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

Welcome, Introductions (type Name, Affiliation, Address in Chat).

Need to reach quorum.

2) **IEEE Patent Policy**
Review new patent policy requirements

3) **Approval of Minutes of Previous Meeting** Victor Hermosillo / Carl Schuetz

Approval of Minutes of S20, online meeting
Sent to all members and guests via e-mail.
Follow up
motion for approval: Pat Di Lillo
second : Neil Hutchins

4) **Membership**

	ROLE AS MEMBERS	ROLE AS GUESTS	ROLE AS CORRESPONDING MEMBERS	REQUIRED* FOR QUORUM COUNT	TOTAL
HVCB Committee Roster	45	XX	7	≥ 50% membership at meeting (≥ 19 members)	XX
Attendance Recorded On-line	**33**	28	4	**25**	65

*Quorum Count includes: Active Members, Chair, Secretary, Past Chair and Corresponding Members present at meeting
Quorum met

Introduction of new members, recognitions:
The following individuals have achieved HVCB Subcommittee membership status:

George Becker
David Caverly
Jeff Door
Curtiss Frazier
Jeremy Hensberger
Christopher Jarnigan
David Johnson
Steven May
John Phouminh
Bobby Rich
Jeff Ward
Jan Weisker
Wei Zhang

Excused members (4): A. Bosma, D. Dufournet, Helmut Heiermeier, Albert Livshitz

5) **Chairman's Report** Victor Hermosillo / Carl Schuetz

Chairman (Victor Hermosillo): vfhermosillo@ieee.org **(**724) 483-7875
Secretary (Carl Schuetz): carl.schuetz@ieee.org (262) 506-6962

- WG chairs need to email minutes of their WG meetings to the subcommittee secretary no later than October 16th.

6) **Reports of Working Groups**

a) **Technical Paper Reviews** Kirk Smith

No papers to review.

b) **ASC C37 Power Switchgear Report** John Webb

NEMA is investigating possibility to create new documents, most likely guides, for the following:
Standard Arrangement for Control Cabinets of High Voltage Substation Circuit Breakers
Standard Arrangement for Utility Metering Sections in Metal-Enclosed Switchgear

Question was asked why NEMA is in development of a control cabinet when HVCB decided there was no interest.
The ASC representative replied the initiative does not have full support of the group and it is unsure if it will move forward.

c) 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.
PC37.04-2018 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.
PC37.09-2018 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 12/31/24	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.
C37.011-2018	IEEE Guide for the Application of Transient Recovery Voltage for AC High-Voltage Circuit Breakers	HVCB	Denis Dufournet			Document published in 2019.
PC37.012-2014	IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers	HVCB	Roy Alexander			Published in 2014.
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	Amendment passed REVComm on June 4, 2020. As of this date the amendment has now been published.
P62271-37-013-2015	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			
PC37.016-2018 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.
PC37.017-2010	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	Second ballot closed on 9/18/20.
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.
C37.10.1-2018	IEEE Guide for the Selection of Monitoring for Circuit Breakers	HVCB	Dave Mitchell		.	Document published in 2018.
PC37.11-2014	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 disbanded
C37.12-2018	IEEE Guide for Specifications of High-Voltage Circuit Breakers (over 1000 Volts)	HVCB	John Webb			Published in 2018 .
C37.12.1-2018	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			
PC37.122-2010	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.
PC37.122.2-2011	Guide for the Application of Gas-Insulated Substations Rated 1 kV to 52 kV	Joint SUB/SWG HVCB	Eldridge Byron	PAR approved 06/03/2019	Document Expires 12/31/2021	Co-sponsored with Substation Committee.
PC37.122.3-2011	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	Not listed as a co-sponsored effort

