.30.1, and although effectively the same, some differences do exist); I believe the intent was to definitively NOT apply altitude correction factors for type tests conducted above 1000 m.	Yes	Change to "Altitude correction factors shall not be applied"
I-69	Burse, Ted	Disapprove	Technical	10	4.4.2	68	The sentence beginning on line 68 could be improved for clarity.	Yes	Change "Altitude correction is not necessary, but the test altitude should be noted in the test report if above 1000 m." to "Testing at elevations above 1000 m is permissible but altitude correction factors shall not be applied. If the test is performed at an altitude above 1000 m the altitude shall be noted in the test report."

# Comment review



I-168	Bosma, Anne	Disapprove	Technical	12	4.8.1	137	SLF tests should be performed using the rated operating sequence	Yes	Change to the rated operating sequence
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# Comment review



I-220r	Schiffbaue, Daniel	Disapprove	Technical	15	4.8.4.2	238	The t3 time to peak parameter for T10 is based on representative system topology and accounts for a significant portion of the stress imposed upon the interrupting device. For example, increasing the time to peak from 36 to 62.5 microseconds (72.5 kV) or from 24 to 40 microseconds (38 kV) can make it much easier to successfully clear the duty - especially for gas interrupters. Why, for a real-life duty such as T10, is it OK to put equipment on the system that has not demonstrated the ability to clear faults with the standard TRV? More discussion on this topic is needed.	Yes	Do not insert the sentence proposed in lines 238-240.
I-170	Hermosillo, Victor	Disapprove	Technical	15	4.8.4.2	238	There is no reference to the requirement for time delay, u', t' or RRRV of a test in which the time to peak is allowed to increase from T10 to T60.	No	Remove this subclause.
I-169	Hermosillo, Victor	Disapprove	Technical	15	4.8.4.2	238	The inserted sentence allows for the reduction of the time to peak during T10 terminal fault test to the value specified for T60. This is equivalent to an increase in time to peak of about 100% for S1 and 62 to 74% for S2 ratings, justified by "laboratory limitations". There is already an increase in time to peak from S2 to S1 class. It may allow for a loophole in qualification of a device that is not capable of withstanding the TRV.	No	The standard already allows qualification for S1 class with reduced severity. Remove this allowance justified by a undefined "laboratory limitation".
I-136	Webb, John	Disapprove	Editorial	15	4.8.4.2	238	Per the instructions, and to make clear this is all new material, the added text should be underscored.	Yes	Change lines 238 through 240 to underscore text
I-118	Bannink, Herman	Approve	Technical	15	4.8.4.2	238	in the case small values of time t3 cannot be met for test duty T10, add also for T30 (this is same practical issue)	No	include also T30.
I-79	Burse, Ted	Disapprove	Editorial	15	4.8.4.2	238	The sentence beginning on line 238 could be improved for clarity.	No	Change the sentence beginning on line 238 to "For rated voltages of 72.5kV and below, if the values of time t3 cannot be met for test duty T10 due to laboratory limitations, a higher value for t3 may be used as long as it is less than the value specified for the T60."
I-117	Bannink, Herman	Approve	Technical	15	4.8.4.2	240	"as long as it is less than the value specified for the T60" keep it in line with the IEEE C37.60 (reclosers), they using T100 as a maximum.	No	change T60 to T100.

# Comment review

## 7.105.5.5 Test-duty T10

- a) For rated voltages less than 100 kV, the specified values are given in
  - Table 16 and Table 17 for class S1 circuit-breakers,
  - Table 18 and Table 19 for class S2 circuit-breakers.
- b) For rated voltages of 100 kV and above, the specified standard values are given in Table 20 and Table 21. The time  $t_3$  is a function of the natural frequency of transformers.

In case that small values of time  $t_3$  cannot be met, the shortest time that can be met shall be used. The values used shall be stated in the test report.

