



Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 3073

Chair: R. Leduc

Date: March 26, 2003

Title: Visual and Audible Alarms, Rule 10-106(2)

Submitted by: Robert Hart of IPC Resistors Inc. on August 15, 2002.

Proposal:

Change Rule 10-106 (2) as follows:

10-106 Alternating Current Systems (see Appendix B)

(2) Wiring systems supplied by an ungrounded supply shall be equipped with a device capable of providing a visual and audible alarm to indicate the presence of a ground fault.

Reasons for Request:

The current clause allows the use of Ground Indicating Lights in which one bulb goes dark while the other two brighten to indicate a ground fault. This passive device is often located where it is not regularly viewed or understood and an audible alarm or an alarm contact for remote indication is not provided which leads to the presence of a ground fault being ignored. In other cases it is assumed that one of the bulbs has burned out. There is the need of visual and alarm indication so that the ground faults cannot be ignored and are located and fixed before second faults can occur.

Chair's Comments: This proposal goes beyond existing requirements to include both visual and audible alarm provisions. Without changing the intent of the proposal, may I suggest wording as follows:

(2) Wiring systems supplied by an ungrounded supply shall be equipped with a suitable ground detection device that provides visual and audible alarms to indicate the presence of a ground fault.

Subcommittee Deliberations (1st Round):

8 of 13 members responded: 5 in favour of the submission and the proposed wording by the Chair, 1 with comments and 2 disagreeing with the submission.

The one member in favour commented as follows:

- I don't think the audible alarm is necessary if the installation has a regular maintenance staff. It would definitely aid in installations where this is not the case.

The 2 members disagreeing commented as follows:

- The main purpose for some type of fault indication is to provide the owner knowledge that a fault exists which will subsequently allow him opportunity to locate the fault before a second one develops... one that could potentially shut down the process or operation. This is a performance, not a safety issue. Even with (visual and/or audible) alarms there is no requirement that anything needs to be done about it therefore no guarantee that something will be done. I believe this to be a design and an operations matter for the owner to establish.
- The existing Rule is fine the way it is as it puts the onus on the owner to deal with the appropriate action on ground faults. The proposed Rule is too prescriptive in nature. If the owner acknowledges and silences the audible alarm and ignores the visual alarm, we are no further ahead. There are many systems that operate just fine on indicating lights only.

Chair's Comments (1st Round):

Although a majority of the members voting were in favour of the submission, I find some compelling arguments suggesting that the need for indication is more of a performance issue than a safety related concern. There is also the suggestion that the proposal moves towards a more prescriptive approach that may restrict design options. For this reason I am returning the subject to the Subcommittee to review the comments with the objective of rationalizing whether the submission truly addresses a legitimate safety concern and would ask that they re-evaluate their original vote. I would also like to hear from those members that have yet to respond on this subject.

Subcommittee Deliberations (2nd Round)

Ten (10) Subcommittee members of a possible 12 responded. The Submitter also commented on the 1st round deliberations. 2 members plus the submitter agreed with the submission with only the submitter providing comments. Eight (8) members disagreed with the submission.

The submitter questioned the arguments in the 1st round suggesting that the requirement was not a safety issue. He also identified several reasons why it is important to resolve a ground fault on the system quickly. Damage to equipment can be severe and potential for harm to operators in the vicinity of the second fault cannot be ignored. An audible alarm, in addition to a visible alarm would certainly draw attention to the presence of a problem.

All of the members in disagreement with the submission agreed that the need for both and audible and a visual alarm was being too prescriptive for what is essentially a design issue. Even with both alarms, there is always the possibility of neglecting them. There was a comment that the requirement for some form of notification for operators was important but that the code should not impose prescriptively how to achieve the notification. In some situations, a visual alarm may be more than adequate (indicator light on panels in an operator room that is always occupied or in a high noise area) while in other situations an audible alarm may be the method most suitable for the application. One member suggested adding a definition for "Ground detection device" that basically reinforced the audible or visual or both requirement. He also suggested an Appendix B note suggesting that the choice for audible or visual indication should be based on the level of operations and maintenance and the remoteness of the site.

Chair's Comments

I don't believe that any of the S/C members are suggesting that indication is not important for identifying that a ground fault exists so that operations personnel can resolve the problem quickly but they feel that this is more of a design and operations issue. I therefore find the argument for

requiring both alarms in all situations to be non-persuasive. The S/C agrees that proper design should dictate whether one or the other or both types of alarm are required. In regards to the suggestion to add a definition and an Appendix B note, I rule this to be non-germane and should be submitted as a new subject. In any case, there is no evidence to suggest that the rule is not clearly understood in its present form. I therefore I declare consensus for the following:

Subcommittee Recommendation

Reject the proposal and close the subject.