

**C37.20.9 Working Group**  
**MINUTES OF THE SPRING 2016 MEETING**

Sonesta Resort, Hilton Head, NC  
April 27, 2016

The meeting called to order by Chair, Eldridge Byron at 8:00 on April 27, 2016.

**Attendance**

Quorum: 19 total WG members present of 33 total WG members, thus Quorum was met (57%).  
(5 new members from balloting and request from guest)  
37 guests participated with 22 requesting to be added as WG members. (total 56)

Membership and attendance status are updated in AMS system.

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1) Approval of Meeting Agenda

The goal for this 04/27/2016 meeting is to review the strawman dispositions, discuss the VT fuse issue and present to the group activities surrounding alternative gas investigations.

Agenda was reviewed and approved by consensus.

2) Patent Slides

No issues – Slides were approved via registrations to the Conference.

3) Introduction of members and guests – Completed

4) Minutes

Minutes from Fall 2015 San Diego, CA meeting – No issues

5) Document Review

Draft C37.20.9-D1B was reviewed.

The draft was sent out for comments and 600 were received. A strawman was created with members from both Substation and Switchgear. The Strawman met face to face 2 times for a total of 4 days and 2 additional telecoms for 5 hours. The resolutions were e-mailed along with draft D1B on

Major issues include:

- a) Removal of non-fuse requirement for VTs  
Paul B. made motion to require fuses in accordance with NEC and Ted O. seconded.
    - i) Vote was taken among WG members and 12 to 3 to require fuses.
    - ii) Second vote was taken among all present and 23 to 11 to require fuses.
  - b) Discussion needed with S/A concerning ground switch testing (only 1 fault close and the need to test in sealed enclosures and other associated tests)
  - c) Track resistance test requirements (other requirements) for materials used in an environment other than air.
- 6) Action Items / Schedule
- a) Chair to check Table on line 871 to make sure it has a Table number
  - b) Chair to clarify pC values for PD testing on line 995
  - c) Chair to talk to C57.13 WG to see if they are looking at the fused VT issue
  - d) Chair to approach NEC (not as an IEEE or WG representative) to see if they are looking at fused VT issue

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- 7) Request to Ballot after Substation meeting if no major issues are surfaced.  
(Approved at Swgr Assm)
- 8) Adjourn  
Meeting adjourned at 11:40.

Reported by:

Terrance Woodyard  
Chair C37.20.9

E: Mr.Terrance.Woodyard@IEEE.org

## C37.20.9 Working Group Attendance

<b>Totals</b>							
Last Name	First Name		E-mail	Member-ship	Swgr. Member	Request Member	4/27 2016
<b>MEMBER</b>							
Baeuml	Katrin	Schneider Electric	<a href="mailto:katrin.baeuml@schneider-electric.com">katrin.baeuml@schneider-electric.com</a>		X		
Ball	Chuck	S&C Electric	<a href="mailto:chuck.ball@sandc.com">chuck.ball@sandc.com</a>		X		
Barnhart	Paul	UL	<a href="mailto:paulbarnhart@ieee.org">paulbarnhart@ieee.org</a>		X		X
Becker	George	Power Engineers	<a href="mailto:george.becker@powereng.com">george.becker@powereng.com</a>	Vice	X	X	
Becker	Michael	ENMAX (Alberta)	<a href="mailto:mbecker@enmax.com">mbecker@enmax.com</a>		X		
Berenguela	Diego	Goggle	<a href="mailto:dberenguela@google.com">dberenguela@google.com</a>				X
Bolin	Phil	Mitsubishi Electric	<a href="mailto:phil.bolin@meppi.com">phil.bolin@meppi.com</a>			X	
Boyce	Russell	Eaton	<a href="mailto:russellboyce@eaton.com">russellboyce@eaton.com</a>		X		X
Brunke	John	Power Engineers	<a href="mailto:jhbrunke@whidbey.com">jhbrunke@whidbey.com</a>				
Burse	Ted	Powell Industries	<a href="mailto:tburse@ieee.org">tburse@ieee.org</a>				X
Byron	Eldridge	Schneider Electric	<a href="mailto:eldridge.byron@us.schneider-electric.com">eldridge.byron@us.schneider-electric.com</a>	Chair	X	X	X
Chiodo	Vincent	HICO (Hyosung)	<a href="mailto:vchiodo@hicoamerica.com">vchiodo@hicoamerica.com</a>		X		X
Chow	Chih	Pepco	<a href="mailto:ccchow@pepco.com">ccchow@pepco.com</a>		X		
Colesanti	Michael		<a href="mailto:mcolesanti@google.com">mcolesanti@google.com</a>				X
Dillilo	Patrick	Con Edison	<a href="mailto:dillilop@coned.com">dillilop@coned.com</a>		X		
Dullni	Edgar	ABB	<a href="mailto:edgar.dullni@de.abb.com">edgar.dullni@de.abb.com</a>		X	X	X
Edwards	Doug	Siemens	<a href="mailto:doug.edwards@ieee.org">doug.edwards@ieee.org</a>		X		X
Elliott	Donald	ABB	<a href="mailto:don.r.elliott@us.abb.com">don.r.elliott@us.abb.com</a>		X		X
Ette	Markos	ABB	<a href="mailto:markos.otte@us.abb.com">markos.otte@us.abb.com</a>			X	
Foster	Robert	Megger	<a href="mailto:robert.foster@megger.com">robert.foster@megger.com</a>		X		
Giegel	Dave	Mitsubishi Electric	<a href="mailto:dave.giegel@meppi.com">dave.giegel@meppi.com</a>			X	
Giraud	Douglas	Powell Industries	<a href="mailto:doug.giraud@powellind.com">doug.giraud@powellind.com</a>		X		
Glaesman	Peter	GE	<a href="mailto:pwglaesman@ieee.org">pwglaesman@ieee.org</a>		X		X
Gohil	Sahadev	Central Electric	<a href="mailto:davegohil@azz.com">davegohil@azz.com</a>		X		
Hines	Jared	Eaton	<a href="mailto:jaredkhines@eaton.com">jaredkhines@eaton.com</a>				X

## C37.20.9 Working Group Attendance

<b>Totals</b>							
Last Name	First Name		E-mail	Member-ship	Swgr. Member	Request Member	4/27 2016
Hopper	Warren	Weyerhaeuser	<a href="mailto:warren.hopper@weyerhaeuser.com">warren.hopper@weyerhaeuser.com</a>				C
Jacobs	Allan	ABB	<a href="mailto:allan.jacobs@us.abb.com">allan.jacobs@us.abb.com</a>			X	
Joseph	Jacob	Toshiba	<a href="mailto:jacob.joseph@tic.toshiba.com">jacob.joseph@tic.toshiba.com</a>		X		
Koch	Hermann	Siemens	<a href="mailto:hermann.koch@siemens.com">hermann.koch@siemens.com</a>			X	
Li	Wangpei	Eaton	<a href="mailto:wangpeili@eaton.com">wangpeili@eaton.com</a>		X		X
Liu	Hua		<a href="mailto:liuhy@ieee.org">liuhy@ieee.org</a>		X	X	
Livshitz	Albert	CE Power Solutions	<a href="mailto:livshitz@ieee.org">livshitz@ieee.org</a>		X		X
Martinez	Ricardo	CFE (Mexico)	<a href="mailto:ricardo.martinez02@cfe.gob.mx">ricardo.martinez02@cfe.gob.mx</a>		X		
Mazumdar	Deepak	Central Electric	<a href="mailto:deepakmazumdar@azz.com">deepakmazumdar@azz.com</a>		X		X
Meiners	Steven	GE	<a href="mailto:steven.meiners@ge.com">steven.meiners@ge.com</a>		X		
Mitchell	Dave	Dominion Power	<a href="mailto:dave.mitchell@dom.com">dave.mitchell@dom.com</a>		X	X	X
Mulcahy	Tom	Dominion Power	<a href="mailto:tom.mulcahy@dom.com">tom.mulcahy@dom.com</a>			X	X
Olsen	Ted	Siemens	<a href="mailto:ted.olsen@siemens.com">ted.olsen@siemens.com</a>		X		X
Orosz	Miklos	Schneider Electric	<a href="mailto:mike.orosz@schneider-electric.com">mike.orosz@schneider-electric.com</a>		X		
Patel	Amit	GE	<a href="mailto:amitpatel@ieee.org">amitpatel@ieee.org</a>				
Scharf	Scott	TVA	<a href="mailto:ssscharf@tva.com">ssscharf@tva.com</a>	co-Secretary		X	
Schneider	Carl	Schneider Electric	<a href="mailto:carl.a.schneider@schneider-electric.com">carl.a.schneider@schneider-electric.com</a>		X		X
Sharma	Devki	Entergy Corp	<a href="mailto:devkisharma@ieee.org">devkisharma@ieee.org</a>		X	X	
Shullaw	John	GE	<a href="mailto:john.shullaw@ge.com">john.shullaw@ge.com</a>		X		
Tailor	Chand	Eaton	<a href="mailto:chandztailor@eaton.com">chandztailor@eaton.com</a>				X
Wilkie	Eddie	Eaton	<a href="mailto:eddie.wilkie@eaton.com">eddie.wilkie@eaton.com</a>			R	X
Woodyard	Terrance	Siemens	<a href="mailto:terrance.woodyard@ieee.org">terrance.woodyard@ieee.org</a>	co-Secretary	X		
Zhu	Xi	GE	<a href="mailto:xi.zhu@ieee.org">xi.zhu@ieee.org</a>		X	X	
<b>Guest List</b>							

