Minutes of Meeting
High Voltage Circuit Breaker Subcommittee

Spring 2024
Westin Fort Lauderdale Resort, Fort Lauderdale, FL
Wednesday, April 3, 2023 from 3:45 to 5:30

The chair called the meeting to order at 3:45.

Introduction of all participants including members and officers.
95 participants in attendance
41 of 57 voting members present – **quorum OK**.
Excused HVCB voting members: R. Alexander, G. Becker, D. Caverly, F. Di Michele, D. Johnson, H. Liu, M. Palazzo and M. Westerdale

Chair reviewed IEEE patent slides and asked for participants to report any essential patent claims – none reported.
Chair reviewed IEEE copyright slides and asked participants to report any need for copyright permissions – none reported.
Chair notified participants of the IEEE participant behavior requirements.

Chair asked for a motion to approve the fall 2023 meeting minutes.
Motion: D. Mitchell
Second: L. Collette
Discussion: None
The motion was approved by unanimous consent.

Chairman's report:

- **Requested working group chairs to email their meeting minutes to the subcommittee secretary no later than Friday, April 19.** daniel.schiffbauer@ieee.org
- Reminder to please *not* include personal contact information of working group attendees in the meeting minutes – only name and affiliation.
- Please sign up for the new Committee Management System (CMS) at: https://ieee.memberplanet.com/v2app/#/member-registration/join
- The chair recognized three new HVCB members.
    - Adrian Lopez
    - Vincent Marshall
    - Jeff Scott
    - The link below explains how working group officers can complete the roster of working group members in the MyProject system. https://standards-support.ieee.org/hc/en-us/articles/4412967015572-Manage-Group-Rosters#h_01FVJAV1N73WA6HQJV6369Y9N5

New Business:

1. ANSI Accreditation

   What happened: Several standards administered by the switchgear committee have lost their ANSI accreditation.

   Why it's important: ANSI accreditation ensures that the standard has been developed, balloted and approved using processes that are ANSI compliant. Standards users such as electricity service providers, equipment manufacturers, consultants and other industry groups expect ANSI accreditation of standards as proof of compliance. Without ANSI accreditation, an IEEE standard risks being supplanted by another organization. For example, organization "X" could develop a circuit breaker test standard called "X37.09" and have it accredited by ANSI. ANSI/X – X37.09 then becomes the primary circuit breaker test standard and IEEE C37.09 takes a back seat.

   How it happened: The PAR process was supposed to automatically include ANSI accreditation. At some point, this stopped happening.

   Which HVCB standards are affected:

Table 1—HVCB Standards and ANSI Accreditation Status

Number	Title	Project Status	ANSI Status
C37.01	IEEE Standard for High-Voltage Direct Current Circuit Breakers Above 3200 Vdc	New PAR Exp. 2024	OK
C37.04	IEEE Standard for Ratings and Requirements for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V	Amendment A PAR Exp. 2025	OK
C37.06.1	IEEE Recommended Practice for Preferred Ratings for High-Voltage (>1000 volts) AC Circuit Breakers Designated Definite Purpose for Fast Transient Recovery Voltage Rise Times	None Doc. Exp. 2027	OK
C37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V	Amendment A PAR Exp. 2025	NO
C37.010	IEEE Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis	Revision PAR Exp. 2025	OK
C37.011	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V	None Doc. Exp. 2029	Pending
C37.012	IEEE Guide for the Application of Capacitance Current Switching for AC High-Voltage Circuit Breakers Above 1000 V	None Doc. Exp. 2032	Pending
62271-C37-013	IEEE/IEC International Standard for High-Voltage Switchgear and Controlgear - Part 37-013: Alternating Current Generator Circuit Breakers	Revision PAR Exp. 2027	NO
C37.015	IEEE Guide for the Application of Shunt Reactor Switching	Revision PAR Exp. 2027	NO
C37.016	IEEE Standard for AC High-Voltage Circuit Switchers Rated 15.5 kV through 245 kV	Revision PAR Exp. 2025	NO
C37.017	IEEE Standard for Bushings for High-Voltage (Over 1000 Vac) Circuit Breakers and Gas-Insulated Switchgear	None Doc. Exp. 2030	NO
62271-C37-082	High-voltage Switchgear and Controlgear - Part 37-082: Standard Practice for the Measurement of Sound Pressure Levels on Alternating Current Circuit-breakers	Inactive-Revision PAR Exp. 2025	NO
C37.10	IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures	Inactive-Revision PAR Exp. 2024	NO

