

**SWITCHGEAR ASSEMBLIES SUBCOMMITTEE
MINUTES OF THE FALL 2016 MEETING**

**Sheraton Station Square, Pittsburgh, PA USA
October 12, 2016**

The meeting was called to order by SA S/C Chair, D. Edwards, at 1:30 PM on October 12, 2016 with the introduction of the following members and guests:

Attendance

Members: 26 present, 12 absent – Quorum was met.

Guests: 29

Total: 55

Attendance is recorded at the end of the meeting minutes. Membership and attendance is recorded in the AMS system.

1. Introduction of Members and Guests

Members and guests introduced as recorded above.

2. Approval of Meeting Agenda

Revised Fall 2016 agenda presented.

Agenda accepted without changes by the SA S/C.

3. Approval of SA Meeting Minutes

Link: <http://www.ewh.ieee.org/soc/pes/switchgear/minutes/2016-1/S16SAmiREV0.pdf>

Minutes (link above) from the spring 2016 meeting in Hilton Head, SC were posted on-line.

Motion by F. Mayle to accept the meeting minutes; 2nd: D. Mazumdar

Motion approved by the SA S/C.

SA S/C Secretary Email address: mike.lafond@ieee.org

4. Working Group Status Reports

- a. C37.20.4** – Amendment: Standard for Indoor AC Switches (1kV to 38kV) for Use in Metal-Enclosed Switchgear

D. Edwards: At the spring meeting, there was a discussion to potentially address some minor items within this document. The document expires in 2023 and is targeted for WG action some time in 2018. At this time, the Chair proposes to postpone action till the planned time in 2018.

No motion or objection from the SA S/C with a consensus to delay action till a later date.

Actions for SA S/C: No further action at this time.

- b. C37.20.7** – Guide for Testing Medium-Voltage Metal-Enclosed Switchgear for Internal Arcing Faults

M. Wactor: Minutes are provided.

M. Wactor: WG met Tuesday, October 11, with many attendees. Quorum was met.

M. Wactor: Par revision and par extension have been submitted and approved. Par now expires at the end of 2017. 683 comments received from the ballot. Good progress was made in addressing the comments. WG is targeting a re-circulation ballot in November.

Actions for SA S/C: No further action required.

- c. C37.20.9** – Metal Enclosed Switchgear Rated 1 kV to 52 kV Incorporating Gas Insulation Systems

E. Byron: Minutes are provided.

E. Byron: WG met Wednesday, October 12, with 58 attendees. Quorum was met.

E. Byron: Two WG sessions held this week. 564 comments received on the last draft circulation. WG has addressed approximately 80 comments. Straw-man meetings planned for November 29th and 30th to complete a revised draft out before the end of the year. This revised draft will then be sent out for ballot shortly thereafter. A balloting pool is currently being formed with a closing date in early December 2016.

Actions for SA S/C: No further action required.

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- d. C37.20.9 Adhoc - Snubber Protection**
A. Livshitz: No minutes are provided.

D. Edwards: No ad-hoc report completed. Update will be provided at the next meeting.
Actions for SA S/C: Add item to next meeting agenda.
- e. C37.20.10 – Standard for Definitions for AC (52kV and below) and DC (3,2kV and below) Switchgear Assemblies**
K. Flowers: No meetings held. No minutes are provided. Document approved by RevCom. First draft from editors expected shortly. Document publication date is expected in November 2016.

D. Edwards: Any recommendations for future actions on how to handle definitions?

K. Flowers: Guidance at this time is to wait and see how the remaining S/C's complete their effort and then discuss this strategy within ADSCOM's.

Actions for SA S/C: Add item to next meeting agenda – if published, disband WG.
- f. C37.21 – Control Switchboards**
D. Hrnrcir: Minutes are provided.

D. Hrnrcir: WG met Monday, October 10, with 14 attendees.

D. Hrnrcir: A ballot was completed in August 2016. 61 comments were received. Current draft and comments addressed by WG. A revised draft is targeted to be sent out for review within two weeks. An effort to coordinate the text on wiring across a hinge will be addressed to align with C37.20.1, C37.20.2, C37.20.3 and similar documents. If required, WG will hold teleconferences and re-ballot.

Actions for SA S/C: No further action required.
- g. C37.24 – Guide for Evaluating the Effect of Solar Radiation on Outdoor Metal-Enclosed Switchgear**
J. McClelland: Minutes are provided.

J. McClelland: WG met Monday, October 10, with 22 attendees.

J. McClelland: 7 comments worked on by WG with line of sight to solution. A revised draft to be re-circulated within the next month and WG is expecting a submission to RevCom prior to the next meeting.

