

1) **Introduction of Members and Guests**

Mike Skidmore / Victor Hermosillo

Member introductions:

Introduction of new members: Sergio Flores
 Dan Schiffbauer
 Roy Hutchins

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

Mike Skidmore / Victor Hermosillo

Approval of Minutes of Pittsburgh, PA

Move: Roy Alexander

Second: John Webb

Unanimous Approval

3) **Membership**

	ROLE AS MEMBERS	ROLE AS GUESTS	ROLE AS CORRESPONDING MEMBERS	REQUIRED* FOR QUORUM COUNT	TOTAL
HVCB Committee Roster	44	107	12	≥ 50% membership at meeting (≥ 22 members)	163
Attendance Recorded Charlotte, NC	32	37	1	73%	70

*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

(Victor could not make meeting in Charlotte - Carl Schuetz helped as Vice-Chairman)

- WG chairs need to email minutes of their WG meetings to the subcommittee secretary no later than MAY 12th, 2017.

5) **Reports of Working Groups**

a) **Technical Paper Reviews**

Kirk Smith

John Webb filling in for Kirk Smith - Joint technical report for alternative gases being drafted and will be discussed at main committee.

b) **WG Activities**

HVCB Switchgear Subcommittee Agenda, 4-26-2017 Charlotte, NC

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	Ballot opened 3-15-17 and closed 4-14-17. 75% approval not achieved from latest ballot. Mid-October of 2017 the deadline for PAR extension.
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 WG to check if the errors have been corrected. Chair asked Steve Cary to review if updates pulled into .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 12-31-2017	Document Expires 12/31/2018	Ballot recirculated on 4-12-17 Document sent back for re-circulation. Another re-circulation scheduled. Expect to be done. Will file for PAR if needed. (Mid-October 2017)
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	Ballot Recirculation. Opened on 3-28-17 and closed on 4-12-17. 85% approval rate from latest re-circulation. Xi will apply for PAR extension immediately-continue working on document.
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	PAR expires 12-31-2016	Reaffirmed 2005 Document Expires 12/31/2018	Final draft accepted by RevCom. Document Published Spring of 2017.
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	Draft document provided to study group on 3-28-17 for review. First meeting as WG is planned for fall of 2017. Limited work necessary for ballot. PAR will be applied for now, motion to HVCB to go for PAR. Unanimous approval. PAR can be established for WG.
PC37.012a	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander			PAR applied for to amend C37.012 via C37.012a. PAR approved before the meeting, WG now formed. Created review group within WG for development of an in-rush rating structure.
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	Motion unanimously passed to establish a PAR for future revisions to the document. PAR approved Dec of 2016. First draft re-circulated submitted before meeting.
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

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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	Ballot recirculation – Opened 2-9-2017 and closed 3-1-2017. Document re-circulated Feb of 2017. Revised draft re-circulated then approval and planned submission to RevCom in November 2017.
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	Draft Document circulated for comments on 4-7-2017. Draft sent before this meeting w/no comments. Decision made to wait until Fall 2017 to align w/C37.04 and C37.09.
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. 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.
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

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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	Ballot closed 3-12-2017 First ballot issued w/90% approval. A CRC was formed to resolve comments by end of June and re-circulate ballot before next meeting.
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	Ballot closed 3-19-2017 Formed a CRC to resolve remaining comments. Re-circulate document after comment resolution.
PC37.12.1-2007	IEEE Guide for High Voltage (>1000V) Circuit Breaker Instruction Manual Content	HVCB	Ken Edwards	PAR Expires 12/31/2020	Document Expires 12/31/2020	Ballot closed 10-15-16 John Webb filled in for Ken E. Crated a CRC for resolution of comments.
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**

- Capacitance Switching WG (PC37.100.2) Neil McCord

Ballot recirculation on 2-22-2017. Reviewed document at Charlotte meeting. Another re-circulation after spring meeting. Chair hoping to be done by Fall.

- Common Requirements WG (C37.100.1) David Stone

Submitted to RevCom. Tabled pending copyright permission of IEC 62271-1 (recently approved)

- Standard for Definitions WG (C37.100.5) Tom Mulcahy

Re-circulation ballot closed Feb 27th. WG TF formed to resolve comments then re-circulate for approval. Comment made that there are many similar definitions in this document to on-line dictionary. Need to determine how we get rid of multiple definitions. Definitions that are withdrawn still stay in the electronic dictionary.

