Manual of Petroleum Measurement Standards Chapter 2—Tank Calibration

Section 8B—Recommended Practice for the Establishment of the Location of the Reference Gauge Point and the Gauge Height of Tanks on Marine Tank Vessels

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FOREWORD

The API *Manual of Petroleum Measurement Standards* (MPMS) is currently available. The manual will eventually include all subject matter now found in API measurement publications—including evaporation loss measurement—as well as new material and revised editions of existing MPMS material when revisions are completed.

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Suggested revisions are invited and should be submitted to Measurement Coordination, American Petroleum Institute, 200 Massachusetts Avenue, NW, Washington, DC 20001.

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Chapter 2—Tank Calibration

SECTION 8B—RECOMMENDED PRACTICE FOR THE ESTABLISHMENT OF THE LOCATION OF THE REFERENCE GAUGE POINT AND THE GAUGE HEIGHT OF TANKS ON MARINE TANK VESSELS

2.8B.0 Introduction

This document is intended to supplement the calibration procedures described in API Chapter 2.8A, "Calibration of Tanks on Ships and Ocean-Going Barges," and API Chapter 2.7, "Calibration of Tanks on Barges" of the *Manual of Petroleum Measurement Standards (MPMS).*

2.8B.1 Scope and Field of Application

This recommended practice is intended as a guide for establishing reference gauge heights during calibration of marine tank vessels. In many cases this calibration is carried out by shipyard engineers who may not be fully familiar with petroleum measurement requirements nor the use of such measurements by petroleum inspectors and tanker operating personnel. This procedure is also for recalibration of vessels.

The importance of establishing an accurate reference gauge height for tanks on marine tank vessels cannot be overstressed. Such tanks are generally calibrated in ullages (outages) whereas in measuring quantities remaining onboard (ROB) or free water, it is frequently more convenient and accurate to measure innages. The reference gauge height is a necessity in converting ullage to innage. Also, in determining the volume of the ROB, the reference gauge height is a factor in every wedge formula, for the establishment of wedge tables.

API MPMS Chapters 2.7 and 2.8A provide three methods of calibrating the volumes of tanks on marine tank vessels: calibration by linear measurement, liquid calibration, and calibration from vessel drawings. The measurement and establishment of the reference gauge height, however, can only be determined by direct linear measurement.

2.8B.2 References

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 2.7, "Calibration of Tanks on Barges"

Chapter 2.8A, "Calibration of Tanks on Ships and Ocean-Going Barges"

DOT[1]

33 *Code of Federal Regulations*

IMO[2]

Resolution of the International Conference on Tanker Safety and Pollution Prevention

NFPA[3]

306 *Control of Gas Hazards on Vessels*

2.8B.3 Safety

Prior to entering any compartment, permission must be obtained from the vessel's master, senior deck officer, authorized shipyard official, or other responsible person in charge. This responsible person should be able to supply information regarding particular materials and conditions or the applicable Material Safety Data Sheet. Before entering the compartment, a valid marine chemist's certificate must be obtained indicating that the compartment is "Safe for Workers" and/or "Safe for Hot Work," as prescribed in National Fire Protection Association 306, *Control of Gas Hazards on Vessels*. Regulations of the U.S. Coast Guard, the Occupational Safety and Health Administration (OSHA), or other international, federal, state, or local regulations may also apply. Such testing must be made at least every 24 hours or more often when changing conditions warrant.

When entering a compartment, another person should stand watch at the compartment entrance for the duration of such entry to sound an alarm should an emergency occur. Normal safety precautions with respect to staging and ladders are to be observed.

2.8B.4 Tank Measuring Equipment

Tank measuring equipment for the establishment of the reference gauge point location and reference gauge height shall be as described in 2.8A.7.1 of API MPMS Chapter 2.8A or 2.7.7.1 of API MPMS Chapter 2.7.

2.8B.5 Measurement Conditions and Tolerances

2.8B.5.1 MEASUREMENT CONDITIONS

Measurements should be taken only after all construction, conversion, and repair activities that would affect tank or reference height dimensions have been completed.

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[1]U.S. Department of Transportation. *The Code of Federal Regulations* is available from the U.S. Government Printing Office, Washington, D.C. 20402.

[2]International Maritime Organization, London, England.

[3]National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts.