

IEEE Power & Energy Society
Switchgear Committee
C37.20.7 Working Group Report
30-April-2013

The working group met on Tuesday, April 30, at 8:00AM.

Patents:

Those registered had to acknowledge the IEEE-SA rules on Patents, and therefore, review in this meeting is not required. Nevertheless, the chair displayed the Patents slides and reminded attendees of their obligations. The participants were reminded that anti-competitive issues are never allowed for discussions.

General:

The PAR for this project was approved by the IEEE-SA Standards Board on November 9, 2011, and is valid through 2015.

Members introduced themselves, identified their company and their affiliation. Total attendance was 74 persons. Attendance included 26 working group members (of 31, with 2 absent and 3 excused, plus 48 guests. Attendance is as shown below:

Members / Affiliation	Members / Affiliation	Guests / Affiliation	Guests / Affiliation
C. Ball (P) – S&C	F. Mayle (P) - Technibus	B. Anderson (P) - Eaton	P. Leufkens (P) – KEMA
P. Barnhart (P) - UL	D. Mazumdar (P) - AZZ	S. Benson (P) – Vota LLC	A. Livshitz (A) - Schneider
J. Baskin (P) – Federal Pacific	D. Mohla (P) – DCM Technical Consulting	A. Bonfanti (P) - ABB	R. Martinez (P) – CFE LAPTEM
R. Boyce (P) – Eaton	A. Morse (E) - Eaton	C. Carne (P) - Schneider	J. McClelland (P) - Technibus
J. Bowen (P) - Aramco	T. Olsen (P) - Siemens	J. Cox (P) - Efacec	A. Morgan (P) - retired
E. Byron (A) - Schneider	M Orosz (P) - Schneider	M. Crooks (P) - Eaton	R. Morris (P) - Eaton
J. Earl (P) - ABB	A. Patel (E) - GE	D. Dunne (P) - Schneider	D. Moser (P) – ABB
D. Edwards (P) - Siemens	C. Schneider (P) - Schneider	D. Elliott (P) – ABB	R. Parthasarathi (P) - Bechtel
M. Flack (P) – Southern Nuclear	J. Smith (P) - Eaton	K. Evangelista (P) – IEEE-SA	O. Parks (P) – ABB
K. Flowers (P) - Siemens	P. Sullivan (P) - DuPont	T. Faber (P) - Schneider	M. Parvin (P) – Chicago Bridge & Iron
D. Gohil (P) - AZZ	C. Taylor (P) - Eaton	L. Farr (P) – Eaton	R. Pawar (P) - ABB
S. Hutchinson (A) – Shallbetter	M. Valdes (P) - GE	A. Finley (P) – Eaton	E. Peters (P) – Powell
H. Josten (P) - Siemens	M. Wactor (P) – Powell	S. Flores (P) - Schneider	I. Profir (P) - Rockwell
A. Jur (P) - Eaton	R. Warren (P) - KEMA	P. Gingrich (P) - AZZ	R. Puckett (P) – retired
C. Kennedy (P) - Schneider		L. Grahor (P) - Eaton	S. Reddy (P) - Powell
M. Lafond (P) - GE		J. Hansen (P) - Schneider	R. Rohil (P) - Powell
D. Lemmerman (E) - Exelon		T. Hawkins (P) - Siemens	A. Rowell (P) - Eaton
		J. Hidaka (P) - UL	T. Schiazza (P) - Schneider
		D. Hrnrcir (P) – Eaton	M. Seabrook (P) – GE
		D. Jackson (P) - ABB	J. Shullaw (P) - GE
			G. Sims (P) – Eaton
			H. Song (P) – Bechtel
			T. Sorvari (P) - Enbridge
			E. Spiewak (P) – IEEE-SA
			T. Stefanski (P) – Powertech Labs
			K. Starcevik (P) - KEMA
			R. Tanner (P) – Schneider
			E. Yee (P) - Eaton
			D. Yek (P) – PG&E
			L. Yonce (A) – Eaton
			J. Zawadzki (A) - Powertech

The minutes from the Fall, 2012 meeting were approved as distributed. J. Smith moved to approve and D. Mohla seconded. Passed unanimously.

