

C37.59 W/G Minutes for meeting 2PM-4PM September 23, 2003 9/23/03

Attending: 11 members and 5 guests

Summary of Meeting:

The various items from the previous version of the “punch sheet” were reviewed so that the sheet could be updated. Several new items were added such as the future inclusion of conversions of generator breakers. A copy of the updated “punch sheet” will be attached to the formal minutes of the meeting.

A number of interesting conversions were discussed such as field installation kits to strengthen existing switch gear against internal faults (with no guarantee against performance to be expected).

It was also proposed that we should remove all references to low voltage Ground & Tests from C37.59-2002, as none have been observed to be presently manufactured or applied, and there are significant technical problems in designing and applying such a device. The Chair will initiate appropriate action.

Pete Dwyer – W/G Chair

“Punch List” for future revision of C37.59:

- Basic philosophy: Let the standard age, and see what issues arise.
- The use of conversions to reduce maintenance expenditures and improve reliability will increase. There are many other types of switchgear devices which may be converted in the future and the standard should consider addressing as appropriate.
- The addition of control or sensing devices to the primary voltage areas of switchgear may have a long or short term effect on the dielectric capability and should be addressed. For instance, direct attachment of fiber optics devices to the primary bus or “glow tube” type devices in the close vicinity. It was mentioned that the IEC has significant documentation covering this subject. Mike Orsz to provide details.
- Some individuals in UL had specific concerns about terms. Paul Notarian advised:

“During the WG meeting this week you asked what specific problem UL had with C37.59. I searched my archived email and found a message from 1997 that indicated the problem was with rebuilt circuit breakers.

I requested authorization to establish a category to cover MV replacement circuit breakers. It was approved with the condition that the replacement be a new circuit breaker that was modified to be used in an application where the original replacement was no longer available. I was told not to reference C37.59 for testing because of the reference in that document to rebuilt circuit breakers.

I would assume that this position remains although the person involved in that decision is retired and we have never issued a report covering a replacement MV circuit breaker.”

- Bob Puckett indicated LV contactor conversions need specific references. A new standard now being prepared (C37.13.1) should be coordinated and referenced. This standard addresses fused contactors that can be made into a removable unit for drawout gear. We need to be sure documents fit together.
- Lots of discussion about LV G&Ts included in C37.59-2002. Such a device must have a solid ground system, and this is very critical for a LV G&T. Nigel will check what activity is going on with LV G&Ts in the short-circuit labs. C37.59-2002 includes this product, emphasizing some of the concerns, although LV G&Ts are not defined by a separate standard. There is concern that the typical currents are so high, a LV G&T with a solid grounding system may be difficult to realize, although the references in C37.59-2002 are technically correct. If this product should not be included, it should be deleted. Tests that will help with this decision

include: Will this device reduce the possibility of accidents? Are there products like this in the field or contemplated? It is noted that LVSD subcommittee plans to write the C37.59 chair recommending that this section be dropped in the future revision. **This was discussed in meeting (23-Sept-2003), and it was recommended that LV G&T devices be dropped from C37.59-2002. Pete will initiate appropriate action including a PAR for a corrigendum to C37.59 to delete LV G&Ts.**

- Arc resistant switchgear – apparently a company in Canada offers some kind of related conversion. This conversion practice should be studied to see if any future action is justified. There were concerns in the WG that perhaps this subject is best left to C37.20.7.
- Albert Livshitz (16 Oct 02) brought up the subject that converters are now replacing low voltage breakers with the Schneider Master Pac line which are smaller. They keep the primary and control attachments and the “truck” but then mount the smaller breaker in place of the AK (GE AK circuit breaker). Albert feels the standards do not clearly address how such a configuration should be design verified – he gives it the momentary and short time tests from other standards. There are several versions of this.
- There is a concern that “hybrid” circuit breakers are being installed in low voltage compartments. These may have additional racking provisions and connections in both the primary and secondary circuits. Albert feels that this concept is covered on MV circuit breakers in 6.1.5.1 but not on LV circuit breakers. Discussed in meeting (23-Sept-2003) and Albert said that he makes a conversion in which a cradle is installed inside the existing cell, using a set of drawout disconnects between the existing cubicle disconnects and the disconnects on the cradle. The cradle is then bolted in place in the unit. Then, the drawout circuit breaker is installed in the cradle in a manner resembling the manner it is used in new switchgear. They conduct momentary and short-time tests, plus dielectric and other tests as appropriate.
- We need to consider the addition of C37.48, concerning fuses, in the bibliography and also as part of the text of 6.3 regarding the addition of fuses.
- There is concern about grounding provisions for the newer solid state trip devices mounted perhaps on plastic shell breakers.
- There is a typo – first line 6.1.9.2 word should be “conforming” not “confirming”
- It was suggested that perhaps an informative bibliography be included to address standards changes which may be significant to a converter such as the changes from total current to symmetrical.
- Alan Storms comments (05-Sept-2003):
 - “There have been questions coming from users and retrofitters of what tests are necessary to qualify adding a trip system to an already qualified breaker to meet C37.59.
 - This subject is covered by clause 3.9.4.5 in C37.50 for new product qualification, but we do not reference this clause in either the standard or in the Annex. The text of our

standard states that design tests should be conducted on EVERY frame, which is an onerous, expensive test program, FAR in excess of what C37.50 requires.

- We are giving direction to do what is exactly in clause 3.9.4.5 of C37.50, except we require more tests than the original product did.
 - We should articulate why we have to do interruption tests to qualify adding a new trip system, and I do not know if old design circuit breakers would pass the stated interruption tests.
 - Whoever is responsible for the design test program should only be required to test for what affect his trip system, not do a test program to requalify the circuit breaker.
 - In reading NETA World magazine where people who do not make circuit breakers are stating that their 185 kits 'are ANSI tested', even using original sensors and original actuators.
 - We have to be sure that all parties understand what is required, and all must comply. We must not require testing that cannot be economically justified, as no one will follow this.
 - Our standard is a "process standard" and not a product standard, and yet we are dictating additional tests." **Discussion at meeting (23-Sept-2003): We required test of each frame because the intent is different than contemplated in C37.50. C37.50 tests two frames, as the situation is one in which a manufacturer is substituting a new trip device on a circuit breaker previously qualified in the lab with a trip device. In the C37.59 situation, the converter is assumed to be fitting a trip device and sensors and flux shift coil to a circuit breaker that did not originally have such devices, or which had devices of different design. Thus, we need to verify that the conversion has sufficient force to trip, is not adversely affected by magnetic fields from the short-circuit current, and that the physical mounting does not introduce interrupting or dielectric problems. Thus, the requirements of C37.59 are reasonable and necessary.**
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- Alan Storms also conversed with Stan Telander, who mentioned the existence of circuit breakers with a high current instantaneous release, per clause 3.9.5 of C37.50. The testing of each frame size circuit breaker would make sure that the conversion works correctly for such a circuit breaker even if the trip device doesn't include the high current instantaneous release.
 - Generator circuit breakers – C37.59 does not make any reference to the generator circuit breaker standard C37.013. This probably should be referred to in the next revision.

Pete Dwyer WG Chair