

IEEE SWITCHGEAR COMMITTEE

Minutes: IEEE High-Voltage Fuses Subcommittee
Place: On-line
Date: Thursday October 14th 2021
Presiding officer: Jim Wenzel – Chair
Recorder: John Leach – Vice-Chair/Secretary

MEMBERS PRESENT

Glenn Borchardt	S & C Electric Co.
Chris Borck	Eaton
Sterlin Cochran	Oak and Shield LLC (Chair RFSWG)
Gary Haynes	ABB Inc.
Travis Johnson	Xcel Energy
John Leach	Consultant (Sec.)
Pete Marzec	S&C Electric Co.
Chris Morton	PowerTech
Caryn Riley	GT/NEETRAC
Jim Wenzel	Eaton (Chair)
Charles Worthington	Hubbell Power Systems
Danish Zia	UL LLC

MEMBERS ABSENT

Bobby Moorhead	Dominion
Jonathan Deverick^	Dominion Virginia Power
Jon Spencer	Utility Solutions
Randy Ward	Aluma-Form
Robert Wolf	Hubbell Power Systems

^ correspondence only

GUESTS

Rich Frye	Eaton
Todd Irwin	GE – Grid Solutions
Hemanth Jala	S&C Electric Co.
Aaron Motes	ABB – Hi-Tech
Byreddy Sudarshan	Burns and Mc Donald
Tim Tillery	Howard Industries
John Webb	ABB

HONORARY MEMBERS

John Angelis, L. Ron Beard, Glenn Borchardt, Ray Capra, Steve Hassler, Frank Ladonne, Chris Lettow, Jim Marek, Frank Muench, Don Parker, R. Neville Parry, Herb Pflanz, R (Kris) Ranjan, Tim Royster, John Schaffer, Mark Stavnes, Alan Yerges, Jan Zawadzki.

1. **Call meeting to order** - 1:30 pm (Central DS time)
2. **Approval of Agenda** – The agenda was modified with items 7 and 12 added to the provisional agenda as distributed. Proposed Caryn Riley, seconded Sterlin Cochran, approved.

3. **Member/guest introduction** – After our last meeting, Pete Marzec became eligible for membership, and is welcomed to the Sub-Committee.

There were therefore 12 members present, with 5 members not in attendance and 7 guests.

4. **Roster check** – Pete Marzec has been added to the roster. Rodolfo Elizondo has not attended in several years and his e-mail no longer works. He has been removed from the roster. Hemanth Jala will be eligible for membership after this meeting.
5. **Approval of April 21st 2021 minutes** – The date of the last meeting was corrected in the minutes. They were approved as corrected (proposed Sterlin Cochran, seconded Chris Morton).
6. **Report from the chair** – Jim reported that Todd Irwin was present to discuss a new initiative to address projects originating from outside the switchgear committee.
7. **EPAG Process** – Todd Irwin reported that we were getting more projects being initiated from outside the committee for which we were being named as co-sponsor. They could be from other committees or societies, and we were having little say in their PARs, only becoming aware of the project “after the fact” in some cases. The proposed solution is to form a group empowered to review and react to issues, an “External Project Approval Group (EPAG). It would be chaired by the Standards Coordinator with members being subcommittee chairs (or their representative) and Committee chair, vice-chair, secretary and immediate past chair. A vote to set up this group will take place at the main committee meeting.
8. **Standards status report**
- a. C37.40: superseded by C37.41-2016 and now shown as superseded in IEEE “shop”.
 - b. C37.41: published April 2017, Corrigenda issued May 2017. **PAR** for it to be combined with C37.42-2016, approved March 2020, expires Dec 2024.
 - c. C37.42: published May 2017.
 - d. C37.45: Published April 2017.
 - e. C37.48: New revision published August 2020.
 - f. C37.48.1: This document has been Incorporated into the revision of C37.48, in accordance with its PAR, and so is now obsolete.

