

Minutes of WG PC37.04
Standard for High Voltage Circuit Breaker
Monday, October 15th, 2018
8:00 – 9:45 am
Kansas City Marriott Downtown, Kansas City, MO

- I Welcome
- II Introductions
Meeting opened with 78 individuals in attendance: 38 of 62 members and 18 guests. A quorum was present.
- III A call for knowledge of essential patents was made. No responses.
- IV A call for additions or corrections to the published minutes from the Spring meeting in Orlando was made without comment from those present. A motion to approve the minutes was made by Mike Skidmore, seconded by Jim Van de Ligt. Approved without objection by voice vote.
- V Old Business
- a. A review of the unresolved negative comments from the final ballot was conducted. These items were not accepted for the current revision but are recorded for potential future work. The items of interest were:
- Inclusion of 420 kV and 1100 to 1200 kV as preferred ratings
 - Include a drawing illustrating the numbering of terminals on free-standing circuit breakers
 - Study of C400 and higher accuracy CTs as mandatory for certain ratings of circuit breakers.
 - Harmonization of temperature rise limits on various joints depending upon material and plating of the surfaces.
 - Possible combination of IEEE C37.04 and IEEE C37.09 into a single standard.
- VI New Business:
- a. The last balloted draft was submitted to RevCom and is approved for the 4 Dec. Agenda.
- b. Kirk Frazier moved that the WG affirm the RevCom submission and request same from HVCB Subcommittee. Second from Eldridge Byron. Approved without objection by voice vote.
- c. It was suggested the future work may also include incorporation of recently approved IEEE Std C37.06.1 Recommended Practice for Fast TRVs be considered either as normative tables or an annex.

With no further items to discuss, the chair adjourned the meeting at 8:25 am

Stephen Cary
Chair

Attachments: (1) Membership and Attendance list.

Attendance Report Oct_18

Name	Role	First Name	Last Name	Company	10/11/16	04/24/17	10/08/17	04/23/18	10/15/18
C37.04	Chair	Stephen	Cary	ABB	X	X	X	X	X
C37.04	Vice-Chair	Roy	Alexander	RWA Engineering	X	X	X		
C37.04	Secretary	John	Webb	ABB	X	X	X	X	X
C37.04	Member	Mauricio	Aristizabal	ABB	X	X		X	X
C37.04	Member	Arben	Bufi	Hitachi T&D Solutions, Inc.	X	X	X	X	X
C37.04	Member	Ted	Burse	Powell Industries, Inc	X	X	X	X	X
C37.04	Member	Eldridge	Byron	Schneider Electric	X	X	X	X	X
C37.04	Member	Steven	Chen	Eaton Corporation	X	X	X	X	X
C37.04	Member	Lucas	Collette	Duquesne Light	X	X		X	X
C37.04	Member	Michael	Crawford	Mitsubishi Electric			X	X	X
C37.04	Member	Patrick	Di Lillo	Consolidated Edison Co. of NY,	X	X	X	X	X
C37.04	Member	Raymond	Frazier	Ameren		X	X	X	X
C37.04	Member	Paul	Grein	Circuit Breaker Sales, Co, Inc, - Group		X	X	X	X
C37.04	Member	John	Hall	Tennessee Valley Authority		X	X	X	X
C37.04	Member	Christian	Heinrich	Siemens AG	X		X		X
C37.04	Member	Jeremy	Hensberger	Mitsubishi Electric Power Products I		X	X	X	X
C37.04	Member	Victor	Hermosillo	GE Grid Solutions	X		X	X	X
C37.04	Member	Roy	Hutchins	Southern Company Services	X	X	X	X	X
C37.04	Member	Todd	Irwin	GE Grid Solutions	X	X	X	X	X
C37.04	Member	Cory	Johnson	BPA			X	X	X
C37.04	Member	Thomas	Keels	Salt River Project		X	X		X
C37.04	Member	Scott	Lanning	S&C Electric	X	X	X	X	X
C37.04	Member	Brad	Leccia	Eaton	X	X	X	X	X
C37.04	Member	Vincent	Marshall	Southern Company Services	X		X	X	X
C37.04	Member	Peter	Marzec	S&C Electric Co.	X	X		X	X
C37.04	Member	Dave	Mitchell	Dominion Energy	X	X	X	X	X
C37.04	Member	Andrew	Peterson	ABB	X	X	X	X	X
C37.04	Member	John	Phouminh	PEPCO HOLDINGS, INC.		X	X	X	X
C37.04	Member	Anthony	Ricciuti	Eaton Corporation	X	X	X	X	X
C37.04	Member	Daniel	Schiffbauer	Toshiba International Corporat	X	X		X	X
C37.04	Member	Carl	Schuetz	American Transmission Compæ	X	X	X	X	X
C37.04	Member	Devki	Sharma	Entergy		X	X	X	X
C37.04	Member	Michael	Skidmore	AEP	X	X	X	X	X
C37.04	Member	Vernon	Toups	Siemens	X	X	X	X	X
C37.04	Member	James	van de Ligt	CANA High Voltage Ltd.	X	X	X	X	X
C37.04	Member	Terrance	Woodyard	Siemens Industry Inc.		X	X	X	X
C37.04	Member	Richard	York	Mitsubishi Electric Power Prod	X	X	X	X	X
C37.04	Member	Wei	Zhang	Hitachi T&D Solutions, Inc.		X	X	X	X
C37.04	Member	Xi	Zhu	GE Energy Management	X	X	X	X	X
C37.04	Member	Koustubh	Ashtekar	Eaton Corporation		X	X		
C37.04	Member	Anne	Bosma	ABB AB	X	X		X	
C37.04	Member	Chih	Chow	PEPCO	X	X	X	X	

