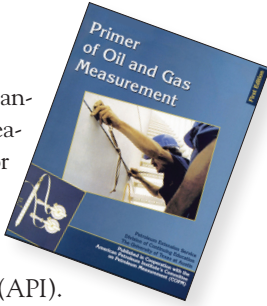


RECOMMENDED BOOK

Primer of Oil and Gas Measurement

Introduces the basic procedures, standards, and instruments used in measurement. A reliable reference for new workers and a solid resource for all industry professionals. Produced in cooperation with the American Petroleum Institute (API).



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January, 2016



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Liquid Petroleum Measurement Courses

- ◆ Fundamentals of Petroleum Measurement
- ◆ Intermediate Petroleum Measurement
- ◆ Advanced Petroleum Measurement



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Fundamentals of Petroleum Measurement (first of three levels)

3.3 CEUs

Length: 4.5 Days

Covers the fundamentals of manual tank gauging, the principles of operating primary dynamic meters, and a base knowledge of meter proving, factor calculation, and meter/tank ticket calculations. Uses the *API Manual of Petroleum Measurement Standards* and the *ASTM Test Methods* as the basis for instruction.

Course Content

- Static measurement
 - › Types of tanks
 - › Fundamentals of tank calibration by the manual strapping method
 - › Lease tanks: level gauging, temperature and free water determination, and manual sampling
- Properties of petroleum
 - › Density and gravity determination
 - › S&W determination by centrifuge
 - › Lease tank run ticket calculations
- Dynamic measurement
 - › Overview of LACT/ACT installations
 - › Introduction to automatic sampling; the flow metering theory; the operation of PD, turbine, Coriolis, and ultrasonic meters; meter provers, meter proving, and prover calibration; and the calculations of meter factors and tickets
- Oil loss control
 - › Introduction to basic principles

Recommended For

Personnel with a basic knowledge of the oil and gas business, especially pipeline, refining, and production operations. Measurement operators, technicians, and engineers seeking a firm foundation or those new (6 months or less) to liquid volume measurement or who witness or audit measurement techniques.

Recommended Book (50% discount when purchased during course): *Primer of Oil and Gas Measurement*

Included with Course

- Catered lunch daily; beverages and snacks provided
- Course materials including instructor presentations
- Field exercises and demonstrations

Intermediate Petroleum Measurement (second of three levels)

3.3 CEUs

Length: 4.5 Days

Builds on Fundamentals of Petroleum Measurement along with 1 to 3 years of field experience in measurement. Introduces some basic trouble-shooting techniques on both static tank measurement and dynamic measurement of quality and quantity of petroleum including refined products. Provides more information on the design and operation of various meter, prover, and automatic sampling system designs and the use of flow computers. Uses *API MPMS* and the *ASTM Test Methods* as basis for instruction.

Course Content

- Expands on topics in first level (Fundamentals)
- *Properties of petroleum*—chemical composition, test methods, and impact on petroleum measurement
- *Static measurement*—tank calibration (ORLM and TSRLM methods); liquid level innage and ullage (manual and automatic); cone and floating roof tanks; static sampling; calculation of tank measured quantities; and tank measurement error sources.
- *Dynamic measurement*—theory, selection, design, operations, performance, and application of different types of meters, provers, and samplers; calculation of meter factors (multigrade) and measurement tickets; proving Coriolis in mass or volume mode; introduction to meter performance and control charts.
- Oil loss analysis in two-region scenarios.

Recommended For

Personnel with 1 to 3 years of experience in the oil and gas business, especially pipeline, refining and production operations. Measurement operators, technicians, and engineers who actively participate in liquid volume measurement operations and need to expand or enhance their operating knowledge of measurement performance; and those who witness or audit measurement techniques.

Recommended Book (50% discount when purchased during course): *Primer of Oil and Gas Measurement*

Included with Course

- Catered lunch daily; beverages and snacks provided
- Course materials including instructor presentations
- Field exercises and demonstrations

Advanced Petroleum Measurement (third of three levels)

3.3 CEUs

Length: 4.5 Days

Builds on previous two courses and 2 to 5 years of field experience in measurement. Introduces additional troubleshooting, problem-solving, and system performance analysis. Covers advanced techniques in loss control analysis, dynamic metering systems, and various methods of calibrating both meter provers and above-ground storage tanks. Addresses needs for advanced EFM and ATG systems. Uses *API MPMS* and the *ASTM Test Methods*.

Course Content

- Expands on each of the topics in Fundamentals and Intermediate Petroleum Measurement
- Properties of petroleum—Physical properties, S&W analytical testing, crude oil assays, multiple analysis, and analytical quality tests for refined products
- *Static Measurement*—ATG by radar, servo gauge, hybrid system, HTG, and mass systems; tank calibration by MTSM, ORLM, OTM, EODR, and TSRLM
- *Dynamic measurement systems*: troubleshooting, meter prover design and performance issues; calibration of meter provers, metering systems for marine terminals and load racks; automatic sampling systems and performance verification
- Oil loss analysis in three-region scenarios; use of control charts and other performance tools; system troubleshooting techniques
- Introduction to mass measurement

Recommended For

Personnel with 2 to 5 years of experience in pipeline, refining, and production measurement operations. Provides training for those participating in prover and sampling system calibrations and certifications. Recommended for those seeking to enhance knowledge of measurement performance and audit techniques.

Recommended Book (50% discount when purchased during course): *Primer of Oil and Gas Measurement*

Included with Course

- Catered lunch daily; beverages and snacks provided
- Course materials including instructor presentations
- Field exercises and demonstrations