9. **Working Group Reports -**

- a. Revision of fuse standards – C37.41: Sterlin Cochran

Sterlin reported that the WG meeting was held at 8:00 am on October 13th (on-line). Twenty-three people were present 16 members and 8 guests. A new draft document (conflating C37.41 and C37.42) had been produced and work continued reviewing the document. A number of issues arose and were discussed. As a result of this, three new Task Force Groups were formed to study the following items:

- a) TF1 – For disconnecting devices, reference to IEEE Std 1247-2005 was made for testing requirements. This is now obsolete so other standards (C37.30 series) will be examined for suitability to meet out testing requirements.
- b) TF2 – For dielectric testing, at the last revision of C37.42, fuse rated maximum voltage was linked to preferred rated lightning impulse withstand voltages and other tables then minimum dielectric test values based on a particular rated lightning impulse withstand voltage. It was decided to revert

to the method used in IEEE Std C37.42-2009 in which minimum dielectric test values were instead related to fuse rated maximum voltage.

- c) TF3 – For examining the modification of Test Series 4 currents for cutouts made in the 2016 revision and the 2017 corrigendum; they are still presenting testing issues. The task Group will revisit questions surrounding this testing.

Other issues were discussed and changes to the document made. This has become more than a simple amalgamation of the two documents and, together with time lost to the COVID 19 epidemic, means that we are somewhat behind schedule. It was decided to explore having a second session at the Spring meetings. This will provide time for the Task Forces to report on their progress.

10. Report of liaison to other committees -

- a. ER&P Committee – J. Wenzel
 - 1. There will be a meeting in November.

11. IEC Report – J. Leach – (full report Annex A)

- a. Since the April 2021 report there have been no live meetings but a TC 32 Chair's Advisory Group on-line meeting, and a meeting of TC32/WG1.
- b. TC32/WG1 is working on a standard for DC fuses over 1500 V (the present limit for LV fuses). It is planned to cover all types of fuses (industrial, semiconductor, photovoltaic, and battery).
- c. A second working group (WG2) has been formed but has only 2 members and presently no convenor. This group is controversial as it seeks to produce a standard for HV fuses tested as LV fuses (which exist at the moment).
- d. There are no plans for in person meetings at the moment before the General meeting in San Francisco 2022. TC32 has obtained some sponsorship for this meeting and hope to be invited, but this has not happened yet.

12. Unfinished business – nothing to report.

13. New business – Jim Wenzel pointed out that at the end of the year, his time as subcommittee chair finishes (there are now three-year term limits). He asked if anyone would like to take the job. No one stepped forward so he asked Sterlin Cochran to be Chair, and Sterlin agreed. John Leach thanked Jim for doing an excellent job for the past three years and Jim received a “virtual” round of applause. John also announced that he would be stepping down as Secretary/Vice-Chair as he felt it was appropriate for younger members to have the opportunity to serve (John has been SC chair or secretary for 35 years).

14. Future meetings -

Spring 2022 (April 11 -15), Hilton Bonnet Creek, Orlando, FL
Fall 2022 (October 17 – 21), Hilton Lake Champlain, Burlington, VT
Spring 2023, Palm Beach, FL (in negotiation)
Fall 2023 (October 08 – 13), Catamaran Resort, San Diego, CA
Spring 2024, St. Petersburg, FL (in negotiation)
Fall 2024, Phoenix, AZ (in negotiation)

15. Adjournment - 2:30 pm

Submitted by John Leach, 10/27/2021

Annex A

SC32A - U.S.A. Technical Advisory Group

Dr. John G. Leach, Technical Advisor ♦ j.g.leach@ieee.org ♦ 828-256-3744

IEC Report 2021-2 April 2021 to October 2021

From: Dr. John G. Leach, Technical Advisor TC32 and SC32A, October 12th 2021

Summary

Since the April 2021 report there have been no SC32A maintenance team meetings, but on-line meetings of TC32 Chair's Advisory Group on September 13th 2021 and a meeting of TC32/WG1 on September 30th 2021. It is still hoped that in-person meetings will be possible at the 2022 General Meeting in San Francisco (October/November).

