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IEEE Guide for Selection and Installation of Electrical Cables and Cable Systems in Hazardous (Classified) Locations on Oil and Gas Land Drilling Rigs

STANDARDS

IEEE Industry Applications Society

Developed by the
Petroleum and Chemical Industry Committee

and the

IEEE Power and Energy Society

Developed by the
Insulated Conductors Committee

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IEEE

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Petroleum and Chemical Industry Committee
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Abstract: Selection, performance requirements, and procedures for flexible electrical cables and cable systems installed in hazardous (classified) locations on oil and gas land drilling rigs are covered by this guide.

Keywords: cables, cable installation, cable retention, cable selection, cable systems, Class I Division 1, Class I Zone 1, Class I Division 2, Class I Zone 2, classified locations, flexible applications, hazardous locations, IEEE 2740™, oil and gas land drilling rig, portability

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Introduction

This introduction is not part of IEEE Std 2740-2020, IEEE Guide for Selection and Installation of Electrical Cables and Cable Systems in Hazardous (Classified) Locations on Oil and Gas Land Drilling Rigs.

The oil and gas industry depends on working within regulatory requirements, industry standards, and industry guidelines. In the case of oil and gas well land drilling rigs in the United States, there are no standards or governing codes that directly address cables and cable systems. Land drilling rig applications often combine hazardous (classified) locations, extreme ambient temperature ranges, vibration, temporary installations, flexibility, and ability to transport over various terrains. The National Electrical Code® (NEC®) NFPA 70 standard does not cover the selection, performance requirements, and procedures for flexible electrical cables and cable systems installed in hazardous (classified) locations on oil and gas land drilling rigs. Instead, its focus is on fixed installations in hazardous (classified) locations. When users have tried to apply National Electrical Code regulations for fixed hazardous (classified) locations, they have encountered conflicts between portability, flexibility, and solutions permitted for fixed hazardous (classified) locations; therefore, users have relied on the API RP 14F and API RP 14FZ recommended practices for installation methods that are not specific to oil and gas land drilling rigs since they reference offshore facilities. This gap creates confusion for new engineers and inspectors trying to understand cables and cable systems for oil and gas well land drilling rigs. However, within the 2020 edition of NFPA 70, an entirely new article (Article 337) has been added along with new language in Article 501 to address this gap. This guide should be consulted only in addition to consideration and evaluation of site-specific circumstances, risks, and applicable safety requirements.

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IEEE Guide for Selection and Installation of Electrical Cables and Cable Systems in Hazardous (Classified) Locations on Oil and Gas Land Drilling Rigs

1. Overview

1.1 Scope

This guide covers the selection and procedures for electrical cables and cable systems installed in hazardous (classified) locations on oil and gas land drilling rigs.

1.2 Purpose

The intent of this guide is to present generally accepted practices for the selection and installation of electrical cables and cable systems in hazardous (classified) locations on oil and gas land drilling rigs. Experience in the oil and gas land rig drilling industry has shown these practices result in safer, more reliable, efficient, and maintainable operations. The practices in this guide should be applied with sound engineering judgment.

This guide will address gaps in the selection, performance, and installation of cables and cable systems for Class I hazardous (classified) locations on oil and gas land drilling rigs not adequately addressed in present standards, recommended practices, and guides. The key drivers are flexibility, portability, allowance for innovation, and expanded use of cables and systems utilized in other industries.