

Minutes of Meeting

C37.100.2 – Common Clauses for Capacitance Current Switching Devices

Hilton University Place Charlotte

April 24-28, 2017

Monday April 24, 2017 – 8:00-9:45am

Welcome

Introductions

Review of minutes from previous meeting

- Some comments not incorporated into the draft
- Recirculation initiated and completed last month
- Comments on the minutes? No
 - o Motion to approve the minutes by Donnie Swing
 - o Seconded by Brian Roberts
 - o Approved

Review of document history by working group chair

C37.66 working group chair has stated that they have received a PAR extension until 12/2018

Ballot passed with 80% approval

155 total comments with 125 marked as “must be satisfied”

- 86 editorial, 67 MBS
- 21 general, 17 MBS
- 48 technical, 41 MBS

Comments discussion

- Officially comments should be made on the redline version since that was what was attached to the ballot

BREAK

Monday April 24, 2017 – 10:15-12:00noon

Comments discussion continued

Unresolved comments remain and a request was made to the C37.66 chair to allow the rest of the comments to be resolved during those sessions.

At the approval of Harry Hirz the discussion will be continued in C37.66 sessions on Tuesday. All working group members are strongly encouraged to make arrangements to attend.

The working group created a comment resolution task force consisting of Neil McCord, John Webb, Donnie Swing, Roy Alexander, and Harry Hirz. This task force is charged with the following authority:

- to resolve any comments from the first recirculation that may remain after the meetings tomorrow
- to incorporate all of the approved changes into the document
- to resolve any comments that arise from subsequent recirculation
- recirculate until resolution is complete

ADJOURN

Tuesday April 25, 2017 – 10:15-12:00noon

Comments discussion continued in C37.66 meetings

All comments were resolved.

The second recirculation will be initiated in four weeks once the approved changes have been incorporated into the document by the comment resolution task force.

ADJOURN

Meeting Attendance

Role	First Name	Last Name	Company	City	State	Country	4/28/2015	9/22/2015	4/25/2016	10/10/2016	4/24/2017
Chair	Neil	McCord	Southern States	Hampton	GA	USA	X	X	X		X
Vice-Chair	John	Webb	ABB	Florence	SC	USA	X	X	X	X	X
Secretary	Donald	Swing	Hubbell Power Systems	Leeds	AL	USA	X	X	X		X
Member	Roy	Alexander	RWA Engineering	Cranberry Twp.	PA	USA	X	X	X	X	X
Member	Edwin	Almeida	Southern California	Long Beach	CA	USA					X

			Edison								
Member	Anne	Bosma	ABB AB	Ludvika	Other	Sweden	X		X		
Member	Frank	DeCesaro	Eaton's Cooper Power Systems Division	Franksville	WI	USA	X	X	X	X	
Member	Edgar	Dullni	ABB	Ratingen	Other	Germany		X	X		X
Member	Sergio	Flores	Schneider Electric Inc. USA	SMYRNA	TN	USA			X	X	X
Member	Harold	Hirz	Thomas and Betts	Solon	OH	USA	X	X	X	X	X
Member	Peter	Meyer	S&C Electric Company	Chicago	IL	USA	X	X	X	X	X
Member	Tom	Mulcahy	Dominion Virginia Power	Richmond	VA	USA	X	X	X	X	X
Member	Brian	Roberts	Southern States, LLC	Hampton	GA	USA	X	X	X		X
Member	Robert	Smith	Retired	Ithaca	NY	USA	X	X	X	X	
Member	James	van de Ligt	CANA High Voltage Ltd.	Calgary	AB	Canada	X	X		X	
Corresp. Member	Richard	Burge	Southern States LLC	Hampton	GA	USA					
Corresp. Member	Tom	Stefanski	KEMA Powertest	Chalfont	PA	USA					
Guest	John Paul	Adigwu	Southern California Edison	Westminster	CA	USA					
Guest	Peter	Agliata	Hubbell Power Systems	Birmingham	AL	USA		X			
Guest	Richard	Allen	United Illuminating	Orange	CT	USA					
Guest	Chris	Ambrose	Federal Pacific (Div. of Electro- Mechanical Corp.)	Bristol	TN	USA					
Guest	Michael	Anderson	Retired	Madison	WI	USA					
Guest	Mauricio	Aristizabal	ABB	Pittsburgh	PA	USA					
Guest	Koustubh	Ashtekar	Eaton Corporation	Moon Township	PA	USA				X	
Guest	Aasim	Atiq	Siemens Industry	Madison	MS	USA		X			
Guest	Roy	Ayers	Nashville Electric Service	Nashville	TN	USA					
Guest	Ganesh	Balasubramanian	Eaton Corporation	Horseheads	NY	USA					
Guest	Craig	Befus	Xcel Energy	Denver	CO	USA					

