Manual of Petroleum Measurement Standards Chapter 3—Tank Gauging

Section 3—Standard Practice for Level Measurement of Liquid Hydrocarbons in Stationary Pressurized Storage Tanks by Automatic Tank Gauging

FIRST EDITION, JUNE 1996

REAFFIRMED, DECEMBER 2022

API American Petroleum Institute

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FOREWORD

This publication covers standard practice for level measurement of liquid hydrocarbons on stationary pressurized storage tanks by automatic tank gauging, and supersedes all applicable sections of API Standard 2545, *Method of Gaging Petroleum and Petroleum Products* (October 1965).

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CONTENTS

SECTION 3—STANDARD PRACTICE FOR LEVEL MEASUREMENT OF LIQUID HYDROCARBONS IN STATIONARY PRESSURIZED STORAGE TANKS BY AUTOMATIC TANK GAUGING

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Chapter 3—Tank Gauging

SECTION 3—STANDARD PRACTICE FOR LEVEL MEASUREMENT OF LIQUID HYDROCARBONS IN STATIONARY PRESSURIZED STORAGE TANKS BY AUTOMATIC TANK GAUGING

1 Scope

This standard provides guidance on the installation, calibration, and verification of automatic tank gauges (ATGs) used in custody transfer for measuring the level of liquid hydrocarbons having a Reid vapor pressure of 15 psi (103 kilopascals) or greater, stored in stationary, pressurized storage tanks. The standard also provides guidance on the requirements for data collection, transmission, and receiving.

This standard is not applicable to the following:

a. Conversion of tank level to liquid volume.
b. Measurement of free water or sediment lying under the liquid hydrocarbon.
c. Measurement of temperature, density, or sediment and water (S & W). These measurements are discussed in the API *Manual of Petroleum Measurement Standards* (MPMS), Chapters 7, 9, and 10.
d. Sampling for determination of the properties of the liquid hydrocarbon. This is discussed in API MPMS Chapter 8.
e. Detection of tank leaks.
f. ATGs used for inventory control and plant operations.

Note: Converting net vapor space volumes to equivalent liquid volumes or mass is described in API MPMS Chapter 12. (The section covering calculation of vapor to liquid equivalent was in preparation at the time this standard was written.)

This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2 References

This section is applicable to all types of ATGs for pressurized storage tanks. Safety precautions are listed separately from general precautions that affect accuracy or performance.

2.1 STANDARDS

Unless otherwise specified, the most recent editions or revisions of the following standards, codes, and specifications shall, to the extent specified herein, form a part of this standard.

API
Manual of Petroleum Measurement Standards
Chapter 1, "Vocabulary"
Chapter 2,"Tank Calibration"
Chapter 3, "Tank Gauging"
Chapter 7, "Temperature Determination"
Chapter 8, "Sampling"
Chapter 9, "Density Determination"
Chapter 10, "Sediment and Water"
Chapter 12, "Calculation of Petroleum Quantities"
RP 500 *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities*
RP 2003 *Protection Against Ignition Arising Out of Static, Lightning, and Stray Currents*
Std 2610 *Design, Construction, Operation, Maintenance, and Inspection of Terminals and Tank Facilities*

GPA[1]
Std 8199 *Standard for Converting Net Vapor Space Volumes to Equivalent Liquid Volumes*

2.2 SAFETY PRECAUTIONS

The following recommended practices and guidelines on safety should be followed:

a. API RP 500 *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities.*
b. API RP 2003 *Protection Against Ignition Arising Out of Static, Lightning, and Stray Currents.*
c. ISGOTT—*International Safety Guide for Oil Tankers and Terminals*.[2]

Other applicable safety codes and regulations should be complied with.

2.2.1 Electrical Safety

All electric equipment uses in ATGs for use in electrically classified areas should be appropriate to the classification of the area and should conform to appropriate national electrical safety standards (such as UL, FM, FCC, NEC).

2.2.2 Equipment Precautions

2.2.2.1 All of the ATG equipment should be capable of withstanding the pressure, temperature, and operating and environmental conditions likely to be encountered in the service.

[1]Gas Processors Association, 6526 East 60th Street, Tulsa, Oklahoma 74145.
[2]Available from the Oil Companies International Forum, Portland House, Stag Place, London SW1E SBH, England.