

**Working Group**  
**C37.10 Guide for Investigation, Analysis, and Reporting of CB Failures**  
**April 19, 2021, 1:30PM to 3:15AM (CDT)**  
**April 20, 2021, 8:00AM to 9:45AM (CDT)**  
**Spring 2021 On-Line Meeting**

Chair: Neil Hutchins  
Secretary: Todd Irwin

<b>Agenda Item</b>	
1	Call Meeting to Order
<b>The meeting was called to order by the Chair at 1:37PM April 19</b>	
2	Introduction of Members & Guests
<b>Attendance for April 19/20 is included with these minutes.</b>	
3	Review IEEE Patent and Copyright Policy slides
<p><a href="https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf">https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf</a></p> <p><a href="https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/copyright-policy-WG-meetings.potx">https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/copyright-policy-WG-meetings.potx</a></p> <p><b>Copyright policy slides were shown and a link will be provided in the minutes. A call for knowledge of essential patents was made, with no respondents</b></p> <p><b>Copyright policy slides were shown and a link will be provided in the minutes.</b></p>	
4	Attendance and Quorum Check
<p><b>As the first meeting of the WG, membership status is granted to all in attendance requesting membership from the Chair.</b></p> <ul style="list-style-type: none"> <li>• <b>Apr 19 – 20 attendees requested and were granted membership, thus confirming quorum. 18 guests were in attendance.</b></li> <li>• <b>Apr 20 – 1 attendee requested and was granted membership. 6 members and 7 guests were in attendance.</b></li> <li>• <b>The working group is formed with 21 members.</b></li> </ul>	
5	Agenda Review and Approval
<p><b>1<sup>st</sup> Jeff Ward</b>  <b>2<sup>nd</sup> Pat Dilillo</b>  <b>No objections or abstentions</b>  <b>Approved by acclamation</b></p>	
6	Approval of minutes of previous meetings (Fall 2020)
<p><b>1<sup>st</sup> Dave Mitchell</b>  <b>2<sup>nd</sup> Carl Schuetz</b>  <b>No objections or abstentions</b>  <b>Approved by acclamation</b></p>	
7	PAR status
<ul style="list-style-type: none"> <li>• <b>Approved Dec 2020</b></li> <li>• <b>Expires Dec 31, 2024</b></li> <li>• <b>C37.10 -2011 will be administratively withdrawn this year should try to be complete by 2022</b></li> <li>• <b>Plan to be out to first ballot in 2021</b></li> </ul>	
8	Subgroups – assignments

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Agenda Item
<ul style="list-style-type: none"> <li>• Sections 1 – 3, Annex B Todd Irwin (Chris Jarnigan, Pat Dilillo, Andy Keels (annex B)) <ul style="list-style-type: none"> <li>○ Reference documents may be provided for consolidation on imeetcentral</li> </ul> </li> <li>• Section 4 – Dave Mitchell (Mike Crawford, Pat Dilillo, Neil Hutchins, Don Steigerwalt)</li> <li>• Section 5 – Jeff Ward (Monty Goulkhah, Neil Hutchins, Albert Livshitz)</li> <li>• Section 6, 7, Annex A – Chris Jarnigan (Mike Skidmore, Stan Billings, Todd Irwin, Steve May, Neil Hutchins) <ul style="list-style-type: none"> <li>○ Should we consider separate classification/forms for major and minor failures?</li> </ul> </li> <li>• Annex C – John Webb (Keith Flowers, Todd Irwin, Jack Harley) <ul style="list-style-type: none"> <li>○ New technology, SF6 alternatives should be considered.</li> </ul> </li> </ul> <p>Timeline:</p> <ul style="list-style-type: none"> <li>• Subgroups provide input to Neil &amp; Todd by August 15 for consolidation</li> <li>• Target next WG meeting in September.</li> <li>• Plan to finalize for ballot at Fall meeting.</li> <li>• Plan to have out for ballot before end of 2021</li> </ul> <p>The Secretary will circulate Word document of the draft standard and failure reporting form to all attendees</p> <p>Documents will be uploaded to imeetcentral at the workspace “C37.10 - Guide for Investigation, Analysis and Reporting of Power Circuit Breaker Failures” Members and guests with valid imeecentral accounts will be granted access.</p>
9   Other Discussion/New Business
<p>WG convened briefly for Apr 20 session (8:05AM to 8:25AM) to update attendees who missed Session 1 and solicit additional volunteers. One member was added to the working group and additional volunteers were added to the subgroups.</p>
10   Adjourn
<p>The chair adjourned the meeting at 2:56PM April 19</p>

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**PC37.10**

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**Submitter Email:** todd.irwin@ieee.org