Guest	Robert	Behl	ABB	Lake Mary	FL	USA			X		
Guest	J	Billings	John S Billings Consulting	Murrysville	PA	USA					
Guest	Mike	Boeing	Plansee Powertech AG	Seon	Other	Switzerland	X				
Guest	Antone	Bonner	PAS Consulting	Oconomowoc	WI	USA		X			X
Guest	Douglas	Brandt	Eaton Corporation	Moon Township	PA	USA				X	
Guest	Steven	Brown	Allen & Hoshall	Bartlett	TN	USA			X		
Guest	Raymond	Browning	FirstEnergy Corp.	Copley	OH	USA					
Guest	John	Brunke	Dr. John H. Brunke, P.E.	Freeland	WA	USA		X			
Guest	Arben	Bufi	Hitachi T&D Solutions, Inc.	Suwanee	GA	USA					
Guest	Ted	Burse	Powell Industries, Inc	Houston	TX	USA		X			X
Guest	Eldridge	Byron	Schneider Electric	Smyrna	TN	USA					
Guest	Donald	Cantrelle	Georgia Power	Atlanta	GA	USA					
Guest	Gilbert	Carmona	Southern California Edison	Pomona	CA	USA					
Guest	Stephen	Cary	GE Energy Management	Chapel Hill	NC	USA					
Guest	David	Caverly	Trench Ltd.	Scarborough	ON	Canada					X
Guest	Steven	Chen	Eaton Corporation	MOON TOWNSHIP	PA	USA			X	X	X
Guest	Chih	Chow	PEPCO	Washington	DC	USA	X				X
Guest	Michael	Christian	ABB	Lake Mary	FL	USA		X			
Guest	Lucas	Collette	Mitsubishi Electric	Warrendale	PA	USA					
Guest	Charles	Corley	Eaton	Greenwood	SC	USA	X				X
Guest	Jason	Cunningham	Hitachi HVB, Inc.	Suwanee	GA	USA		X			
Guest	David	Dart	NOJAPower	Brisbane	Other	Australia					
Guest	Anil	Dhawan	ComEd	Oakbrook Terrace	IL	USA		X			
Guest	Patrick	Di Lillo	Consolidated Edison Co. of NY, Inc.	New York	NY	USA					
Guest	Alexander	Dixon	Alex Dixon, Inc.	Randallstown	MD	USA					
Guest	Denis	Dufournet	Retired	Sathonay-Camp	Other	France			X		
Guest	Hernan	Figuroa	Hubbell Power Systems	Leeds	AL	USA					
Guest	Paul	Found	BC Hydro	Burnaby	BC	Canada					

Guest	Richard	Frye	Eaton	Franksville	WI	USA				X	
Guest	Rick	Gavazza	Pacific Gas & Electric	Novato	CA	USA					
Guest	Sahadev	Gohil	AZZ Switchgear Systems	Fulton	MO	Other				X	
Guest	Monty	Goulkhah	Siemens-Trench Limited	Scarborough	ON	Canada					X
Guest	John	Hall	Tennessee Valley Authority	Chattanooga	TN	USA					
Guest	Ronald	Hartzel	Eaton Corporation	Moon Township	PA	USA					X
Guest	Helmut	Heiermeier	ABB	Baden	Other	Switzerland		X	X		
Guest	Christian	Heinrich	Siemens AG	Berlin	Other	Germany					
Guest	Victor	Hermosillo	GE Grid Solutions	Charleroi	PA	USA		X			
Guest	Reid	Herzog	OG&E	Oklahoma City	OK	USA					
Guest	Luther	Holloman	Retired		VA	USA					
Guest	Tyler	Holp	Eaton	Pittsburgh	PA	USA				X	
Guest	James	Houston	Southern Company Transmission	Birmingham	AL	USA					
Guest	Jingxuan (Joanne)	Hu	RBJ Engineering Corporation	Winnipeg	MB	Canada			X		
Guest	Jennifer	Hunter	MEPPI	Warrendale	PA	USA					X
Guest	Bill	Hurst	Alstom Grid	Charleroi	PA	USA					
Guest	Todd	Irwin	GE Grid Solutions	Smithville	MO	USA					
Guest	Carlos	Isaac	Oncor Electric Delivery	Fort Worth	TX	USA					
Guest	Joseph	Jasinski	ITC Holdings Corp.	Novi	MI	USA		X			
Guest	Thomas	Keels	Salt River Project	Phoenix	AZ	USA			X		
Guest	Brendan	Kirkpatrick	Southern California Edison	Westminster	CA	USA	X				
Guest	Boris	Kogan	Schneider Electric	West Chester	OH	USA					X
Guest	Sandeep	Kulkarni	CG	MUMBAI	Other	India					
Guest	Carl	Kurinko	ABB Inc.	North Huntingdon	PA	USA					
Guest	Daniel	Landreman	Cooper Power Systems	Franksville	WI	USA					
Guest	Brad	Leccia	Eaton	Moon Township	PA	USA				X	
Guest	David	Lemmerman	PECO/Exelon	Berwyn	PA	USA			X		

Guest	Wangpei	Li	Eaton	Horseheads	NY	USA					
Guest	Qian	Li	Powertech Labs INC.	Surrey	BC	Canada		X			
Guest	Hua Ying	Liu	Southern California Edison	Pomona	CA	USA			X		
Guest	Li	Liu	Eaton	Moon Township	PA	USA					
Guest	Russell	Long	Retired	Pittsburgh	PA	USA					
Guest	Gary	Martin	Entergy	Kenner	LA	USA					
Guest	Herbert	Martinez	Southern California Edison	Westminster	CA	USA					
Guest	Ricardo	Martinez	CFE-LAPEM	IRAPUATO, GTO	GU	Mexico		X			
Guest	Frank	Mayle	Technibus, Inc.	Canton	OH	USA					
Guest	Deepak	Mazumdar	Central Electric Manufacturing Co.	Fulton	MO	USA				X	
Guest	Dave	Mitchell	Dominion	Richmond	VA	USA					
Guest	Terry	Monahan	Schneider Electric	Smyrna	TN	USA					
Guest	Charles	Morse	Siemens Industry, Inc.	Arden	NC	USA					X
Guest	Raj	Nayar	Siemens Energy Inc.	Heber Springs	AR	USA					
Guest	Jeffrey	Nelson	Tennessee Valley Authority	Chattanooga	TN	USA					
Guest	T	Olsen	Siemens Industry, Inc.	York	PA	USA					X
Guest	Thomas	Pellerito	DTE Energy	Detroit	MI	USA					
Guest	Alan	Peterson	Utility Service Corporation	Huntsville	AL	USA		X			
Guest	Andrew	Peterson	ABB	Sanford	FL	USA					X
Guest	Lise	Phan	Parcific Gas and Electric Company	Oakland	CA	USA					
Guest	John	Phouminh	PEPCO HOLDINGS, INC.	WASHINGTON	DC	USA					X
Guest	Iulian	Profir	Rockwell Automation	Cambridge	AZ	Canada					X
Guest	Ahmad	Qasem	Bechtel	Houston	TX	USA			X		X
Guest	Syed	Rahman	The United Illuminating Company	Orange	CT	USA					
Guest	Samala Santosh	Reddy	Powell Industries	Houston	TX	USA					X