## C37.20.9 Working Group Attendance

<b>Totals</b>							
Last Name	First Name		E-mail	Member-ship	Swgr. Member	Request Member	4/27 2016
Adigwo	John Paul	Souther California Edison	<a href="mailto:jonpaul.adigwo@sce.com">jonpaul.adigwo@sce.com</a>				
Aviles	Andres	CE Power Solutions	<a href="mailto:andres.aviles@cepower.net">andres.aviles@cepower.net</a>				
Beseda	David	S&C Electric	<a href="mailto:david.beseda@sandc.com">david.beseda@sandc.com</a>			R	X
Biasse	Jean-Marc	Schneider Electric	<a href="mailto:jean-marc.biasse@schneider-electric.com">jean-marc.biasse@schneider-electric.com</a>				X
Boadi	Kofi	Pepco	<a href="mailto:kboadi-boateng@pepco.com">kboadi-boateng@pepco.com</a>				
Bowen	Jim		<a href="mailto:jbowen@ieee.org">jbowen@ieee.org</a>			R	X
Boggers	john	ABB	<a href="mailto:john.boggers@us.abb.com">john.boggers@us.abb.com</a>				
Byard	Jonathan	Siemens	<a href="mailto:jon.byard@siemens.com">jon.byard@siemens.com</a>				
Cary	Stephen	GE	<a href="mailto:stephen.cary@ge.com">stephen.cary@ge.com</a>			R	X
Chiodo	Vince	HICO (Hyosung)	<a href="mailto:vchio@hicoamerica.com">vchio@hicoamerica.com</a>				
Cho	Jeong Hwan	HICO (Hyosung)	<a href="mailto:jhcho@hyosung.com">jhcho@hyosung.com</a>				
Connor	Larry	Eaton	<a href="mailto:lawrencetconnor@eaton.com">lawrencetconnor@eaton.com</a>				
Crockett	Edward	Sargent & Lundy	<a href="mailto:edward.crockett@sargentlundy.com">edward.crockett@sargentlundy.com</a>			X	
Cruz	Leonardo	Seimens	<a href="mailto:leonardo.cruz@seimens.com">leonardo.cruz@seimens.com</a>			X	
Dhara	Ravi	ABB	<a href="mailto:ravi.s.dhara@us.abb.com">ravi.s.dhara@us.abb.com</a>			X	
Dickerman	Larry	DNV GL - KEMA	<a href="mailto:larry.dickerman@dnvel.com">larry.dickerman@dnvel.com</a>				
Dilillo	Pat	Con Edison	<a href="mailto:dilillo@coned.com">dilillo@coned.com</a>		X		
Earl	Jerry	ABB	<a href="mailto:jearl@toad.net">jearl@toad.net</a>				
Eastman	John	Franklin Fuelin	<a href="mailto:eastman@franklinfueling.com">eastman@franklinfueling.com</a>				
Elliott	Donald	ABB	<a href="mailto:don.r.elliott@us.abb.com">don.r.elliott@us.abb.com</a>				
Emma	Christine	ABB	<a href="mailto:christine.a.emma@us.abb.com">christine.a.emma@us.abb.com</a>				
Ette	Markus	ABB	<a href="mailto:markus.ette@us.abb.com">markus.ette@us.abb.com</a>			X	
Fulicron	Didier	Schneider Electric	<a href="mailto:didier.fulicron@schneider-electric.com">didier.fulicron@schneider-electric.com</a>			X	
Flores	Sergio	Schneider Electric	<a href="mailto:sergio.flores@schneider-electric.com">sergio.flores@schneider-electric.com</a>		X	R	X
Fox	Paul	Schneider Electric	<a href="mailto:paul.fox@schneider-electric.com">paul.fox@schneider-electric.com</a>				
Fujimoto	Noboru	Kinectrics	<a href="mailto:noboru.fujimoto@kinectrics.com">noboru.fujimoto@kinectrics.com</a>			X	