Actions for SA S/C: No further action required.
- h. C37.81 – Seismic Qualification of Class 1E Metal-Enclosed Power Switchgear Assemblies**
D. Riffe: Minutes provided.

D. Edwards: WG met Tuesday, October 11, with 3 attendees.

D. Edwards: D. Riffe could not be present for this meeting. WG is on track with efforts. Document has been balloted and addressing a few remaining comments. Possibly one additional round of re-circulation on the draft and submission to RevCom should be soon. Chair will follow-up with WG chair off-line for any action required.

Note that a combined WG is focused on both C37.81 and C37.82 documents.

Actions for SA S/C: Contact WG chair for status update.
- i. C37.82 – Qualifications of Switchgear Assemblies for Class 1E Applications in Nuclear Power Generating Stations**
D. Riffe: Minutes Provided

D. Edwards: WG met Tuesday, October 11, with 3 attendees.

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D. Edwards: D. Riffe could not be present for this meeting. WG is on track with efforts. Document has been balloted and addressing a few remaining comments. Possibly one additional round of re-circulation on the draft and submission to RevCom should be soon. Chair will follow-up with WG chair off-line for any action required.

Note that a combined WG is focused on both C37.81 and C37.82 documents.

Actions for SA S/C: Contact WG Chair for status update.

5. Old Business

a. IEC Activities

T. Burse: No meeting minutes provided.

T. Burse: IEC 62271-200 targeting recirculation later this year or next year. Will keep the SA S/C informed on future actions.

b. ASC C37 – General Update

T. Olsen: No meeting minutes provided.

T. Olsen: Group is getting ready to ballot new operating procedures. C37.50 and C37.51 are being taken under action. More information will be coming soon. Documents continue to be available to free download on the IEEE website. The next Chair for the ASC C37 group will be John Webb.

6. Membership

a. Senior Membership & Award for Young Professionals

D. Edwards: The following SA S/C members have achieved senior membership and are recognized.

- Michael Lafond
- Jeff Mizener

D. Edwards: Encouraged all to obtain your senior membership.

Senior Membership url: http://www.ieee.org/membership_services/membership/senior/index.html

b. Main Committee Membership

D. Edwards: New Main Committee members from SA S/C are:

- Paul Gingrich
- John McClelland
- Terry Woodyard

7. New Business

a. C37.20.2 – Inspection Windows installed in Barriers (Presentation attached to the meeting minutes)

P. Barnhart: Subject came up about putting a window on an interior barrier. Presentation shared with SA S/C.

E. Byron: Annex A defines some requirements for viewing windows including internal windows.

P. Barnhart: Yes, but how much steel remains around the viewing window is the question/topic. Would we need to be concerned about an extremely large viewing window where there is nearly minimal steel structure remaining to hold the viewing window to the structure?

T. Rohrer: Viewing window products do exist of relatively large sizes (i.e. 15 or 18 inches wide).

N. McQuin: Barriers are used in the equipment as a ground return path. Viewing window size should be limited to ensure an adequate ground return path to limit an internal event from penetrating a viewing window or barrier. There are some technical requirements, such as rod gap distances, within the document to possibly limit the size of the viewing window in some manner.

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T. Rohrer: Larger viewing windows on the market have an expanded metal cover in which the viewing window is located behind. If a viewing window is too large, does its installation impact the structural integrity? Cases could exist where structural integrity could be impacted.

P. Barnhart: Does the expanded metal in these viewing windows meet the minimum metal thickness requirements in the document?

T. Rohrer: The expanded metal on some products may not meet the minimum metal thickness requirement.

P. Barnhart: All live parts within the equipment are completely enclosed by metal but C37.20.2 does allow viewing windows in the exterior surface. If we allow them on the exterior, why would the viewing window be restricted on internal barriers?

M. Wactor: C37.20.2 does provide exceptions for external viewing windows and has exceptions for internal barriers such as insulated bus supports.

T. Burse: Metal-Clad equipment was intended to be inherently safer than Metal-Enclosed equipment. The internal barriers and thicker metal requirements provide a robustness to help prevent an internal event from cascading through multiple compartments.

T. Rohrer: Typically, the user keeps the external panels/doors closed and viewing is accomplished through both external and internal viewing windows while the equipment is live.

Consensus Check of SA S/C: How many would be concerned about the lack a limit for the size of a viewing window? Quick show of hands, majority of SA S/C agrees that a concern could exist.