Guest	Carl	Reigart	CDR Technical Services, LLC	Leeds	AL	USA					
Guest	Anthony	Ricciuti	Eaton Corporation	Moon Township	PA	USA					
Guest	Julian	Rizo	Xcel Energy	Denver	CO	USA			X	X	
Guest	Marcelo	Rodrigues	CEPEL - Electric Energy Research Center	Nova Iguacu	Other	Brazil					
Guest	James	Ruebensam	S&C Electric Co.	Chicago	IL	USA					X
Guest	Victor	Savulyak	DNV GL KEMA Laboratory	Chalfont	PA	USA			X		
Guest	Carl	Schneider	Schneider Electric	Smyrna	TN	USA					
Guest	Sushil	Shinde	ABB Inc.	Mt Pleasant	PA	USA		X			
Guest	Michael	Skidmore	AEP	Pickerington	OH	USA					
Guest	Francois	Soulard	Hydro-Quebec	Montreal	QC	Canada					
Guest	Erin	Spiewak	IEEE	Piscataway	NJ	USA	X	X	X		
Guest	David	Stone	DTS Technical Services	Reading	MA	USA					
Guest	Dustin	Sullivan	Hubbell Power Systems	Centralia	MO	USA					X
Guest	Andrew	Swisher	Southern California Edison	Westminster	CA	USA					
Guest	Humayun	Tariq	American Electric Power	Gahanna	OH	USA	X	X			
Guest	Thomas	Tobin	S&C Electric Co	Chicago	IL	USA					
Guest	Richard	Trussler	Schneider Electric	Smyrna	TN	USA					
Guest	Bruce	Venne	Rockwell Automation	Milwaukee	WI	USA					X
Guest	Robert	Warren	KEMA Powertest	Chalfont	PA	USA					
Guest	Casey	Weeks	Siemens Energy	Richland	MS	USA		X			
Guest	Jan	Weisker	Siemens AG	Berlin	Other	Germany		X			
Guest	Matthew	Williford	Schneider Electric	Nashville	TN	USA					X
Guest	Torsten	Wirz	ABB AG	Ratingen	Other	Germany					X
Guest	Richard	York	Mitsubishi Electric Power Products Inc.	Pittsburgh	PA	USA		X			
Guest	Wei	Zhang	Hitachi HVB, Inc.	Suwanee	GA	USA	X	X			
Guest	Xi	Zhu	GE Energy Management	Atlanta	GA	USA					

Comment Resolution Details

Category	Page	Subclause	Line	Comment	MBS	Proposed Change	Disposition Status	Disposition Detail
General	1	1.1	292	There are numerous editorial errors in the draft, beginning with an extra period at the end of line 292.	Yes	Editorially review the entire draft for editorial and formatting errors prior to the next ballot cycle.	Accept	
General	1	1	296	From the technical point of view, the standard is quite mature. From the organizational point of view, the contents needs to be rearranged in order to guide the reader.	Yes		Reject	No specific suggestion. Will review for this comment during other required change.
General	2		312	IEEE Std C37.04 is currently being revised and with Addendum a and b rolling into it. Addendum would be withdrawn once the revised C37.04 is completed and formally published by IEEE/SA.	No	Add the year 2003 to read [IEEE Std C37.04a - 2003].	Revise	Refer to C37.04
Technical	2	3.1	312	C37.100.5 should also be mentioned in the last sentence of the paragraph. It is currently under ballot and contains terms not included in C37.20.10	Yes	Add C37.200.5 to the last sentence of the paragraph which begins on line 312.	Revise	Will place as mentioned.
Technical	2	3.1	325	The term "opening" must be changed to "breaking" as per the terms defined in the subclause 1.2. Restrike is a condition that occurs in the process of current breaking.	No	It should read "...during a breaking operation..."	Accept	do
Technical	2	3.1	335	opening operation refers to no V or I	Yes	breaking operation	Accept	do

