

WG: C37.010 - Circuit breaker application Guide

Chair: Helmut Heiermeier
Vice Chair: Xi Zhu
Secretary: Mike Skidmore

Location: San Antonio
Participants: 33 members
18 guests

- 1.) The meeting started with the chair introduction and introductions of the attendees. The chair asked all attendees to sign the roster and provide affiliation if not noted on the roster.
- 2.) The chairman reviewed the minutes of the meeting (MOM) from Galveston. The MOM from Galveston was distributed to all committee members and guests of C37.010 on 9-4-13 with an e-mail from Helmut. The secretary (Mike Skidmore) also distributed the draft (MOM) on 5-2-13 to all members and guests listed on the committee roster.
- 3.) The chair entertained a motion from John Webb to approve the MOM from Galveston. Mauricio Aristizabal seconded the motion. The motion passed unanimously.
- 4.) Status of Working Group

The chairman discussed the status of the PAR. The PAR expiration date is at the end of 2014. The chairman discussed the current PAR does not have a "Purpose". Some commented that a purpose was not provided in the original PAR submittal because it was not needed. The chairman discussed that the document should have a purpose. Helmut said he will review a modification to the PAR and possibly add a purpose. John Webb also recommended that the committee should ask for a 1 year extension if the PAR needs to be modified.

5.) Performed Work

The chairman provided an update on the work completed after Galveston which mostly included:
Some detailed work on solutions for comments
Rewriting of sub-clause 6.

The chairman discussed some comments received to remove all dated references from the document if the dates aren't necessary. Helmut agreed that dated references will be removed if the date is not necessary.

Carl Schuetz of ATC presented information to modify sub clause 6 for fault current calculations. The information presented by Carl is included as an attachment.

Discussion from others after presentation:

Roy Alexander was concerned about losing the decrement Figures within sub clause 6. He feared we will be stuck in a loop if IEEE 551 refers to C37.010 and C37.010 refers back to 551. If the graphs are removed we still need to point the users in the right direction and information. Some people felt the graphs may not be accurate and were removed because they were for older technology. Some commented how we know the graphs are accurate. Others commented how we know the graphs are inaccurate.

The chair along with the committee agreed we should include the decrement graphs Figures 8,9,10 (the AC and DC decrement curve for three-phase faults, the AC and DC decrement curve for single-phase faults, the DC decrement curve for all faults, respectively) back into the document along with an example. Carl agreed to add the information back into the document.

Ken Edwards has the old decrement graphs digitized. Moving forward Carl Schuetz will take the formulas provided by Ken and digitize to obtain better copies of the graphs and decrement figures. These graphs or formulas will be added back into C37.010 under sub-clause 6.

The chairman asked the committee about the sequence of events that need to occur and if C37.04 will incorporate C37.06 and if the committee can make reference to other "more current" revisions of 06 for C37.010. The committee discussed that we should refer to C37.06 and when it is superseded by the future document. Bill Long recommended including information on the subject and sequence of document approvals in the front section of the C37.010 document. That is, we should explain what should occur if we need to refer to a document that are not release or updated yet.

The chairman commented about some very old standards referenced. Helmut would like to keep the important information but no future work will be done if it is related to old technology such as oil breakers.

Carl Schuetz discuss that C37.010 is an application guide for breakers rated on a symmetrical current basis and there is some older equipment referenced that may be rated on a total current basis. The committee should review what may be removed.

The Chairman discussed de-rating factors for oil breakers and showed a graph for operating duty cycle de-rating. It is difficult or impossible to test new HV circuit breakers with extended duty cycles similar to the graph presented due to limits of the synthetic lab test circuit. Most of the old de-rating oil breaker graphs were likely established from a direct test circuit and not a synthetic test circuit. John Webb agreed to provide wording for de-rating for C37.010. Helmut recommends keeping de-rating for oil and air magnetic and adding wording for SF6 breakers.

6.) Further work/open points

Work will continue to address editorial comments.

Annex A or parts of Annex A will be incorporated into Sub-Clause 6 – The old decrement factors or curves will be digitized and added back into C37.010

7.) Preparation of next ballot.

The chair plans to re-circulate the document in maybe 2 or 3 months.

8.) The working group committee agreed to adjourn meeting.

9.) All slides provided at the meeting are included as attachments.

Meeting Roster – San Antonio

First Name	Last Name	Company	Role	San Antonio Meeting 9/16/2013
Mehmet	Adanur	Southern Company Services	Guest	
Syed Shahab Uddin	Ahmed	Siemens Energy Inc	Guest	X
Roy	Alexander	RWA Engineering	Member	X
Michael	Anderson	Retired	Member	
Mauricio	Aristizabal	ABB	Member	X
William	Bane	Nashville Electric Service	Guest	
Amildo	Barrio	Parsons	Guest	X
George	Becker	The United Illuminating Company	Member	X
Robert	Behl	ABB	Member	
W.J. (Bill)	Bergman	PowerNex Associates Inc.	Member	
Stan	Billings	Mitsubishi Electric PP	Member	X
Anne	Bosma	ABB AB	Member	
Cody	Brehm	American Transmission Company	Member	
Steven	Brown	Allen & Hoshall	Member	X
Arben	Bufi	Hitachi HVB, Inc.	Member	
Eldridge	Byron	Schneider Electric	Member	X
Donald	Cantrelle	Georgia Power	Guest	X
Gilbert	Carmona	Southern California Edison	Member	X
Stephen	Cary	Eaton Corporation	Guest	X
Steven	Chen	Eaton Corporation	Member	X
Chih	Chow	PEPCO	Member	X
Michael	Christian	ABB	Member	X
Roggero	Ciofani	Altalink	Guest	X
Lucas	Collette	Mitsubishi Electric	Guest	X
Dave	Collette	Mitsubishi Electric	Guest	X
Lee	Cox, Jr.	Efacec	Guest	X
Michael	Crawford	Mitsubishi Electric	Guest	X
David	Dart	NOJAPower	Guest	X
Jerod	Day	Vacuum Interrupters, Inc.	Guest	X
Patrick	Di Lillo	Consolidated Edison Co. of NY, Inc.	Member	X