## 7.105.5.4 Test-duty T30

- a) For rated voltages less than 100 kV, the specified values are given in
  - Table 16 and Table 17 for class S1 circuit-breakers,
  - Table 18 and Table 19 for class S2 circuit-breakers.
- b) For rated voltages of 100 kV and above, the specified standard values are given in Table 20 and Table 21.

In case that small values of time  $t_3$  cannot be met, the shortest time that can be met shall be used. The values used shall be stated in the test report.

# Comment review



I-221	Schiffbauer, Daniel	Disapprove	Editorial	17	4.8.5.4.3	310	SF6 should not be assumed.	Yes	Delete "SF6" from the sentence.	ACCEPTED	changed to fluid
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# Comment review



I-185	Long, R	Disapprove	Editorial	15	4.8.4.3	251	It is confusing to use "F" for both the Maximum peak current factor in 4.9.1 f), and also the leak rate in 4.13.8 and 4.13.9	Yes	Consider adding a reference to 4.9.1.f) here: " — Maximum peak current $F \times I$ "(see item f) in 4.9.1)"
I-205	Long, R	Disapprove	Technical	25	4.13.9	546	Again at the end of item s) we use symbol "F" for "leak rate". It is the same symbol we use as the factor to calculate the asymmetrical peak value of the short circuit current from the rms symmetrical value.	Yes	Can we use "F" with a subscript "LR" for leak rate, and "F" with subscript "PK" for the peak current factor - or another way to clarify what we mean?
I-211	Long, R	Disapprove	Technical	27	4.13.10	562	Again at the end of item a) we use symbol "F" for "leak rate". It is the same symbol we use as the factor to calculate the asymmetrical peak value of the short circuit current from the rms symmetrical value.	Yes	Can we use "F" with a subscript "LR" for leak rate, and "F" with subscript "PK" for the peak current factor - or another way to clarify what we mean?
I-212	Long, R	Disapprove	Technical	27	4.13.10	580	Again at the end of item k) we use symbol "F" for "leak rate". It is the same symbol we use as the factor to calculate the asymmetrical peak value of the short circuit current from the rms symmetrical value.	Yes	Can we use "F" with a subscript "LR" for leak rate, and "F" with subscript "PK" for the peak current factor - or another way to clarify what we mean?

# Comment review



I-222	Schiffbauer, Daniel	Disapprove	Technical	18	4.8.5.4.3	335	Alignment with the IEC voltage condition check would have both the direct and indirect test methods performed with 90% of the switching impulse value. This is what was presented and agreed in the working group.	Yes	Replace 80% with 90%.
I-48	Bronsveld, Arjan	Disapprove	Technical	18	4.8.5.4.3	335	The amendment calls for a test at only 80% when a T10 circuit is used, while a 90% test is called for when using an impulse generator	Yes	Correct the level to 90% for the T10 circuit as well.

# Comment review



IEEE PC37.04a/D1.4, June 2024

68 **5.8.1 Rated line-charging capacitive breaking current (LC)**

69 *Delete the last sentence of 5.8.1*

70 The rated line-charging breaking current is the maximum line-charging current that the circuit breaker shall  
71 be capable of breaking at its rated voltage under the conditions of use and behavior prescribed in this  
72 standard. ~~The specification of a rated line-charging breaking current is mandatory for all class S2~~  
73 ~~circuit breakers.~~

74 **5.8.2 Rated cable-charging capacitive breaking current (CC)**

75 *Delete the last sentence of 5.8.2*

76 The rated cable-charging breaking current is the maximum cable-charging current that the circuit breaker  
77 shall be capable of breaking at its rated voltage under the conditions of use and behavior prescribed in this  
78 standard. ~~The specification of a rated cable-charging breaking current is mandatory for all class S1~~  
79 ~~circuit breakers.~~



