Liquid Petroleum Measurement, cont.

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
Tel: 800.687.7052
or 281.443.7144
FAX: 281.443.8722
Email: petexhtc@www.utexas.edu
Basic Petroleum Measurement

3.3 CEUs
Length: 4½ Days

PROPERTIES OF PETROLEUM
- Chemical composition of hydrocarbons
- Testing procedures for hydrocarbons
- Significance of petroleum testing
- Classroom exercises

STATIC MEASUREMENT
- Basic tank calibration
- Calculation tables
- Gauging equipment and methods
- Static measurement calculations
- Practical exercises
  - Tank volume calculation classroom exercises
  - Demonstration of a tank calibration
  - Tank gauging field exercises
  - Gravity determination field exercise

DYNAMIC MEASUREMENT
- Criteria for metering
- Displacement meters
- Turbine meters
- Coriolis meters
- Ultrasonic meters
- Accessory equipment
- Meter provers (overview)
- LACT/ACT units (overview)

QUALITY DETERMINATION
- Definitions
- Representative sampling
  - Manual sampling
  - Dynamic sampling
- Manual sampling devices/components
- Types of dynamic sampling systems

CALCULATIONS OF QUANTITIES
- Definitions
- Physical properties
- Dynamic measurement calculations
  - Meter factor calculation
  - Meter ticket calculation
- Practical exercises
  - Classroom calculation exercises
  - Proving a meter with a pipe prover-field exercise
  - Discuss master meter proving
  - Demonstration of a water draw (walkthrough)

OIL LOSS ANALYSIS
- Metering accuracy
- Tank gauging accuracy
- Other factors affecting accuracy
- Sources of measurement losses and gains

Advanced Petroleum Measurement

3.3 CEUs
Length: 4½ Days

TANK CALIBRATION METHODS
- Tank strapping
- Liquid calibration
- Optical methods
- Other calibration methods

TANK MEASUREMENT METHODS
- Manual gauging
- Automatic tank gauging
  - Float systems
  - Radar systems
  - Servo systems
- Hydrostatic systems
- Sources of gauging errors
- Installation applications

ELECTRONICS
- Electronic theory
- Equipment and instrumentation
- Fidelity and security
- Data transmission
- Pulse interpolation

METERING SYSTEMS AND PROVERS
- Meter selection and sizing
- Prover selection and sizing
- Meter system layout
- Meter prover theory
- Volumetric tank provers
- Conventional pipe provers
- Small volume provers

AUTOMATIC SAMPLING
- Theory and operation (overview)
- Various types of design (overview)
- Component performance tests
- Sampling system performance tests
- Operational performance

Recommended For
Personnel who are new to liquid measurement and those who witness or audit measurement techniques. The API Manual of Petroleum Measurement Standards and the ASTM Analytical Standards are used.

Advanced Petroleum Measurement, cont.

Recommended For
Personnel who are new to liquid measurement and those who witness or audit measurement techniques. The API Manual of Petroleum Measurement Standards and the ASTM Analytical Standards are used.

Basic Petroleum Measurement, cont.

Recommended For
Personnel who are new to liquid measurement and those who witness or audit measurement techniques. The API Manual of Petroleum Measurement Standards and the ASTM Analytical Standards are used.

Advanced Petroleum Measurement, cont.

- Ultrasonic/Doppler types of meters
- Meters for mass measurement
- Insertion and clamp-on types of meters
- Other meters

METER AND PROVING TROUBLESHOOTING
- Problems with meter provers
- Problems encountered proving meters
- Turbine meter problems
- Displacement meter problems

CALCULATIONS OF QUANTITIES
- API MPMS Chapter 12.1
- API MPMS Chapter 12.2
- Master meter calculations
- Computer implementation and calculations
- Electronic data handling and transfer
- Calculation exercises uncertainties

PROVER CALIBRATION METHODS
- Water draw theory
- Master meter method
- Errors and uncertainties
- Water draw calculations

PROVER CALIBRATION METHODS
- Water draw procedures
- Conventional provers
- Small volume provers
- Water draw calculations
- Exercises and problem solving

MASS MEASUREMENT OVERVIEW
- Mass metering methods
- Direct mass measurement
- Indirect mass measurement
- Comparison of volumetric vs. mass measurement
- Mass measurement calculation

OVERALL MEASUREMENT UNCERTAINTY
- Calculation of statistical uncertainties
- Sources of measurement uncertainties
- Methods of improving uncertainties

Recommended For
This course is recommended for liquid measurement personnel with several years’ experience or those who have completed Basic Petroleum Measurement.

Need on-site training? These courses can be customized to meet your company’s needs. Please call 1-281.443.7144 for more information.