

C37.74 Working Group Meeting Agenda

October 17th, 2022 1:30 PM – Burlington, VT.



Chair: Kennedy Darko

Secretary: Travis Johnson

Meeting Agenda

- 1. Call to Order** K Darko
Kennedy brought meeting to order on 1:30pm EST on 10/17/2022.

- 2. Call for Patents** K. Darko
 - a. [Patent Slides](#)
 - b. [Copyright Slides](#)

Kennedy showed the Patent and Copyright slides. There were no patent or copyright issues brought forward.

- 3. Introduction of Members and Guests** K Darko
Introduction of Member and Guests

- 4. Attendance and quorum check** T. Johnson
13 of 19 members in attendance. Quorum was met.
31 Attendance (37 second)

- 5. Approval of Agenda** K. Darko
Chris Ambrose first to approve
David Beseda second approval

- 6. Approval of Previous meeting minutes** T. Johnson
David Beseda motion to approved
Caryn Riley Second

- 7. Action Items** K. Darko
 - a. Quick project schedule review

 - b. Should C37.74 be a standalone document vs an overarching document. WG to provide RODE with a recommendation.

Motion Frank DeCesaro: Motion to maintain C37.74 as a stand alone document as it is currently.

Second by Caryn Riley
11 in favor

0 opposed
0 abstained

c. Editorial and Technical reviews draft D1.2

i. See attached spreadsheet

Motion to hyphenate the word “pad-mounted” and will be written in lower case except where in the title and at the beginning of a sentence.

Chris Ambrose Motion

Karla Trost second

9 approved

0 opposed

1 abstain

Loop, Cable and Unloaded Transformer Tests

Remove the current up to and including rated value and replace with shall be capable of switching the rated current.

- For the end user, it is important the device to perform up to the rated value.
- Discussion is centering around why this language included up to the rated value but there are no lower values that are required to be tested. So just the maximum current can be tested and it will meet this requirement. The question is if there are some lower current values that need to be tested or if the maximum current value tested will cover the lower currents.
- Is the loop switching even needed? It is not present in C37.60 or in C37.63. Can this just be removed from C37.74.
- There is not evidence from users that the current testing is not sufficient.

Edwin Almeida proposed changing to “The switch shall be assumed capable....”

Ian Rokser seconded

0 in favor

13 opposed

2 abstain

It was brought that verbiage could be changed to state switch is assumed to up to and rated current. Should the table be revised to show the worst case? Is the table in it present state does it cover the worst case?

“The switch shall be capable of switching its rated loop switching current.” (See table 3 and table 4 for preferred ratings).

Victor Savolyak Motion

Chris Ambrose Second

11 in favor

1 opposed

0 abstain

For 7.7.5.2 (line 1161) there is a suggested change to add exception for unloaded transformer switching tests. The current will not be sinusoidal when the transformer is unloaded. Magnetizing current is not sinusoidal for unloaded transformers.

Proposal to add "...circuit and shall be essentially sinusoidal except unloaded transformer switching tests.

Victor Savulyak motion

Ian Rokser second

9 in favor

0 opposed

1 abstain

For 7.7.5.2 has current language "...shall be essentially sinusoidal and substantially free of energization transients and DC offset currents. There is a suggested change to add "...DC offset is allowed with agreement from manufacturer if TRV requirements are met."

Free of DC does this mean symmetrical? Should this instead read symmetrical current and this would mean mostly free of DC offset but potentially. If the standard says symmetrical, the plus/minus 20% would apply. But right now the way it is written free of DC offset. Brian Gerzeny volunteered to come up with a proposal. Going to table item for now.

For 4.1.2

Victor Savulyak volunteered to reviewed the table of tolerances.

For 7.7.5.2 to add "For the closing portion of the tests, **except unloaded transformer switching tests**, the current shall be the power-frequency component measured immediately after the last pole closes."

For 7.7.5.6 overvoltages caused by restrikes in the laboratory may be substantially greater than those experienced in the field. Add verbiage to protect lab equipment during restrikes.

Proposal to add "The voltage magnitude after clearing can escalate with multiple restrikes and the test labs may shut power off to protect their equipment."

Reclosers resolved this by implementing this an adding a requirement to count the number of restrikes. The tests that have restrikes will need to be determined if they can be counted.

This issue was tabled and will be taken up at a future time.

For 7.7.6 the switch shall have passed this test if the temperature rise stabilizes as indicated by consecutive readings at 30 minute intervals. The limits of observable

temperature rise of Table 5 may be exceeded. Need to provide limit to protect labs from accidental fires.

