



Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 3017

Chair: M.D. Gardener

Date: April 1, 2003

Title: Sizing of Parallel Neutrals, Rule 12-108(4)

Submitted by: Gilbert Montminy of Direction de la Normalisation, Regie du Batiment du Quebec, 800 Place d'Youville, 15e etage, Quebec, QC, G1R 5S3, Tel: (418) 643-1913, Fax: (418) 646-9280 on February 8, 2001.

Proposal: Add Subrule 12-108(4) after (3) as follows:

12-108 Conductors in Parallel (see Appendix B)

(4) Where the size of neutral conductors is determined in conformity with Rule 4-022, the installation of parallel neutral conductors smaller than No. 1/0 AWG shall be permitted.

Reasons for Request: Let's suppose we have a design that allow us to put 4 wires (1/0 AWG) per phase on a 3 phase system. Assume that the complete design is in conformity with the Code; especially the neutral conductor (4-022). The actual Rule 12-108 does not allow us to put a neutral conductor smaller than 1/0 AWG in each raceway. I personally think we should relax the Rule in regard to the neutral conductor while specifying the conformity to Rule 4-022. Rule 12-108 gives the possibility to reduce the wire size for "live wires" with parallelism. It should be the same for the neutral conductor.

Supporting Information: Please, refer to the similar relaxation in Subrule 12-108(3) for control devices.

Chair's Comments: Agree with this proposal.

Subcommittee Deliberations: There were eleven members who are in favour of the proposal and two members that are not.

The two members who disagreed with the proposal had similar comments. They indicated that when dealing with non-linear loads, there should be no reduction in the size of the neutral. Harmonic content could have serious affects on neutral conductors, especially if the neutral is

reduced in size as allowed by Rule 4-022(2). One member suggested that there should be no reduction in the size of the neutral altogether.

Although one can say this is a design problem when sizing conductors, the two members may have a point that non-linear loads should be taken into account and a rule or Appendix B note be added to bring attention to this problem. However, this should be addressed in Section 4 through another proposal.

Also, the proposal is not permitting further reduction to the size of the neutral as permitted by Rule 4-022(2). Rather, the proposal is allowing the neutral conductor that are in parallel to be less than 1/0 AWG which is permitted for conductors in Rule 12-108(3).

Subcommittee Recommendation: To accept the proposal.