IEEE Power Engineering Society
Switchgear Committee
C37.20.7 Working Group Report
10-May-2005

The working group met twice to review the ballot results and comments on D7 of the revision to C37.20.7. Attendance on May 9 (1:15PM to 5:47PM) included 13 WG members and 25 guests. Attendance on May 10, 2005 (8:00AM to 11:45AM) included 11 WG members and 25 guests. Working group members are:

C.Ball (M-T)	N. Gunderson (M-T)	T. Olsen (Vice Chair) (M-T)	J. E. Smith (M-T)
P. Barnhart (M-)	D. Lemmerman (M-)	M. Orosz (M-T)	M. Wactor (Chair) (M-T)
E. Byron (M-T)	D. Mazumdar (M-T)	R. Puckett (M-T)	J. Zawadzki (M-T)
P. Dwyer (-)	T. McNamara (M-T)	S. Slattery (-)	

In this listing, the parenthetical entry indicates M for attendance Monday, and T for attendance on Tuesday.

IEEE-SA rules on Patents were reviewed prior to further discussions.

The ballot closed on May 5, with the following results:

97	100%	persons in ballot group
78	80%	returned (78 of 97)
3	3%	abstain (3 of 97)
59	78%	affirmative with or without comments (59 of 78)
16	22%	negative (16) with comments (16 of 78)

Discussion of controversial comments associated with negative ballots:

- 5.4.2: Indicator distance 300mm (in D7) vs. 100mm (as in C37.20.7-2001). Decision: use an indicator distance of 100mm.
- Request that “low voltage” and “medium voltage” be defined. Decision made to add “(hereafter referred to as Low Voltage Switchgear)” after the first mention of C37.20.1, and to add “(hereafter referred to as Medium Voltage Switchgear)” after the first mention of C37.20.2 and C37.20.3.
- 5.2.5: Objection to allowing the duration of the test in clause 5.2.5 to be limited by the duration required for a protective device to operate, such as a fuse. Very lively discussion ensued, with the conclusion that the draft will remain as written on this issue.
- 5.2.6: Objection to the direction of feed in item c (from the busbar) as it relates to Suffix C. Decision: modify A.3.2 for item c to use supply from the cable side with the switching device in the closed position for suffix C only.
- 5.4.2: Objection that indicators must be mounted inside the low voltage compartment in all cases, which would make suffix B mandatory. Decision: an option to add indicators is available with suffix B, and this allows the user to specify the level of construction desired.
- 6.1, criteria 3: A number of comments regarding the ignoring of openings above 2m were submitted. Decision: retain present 2m requirement.
- 5.1.3.d: Advocates creation of a “typical” or “standard” configuration of control devices, meters, and relays, and use it as the uniform arrangement to be tested. Decision: keep the existing requirement, because it is not possible to specify a test configuration and define how an actual arrangement would alter the results.
- 5.2.1: A comment was submitted that the phrase “… polyphase device, designed such that the phases cannot interact …” is unclear. Decision: add elaboration to address the comment.
- 3.5 and 5.2.3: Request to add the modifier “(inherent)” to the description of prospective current.
- B1.3: There is a lack of correlation between the arcing tests and the amount of heat energy that is sufficient to ignite the indicators used in the arcing tests. There is concern that users have the perception that use of arc resistant equipment eliminates the need for personal protective equipment (PPE), even though the introduction states that PPE is required even with equipment tested to the requirements of C37.20.7. Decision: the chair will create language for B1.3 to address this concern. Also add reference in bibliography to IEEE 1584.
- 6.1, criterion 2: Is a 60g projectile reasonable? 60g is the value that appears in IEC. No decision.

- 5.4.1: Consider use of indicators of 40g/m^2 density. Decision: do not add.
- 5.3: Request to make the last paragraph an informative note, and eliminate the 87% current value for a two-phase fault. Decision: accepted.
- 5.4.1: Address test setup for outdoor equipment with an enclosed aisle. Decision: expand 5.1.1.6 to also address this issue.
- 5.1.1.3: Experience was related of indicators inside compartments which are believed to have ignited as a result of burning paint. However, either because the compartment is closed or because it is not possible to get a good video record, it cannot be proven that the indicator burned due to burning paint. Hence, it is requested that the test specimen be allowed to use unpainted surfaces on metal adjacent to the compartment in which the arc is to be ignited. Decision: language will be modified to allow unpainted surfaces in adjacent compartments if not directly adjacent to surfaces exposed to the arc, for suffix C testing.
- 5.1.1.5a: Discussion of "withdrawable" vs. "removable". Decision: remove the word "removable".
- 5.1.3: Requires testing of both insulated and uninsulated bus configurations. It was requested that the manufacturer be allowed to test one of the arrangements as the worst case, upon agreement with the third party observer. Decision: no change.
- 5.1.4.3: Why should it be necessary to test each compartment, if all compartments have the same construction? Decision: wording to allow for some latitude will be created.
- 4.2, and others: Modify language to recognize fast-acting devices other than fuses. This was done in some places but several places were missed. B2.4.2.3 will be added to address, and the language in several additional paragraphs.
- 5.2.5: A comment was submitted that, with current limiting fuses, the worst condition may not be the test with rated short-circuit current and maximum let-thru current. The amount of energy delivered to the fault may be greater at a lower current. It was suggested that the total clearing current at the rated arcing duration (e.g., 0.5s or 1.0s) would test this condition. This would be an added test, conducted with the fuses replaced with solid links, and the laboratory current adjusted to equal the total clearing current of the fuse at the rated arcing duration of the non-fuse protected equipment. Language for a test of this type will be added.
- A lively discussion of the arcing duration and current ensued, with the example of a group of low voltage equipment having 200kA available. If fused circuit breakers are used, the equipment could have a rated arcing current of 200kA downstream of the first fuse, but considerably less than 200kA on the line side of the first fuse. It was agreed that the capability of the line side of the equipment would be unlikely to be 200kA and that the line side could have a different rated arcing current and / or duration. A few words on this issue will be added.
- 1.1 includes outdoor equipment but no test guidance is given. It was suggested that a subclause be added to 5.1.2 to discuss outdoor equipment with and without an aisle. This may also apply to clauses 5.1.1 and 5.1.3.
- 5.4.2 does not address placement of indicators around an exhaust duct. Recommended text for placement of indicators was accepted in principle.

A consolidated listing of ballot comments will be prepared, including the decisions of the working group.

Future schedule:
- Ballot comments and resolution: June 1, 2005
- WG and balloter response to proposed resolutions: June 15, 2005
- Revised draft for ballot: July 15, 2005
- WG review of ballot draft: July 30, 2005
- Submittal to IEEE-SA for re-ballot: August 15, 2005
- Review ballot comments at Fall meeting

Report submitted by: M. Wactor, WG Chair