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C37.04	Member	Michael	Christian	ABB		X	X	X	
C37.04	Member	Jeffrey	Door	The H-J Family of Companies	X		X	X	
C37.04	Member	Denis	Dufournet	Retired	X	X		X	
C37.04	Member	Robert	Foster	Megger	X	X	X		
C37.04	Member	Douglas	Giraud	Powell Industries	X		X		
C37.04	Member	Helmut	Heiermeier	ABB	X	X	X	X	
C37.04	Member	Alexander	Hoover	Siemens Industry	X	X	X		
C37.04	Member	Jennifer	Hunter	MEPPI			X	X	
C37.04	Member	Hua Ying	Liu	Southern California Edison	X	X	X	X	
C37.04	Member	Albert	Livshitz	CE Power Solutions		X		X	
C37.04	Member	Gary	Martin	Entergy	X	X		X	
C37.04	Member	Charles	Morse	Siemens Industry, Inc.		X	X	X	
C37.04	Member	Tom	Mulcahy	Dominion Virginia Power	X	X	X	X	
C37.04	Member	T	Olsen	Retired, formerly with Siemens Indu:	X	X			
C37.04	Member	Miklos	Orosz	Myers Controlled Power			X	X	
C37.04	Member	Samala Sant	Reddy	Powell Industries	X	X	X	X	
C37.04	Member	Sushil	Shinde	ABB Inc.	X	X	X	X	
C37.04	Member	Dean	Sigmon	Eaton Corporation	X	X	X	X	
C37.04	Member	David	Stone	DTS Technical Services	X	X	X		
C37.04	Member	Jan	Weisker	Siemens AG		X	X	X	
C37.04	Guest	Janet	Ache	G&W Electric					X
C37.04	Guest	Brad	Armstrong	Meramec Instrument Transformer C	X	X	X	X	X
C37.04	Guest	Georges	Auguste	Ameren MO					X
C37.04	Guest	Michael	Boulus	PSE&G					X
C37.04	Guest	Steven	Brown	Allen & Hoshall	X				X
C37.04	Guest	Vincent	Chiodo	HICO	X	X	X	X	X
C37.04	Guest	Andrew	Chovanec	GE Power			X	X	X
C37.04	Guest	Brad	Connor	Xcel Energy					X
C37.04	Guest	Jason	Cunningham	Southern States, LLC					X
C37.04	Guest	Federico	Di Michele	CESI S.p.A.					X
C37.04	Guest	Kirk	Duncan	Hitachi T&D Solutions					X
C37.04	Guest	Emily	Eftink	Burns & McDonnell					X
C37.04	Guest	Rob	Eichelberger	Eaton					X
C37.04	Guest	Tanner	Esco	Eaton Corporation	X		X		X
C37.04	Guest	Sergio	Flores	Schneider Electric Inc. USA		X		X	X
C37.04	Guest	Travis	Heintzelman	Burns & McDonnell					X
C37.04	Guest	Christopher	Jarnigan	Southern Company Services				X	X
C37.04	Guest	David	Johnson	Self-Employed					X
C37.04	Guest	Ivan	Jovanovic	G&W Electric					X
C37.04	Guest	David	Lemmerman	PECO/Exelon			X	X	X
C37.04	Guest	Paul	Leufkens	Power Projects Leufkens					X
C37.04	Guest	Chunming	Ma	Burns and McDonnell					X

