

1) **Introduction of Members and Guests** Victor Hermosillo / Carl Schuetz

Welcome, Introductions and Rosters.

Need to reach quorum.

2) **IEEE Patent and Copyright Policies**

IEEE patent and copyright policy slides shown – no patent claims nor copyright claims identified.

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

Victor Hermosillo / Carl Schuetz

Approval of Minutes of San Diego, CA

Sent to all members and guests via e-mail and posted online.

Follow up: None identified

Motion for approval: Terry Woodyard

Second : Pat Dillilo

4) **Membership**

	ROLE AS MEMBERS	ROLE AS GUESTS	ROLE AS CORRESPONDING MEMBERS	REQUIRED* FOR QUORUM COUNT	TOTAL
HVCB Committee Roster	38	XX	XX	≥ 50% membership at meeting (≥ 22 members)	
Attendance Recorded On-line	32	21	2	19	55

*Quorum Count includes: Active Members, Chair, Secretary

Introduction of new members, recognitions: will be announced at the Fall 2020 meeting.

Excused members (4): Roy Alexander, D. Dufournet, Anne Bosma, J. Jasinski

5) **Chairman's Report**

Victor Hermosillo / Carl Schuetz

Chairman (Victor Hermosillo): victor.hermosillo@ge.com (724) 483-7875
 Vice-Chairman (Carl Schuetz): carl.schuetz@atcllc.com (262) 506-6962

- WG chairs need to email minutes of their WG meetings to the subcommittee secretary no later than June 7th.

6) **Reports of Working Groups**

a) **Technical Paper Reviews**

Kirk Smith

Report to Subcommittee: There were no technical papers submitted since the last meeting.

b) HVCB Document Status

Document	Title	Subcommittee	WG Chair	PAR	IEEE Status	Comments
C37.04-2018	Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage above 1000 V	HVCB	Stephen Cary		Approved 12/05/2018	Document published May 31, 2019.
C37.04-2018 Cor 1	Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage above 1000 V	HVCB	John Webb	PAR approved 02/13/2020	PAR expires 12/31/2024	Technical errors identified, awaiting draft.
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 to expire 9/11/2019	Motion to withdraw made in San Diego. E-mail correspondence after San Diego resulted in decision to let the document expire.
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			Published in 2018
C37.09-2018	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	HVCB	Xi Zhu		Published in 2018	Document published April 11, 2019. PAR SG (Jan Weisker) to lead review.
C37.09-2018 Cor 1	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis	HVCB	Jan Weisker	PAR approved 02/13/2020	PAR expires	Technical and editorial errors identified, awaiting draft.
C37.010-2016	Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis	HVCB	Helmut Heiermeier			Document published April 17, 2017.
PC37.011-2018	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers	HVCB	Denis Dufournet			Document published in 2019.
PC37.012a- Amendment	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander	PAR approved 03/23/2017	PAR expires 12-31-2021	PAR applied to amend C37.012 via C37.012a. WG now formed. Held meeting. Presented test results to be used in development of an inrush current rating structure. CIGRE A3.38 WG?
PC37.012-2014	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander			

HVCB Switchgear Subcommittee Meeting Minutes, 05/06/2020, 3:45-5:30 PM, on-line

62271-37-013-2015	Standard for AC High Voltage (rated above 1000 V) Generator Circuit Breakers for Use With Generators Rated 10 MVA or More	HVCB	Mirko Palazzo	PAR approved 12/07/2016	PAR expires 10/01/2022	WG established and work continues for upgrades to the document.
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			Identify PAR request date. Document Expires 12/31/2022
C37.015-2018	IEEE Guide for the Application of Shunt Reactor Switching	HVCB	Anne Bosma			Published on 03/15/2018.
C37.016-2018	Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV	HVCB	Peter Meyer			
C37.016-2018 Cor 1	Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV	HVCB	Neil McCord	PAR approved 02/13/2020	PAR expires 12/31/2024	Several technical errors needing revision identified.
C37.017-2010	IEEE Standard for Bushings for High-Voltage [over 1000 V (ac)] Circuit Breakers and Gas-Insulated Switchgear	HVCB-GIS	Devki Sharma	PAR approved 02/08/2019	PAR expires 12/31/2023	WG meeting report. Proposed schedule to go to ballot in spring of 2020.
C37.10-2011	IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures	HVCB	Neil Hutchins	Awaiting PAR approval		Establish WG for update, motion passed for PAR Study Group formation.
PC37.10.1-2018	IEEE Guide for the Selection of Monitoring for Circuit Breakers	HVCB	Dave Mitchell			Document published in 2018.
C37.11-2014	Standard Requirements for Electrical Control for AC High-Voltage (>1000V) Circuit Breakers	HVCB	John Webb	PAR approved 02/08/2019	PAR expires 12/31/2023	PAR drafted and approved. Meeting report.
C57.148	IEEE Standard for Control Cabinets for for HVAC Switchgear	HVCB/joint	Devki Sharma		TF formed	Sub-comm voted to form TF, may become C37.11.1 Results of TF from Burlington-no further work recommended.
PC37.12-2018	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)	HVCB	John Webb		Published in 2018	
PC37.12.1-2018	IEEE Guide for High Voltage (>1000V) Recommended Practice for Circuit Breaker Instruction Manual Content	HVCB	Ken Edwards		Published in 2018	
C37.20.6-2015	4.76 kV to 38 kV Rated Grounding and Testing Devices Used in Enclosures	ADSCOM joint HVCB/SA	T. W. Olsen			Published in 2015
C37.59-2018	Requirements for Conversion of Power Switchgear Equipment	ADSCOM joint HVCB, SA, and LVSD	Dean Sigmon			

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C37.122-2010	Standard for High Voltage Gas-Insulated Substations Rated above 52 kV	Joint SUB/SWG HVCB	Ryan Stone	PAR approved 03/08/2018	Document Expires 12/31/2020	Co-sponsored with Substation Committee.
C37.122.3-2011	IEEE Guide for Sulphur Hexafluoride (SF6) Gas Handling for High-Voltage (over 1000 Vac) Equipment	Joint SUB/SWG HVCB	Billy Lao	PAR approved 09/05/2019	PAR expires 12/31/2023	Chair e-mail: billy@dilo.com Not listed as a co-sponsored effort
C57.16	IEEE Standard for Requirements, Terminology and Test Code for Dry-Type Air-Core Series Connected Reactors	Joint TF HVCB/TC	David Caverly		Document Expires 2021	Moved to ADSCOM
C57.142	Guide to Describe the Occurrence and Mitigation of Switching Transients Induced by Transformers, Switching Device and System Interaction	Joint TF HVCB/TC	James McBride		Revision ongoing	Moved to ADSCOM

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

7) Reports of AdsCom WG/TF/Study Group

Common Requirements WG (C37.100.1)

John Webb

Report to Subcommittee: Initial meeting this session. Group will analyze document for copyright issues as first step. If you wish to participate please send John an e-mail request.

TF to review Shunt Reactor (inductive load) Switching

Sushil Shinde

Report to Subcommittee: 17 members, 33 guests. Survey will be started, one utility and one manufacturer to act as coordinators for each of five regions in the US and one for Canada. Explore extension to some countries in Europe. Utility contact lists to be prepared. TF Chair asking for utility member participation in data collection.

PC37.122.10 Guide for Handling Non-SF₆ Gas Mixtures for HV Equipment

G. Becker

Report to Subcommittee: Sponsored by SUB committee, request for co-sponsorship by SWGR committee to be taken before AdsCom. Initial meeting held at JTCM in Jan. 20. WG Chair would like to have a joint meeting in the fall.

PAR: Scope of proposed standard: This guide describes the on-site handling of non-SF₆ gases and their gas mixtures used in electric power equipment. This includes gas mixing, filling, analysis, recovery, reclamation, and recycling.

Technology and Innovation Subcommittee

Nenad Uzelac

Report to Subcommittee: given by Victor Hermosillo on behalf of Nenad Uzelac

Initiatives for WG presented, two were chosen:

- Requirement for >200% voltage in open position, white paper
- Switchgear asset management: condition assessment and life cycle management

8) CIGRE Reports

CIGRE is undergoing a reorganization to respond to challenges.

Focus Areas:

Prepare for the Grid of the Future

- Cover new T&D equipment technologies
- Digitalization and automation
- Advanced sensors and data analytics
- Impact of renewables on T&D equipment

Make the best use of existing equipment

- Improve Condition assessment and diagnostics
- Investigate reliability of T&D equipment
- Consider all aspects of Life Cycle Management
- Consider influence of severe weather

Cover environmental and sustainability aspects

- Consider sustainable principles in the whole life cycle of T&D equipment

- Study environmentally friendly current interruptions and insulation media
- Reduce visual and spatial impact of T&D equipment

Develop knowledge and distribute information:

- Number of T&D equipment engineers on decline.
- Create content and distribute (include new channels like Linked In)
- Grow A3 community

Active WG:

A3.30: Overstressing of substation equipment

A3.31: NCIT with digital output

A3.36: Application and Benchmark of Multi Physic Simulations and Engineering Tools for Temperature Rise Calculation

A3.38: Shunt capacitor switching in distribution and transmission systems

A3.39: Application and field experience with Metal Oxide Surge Arresters

A3.40: Technical Requirements and Testing Recommendations for MV DC switching equipment at distribution levels

A3.41: Interrupting and switching performance with SF6 free switching equipment

A3.42: Failure analysis and risk mitigation for recent incidents of AIS instrument transformers

A3.43: Tools for lifecycle management of T&D switchgear based on data from condition monitoring systems

A3/A2/A1/B1.44: Limitations in Operation of High Voltage Equipment Resulting of Frequent Temporary Overvoltage's

A3.45: Methods for identification of frequency response characteristic of voltage measurement systems

CIGRE has established national committee panels KMS. Information can be obtained from USNC A3 contact: Albert Livshitz, B3 contact: George Becker.

Victor Hermosillo on behalf of Nenad Uzelac

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

9) Old Business

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

10) New Business

- a) Technical presentation – none
- b) Documents Approved by RevCom; no new documents since last meeting.
- c) C37.04-2018 Corrigendum 1. Standard for Ratings and Requirements for AC High Voltage Circuit Breakers with Rated Maximum Voltage above 1000 V

Chair: John Webb

Secretary: Jan Weisker

Report to Subcommittee: 33 attendees, 25 requested voting membership. PAR items completed however PAR modification identified. Revisions discussed to TRV tables but WG felt not to be presently undertaken. Draft in format not complete however, the WG would like to go for ballot and

Motion #1: Modify the PAR for C37.04 “Revise PAR to add 2 items from C37.09 PAR and exclude the modifications to TRV Tables.”

Motion made by: John Webb

Votes for: by consensus

Votes against: none

Abstentions: none

Motion #2: Modify the PAR for C37.04 “Request from HVCB permission to go to ballot conditional upon the working group reviews and approves the final version of the corrigendum prior to submittal to IEEE for ballot.”

Motion made by: John Webb

Votes for: by consensus

Votes against: none

Abstentions: none

- d) C37.09-2018 Corrigendum 1. IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis

Chair: Jan Weisker

Secretary: John Webb

Report to Subcommittee: 34 attendees, 26 req voting membership. After discussion regarding further content revision a vote to modify the PAR was taken and it passed. The WG will establish a re-defined scope of work at the F20 meeting and request a PAR modification later.

- e) C37.012a Amendment. IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers

Chair: Roy Alexander

Secretary: Brian Roberts

Report to Subcommittee: Document went to ballot, 98% approval w/28 comments. Re-circulated ballot had 100% approval. Submitted to RevCom in time for their June meeting. WG chair recommended starting immediately on next revision of C37.012.

- f) C37.017 IEEE Standard for Bushings for High-Voltage [over 1000 V (ac)] Circuit Breakers and Gas-Insulated Switchgear

Chair: Devki Sharma

Secretary: Carl Schuetz

Report to Subcommittee: Joint sponsorship by SUB and SWGR committees.

Motion made by WG chair to proceed to ballot.

Votes for: by consensus

Votes against: none

Abstentions: none

- g) 62271-37-013 Standard for AC High Voltage (rated above 1000 V) Generator Circuit Breakers for Use With Generators Rated 10 MVA or More

Chair: Mirko Palazzo

Secretary: Matt Westerdale

Report to Subcommittee: 13 members, 4 guests.

Draft 3 is presently being balloted by the WG. PAR will expire before dual-logo process would end.

Motion to extend the PAR until Dec 2022 made by Mirko Palazzo to account for coordination of dual-logo standard with IEC.

Votes for: by concensus

Votes against: none

Abstentions: none

- h) C37.10 IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures

First meeting to be held Fall 2020

Chair: Neil Hutchins

Secretary: Todd Irwin

Report to Subcommittee: First WG meeting scheduled for Fall 2020. Online WG meeting presently planned before F20 meeting.

- i) C37.016-2018 Corrigendum 1. Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV

Chair: Neil McCord

Secretary: None

Report to Subcommittee: Revisions progressing and document undergoing final editing. WG ballot expected to begin this Saturday, May 9, 2020.

The WG will need a room for F20.

- j) C37.11 Standard Requirements for Electrical Control for AC High-Voltage (>1000V) Circuit Breakers

Chair: John Webb

Secretary: Tony Riccuiti

Report to Subcommittee: Quorum met, WG voted to go to ballot.

Motion made by WG Chair to proceed to SA ballot.

Votes for: by consensus

Votes against: none

Abstentions: none

- k) C37.122 Standard for High Voltage Gas-Insulated Substations Rated above 52 kV
Chair: Ryan Stone
Secretary: Jennings Graham
Report to Subcommittee: Draft 5.4 reviewed in this WG session. On schedule to go to SA ballot by July of 2020.
- l) P2880 HVDC Circuit Breaker Standard
Chair: Joanne Hu
Vice-Chair / Secretary: Steven Chen
Report to Subcommittee: 30 attendees, 14 members, 16 guests. TF met on Monday and discussed next steps to be undertaken after PAR approval. Expected approval is mid-May of 2020. The PAR is written for a Standard document type. SC chair requested a document number at AdsCom. Process and criteria for document numbering is being revised. WG to continue work under PAR number, which will later transfer to the new document number.
- m) C37.122.10 Guide for Handling Non-Suphur Hexaflouride (SF6) Gas Mixtures For High-Voltage Equipment
Chair: George Becker
Secretary: Jorge Marquez-Sanchez
Report to Subcommittee: provided in section 7.
- n) Ad-hoc Committee of C37.04-2018 and C37.09-2018.
Chair: **Terry Woodyard**
Secretary: John Webb

The Ad-hoc Committee of C37.04-2018 and C37.09-2018 did not meet this week, officers determined that the subject could not be covered adequately in a virtual meeting. Officers to circulate list of known issues. HVCB SC members are encouraged to provide input. Report list of items to HVCB SC in preparation for a face-to-face meeting.

The WG will need a meeting room to hold 50-70 participants during the F20 meeting.

- o) 62271-37-082-2012 Standard for High-voltage switchgear and control gear - Part 37-082: Measurement of sound pressure levels on AC HVCB

This document expires in 2022, no PAR on file.

Past chair of this document contacted and accepted to lead a PAR SG.
Motion made to form a PAR SG with Leslie Falkingham as a Chair.
Second by: John Webb

Votes for: by consensus
Votes against: none
Abstentions: none

The PAR SG will need a room during F20 meeting.

- p) C37.012-2014 IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers

Motion made to form a C37.012 Study Group and identify a PAR SG by Ken Edwards
Second by: Roy Alexander

Votes for: by concensus
Votes against: none
Abstentions: none

SG Chair: Ken Edwards
SG Secretary: Luke Collette

Ken requests a meeting room for F20 meeting.

- q) C37.010-2016 Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis

This document expires 12/2025.

Motion made to establish a PAR SG for revision of C37.010 made by John Webb.
Second by: Ken Edwards

Votes for: by consensus
Votes against: none
Abstentions: none

John Webb accepted SG Chair. Helmut Heirmeier provided offer to assist.
A room for F20 will be needed.