Technical	2	3.1	335	the use of "opening operation" contradicts the definition of that term under 1.2, since it excludes current flow or voltage presence.	Yes	replace by: "breaking operation..."	Accept	do
Technical	3	3.1	345	by closing a switching device	Yes	by a making operation of a switching device	Accept	do
Technical	3	3.2	349	the definition of C20, C50 and C100 is complete and could be misleading	No	C20: Tests at 20 % of the capacitance current switching rating in case of random switching The same change should be done for C50 and C100	Reject	
General	3	3.2	358	LC ...	No	move this definition to line 352 and renumber what follows	Reject	Alpha order
Technical	4	4.2.6	373	Item d) is not a "performance" per se and should not be part of the itemized list. Also the verbiage does not match that found in 4.11.4.	Yes	Change d) to a stand alone paragraph and change the verbiage to "Suitability for capacitance current switching is demonstrated by successfully performing either the C1 or C2 test program with no more than one restrike per operation (4.11.4) provided that the recovery voltage is maintained after clearing the restrike."	Revise	The information here should be relocated to much later in the document. It seems to be adequately covered by 4.11.4. Also modify def. for C0 to stop after "breaking"
Technical	4	4.2.6.1	382	Somewhere we lost rated B2B breaking (formerly switching?) current. For clarity on nameplates of a device it is probably best to differentiate between single-bank and back-to-back breaking currents.	Yes	reintroduce rated B2B breaking current under 4.2.6.1	Table	

Technical	4	4.2.6.1	382	I accept that the frequency of the B2B inrush current is more of a tested value than a rating in the proper sense of the word, but the magnitude of the inrush current should still be a rating (perhaps tested to a generous tolerance)	Yes	reintroduce rated B2B inrush making current (ibb) under 4.2.6.1	Reject	The parameters of the inrush current are covered later in the document.
General	4	4.2.2	383	U sub r This document appears to mix IEC nomenclature with IEEE	Yes	Perhaps V should be used throughout this document as in other IEEE documents	Revise	Rated maximum voltage (V) or (Ur)
Technical	4	4.2.6.1	383	The sentence is stated in absolute terms when no such proof exists to support it. It can also be improved for clarity.	Yes	Change "In most cases, the 'rated' capacitance switching currents LC, CC and BC do not reflect a limit of the capacitance switching capability of the device, rather the level at which the rated probability of restrike performance can be assured. Hence is not unusual for a single device to be rated for line-charging current at one value but C1 for a higher level and again C2 for some intermediate value of capacitor bank breaking current." to "The 'rated' capacitance switching currents LC, CC and BC may not reflect a limit of the capacitance switching capability of the device, rather the level at which the rated probability of restrike performance is proven by test."	Revise	replace can be assured, to "proven by test" And followed by Hence *it* is...

General	4	4.2.2	384	I was not aware that C37.100.1 has been approved in 2017. The standard is not available in IEEE Xplore. Also applies to subclause 4.2.3, line 386.	No	Remove the "-2017" dates from the C37.100.1 references.	Reject	Will take place in final editing
General	5		387	Clause 4.3 had a title but no informational text was provided.	Yes	Fill out the missing information OR delete clause 4.3	Revise	We will figure it out.
Technical	4	4.2.5	390	A device rated for non-simultaneous operation is in general NOT suitable for simultaneous operation. This needs to be expressed differently.	Yes	Reword to "a device rated for non-simultaneous operation covers the capacitance switching capability of a device rated for simultaneous operation."	Revise	Refer to clause 3.1 for definitions [end]
General	4	4.2.6	394	I find it difficult to accept low probability, very low probability and unspecified probability as a rated probability for restrike free performance.	No	I am not sure how to remedy this issue as there appears to be a restrke number allowed in the following text.	Reject	Cannot be resolved at this time.
General	5	4.3	417	Since all details in 4.3 are redlined there does not appear to be a need for 4.3	Yes	Clarification needed	Revise	Modified text in 4.3
Technical	6	4.4.2	423	The phrase "...do not differ significantly..." is followed by an absolute parenthetical value of plus or minus 5 percent which is contradictory.	Yes	Change "...Don not differ significantly..." to "...do not differ by more than plus or minus 5 percent from the specified values."	Accept	do
Technical	6	4.5	450	The phrase "...100 percent short-circuit test-duty." does not specify if the duty is symmetrical or asymmetrical. (i.e. T100S or T100A in circuit breaker terms.)	Yes	Change "...100% percent short-circuit test-duty." to "100 percent symmetrical short-circuit test-duty."	Accept	do
Technical	6	4.4.1.1	451	Not clear what is meant by the wording in the subclauses following	Yes	Clarification needed	Reject	No specific suggestion.
Technical	6	4.5	455	incorrect reference	Yes	change 4.4.3 to 4.4.4	Accept	do

Technical	6	4.4.1.2	456	The two sub-clauses are extremely confusing and the statement can better be written as a note after line 462.	Yes	Delete lines 456 to 459 and add a note after line 462 "For class C2 tested in accordance with Clause 4.9, the recovery voltage after a restrike is irrelevant, since one restrike makes the test duty failed."	Revise	Add explanatory note as *why* (e.g. you failed!)
Technical	7	4.5	460	The statement is not clear as written.	Yes	Suggest changing "In the case where the switching device alters the circuit during switching (i.e. closing resistors or controlled switching) the test report must show that the circuit follows the requirements of this standard when switched by a plain switch that does not alter the circuit" to "In the case where the switching device modifies the inherent test circuit during switching (i.e. closing resistors or controlled switching) the test report shall contain evidence that the inherent test circuit is in compliance with the requirements of this standard when switched by a plain switch that does not modify the circuit."	Revise	do change plain switch to device.
Technical	7	4.6.1	474	The statement beginning on line 473 is ambiguous as written. "Shall" is imperative, whereas "in principle" allows interpretation.	Yes	Delete the words "in principle" from line 474	Accept	do
Technical	7	4.4.4	480	Clause 4.4.4 should provide details to the test circuit and not tolerances of currents, which are already contained in 4.7.6	Yes	Delete whole clause 4.4.4. The contents is contained in the paragraph between lines 501 and 504 of 4.5, where it belongs.	Revise	Remove 501 to 504 because 4.4.4 is relevant. And these duplicate.

Technical	7	4.5	493	Item c) does not belong to the supply circuit, but to clause 4.7.1. Also, it has to be clear that this tolerance is only applicable to C100, LC2, CC2 and BC2.	Yes	Shift item c) into clause 4.7.1 and add applicable test duties.	Revise	refers to d). Move statement with tolerance to under 4.7.1.
Technical	8	4.6.2	494	The sentence beginning on line 494 could be improved for technical clarity.	Yes	Suggest changing "For testing in the presence of ground faults, The single or double line to ground fault must be applied prior to the capacitor switching, and remain on until after the capacitor has been deenergized for 0.3s.: to "For testing in the presence of ground faults, the single or double line to ground fault must be applied prior to the capacitor switching, and remain applied until after the capacitor has been deenergized for 0.3s."	Accept	do
Technical	8	4.6.1	518	opening operation refers to no V or I	Yes	breaking	Accept	do
Technical	10	4.6.3	543	The term "kpp" is not defined anywhere in the standard	No	Define kpp	Revise	add footnote in col 4 to table giving name to kpp. Also address S1 and S2 in normative text [likely 4.3] of document (more than just a footnote). Look at C37.011 for information on selecting kpp.
Technical	10	4.6.3	543	Table 5 Column 7 (t2) erroneously splits t2 between CS1 and CS2 as 50 Hz and 60 Hz.	Yes	For the entire table t2 should be 8.7 ms for 50 Hz and 7.3 ms for 60 Hz for all tests.	Accept	do

