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Testing Protocol for Multiphase Meter

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Testing Protocol for Multiphase Meter

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Introduction

The following are objectives of this testing protocol:

— Provide documented performance characteristics and parameter sensitivity of the multiphase meter under controlled fluid properties and flowing conditions over a defined operating range with a standardized reporting format.

— State the assumptions of the operating and installation conditions for which the stated uncertainties apply.

Dynamic testing enables the evaluation of performance (and factors influencing performance) of a multiphase flow meter (MPFM) technology/type/model across a clearly defined operating range under controlled conditions.

Performance testing of a multiphase flow meter is a critical step in validation of the flow models and the fluid models that are used to measure multiphase flow. A multiphase meter will typically contain several of these models in order to address the challenge of measuring individual phase flow rates within a range of flow regimes, operating velocities, and fluid types.

Testing Protocol for Multiphase Meter

1 Scope

This testing protocol provides the minimum requirements for documenting performance testing of an inline multiphase flow meter under controlled flowing conditions in a flow loop facility. Completion of the testing protocol is not a calibration and does not replace field testing and validation.

This testing protocol documents the method for testing the performance characteristics of multiphase flow meters used in production allocation. The testing protocol includes a listing of parameters affecting the performance of the devices, a description of the tests required, requirements for the test facility, a data reporting format, and an uncertainty determination methodology.

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 13, *Statistical Aspects of Measuring and Sampling*

ISO[1] *Guide to the Expression of Uncertainty in Measurement (GUM)*

ISO 8601, *Date and time — Representations for information interchange*

3 Terms, Definitions, Abbreviations, and Symbols

3.1 Terms and Definitions

3.1.1
allocation
The mathematical process of determining the proportion of produced fluids from individual entities (zones, wells, fields, leases, or producing units) when compared to the total production from the entire system (reservoir, production system, and gathering systems) in order to determine value or ownership to attribute to each entity.

3.1.2
gas correction factor
Bg
The ratio of hydrocarbon gas quantity at measurement point conditions to the hydrocarbon gas quantity at standard conditions.

[1] International Organization for Standardization, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, www.iso.org.