IEEE SWITCHGEAR COMMITTEE CORRESPONDENCE

Minutes:	IEEE High-Voltage Fuses Subcommittee
Place:	San Diego, CA
Date:	Wednesday, September 23rd 2015
Presiding officer:	John Leach - Chair
Recorder:	Alan Yerges

MEMBERS PRESENT

Glenn Borchardt	S & C Electric Company
Gary Haynes	ABB Inc.
John Leach	Consultant - T&B/Hi-Tech Fuses/ABB
Chris Lettow	S&C Electric Company
Sean Moody	Mersen
Alan Yerges	Eaton's Cooper Power Systems
Jon Spencer	ABB-Thomas Betts/Hi-Tech
Jonathan Deverick	Dominion Virginia Power
Sterlin Cochran	Hubbell Power (new)
Charles Worthington	Hubbell Power
Frank Lambert	Georgia Tech/NEETRAC (new)

MEMBERS ABSENT

Mark Stavnes	S & C Electric
Dan Gardner^	Thomas & Betts – Hi-Tech
J. R. Marek^	Consultant
R. Neville Parry^	Eaton
T. E. Royster	Dominion Virginia Power
Jim Wenzel	Eaton (new)

GUESTS

Dustin Sullivan	Hubbell Power
Rodolfo Elizondo	ABB
Blake Henard	Hubbell Power

HONORARY MEMBERS

J. G. Angelis, L. R. Beard, R. L. Capra, S. P. Hassler, F. Ladonne, Frank Muench, Don Parker, H. Pflanz, R. Ranjan, J. S. Schaffer, Jan Stefanski

1. **Call meeting to order -** at 1:30 PM
2. **Approval of Agenda** – No changes requested, agenda accepted.
3. **Member/guest introduction** – 9 members, 3 guests
4. **Roster check–** roster circulated for correction. Apology for absence received from Jim Wenzel, and Mark Stavnes.

5. **Approval of April 29, 2015 minutes –** Approved.
6. **Report from the Chair:** Nothing new to report, outside of later agenda items.
7. **Standards Document Status Report:**
    - **a.** PAR for C37.41 and C37.42 are valid through 2016.
    - **b.** PAR for C37.45 - document has been balloted.
    - **c.** We will need to have PAR next year for C37.48 and C37.48.1 revision (present standards are good through 2020/2021) and we will investigate adoption of IEC/TR 62655 with in-country modifications.
    - **d.** Regulations now require a revision every 10 years, or standard will expire.
8. **Working Group Reports**

a) Revision of Fuse Specification Standards – J. Leach John reported that:

- The Revision of Fuse Standards Working Group met on Tuesday, 9/22/2015 and 9/23/2015 with 18 Members in attendance, and 7 Guests.
    - Two reports from Chris Lettow on the two task forces on Polymer Insulator Cutouts and Test Series 4 additions.
    - WG completed a full review of the working draft of C37.41 and all open items were updated and approved.
    - Updates to align with C37.45 as was reviewed on 9/22/2015.
    - We have essentially completed the review. We will distribute for final review and submit for balloting by the end of this year.
    - WG Chair recognizes the support provided by C. Lettow to develop consensus and complete all targeted tasks for the two task forces.

b) Revision of Fuse Specification Standards – M. Stavnes (A. Yerges reported on Mark's behalf).

Date: 9/22/2015
Time: 10:15am – 12:00pm

a. (Members Present - 10)
b. (Members Absent (non-"corresponding only")-7)
c. (Guests - 7)
d. New individuals requested membership:
    i. Sterlin Cochran – Hubbell
    ii. Randy Ward – Alumaform
    iii. Both individuals have met the requirement of attending two consecutive meetings, and are therefore recommended to be approved for membership.
e. Report from the Chair (Mark Stavnes via. E-mail 9/21/15)
   PC 37.45 Draft 5 Ballot Comments Summary September 20, 2015. The ballot was successful; with an 89% return rate and a 93% affirmative rate. There were 3 negative votes and 79 comments that need to be resolved through a recirculation ballot
f. Reviewed Ballot for C37.45 Draft 5. Adressed:
    1. Open items – All were reviewed and addressed.
    2. Rejected items – All were reviewed and addressed.
    3. Accepted items – Not reviewed, but will propose Mark to survey final feedback via. E-mail.

g. Reviewed Some Changes that will be required in PC37.42 Draft 8
   i. Discussions noted that since most of the current activity is in C37.41, we would have to do an e-mail survey of changes needed in 37.42 afterwards.
   ii. Since C37.41 references the new C37.42 we have to try and synchronize the two ballots. John Leach has confirmed with Ted Olson that this can be done (probably will require a 45 day ballot).