Draft 4 of the document was distributed prior to the meeting. This draft is completely restructured from prior drafts, and this necessitates very careful review of the entire document. This draft is intended to cover these types of equipment:

- LV Metal-Enclosed Switchgear (C37.20.1)
- MV Metal-Clad Switchgear (C37.20.2)
- MV Metal-Enclosed Interrupter Switchgear (C37.20.3)
- Metal-Enclosed Bus (C37.23)
- MV Motor Controllers (UL 347)
- LV Motor Controllers (UL 845)
- LV Switchboard (UL 891)

Other equipment types, such as transformers, large motor drives, and others, have been suggested for inclusion. For the time being, we will focus on the types above.

In previous meetings, we had agreed that we would put the special requirements germane to a particular type of equipment in a specific normative annex for that type of equipment. To encompass other types of equipment, we have re-titled the document from covering “metal-enclosed switchgear” to “switchgear”, with corresponding changes throughout the document. This was discussed and it was agreed that the generic term “switchgear” can be used.

The intended major focus of this meeting is to discuss philosophical issues related to the organization of the document. Quick survey of the major areas in the document, among the task force leaders:

- Annex D (LV Switchgear) -- No specific discussions.
- Annex E (MV MC Switchgear) -- No specific discussions.
- Annex F (MV MEI Switchgear) -- No specific discussions.
- Annex G (Outdoor equipment) -- No specific discussions.
- Annex H (LV MCCs) – No specific discussions
- Annex I (MV MVCs) -- No specific discussions.
- Annex J (LV Switchboards) – No specific discussions.
- Annex K (Metal-Enclosed Bus) – No specific discussions.

Volunteers were solicited to carefully review the document for editorial issues, consistency of clause references, and the like. The following attendees volunteered. Input is required by the end of May.

C. Ball	D. Hrcir	C. Tailor
L. Farr	T. Olsen	M. Valdes
S. Flores	R. Parthasrathi	M. Wactor
K. Flowers	S. Reddy	

Grounding – the participants were asked if there was any further information on comparison of arcing tests on grounded versus ungrounded (or limited ground current) test arrangements. No additional information beyond that included with the Fall 2012 minutes. The chair indicated a generalization that damage to equipment seems higher with solidly grounded test arrangements, but that the relative degree of difficulty of passing the test is approximately equal with either form of grounding. Mr. Farr indicated that IEC is leaning towards using a grounded system when testing to the IEEE method, and an ungrounded (or limited ground current) arrangement when testing to the IEC method. Discussion of this issue will likely continue at future meetings.

Mr. Warren asked if consideration could be given to increasing wire size for initiation of the arc, particularly on higher current tests (e.g., 50kA and higher) for medium-voltage tests. A similar issue also concerns the wire size used to initiate the arc in low-voltage equipment tests.

A question was also raised concerning holes in indicators placed internally in the equipment, where high speed videos are not possible. At present, an indicator that does not burn is ignored.

Mr. Mohla asked for comments for submittal by May 3 for NPFA 70E. Several participants volunteered to discuss this following the meeting.

A general discussion occurred. Among the topics:

- Revised supplemental ratings (annex C), including revamped meanings for accessibility C. The revised draft reflects a major revamp of accessibility C. In particular, suffix C1 engendered considerable discussion.
- Supplemental rating D is envisioned as the only rating for metal-enclosed bus (annex K).
- A special plea for comments or suggestions for improvement of table A.1 was made. Is this table even needed?
- Wire size for arc initiation was discussed, for each of the types of equipment in the document.
- In reduced voltage testing (common at medium voltage), particularly for higher currents, the laboratories are having troubles meeting the peak current requirements. However, to meet the peak requirements, laboratories are increasing the prospective current above the rated symmetrical value. This leads us to question whether the requirement to meet the 90% peak current for reduced voltage tests is unnecessarily severe (i.e., not representative of the real-world situation) for medium voltage equipment at high test currents.
- Mr. Morris will head a task force to investigate insulated versus non-insulated bus construction and its effects on arcing tests.

Comments from the volunteer reviewers, and from any other interested participants, are required by May 31. Draft 5 will be prepared and circulated during the summer.

The meeting adjourned at 11:57AM.

Report submitted by: M. Wactor, WG Chair