

*Now Being Held in Odessa and Houston*

### 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: 1½ 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—

Houston Training Center  
The University of Texas  
2700 W. W. Thorne Blvd.  
Houston, TX 77073-3410  
Tel: 800.687.7052  
or 281.443.7144  
FAX: 281.443.8722  
Email: [petexhtc@www.utexas.edu](mailto:petexhtc@www.utexas.edu)



## OTHER PETEX COURSES

Basic EOR (Enhanced Oil Recovery)  
Completion and Workover  
Economics of the Petroleum Industry—Risk and Uncertainty  
Electrical Maintenance Fundamentals for Production Lease Operations  
Electrical Maintenance—Equipment and Application  
Elementary Drilling  
Elementary Electronics for Nonelectrical Personnel  
Engine and Compressor Operations  
Field Handling of Natural Gas—Engineering  
Field Handling of Natural Gas—Operations  
Hydraulics for Pipeline Engineers  
Hydraulics for Pipeline Operators  
Instruments and Controls  
Introduction to Offshore Operations  
Introduction to Programmable Logic Controllers  
LNG: Basics of Liquefied Natural Gas  
*Mass Measurement of Hydrocarbon Fluids*  
*Natural Gas Measurement—Design/Application/Inspection*  
*Natural Gas Measurement—Electronic Flow Measurement*  
*Natural Gas Measurement—Fundamentals*  
*Natural Gas Measurement—Sampling and Analysis*  
Petroleum Fundamentals  
Pipeline Technology  
Plant Processing of Natural Gas—Engineering  
Plant Processing of Natural Gas—Operations  
Production Technology  
Reciprocating Compressor/Prime Mover Operations and Maintenance  
Supervisory Control and Data Acquisition Systems (SCADA)  
Valves and Actuators—Operation and Maintenance  
ValvePro® Certified Valve Maintenance Technician

*For information on the Houston and West Texas Training Centers, course schedules, or to enroll, visit our Web site at [www.utexas.edu/ce/petex](http://www.utexas.edu/ce/petex)*



THE UNIVERSITY OF TEXAS



## PETEX Liquid Petroleum Measurement Courses

- Fundamentals of Petroleum Measurement
- Intermediate Petroleum Measurement
- Advanced Petroleum Measurement
- Gauging, Testing, and Running of Lease Tanks



## Fundamentals of Petroleum Measurement

3.3 CEUs

Length: 4½ 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 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 & gas business, especially pipeline, refining and production operations. Measurement operators, technicians, and engineers who would like to get a more firm foundation and/or are new (6 months or less) to liquid volume measurement; and those who witness or audit measurement techniques.



**MASS MEASUREMENT OF  
HYDROCARBON FLUIDS**

*Endorsed by the Gas Processors Association  
Recommended for Measurement Technicians and  
Engineers with one to five years of experience.*

## Intermediate Petroleum Measurement

3.3 CEUs

Length: 4½ 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 & 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: 4½ 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

- Trouble shooting 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 trouble shooting 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 prover 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.