9. Report of liaison to other committees

a. ER&P Committee met 9/23/2015 (J. G. Leach)

1. Several honorary members were nominated and approved. It was noted that Ed Jankowich has often attended our meetings as a guest.
   1. Harry Josten
   2. Larry Farr
   3. Ed Jankowich
   4. John Sullaw
   5. Denis Dufournet
   6. Jim Swank
2. Subcommittee chairs are encouraged to promote members to become senior members of IEEE, and to become fellows in the future.
3. Continuing push in the Switchgear committee to write technical papers.

10. IEC Report – J.G. Leach:

a. Met in Dresden, Germany in September, 2015 in conjunction with the 10th annual International Conference on Electric Fuses and Their Applications (ICEFA). Planning another meeting in spring, 2016.

b. Plenary session (subcommittee) scheduled in Frankfort, October, 2016. a revision to IEC60282-1 has been worked on unofficially. The subcommittee meeting can start the official process in which the time to complete is very limited – requiring draft within about 1 year, a vote within another 1 year, final draft International Standard vote in another, and publish with 1 year. (4 years total).

   A significant change is being proposed in that for the North American voltages testing would be performed at rated voltage (presently all voltages are tested to the European practice of testing at 87% of rated voltage).

   The Tutorial and Application Technical Report that relates to C37.48 and C37.48.1, IEC 62655 will be reviewed to see what changes will be needed with the revision of IEC 60282-1 (this is relevant to us as we hope to use the TR as the basis for replacing IEEE C37.48 and C37.48.1). IEC Technical reports can be treated as a standard to go through revisions.

c. TAG Meeting

1. Other than J. Leach, there is no one else presently attending IEC meetings to represent the US. Corresponding membership only goes so far in getting US interests heard.
2. With the retirement of F. Muench, we are looking for other options.

11. Unfinished business – None

12. New business – None

13. Next meetings:

Spring 2016 (April 25th-29th) Sonesta Resort, Hilton Head, SC, USA

Fall 2016 (Oct 9th-14th) Sheraton Station, Pittsburgh, PA

Spring 2017 (April 23-27th) Hilton Charlotte University, Charlotte, NC, USA

Fall 2017 (October 8-13) Marriott Portland Sable Oaks, Portland, ME

Spring 2018 (April 22-27) Disney's Contemporary Resort,, Lake Buena Vista, FL

14. Adjournment – 2:04PM

Annex 1: IEC Report

SC32A - U.S.A. Technical Advisory Group

Dr. John G. Leach, Technical Advisor ◆ j.g.leach@ieee.org ◆ 828-256-3744 ◆ Fax 828-322-2376

IEC Report 2015-1 April 2015 to September 2015

From: Dr. John G. Leach, Technical Advisor SC32A, September 23rd 2015

Summary

Since the April 2015 report there has been another meeting of MT3 in Dresden, Germany (in conjunction with the 10th Annual International Conference on Electric Fuses and their Applications (ICEFA), On Sunday September 13th, 2015.

The next meeting of MT3 is to be held in Mannheim, Germany in March 2016, followed by a meeting in Frankfurt, Germany as part of the 80th General meeting of the IEC, October 10 to 15, 2016. TC32 and all three subcommittees will meet.

Reports of activities

MT3

The current-limiting fuse maintenance Team met in Dresden, Germany-Sunday September 13th 2015. Participants were:

Harold Handcock	
Ulrich Haas	
John Leach	(Convenor IEC 32A MT7)
Juan-Carlos Perez-Quesada	(Convenor IEC 32A MT4)
Viktor Martinčič	
Mitja Koprivsek	visitor

At the end of April, Convenor Norbert Stein suffered a stroke and spent several weeks in hospital. While Norbert is home and recovering, he is not yet in a position to take up any of his leadership role. Consequently, Secretary John Leach conducted the meeting in Norbert's absence.