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<b>Totals</b>							
Last Name	First Name		E-mail	Member-ship	Swgr. Member	Request Member	4/27 2016
Giegel	Dave	Mitsubishi Electric	<a href="mailto:dave.giegel@meppi.com">dave.giegel@meppi.com</a>			X	
Gingrich	Paul	AZZ Switchgear Systems	<a href="mailto:paulgingrich@azz.com">paulgingrich@azz.com</a>				X
Good	Anne	Net Shape Manf	<a href="mailto:agood@netshapetech.com">agood@netshapetech.com</a>				
Grossmann	Peter	Siemens	<a href="mailto:peter.grossmann@siemens.com">peter.grossmann@siemens.com</a>			X	
Hand	Charles		<a href="mailto:left-hand@sbcglobal.net">left-hand@sbcglobal.net</a>				
Hanson	Jeffrey	Schneider Electric	<a href="mailto:jeff.hanson@schneider-electric.com">jeff.hanson@schneider-electric.com</a>		X		
Harley	Jack	First Power Group	<a href="mailto:jack.harley@firstpowergroupllc.com">jack.harley@firstpowergroupllc.com</a>				
Hartzel	Ron	Eaton	<a href="mailto:rondhartzel@eaton.com">rondhartzel@eaton.com</a>		X	R	X
Hendriderson	Charles	AZ Public Service Co					
Higinbotham	William	EA Technology	<a href="mailto:bill.higinbotham@eatechnologyusa.com">bill.higinbotham@eatechnologyusa.com</a>			R	X
Hines	Jared	Eaton	<a href="mailto:jaredkhines@eaton.com">jaredkhines@eaton.com</a>				
Hmeir	Don	Eaton	<a href="mailto:donehmeir@eaton.com">donehmeir@eaton.com</a>				X
Hutchins	Roy						
Jargue	Jose	Central Electric	<a href="mailto:josejarque@azz.com">josejarque@azz.com</a>			R	X
Jones	Ricard	Techs Corp	<a href="mailto:djones@techscorp.com">djones@techscorp.com</a>				
Jung	Wolfgang	Siemens	<a href="mailto:wolfgangjung@siemens.com">wolfgangjung@siemens.com</a>		X	X	X
Jur	Art	Eaton	<a href="mailto:artjur@eaton.com">artjur@eaton.com</a>				X
Kennedy	Chad	Schneider Electric	<a href="mailto:chad.kennedy@us.schneider-electric.com">chad.kennedy@us.schneider-electric.com</a>		X	R	X
Khosravi	Amir	BC Hydro	<a href="mailto:amir.khosravi@bchydro.com">amir.khosravi@bchydro.com</a>				
Kohler	Thomas		<a href="mailto:tkohler@ameren.com">tkohler@ameren.com</a>				
Lafond	Mike	GE	<a href="mailto:mike.lafond@ge">mike.lafond@ge</a>				X
Lee	Shawn	HICO (Hyosung)	<a href="mailto:slee@hicoamerica.com">slee@hicoamerica.com</a>				X
Lemmerman	David	Peco Energy (Philly)	<a href="mailto:david.limmerman@peco-energy.com">david.limmerman@peco-energy.com</a>		X		
Leufhens	Paul	Power Projects Leufhens	<a href="mailto:paul.p.leufhens@ieee.org">paul.p.leufhens@ieee.org</a>			R	X
Lim	Antonio	American Electric Power	<a href="mailto:allim@aep.com">allim@aep.com</a>				
Mayle	Frank	Technibus, Inc	<a href="mailto:fmayle@ieee.org">fmayle@ieee.org</a>		X	R	X
Marquez	Jorge	Burns & McDonnell	<a href="mailto:jmarquez@burnsmcd.com">jmarquez@burnsmcd.com</a>				
Martin	Gary	Entergy	<a href="mailto:gmarti3@entergy.com">gmarti3@entergy.com</a>			R	X
McClelland	John	Technibus, Inc	<a href="mailto:j.mcclelland.2001@ieee.org">j.mcclelland.2001@ieee.org</a>				X

