

1) **Introduction of Members and Guests**

Mike Skidmore / Victor Hermosillo

Member introductions:

Introduction of new members: **Terry Woodyard**

2) **Approval of Minutes of Previous Meeting**

Mike Skidmore / Victor Hermosillo

The meeting minutes are approved as posted in the IEEE PES Switchgear website (<http://www.ewh.ieee.org/soc/pes/switchgear/minutes/Minutes.html>) and no additional motion is necessary to approve the minutes. If corrections are needed to the meeting minutes, please notify the chairman. Any revision to the minutes will be corrected and re-posted as a revision at the next meeting.

3) **Membership**

	ROLE AS MEMBERS	ROLE AS GUESTS	ROLE AS CORRESPONDING MEMBERS	REQUIRED* FOR QUORUM COUNT	TOTAL
HVCB Committee Roster	44	88	10	≥ 50% membership at meeting (≥ 22 members)	142
Attendance Recorded Hilton Head, SC	33	32	1	>75% 34 of 44 members present	66

*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

614-552-1472

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 May 9th, 2016.

5) **Reports of Working Groups**

a) **Technical Paper Reviews**

Kirk Smith

The new editor is Kirk Smith.

b) **WG Activities**

HVCB Switchgear Subcommittee Agenda, 4-27-2016 Hilton Head, SC

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 12-31-2017	Reaffirmed 2006 Document Expires 12/31/2018	Two meetings held in Hilton Head. Will issue new draft and comments before going to ballot next meeting. Standard should go to ballot by Fall of 2016.
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 amendment to address error in tables 6 and 7 for SLF reference - No update needed at this time - will be pulled into .C37.04
PC37.06.1	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 12-31-2016	Document Expires 12/31/2018	Working Group (WG) went through draft 2 of document in Hilton Head. Prior ballot pool is not valid. New ballot group will be formed. Two ballots and recirculation before Fall 2016 meeting. C37.06.1 will not be pulled into C37.04 at this time. Document submitted to IEEE editorial review before 1 st ballot.

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PC37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	HVCB	Xi Zhu	PAR Expires 12/31/2017	Reaffirmed 2007 Document Expires 12/31/2018	Many contributions have been incorporated. Plan to have first ballot and comments before Fall 2016 meeting. On schedule to Ballot by Fall of 2016. Document to be completed by 2017. Meet for 2 sessions in Hilton Head. Draft 2.3 submitted to WG on 4-9-16 for review.
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
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
PC37.010	Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis	HVCB	Helmut Heiermeier	PAR expires 12-31-2016	Reaffirmed 2005 Document Expires 12/31/2018	WG met 4-25-16 in Hilton Head. Discussed comments from last ballot. Updated into documents. Plan to go out for last ballot recirculation after Spring meeting. Sponsor Ballot Recirculation on 2-24-16 and closed on 3-16-16.
C37.011-2011	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers	HVCB	Denis Dufournet		Document Expires 12/31/2021	Discussed TRV with compensated lines, guidelines for TRV calculations/models. Will continue study of new proposals. Revision needed to align with the revised C37.04, C37.09 and with IEEE C37.06.1. Request for PAR will be done end of 2017 or early 2018.
PC37.012	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Anne Bosma	PAR Expires 12-31-2019	Document Expires 3/31/2021	Corrigendum has been published.

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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		Document Expires 10/1/2025	Mirko Palazzo unable to attend meeting in Hilton Head. Anne Bosma presented information on negative votes such as; 2 negative votes JP, NL. 33 comments: TRV not rating, 133 ms time constant, JP test facility issues, NL Figure. Others: guidance for use of caps, resistors. IEC maintenance team was formed (dual logo w/IEEE) members from IEEE to be incorporated. Plan to have IEEE meeting in Fall 2016 to address issues. PAR for amendment to be submitted. Form WG next meeting to work with IEC WG 59. P62271-37-013-2015/Cor 1 submitted for review. Presentation is attached in meeting minutes.
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
PC37.015-2009	IEEE Guide for the Application of Shunt Reactor Switching	HVCB	Anne Bosma	PAR Expires 12/31/2019	Document Expires 12/9/2019	WG met in Hilton Head. Number of changes to document. Draft 2 to be circulated for comments. Plan to go to ballot so changes can be discussed in Fall 2016. Anne is revising the document and will send it to the members of the WG for review.
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	WG met 4-27-16. Circulated and received comments. Will be discussed in Fall 2016. Document is in draft form and about 2/3 of the document has been updated to remove IEC references and add in the latest references from IEEE documents. A committee draft will take place and be reviewed at the Fall 2016 meeting.

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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	Parts to be pulled into. 04 and .09. no action needed at this time
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.
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.
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.
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 12-31-2016	Reaffirmed 2006 Document Expires 12/31/2018	Reviewed changes at meeting in Hilton Head. Plan is to Ballot before Fall of 2016 meeting. Chair will review PAR extension.
C37.11	Standard Requirements for Electrical Control for AC High-Voltage (>1000V) Circuit Breakers	HVCB	John Webb		Reaffirmed 2003 Document Expires 12/31/2024	No updated needed at this time. Document published.
PC37.12-2008	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)	HVCB	John Webb	PAR Expires 12/31/2018	Document Expires 12/31/2018	Large number of comments received internally form WG. Plan is to go to ballot before Fall 2016

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C37.12.1-2007	IEEE Guide for High Voltage (>1000V) Circuit Breaker Instruction Manual Content	HVCB	Ken Edwards	PAR Expires	Document Expires 12/31/2018	New PAR and reorganized title. Reviewed WG comments at meeting in Hilton Head. Expect to be done Fall of 2016. This document is no longer a guide it is a recommended practice. PAR to be submitted Spring 2016.
PC37.100.5	Draft Standard for Definitions for High Voltage Circuit Breakers Above 1000V	HVCB	Tom Mulcahy	PAR Expires 12/31/2018	NEW	Went out to ballot 03-29-16, worked on comments at Hilton Head. Document title and purpose in PAR not adequate, too broad. Decided to complete comments at meeting and propose motion to address issues. Motion (see attachment) was approved unanimously. PAR created and expires 12/31/2019, Ballot Close date of 4/28/16
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			Started Work. Two sessions with progress. Met Monday morning, no HVCB members present.
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 Task Forces**

7) **Reports of AdsCom WG/TF**

- Capacitance Switching WG (PC37.100.2) Neil McCord

Monday three sessions, went through most comments. Plan is to have draft for recirculation in one month.