Regardless of the standard, the test labs will have limits to protect their equipment from damage. If the equipment is going to stabilize you can tell. Sometime the equipment the temperature will keep going up and you can tell. The requirement that it needs to stabilize, nothing needs to be added to standard and it would be difficult to select a reasonable limitation.

This was decided to keep the verbiage unchanged.

For 7.7.6 fault making and fault closing are used sometimes interchangeably between the various standards. It appears fault making is referenced as capability while fault closing is the test to prove the capability. Fault making is in online dictionary but fault closing is not. C37.30.4 on references fault making.

Frank DeCesaro motion "Make all references to fault making in C37.74 and remove term fault closing"

Jeff Gieger second

12 in favor

0 opposed

1 abstain

For 7.7.4.1 During peak withstand current and fault making current tests, the power frequency component of the test current shall in principle be equal to the rated symmetrical short circuit current specified. Due to the ac current decrement in laboratories may be possible to obtain the specified rated symmetrical current for the entire test duration.

Proposal "The rms symmetrical component of the current at the tenth cycle shall be at least 80% of the rated short circuit withstand current"

The 80% comes from the IEC standard.

The labs need the decrement because otherwise you will overshoot the peaks or you wont be able to get the needed test ratings. So the decrement is needed.

In C37.60 the tolerance is +10% and -0%.

The fault making current shall be no less than 2.6 times the rated rms symmetrical fault making current in IEEE 1247.

If you do your trial shot to figure out where you are, why is the 80% needed?

Ian motion to accept the comment to not let the rms current drop below 80%

Harm seconded

6 in favor

0 opposed

4 abstain

7.7.5.6 IEEE 1247 is obsolete. New reference standard C37.30.4 does not cover cable charging. C37.100.2 is referenced in C37.30.4 but not the same test as in IEEE 1247.

Proposal need to identify suitable reference standard or incorporate cable charging into C37.74. Need an adhoc group to review and make recommendations.

Adhoc Volunteers (5)

Frank DeCesaro

Herman Bannink

Ian Rokser

Kennedy Darko

Chris Borck

7.7.5.4

In 1247 there is Figure 3 for TRV. In C37.30.4, there is Figure 3a. Both are actual TRV wave shapes that are C37.30.4. 1247 was an idealized TRV and was not real and could not be replicated in the lab. The 3a and 3b shown in C37.30.4 was measured.

It was determined that referencing C37.30.4 is best. The diagram is good and demonstrates what is needed for TRV and the waveform is good.

Add some informative TRV waveforms for switching TRV in the Annex to help clear things up for people that do not like inverted waveforms or show less defined TRV waveforms.

Grounding for switches with semi-conductive exterior. Add test requirements to C37.74 similar to IEEE 592 for switches with semi-conductive exterior to ensure the touch current/surface voltage is within acceptable limits

Volunteers to review and make recommendations

Edwin

David B

Kennedy

Anil

Submersibility testing. Align C37.74 with the normal conditions for submersible gear in C37.62-2020. Subclause 3.2 of IEEE std C37.100.1-2018 is applicable with the following additions. Normal (usual) conditions is 3m of depth from the base of the equipment and a duration of 10 days. Exposure to chemical or electrochemical reactions may be encountered in a subgrade location.

FI would be changed to DSG. There is a requirement for operations during the 10 day period when submerged by liquid.

Proposal to pull the test from C37.62 section 7.27 for the test with the appropriate changes to "Fault Interrupter (FI)" to "Dielectric Switch Gear (DSG)"

Motion to take section 7.27 from C37.62 to C37.74 with the appropriate changes as needed.

11 in favor

0 against
1 abstain

7.7.7.1 for partial discharge test voltage. Test voltage shall be 105% of the line to ground voltage corresponding to the rated maximum voltage of the DSG. 37.60 (7.106.4) and C37.62 (7.18.3); use a test voltage of 100% line to ground.

Jeff G Motion to harmonize with C37.60 and C37.62 to cover switches that combine load and fault interrupters.

Second by Ian

11 in favor

0 against

0 abstain

d. Visible Break inclusion in C37.74

Visible Break - An insulating gap between conductors that can be visually verified.

Creation of Adhoc group to get the ADSCOM approved definition for visible break with test requirement and possible test procedure into C37.74.