## C37.20.9 Working Group Attendance

Totals							
Last Name	First Name		E-mail	Member-ship	Swgr. Member	Request Member	4/27 2016
Meiners	Steven	GE	<a href="mailto:stevenmeiners@ge.com">stevenmeiners@ge.com</a>				
Meyer	Pete	S&C Electric	<a href="mailto:peter.meyer@sandc.com">peter.meyer@sandc.com</a>				
Minisandram	Venkatesh	National Grid	<a href="mailto:venkatesh.minisandram@nationalgrid.com">venkatesh.minisandram@nationalgrid.com</a>			X	
Munn	William	Southern Companies	<a href="mailto:wamunn@southernco.com">wamunn@southernco.com</a>			X	
Naranjo	Volney	Megger	<a href="mailto:volney.naranjo@megger.com">volney.naranjo@megger.com</a>				
Neighboros	Terry	ABB	<a href="mailto:terry.l.neighboros@us.abb.com">terry.l.neighboros@us.abb.com</a>			R	X
Ozsokmen	Volkan		<a href="mailto:volkansk@me.com">volkansk@me.com</a>			R	X
Parsi	Sean	Kinectrics	<a href="mailto:sean.parsi@kinectrics.com">sean.parsi@kinectrics.com</a>				
Pawar	Rahul	ABB	<a href="mailto:rahul.pawar@us.abb.com">rahul.pawar@us.abb.com</a>			R	X
Pintad	Zachary	Entergy	<a href="mailto:zpintado@entergy.com">zpintado@entergy.com</a>				X
Qasem	Ahmat	Bechtel	<a href="mailto:azqasem@bechtel.com">azqasem@bechtel.com</a>			R	X
Raj	Nayer	Siemens	<a href="mailto:raj.nayer@siemens.com">raj.nayer@siemens.com</a>				X
Riffe	David	Westinghouse	<a href="mailto:riffeda@westinghouse.com">riffeda@westinghouse.com</a>			R	
Rizo	Julian	Xcel Energy	<a href="mailto:julian.a.rizo@xcelenergy.com">julian.a.rizo@xcelenergy.com</a>				X
Roha	Richard	Powell Industries	<a href="mailto:richard.rohr@prowellind.com">richard.rohr@prowellind.com</a>				X
Rohrer	Tim	Exiscan	<a href="mailto:Etrohrer@exiscan.com">Etrohrer@exiscan.com</a>				
Rosenkrans	Ben	Eaton	<a href="mailto:benrosenkran@eaton.com">benrosenkran@eaton.com</a>				
Rothlisberger	Lukes	Dilo	<a href="mailto:lukesr@dilo.com">lukesr@dilo.com</a>				
Rowell	Amy	Eaton	<a href="mailto:amywrowell@eaton.com">amywrowell@eaton.com</a>				X
Samanta	Pravakar	ABB	<a href="mailto:Pravakar.Samanta@us.abb.com">Pravakar.Samanta@us.abb.com</a>				
Sauls	Rod	Southern Companies	<a href="mailto:resauls@southerncom.com">resauls@southerncom.com</a>				
Seccombe	Andy		<a href="mailto:andy.seccombe@gmail.com">andy.seccombe@gmail.com</a>		X		
Sharifi	Behzad	ABB	<a href="mailto:behzad.sharifi@de.abb.com">behzad.sharifi@de.abb.com</a>				
Song	Hongbiao	GE	<a href="mailto:hongbiao.song@ge.com">hongbiao.song@ge.com</a>			X	
Shullaw	John	GE - RETIRED	<a href="mailto:john.shullaw@ieee.org">john.shullaw@ieee.org</a>		X	R	X
Sigmon	Dean	Eaton	<a href="mailto:dsigmon@ieee.com">dsigmon@ieee.com</a>				X
Slattery	Christopher	First Energy	<a href="mailto:cslattery@firstenergycorp.com">cslattery@firstenergycorp.com</a>				
Smith	James				X		
Sozonowicz	Robert		<a href="mailto:robert.sozonowicz@uinet.com">robert.sozonowicz@uinet.com</a>				
Stacy	James	Schneider Electric	<a href="mailto:James.stacy@schneider-electric.com">James.stacy@schneider-electric.com</a>				
Stone	Ryan		<a href="mailto:ryan.stone@ieee.org">ryan.stone@ieee.org</a>				
Stromberg	Kyle	G&W	<a href="mailto:kstromberg@gwelec.com">kstromberg@gwelec.com</a>				
Sullivan	Paul	Dupont	<a href="mailto:paul.sullivan@dupont.com">paul.sullivan@dupont.com</a>				X
Swing	Donald		<a href="mailto:d.swing@ieee.org">d.swing@ieee.org</a>		X		
Thayalan	Jey	Schneider Electric	<a href="mailto:jeyaprakash.thayalan@schneider-electric.com">jeyaprakash.thayalan@schneider-electric.com</a>				





