API 653 Aboveground Storage Tank Inspector Certification Preparation Course

Venue: *3 Seletar Aerospace Link*
Singapore 797550

This is an intensive 5-day training course to provide a comprehensive understanding of the design, inspection and maintenance of aboveground storage tanks based on API 653 standards. It aims to provide the oil, gas and petrochemical industries with the assurance that inspectors have been trained under this internationally recognized program to have the required knowledge and experience for inspection of in-service aboveground storage tanks.

Course participants aspiring to be certified by API will get well versed with the various code books and standards to be prepared for the API 653 examination.

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WHO SHOULD ATTEND

The course is designed for inspection engineers, Inspection personnel, Operating engineers, Managers, Maintenance engineers and personnel involved in design, operation, inspection and maintenance of aboveground storage tanks. This course will also be beneficial to those who are preparing themselves for the API 653 certification examination.

COURSE OBJECTIVES

The Training provides participants with:

1. Knowledge of API publications and other international standards that include:
    - ASME Sect V – Non-destructive Examination
    - ASME Sect IX -Welding and Brazing Qualifications
    - API RP 571 - Damage Mechanisms Affecting Fixed Equipment in the Refinery Industry
    - API RP 575 - Inspection of Atmospheric and Low-Pressure Storage Tanks
    - API RP 577 - Welding Inspection and Metallurgy
    - API Standard 650 – Welded Tanks for Oil Storage
    - API RP 651 – Cathodic Protection of Aboveground Petroleum Storage Tanks
    - API RP 652 – Lining of Aboveground Petroleum Storage Tank Bottoms
    - API Standard 653 – Tank Inspection, Repair, Alteration, and Reconstruction
2. Knowledge and expertise that are required for maintenance, rating, inspection, repair and alteration of in-service aboveground storage tanks;
3. Information of API Individual Certification Program and API 653 Inspector certification process;
4. Practical tests that simulate the API 653 ICP exam;
5. Competence and confidence to finally achieve API 653 ICP qualification.

CODE BOOKS TO BRING*

ASME Codes:

- ASME Sect V, Nondestructive Examination, 2015 Edition
- ASME Sect IX, Welding and Brazing Qualifications, 2015 Edition

API Codes:

- API RP 571, Damage Mechanisms Affecting Fixed Equipment in the Refinery Industry, 2nd Edition, Apr 2011
- API RP 575, Inspection of Atmospheric and Low-Pressure Storage Tanks, 3rd Edition, Apr 2014
- API RP 577, Welding Inspection and Metallurgy, 2nd Edition, Dec 2013
- API Standard 650, Welded Tanks for Oil Storage, 12th Edition, Mar 2013 with Add 2 (Jan 2016)
- API RP 651, Cathodic Protection of Aboveground Petroleum Storage Tanks, 4th Edition, Sep 2014
- API RP 652, Lining of Aboveground Petroleum Storage Tank Bottoms, 4th Edition, Sep 2014
- API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction, 5th Edition, Nov 2014

* Refer to latest Publications Effectivity Sheet for the API 653 Certification examination and dates of examination.

http://www.api.org/products-and-services/individual-certification-programs/programs#tab_examination-info

COURSE CONTENT

DAY 1

- Introduction, Publications, Course Outline and Body of Knowledge
- API RP 575, Inspection of Atmospheric and Low-Pressure Storage Tanks
  - ❑ Scope, Terms and Definitions
  - ❑ Reasons for inspection and Causes of Deterioration
  - ❑ Inspection Planning
  - ❑ Frequency, Extent and Methods of Inspection
  - ❑ Leak Testing and Hydraulic Integrity of Bottom
  - ❑ Repairs and Alterations
  - ❑ Records and Reports
- API 650, Welded Tanks for Oil Storage
  - ❑ Scope and organization of the code
  - ❑ Definitions and materials
  - ❑ Design and Fabrication

DAY 2

- API 650, Welded Tanks for Oil Storage (Cont'd)
  - ❑ Design and Fabrication (cont'd)
  - ❑ Erection
  - ❑ Methods of Examining Joints
  - ❑ Welding and Marking
- API 653, Tank Inspection, Repair, Alteration, and Reconstruction
  - ❑ Scope, organization and definitions
  - ❑ Suitability for Service
  - ❑ Brittle Fracture Considerations
  - ❑ Inspection

