Liquid Petroleum Measurement, cont.

Gauging, Testing, and Running of Lease Tanks

1.1 CEUs

Please note: This course has also been designed for on-site training, with the exception of the field exercises, and can be completed in one day.

Length: 1.5 days

GOALS OF THE MEASUREMENT PROCESS

LEASE TANKAGE COMPONENTS

GAUGING, TESTING, AND RUNNING PROCESS

• General inspection
• Safety
• Manual sampling
• Density determination
• Temperature determination (initial)
• Bottom sediment and water determination
• Liquid level determination
• Temperature determination (continued)
• Suspended sediment and water determination
• Preparation for shipment
• Closing liquid level gauge
• Closure

Recommended For

Operators, pumpers, gaugers, technicians, supervisors, and those who witness or audit lease tanks.

Enrollment Information

Your company is invited to participate in these training programs. For additional information, contact—

PETEX Learning and Assessment Center
The University of Texas
4702 North Sam Houston Parkway West, Suite 800
Houston, TX 77086
Tel: 800.687.7052
or 281.397.2440
Fax: 281.397.2441
Email: plach@www.utexas.edu

March, 2012

OTHER PETEX COURSES

Completion and Workover
Elementary Drilling
Field Handling of Natural Gas—Emphasis on Engineering
Field Handling of Natural Gas—Emphasis on Operations
Hydraulics for Pipeline Engineers
Hydraulics for Pipeline Operators
Introduction to Offshore Operations—The Big School
LNG: Basics of Liquefied Natural Gas
Mass Measurement of Hydrocarbon Fluids
Natural Gas Measurement—Fundamentals
Natural Gas Measurement—Design/Application/Inspection
Natural Gas Measurement—Electronic Flow Measurement
Natural Gas Measurement—Sampling and Analysis
Petroleum Fundamentals
Pipeline Technology
Plant Processing of Natural Gas—Emphasis on Engineering
Plant Processing of Natural Gas—Emphasis on Operations
Production Technology
Valves and Actuators—Operation and Maintenance
ValvePro® Certified Valve Maintenance Technician

For information on the PETEX Learning and Assessment Centers, course schedules, or to enroll, visit our Web site at www.utexas.edu/ce/petex
PETEX Liquid Petroleum Measurement Courses

**Fundamentals of Petroleum Measurement**

3.3 CEUs

**Length:** 4.5 Days

**PROPERTIES OF PETROLEUM**
- Testing and significance of testing for properties of petroleum
- Principles of testing for API gravity and S&W (base methods)
- Laboratory and classroom demonstrations and exercises

**STATIC MEASUREMENT**
- Basic principle of volume measurement by liquid level
- Fundamentals of tank calibration by the manual method
- Calibration, gauging and sampling equipment
- Fundamentals of tank gauging and sampling
- Calculation of a basic run ticket
- Field and classroom exercises, including calculation exercises

**DYNAMIC MEASUREMENT**
- Theory of operation and use of PD, turbine, Coriolis, and ultrasonic meters
- Theory of operation and use of displacement provers
- Calculation of a basic meter factor from proving
- Overview of LACT/ACT installations
- Field and classroom exercises, including calculation exercises

**OIL LOSS ANALYSIS**
- Introduction to need for oil loss analysis and good measurement

**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.

**Intermediate Petroleum Measurement**

3.3 CEUs

**Length:** 4.5 Days

**PROPERTIES OF PETROLEUM**
- Chemical composition & physical properties, including viscosity and boiling points
- Principles of testing for API gravity and S&W (advanced methods)
- Laboratory and classroom demonstrations and exercises for density and S&W

**STATIC MEASUREMENT**
- Principles of volume measurement by liquid level in various types of tanks
- Tank Calibration using Optical Reference Line Method
- Automatic tank gauging by float and servo gauge systems
- Tank sampling methods and equipment
- Static measurement calculations for floating roof tanks
- Field and classroom exercises, including calculation exercises

**DYNAMIC MEASUREMENT**
- Theory, selection and use of PD, turbine, Coriolis and ultrasonic meters and auxiliary equipment
- Practical exercise in teardown and inspection of PD and turbine meters
- Theory, selection and use of different types of displacement and volumetric provers
- Displacement provers, design criteria and calculations
- Prover calibration, overview of waterdraw method
- Theory, selection and design of dynamic metering systems
- Dynamic sampling systems, an introduction to design and operations, including performance
- Meter performance verification including volume and mass proving, calculations and control charts
- Field and classroom exercises, including calculation exercises

**OIL LOSS ANALYSIS**
- Oil Loss analysis in 2-region scenarios

**Recommended For**
Personnel with 1–3 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.

**Advanced Petroleum Measurement**

3.3 CEUs

**Length:** 4.5 Days

**PROPERTIES OF PETROLEUM**
- Physical properties (vapor pressure, NGL/LPG mixing)
- S&W analytical testing
- Crude oil assays by distillation and simulated distillations
- Refined products analytical quality tests
- Laboratory and classroom demonstrations and exercises

**STATIC MEASUREMENT**
- Automatic tank gauging by radar, servo gauge, hybrid system, HTG, and mass systems
- Tank calibration by MTM, ORLM, OTM, EODR, and EORLM methodologies
- Calibration and verification of gauging and tank calibration equipment
- Overview of gauging and sampling of high vapor pressure fluids
- Field and classroom exercises

**DYNAMIC MEASUREMENT**
- Troubleshooting of dynamic measurement systems including meter and prover combinations
- Meter prover design and troubleshooting of performance issues
- Calibration of meter provers by the waterdraw, master meter and gravimetric methods
- Overview of metering systems for marine terminals, load racks and gathering systems
- Automatic sampling systems, performance verification by water-injection method
- Field and classroom exercises

**OIL LOSS ANALYSIS**
- Oil Loss analysis in 3-region scenarios
- Use of control charts and other performance tools
- System troubleshooting techniques

**ALTERNATE TYPES OF METERS**

**INTRODUCTION TO MASS MEASUREMENT (OVERVIEW)**

**Recommended For**
Personnel with 2–5 years of experience in the oil & gas business, especially pipeline, refining and production operations. The course will also provide training for those in measurement operations who actively participate in proving and sampling systems calibration and certifications. These include operators, senior operators, senior technicians and engineers. The course will also benefit those who have a need to expand or enhance their operating knowledge of measurement performance; and those who witness or audit measurement techniques.

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**MASS MEASUREMENT OF HYDROCARBON FLUIDS**

*Endorsed by the Gas Processors Association*

Recommended for Measurement Technicians and Engineers with one to five years of experience.