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IEEE Std 837™-2002
(Revision of
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IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding

IEEE Power Engineering Society

Sponsored by the
Substations Committee

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Approved 11 November 2002

IEEE-SA Standards Board

Abstract: Direction and methods for qualifying permanent connections used for substation grounding are provided in this standard. This standard particularly addresses the connection used within the grid system,the connection used to join ground leads to the grid system,and the connection used to join the ground leads to equipment and structures.
Keywords: conductor, conductor combination, connection, connection thermal capacity, control conductor, current loop cycle, equalizer, grid system, permanent connection

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Introduction

[This introduction is not part of IEEE Std 837-2002, IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding.]

This standard has been written to fill a need for standardization of terminology and test requirements for permanent grounding connections.

Many types of connections are available that may be used as permanent grounding connections even though they were designed for use as power connections. This standard has been written to provide a meaningful reproducible test program that will enable connection manufacturers to qualify their products as permanent grounding connections. The users can then be reasonably assured that the qualified permanent grounding connection will be capable of performing satisfactorily over the lifetime of the substation or other installation, however, these tests are not intended for service-aged connections.

This standard addresses the parameters for testing grounding connections on aluminum, copper, steel, copper-bonded steel, galvanized steel, stainless steel, and stainless-clad steel.

Participants

The work of preparing this standard was carried out by Working Group D9 of the Distribution Substation Subcommittee, IEEE Substations Committee of the IEEE Power Engineering Society. At the time this standard was approved, the members of the working group were as follows:

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IEEE Standards Project Editor

Contents

IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding

1. Overview

1.1 Scope

This standard provides direction and methods for qualifying permanent connections used for substation grounding. It particularly addresses the connection used within the grid system, the connection used to join ground leads to the grid system, and the connection used to join the ground leads to equipment and structures.

1.2 Purpose

The purpose of this standard is to give assurance to the user that a connection meeting the requirements of this standard will perform in a satisfactory manner over the lifetime of the installation, provided that the proper connection is selected for the application and that the connection is installed correctly. Grounding connections that meet the test criteria stated in this standard for a particular conductor size range and material should satisfy all of the criteria for connections as outlined in IEEE Std 80™-2000 [B5][1].

2. References

This standard shall be used in conjunction with the following publications. When the following standards are superseded by an approved revision, the revision shall apply.

ASTM A363-98, Specification for Zinc-Coated (Galvanized) Steel Overhead Ground Wire.[2]

ASTM A510-96 (R2002), Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel.

ASTM A752-93 (R1998), Specification for General Requirements for Wire Rods and Coarse Round Wire, Alloy Steel (Metric).

ASTM B1-90 (R2001), Standard Specification for Hard-Drawn Copper Wire.

ASTM B2-94 (R2000), Standard Specification for Medium-Hard-Drawn Copper Wire.

ASTM B3-95 (R2001), Standard Specification for Soft or Annealed Copper Wire.

ASTM B8-99, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

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[1]The numbers in brackets correspond to those of the bibliography in Annex A.

[2]ASTM publications are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA (http://www.astm.org/).