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C37.04	Guest	Steven	May	Southern Company Services				X	X
C37.04	Guest	Neil	McCord	KEC Precision			X		X
C37.04	Guest	Justin	Palmer	ELECTRONSYSTEM MD		X		X	X
C37.04	Guest	Thomas	Pellerito	DTE Energy		X	X	X	X
C37.04	Guest	Mark	Peterson	Xcel Energy			X	X	X
C37.04	Guest	Bobby	Rich	Dominion Virginia Power		X	X	X	X
C37.04	Guest	Brian	Roberts	Southern States, LLC		X	X	X	X
C37.04	Guest	Victor	Savulyak	DNV GL KEMA Laboratory	X			X	X
C37.04	Guest	Chase	Schaben	Burns & McDonnell					X
C37.04	Guest	Jon	Schumann	American Transmission Company		X			X
C37.04	Guest	Don	Steigerwalt	Duke Energy			X	X	X
C37.04	Guest	Dragan	Tabakovic	Meramec Hubbell Power Systems				X	X
C37.04	Guest	Jordan	Tsvetanoff	First Energy			X	X	X
C37.04	Guest	Nick	Vonfeldt	Ameren Missouri					X
C37.04	Guest	Jeffrey	Ward	Doble Engineering Company		X	X	X	X
C37.04	Guest	Matt	Westerdale	Bureau of Reclamation		X		X	X
C37.04	Guest	Colin	Younce	Burns & McDonnell					X
C37.04	Guest	Marcus	Young	Mitsubishi Electric Power Products, Inc.					X
C37.04	Guest	Benjamin	Abebe	Qualitrol				X	
C37.04	Guest	Syed Shahab	Ahmed	Siemens Energy Inc					
C37.04	Guest	Aasim	Atiq	Siemens Industry	X				
C37.04	Guest	Roy	Ayers	Nashville Electric Service		X			
C37.04	Guest	Ganesh	Balasubramar	Eaton Corporation					
C37.04	Guest	Herman	Bannink	KEMA Netherlands			X	X	
C37.04	Guest	Robert	Barnett	Tennessee Valley Authority					
C37.04	Guest	Paul	Barnhart	Underwriters Laboratories				X	
C37.04	Guest	Allan	Bartek	C-K Composites Co., LLC		X			
C37.04	Guest	George	Becker	POWER Engineers				X	
C37.04	Guest	Robert	Behl	ABB	X	X		X	
C37.04	Guest	W.J. (Bill)	Bergman	Bergman& Associates Ltd.					
C37.04	Guest	Jean-Marc	Biasse	Schneider Electric	X				
C37.04	Guest	Thomas	Blair	Tampa Electric Company				X	
C37.04	Guest	Kofi	Boadi-Boaten	Pepco					
C37.04	Guest	Mike	Boening	Plansee Powertech AG					
C37.04	Guest	Antone	Bonner	PAS Consulting					
C37.04	Guest	Russell	Boyce	Eaton		X			
C37.04	Guest	Douglas	Brandt	Eaton Corporation	X				
C37.04	Guest	Cody	Brehm						
C37.04	Guest	Andrew	Brignac	Entergy				X	
C37.04	Guest	Jeffrey	Brogdon	Georgia Transmission		X		X	
C37.04	Guest	Raymond	Browning	FirstEnergy Corp.					
C37.04	Guest	John	Brunke	Dr. John H. Brunke, P.E.					