**Type of Project:** Revision to IEEE Standard C37.10-2011

**Project Request Type:** Initiation / Revision

**PAR Request Date:** 07 Oct 2020

**PAR Approval Date:** 03 Dec 2020

**PAR Expiration Date:** 31 Dec 2024

**PAR Status:** Active

**Root Project:** C37.10-2011

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**1.1 Project Number:** PC37.10

**1.2 Type of Document:** Guide

**1.3 Life Cycle:** Full Use

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**2.1 Project Title:** Guide for Investigation, Analysis, and Reporting of Failures of AC High-Voltage Circuit Breakers and Circuit Switchers with Rated Maximum Voltage Above 1000 V

**Change to Title:** ~~IEEE Guide for Investigation, Analysis, and Reporting of Power~~ Failures of AC High-Voltage Circuit Breakers and Circuit Switchers with Rated Maximum Voltage Above 1000 V

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**3.1 Working Group:** HVCB - IEEE Guide for Investigation, Analysis and Reporting Failures of AC High-Voltage Circuit Breakers and Circuit Switchers with Rated Maximum Voltage Above 1000 V(PE/SWG/C37.10)

**3.1.1 Contact Information for Working Group Chair:**

**Name:** Todd Irwin

**Email Address:** todd.irwin@ieee.org

**3.1.2 Contact Information for Working Group Vice Chair:**

None

**3.2 Society and Committee:** IEEE Power and Energy Society/Switchgear(PE/SWG)

**3.2.1 Contact Information for Standards Committee Chair:**

**Name:** Keith Flowers

**Email Address:** keith.flowers@ieee.org

**3.2.2 Contact Information for Standards Committee Vice Chair:**

**Name:** Douglas J Edwards

**Email Address:** doug.edwards@ieee.org

**3.2.3 Contact Information for Standards Representative:**

**Name:** Michael Wactor

**Email Address:** mwactor@ieee.org

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**4.1 Type of Ballot:** Individual

**4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:** Nov 2021

**4.3 Projected Completion Date for Submittal to RevCom:** Nov 2022

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**5.1 Approximate number of people expected to be actively involved in the development of this project:** 30

**5.2 Scope of proposed standard:** This guide provides practices and processes to perform, analyze, and report failure investigations of AC high voltage circuit breakers and circuit switchers.

**Change to scope of proposed standard:** This guide provides practices and processes to perform, analyze, and report failure investigations of ~~power~~ AC high voltage circuit breakers and circuit switchers.

**5.3 Is the completion of this standard contingent upon the completion of another standard?** No

**5.4 Purpose:** The purpose of this guide is

- a) To provide guidelines and promote uniform, thorough analysis of circuit breaker and circuit switcher failures
- b) To provide guidance for systematic and uniform data collection so that valuable evidence is not lost or destroyed
- c) To provide a consistent methodology by which the most probable cause of any particular circuit breaker or circuit switcher failure may be determined, whether equipment or system issue
- d) To encourage cooperative efforts by users and manufacturers during failure analysis

e) To provide guidance for reporting failures of circuit breakers and circuit switchers

**Change to Purpose:** The purpose of this guide is a) To provide guidelines and promote ~~uniformity~~ uniform, in the thorough analysis of ~~power~~ circuit breaker and circuit switcher failures b) To provide guidance for systematic and uniform data collection so that valuable evidence is not lost or destroyed c) To provide a consistent methodology by which the most probable cause of any particular circuit breaker or circuit switcher failure may be determined, whether equipment or system issue d) To encourage cooperative efforts by users and manufacturers during failure analysis e) To provide guidance for reporting failures ~~for power~~ of circuit breakers and circuit switchers

**5.5 Need for the Project:** This project provides guidance on the process of investigating circuit breaker and circuit switcher failures and will promote the consistency in the process

**Change to Need for the Project:** This project provides guidance on the process of investigating circuit breaker and circuit switcher failures and will promote the consistency in the process

**5.6 Stakeholders for the Standard:** Owners and asset managers of high voltage (HV) circuit breakers and circuit switchers, Operators and maintainers of HV circuit breakers or circuit switchers, Power industry

**Change to Stakeholders for the Standard:** Owners and asset managers of high voltage (HV) circuit breakers and circuit switchers, Operators and maintainers of HV circuit breakers or circuit switchers, Power industry

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## 6.1 Intellectual Property

**6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?**

No

**6.1.2 Is the Standards Committee aware of possible registration activity related to this project?**

No

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**7.1 Are there other standards or projects with a similar scope?** No

**Change to Are there other standards or projects with a similar scope?** ~~Yes~~ No

**7.2 Is it the intent to develop this document jointly with another organization?** No

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**8.1 Additional Explanatory Notes:** This is an update of the existing C37.10-2011. The scope has been expended to cover HV circuit switchers in addition to circuit breakers. The WG will review the standard to include necessary updates to account for new interrupting technologies such as alternative gases and vacuum/clean air. The failure reporting form (Annex A) will be review for updates and format to encourage greater user adoption in the reporting and analysis of failures.