PC37.122.10	Guide for Handling Non-Sulphur Hexafluoride (SF6) Gas Mixtures for High Voltage Equipment	Joint SUB/SWG HVCB	George Becker	PAR approved 06/03/2019	Document Expires 12/31/2023	Co-sponsored with Substation Committee.
PC57.16	IEEE Standard for Requirements, Terminology and Test Code for Dry-Type Air-Core Series Connected Reactors	Joint TF HVCB/TC	David Caverly	PAR approved 02/05/2016	Document Expires 2021	Moved to ADSCOM
PC57.142	Guide to Describe the Occurrence and Mitigation of Switching Transients Induced by Transformers, Switching Device and System Interaction	Joint TF HVCB/TC	James McBride	PAR approved 03/23/2017	Revision ongoing	Moved to ADSCOM

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

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

C37.100.1 Common Requirements for High Voltage Power Switchgear Rated Above 1000 V — John Webb
One meeting held to evaluate what content is needed for revision. Virtual TF meetings to be held over the next few months.

TF to review Shunt Reactor (inductive load) Switching — Sushil Shinde
Work continuing on information collection w/report expected in spring of 2021. Questionnaires going out to 3 groups: CB manufacturers, Shunt Rx manufacturers and Utilities. Coordinating with Transformer Committee liaison (D. Caverly) to obtain information.

C37.122.10 Guide for Handling Non-SF6 Gas Mixtures for HV Equipment — George Becker
New joint guide sponsored by SUB and co-sponsored by SWG Two web chapter meetings held resulting in development of a work plan developed and chapter leaders identified,
Next meeting at SUB in 2021 (virtual)

C57.142: Guide to Describe the Occurrence & Mitigation of Switching Transients Induced by Transformers, Switching Device, & System Interactions — David Caverly
Jointly sponsored by TRF and SWG. The guide expires 2020 and the PAR expires in 2021. The working group published a paper that describes the findings and is available on IEEE Explore,. This working group session gathered some new comments and the general consensus is that the document is close to finalization for balloting.

Technology and Innovation Subcommittee — Nenad Uzelac
Report to Subcommittee given below.

SC met October 5th from 3:45 to 5:30 PM.
Initiatives for WG presented, first two were chosen, groups were formed, requesting volunteers:

- Requirement for >200% voltage in open position, white paper (M. Chhabra)
- Special applications for switchgear: HVCB Generator synchronization; effects of renewable energy: harmonics, short circuit current, X/R ratio, overvoltage; power factor testing of HVAC circuit breakers; disconnect switch transients. (S. Shinde)
- Switchgear asset management: condition assessment and life cycle management (no lead)

8) **CIGRE Reports**

CIGRE held e-Session August 24th-28th and August 31st - September 4th.

Focus Areas:

Prepare for the Grid of the Future

- 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, T&D equipment reliability, Life Cycle Management, influence of severe weather

Cover environmental and sustainability aspects

- Sustainable principles of T&D equipment, environmentally-friendly current interruption and insulation media, reduce visual and spatial impact of equipment.

Develop knowledge and distribute information:

- Number of T&D equipment engineers on decline, create and distribute content. grow A3 community

New Technical Brochures:
A3.30: Overstressing of substation equipment
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

Paper to be published in Electra:
A3.31: NCIT with digital output

Active WG:

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

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

Documents published: none

c) 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**
Met on Monday - 30 members, 1 guest. IEC comments were reviewed and received with 100% approval. Most comments were editorial, next step is to submit a new draft. Expected schedule is in November and last draft submitted before years end. Expected publish date in 2021.

d) 62271-37-082-2012 Standard for Sound Pressure Levels in Switchgear
Chair: **Leslie Falkingham**
Secretary: **TBD**
This is a jointly sponsored standard between IEC and IEEE. The PAR WG meeting was held on Monday with 19 attendees. The chair described a desire to renew the standard as is however, needs IEC concurrence. Chair will contact the IEC liaison and try to align future renewal cycles.
Comment from an attendee is that a renewal would need to be balloted Chair agreed and will investigate with the IEEE liaison.

