

## IEEE SWITCHGEAR COMMITTEE CORRESPONDENCE

Minutes: IEEE High-Voltage Fuse Subcommittee  
Place: Las Vegas, Nevada  
Date: September 29<sup>th</sup> 2010  
Presiding officer: John Leach - Chair  
Recorder: Frank Muench - Secretary

### MEMBERS PRESENT

G. Borchardt	S & C Electric Company
G. Haynes	ABB Inc.
J. G. Leach	Consultant - T&B/Hi-Tech Fuses
F. J. Muench	Cooper Power Systems
D. Parker	Alabama Power
T. E. Royster	Dominion Virginia Power
M. Stavnes	S & C Electric
J. Zawadzki	Powertech Labs Inc.

### MEMBERS ABSENT

J. G. Angelis*	Consultant
R. L. Capra*	Consultant
D. Gardner^	T&B – Hi-Tech
S. P. Hassler*	Cooper Power Systems
F. Ladonne*	Underwriters Laboratories
J. R. Marek^	Consultant
R. N. Parry	Cutler Hammer
R. Ranjan*	Consultant
J. S. Schaffer*	G & W Electric Co.

\* Correspondence Only ^ Excused

### GUESTS

Jerry Earl	ABB
Frank Lambert	NEETRAC
Chris Lettow	S&C
Alan Yerges	Cooper Power Systems

1. **Call meeting to order** - at 1:40 PM
2. **IEEE Patent policy** – Presented and reviewed. Slides shown
3. **Member /guest introduction** – 6 members 4 guests
4. **Roster check**– roster circulated for correction. John Angeles has retired. Will check if he wishes to stay as a corresponding member. After numerous attempts we can't contact F. Calderon. We will remove him from the membership list. We will leave Ray Capra as active at present but check to see if he wishes to continue as a member.
5. **Approval of April 28th 2010 minutes** – Reviewed and approved without change.
6. **Report from the Chair:** – Instructions for how to get to the Luxor for the evening's social event were passed out
7. **Standards status report:** Attached as appendix B. Summary:

- a. C37.40 – 2003 reaffirmed 2009
- b. C37.41 – 2008
- c. C37.42 – 2009
- d. C37. 43- 2008
- e. C37.45 – 2007
- f. C37.46 – Approved in June
- g. C37.47 – Ready for recirculation ballot
- h. C37.48 – Reaffirmation ballot in progress
- i. C37.48.1 PAR approved, in revision.

## **8. Working Group Reports**

### **a. Revision of Fuse Specification Standards – M. Stavnes**

Met on the morning of September 28<sup>th</sup>, with 8 members and 2 guests. C37.46 in editor's hands to be published. C37.47 balloted; met requirements, 15 affirmative, 3 negative, 1 abstained. Met to resolve negatives. Will move to a second ballot, shortly.

After C37.47 is published all tasks of the WG are complete.

It was proposed that the working group will reform as a task force to investigate consolidating C37.42, 43, 45, 46, and 47, with a focus on organizing it to align with C37.41 and the IEC documents. The long time plan is to incorporate the material into C37.41.

### **b. Revision of Fuse Standards - J. G. Leach**

Met on the morning of September 29<sup>th</sup>, with 12 members and 1 guest. John reported That C37.48 is currently in reaffirmation ballot; 40% balloted with no comments to date.

Discussed latest draft of C37.48.1. A review of proposals has been completed and a new draft document created This was reviewed by the working group. The document is now close to being ready for ballot, but must be put in the latest IEC template. Potentially we could eventually replace this guide with the IEC application guide under development. Presently efforts to develop the IEC application guide are incorporating topics from IEEE C37.48 and C37.48.1. This could allow us to adopt the IEC document as our own. Need to evaluate how the final draft comes out. The IEC document is in the committee draft stage for comments. Probability is for creation of 2nd draft prior to moving to CDV stage (international ballot).

## **9. Report of liaison to other committees**

### **ER&P Committee – J. G. Leach:**

1. New honorary members elected – John Angeles (doesn't count toward quorum and no longer need to pay registration fees) also elected Alec Monroe and Nigel Quinn.
2. Want luncheon topics – PES president will speak in fall of 2011 at Nashville.

## **10. Report of IEC activities - J. G. Leach:**

- a. Refer to 8b, second paragraph for initial discussion of IEC activities.
- b. We will probably have our own version of an application guide, at least to convert terms to US style terms.
- c. The IEC guide includes details on expulsion fuses.
- d. The IEC document is an expansion of C37.48.1.

- e. The older versions of application information were quite Euro-centric; the draft incorporates US practice, which enables us to consider adopting the material. This includes coordination between expulsion fuses and Back-up CL fuses.
- f. Additional information is in attachment on IEC Activities to inform the TAG group and HV subcommittee about the current activities.