## PC37.10 Spring 2021 Attendance

Subgroup Name	Membership	Role	Participation	Type	First Name	Last Name	Company	City	State	Country	4/19/2021	4/20/2021
HVCB C37.10	Active	Guest	Active	Interested In	Roy	Ayers	Nashville Electric	Nashville	TN	USA	X	X
HVCB C37.10	Active	Member	Active	Interested In	John	Billings	retired	Murrysville	PA	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Michael	Boulus	PSE&G	NEWARK	NJ	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Andrew	Chovanec	GE Power	Charleroi	PA	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Michael	Crawford	Mitsubishi Electr	Cranberry Twp	PA	USA	X	
HVCB C37.10	Active	Member	Active	Member	Patrick	Di Lillo	Consolidated Edi	New York	NY	USA	X	
HVCB C37.10	Active	Guest	Active	Member	Doug	Edwards	Siemens Industry	Wendell	NC	USA	X	X
HVCB C37.10	Active	Member	Active	Member	Keith	Flowers	Siemens Industry	Grapevine	TX	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Raymond	Frazier	Ameren	St. Louis	MO	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Monty	Goulkhah	Kinectrics Inc	Toronto	ON	Canada	X	
HVCB C37.10	Active	Member	Active	Interested In	John	Hall	Tennessee Valley	Chattanooga	TN	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	John	Harley	FirstPower Group	Twinsburg OH 44	OH	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Victor	Hermosillo	GE Grid Solutions	Charleroi	PA	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Jennifer	Hunter	MEPPI	Warrendale	PA	USA	X	
HVCB C37.10	Active	Chair	Active	Interested In	Neil	Hutchins	Georgia Power C	Forest Park	GA	USA	X	X
HVCB C37.10	Active	Secretary	Active	Member	Todd	Irwin	GE Grid Solutions	Smithville	MO	USA	X	X
HVCB C37.10	Active	Member	Active	Interested In	Christopher	Jarnigan	Southern Compa	Birmingham	AL	USA	X	X
HVCB C37.10	Active	Member	Active	Interested In	Thomas	Keels	kEElectric Engine	Mesa	AZ	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Carl	Kurinko	ABB Inc.	North Huntingdo	PA	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Scott	Lanning	S&C Electric	Libertyville	IL	USA	X	
HVCB C37.10	Active	Member	Active	Member	Albert	Livshitz	CE Power Engine	Loveland	OH	USA		X
HVCB C37.10	Active	Guest	Active	Interested In	Leo	Lopez	WIKA Instrument	Lawrenceville	GA	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Steven	May	Southern Compa	Forest Park	GA	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Dave	Mitchell	Mitch and Associ	Henrico	VA	USA	X	X
HVCB C37.10	Active	Guest	Active	Interested In	Jeffrey	Nelson	Tennessee Valley	Chattanooga	TN	USA	X	
HVCB C37.10	Active	Guest	Active	Member	Thomas	Pellerito	DTE Energy	Detroit	MI	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Andrew	Peterson	ABB	Sanford	FL	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Ali	Razi-Kazemi	K. N. Toosi Unive	Tehran	Other	Iran		X
HVCB C37.10	Active	Guest	Active	Interested In	Jon	Rogers	Siemens Energy,	richland	MS	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Daniel	Schiffbauer	Toshiba Internat	Oliver	PA	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Carl	Schuetz	American Transn	Waukesha	WI	USA	X	
HVCB C37.10	Active	Member	Active	Interested In	Jeff	Scott	Ameren	Desloge	MO	USA	X	
HVCB C37.10	Active	Guest	Active	Member	Sushil	Shinde	Hitachi ABB Pow	Mt Pleasant	PA	USA	X	
HVCB C37.10	Active	Member	Active	Member	Michael	Skidmore	AEP	Pickerington	OH	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Don	Steigerwalt	Duke Energy	Charlotte	NC	USA		X
HVCB C37.10	Active	Guest	Active	Interested In	Vernon	Toups	Siemens	Richland	MS	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Francois	Trichon	Schneider Electri	Saint martin d'ur	Other	France	X	
HVCB C37.10	Active	Member	Active	Interested In	Jeffrey	Ward	Doble Engineerin	Marlborough	MA	USA	X	X
HVCB C37.10	Active	Member	Active	Member	John	Webb	ABB	Florence	SC	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Matt	Westerdale	Bureau of Reclan	Denver	CO	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Marcus	Young	Mitsubishi Electr	Knoxville	TN	USA		X
HVCB C37.10	Active	Guest	Active	Interested In	Li	Yu	Eaton Corporatid	Moon Township	PA	USA	X	
HVCB C37.10	Active	Guest	Active	Interested In	Wei	Zhang	Hitachi T&D Solu	Suwanee	GA	USA		X