Manual of Petroleum Measurement Standards Chapter 17.10

Measurement of Cargoes on Board Marine Gas Carriers

Part 1—Liquefied Natural Gas

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ISO 10976:2012 (Identical) Refrigerated light hydrocarbon fluids—Measurement of cargoes on board LNG carriers

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This American National Standard is under the jurisdiction of the API Subcommittee on Measurement Accountability. This standard is considered identical to the English version of ISO 10976. ISO 10976 was prepared by Technical Committee ISO/TC 28, Subcommittee 5, Measurement of refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels.

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Introduction

This International Standard provides accepted methods for measuring quantities on liquefied natural gas (LNG) carriers for those involved in the LNG trade on ships and onshore. It includes recommended methods for measuring, reporting and documenting quantities on board these vessels.

This International Standard is intended to establish uniform practices for the measurement of the quantity of cargo on board LNG carriers from which the energy is computed. It details the commonly used current methods of cargo measurement, but is not intended to preclude the use or development of any other technologies or methods or the revision of the methods presented. It is intended that the reader review, in detail, the latest editions of the publications, standards and documents referenced in this International Standard in order to gain a better understanding of the methods described.

This International Standard is not intended to supersede any safety or operating practices recommended by organizations, such as the International Maritime Organization (IMO), the International Chamber of Shipping (ICS), the Oil Companies International Marine Forum (OCIMF), the International Group of LNG Importers (GIIGNL) and the Society of International Gas Tanker and Terminal Operators (SIGTTO), or individual operating companies. This International Standard is not intended to supersede any other safety or environmental considerations, local regulations or the specific provisions of any contract.

The International System of units (SI) is used throughout this standard as the primary units of measure since this system is commonly used in the industry for these types of cargoes. However, as some LNG carrier's tanks are calibrated in US customary units and some sales and purchase agreements (SPA) are made in US customary units, both SI and US customary equivalents are shown. Proper unit conversion is intended to be applied, documented and agreed upon among all parties involved in the LNG custody transfer.

Measurement of Cargoes on Board Marine Gas Carriers
Part 1—Liquefied Natural Gas

1 Scope

This International Standard establishes all of the steps needed to properly measure and account for the quantities of cargoes on liquefied natural gas (LNG) carriers. This includes, but is not limited to, the measurement of liquid volume, vapour volume, temperature and pressure, and accounting for the total quantity of the cargo on board. This International Standard describes the use of common measurement systems used on board LNG carriers, the aim of which is to improve the general knowledge and processes in the measurement of LNG for all parties concerned. This International Standard provides general requirements for those involved in the LNG trade on ships and onshore.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8310, *Refrigerated light hydrocarbon fluids — Measurement of temperature in tanks containing liquefied gases — Resistance thermometers and thermocouples*

ISO 8943, *Refrigerated light hydrocarbon fluids — Sampling of liquefied natural gas — Continuous and intermittent methods*

ISO 18132-1, *Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels — General requirements for automatic tank gauges — Part 1: Automatic tank gauges for liquefied natural gas on board marine carriers and floating storage*

IEC 60533, *Electrical and electronic installations in ships — Electromagnetic compatibility*

EN 1160, *Installations and equipment for liquefied natural gas — General characteristics of liquefied natural gas*

API Standard 2217A, *Guidelines for Work in Inert Confined Spaces in the Petroleum and Petrochemical Industries*

IACS Unified Requirement E10

ICS Tanker Safety Guide - Liquefied Gas

ICS/OCIMF/IAPH International Safety Guide for Oil Tankers and Terminals (ISGOTT)

IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)

NOTE Earlier versions of the gas codes can apply to older ships (see the note to 3.1.13).

SIGTTO Liquefied Gas Handling Principles on Ships and in Terminals

SIGTTO Liquefied Gas Fire Hazard Management