e) 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**
Combined meeting of C37.04 Corrigendum and C37.09 Corrigendum with 41 individuals and 29 members. Draft of the Corrigenda for 04 and 09. Both documents approved to go to ballot.
Chair made a motion to request C37.04 Corrigendum and C37.09 Corrigendum permission to go to ballot.
Permission was granted by the subcommittee chair based on a preliminary draft of the meeting minutes.

f) 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**
See the report to the subcommittee of item e)

g) Ad-hoc Committee of C37.04-2018 and C37.09-2018.
Chair: **Terry Woodyard**
Secretary: **TBD**
John Webb chosen as secretary. Met on Tuesday with 42 attendees. Will need an additional meeting to clarify proposed changes and start document revision by Amendment.

h) C37.012a Amendment. IEEE Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers
Chair: **Roy Alexander**
Secretary: **Brian Roberts**
Document has been approved and published.
Motion made by Roy Alexander to disband the WG.
Second by: Carl Schuetz
Motion passed by consensus.

i) C37.10 IEEE Guide for Investigation, Analysis, and Reporting of Power Circuit Breaker Failures
Chair: **Neil Hutchins**
Secretary: **Todd Irwin**
Met on Monday with 13 members present but no quorum was achieved. Previous meeting minutes and agenda were approved. Alternative gases to be included on the failure form. The working group recommended inclusion of data collection for NEMA use. The working group is also considering PES presentations and HVCB presentations. A further virtual meeting will be scheduled (early Nov.) to discuss further document revisions.

j) C37.016-2018 Corrigendum 1. Standard for AC High Voltage Circuit Switchers Rated 15.5kV through 245kV
Chair: **Neil McCord**
Secretary: **TBD**
The document needs further formatting revision and is expected to be completed by December 25. The chair explained that the working group has completed their technical and editorial revisions and voted to forward the document for subcommittee approval to go to ballot. However, based on the further revision needed the working group chair will not seek subcommittee approval until the document formatting is complete.

k) 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**
The standard is on second recirculation, presently has 100% approval.

l) C37.11 Standard Requirements for Electrical Control for AC High-Voltage (>1000V) Circuit Breakers
Chair: **John Webb**
Secretary: **Tony Riccuiti**
Nothing new to report, WG and SC previously approved document to ballot.

m) P2880 HVDC Circuit Breaker Standard
Chair: **Joanne Hu**
Secretary: **Steven Chen**

HVDC CB met on Monday with 33 attendees that included 17 members. Material content was reviewed that included definitions and work begun thus far. Discussion and comments were received on material already present and further work identified. The chair expressed an opinion that there needs to be two working groups for DC switching equipment, one for circuit breakers and another for DC switches. Coordination is needed between these groups to avoid overlap or identify equipment not covered.

n) C37.122 Standard for High Voltage Gas-Insulated Substations Rated above 52 kV
Chair: **Ryan Stone**
Secretary: **Jennings Graham**
A working group member stated the standard is waiting to go to ballot.

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

Motion made by Roy Alexander to form a PAR Study Group for C37.012
Second by: John Webb
Motion passed by consensus.

p) C37.010-2016 Application Guide for AC High-Voltage Circuit Breakers > 1000 Vac Rated on a Symmetrical Current Basis / past chair: Helmut Heiermeier, motion establish PAR, discussion, vote, officers.
Chair: TBD, Secretary: TBD
A request for utility volunteers for the secretary position made. The subcommittee chair asked that any volunteer contact him.
Motion made by Todd Irwin to form a PAR Study Group once a Chair is identified.
Second by: John Webb
Motion passed by consensus.