Technical	10		543	In Table 1, the time value t2, given for Test Duty CW1 and CW2 were based on 50 Hz and 60 Hz respectively. Should the time value, t2, for both Test Duties be given on both 50 Hz and 60 Hz basis?	Yes	Please furnish missing information or provide an explanation.	Accept	as above
Technical	9	4.6.2	544	opening operation refers to no V or I	Yes	breaking	Accept	do
General	9	4.6.2	552	Refer to 4.2.2 above	Yes	Refer to 4.2.2 above	Reject	text is clear as is in context of rest of document.
General	9	4.6.2	558	Belted cables previously indicated below or equal 52kV	Yes	In this subclause belted cables appear to exist above 52kV. Clarification needed	Accept	Parenthetical info in 443 to be stricken. 1.2 - Breaking in effectively grounded neutral systems with rated voltages above 72 kV (for example line charging) or in systems with belted cables.
Technical	11	4.7.3	569	The term "make-break" should be "switching" as described in 1.2 of this document for consistency.	Yes	Change "make-break" to "switching" in line 569.	Accept	do
General	10	4.6.3	572	There appears to be some missing text	Yes	Need to clarify what comes before e) and I presume some reference to Tables that follow. Perhaps a drawing would also help to clarify terms.	Revise	erroneous paragraph numbering to be corrected. No missing information. Also 4.11.2 RL:865
General	10	4.6.3	581	Refer to 4.2.2 above	Yes	Refer to 4.2.2 above	Revise	same as above.
General	10	4.6.3	584	There appears to be some mixup in the bracketed subclauses.	Yes	Some corrections needed	Revise	erroneous paragraph numbering to be corrected. No missing information. Also 4.11.2 RL:865
General	10	4.6.3	585	Refer to 4.2.2 above	Yes	Refer to 4.2.2 above	Revise	same as above.
General	10	4.6.3	595	u1, t1, and t2	Yes	u sub 1, t sub 1, t sub 2	Accept	do
General	11	4.6.3	597	Table 1 Class S1,S2 etc. K sub pp	Yes	Clarification needed	Revise	as above
General	12	4.6.3	600	t1	Yes	t sub 1	Accept	do

Technical	13	4.8.2	615	The sentence seems to be incomplete and is confusing.	Yes	Suggest changing "Perform a preconditioning test that has energy to item a. above..." to "Perform a preconditioning test that has energy equivalent to item a. above..."	Accept	do
Technical	15	4.9.4	677	the statement "...may have to be iterated..." is open ended and unending in the event that performing a) and b) do not produce the minimum arcing time some reasonable number of attempts.	Yes	Add text following 4.9.4 stating the maximum amount of tests that must be performed, and also a resolution of the requirement should the minimum arcing time not be achieved in the maximum number of tests stated.	Revise	Intent is to require that a minimum arcing time must always be found, otherwise the device is considered to have random switching. If, in searching for the minimum arcing time another arcing time is obtained, this result may counted toward the 'other than minimum arcing time' requirements, but the search for the minimum must continue. Proposal is to reduce the # of details in this text to the basic; let the product standard which cites this document fill in the details.
Technical	15	4.9.2	721	The clause does not specify whether the making peak needs to be achieved always in one phase or distributed over all phases.	Yes	Consider wording given in C37.09a cl. 4.10.9.2.1.3 "Closing shall occur within 15deg of the peak value (on the same phase for three-phase tests)."	Accept	do
Technical	15	4.9.2	727	The note refers to the requirement of a 2 cycle interval between the no-load closing and opening operation, which has been deleted in D6. Since anyway 4.7.3 only recommends to have an interval close to the specified close-open time, the note is questionable.	Yes	Modify the note to just describing the possible impact of the C on the O operation.	Revise	revise these requirements re: no load and open w/in 2 cycles.
Technical	15	4.9.2	729	closing	Yes	making	Accept	do