Future Meetings

- a) Fall 2020: Sheraton Sundance Square, Fort Worth, TX – October 4th to 8th, 2020

- b) Spring 2021: Hilton Charlotte University Place, Charlotte, NC – April 18th to 23rd 2021
 - c) Fall 2021: Peppermill Resort, Reno, NV Oct. 10th to 14th
- 11) Expired standards from F19 – Ken Edwards ceased work on withdrawing those standards after discussion with IEEE liaison. The following standards will be automatically withdrawn: C37.06, C37.081, C37.083

12) **Adjourn**

Motion: Ken Edward

Second: Andy Keel, Dave Mitchell, Devki

Meeting Adjourned

Reported by:

Victor Hermosillo & Carl Schuetz

List of Attendees

First Name	Last Name	Role	Company
Roy	Alexander	Member	RWA Engineering
Roy	Ayers	Guest	Nashville Electric Service
George	Becker	Guest	POWER Engineers Inc.
Arben	Bufi	Member	Hitachi T&D Solutions, Inc.
David	Caverly	Guest	Trench Ltd.
Steven	Chen	Member	Eaton Corporation
Andrew	Chovanec	Guest	GE Power
Lucas	Collette	Member	Duquesne Light
Michael	Crawford	Member	Mitsubishi Electric
Jason	Cunningham	Member	Southern States, LLC
Patrick	Di Lillo	Member	Consolidated Edison Co. of NY, Inc.
Federico	Di Michele	Guest	CESI S.p.A.
Jeffrey	Door	Guest	The H-J Family of Companies
Ken	Edwards	Member	FirstEnergy Corp.
Sergio	Flores	Member	Schneider Electric Inc. USA
Raymond	Frazier	Guest	Ameren
John	Hall	Member	Tennessee Valley Authority
		Corresponding	
Helmut	Heiermeier	Member	ABB
Jeremy	Hensberger	Guest	Mitsubishi Electric Power Products Inc.
Victor	Hermosillo	Chair	GE Grid Solutions

Jingxuan (Joanne)	Hu	Member	RBJ Engineering Corporation
Jennifer	Hunter	Guest	MEPPI
Roy	Hutchins	Member	Southern Company Services
Todd	Irwin	Member	GE Grid Solutions
Christopher	Jarnigan	Guest	Southern Company Services
David	Johnson	Guest	HVCB
Thomas	Keels	Member	kEElectric Engineering
Hua Ying	Liu	Member	Southern California Edison
Albert	Livshitz	Member	CE Power Engineered Services
Russell	Long	Member	Retired
Neil	McCord	Member	KEC Precision
Dave	Mitchell	Member	Mitch and Associates
		Corresponding	
Jeffrey	Nelson	Member	Tennessee Valley Authority
Mirko	Palazzo	Member	ABB
Thomas	Pellerito	Member	DTE Energy
Andrew	Peterson	Guest	ABB
John	Phouminh	Guest	PEPCO HOLDINGS, INC.
Craig	Polchinski	Guest	MEPPI
Anthony	Ricciuti	Member	Eaton Corporation
Brian	Roberts	Guest	Southern States, LLC
Daniel	Schiffbauer	Member	Toshiba International Corporation
Carl	Schuetz	Secretary	American Transmission Company (ATC)
Devki	Sharma	Member	Entergy
Sushil	Shinde	Member	ABB Inc.
Michael	Skidmore	Past Chair	AEP
		Corresponding	
Robert	Smith	Member	Retired
Don	Steigerwalt	Member	Duke Energy
Jeffrey	Ward	Guest	Doble Engineering Company
John	Webb	Member	ABB
Jan	Weisker	Guest	Siemens AG
Matt	Westerdale	Guest	Bureau of Reclamation
Terrance	Woodyard	Member	Siemens Industry Inc.
Richard	York	Member	Mitsubishi Electric Power Products Inc.
Marcus	Young	Guest	Mitsubishi Electric Power Products, Inc.
Wei	Zhang	Guest	Hitachi T&D Solutions, Inc.
Xi	Zhu	Member	GE Energy Management