- Common Requirements WG (C37.100.1) David Stone

Dave Stone was not available at the meeting. Chair will request an update, no information available at HVCB meeting.

- New TF for Alternative Gasses to SF6 Nenad Uzelac

HVCB Chair provided information during meeting. ADSCOM wants to develop a TF to study alternative gasses to SF6. IEEE Substation Committee also looking at a similar TF for alternative gasses to SF6. HVCB currently has suggestion from ADSCOM to keep membership low (2 or 3 members on TF). HVCB has a list of approximately 12 people interested in working on TF but Chair may need to limit members to 2 or 3. HVCB will know more at ADSCOM meeting on 4-28-16. See attachment for more information.

8) **Reports of CIGRE**

- a) A3.32 – Non-intrusive methods for condition assessment

Albert Livshitz

No information available.

Work is done, item to be deleted at next meeting.

- b) A3.29 Deterioration of ageing substation equipment

Ken Edwards

Working group is progressing, bulletin at least 2 years out.

Denis Dufournet provided update. Brochure ready approximately 2nd quarter 2016, near completion.

- c) A3.30 Overstresses in S/E equipment.

Ken Edwards

Committee to meet in Paris Fall of 2016

Denis Dufournet said study committee met, brochure to be ready before end of 2016.

- d) JWG A3/B4.34 Technical requirements and specifications of state-of-the-art DC switching equipment.

Jingxuan (Joanne) Hu

Last year they completed document. Draft for review still not circulated.

Target is to publish in 2016.

- e) TF2 (SC121A – AG4) Arc – Flash Detection Function and Devices

Albert Livshitz

No updated available at this time.

9) **Old Business**

- a) <https://development.standards.ieee.org/my-site/open-ballot-invitations>
- b) Senior membership grade Up to 65 Sr. Members, numbers increasing (John Webb). Information available, presented during main committee meeting.

10) **New Business**

- a) Presentation Reminder – Long Term Performance of Bare and Coated Contacts at High Temperatures
(Thursday April 28, 2015 (11:45 AM to 2:45 PM)) John Webb

- b) Subcommittee officer rotation ends 2019 Mike Skidmore

Chair: Mike Skidmore
Secretary: Victor Hermosillo

- c) Chair information required to report at next meeting Mike Skidmore

Report for Active:
Par Expires:
Ballot Date:
Completion:

Information will be posted in meeting minutes by HVCB subcommittee chair in new format for all future meetings. Webpage has status for all documents. Different fields depending on document status as active/inactive. Standardize how information is reported. Spreadsheet that can be incorporated into meeting minutes. Needs for next meeting based on the information contained in this file.

- d) Motion for Task Force for C37.012 revisions Roy Alexander

HVCB passed a motion to create a Task Force (TF) to C37.012 to study possible revisions to C37.012. Roy Alexander requested the motion as listed in the attachment during the meeting (see attachment). TF to be led by Roy Alexander. Anne Bosma seconded the motion. Clarification requested by J. Webb, 't' in this case refers to the period of the inrush current during pre-arcing? Answer from Roy Alexander was in the affirmative. Others supported to establish the TF. HVCB voted on the motion with: 33 in favor, none opposed, none abstained. The vote was unanimous. HVCB will request a TF time slot for fall 2016 meeting.

- e) Definitions Document Motion Tom Mulcahy

Motion was discussed per attachment by Tom Mulcahy and HVCB Chair. Ken Edwards seconded the motion. Ken Edwards commented regarding need to expedite work before definitions expire. The motion was to move WG from HVCB to ADSCOM to broaden participation (HVCB and RODE) in WG and change PAR title and scope accordingly (see attachment). Vote: 31 in favor, none

opposed, none abstained. The vote was unanimous. HVCB will discuss with ADSCOM on 4-28-16.

f) Nameplate Discussion - SF6

Eldridge Byron began discussion item for SF6 amount listed on equipment nameplates. How accurate is the information (amount of SF6) and what should be done. What are utilities doing to report amount. A general discussion took place. Maybe some information could be incorporated into C37.04. EPA reporting guidelines takes nameplate SF6 mass and uses this information in order to report leakage. How accurate is this? HVCB may need to issue a position regarding this issue. In service inventory is used by utilities. Task Force or Study Group could be implemented in the future. HVCB Chair will review a time slot for Pittsburgh meeting to establish a study group. If time slot available, Eldridge Byron offered to chair the study group.

11) Future Meetings

- a) Fall 2016: Sheraton, Pittsburgh, Pa. October 9th – 13th, 2016
- b) Spring 2017: Hilton Charlotte University Place, Charlotte, NC April 23rd – 28th, 2017
- c) Fall 2017: Marriott Portland Sable Oaks, Portland, ME October 8th – 13th, 2017
- d) Spring 2018: Disney's Contemporary Resort, Lake Buena Vista, FL April 22nd – 27th, 2018

12) Adjourn