

1) **Introduction of Members and Guests** Mike Skidmore / Victor Hermosillo

Introductions: **Done**

Introduction of new members: **No new members added to HVCB Subcommittee.**

2) **Approval of Minutes of Previous Meeting** Mike Skidmore / Victor Hermosillo

Approval of Minutes of Lake Buena Vista, FL

The meeting minutes were submitted to all HVCB members and guests after the spring meeting and posted online at the IEEE PES website.

The Chair asked if anyone needed to review the HVCB meeting minutes (MOM) from the spring 2018 conference. No one wanted to review the (MOM).

Motion to approve the minutes

Move: Sushil Shinde

Second: Xi Zhu

Unanimous approval

3) **Membership**

	ROLE AS MEMBERS	ROLE AS GUESTS	ROLE AS CORRESPONDING MEMBERS	REQUIRED* FOR QUORUM COUNT	TOTAL
HVCB Committee Roster	43	134	11	≥ 50% membership at meeting (≥ 22 members)	188
Attendance Recorded Kansas City, MO	30	43	1	Quorum met (31/43) 72%	74

*Quorum Count includes: Active Members, Chair, Secretary, and (Corresponding Members if present at the meeting)

4) **Chairman's Report** Mike Skidmore / Victor Hermosillo

Chairman (Mike Skidmore): mikeskidmore@ieee.org 614-933-2154

Vice-Chairman (Victor Hermosillo): vfhermosillo@ieee.org 724-483-7875

- WG chairs need to email minutes of their WG meetings to the subcommittee secretary no later than October 29th, 2018. Several received already.

5) **Reports of Working Groups**

a) **Technical Paper Reviews** Kirk Smith

No technical papers reported. IEEE PES looking for submissions.

b) **WG Activities**

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Document	Title	SubCommittee	WG Chair	PAR	IEEE Status	Activity
PC37.04	Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage above 1000 V	HVCB	Stephen Cary	PAR Expires 12-31-2018	Reaffirmed 2006 Document Expires 12/31/2018	Three ballot re-circulations since Spring 2018 meeting. Document submitted to RevCom on 10-8-18. WG and HVCB members unanimously confirmed and approved document submittal to RevCom.
C37.04-1999 Cor 1-2009	IEEE Standard for Rating Structure for AC High-Voltage Circuit Breakers Corrigendum 1	HVCB	Stephen Cary	Included on PC37.04 PAR	Document Expires 6/17/2019	Will be pulled into .04 – no update needed
C37.04a-2003	IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis: Amendment 1 Capacitance Current Switching	HVCB	Roy Alexander	Included on PC37.04 PAR	Reaffirmed 2006 Document Expires 12/31/2018	Will be pulled into .04 – no update needed
C37.04b -2008	IEEE Standard for Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Amendment 2: To Change the Description of Transient Recovery Voltage for Harmonization with IEC 62271-100	HVCB	Kirk Smith	Included on PC37.04 PAR	Document Expires 12/31/2018	Will be pulled into .04 – no update needed
C37.06.-2009 ANSI	IEEE Standard for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis - Preferred Ratings and Related Required Capabilities for Voltages Above 1000 V	HVCB	Mauricio Aristizabal	Included on PC37.04 PAR	Document Expires 9/11/2019	Needs corrections to address mistakes in tables 6 and 7 for SLF. HVCB chair to review with C37.04 WG chair if document updated to correct errors.
C37.06.1-2018	Recommended Practice for Preferred Ratings for High-Voltage (>1000 volts) AC Circuit Breakers Designated Definite Purpose for Fast Transient Recovery Voltage Rise Times	HVCB	Sushil Shinde	PAR Expires 12/31/2017	Document Expires 2/6/2028	IEEE C37.06.1-2017 officially published on 2-6-2018.
PC37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	HVCB	Xi Zhu	PAR Expires 12/31/2018	Reaffirmed 2007 Document Expires 12/31/2018	Two ballot re-circulations since Spring 2018 meeting. Document submitted to RevCom on 9-26-18. WG and HVCB members unanimously confirmed and approved document submittal to RevCom.
C37.09-1999 /Cor 1-2007	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis – Corrigendum 1	HVCB	Mauricio Aristizabal	Included on PC37.09 PAR	Document Expires 12/31/2018	Will be pulled into C37.09 – no update needed

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C37.09a-2005 Amendment to C37.09-1999	American National Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Amendment 1: Capacitance	HVCB	Roy Alexander	Included on PC37.09 PAR	Reaffirmed 2007 Document Expires 12/31/2018	Status .09a will be pulled into C37.09. – no update needed
C37.09b-2010	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis – Amendment 2: To Change the Description of Transient Recovery Voltage for Harmonization with IEC 62271-100	HVCB	Kirk Smith	Included on PC37.09 PAR	Document Expires 12/8/2020	Will be pulled into .C37.09 – no update needed
C37.010	Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis	HVCB	Helmut Heiermeier		Document released Document Expires 12/31/2026	Final draft accepted by RevCom. Document Published Spring of 2017. Editorial updates made 6-5-2017 and submitted to WG
PC37.011-2011	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers	HVCB	Denis Dufournet		Document Expires 12/31/2021	No meeting held Fall 2018. Document expected to be submitted to RevCom in 2019. Currently at 100% approval per WG Chair. Ballot recirculation started on 10-1-18 and to finish on 10-22-18.
PC37.012a	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander	PAR expires 12-31-2021	Document Expires 3/31/2024	No meeting held Fall of 2018. PAR applied to amend C37.012 via C37.012a. WG now formed. Created review group within WG for development of an inrush rating structure. Work also continues with CIGRE A3.38 WG
PC37.012	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander		Document Expires 3/31/2024	Corrigendum for PC37.012-2014-Cor_1 was approved in January of 2016. Task Force to C37.012 established Spring 2016. Roy Alexander to Chair
62271-37-013 (Replaces C37.013 and C37.013a)	Standard for AC High Voltage (rated above 1000 V) Generator Circuit Breakers for Use With Generators Rated 10 MVA or More	HVCB	Mirko Palazzo	10-1-2022	Document Expires 10/1/2025	WG established and work continues for upgrades to the document. 9 meeting sessions held in Kansas City.
62271-37-082-2012	Standard for High-voltage switchgear and control gear - Part 37-082: Measurement of sound pressure levels on AC HVCB	HVCB	Leslie Falkingham		Document Expires 12/31/2023	Done - no update needed at this time
C37.015-2018	IEEE Guide for the Application of Shunt Reactor Switching	HVCB	Anne Bosma	PAR Expires 12/31/2019	Document Expires 3/15/2028	IEEE C37.015-2017 officially published on 3-15-2018.

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PC37.016	Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV	HVCB	Peter Meyer	PAR Expires 12/31/18	Document Expires 12/31/2018	Two ballot recirculation since Spring 2018 meeting. Document submitted to RevCom on 10-8-2018. WG and HVCB members unanimously confirmed and approved document submittal to RevCom
C37.017-2010	IEEE Standard for Bushings for High-Voltage [over 1000 V (ac)] Circuit Breakers and Gas-Insulated Switchgear	HVCB-GIS	Devki Sharma		Document Expires 9/30/2020	First Task Force meeting held Fall 2018. Scope of document will not change. (HVCB passed a motion to submit a PAR and establish a WG to begin updates to C37.017 standard) (This will be a joint WG consisting of members between HVCB and GIS Subcommittee) Motion: To submit a PAR and establish a Working Group to begin updates to C37.017 Moved: Carl Schuetz, Second: Dave Mitchell, Unanimous Approval
C37.081-1981	IEEE Guide for Synthetic Fault Testing of AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	HVCB	Mauricio Aristizabal		Reaffirmed 2007 Document Expires 12/31/2018	TF meeting held on 4-28-15. Motion was passed to support work of IEC 62271-101 into C37.09 - HVCB to let document expire. References to IEC 62271-101 will be used in C37.09. HVCB let documents expire and they will be automatically withdrawn. Will be listed in system as inactive.
C37.081a-1997	Supplement to IEEE Guide for Synthetic Fault Testing of AC HVCB Rated on a Symmetrical Current Basis	HVCB	Mauricio Aristizabal		Reaffirmed 2007 Document Expires 12/31/2018	TF meeting held on 4-28-15. Motion was passed to support work of IEC 62271-101 into C37.09 - HVCB to let document expire. References to IEC 62271-101 will be used in C37.09. HVCB let documents expire and they will be automatically withdrawn. Will be listed in system as inactive.

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C37.083-1999	IEEE Guide for Synthetic Capacitive Current Switching Tests of AC High-Voltage Circuit Breakers	HVCB	Mauricio Aristizabal		Reaffirmed 2007 Document Expires 12/31/2018	TF meeting held on 4-28-15. Motion was passed to support work of IEC 62271-101 into C37.09 - HVCB to let document expire. References to IEC 62271-101 will be used in C37.09. HVCB let documents expire and they will be automatically withdrawn. Will be listed in system as inactive.
C37.10-2011	IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures	HVCB	Bill Bergman		Document Expires 12/31/2021	No Action needed at this time
PC37.10.1-2000	IEEE Guide for the Selection of Monitoring for Circuit Breakers	HVCB	Dave Mitchell	PAR Expires 12-31-2018	Reaffirmed 2006 Document Expires 12/31/2018	Two ballot re-circulation since Spring 2018 meeting. Document submitted to RevCom on 10-15-18 and began final ballot recirculation. WG and HVCB members unanimously confirmed and approved document submittal to RevCom.
C37.11	Standard Requirements for Electrical Control for AC High-Voltage (>1000V) Circuit Breakers	HVCB	John Webb		Published 2014 12/31/2024	First Task Force meeting held Fall 2018. Scope of document will not change (HVCB passed a motion to submit a PAR and establish a WG to begin updates to C37.11 standard) Motion: To submit a PAR and establish a Working Group to begin updates to C37.11 Moved: Devki Sharma Second: Neil Hutchins Unanimous Approval Additional item discussed (see new business item "f" below)

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PC37.12-2008	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)	HVCB	John Webb	PAR Expires 12/31/2020	Document Expires 12/31/2018	Three ballot re-circulations since Spring 2018 meeting. Ballot closed on 9-24-18 with 100% approval rate. Document submitted to RevCom on 10-10-18. HVCB Subcommittee members unanimously confirmed and approved document submittal to RevCom. Moved : John Webb Second Terry Woodyard Vote Taken at HVCB subcommittee since WG for C37.12.1 did not have quorum
PC37.12.1-2007	IEEE Guide for High Voltage (>1000V) Recommended Practice for Circuit Breaker Instruction Manual Content	HVCB	John Webb	PAR Expires 12/31/2020	Document Expires 12/31/2018	Two ballot re-circulations since Spring 2018 meeting. Document submitted to RevCom on 10-8-18. WG and HVCB members unanimously confirmed and approved document submittal to RevCom.
C37.20.6-2007	4.76 kV to 38 kV Rated Grounding and Testing Devices Used in Enclosures	ADSCOM joint HVCB/SA	T. W. Olsen		Document Expires 2026	Done - Published
C37.59-2007	Requirements for Conversion of Power Switchgear Equipment	ADSCOM joint HVCB, SA, and LVSD	Dean Sigmon			
C37.122-2010	Standard for High Voltage Gas-Insulated Substations Rated above 52 kV	Joint SUB/SWG HVCB	Jon Brunke			Done – Published – No update provided at meeting. Will start revision in 2016.
C37.122.3-2011 (was P1712)	IEEE Guide for Sulphur Hexafluoride (SF6) Gas Handling for High-Voltage (over 1000 Vac) Equipment	Joint SUB/SWG HVCB	Gordon van der Zel (Jeff Nelson)		Document Expires 2021	Done - Published

Note: Only those working groups with PAR information are currently active.

6) Reports of AdsCom WG/TF/Study Group

- Common Requirements WG (C37.100.1) Keith Flowers

Initial Ballot submitted on 9-10-18. Ballot recirculation submitted on 10-15-18 along with submittal to RevCom.

- TF to review Shunt Reactor (inductive load) Switching Sushil Shinde

Work continues for Task Force to review “Shunt Reactor (Inductive Load) Switching for C37.09.” Survey template finalized and will be converted into online tool. Survey Data to be collected in 2019.

- Task force for innovation Nenad Uzelac

Nenad Uzelac absent from HVCB Meeting. Summary by Subcommittee chair. Discussion regarding possible standards for HVDC circuit breakers (new business item “g” listed below)

7) Reports of CIGRE

Chair of CIGRE SC A3 will be Nenad Uzelac, starting in August 2018. The following is a list of CIGRE WG activity:

- a) WG A3.30 Overstresses in S/E equipment. Technical brochure will be issued in 2018.
 - A3.30: First draft of Technical Brochure (TB) completed in July. A3 is waiting for the final draft for review.
- b) WG A3.31 NCIT with digital output. Draft technical brochure ready for submission to SC A3.
 - A3.31: Draft technical brochure was not ready during meeting in August. Plan B will be to write a paper instead of TB.
- c) WG A3.32 Non-intrusive methods for condition assessment for distribution and transmission equipment. Technical Brochure scheduled second quarter 2018.
 - A3.32 has published the TB 737 in August “Non-Intrusive methods for condition assessment of distribution and transmission switchgear”.

- d) WG A3.33 Experience for equipment for series/shunt compensation. Technical Brochure 693 published.
- e) WG A3-35 “Guidelines and best practices for the commissioning and operation of controlled switching projects”. Publication scheduled in 2018
 - A3.35: Final Draft of TB submitted to A3 in August and it’s currently being reviewed by A3 members.
- f) WG A3-36 “Application and Benchmark of Multi Physics simulations and engineering tools for temperature rise calculations”. Technical Brochure planned for October 2018
 - A3.36: Working group still working on the content. Expecting draft to complete next year.
- g) WG A3-37 “System conditions for and probability of Out-of-Phase. Technical Brochure 716 published in 2018.
- h) A3-39 “Field Experience with and Reliability of Surge Arresters.
- i) New WG A3-40 Technical requirements and field experiences with MV DC switching equipment
- j) New WG A3-41 Interrupting and switching performance with SF6 free switching equipment
- k) New WG A3-42 Failure analysis of recent AIS instrument transformer incidents
- l) WG A3-38 “Shunt Capacitor Switching in distribution and transmission systems: Verification by tests and performance in service”.

Anne Bosma / Edgar Dullni

 - New proposals discussed during meeting in Paris. Will be reviewed in Q4.
 - VT for accurate high frequency voltage measurements
 - Equipment for operating at higher voltage than system voltage
 - Tools for lifecycle management of T&D switchgear based on data from condition monitoring systems
 - Technical evaluation of generator switching technologies in power plants rated up to 1000 MW

Cigre Updates go to <https://cigre-usnc.tamu.edu/study-committees/>

Mike Skidmore

8) **Old Business**

- a) <https://development.standards.ieee.org/my-site/open-ballot-invitations>
- b) Senior membership - 102 senior members total in switchgear.

9) **New Business**

- a) Presentation Reminder – “Greenhouse Gas Emission Reductions from Electric Power Equipment through use of Sustainable Alternatives to SF6”
(Thursday October 18, 2018 (11:45 AM to 3:30 PM))

John Owens

- b) Documents on RevCom Agenda for Approval

On 9-7-18 Mike Skidmore asked HVCB subcommittee members asked if there were any objections to placing the following documents on the RevCom agenda. The documents included: PC37.04, PC37.09, PC37.10.1, PC37.12, PC37.12.1, and PC37.016.

There are no objections to placing these documents on the RevCom agenda.

For PC37.04, PC37.09, PC37.10.1, PC37.12, PC37.12.1, and PC37.016 standards, Confirmation to submit document to RevCom was confirmed in each WG meeting and/or at the HVCB Subcommittee meeting with unanimous approval of WG members.

- c) Subcommittee officer rotation ends beginning of 2019 Mike Skidmore

Victor Hermosillo appointed as Chair Starting January 2019
Carl Schultz appointed as Vice-Chair Starting January 2019

- d) Redact email address from Committee Roster Mike Skidmore

- e) CRG (Comment Resolution Group) – Advice for future Working Groups

Mike Skidmore

- f) New document suggested similar to C57.148 (IEEE Standard for Control Cabinets for Power Transformer) but for HVAC Switchgear.

Example: Document could be C37.11.1 if approved

Motion: Establish Task Force for control cabinets for HVCB

Scope to review C57.148 and present recommended actions. To be completed by Fall 2019.

Motion by John Webb
Devki Sharma seconded motion.

Discussion: New document may or may not be included in C37.11. Could conflict with C37.21 "Standard for control switchboards". TF to decide if initially issued as a Guide or Recommended Practice as well as if it requires involvement from other subcommittees. All these topic can be reviewed by assigned Task Force.

Unanimous approval of motion

Volunteers: Sushil Shinde, Devki Sharma, Mike Crawford, Todd Irwin, Dave Mitchell, Andy Keels, Albert Livshitz, and Terry Woodyard. Devki Sharma assigned as TF chair to coordinated assignments and report in the spring of 2019.

Mike Skidmore

g) HVDC circuit breaker Standard

Proposal: Establish a Task Force to review the need for a standard for HVDC Breakers above 3200 volts.

Discussion:
Jingxuan (Joanne) Hu absent, no motion on table at this time. May be moved to Innovation Subcommittee under Nenad. Could include rating, testing structure. Investigate and reach out to find expertise.

There does not appear to be many (any) HVDC projects with any current WG members present at the meeting. Communicate with interested parties to add participants.

CIGRE A3-40 Medium voltage DC circuit breakers. Difficulty in finding US members.

Conclusion: No interest at this time from HVCB subcommittee members to develop a HVDC document. No Task Force will be created at this time. HVCB to discuss with Nenad to see if document should be in Technology and Innovation Subcommittee

Mike Skidmore

Future Meetings

- a) Spring 2019: Hilton, Burlington, VT - April 28th to May 1st, 2019
- b) Fall 2019: Catamaran Resort, San Diego, CA – October 6th to 10th , 2019
- c) Spring 2020: Peppermill Resort, Reno, NV – May 4th to 8th, 2020
- d) Fall 2020: Sheraton Sundance Square, Fort Worth, TX – October 4th to 8th, 2020
- e) Spring 2021: Hilton Charlotte University Place, Charlotte, NC – April 18th to 23rd 2021

10) Adjourn