DAY 3

- API 653, Tank Inspection, Repair, Alteration and Reconstruction (Cont'd)
  - ❑ Materials
  - ❑ Design considerations for reconstructed tanks
  - ❑ Tank repair and alteration
  - ❑ Dismantling and reconstruction
  - ❑ Welding
  - ❑ Examination and testing
  - ❑ Marking and recordkeeping
- API RP 651, Cathodic Protection of Aboveground Petroleum Storage Tanks
  - ❑ Scope and definitions
  - ❑ Corrosion and determination of need for CP
  - ❑ Methods and design of CP
  - ❑ Criteria for CP
  - ❑ Installation of CP

DAY 4

- API RP 652, Lining of Aboveground Petroleum Storage Tank Bottoms
  - ❑ Scope and definitions
  - ❑ Corrosion mechanisms
  - ❑ Determination of need for tank bottom lining
  - ❑ Selection of tank bottom lining
  - ❑ Surface preparation
  - ❑ Lining application
  - ❑ Inspection of lining
- API RP 571, Damage Mechanisms (related to pressure vessels in general)
  - ❑ Brittle Fracture
  - ❑ Mechanical Fatigue
  - ❑ Atmospheric Corrosion
  - ❑ Corrosion Under Insulation (CUI)
  - ❑ Microbiologically Induced Corrosion (MIC)
  - ❑ Soil Corrosion
  - ❑ Caustic Corrosion
  - ❑ Chloride Stress Corrosion Cracking (Cl-SCC)
  - ❑ Caustic Stress Corrosion Cracking (Caustic Embrittlement)
  - ❑ Sour Water Corrosion (Acidic)
  - ❑ Sulfuric Acid Corrosion
- ASME Section 5
  - ❑ Article 1, General Requirements
  - ❑ Article 2, Radiographic Examination
  - ❑ Article 6, Liquid Penetrant Examination
  - ❑ Article 7, Magnetic Particle Examination
  - ❑ Article 23, Section SE-797, Ultrasonic Standards

DAY 5

- ASME Section 9
  - ❑ Article 1, Welding General Requirements
  - ❑ Article 2, Welding Procedure Qualifications
  - ❑ Article 3, Welding Performance Qualifications
  - ❑ Article 4, Welding Data
- API RP 577, Welding Inspection and Metallurgy
  - ❑ Definitions
  - ❑ Welding inspection, processes, procedure, materials
  - ❑ Welder qualifications
  - ❑ Non-destructive examination
  - ❑ Metallurgy
  - ❑ Refinery and Petrochemical Plant Welding Issues
- API 653 Practice examination, Open and Closed Book

Exercises:

A number of short exercises designed to reinforce key topics after each topic.

Participants should bring along to the training: Codes and Standards, Scientific Calculator, pencils, highlighters, lots of questions and a "CAN-DO" attitude.

ABOUT THE TRAINER

HO BEE LEONG has more than 20 years of experience in the international oil and gas, both onshore and offshore, marine, shipbuilding and repair industries providing engineering consultancy, asset integrity, materials and corrosion expertise, welding and failure investigations.

He had previously held positions as Principal Consultant with DNV, as Corrosion and Inspection Manager in Shell Seraya, Singapore and Integrity Manager in BW Offshore. He was stationed in Vietnam where he helped to set up Asset Integrity Management systems for BP and PetroVietnam offshore and onshore facilities. He graduated from the National University of Singapore with Masters of Materials Science and Engineering and Bachelor of Engineering Degree, Mechanical (Honors).

His professional certifications include API 510, 570 & 653, AWS CWI and NDT, and with more than 15 years hands-on experience as an API Authorized Inspector for pressure vessels, piping and storage tanks. He has also conducted API public training regionally in Singapore, Malaysia, Philippines, Indonesia and China; and in-house for Petronas, Chevron Indonesia, Shell, and BP etc.

PROFESSIONAL EXPERIENCES:

- Asset Integrity and Risk Management Services
- Plant Maintenance and Engineering
- Risk-Based Inspection (RBI)
- Process Safety Management
- Failure Analysis
- Metallurgy and Chemical Analysis
- Corrosion Assessment and Protection
- Materials Selection
- Welding Consultancy/Inspection/Witnessing
- Non-Destructive Testing
- Calibration & Mechanical Testing