Number	Title	Project Status	ANSI Status
C37.10.1	IEEE Guide for the Selection of Monitoring for Circuit Breakers	None Doc. Exp 2028	NO
C37.11	IEEE Standard Requirements for Electrical Control for AC High-Voltage (>1000 V) Circuit Breakers	None Doc. Exp. 2032	Pending
C37.12	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 V)	Revision PAR Exp. 2027	NO
C37.12.1	IEEE Recommended Practice for Instruction Manual Content of AC High-Voltage Circuit Breakers Above 1000 V	Revision PAR Exp. 2027	NO

What's next: HVCB officers are working with working group and main committee officers to develop and execute a plan that re-establishes ANSI accreditation as quickly as possible with minimal disruption to the ongoing work.

Other points related to ANSI accreditation:

- An expedited revision is an option to quickly regain ANSI accreditation. However, the process does not change. Such a revision still opens the document to comments and the resolution process.
- A PAR does not protect ANSI accreditation but a ballot does. Therefore, initiating the ballot process becomes an important milestone to stake an ANSI claim on the scope covered by the document.
- A ballot for an amendment document does not protect the base document scope. Only a ballot of the base document achieves such protection (e.g., balloting 09a vs. 09).
- It is possible to have a PAR to revise a document once the existing document being revised has been approved by REVCOM. No need to wait for publishing.
- Any existing active PAR (SWG committee) will automatically go through the ANSI process. No additional intervention is required.
- The working group chair of PC37.10 indicated that they will take no special action and they will continue with the ballot and comment resolution.
- The working group chair of PC37.12 indicated that they will immediately go to ballot with a document that incorporates format and reference updates only.

2. PC37.04a Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage above 1000 V
   Amendment: Changes to construction requirements and clarification of certain related required capabilities
   Chair: John Webb
   Secretary: Marcus Young
   - The working group met with quorum on Tuesday, April 2.
   - The working group voted to move to ballot during their meeting on Tuesday, April 2.
   - J. Webb made a motion to the subcommittee for approval to take PC37.04a to ballot. The motion was seconded by M. Crawford. There was no discussion, no disapprovals and no abstentions. The motion passed by unanimous consent.
   - PAR expires 2025 – extension not expected

3. PC37.09a IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
   Amendment: Modifications to test procedures
   Chair: Jan Weisker

Secretary: Chris Jarnigan

- The working group met with quorum on Tuesday, April 2.
- The working group voted to move to ballot during their meeting on Tuesday, April 2.
- J. Weisker made a motion to the subcommittee for approval to take PC37.09a to ballot. The motion was seconded by M. Crawford. There was no discussion, no disapprovals and no abstentions. The motion passed by unanimous consent.
- PAR expires 2025 – extension not expected

Motion to adjourn – N. McCord
Second – J. Ward

Voting Member Attendance:

Family	Given	Affiliation	Attendance
Alexander	Roy	RWA Engineering	EA
Aristizabal	Mauricio	Hitachi Energy	X
Ashtekar	Koustubh	S&C Electric	
Becker	George	Power Engineers	EA
Bufi	Arben	Meiden America Switchgear, Inc.	X
Cary	Stephen	2-phase solutions	
Caverly	David	Trench Ltd.	EA
Chen	Steven	Eaton	X
Chovanec	Andrew	Power Grid Components	X
Christian	Michael	ABB	X
Collette	Lucas	Duquesne Power & Light	X
Crawford	Michael	MEPPI	X
Cunningham	Jason	Southern States	X
Di Lillo	Patrick	Consolidated Edison	
Di Michele	Federico	KEMA	EA
Door	Jeffrey	The H-J Family of Companies	X
Falkingham	Leslie	Vacuum Interrupters Limited	
Flores	Sergio	Schneider Electric	X
Hensberger	Jeremy	MEPPI	X
Hermosillo	Victor	GE Vernova	X
Hu	Jingxuan (Joanne)	RBJ Engineering	
Hunter	Jennifer	MEPPI	X
Irwin	Todd	GE Vernova	X
Jarnigan	Christopher	Southern Company	X
Johnson	David	HVCB	EA
Keels	Thomas (Andy)	Clearway Energy	X
Leccia	Brad	Eaton	X
Liu	Hua Ying	Southern California Edison	EA
Livshitz	Albert	Qualus Services	X
Lopez	Adrian	Powell Industries	X
Marshall	Vincent	Southern Company	X