- TF for Alternative Gases to SF6 Nenad Uzelac

Nenad not present at meeting. Chair filled in with an update. Document could be published in fall 2017 or spring 2018. Discussion will take place at Main Committee meeting.

7) **Reports of CIGRE**

- a) A3.30 Overstresses in S/E equipment. Denis Dufournet
Technical Brochure foreseen end of 2017
No additional update.

- b) JWG A3/B4.34 Technical requirements and specifications of state-of-the-art DC switching equipment. Joanne not present - Final version before end of 2018 Jingxuan (Joanne) Hu

- c) TF2 (SC121A – AG4) Arc – Flash Detection Function and Devices Albert Livshitz
Albert not present. No update provided.

- d) WG A3-35 “Guidelines and best practices for the commissioning and operation of controlled switching projects”. Draft Technical Brochure for SC review in May 2018 Denis Dufournet

Still on target for May of 2018

- e) WG A3-37 “System conditions for and probability of Out-of-Phase. Draft Technical Brochure for SC review in October 2017.

Denis Dufournet

- f) WG A3-38 “Shunt Capacitor Switching in distribution and transmission systems: Verification by tests and performance in service”.
Kick-off meeting in August 2016

Anne Bosma

Work continues on document.

- g) New WG A3-39 “Field Experience with and Reliability of Surge Arresters

Denis Dufournet

Just starting work on this document.

8) Old Business

- a) <https://development.standards.ieee.org/my-site/open-ballot-invitations>
- b) Senior membership +15 in 2015, +16 in 2016, 69 senior members total in Subcommittee.

9) New Business

- a) Discussion - TF for IEEE Shunt reactor switching standard

Roy Alexander

Chair showed document submitted by Roy (see attachment at end of document). Roy discussed some concerns in existing standards where testing practices for shunt reactor switching may be lacking. A motion was pasted to create a TF to study electrical endurance of shunt reactor switching.

Motion: Form a TF to study shunt reactor switching endurance.

Moved: Mike Skidmore

Second: John Webb

Unanimous Approval

After meeting Sushil Shinde offered to become chair.

- b) Discussion – C57.142 – Revision – Guide to Describe the Occurrence and Mitigation of Switching Transients Induced by Transformer Switching Device, and System Interaction.

Mike Skidmore

Chair asked if anyone was interested in representing HVCB at the transformer WG meeting. C57.142 is listed as a joint WG between IEEE Switchgear and the Transformer Committee. Maybe someone from HVCB could act as a liaison between the transformer and switchgear committee to provide updates to HVCB. HVCB will review and discuss with ADSCOM and Main Committee, if meetings can be held at IEEE PES Switchgear.

- c) Presentation Reminder – “Case Studies in Engineering Ethics”
(Thursday April 27, 2017 (11:45 AM to 2:45 PM)) Dan Schiffbauer
- d) Subcommittee officer rotation ends 2019 Mike Skidmore

Chair: Mike Skidmore
Secretary: Victor Hermosillo

10) Future Meetings

- a) Fall 2017: Marriott Portland Sable Oaks, Portland, ME - October 8th to 13th, 2017
- b) Spring 2018: Disney’s Contemporary Resort, Lake Buena Vista, FL - April 22nd to 27th, 2018
- c) Fall 2018: Kansas City Marriott Downtown, Kansas City, MO - October 14th to 18th, 2018
- d) Spring 2019: Hilton, Burlington, VT - April 28th to May 1st, 2019
- e) Fall 2019: Catamaran Resort, San Diego, CA – October 6th to 10th, 2019

11) Adjourn

Roy Alexander Motion – Reactor Switching – Discussed at the Meeting

Explained by Roy Alexander at HVCB meeting (4-26-17):

Roy Discussion

There are 2 flaws in IEC 62271-110

1) There is nothing to determine switching endurance. 40 or 80 shots do not ensure endurance. Many are failing or failing the reactors after say 500 operations.

2) The reignition requirements are hokey at best. Presently, one is allowed any number and magnitude of reignitions in one half cycle but none in subsequent half cycles. This is crazy. There should be limits on the number of big reignitions. What difference does it make if small reignitions occur on subsequent half cycles?

TF could possibly review and study a new standard or modifications to parts of existing documents (such as IEC) with a new number to be determined.

Motion: Form a TF to study shunt reactor switching endurance.

Moved: Mike Skidmore

Second: John Webb

Vote (only members)

Unanimous approval