TC 32 CAG web meeting, September 13th 2021

There was some discussion involving the development of a new Strategic Business Plan. It was decided to seek further clarification of the purposes to which this is put in order to determine what information would be helpful. There was also further discussion on WG2 of the Technical Committee. According to the IEC web site this WG has been established. However, it has not yet met and presently has no convenor (Jens Weber who was to have been the convenor has left Siba and IEC involvement). This WG has some controversy attached to it (three countries voted against its formation, based on the information available, and it presently only has two experts). Its purpose is to write a standard to cover existing "HV" fuses that have only been tested to LV requirements (but without appropriately specified test conditions). Such fuses have therefore not been tested to any recognized standard. The WG was formed by the circulation of questionnaire 32/241/Q. This document looked as if it was an "NP" (New Work Item Proposal) but without the necessary documentation (its "Question" was "Do you agree with the formation of a Working Group (WG) with the task of 'Make a standard for fuses with a rated voltage of more than 1.000V a.c.' and to Mr. Jens Weber, DE as the convenor of this group." I believe this was a mistake, as it was not intended to immediately start a new project, (if it had, it would have failed as insufficient experts were nominated). The actual intent was to create a Provisional Work Item (PWI) and launch a study concerning the creation of a standard. Only after a substantially finished document is available would a NP be proposed and a formal project for a standard started.

Whatever the intent, the WG presently exists but with almost no experts. At some point in the near future, an enquiry should be sent out inviting additional participation.

TC32/WG1 web meeting September 30th 2021

This group was set up to address HV DC fuses. SC32B covers LV DC, up to 1 500 V DC. SC32A covers no DC at all. The meeting was attended by 5 members and 3 guests (who intend to join). I was the only attendee from HV fuses (J. Carlos Perez Quesada is a member but had a conflict). The convenor is Jean-François De Palma, and the secretary Michael Altenhuber (who ran the meeting). The initial proposal was for fuses up to 12 kV

(I believe such fuses exist at the moment) but it was agreed to only limit the voltage by test requirements (as with HV AC fuses). The next significant question was what types of fuses to cover. While the bulk of interest is in semiconductor fuses (the first draft document contained text from IEC 60269 [LV Fuses] parts 1 [general requirements] and part 4 [semiconductor fuses]), it was decided that all types of fuses existing as LV fuses would be included. This therefore includes industrial types (gG, aM), semiconductor (aR, gR, gS), photovoltaic (gPV), and battery (aBat, gBat). We started going through the document making changes and noting items requiring more work. It is planned to meet again on October 18 and November 18, 2021.

Meetings of SC32A Maintenance Teams

I have not proposed any on-line meetings of any of the SC32A MTs. There are two reasons for this. The first is that on-line meetings of more than an hour or two, and/or when more than about 6 time zones are involved, become quite problematic. With participants in time zones from the USA to China and Japan, starting times and finishing times for anything approaching a normal meeting are well outside a normal working day. The second reason is that the subcommittee does not actually have any active projects at the moment, having concluded in 2020 an extensive revision of IEC 60282-1 and a new standard for cutouts using polymeric insulators. It was intended, at the planned Plenary meeting last September, to launch a project for the revision of the Tutorial and application document IEC 62655. The work we have already done in MT6 on this was in anticipation of such a project; the process is done this way because, once a project starts officially, there is an aggressive time-line for project completion. In effect, a document has to be almost ready for circulating as a Committee Draft before a project is officially launched. The intent of the Plenary was also to discuss whether a revision of IEC 60282-2 (Expulsion fuses) was necessary in view of changes in other expulsion fuse testing (e.g. IEEE C37.41-2016). We have also received input from Brazil on suggested changes to IEC 60282-2. No other proposed projects/changes have been sent to me.

We are still waiting to hear whether we have been issued an invitation to San Francisco in 2022 for TC32/SC32A/B/C and MT meetings.

Date and place of next meetings: Next CAG meeting January 17th 2022. TC32/WG2 meetings, October 18 and November 18, 2021. Next in-person TC/SC/MT meetings at the 2022 General Meeting in San Francisco, USA, October 31st – November 4th, 2022, (hopefully).

John Leach, 10/12/21