Denis	Dufournet	Alstom Grid	Member	X
Edgar	Dullni	ABB	Member	
Carolyn	Durham	Entergy	Guest	
Ken	Edwards	Bonneville Power Administration	Member	X
Leslie	Falkingham	Vacuum Interrupters Limited	Member	
Thomas	Field	Entergy	Member	
Lori	Fish	Entergy	Guest	
Shane	Ford	Nashville Electric Service	Guest	
Robert	Foster	Megger	Guest	X
John	Hall	Tennessee Valley Authority	Guest	X
Daryl	Hallmark	Southern Company Services	Guest	
John	Harley	FirstPower Group LLC	Guest	
Helmut	Heiermeier	ABB	Chair	X
Charles	Hendrickson	Arizona Public Service Company	Guest	
Victor	Hermosillo	Alstom Grid	Member	X
Jingxuan (Joanne)	Hu	RBJ Engineering Corporation	Guest	
Todd	Irwin	Alstom Grid Inc	Member	X
Carlos	Isaac	Oncor Electric Delivery	Guest	X
Richard	Jackson	Detroit Edison	Member	
Anton	Janssen	Liander	Guest	
Cory	Johnson	BPA	Member	
Thomas	Lagerstrom	Pedersen Power Products	Guest	
Stephen	Lambert	Shawnee Power Consulting, LLC	Member	
Matthew	Lawrence	Doble Engineering	Guest	
Wangpei	Li	Eaton	Guest	
Hua Ying	Liu	Southern California Edison	Member	
Li	Liu	Eaton	Member	
Albert	Livshitz	Schneider Electric Services	Member	
Bjorn	Lofgren	Siemens Energy	Member	X
Russell	Long	Retired, but affiliated with Eaton Corp.	Member	X
Jess	Mains	ABB Inc	Guest	
Antonio	Mannarino	PSE&G	Guest	
Vincent	Marshall	Southern Company Services	Guest	X
Gary	Martin	Entergy	Member	X
John	Marzula	Mitsubishi	Guest	
Frank	Mayle	Technibus, Inc.	Member	
Dave	Mitchell	Dominion	Member	X
Georges	Montillet	GFM Consulting LLC	Member	
Stephanie	Montoya	Southern California Edison	Member	
Tom	Mulcahy	Dominion	Member	X
Jeffrey	Nelson	Tennessee Valley Authority	Member	
Joe	Nims	Allen & Hoshall	Guest	

Mirko	Palazzo	ABB	Member	
Shawn	Patterson	US Bureau of Reclamation	Member	X
Thomas	Pellerito	DTE Energy	Member	X
Alan	Peterson	Utility Service Corporation	Guest	
Lise	Phan	Parcific Gas and Electric Company	Member	
Cornelius	Plath	Omicron electronics	Guest	
Reynaldo	Ramos	Southern Company	Member	
Frank	Ricard	FirstPower Group LLC	Guest	
Anthony	Ricciuti	Eaton Corporation	Member	X
Brian	Roberts	Southern States, LLC	Guest	X
Jon	Rogers	Siemens Energy, Inc	Member	
Charles	Ross	PGH Wong Engineering	Member	
Roderick	Sauls	Southern Company Services	Member	X
Carl	Schuetz	American Transmission Company (ATC)	Member	X
Devki	Sharma	Consultant	Member	X
Sushil	Shinde	ABB Inc.	Member	X
Michael	Skidmore	AEP	Secretary	X
Zachary	Smith	Mitsubishi Electric Power Products, Inc.	Member	
Don	Steigerwalt	Duke Energy	Member	X
Donald	Swing	Powell Industries	Guest	
Vernon	Toups	Siemens	Guest	X
Stephen	Tyler	Dominion	Guest	
James	van de Ligt	CANA High Voltage Ltd.	Member	X
Steve	Vatterott	ABB Inc.	Guest	
Wes	Wadsworth	Hitachi HVB, Inc.	Guest	
John	Webb	ABB	Member	X
Jan	Weisker	Siemens AG	Member	
Oon	Yek	Pacific Gas & Electric	Guest	
Dong Sun	Yoon	HICO America	Guest	X
Richard	York	GE Gigital Energy	Guest	
Jiong	Zhang	MEPPI	Member	
Xi	Zhu	GE Energy Management	Vice- Chair	X

“X” - individual was at the meeting in San Antonio