Technical	15	4.9.2	730	opening operation refers to no V or I	Yes	breaking	Accept	do
Technical	17	4.10.2.1	732	The statement "This test shall be performed after the timing measurements and contact resistance test provided that the tested peak recovery voltage during the capacitance current switching tests is lower than the peak voltage of the specified dielectric condition checking test." does not specify what should be done if the peak voltage is higher than the dielectric test voltage, nor should that be a cause for not performing a dielectric test at the end of a test program.	Yes	Delete the words "... provided that the tested peak recovery voltage during the capacitance current switching tests is lower than the peak voltage of the specified dielectric condition checking test." from the sentence that begins on line 732.	Approve	do
Technical	18	4.10.2.1.1	746	There is no test specified for devices rated 362kV and above, which I believe is an unintentional omission from this draft.	Yes	Specify the test to perform for devices rated 362kV and above.	Revise	Find the missing paragraph in 09a
Technical	17	4.9.5	777	The term "testing intervals" is not defined and can mean opening operations or test duties.	Yes	Clarify the term "testing interval" and specify accordingly	Revise	Replace "testing intervals" with "CO operations" and add to the end of the sentence "and shall be documented as part of the test report"
Technical	19	4.9.7	793	The behaviour of capacitance current switching devices is not only applicable to time-controllable devices, but in general.	Yes	Shift whole paragraph to 4.10.1. It can also be understood as behaviour after test.	Accept	do
Technical	19	4.11.4	798	I believe a wrong subclause is referenced here i.e 4.9.1.	No	I believe the correct subclause shall be 4.11.1	Accept	do
Technical	19	4.9.8	798	The clause on NSDD is not only applicable to time-controllable devices, but in general.	Yes	Shift whole paragraph to a subclause of 4.11, since it is a pass or fail criterion.	Accept	

Technical	19	4.12.1	802	Change the word "method" to "procedure" to be consistent with the heading of subclause 4.12.	No	It should read "...test procedure for devices..."	Accept	
Technical	19	4.10.2.1	812	This is a subclause of 4.10 and describes the conditions for the different tests	Yes	renumber to 4.10.2 and rename to "Conditions for acceptance tests"	Accept	
Technical	20		817	In Table 5, 1st column and 6th row, should the information such as [Step : how many electrical degree] be specified here?	Yes	Please furnish missing information or provide an explanation.	Revise	Edgar to send Neil notes
Technical	20	4.10.2.1.1	825	The condition for applying the voltage withstand test are stated in the previous clause.	Yes	Delete "If the criteria for a visual inspection is not met"	Accept	
Technical	20	4.12.2.2.2	828	I believe the Table 3 should technically be Table 5 as the criteria for class C2 allows a maximum of 2 single restrikes. These many restrikes are allowed only for Random Switching Duty.	No	If my comment is correct, then it should read "...complete Table 5 test series..."	Accept	
Technical	20	4.12.2.2.2	832	I believe the Table 4 should technically be Table 5 as the criteria for class C1 allows a maximum of 24 single restrikes. These many restrikes are allowed only for Random Switching Duty.	No	If my comment is correct, then it should read "...complete Table 5 test series..."	Accept	
Technical	20	4.10.2.1.1	834	No test description given	Yes	Add test description	Revise	Find the missing paragraph in 09a

Technical	20	4.10.2.1.1	834	The specification for item c) is missing.	Yes	Insert the specification given in C37.09 cl. 4.8.5.6: "An impulse voltage test with a peak voltage equal to 90% of the rated switching impulse withstand voltage. The waveform for this test shall be the same as that used for switching impulse tests"	Accept	do
Technical	21	4.13	842	you realize to aceivethis a 50Hz test voltage would need to be 1.44 x the 60 Hz test voltage. If this is desired we should state it simply and clearly. previously it was decided that a 1.3 factor would be sufficient.	Yes	clearly state what voltage factor is required V50 /V60.	Revise	1.44
General	21		845	Is there a reason why IEEE harmonization with IEC applied to class C2 only, but not C1 as well?	Yes	Please provide an explanation or a clarification for this.	Reject	IEC does not require voltage after a restrike so there is no way to show how many restrikes occurred
General	22	4.12.2.1	910	Table 5 should also include the requirements for line charging interruption LC	Yes	Add column in Table for required values. Note that IEEE 1247 required 20 operations	Revise	Look into IEEE 1247 for random LC switching and add material
General	vii	Intro		Please note all page numbers, sub clauses and line numbers refer to the redline document	Yes	See note left	Reject	