Adhoc group

Rahul

Frank

Karla

Jeff

Francois

Travis

- 8. Next Meeting:** (3) Three virtual meetings lead by Kennedy Darko.
Next in person meeting Spring 2023 - Clearwater, FL

- 9. Adjournment**

Role	First Name	Last Name	Company Name	Fall 2022
Guest	Robert	Smith	Retired	
Member	Donald	Martin	G&W Electric Co.	X
Member	Francois	Soulard	Hydro-Quebec	X
Guest	Chris	Ambrose	Federal Pacific (Div. of Electro-Mechanical Corp.)	X
Member	Jeffrey	Gieger	ABB/Elastimold	X
Guest	William	Walter	We-Energies	
Member	Harold	Hirz	G&W	X
Member	Harm	Bannink	G&W	X
Member	Antone	Bonner	PAS Consulting	
Guest	Jon	Spencer	Utility Solutions	
Guest	Brian	Gerzeny	Powell Electrical Systems Inc	X
Member	Wangpei	Li	Eaton	
Member	Christopher	Borck	Eaton's Power Systems Division	x
Guest	James	Wenzel	Eaton	
Guest	Paul	Found	BC Hydro	
Guest	Brendan	Kirkpatrick	Southern California Edison	
Member	David	Beseda	S&C Electric Co.	X
Secretary	Travis	Johnson	Xcel Energy	X
Member	Karla	Trost	G&W Electric	X
Guest	Joseph	Smith	FortisAlberta	
Member	Ian	Rokser	Eaton Corp	X
Member	Michael	Whitney	S & C Electric Company	
Member	Rahul	Jain	S&C Electric Company	X
Chair	Kennedy	Darko	G&W Electric Co	
Guest	Richard	Frye	Eaton	
Member	Edwin	Almeida	Southern California Edison	
Guest	Katherine	Cummings	G&W Electric	X
Member	Caryn	Riley	Georgia Tech/NEETRAC	X
Guest	Larry	Putman	Powell	X
Member	Stephen	Pell	Siemens	
Member	Grant	Ringham	BC Hydro	
Guest	Ashley	Moran	IEEE Standards Association (IEEE-SA)	
Guest	Jose	Gamboa	The H-J Family of Companies	
Guest	Vaidyanathan	Ramasethu	G&W Electric	
Guest	John	Kapitula	ABB	X
Guest	Benjamin	Isaak	American Electric Power	
Guest	Doug	Edwards	Siemens	
Guest	Claude	Florvil	PSEG	
Guest	Jack	Geng	Powertech Labs, Surrey, BC	
Guest	Dan	Busilan	Dominion Energy	
Guest	Kate	Cummings	G&W Electric Co, Bolingbrook, IL	
Member	Frank	DeCesaro	DeCesaro Consulting Services, LLC	X
Guest	Ilya	Glinsky	Southern California Edison, Westminster, CA	
Guest	Christopher	Hastreiter	Eaton, South Milwaukee WI	X
Guest	Colby	Lovins	Federal Pacific, Bristol, VA	
Guest	Chris	Morton	Powertech Labs, Surrey, BC	x
Guest	Kirk	Smith	Self (Retired)	X
Guest	Noel	Smith	FortisAlberta	
Member	Joseph	Stemmerich	Trayer Engineering Corporation	

Guest	Andrew	Swisher	Southern California Edison	
Guest	Tim	Tillery	Howard Industries Laurel, MS	
Guest	Nenad	Uzelac	G&W Electric Co, Bolingbrook, IL	x
Guest	Joseph	Wisnewski	UL LLC	
Guest	Oswaldo	Kaschny	Siemens	
Guest	Roberto	Oliwars	Siemens Industry	x
Guest	Jackie	Kandel	Powell	x
Guest	Stacey	Davies	Siemens Industry	
Guest	Truett	Thompson	Siemens	x
Member	Victor	Savulyak	KEMA	X
Guest	Ngoc	Bui	SDG&E	
Guest	Jen	Santalli	IEEE Standards Association (IEEE-SA)	
Guest	John	Leach	Self	
Guest	Xin	Zhou	Eaton	x
Guest	Ken	McKonney	UL Solutions	x
Guest	Anil	Dhawan	Allgos Group	x
Guest	Paul	Shiller	First Power Group LLC.com	x
Guest	Samuel	Andris	KEMA Labs	x
Guest	Eric (Qian)	Li	Powertech Labs	x
Guest	Peter	Glaesman	PCORE Electric, CO / Hubbell Power Systems	x
Guest	Kelsey	Bush	ABB Elastimold	x
Guest	Federico	Michele	CESI	x
Guest	Sumitabha	Pal	Schneider Electric	x
Guest	Leonel	Santos	Schneider Electric	x