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Name	Role	First Name	Last Name	Company	10/11/16	04/24/17	10/08/17	04/23/18	10/15/18
C37.04	Guest	Richard	Burge	Southern States, LLC			X		
C37.04	Guest	Donald	Cantrelle	Georgia Power					
C37.04	Guest	Gilbert	Carmona	Southern California Edison					
C37.04	Guest	Simarjit	Chouhan	Crown Technical Systems			X		
C37.04	Guest	Roggero	Ciofani	Altalink					
C37.04	Guest	Sterlin	Cochran	Hubbell Power Systems					
C37.04	Guest	Robert	Cohn	Powercon Corp.		X			
C37.04	Guest	Dave	Collette	Mitsubishi Electric					
C37.04	Guest	Jerod	Day	Vacuum Interrupters, Inc.					
C37.04	Guest	Randall	Dotson	Lakeland Electric, City of Lakeland, FL					
C37.04	Guest	Edgar	Dullni	ABB		X	X		
C37.04	Guest	Bernie	Dwyer	PECO				X	
C37.04	Guest	John	Eastman	Franklin Electric- Grid Solution	X		X	X	
C37.04	Guest	Doug	Edwards	Siemens Industry, Inc.		X	X		
C37.04	Guest	Ken	Edwards	FirstEnergy Corp.					
C37.04	Guest	Leslie	Falkingham	Vacuum Interrupters Limited	X	X			
C37.04	Guest	Lawrence	Farr	Eaton Electrical					
C37.04	Guest	David	Feldmann	HICO America	X				
C37.04	Guest	Howard	Fennell	Nashville Electric Service		X		X	
C37.04	Guest	Philip	Fentress	Memphis Light, Gas & Water Div			X		
C37.04	Guest	Thomas	Field	Engergy					
C37.04	Guest	Michael	Flack	Southern Company Services, Inc.		X			
C37.04	Guest	Marcel	Fortin	BPR Energy Inc					
C37.04	Guest	Paul	Fox	Schneider Electric		X		X	
C37.04	Guest	Richard	Frye	Eaton	X				
C37.04	Guest	Elizabeth	Gall	MEPPI				X	
C37.04	Guest	Sahadev	Gohil	AZZ Switchgear Systems		X		X	
C37.04	Guest	Jonathan	Goldberg	IEEE Standards Association		X			
C37.04	Guest	Anne	Good	Netshape Technologies, Inc.					
C37.04	Guest	Ronald	Hartzel	Eaton Corporation				X	
C37.04	Guest	Charles	Hendrickson	Arizona Public Service Company					
C37.04	Guest	Jason	Hollander	RESA Power				X	
C37.04	Guest	Tyler	Holp	Eaton	X				
C37.04	Guest	Jingxuan (Joa Hu		RBJ Engineering Corporation	X		X		
C37.04	Guest	Carl	Hummel	HICO America		X			
C37.04	Guest	Richard	Jackson	Detroit Edison					
C37.04	Guest	Joseph	Jasinski	ITC Holdings Corp.	X		X	X	
C37.04	Guest	Jacob	Joseph	Toshiba International Corporation					
C37.04	Guest	Stephen	Kanty	Isberg & Associates, Inc.			X		
C37.04	Guest	Joe	Kausek	FirstEnergy	X				
C37.04	Guest	Amir	Khosravi	BC Hydro		X	X	X	
C37.04	Guest	Hong Jun	Kim	HICO				X	