# Comment review



I-87	Burse, Ted	Disapprove	Technical	18	4.10		The definition for a circuit breaker class S1 given in C37.04 states "Circuit breaker with rated maximum voltage less than 100 kV intended to be used in a cable system." it does not seem rational or technically correct to delete a test for the application of a circuit breaker in accordance with its stated definition.	Yes	Reinstate the words "(required for S1 circuit breakers, optional for S2 circuit breakers)" on lines 354 and 355.
I-86	Burse, Ted	Disapprove	Technical	18	4.10	354	The word "current" should not be removed.	Yes	Reinstate the word "current" on line 354.
I-227	York, Richard	Disapprove	Technical	18	4.10.1	352	Requirements for line charging breaking current ratings has been changed in C37.04a; revise this section to maintain consistency.	Yes	remove the phrase "(required for all S2 circuit breakers, optional for S1 circuit breakers)" from a)  and remove "(optional for all circuit breakers)" from b) through e).

# Comment review



I-216	Long, R	Disapprove	Technical	18	4.10.1	354	In item b) the proposal to delete the text, "... current (required for S1 circuit breakers, optional for S2 circuit breakers) that follows, "Rated cable-charging breaking", may have been an error.	Yes	Consider restoring "current" after "Cable charging breaking". It should not have been deleted. In 348 we already say that capacitor switching tests are applicable to all circuit breakers that have an assigned [capacitance current switching] rating. In a) we say "Rated line-charging current breaking current rating is required [mandatory] for class S2 circuit breakers". And in c), d) and e) we declare that these ratings are "(optional for all circuit breakers)". And yet in b) for the cable-charging switching current rating, we propose nothing - not even that it is "optional". Clarify what is intended in b).
I-167	Webb, John	Disapprove	General	18	4.10.1	354	There is an inconsistency between leaving the parenthetical text in a) and striking it in b). The proposal in C37.04a was to make all capacitive switching (both S1 and S2) optional, results of initial ballot of C37.04a were to make line switching mandatory for S2 (as shown) AND cable switchign mandatory for S1 -- but now in strikethrough.	No	Restore the struck-through text on 354 to normal text. It would also be acceptable to simply remove all changes to 4.10.1 and leave the existing text in C37.09-2018 as is.

# Comment review



I-93	Burse, Ted	Disapprove	Technical	21	4.13.3.1	412	The newly added 4.13.3.1 is redundant and therefore not needed. Data set 1 in Table 10 is required for all types of circuit breakers as a pretest check which includes this requirement.	Yes	Delete 4.13.3.1 in its entirety and renumber 4.13.3.2 to 4.13.3.1.
I-94	Burse, Ted	Disapprove	Technical	21	4.13.3.2	416	The newly added "4.13.3.2 Vacuum integrity after mechanical and environmental type tests" is in direct conflict with what is stated in clause 5.7.	Yes	Change "Vacuum integrity after mechanical and environmental type tests" to "Vacuum interrupter integrity after mechanical and environmental type tests". Delete the text "4.13.3.2.1 Gaseous insulating medium other than air at atmospheric pressure" on line 417, and add "This test is not required for circuit breakers utilizing vacuum interrupters with an insulation media external to the vacuum interrupter is than air at atmospheric pressure. In the case of a circuit breaker design that utilizes vacuum interrupters with an insulation media external to the vacuum interrupter that is other than air at atmospheric pressure, one of the following tests shall be performed."