Future Meetings

a) Spring 2021: Hilton Charlotte University Place, Charlotte, NC – April 18th to 23rd 2021

b) Fall 2021: Peppermill Resort, Reno, NV Oct. 10th to 14th

11) **Adjourn**

Motion: Neil Hutchins
Second: Pat Di Lillo

Meeting Adjourned

Reported by:
Victor Hermosillo & Carl Schuetz

F20 Attendance

Roy	Alexander	RWA Engineering	Member
Mauricio	Aristizabal	ABB	Member
Roy	Ayers	Nashville Electric Service	Guest
George	Becker	POWER Engineers Inc.	Guest
W.J. (Bill)	Bergman	Bergman& Associates Ltd.	Corresponding Member
Steven	Brown	Allen & Hoshall	Guest
Arben	Bufi	Meiden America Switchgear, Inc.	Member
Eldridge	Byron	Schneider Electric	Member
Stephen	Cary	Eaton	Member
David	Caverly	Trench Ltd.	Guest
Steven	Chen	Eaton Corporation	Member
Andrew	Chovanec	GE Power	Guest
Lucas	Collette	Duquesne Light	Member
Michael	Crawford	Mitsubishi Electric	Member
Jason	Cunningham	Southern States, LLC	Member
Patrick	Di Lillo	Consolidated Edison Co. of NY, Inc.	Member
Federico	Di Michele	CESI S.p.A.	Guest
Jeffrey	Door	The H-J Family of Companies	Guest
Emily	Eftink	Burns & McDonnell	Guest
Leslie	Falkingham	Vacuum Interrupters Limited	Member
Sergio	Flores	Schneider Electric Inc. USA	Member
Raymond	Frazier	Ameren	Guest
John	Hall	Tennessee Valley Authority	Member
Jeremy	Hensberger	Mitsubishi Electric Power Products Inc.	Guest
Victor	Hermosillo	GE Grid Solutions	Chair
Jingxuan (Joanne)	Hu	RBJ Engineering Corporation	Member
Jennifer	Hunter	MEPPI	Guest
Roy	Hutchins	Southern Company Services	Member
Todd	Irwin	GE Grid Solutions	Member
Christopher	Jarnigan	Southern Company Services	Guest
David	Johnson	HVCB	Guest
Thomas	Keels	kEElectric Engineering	Member
David	Lemmerman	PECO/Exelon	Corresponding Member
Hua Ying	Liu	Southern California Edison	Member
Russell	Long	Retired	Member
Leo	Lopez	WIKA Instrument, LP	Guest
Steven	May	Southern Company	Guest
Neil	McCord	KEC Precision	Member
Jeffrey	Nelson	Tennessee Valley Authority	Corresponding Member
Mirko	Palazzo	ABB	Member
Thomas	Pellerito	DTE Energy	Member
Alan	Peterson	Utility Service Corporation	Guest
Andrew	Peterson	ABB	Guest

John	Phouminh	PEPCO HOLDINGS, INC.	Guest
Craig	Polchinski	MEPPI	Guest
Anthony	Ricciuti	Eaton Corporation	Member
Bobby	Rich	Dominion Energy	Guest
Daniel	Schiffbauer	Toshiba International Corporation	Member
Carl	Schuetz	American Transmission Company (ATC)	Secretary
Devki	Sharma	Entergy	Member
Sushil	Shinde	Hitachi ABB Power Grids	Member
Michael	Skidmore	AEP	Past Chair
Robert	Smith	Retired	Corresponding Member
Donald	Swing	Powell Industries	Guest
Vernon	Toups	Siemens	Guest
Francois	Trichon	Schneider Electric	Guest
James	van de Ligt	CANA High Voltage Ltd.	Guest
Jeffrey	Ward	Doble Engineering Company	Guest
John	Webb	ABB	Member
Matt	Westerdale	Bureau of Reclamation	Guest
Terrance	Woodyard	Siemens Industry Inc.	Member
Richard	York	Mitsubishi Electric Power Products Inc.	Member
Marcus	Young	Mitsubishi Electric Power Products, Inc.	Guest
Wei	Zhang	Hitachi T&D Solutions, Inc.	Guest
Xi	Zhu	GE Energy Management	Member