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ISO 9001:2008 Certified

Hazardous Area Electrical Course

Five-Day Course Outline
(WEST DEC Facility, Brookshire, Texas)

Note: A Job Safety Analysis (JSA) will be presented before each lab exercise.

Day 1

Section I - Introduction

A. Shop safety
   1. Fire awareness
   2. Toolbox meetings (JSAs)
   3. Awareness of potentially hazardous activities of other groups
   4. Personal protective equipment
   5. Trapped pressure
   6. Compressed air
   7. Security of equipment being worked on or mounted on work benches
   8. Forklift operations
   9. Working under suspended loads
   10. Load rating of lifting equipment
   11. Rotating machinery
   12. Hand tools and electric power tools
   13. Chemical storage and identification
   14. Tool care and maintenance
   15. Housekeeping

B. Safety equipment required in the shop
   1. Steel-toed work boots
   2. Safety glasses with side shields
   3. Work gloves
   4. Coveralls

Section II - Area Classification and Standards

Area classification and statutory requirements discussed using applicable standards
   1. API- API RP 14F and 500
   2. DNV- DNV OS A101 2008, DNV OS D201, DNV OS E101, DNV OS E201
   3. USCG- 46cfr140-155 2008
   4. NEC- Article 501 - Class 1 Locations; section 501.4 - Wiring Methods; subsection (A) - class 1, division 1, appendix E

Day 2

Section III - Temperature Classes and Gas Groups

Temperature and gas classification/groups discussed based on industry standards

1. What is “temperature classification”
2. Why is temperature class important
3. Temperature class and equipment marking.
4. Explanation of temperature class group I
5. Temperature class for group II
6. Hazards of gas
7. Gas group national or international code of practices
8. Gas group breakdown

Section IV - Concepts of Equipment Protection

Discuss equipment protection for different hazard levels

1. Flameproof
2. Intrinsically safe
3. Encapsulated
4. Oil filled
5. Powder filled
6. Purged/pressurized
7. Non-incendive
8. Special protection

Day 3

Section V - Termination, Cabling, Glands and Equipment Selection

A. Discuss equipment requirements for each hazardous area class.

1. Cabling
2. Apparatus
3. Glands
4. Motors, j-boxes, conduit, communication

B. **Lab** – Exercises demonstrating proper installation techniques

Section VI - Equipment and Systems Inspections

A. Inspection based on industry standards.

1. Visual
2. Disassembly
3. Operational

B. **Lab** - Inspection of equipment in different scenarios and states of repair

Day 4

Section VII - Maintenance and Repair

A. Topics of maintenance and repair discussed.
   1. Typical routine maintenance
   2. Repair to damaged equipment
   3. Manufacturer/owner-approved modifications

B. **Lab** - Exercises include repair to cables/glands and servicing of Ex equipment.

Section VIII - Testing or Recommissioning Following Maintenance or Repair

Discussion of testing or recommissioning based on type of maintenance or repair
   1. Routine maintenance
   2. Damage repair
   3. Approved modifications

Day 5

Section VIII - Documentation

Discussion about updating documentation for hazardous area equipment registers, and equipment certificates
   1. Why we need a “hazardous area register″
   2. Minimum information on the hazardous area register
   3. Equipment certification certificates

Section IX - Test and Evaluation