

Rule(s):

75-814

Description of Change:

Amend Ontario amendment Subrule 3) about maximum permissible neutral voltage.

Submitted by:

Electrical Safety Authority

Background:

The scope of Section 75 applies to the installation of consumer-owned powerlines. Since the beginning of the Ontario Regulation 22/04, the Electrical Safety Authority (ESA) has issued over 60 utility public safety concerns informing the Distributor that members of the public are receiving electric shocks from stray voltages on the consumer's premises. A licensed electrical contractor (LEC) performed testing on the consumer's electrical equipment and installation and determined that the source is external from the Distributor's distribution system.

Distributors have mitigated contributions from their system by repairing deteriorated neutral connections and installation of additional grounding electrodes to their system. Neither distributor standards nor industry standards contain any acceptable thresholds for maximum allowed neutral voltage. Since the scope of Section 75 applies to consumer-owned powerlines, Distributors have misapplied Rule 75-814 3) which will allow up to 10 V to ground. Once a Distributor mitigates the voltage below the 10 V threshold, the Distributor would typically cease to reduce the voltage and to determine the source, even though the consumer could still receive electric shocks.

Rationale:

This amendment removes the 10 V threshold for maximum permissible neutral voltage to ground, but still requires further investigation and solutions to reduce the voltage and current to a level where a person will not feel a sensation of shock. The amendment also recognizes that since the distribution system is a multi-grounded system, the complete elimination of voltage and current over the neutral conductor may not be possible.

Proposed Change:

Amend Ontario amendment, Subrule 3) of Rule 75-814 and add a new Appendix B note.

75-814 Multiple grounding of system neutral on primary lines (See Appendix B)

- 1) The system neutral on primary distribution lines shall be multi-grounded.*
- 2) The standard number of grounds per km of circuit shall be four.*
- 3) ~~The neutral potential shall not exceed 10 V rms to a remote ground at any point under steady-state conditions.~~ The neutral voltage to a remote ground at any point under steady-state conditions shall be limited to reduce the risk of shock hazard.*

Add Appendix B Note to Rule 75-814 3) as follows:

75-814 3)

The intent of this subrule is to limit the neutral voltage in order to reduce the risk of shock hazard, property damage or loss. This may be achieved by limiting the neutral voltage to 10 V rms or less measured to a remote ground.