T. Burse: Recommend an ad-hoc group be formed to research options and report back to this committee.

D. Edwards: P. Barnhart volunteers to lead ad-hoc group to investigate requirements for internal viewing windows. Ad-hoc group consists of M. Wactor, C. Schneider, T. Woodyard, T. Rohrer, D. Elliot, R. Boyce, C. Taylor, and N. McQuin.

P. Barnhart: Targeting a meeting/teleconference in November 2016.

Actions for SA S/C Chair: Add item to next meeting agenda.

b. C37.20.2 – Corrigendum or Amendment Discussion

D. Elliot: C37.20.2 Annex B deals with voltage dividers covering construction details and other requirements. There are references to IEC 61234-5 and 62271-6 neither of which address what a voltage divider does which is for voltage measurements.

T. Olsen: IEC 61243-1, 2, and 5 are the current documents.

D. Edwards: If there is a potential problem with references for voltage dividers, we can correct the document with a corrigendum or an amendment. If we cannot confirm the issue/solution today, we can table the discussion for later and address at a future date.

D. Elliot: Will do more research on the subject prior to the next meeting.

Actions for SA S/C Chair: Add item to next meeting agenda.

c. Logic Level/Communication Wire – Wire Requirements & Exceptions

D. Edwards: In C37.20.9 WG sessions, a discussion on the subject of wiring across hinges and how some types of wiring for communication/logic level have exceptions. The current text presents some differences along with different stranding requirements when compared to C37.20.1, C37.20.2, C37.20.21 documents. The text on this subject should be uniform since the application are similar. Currently C37.21 is in ballot and C37.20.9 will be going to ballot in the very near future.

K. Flowers: Does this effort need to initiate a common clause document for SA?

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D. Edwards: A SA S/C Common Clause document is of interest – has potential for benefit as a document for SA S/C family of documents. Paint, plating, wiring, dielectric, etc. would be involved. However, SA S/C not prepared to initiate a new WG for common clauses at this session.

P. Barnhart: Challenges of wiring across a hinge include stress, binding, too fine strands breaking, anchoring, etc. UL does have wiring experts across many different products that involve wiring across hinges.

T. Burse: Current text and exception in C37.20.1, C37.20.2, etc. are used today. Using this text should not create new complications.

P. Barnhart: C37.21 text on this subject is closer to our current documents but C37.20.9 drafted text has a significant expansion of the exceptions.

E. Byron: We can propose to leave the exception out but not sure if this solves the issues in C37.20.9.

D. Edwards: Consensus of SA S/C group is to allow C37.21 WG to proceed as planned with ballot activity. C37.20.9 will wait for the recommendations from the ad-hoc group. An ad-hoc group needs to be formed to help refine the requirements/testing on this subject area.

D. Edwards: P. Barnhart volunteers to lead an ad-hoc group with the following members: T. Burse, J. Jarque, B. Cohn, R. Boyce, E. Byron, and T. Hawkins. Ad-hoc will be targeting a meeting/teleconference near end of year and recommendations to be presented at the next meeting.

Actions for SA S/C Chair: Add item to next meeting agenda.

d. Officer Succession

SA S/C expresses sincere thanks and gratitude to D. Edwards for service as SA S/C Chair.

Mike Lafond takes over as Chair for SA S/C – succession step up from Secretary.

Tom Hawkins (tom.hawkins@ieee.org) has volunteered and is appointed as Secretary.

e. SA Document Status – Required action – review of proposed “SA Document Status” report.

D. Edwards: Document status has been reviewed with each WG Chair and Document Status Report is updated.

f. WG Meeting Room Requests – Update “SA Document Status” report

M. Lafond: Please contact me for any changes for meeting room requirements. Meeting room requests are circulated in SA Document status.

g. ADSCOM – Items for SA S/C Chair to discuss at ADSCOM meeting

- SA S/C considering a future WG effort for a common clause document in the future.
- HVCB S/C may be releasing documents out of synch from themselves.
- Recommendation for M. Lafond as SA S/C Chair.
- Potential discharge ADSCOM effort.

h. Visible Break – Rode Discussion Group Report (attached to meeting minutes)

D. Edwards: The current task force effort crosses multiple S/C's. Each S/C is represented. Recent work focused on withdraw-able breakers which are visibly moved to create an isolating gap but the gap cannot be visually verified. Effort is underway to define the requirement to include a visual evidence of an isolating gap. Several terms are being developed. Task force targeting definitions within a month and will focus on construction and qualification requirements next.