**11. Unfinished business - none**

**12. New business** – Proposal from Revisions of fuse standards WG – they would like to dissolve upon completion of publication of C37.47 and reform as a task force to investigate combining C37.42, .43, .45, .46, and .47 into a single document. Mark Stavnes would lead the Task force. The long term goals are to eventually move this material in C37.41

**13. Next meeting:** Meeting will be in Orlando, Florida, Walt Disney World Contemporary, Hotel, 17 May.

**14. Adjournment - 2:15PM**

**Annex A – IEC report**

# SC32A - U.S.A. Technical Advisory Group

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**IEC Report 2010-2 September 2010**



From: Dr. John G. Leach, Technical Advisor SC32A, April 23<sup>rd</sup> 2010

**IEC actions since April 2010:**

There has been one group of IEC meetings involving HV fuses since March 2010, which took place in London on the 7<sup>th</sup> and 8<sup>th</sup> of September. The main purpose of the meeting was for MT7 to meet under the convenorship of John Leach, and this was followed by a brief meeting of MT3. Additional activity during the period March to September was the completion of a committee draft of the Fuse User's Guide. Plans are for this to be circulated to National Committees for comment, early in October, with a January date for comments to be reported to WG6.

**London Meetings**

**MT7** met in London on September 7<sup>th</sup> and 8<sup>th</sup> 2010. Members present were:

Heinz-Ulrich Haas

Harold Handcock

John Leach

(Convenor IEC 32A MT7)

Joze Pihler

Phil Rosen

(part time guest from MT3)

Norbert Stein (part time guest from MT3) (Convenor IEC 32A MT3 and WG6)

A preliminary draft revision of IEC 60549 1976 Shunt capacitor fuse testing was discussed. It was agreed that since little information had been received as to changes needed in this

document and the general lack of "experts" willing to participate, a thorough revision would not be attempted. Rather a number of areas with known problems would be addressed and a CD would be prepared by Spring next year. Some rationalization with the IEEE capacitor fuse testing would be attempted, but it was felt that the IEEE test methods were not fully correct either. Based on the team's understanding of the effects of capacitive fault current on circuit voltage, an additional paragraph would be inserted into the Fuse User's Guide being developed by WG6.

**MT3** met in London on 8<sup>th</sup> 2010. Members present were:

Heinz-Ulrich Haas

Harold Handcock

John Leach (Convenor IEC 32A MT7)

Joze Pihler

Phil Rosen

Norbert Stein (Convenor IEC 32A MT3 and WG6)

Didier Fulchiron (secretary of SC32A) had clarified what changes, and the method of publishing, was possible for IEC 60282-1. The primary mandate of MT3 is to include new liquid-tightness testing, and this will be issued as an amendment. Since an amendment is a separate document, replacing sections of the "parent" document, too many changes (especially small changes) make the documents difficult to use. The primary changes are the introduction of a liquid-tightness test for fuse-links used in transformer-like applications and clarification of fuse rated voltage for unearthed (ungrounded) systems. Minor changes from the progress reported in May included combining the "switchgear-like" and "transformer-like" applications in one sub-clause, adding tolerances to the test temperatures (115 - 120 °C for European transformers and 140 – 145 °C for North American transformers), and additional clarification of the existing "switchgear" testing. While there was general agreement that the use of short duration virtual pre-arcing time for TCC curves could lead to errors if the currents are not symmetrical, it was felt that such changes are beyond the scope of the MT at this time.

John Leach, 10-5-10

## Annex B

Document	Title	Sub-Committee	WG Chair	PAR	IEEE Status	Activity
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
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 2008	None
C37.42	Standard Specification for High-Voltage Expulsion Type Distribution Class Fuses, Cutouts, Fuse Disconnecting Switches and Fuse Links	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com		Approved 2009	None
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
C37.45	Standard Specifications for High-Voltage Distribution Class Enclosed Single-Pole Air Switches with Rated Voltages from 1kV through 38kV	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com		Approved 2007	None
C37.46	Standard for High-Voltage Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com		Approved 6/17/2010	In Editing
C37.47	Standard Specifications for High-Voltage Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches	HVF	Mark Stavnes 773-338-1000, Ext. 2071 MStavnes@sandc.com	Approved 2009 Rev	Approved 2000	In ballot
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	Re-affirmation ballot in progress
C37.48.1	Guide for the Operation, Classification, Application, and Coordination of Current-Limiting Fuses with Rated Voltages 1-38kV	HVF	John Leach 828 256 3744 j.g.leach@ieee.org	Approved 2009-13	Approved 2002 R2008	In revision.