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IEEE Recommended Practice for Electrical Installations on Shipboard—Electrical Testing

IEEE Industry Applications Society

Sponsored by the
Petroleum & Chemical Industry Committee

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IEEE Std 45.6™-2016

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Abstract: A consensus of recommended practices for system testing in marine electrical engineering as applied specifically to vessels, shipboard systems, and equipment is provided.

Keywords: IEEE 45.6™, marine electrical engineering, marine vessels, shipboard systems, ships

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Introduction

This introduction is not part of IEEE Std 45.6-2016, IEEE Recommended Practice for Electrical Installations on Shipboard—Electrical Testing.

The IEEE Std 45™ series comprises nine recommended practices addressing electrical installations on ships and marine platforms. IEEE Std 45.6 provides a recommended practice for electrical testing of shipboard electrical power systems, including: ac power systems, dc power systems, emergency power systems, shore power, power quality and harmonics, electric propulsion and maneuvering systems, motors and drives, thrusters, and steering systems intended for use with the IEEE Standard 45 series of documents. The topics covered in this document should be considered from the beginning of the project and throughout the design and construction processes, and thereby should facilitate the integration of electrical systems at the shipyard level.

Previous editions of IEEE Std 45 were developed as single documents addressing all areas. On 9 June 2005, Project Authorization Request (PAR) 45 for the Revision of IEEE Std 45-2002 was approved and the revision of IEEE Std 45 as a single document began. It soon became apparent that attempting to cover all issues in a single document would produce a document that was very large and therefore difficult to ballot due to the wide range of issues needed to be addressed. In September 2008 it was decided that the revision of IEEE Std 45 should be developed as a base document with separate documents addressing specific areas.

On 10 December 2008, separate PARs were approved for seven separate recommended practices. Additional PARs, approved on 11 September 2009 for switchboards and 9 December 2009 for cable systems, bring the total number of standards in the IEEE Std 45 series to nine, including:

— IEEE P45™, IEEE Recommended Practice for Electrical Installations on Ships

— IEEE P45.1™, IEEE Recommended Practice for Electrical Installations on Shipboard—Design

— IEEE Std 45.2™-2011, IEEE Recommended Practice for Electrical Installations on Shipboard—Controls and Automation

— IEEE Std 45.3™-2015, IEEE Recommended Practice for Shipboard Electrical Installations—Systems Engineering

— IEEE P45.4™, IEEE Recommended Practice for Electrical Installations on Shipboard—Marine Sectors and Mission Systems

— IEEE Std 45.5™-2014, IEEE Recommended Practice for Electrical Installations on Shipboard—Safety Considerations

— IEEE P45.6™, IEEE Recommended Practice for Electrical Installations on Shipboard—Electrical Testing

— IEEE Std 45.7™-2012, IEEE Recommended Practice for Electrical Installations on Shipboard—AC Switchboards

— IEEE P45.8™, IEEE Recommended Practice for Electrical Installations on Shipboard—Cable Systems

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IEEE Recommended Practice for Electrical Installations on Shipboard—Electrical Testing

1. Overview

1.1 Scope

The recommendations for electrical testing for power generation, distribution, and electric propulsion systems installed shipboards are established by this document. These recommendations reflect the present day technologies, engineering methods, and engineering practices.

This document is intended to be used in conjunction with the IEEE Std 45™ series.

1.2 Purpose

The main purpose of this recommended practice is to provide a consensus of recommended testing practices in the unique field of marine electrical engineering as applied specifically to ships, shipboard systems, and equipment (including maritime platforms).

1.3 Equipment construction, testing, and certification

Electrical apparatus and equipment should be constructed and tested in accordance with the requirements of appropriate national and international equipment standards. Standards specifically addressing marine requirements should be used whenever applicable. Many appropriate standards are referenced in this document. All electrical equipment should be tested and certified, with labeling and follow-up services (i.e., listed) by a recognized independent laboratory acceptable to the authority having jurisdiction.

1.4 Application of various national and international standards

Special precautions must be exercised when mixing equipment designed to different national and international standards.

CAUTION

It is recognized that various national and international standards for equipment and installations are not identical. However, it is recognized that mixing of standards is occasionally necessary. Therefore, the application of any of these standards is the choice of the user, authority having jurisdiction, and/or classification society.