

**ConocoPhillips Company
Americas Supply & Trading
Q & Q Determination and Loss Control
2011 A.P.I. International Trade and Customs
Conference
Houston, Texas**

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Agenda

- Welcome & Introduction
- Definition of Custody Transfer & Inherent Risk(s)
- Commercial & Operations Overview
- The Role of the Independent Inspector
- Loss Control & its Role
- Some Custody Transfer Scenarios
- Q&Q Determination Methodologies
- Overview of Industry Measurement Standards
- Q&A

Definition of Custody Transfer

➤ **Custody transfer measurement:**

“Provides quantity and quality (Q&Q) information used for the physical and fiscal documentation of a change in ownership and/or a change in responsibility for commodities.” (API MPMS Chapter 1 Vocabulary)

➤ Q&Q Determination

➤ Change in Ownership and/or Accountability

Risks Associated with Custody Transfer Operations

- Security
- Health
- Safety
- Environmental
- Financial
- Regulatory (US Customs & BP, EPA)

Commercial & Operational Processes

- Commercial (Contracts & Optimization)
 - Traders, Schedulers, Chartering, Contract Admin.

- Operations
 - Upstream, Refining, PLs, Terminals, Marine & Vessel

- Q&Q Determination ~ Measurement & Sampling
 - Independent Inspectors (IICs), Terminals, LC

- Financial Systems & Reporting
 - Upstream, Commercial and Refining, Invoicing/Settlements, Audit & Regulatory Compliance

Role of Independent Inspection Company (IIC) Inspector (aka “Approved Commercial Gauger”)

CFR 19 151.13(c) ...” approved gaugers must comply with appropriate procedures published by such organizations as the ASTM and the American Petroleum Institute (API),...”

“Quantity as determined by the IIC shall be final and binding on all parties and will be the basis for preparing relevant shipping documents and invoices save fraud and/or manifest error.”—COP Q&Q Determination Guidelines

- Independent Q&Q Determination
- Early Warning System for Terminal and Vessel Cargo Transfer Problems & Measurement Anomalies
- Facts/Expert Witness in Claims Resolution

IIC Inspector Role in Custody Transfer Processes

- Witness and/or Independent Marine Cargo Surveyor
 - Measurements and Samples (Q&Q Determination)
 - Quality Assurance
 - Validation~API/ASTM/ISO Standards are followed
 - Static (Manual Tank Gauges)
 - Dynamic (Meter Proving, K factors)
 - Prepares Documentation (Meter & Sampler Performance, Vessel Ullage, Quality Reports, Letters of Apparent Discrepancies/Protest etc.)
- Assists in Resolution of Discrepancies

What is Loss Control ?

- Loss Control is a risk management process that minimizes & prevents Quantity & Quality (Q&Q) losses.
- Loss Control begins with the commercial contract Terms & Conditions.
- Loss Control processes validate “performance” of operations and IICs (measurement, sampling & lab).
- “Performance” and “Compliance” (Financial & Regulatory) rely upon adherence to accepted custody transfer measurement standards.

Loss Control's Role in Custody Transfer Processes

- Witness Custody Transfer Measurements and Cargo Transfer Operations
- Validate that Measurement Accuracy & Quality Specifications/Assurance is Achieved (API/ASTM/ISO Standards are followed)
- Reinforce “Independence” of IIC Inspector
- Minimize/manage excess water, other contaminants
- Vessel Ops. (Cleanliness, COWing & stripping)
- Support Contract(s)~Claims and Claims Settlement













Quantity Determination Methodologies

A.) Preferred Measurements for Custody Transfer at a Terminal

- Primary; Meters or Static Shore Tank(s) Gauges
- Secondary; Vessel (Receiving or Delivering) Measurements with Valid VEF Applied

NB: Truck & Rail Car ~ rack meters, certified truck/rail car calibration tables, certified weigh scales

B.) Preferred Measurements for Custody Transfer Offshore (Ship to Ship Transfers or STS)

- Primary; Lighter Vessel (Receiving or Delivering) Measurements with Valid VEF Applied

C.) Default Measurements for Custody Transfer at a Terminal or Offshore

- “Good Faith” Agreement between the parties.

Quantity Determination Methodologies - Key Factors

I. Key Measurement Factors

- No non-perforated standpipe/stilling wells
- Shore Line Fullness Verification (SLFV))
- Floating Shore Tank(s) Roofs to be Afloat (Critical Zone)
- Shore Tank Strapping (Calibration) Tables & Marine Cargo Capacity Tables

Quality Determination Methodologies

I. A.) Preferred Sampling for Custody Transfer at a Terminal

- Primary; Flow Proportional in-line Sampler
- Secondary; Vessel (post-Receiving or pre-Delivering) Volumetric Composite or Shore Tanks (post-Receiving or pre-Delivering) Composite

NB: Refined Products Certificate of Quality (COQ)

B.) Default Sampling for Custody Transfer at a Terminal or Offshore

- “Good Faith” Agreement between the parties.

Role of Measurement Standards

Industry Standards Development Organizations (SDO)

ISO/ASTM/API/EI

- Industry standards are voluntary.
- As non-governmental organizations, SDOs have no legal authority to enforce their implementation.
- Some standards (i.e. those concerned with health, safety, trade or the environment) have been adopted in some countries as part of their regulatory framework.
- Some standards are referred to in legislation for which they provide a technical basis for reporting & compliance.
- Industry standards have become a commercial requirement because they serve as a technical means to determine measurement accuracy and procedural “best practices” for all participants.

Measurement & Laboratory Test(s) Standards

American Petroleum Institute (API)

- Primary source for many companies' petroleum measurement standards
 - API measurement standards are organized as documents within a manual called the Manual of Petroleum Measurement Standards (MPMS)

ASTM International

- Primary source for many companies' petroleum laboratory test methods
 - Former name was American Society for Testing Materials

International Standards Organization (ISO)

- Choice of some companies/countries for measurement standards
 - Includes measurement and laboratory test methods
- ISO's scope is very broad and covers standards outside the petroleum industry (food, building, manufacturing, safety etc.)

Goal: Globally Accepted Standards~API and ISO

- ISO has developed a limited number of new measurement standards in recent years.
- Most ISO petroleum measurement standards are based on API standards, some of which are joint standards with ASTM International & Energy Institute.
- Not all API standards are processed through ISO – only where there is a need of the international oil and natural gas industries.
- API & ISO standards are reviewed at intervals of not more than 5 years.

Current API COPM Measurement Standard(s) Initiatives

- The API COPM develops, approves, and maintains hydrocarbon measurement standards involving all modes of transportation.

- Examples of Current Standards Development
 - Manual Gauging & Level Measurement by ATG of Petrol./Petrol. Products (COLM Ch 3.1A & CH 3.1B respectively).
 - Temperature Determination (COMQ Ch 7)
 - Manual & Automatic Sampling of Petrol./Petrol. Products (COMQ Ch 8)
 - Cargo Analysis and Reconciliation of Cargo Quantities (COMA Ch.17.5)
 - Determining Fullness of PLs between Vessels and Shore Tanks (COMA Ch.17.6)
 - Vessel Experience Factors (COMA Ch. 17.9)
 - Measurement of LPGs/Chemical Gases & LNG on Board Marine Gas Carriers (COMA Ch. 17.10.1~ISO 10976)
 - Evaporative Loss from Fixed Roof Tanks (CELE Ch. 19.1)
 - Allocation Measurement Single & Multiphase Measurement (CPMA Ch. 20)
 - Measurement & Sampling On Board Tank Vessels Using Closed/Restricted Equipment (COMA Ch17.11)