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Name	Role	First Name	Last Name	Company	10/11/16	04/24/17	10/08/17	04/23/18	10/15/18
C37.04	Guest	SangTae	Kim	HICO/HYOSUNG		X		X	
C37.04	Guest	SangTae	Kim	HICO America			X	X	
C37.04	Guest	Boris	Kogan	Schneider Electric		X			
C37.04	Guest	Sandeep	Kulkarni	CG					
C37.04	Guest	Robert	Kuntz	HICO AMERICA				X	
C37.04	Guest	Carl	Kurinko	ABB Inc.					
C37.04	Guest	Michael	Lafond	ABB		X			
C37.04	Guest	Stephen	Lambert	Shawnee Power Consulting, LLC					
C37.04	Guest	Matthew	Lawrence	Doble Engineering					
C37.04	Guest	Werner	Lesse	Siemens AG					
C37.04	Guest	Russell	Long	Retired					
C37.04	Guest	Antonio	Mannarino	PSE&G					
C37.04	Guest	Ricardo	Martinez	CFE-LAPEM					
C37.04	Guest	Joel	Mathewson	Siemens					
C37.04	Guest	Frank	Mayle	Technibus, Inc.		X			
C37.04	Guest	Deepak	Mazumdar	Consultant			X		
C37.04	Guest	Timothy	McGee	Siemens Energy					
C37.04	Guest	Steven	Meiners	GE		X		X	
C37.04	Guest	Peter	Meyer	S&C Electric Company					
C37.04	Guest	Georges	Montillet	GFM Consulting LLC					
C37.04	Guest	Volney	Naranjo	GERS USA					
C37.04	Guest	Raj	Nayar	Siemens Energy Inc.					
C37.04	Guest	Terry	Neighbours	ABB Inc.		X			
C37.04	Guest	Jeffrey	Nelson	Tennessee Valley Authority					
C37.04	Guest	Joachim	Oemisch	Siemens AG					
C37.04	Guest	Brian	ONeil	CE Power Engineered Services		X			
C37.04	Guest	Nicholas	Orlando	IEEE-SA		X			
C37.04	Guest	Mary	Owens	Eaton				X	
C37.04	Guest	Sean	Parsi	Kinectrics			X		
C37.04	Guest	Shawn	Patterson	US Bureau of Reclamation					
C37.04	Guest	Mark	Pattison	H-J Family of Companies				X	
C37.04	Guest	Alan	Peterson	Utility Service Corporation			X	X	
C37.04	Guest	Lise	Phan	Parcific Gas and Electric Company					
C37.04	Guest	Anton	Poeltl	ABB	X				
C37.04	Guest	Iulian	Profir	Rockwell Automation		X			
C37.04	Guest	Ahmad	Qasem	Bechtel		X			
C37.04	Guest	Syed	Rahman	The United Illuminating Company		X			
C37.04	Guest	Thomas	Rak	PG&E			X		
C37.04	Guest	Robert	Ramsey	Bechtel				X	
C37.04	Guest	Frank	Ricard	FirstPower Group LLC					
C37.04	Guest	Anthony	Ricci	FirstEnergy Corp.			X		
C37.04	Guest	Dave	Riffe	Westinghouse Electric Company					

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C37.04	Guest	Jon	Rogers	Siemens Energy, Inc			X		
C37.04	Guest	Richard	Rohr	Powell Electrical Systems					
C37.04	Guest	Ian	Rokser	Eaton Corp	X				
C37.04	Guest	Leonel	Santos	Schneider Electric				X	
C37.04	Guest	Robert	Sazanowicz	The United Illuminating Company					
C37.04	Guest	Carl	Schneider	Schneider Electric		X			
C37.04	Guest	Moin	Shaikh	Siemens			X		
C37.04	Guest	Harish	Sharma	Southern Company		X			
C37.04	Guest	John	Shullaw	Retired					
C37.04	Guest	Daniel	Sims	Eaton Corp.					X
C37.04	Guest	Christopher	Slattery	FirstEnergy					X
C37.04	Guest	Robert	Smith	Retired			X		
C37.04	Guest	Erin	Spiewak	IEEE		X		X	
C37.04	Guest	James	Stacy	Schneider Electric					
C37.04	Guest	Donald	Swing	Powell Industries					
C37.04	Guest	Chand	Taylor	Eaton Corporation			X	X	
C37.04	Guest	Humayun	Tariq	American Electric Power					
C37.04	Guest	Henk	te Paske	KEMA Netherlands		X		X	
C37.04	Guest	Jey	Thayalan	Schneider Electric		X			
C37.04	Guest	Michael	Titus	Schneider Electric					X
C37.04	Guest	Lin	Tong	SYET Corporation		X			
C37.04	Guest	Francois	Trichon	Schneider Electric					X
C37.04	Guest	Marcelo	Valdes	GE		X			
C37.04	Guest	Michael	Wactor	Powell Industries, Inc					X
C37.04	Guest	Robert	Warren	DNV GL - KEMA Laboratories		X	X	X	
C37.04	Guest	Casey	Weeks	Siemens Energy			X	X	
C37.04	Guest	Jerry	Wen	BC Hydro	X		X	X	
C37.04	Guest	William	Wilkie	Eaton					X
C37.04	Guest	Matthew	Williford	Schneider Electric					
C37.04	Guest	Torsten	Wirz	ABB AG		X			
C37.04	Guest	Joseph	Wisnewski	UL LLC		X			
C37.04	Guest	Jason	Wright	Staubli electrical Connectors		X			
C37.04	Guest	Hua	Yang	Rockwell Automation Canada					X
C37.04	Guest	Larry	Yonce	Eaton Corporation			X		
C37.04	Guest	Dong Sun	Yoon	HICO America					
C37.04	Guest	Lukas	Zehnder	ABB Switzerland					
C37.04	Guest	Jiong	Zhang	MEPPI					
Total		62							78