Manual of Petroleum Measurement Standards Chapter 4.8

Operation of Proving Systems

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1 Scope

This guide provides information for operating meter provers on single-phase liquid hydrocarbons. It is intended for use as a reference manual for operating proving systems.

The requirements of this chapter are based on customary practices for single-phase liquids. This standard is primarily written for hydrocarbons, but much of the information in this chapter may be applicable to other liquids. Specific requirements for other liquids should be agreeable to the parties involved.

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 *MPMS* Chapter 4.2, *Displacement Provers*

API *MPMS* Chapter 4.4, *Tank Provers*

API *MPMS* Chapter 4.5, *Master-Meter Provers*

API *MPMS* Chapter 5.1, *General Considerations for Measurement by Meters*

API *MPMS* Chapter 5.6, *Measurement of Liquid Hydrocarbons by Coriolis Meters*

API *MPMS* Chapter 12.2, *Calculation of Petroleum Quantities Using Dynamic Measurement Methods and Volumetric Correction Factors*

3 Terms and Definitions

There are no definitions unique to this document. Terms of more general use may be found in the API *MPMS* Chapter 1—Online Terms and Definitions Database.

4 Basic Principles

The object of proving meters with a prover is to provide a number with a defined discrimination level, which can be used to convert the meter indication to an accurate quantity of fluid passed through the meter. Refer to API *MPMS* Ch. 12.2 for volume discrimination levels and calculations or API *MPMS* Ch. 5.6 for mass discrimination levels and calculations.

5 The Need to Prove

A meter in service should be periodically proved to confirm its accuracy. The previously determined meter factor may no longer be applicable because of changes in fluid characteristics, operating conditions, and meter wear. Specific reasons for proving meters include the following:

a) minimize financial impact of potential undetected accuracy changes;

b) contractual requirements exist, such as scheduled meter maintenance based on throughput or elapsed time, or both;