Family	Given	Affiliation	Attendance
May	Steven	Southern Company	X
McCord	Neil	KEC Precision	X
Mitchell	Dave	Southern States	X
Nelson	Jeffrey	TVA	
Palazzo	Mirko	Hitachi Energy	EA
Polchinski	Craig	MEPPI	X
Ricciuti	Anthony	Eaton	X
Santos	Leonel	Schneider Electric	X
Schiffbauer	Daniel	Toshiba International Corporation	X
Schuetz	Carl	ATC	X
Scott	Jeff	Ameren	X
Sharma	Devki	Self	X
Skidmore	Michael	AEP	X
Smith	Robert (Kirk)	Retired	X
Steigerwalt	Don	Duke Energy	
Toups	Vernon	Siemens Energy	X
Trichon	Francois	Schneider Electric	X
Ward	Jeffrey	Doble Engineering	X
Webb	John	ABB	X
Weeks	Casey	Siemens Energy	X
Weisker	Jan	Siemens Energy	X
Westerdale	Matt	US Bureau of Reclamation	EA
Woodyard	Terrance	Siemens Industry	X
York	Richard	MEPPI	X
Young	Marcus	MEPPI	X
Zhang	Wei	Southern Company	

NOTE – EA (Excused Absence) does not count against continued membership and does not count toward meeting quorum.

Attachments:

HVCB Meeting Agenda:

1) **Introduction of Members and Guests**

2) **IEEE Slides**
- Patent slides
- Copyright policy

Quorum Check

3) **Approval of Minutes of Previous Meeting**

Approval of Minutes of F23 meeting. Sent to all members via e-mail.

Motion for approval:
Second:

4) **Membership**

Members [a]	Excused Members	Quorum Requirement [b]
53	8	≥ 23 members

a) Does not include new members announced during this meeting.

b) Quorum Count includes Members, Chair and Secretary but not excused members. Membership at the meeting must be ≥ 50% for quorum.

Excused members:
David Johnson, Matt Westerdale, Roy Alexander, David Caverly, Federico Di Michele, Hua Liu, Mirko Palazzo, George Becker

5) **Chairman's Report**

Chairman (Carl Schuetz)	carl.schuetz@ieee.org	(262) 506-6962
Secretary (Dan Schiffbauer)	daniel.schiffbauer@ieee.org	(713) 540-2968

- Working group chairs please email meeting minutes to the subcommittee secretary no later than Friday, April 19.
- Please do not include personal contact information of working group attendees in the meeting minutes – only name and affiliation.
- Please sign up for the new Committee Management System (CMS) at https://ieee.memberplanet.com/v2app/#/member-registration/join
- New HVCB members
  - Adrian Lopez
  - Vincent Marshall

  - Jeff Scott
- Recognition of retirees
(Any person that has, or will retire before the spring meeting in Fort Lauderdale, FL)
  - None
- The addition of working group voting members into the MyProject system. The link explains how working group officers can complete the roster within MyProject. **https://standards-support.ieee.org/hc/en-us/articles/4412967015572-Manage-Group-Rosters#h_01FVJAV1N73WA6HQJV6369Y9N5**

6) **New Business**

a) ANSI accreditation

b) HVCB documents approved by RevCom or published since the last meeting

i) None

c) HVCB working group reports

i) PC37.01 - Standard for High Voltage Direct Current Circuit Breakers Above 3200 Vdc
Chair: Steven Chen
Vice Chair: Paul Yang
Secretary: Carl Schuetz

ii) PC37.04a - Standard for Ratings and Requirements for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V Amendment: Changes to construction requirements and clarification of certain related required capabilities
Chair: John Webb
Secretary: Marcus Young

iii) PC37.09a - Standard Test Procedures for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V Amendment: Modifications to test procedures
Chair: Jan Weisker
Secretary: Chris Jarnigan

iv) PC37.010 - Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis
Chair: Andy Keels
Secretary: Jeremy Hensberger

v) P62271-37-013 Cor 1 - Standard for AC High Voltage (rated above 1000 V) Generator Circuit Breakers for Use with Generators Rated 10 MVA or More
Chair: Mirko Palazzo
Vice Chair: Anne Bosma

Regarding the status of IEEE 62271-37-013 corrigendum, the ballot successfully took place meeting the required approval rate.
I will ensure to get the results of this ballot aligned with IEEE and IEC to proceed towards publication following the steps required by both organizations.

vi) PC37.015 - IEEE Guide for the Application of Shunt Reactor Switching
Chair: Mike Crawford
Secretary: Luke Collette

vii) PC37.016 - IEEE Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV
Chair: Neil McCord
Vice Chair: S. Byreddy
Secretary: Luke Collette

viii) P62271-37-082 - High-voltage Switchgear and Controlgear - Part 37-082: Standard Practice for the Measurement of Sound Pressure Levels on Alternating Current Circuit-breakers
Chair: Leslie Falkingham
Secretary: Carl Schuetz

ix) PC37.10 - IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures
Chair: Todd Irwin
Secretary: Jeff Ward

x) PC37.12 - IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)
Chair: Todd Irwin
Secretary: Andy Beckel

xi) PC37.12.1 - IEEE Guide for High Voltage (>1000V) Recommended Practice for Circuit Breaker Instruction Manual Content
Chair: Sam Zaharko
Secretary: Mike Crawford

7) Old Business

a) A motion to form a taskforce on HVCB document consolidation was approved during the fall 2023 subcommittee meeting. The volunteers were L. Collette, M. Crawford, T. Irwin, A. Keels, N. McCord, J. Webb, J. Weisker, and T. Woodyard.

8) Reports of External Working Groups

a) Technical Paper Reviews (Kirk Smith)

b) ASC C37 Power Switchgear Report (John Webb)

c) PC37.20.6 IEEE Standard for 4.76kV to 38 kV Rated Ground and Test Devices Used in Enclosures (Ron Hartzel)

d) PC37.100.1 Common Requirements for High Voltage Power Switchgear Rated Above 1000 V (John Webb)

e) PC37.122.3 IEEE Guide for Sulphur Hexafluoride (SF6) Gas Handling for High-Voltage (over 1000 Vac) Equipment (Billy Lao)

Balloting comments received and replied to from Ballot resolution Group.
We are waiting on WG votes to move forward to send comment responses.
Plan to send to Revcom soon after.

f) PC37.122.10 IEEE Guide for Handling Non-Sulphur Hexafluoride (SF6) Gas Mixtures for High Voltage Equipment (Billy Lao)

Continue to move forward with input from the WG members and attendee guests. Meeting in spring to continue to update document.

g) PC57.16: IEEE Standard for Requirements, Terminology and Test Code for Dry-Type Air-Core Series Connected Reactors (David Caverly)

h) PC57.142: Guide to Describe the Occurrence & Mitigation of Switching Transients Induced by Transformers, Switching Devices and System Interactions (David Caverly) jointly sponsored by TRFCOM and SWGCOM)

i) Technology and Innovation Subcommittee (Alex Cochran)

j) CIGRE (Nenad Uzelac)

9) Future Meetings

a) Fall 2024: October 13-17, OMNI Hotel, Oklahoma City, OK
b) Spring 2025: April 6-11, Wyndham Bonnet Creek, Orlando, FL
c) Fall 2025: October 5-9, Peppermill Resort, Reno, NV
d) Spring 2026: April 26-30, Sheraton Sand Key Resort, Clearwater Beach, FL
e) Fall 2026: October 4-9, Catamaran Resort, San Diego, CA

10) Adjourn

Motion:
Second:

HVCB Document Status:

Document	Title	Officers	Activity	Expiration
PC37.01	**IEEE Standard for High-Voltage Direct Current Circuit Breakers Above 3200 Vdc**	**S. Chen P. Yang C. Schuetz**	**Active PAR**	**12/31/2024**
C37.04-2018	IEEE Standard for Ratings and Requirements for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V			12/31/2028
C37.04-2018 Corrigendum 1-2021	IEEE Standard for Ratings and Requirements for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V - Corrigendum 1			
PC37.04a	**IEEE Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V Amendment: Changes to construction requirements and clarification of certain related required capabilities**	**J. Webb M. Young**	**Active PAR**	**12/31/2025**
C37.06.1-2017	IEEE Recommended Practice for Preferred Ratings for High-Voltage (>1000 volts) AC Circuit Breakers Designated Definite Purpose for Fast Transient Recovery Voltage Rise Times			12/31/2027
C37.09-2018	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V			12/31/2028
C37.09-2018 Corrigendum 1-2021	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V - Corrigendum 1			
PC37.09a	**IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V Amendment: Modifications to test procedures**	**J. Weisker C. Jarnigan**	**Active PAR**	**12/31/2025**
C37.010-2016	IEEE Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis			12/13/2026
PC37.010	**IEEE Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis**	**A. Keels L. Collette J. Hensberger**	**Active PAR**	**12/31/2025**
C37.011-2019	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers with Rated Maximum Voltage Above 1000 V			12/31/2029
C37.012-2022	IEEE Guide for the Application of Capacitance Current Switching for AC High-Voltage Circuit Breakers Above 1000 V			12/31/2032
62271-37-013-2021	IEEE/IEC International Standard for High-Voltage Switchgear and Controlgear - Part 37-013: Alternating Current Generator Circuit Breakers			12/31/2031
62271-37-013-2021 Corrigendum 1	**IEEE/IEC International Standard for High-Voltage Switchgear and Controlgear - Part 37-013: Alternating Current Generator Circuit Breakers**	**M. Palazzo A. Bosma**	**Active PAR**	**12/31/2027**

Document	Title	Officers	Activity	Expiration
C37.015-2017	IEEE Guide for the Application of Shunt Reactor Switching			12/31/2027
PC37.015	**IEEE Guide for the Application of Shunt Reactor Switching**	**M. Crawford L. Collette**	**Active PAR**	**12/31/2027**
C37.016-2018	IEEE Standard for AC High-Voltage Circuit Switchers Rated 15.5 kV through 245 kV			12/31/2028
C37.016-2018 Corrigendum 1-2021	IEEE Standard for AC High-Voltage Circuit Switchers Rated 15.5 kV through 245 kV - Corrigendum 1			
PC37.016	**IEEE Standard for AC High-Voltage Circuit Switchers Rated 15.5 kV through 245 kV**	**N. McCord S. Byreddy L. Collette**	**Active PAR**	**12/31/2025**
C37.017-2020	IEEE Standard for Bushings for High-Voltage (Over 1000 Vac) Circuit Breakers and Gas-Insulated Switchgear			12/31/2030
62271-37-082-2012	High-voltage Switchgear and Controlgear - Part 37-082: Standard Practice for the Measurement of Sound Pressure Levels on Alternating Current Circuit-breakers			12/31/2022
P62271-37-082	**High-voltage Switchgear and Controlgear - Part 37-082: Standard Practice for the Measurement of Sound Pressure Levels on Alternating Current Circuit-breakers**	**L. Falkingham C. Schuetz**	**Active PAR**	**12/31/2025**
C37.10-2011	IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures			12/31/2021
PC37.10	**IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures**	**T. Irwin J. Ward**	**Active PAR**	**12/31/2024**
C37.10.1-2018	IEEE Guide for the Selection of Monitoring for Circuit Breakers			12/31/2028
C37.11-2022	IEEE Standard Requirements for Electrical Control for AC High-Voltage (>1000 V) Circuit Breakers			12/31/2032
C37.12-2018	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 V)			12/31/2028
PC37.12	**IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 V)**	**T. Irwin A. Beckel**	**Active PAR**	**12/31/2027**
C37.12.1-2018	IEEE Recommended Practice for Instruction Manual Content of AC High-Voltage Circuit Breakers Above 1000 V			12/31/2028
PC37.12.1	**IEEE Recommended Practice for Instruction Manual Content of AC High-Voltage Circuit Breakers Above 1000 V**	**S. Zaharko A. Keels**	**Active PAR**	**12/31/2027**