Since the next plenary meeting will take place at the 80th General meeting of the IEC, in Frankfurt, October 10 to 15, 2016, plans were made for gaining approval to move the revision of the HV Fuse test document IEC 60282-1 forward. Based on discussions with Didier Fulchiron (secretary of SC32A) and IEC central office, the procedure will be to issue a information document (INF) to all National Committees 4 months before the meeting, explaining the reasons for revision and the principle changes to be made. The preliminary INF document, prepared by John, was discussed and will be finalized early in 2016. This will be an important revision for those using North American voltages and practices as testing for I_1 and I_2 will required at 100% rated voltage (rather than the present 87% that only makes the fuses suitable for three-phase grounded-wye applications at rated voltage). It was also found that the Tutorial and Application report IEC/TR 62655 can be treated as a standard for maintenance purposes. It is anticipated that informal revision of this will be conducted in parallel with the revision of IEC 60282-1, with a formal revision project launched after the publishing of 60282-1, probably in 2020.

Most of the meeting time at the meeting was spent reviewing changes to IEC 60282-1 for the next edition, based on tasks determined at the March meeting in Geneva. Several relatively minor changes were agreed, (including fixing the incorrect single element homogeneous test for TD3) but the bulk of the discussion revolved around the necessity for additional testing requirements for thermally operated strikers. A proposal for specific tests met with no general support. The final majority opinion was that since different manufacturers implemented thermal strikers differently, a single set of criteria (e.g. specifying currents or temperatures at which a particular fuse should or should not operate) could be detrimental to some manufacturers whose fuses were working correctly in the enclosures for which they were designed. Consequently while proposals were made for changes to existing testing when thermal strikers are used (e.g. at low currents the striker can, and should, deploy with the fuse's main elements intact, but it still has to be tested for "conventional" deployment when the main elements melt) it was decided that it was appropriate to have no specific tests to investigate the thermal mechanism.

Date and place of next meeting: The next meeting is planned for Mannheim Germany (Norbert's home town) in March 2016, for final preparation for the plenary meeting at the 80th General meeting of the IEC in Frankfurt, October 10 to 15, 2016. Note the IEC meetings will clash with our IEEE fuse meetings.

John Leach, 9/23/15

Annex "B" Project status

Document	Title	Sub-Committee	WG Chair	PAR	IEEE Status	Activity/Plans
C37.40	Standard Service Conditions and Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories.	HVF	John Leach 828 256 3744 j.g.leach@ieee,org		Approved 2003 R2009	None - To be combined with C37.41
C37.41	Standard Design Tests for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories	HVF	John Leach 828 256 3744 j.g.leach@ieee,org	Approved 2012-16 Revision	Approved 2008	Revision to incorporate C37.40
C37.42	Standard Specification for High-Voltage (>1000 V) Expulsion Type Distribution Class Fuses, Fuse and Disconnecting Cutouts, Fuse Disconnecting Switches, and Fuse Links, and Accessories Used with These Devices.	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com	Approved 2012-16 Revision	Approved 2009	Revision to incorporate C37.43, C37.46 and C37.47
C37.43	Standard Specifications for High-Voltage Expulsion, Current-Limiting and Combination Type Distribution and Power Class External Fuses, with Rated Voltages from 1kV through 38kV, Used for the Protection of Shunt Capacitors	HVF	John Leach 828 256 3744 j.g.leach@ieee,org		Approved 2008	None – to be combined with C37.42
C37.45	Standard Specifications for High-Voltage Distribution Class Enclosed Single-Pole Air Switches with Rated Voltages from 1kV through 8.3kV	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com	Approved 2015-19 Revision	Approved 2007	Revision to incorporate material from C37.41 and C37.40 First ballot completed 9-2015
C37.46	Standard for High-Voltage (>1000 V) Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches.	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com		Approved 2010	None - To be combined with C37.42
C37.47	Standard Specifications for High-Voltage (>1000 V) Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com		Approved 2011	None - To be combined with C37.42
C37.48	Guide for Application, operation, and Maintenance of High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories	HVF	John Leach 828 256 3744 j.g.leach@ieee,org		Approved 2005 R2010	None - Good to 2020 PAR to combine C37.48 and C37.48.1 with IEC/TR 62655 to be sought in 2016
C37.48.1	Guide for the Application, Operation, and Coordination of High Voltage (>1000 V) Current-Limiting Fuses.	HVF	John Leach 828 256 3744 j.g.leach@ieee,org		Approved 2011	None – Good to 2021 See C37.48