i. Main Committee Meeting Items – Review items to be presented

Total: 14

Future PAR Activity: 0

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Future Ballot Activity: 1 (C37.20.9), Ballot activity approved in previous meeting
Active PAR's: 7 (C37.20.7, C37.20.9, C37.20.10, C37.21, C37.24, C37.81, C37.82)
Disbanded WG's: 0
Not Active: 7 (C37.20.1, C37.20.2, C37.20.3, C37.20.4, C37.20.6, C37.23, C37.121)

- j. Working Group Minutes** – To SA S/C Secretary no later than October 13, 2016.
Email address: tom.hawkins@ieee.org and mike.lafond@ieee.org
- k. WG - Booklet & Website Synopsis** – To SA S/C Secretary no later than October 13, 2016.
Email address: tom.hawkins@ieee.org and mike.lafond@ieee.org
- l. Upcoming Meetings**
Spring 2017 (23 Apr – 28 Apr), Hilton Charlotte University Place, Charlotte, NC USA
Fall 2017 (8 Oct – 13 Oct), Marriott Portland Sable Oaks, Portland, ME USA
Spring 2018 (22 Apr – 27 Apr), Disney's Contemporary Resort, Lake Buena Vista, FL USA

8. Adjourn

Meeting adjourned at 3:13pm.

Reported by:

Michael P. Lafond
Switchgear Assemblies Sub-Committee Secretary
October 12, 2016

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Attendance record and as recorded in the AMS system:

Role	First Name	Last Name	Company
Chair	Doug	Edwards	Siemens Industry, Inc.
Secretary	Michael	Lafond	General Electric
Member	Paul	Barnhart	Underwriters Laboratories
Member	Ted	Burse	Powell Industries, Inc
Member	Eldridge	Byron	Schneider Electric
Member	David	Dunne	Schneider Electric
Member	Keith	Flowers	Siemens Industry, Inc.
Member	Paul	Gingrich	AZZ / Central Electric
Member	Sahadev	Gohil	AZZ/Central Electric Mfg. Co.
Member	Tom	Hawkins	Siemens Industry, Inc.
Member	Dan	Hrcir	Eaton
Member	David	Lemmerman	PECO/Exelon
Member	Alex	Lizardo	ABB
Member	Frank	Mayle	Technibus, Inc.
Member	Deepak	Mazumdar	Central Electric Manufacturing Co.
Member	John	McClelland	Technibus
Member	Charles	Morse	Siemens Industry, Inc.
Member	Darryl	Moser	ABB
Member	T	Olsen	Siemens Industry, Inc.
Member	Carl	Schneider	Schneider Electric
Member	Dean	Sigmon	Eaton Corporation
Member	Paul	Sullivan	DuPont
Member	Chand	Tailor	Eaton Corporation
Member	Michael	Wactor	Powell Industries, Inc
Member	Terry	Woodyard	Siemens Industry Inc.
Corresponding Member	James	Smith	Retired
Guest	David	Beseda	S&C Electric Co.
Guest	Jean-Marc	Biasse	Schneider Electric
Guest	Russell	Boyce	Eaton
Guest	Richard	Calatayud	ABB
Guest	Clint	Carne	Schneider Electric
Guest	Stephen	Cary	GE Energy Management
Guest	Robert	Cohn	Powercon Corp.
Guest	Jeffrey	Door	H-J Family of Companies
Guest	Donald	Elliott	ABB
Guest	Sergio	Flores	Schneider Electric Inc. USA
Guest	Peter	Glaesman	PCORE Electric Company, Inc.
Guest	Lou	Grahor	Eaton Corporation
Guest	Ronald	Hartzel	Eaton Corporation
Guest	Rahul	Jain	S&C Electric Company
Guest	Jose	Jarque	AZZ Switchgear Systems
Guest	James	Lagree	Eaton
Guest	Nigel	McQuin	McQuin Electrical Power Consulting, Inc.
Guest	Steven	Meiners	GE
Guest	Jeffery	Mizener	Siemens Industry
Guest	Rahul	Pawar	ABB

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Role	First Name	Last Name	Company
Guest	Iulian	Profir	Rockwell Automation
Guest	Ahmad	Qasem	Bechtel
Guest	Julian	Rizo	Xcel Energy
Guest	Richard	Rohr	Powell Electrical Systems
Guest	Tim	Rohrer	Exiscan
Guest	Kevin	Sippel	Eaton Electric
Guest	Robert	Warren	DNV GL - KEMA Laboratories
Guest	Michael	Whitney	S&C Electric Company
Guest	Matthew	Williford	Schneider Electric