Manual of Petroleum Measurement Standards Chapter 4—Proving Systems

Section 9—Methods of Calibration for Displacement and Volumetric Tank Provers

Part 3—Determination of the Volume of Displacement Provers by the Master Meter Method of Calibration

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Foreword

This multi-part publication consolidates and standardizes calibration procedures for displacement and volumetric tank provers used in the metering of petroleum liquids. It provides essential information on the operations involved in obtaining a valid, accurate and acceptable prover volume by different calibration methods. Units of measure in this publication are in the International System (SI) and United States Customary (USC) units consistent with North American industry practices. This section consists of the following four parts:

— Part 1—*Introduction to the Determination of the Volume of Displacement and Tank Provers*;

— Part 2—*Determination of the Volume of Displacement and Tank Provers by the Waterdraw Method of Calibration*;

— Part 3—*Determination of the Volume of Displacement Provers by the Master Meter Method of Calibration*;

— Part 4—*Determination of the Volume of Displacement and Tank Provers by the Gravimetric Method of Calibration*.

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1 Scope

This standard covers the procedures required to determine the field data necessary to calculate a Base Prover Volume (BPV) of a field displacement prover by the master meter method of calibration.

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.

API *Manual of Petroleum Measurement Standards* (*MPMS*) Chapter 4.2, *Displacement Provers*

API *MPMS* Chapter 4.4, *Tank Provers*

API *MPMS* Chapter 4.6, *Pulse Interpolation*

API *MPMS* Chapter 4.8, *Operation of Proving Systems*

API *MPMS* Chapter 4.9.1-2005, *Methods of Calibration for Displacement and Volumetric Tank Provers*, Part 1—*Introduction to the Determination of the Volume of Displacement and Tank Provers*

API *MPMS* Chapter 4.9.2-2005, *Methods of Calibration for Displacement and Volumetric Tank Provers*, Part 2—*Determination of the Volume of Displacement and Tank Provers by the Waterdraw Method of Calibration*

API *MPMS* Chapter 12.2.3-1998, *Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors*, Part 3—*Proving Reports*

API *MPMS* Chapter 12.2.5-2001, *Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors*, Part 5—*Base Prover Volume Using Master Meter Methods*

NOTE For readability, references to API *Manual of Petroleum Measurement Standards* are abbreviated as API *MPMS*. Reference to parts of chapters will follow the convention of “Chapter.Section.Part.Subpart”. For example, this standard, *American Petroleum Institute Manual of Petroleum Measurement Standards*, Chapter 4, Section 9, Part 3, would be called API *MPMS* Chapter 4.9.3.

3 Terms and Applications

3.1 Terms

No definitions are unique to this document. Unfamiliar terms not explained in adjoining text are found in the publications listed in Section 2 and the Bibliography, chiefly API *MPMS* Ch. 1, API *MPMS* Ch. 4.9.1, and API *MPMS* Ch. 12.2.