# Comment review

I-194	Long, R	Disapprove	Editorial	20	4.13.3	407	The title of Table 10 says "Mechanical endurance and cold test datasets" but that is not consistent with the title of the subclause or the text of the rest of the subclause.	Yes	Replace "...cold..." with "...environmental..."
I-92	Burse, Ted	Disapprove	Technical	20	4.13.3	407	Row m) of Table 10 is applicable to all circuit breakers posttest.	Yes	Make row m) of Table 10 also a part of data set 3 and delete the proposed 4.13.3.2.2.
I-91	Burse, Ted	Disapprove	Technical	20	4.13.3	407	The combination of changes to the reference clause column for row l) in Table 10 and the newly added "4.13.3.2 Vacuum integrity after mechanical and environmental type tests" is in direct conflict with what is stated in clause 5.7. Row m), which should also be a part of data set 3, refers to 4.5.4.1 which requires a dielectric test across the open contacts of a circuit breaker. This is essentially what 5.7 requires. Therefore the vacuum integrity test in row l) could be changed to a vacuum interrupter integrity test to avoid confusion of terms and requirements.	Yes	Change the "vacuum integrity test (if applicable)" in row l) to a "vacuum interrupter integrity test (if applicable)" that is a part of data set 3 only and change the reference clause to 4.13.3.2 (which should be numbered 4.13.3.1 per another comment)
I-90	Burse, Ted	Disapprove	Technical	20	4.13.3	407	The title of Table 10 is not fully correct as stated.	Yes	Change the word "cold" to "environmental" in the title of Table 10 to match the title of 4.13.3.

# Comment review

## How to be finalized?

- Virtual Meeting
- Or empower CRG
  - WG Vote

# Schedule PC37.09 Amd1

- First meeting, April 12, 2022, Orlando/FL
- Second meeting, October 18, 2022, Burlington/VT
- Third Meeting, April 18, 2023, Clearwater/FL
- Forth Meeting, October 10, 2023, San Diego/CA
- Fifth Meeting, March 12, 2024, virtual
- Draft D1.0 prepared
- Sixth Meeting, April 2, 2024, Fort Lauderdale/FL
- Get permission to ballot by WG and HVCB
- Draft D1.1 circulation within the WG – through iMeet Central
- Form ballot group (validity 6 month) after Summer of 2024 – running until June, 20
- After today's meeting, complete Draft D1.x and send to MEC
- Initial Ballot before F'24 meeting, as soon as possible
- Comment resolution by e-mail and virtual group meetings **and the F'24 meeting**
- Prepare **Dx.x** and re-circulate
- Send Draft to RevCom by **February 14th** for **March** meeting
- Finalization in **2025**

(PAR expires December 31, 2025)

# Adjourn the Meeting



Role	First Name	Last Name	Company Name	S22	F22	S23	F23	3/24	S24	5/30	F24
Chair	Jan	Weisker	Siemens Energy	x	x	x	x	x	x	x	x
Secretary	Christopher	Jarnigan	Southern Company	x	x	x	x	x	x	x	x
Voting member	Koustubh	Ashtekar	Siemens Industry, Inc.	x	x	x	x				x
Voting member	Ganesh	Balasubramanian	Eaton			x		x	x		
Voting member	Herman	Bannink	G&W Electric	x	x	x		x	x		
Voting member	Andreas	Bartels	Powell Industries			x	x	x	x	x	x
Voting member	Bob	Behl	JST POWER EQUIPMENT			x			x		
Voting member	Dan	Benedict	PPL				x	x	x	x	x
Voting member	Craig	Bryant	Duke Energy		x	x		x	x	x	
Voting member	Arben	Bufi	Meiden America	x	x	x	x		x		
Voting member	Stephen	Cary	2 Phase Solutions	x		x	x				
Voting member	Steven	Chen	Eaton Corporation	x	x	x	x	x	x	x	x
Voting member	Andrew	Chovanec	Power Grid Components	x	x	x	x	x	x	x	x
Voting member	Michael	Christian	ABB	x	x	x	x		x	x	x
Voting member	Lucas	Collette	Duquesne Light Co.	x	x	x	x	x	x	x	x
Voting member	Michael	Crawford	Mitsubishi Electric	x	x	x	x		x	x	
Voting member	Federico	Di Michele	CESI SpA		x	x		x			
Voting member	Sergio	Flores	Schneider Electric US, Inc.	x	x	x	x		x		x
Voting member	Robert	Hanna	JST Power Equipment	x	x					x	x
Voting member	Jeremy	Hensberger	Mitsubishi Electric	x	x	x	x		x		x
Voting member	Victor	Hermosillo	GE Grid Solutions		x		x		x	x	x
Voting member	Jennifer	Hunter	MEPPI		x	x	x		x	x	x
Voting member	Todd	Irwin	GE Grid Solutions	x		x			x		
Voting member	Thomas	Keels	kEElectric Engineering,	x	x		x		x		x
Voting member	Dwight	Krause	Black & Veatch			x			x		x
Voting member	Carl	Kurinko	Hitachi Energy	x	x	x	x	x	x		x
Voting member	Chang Hoon	Lee	HYOSUNG	x	x	x	x		x		x
Voting member	Yong Woo	Lee	KERI			x	x		x		x
Voting member	Vincent	Marshall	Southern Company	x	x	x	x	x	x	x	x
Voting member	Steven	May	Southern Company		x	x	x	x	x	x	x
Voting member	Neil	McCord	KEC Precision LLC	x	x	x	x		x	x	x
Voting member	Henning	Milnikel	Siemens AG				x	x	x		
Voting member	Fernando	Ordein	Dominion Energy			x			x	x	x
Voting member	Sumitabha	Pal	Schneider Electric	x	x	x	x	x	x		x
Voting member	Lalit	Patil	Eaton			x	x		x		x
Voting member	Isaac	Pounders	Meiden			x	x		x		x
Voting member	Aaron	Rexroad	Meiden			x	x		x		
Voting member	Anthony	Ricciuti	EATON	x	x	x	x	x	x	x	x
Voting member	Ryan	Rowe	TCI			x			x		x
Voting member	Leonel	Santos	Schneider Electric	x		x	x	x	x		
Voting member	Victor	Savulyak	KEMA	x	x	x	x			x	x
Voting member	Ben	Sax	Nashville Electric Service			x			x		x
Voting member	Carl	Schuetz	ATC	x	x	x	x	x	x		x
Voting member	Jeffrey	Scott	Ameren	x	x	x	x		x		
Voting member	Devki	Sharma	Self affiliated	x		x			x		
Voting member	Michael	Skidmore	AEP	x	x	x			x		x
Voting member	Donald	Steigerwalt	Duke Energy		x	x	x	x		x	x
Voting member	Vernon	Toups	Siemens Energy Inc	x	x	x	x	x	x		x
Voting member	Jacob	Walgenbach	Siemens	x	x	x	x	x	x	x	
Voting member	John	Webb	ABB	x	x	x	x	x	x	x	x
Voting member	Casey	Weeks	Siemens Energy, Inc.	x	x	x	x		x	x	x
Voting member	Dan	Wolfe	MEPPI		x	x	x	x	x	x	x
Voting member	Terry	Woodyard	Siemens Industry, Inc.	x	x	x	x	x		x	
Voting member	Richard	York	Mitsubishi Electric	x	x	x	x		x		x
Voting member	Marcus	Young	Mitsubishi Electric		x	x	x		x		x
Voting member	Mina	Youssef	Eaton Corporation		x		x		x	x	x
Voting member	Li	Yu	EATON		x	x			x		
Voting member	Samuel	Zaharko	MEPPI	x	x	x			x	x	x
Non-voting member	Anatoly	Akhunov	HICO			x	x		x		x
Non-voting member	Brian	Alexander	S&C Electric						x		
Non-voting member	Samuel	Andris	KEMA Labs		x	x	x				



