

IEEE Switchgear WG PC37.06.1 “Guide for High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Designated “Definite Purpose for Fast Transient Recovery Voltage Rise Times”

Myrtle Beach, SC

2010-04-26

Minutes of Meeting led by Keith Wallace (WG Chair)

Introductions

Review of IEEE patent slides

Purpose of meeting is to revise the C37.06.1 “Guide for High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis Designated “Definite Purpose for Fast Transient Recovery Voltage Rise Times”

Previous discussion presented the source of the 7% and 30% ratings (from Figure B.1 of C37.011-2005 (from previous transformer resonant frequency investigations). Derivation is posted on the IEEE Switchgear website.

Sample data was gathered from about 600 examples (115 to 800 kV) from several companies. Data seems to be “grouped” in multiple groups of fault level (source side). In the 765 kV transformer sample, a circuit breaker applied at 7% to 30% of its rating will include all cases. At 500 kV, a small percentage of cases are not covered using circuit breakers applied at 7% to 30% of their rating. At 230 and 138 kV, all but the higher let-through currents are covered using circuit breakers applied at 7% to 30% of their rating.

Proposals to use 10% and 30% doesn’t cover some of the lower cases but does cover some of the slightly higher cases. Similarly, use of the R10 series does not cover all of the situations.

The circuit switcher standard requires the circuit switcher to cover all cases at the 30% and 7% and lower fault levels.

Revision:

- will convert existing values to a two-parameter envelope
- may change existing range of values (existing values cover majority of situations now existing in-service)
- will consider technical reasons for any changes (data or technology causing change)
- will consider incorporation into C37.04 (could incorporate these “preferred” ratings as well as “optional” ratings into C37.04)

Proposals were received from Dufournet to test at two specified fault currents for each rated voltage and interrupting current rating (approx 10% and 30% that will cover

approximately 90% of cases). Alternately, users could specify currents from the R10 series as optional transformer limited fault (TLF) current ratings.

A proposal was made to have preferred values of 10, 12, 16 and 20 kV as well as 30% of the selected value. The intent is to then have the circuit breaker capable of interrupting this selected current and all currents below the selected value of current (all the way down to 0 A). Keith Wallace will compile the 90% percentile inclusion for presented transformers (~600).

Additional transformer data is solicited (voltage levels, MVA, %IZ on base).

When this work is successfully finalized there is an opportunity to present these values as optional requirements in the soon-to-be-revised C37.04.

A draft copy of this new draft will be sent to members for comment prior to the next meeting.

Pat Dillilo (ConEd), Mike Skidmore (AEP), Jeff Nelson (TVA), Rick Gavazza (PG&E) will send data to Keith Wallace

Minutes recorded by
Bill Bergman (WG Vice Chair)
2010-04-26

Attach: Slides presented at meeting