Aboveground Storage Tank Inspector (API 653)

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Introduction:

The effective management and operation of an oil and gas terminal are essential for a successful business. The processing, transporting, and storing of crude oil and refined petroleum products, in tank farms, involves custody transfers of partner and commingled stock, significant volumes of data from various sources, and blending operations complexities. In addition, as these liquids are loaded and offloaded in bulk quantities, there is a large transfer of high value that makes it imperative for tank farm operators to efficiently manage their inventory and maximize their return on investment.

This training course provides an overview of the American Petroleum Institute API-650, API 620, and API 2610 specifications as well as the API 653 inspection standard. Emphasis is also given both as to safety as well as operability of tank farms and the training includes Seveso III Directive real-life example reports, how they were carried out, and implemented.

Upon successful completion of this training course, participants will gain knowledge on oil terminals and tank farms, methods of tank gauging, crude oil product specifications, product blending, and tank mixing, dealing with of oil spill emergencies, cleaning of crude oil and heavy product tanks, understanding and employ a work permit system, pigging operations of oil pipelines, quality assurance and control, contingency and safety procedures.

Course Objectives:

At the end of this course the participants will be able to:

- In-depth knowledge of operations & management of crude oil and product terminals.
- Apply proper planning and scheduling techniques in storage & transfer systems.
- Command the various planning and transfer requirements for terminals.
- Develop good terminal management skills.
- Apply safe practices and procedures during the various operations in terminals including oil spill contingency and emergency response plans.
- Learn techniques on blending recipes for on specification products.
- Understand the limitations of tank gauging methods and learn up to date new technologies and methodologies for accurate tank measurement.
- Perform calculations for emissions discharges and dispersion with the aid of dedicated simulation software.

Targeted Audience:

- Marine Terminal Managers, supervisors, and Superintendents.
- Oil and Gas refinery or product storage facility personnel.
- Oil and gas operators and engineers.
- Facility Managers and Coordinators.
- Process Engineers, Project Managers, Mechanical Engineers, Electrical Engineers, Instrumentation/Control Engineers, technical staff.
- Safety and Environmental personnel.
- Transfer Supervisors.
- Oil and Gas Cargo officials.

Course Outlines:

Unit 1: Crude Oil and Product Properties:

- Review of Energy Production and Consumption.
- Tank farm Operations, Planning, and scheduling.
- Physical, chemical & hazardous properties of Stored products.
- Effects of Physical & chemical properties on the choice of storage.
- Safety and Risk.
- Ignition sources - Electrostatic charge - NFPA 77.
- Fire detection, firefighting & protection.
- Case study - I: Static Electricity Major accidents.
- Case study - II: Jet fuel conductivity adjustment.

Unit 2: Tank Types, Construction & Requirements for Stored Products:

- Tank farm's differences and purpose.
- Tank design & engineering considerations, API codes & standards :
    - Crude & Refined product Storage.
    - LNG, LPG, CNG storage.
- Roof Types.
- Fixed, Dome & Cone.
- Floating Roof, internal/external.
- Suction levels fixed/floating.
- Estimation and Measurement of Tank Emissions and Losses.
- Case Study: Emission reduction technologies, Vapor recovery units.
- Group exercise: Emissions estimation & dispersion -Simulation Calculations Use of PC□s.

Unit 3: Tank Terminal Operations:

- Tank farm Layout, Secondary Containment, Bund walls.
- Emergency response, Handling Oil Spills.
- Water drainage systems network and Process water treatment.
- Ship to shore Transfers, Ship Loading, and discharge process.
- The bill of lading, Custody transfer, and administration.
- Tank gauging and metering, meter proving, stock loss & Pipeline transfer loss.
- Sampling and quality control - ISO 17025.
- Group exercise: Loss estimation - Excel Calculations.

Unit 4: Terminal Management:

- Competency Description:
- Terminal Inventory Control & Inter Tank transfers.
- Changing tanks service.
- Tank calibration/ recalibration.
- Instrumentation, flow, and level measurement.
- Spill and overfill control.
- Level alarms/ independent level alarms.
- Product Blending and Product failures.
- Excel Calculations: Blending exercise Use of PC□s.

Unit 5: International Regulations & Requirements for Oil & Gas Marine Terminals:

- The Seveso III Directive.
- ISGOTT - Required notifications in the event of a release.
- Release detection, response, reporting, and investigation.
- Tank cleaning g.
- Gas freeing and confined entry.
- API 653 Tank Inspection:
    - Tank failure causes and prevention.
    - Settling.
    - Corrosion.
- Case Study - I: Tank Inspection Final Report.
- Case Study - II: The Seveso III Directive example reports.