Non-voting member	Michelle	Antantis	Duquesne Light						X		
Non-voting member	Mauricio	Aristizabal	Hitachi Energy		X	X	X	X		X	
Non-voting member	Jesus Manuel	Avila	ABB Mexico						X		
Non-voting member	Eloy	Banda	Siemens Energy								X
Non-voting member	Andy	Beckel	Xcel Energy			X	X				
Non-voting member	George	Becker	Power Engineers Inc.		X	X	X				
Non-voting member	Zachary	Beecher	Power Grid Components						X	X	X
Non-voting member	Brian	Berner	Power Grid Components				X	X			X
Non-voting member	Sanket	Bolar	Oncor				X		X		X
Non-voting member	Albane	Bornuat	GE Grid Solutions						X		X
Non-voting member	Nick	Bouche	Switchgear Power Solutions								X
Non-voting member	Elizabeth	Bray	Southern Company	X							
Non-voting member	Jeff	Brodgon	Georgia Transmssion			X			X		
Non-voting member	Arjan	Bronsveld	Hitachi Energy						X		X
Non-voting member	Adam	Brooks	Duke Energy			X	X	X			X
Non-voting member	John	Brunke	Power Engineers	X							
Non-voting member	Ted	Burse	Powell Industries, Inc.		X			X			X
Non-voting member	Sudarshan	Byreddy	Burns & McDonell				X				
Non-voting member	Ping	Cai	Sieyuan Electric								X
Non-voting member	Jared	Cantu	OMICRON Electronics								X
Non-voting member	Dave	Collette	Mitsubishi Electric			X			X		
Non-voting member	Ivan	Contreras	ABB				X				
Non-voting member	Jason	Cunningham	Southern States, LLC	X	X	X			X		X
Non-voting member	Matthew	Cuppett	Hitachi Energy						X		X
Non-voting member	David	Dart	NOJA Power						X		
Non-voting member	Henry	De Villiers	Arizona Public Service								X
Non-voting member	Patrick	Di Lillo	Consolidated Edison Co.	X	X		X				
Non-voting member	Lissy	Diaz	FPL						X		X
Non-voting member	Jeff	Door	H-J			X			X		X
Non-voting member	Max	Eastman	Black & Veatch			X			X		
Non-voting member	Leslie	Falkingham	VIL			X					X
Non-voting member	Bruce	Fennell	Nashville Electric Service	X							
Non-voting member	Andrew	Fernandes	Trayer				X			X	
Non-voting member	Peter	Glaesman	PCORE Electric Company		X						
Non-voting member	Mauricio	Gonzalez	Avangrid				X				
Non-voting member	Sathish	Govindarajan	Schneider Electric								X
Non-voting member	John	Harley	First Power Group								X
Non-voting member	Oliver	Hartmann	Siemens Energy Inc						X		
Non-voting member	Nadia	HASNAOUI	GE		X						
Non-voting member	Christian	Heinrich	Siemens AG								X
Non-voting member	Eduardo	Henriet	Siemens Energy								X
Non-voting member	Benjamin	Hohnstadt	DTE	X							
Non-voting member	Zinan	Huang	Sieyuan Electric								X
Non-voting member	Roy	Hutchins	Georgia Power Company	X	X						
Non-voting member	Bharatwaj	Jagadeesan	Southern States LLC	X							
Non-voting member	Shah	Jamal	Avangrid								X
Non-voting member	Darin	Jensen	Meiden American		X		X				
Non-voting member	Dave	Johnson	Self affiliated			X					
Non-voting member	Hyounjgin	Joo	Hyundai Electric & Energy		X						
Non-voting member	Jeff	Jordan	Southern States				X				
Non-voting member	Blair	Kerr	G&W Electric						X		
Non-voting member	SangTae	Kim	HICO America	X	X	X					
Non-voting member	Yun Seong	Kim	KERI			X			X		
Non-voting member	Ramaprasad	Lakshminarayana	Doble Engineering Co								X
Non-voting member	Brad	Leccia	Eaton								X
Non-voting member	Hua Ying	Liu	Southern California Edison							X	
Non-voting member	Linda	Liu	Sieyuan Electric						X		
Non-voting member	Adrian	Lopez	Powell Industries		X				X		X
Non-voting member	Leo	Lopez	WIKI Instrument	X	X	X	X		X		X
Non-voting member	Chunming	Ma	Burns & McDonell				X				X
Non-voting member	Jesse	Markham	ECI								X
Non-voting member	Peter	Marzec	S&C Electric	X							X
Non-voting member	Paul	Masterson	Meiden America	X		X	X		X		

Non-voting member	Kevin	McGlown	JST Power Equipment	x							
Non-voting member	Kenneth	McKinney	Underwriters		x						
Non-voting member	Gary	Meekins	Southern States					x			x
Non-voting member	Anne	Miller	TCI								x
Non-voting member	Sergio	Miranda	ABB Mexico					x			
Non-voting member	David	Mitchell	Southern States	x	x	x		x	x	x	x
Non-voting member	Andrew	Monroe	Southern Company	x							
Non-voting member	Stephanie	Montoya	MKI				x				
Non-voting member	Anthony	Natale	HICO				x		x		
Non-voting member	Raj	Nayar	Siemens	x		x					
Non-voting member	Miklos	Orosz	Circuit Breaker	x	x				x		
Non-voting member	John	Owen	Powertech Labs			x				x	
Non-voting member	Sharan	Parikh	Duke Energy						x		
Non-voting member	Mark	Pattison	H-J			x			x		x
Non-voting member	Conrad	Pecile	Myers Power Products				x			x	
Non-voting member	Thomas	Pellerito	DTE ENERGY	x							
Non-voting member	Mark	Peterson	Xcel Energy			x					
Non-voting member	Craig	Polchinski	Mitsubishi Electric Power	x					x	x	
Non-voting member	Rakesh	Ranjan	Esgee Technologies Inc.	x							
Non-voting member	Justin	Rebovich	GE Grid Solutions						x		x
Non-voting member	Frank	Richter	50 Hz Transmission				x				x
Non-voting member	Brian	Roberts	Southern States			x	x		x		x
Non-voting member	Jon	Rogers	Siemens Energy Inc				x				
Non-voting member	Sergiy	Rogozkhin	Tavrida Electric GmbH						x		x
Non-voting member	Oscar	Salas	Duke Energy			x					
Non-voting member	Alex	Salinas	Doble/Vanguard			x					
Non-voting member	Jennifer	Santulli	IEEE-SA	x				x			
Non-voting member	Daniel	Schiffbauer	Toshiba International	x	x	x	x	x	x	x	x
Non-voting member	Skyler	Schwartz	American Transmission Co								x
Non-voting member	June	Seo	HD Hyundai Electric				x				
Non-voting member	Aleksandr	Sergeyenko	Tavrida			x		x		x	
Non-voting member	John	Sestito	Hyundai				x		x		
Non-voting member	Paul	Shiller	First Power Group								x
Non-voting member	Aniket	Shirode	ABB						x		
Non-voting member	Matthew	Siena	Duke Energy	x							
Non-voting member	Hall	Sigmon	Siemens			x					
Non-voting member	R Kirkland	Smith	TCARA		x				x		x
Non-voting member	Jeremy	Sneath	Electranix Corp						x		
Non-voting member	Donnie	Swing	Powell			x					
Non-voting member	John	Tarleton	Southern States				x		x	x	x
Non-voting member	Timothy	Terry	Meiden America						x		x
Non-voting member	Truett	Thompson	Siemens		x						
Non-voting member	Joseph	Usner	AEP	x	x	x			x		
Non-voting member	Jeffrey	Ward	Doble Engineering Co			x			x	x	x
Non-voting member	Jerry	Wen	BC Hydro						x		
Non-voting member	Michael	Wong	Entergy						x		
Non-voting member	Lukas	Zehnder	Hitachi Energy	x							
Non-voting member	Gigi	Zhang	HICO America			x					
Non-voting member	Xin	Zhou	Eaton		x						
Non-voting member	Danish	Zia	UL LLC	x							