

IEEE Std 1017™-2004
(Revision of
IEEE Std 1017-1991)

IEEE Standards

1017™

IEEE Recommended Practice for Field Testing Electric Submersible Pump Cable

IEEE Industry Applications Society

Sponsored by the
Petroleum and Chemical Industry Committee



3 Park Avenue, New York, NY 10016-5997, USA

13 April 2005

Print: SH95250
PDF: 659-240



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Petroleum and Chemical Industry Committee
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IEEE Industry Applications Society

Approved 10 March 2005

American National Standards Institute

Approved 23 September 2004

IEEE-SA Standards Board

Abstract: Procedures and test voltage values for acceptance and maintenance testing of electrical submersible pump (ESP) cable systems are presented. This recommended practice applies to cable systems rated 3 kV and 5 kV (phase to phase) and is intended only for this special-purpose cable. The intent is to provide uniform test procedures and guidelines for evaluation of the test results.

Keywords: cable ampacity, cable testing, conductors, field testing, submersible pump cable

The Institute of Electrical and Electronics Engineers, Inc.
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Print: ISBN 0-7381-4077-5 SH95250
PDF: ISBN 0-7381-4078-3 SS95250

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Marcus O. Durham, *Chair*

Thomson H. Wallace, *Secretary*

David Anderson
Gordon Baker

Lester Gagan
Robert Lannom
Howard Oswald

John Patterson
Rodney Story

The following members of the individual balloting committee voted on this recommended practice. Balloters may have voted for approval, disapproval, or abstention.

Kaveh Ashenayi
James M. Daly
Gary Donner

Marcus O. Durham
Richard H. Hulett

Ben C. Johnson
Lorraine K. Padden
Tom P. Pearson

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1. Overview

Guidance for the field and maintenance testing of conventional power cable is available in IEEE Std 400^{TM1}; however, that document is not an applicable guide in assessing the condition of electric submersible pump (ESP) cable. By adopting some principles set forth in IEEE Std 400 and applying others developed from field experience, this recommended practice for submersible cable testing will assist those persons with the responsibility of determining the dielectric condition of this type of cable.

This recommended practice proposes the use of direct current (dc) because of its advantages over alternating current (ac). These advantages are as follows:

- a) Smaller test equipment may be used.
- b) It minimizes damage, which aids in fault examination.

This recommended practice is for cables without a connecting motor-lead extension cable or surface connecting cable, and it is primarily for armored cables; however, unarmored cables can be tested by submersing them in water.

This recommended practice does not require that testing be performed, either at the time of installation or periodically thereafter, for acceptance or maintenance. It sets forth the consensus of currently known good practice in testing methods, with interpretation of results.

1.1 Scope

Procedures and test voltage values for acceptance and maintenance testing of ESP cable systems are presented. This procedure applies to cable systems rated 3 kV and 5 kV (phase to phase).

¹Information on references can be found in Clause 2.