

QA/QC PIPING ENGINEERING

TRAINING MODULE

TOPICS TO BE COVERED

1.INTRODUCTION TO NDT

- a) Principles of various NDT
- b) Equipment for NDT
- c) Procedure for NDT
- d) applications of NDT
- e) scope & advantages of NDT
- f) Comparison of NDT with DT
- g) Classification of NDT

2.LIQUID PENETRANT TESTING

- a) Principles of LPT
- b) Equipments for LPT
- c) Procedures for LPT
- d) characteristics of LPT
- e) Developers
- f) Evaluations
- g) Hazards precautions, advantages, limitations and applications.

3. MAGNETIC PARTICLE TESTING

- a) Principle of MPT

- b) Equipments for MPT
- c) procedures for MPT
- d) Methods to generate magnetic field
- e) Magnetic particle medium
- f) Evaluation of indications and acceptance standards
- g) Magnetic particle test
- h) Application, advantages and limitations

4. RADIOGRAPHIC TESTING

- a) X-ray radiography principle, equipment & methodology
- b) Type of industrial radiation sources and application
- c) Radiography exposure factors and techniques
- d) GAMA ray and X-ray equipment
- e) Radiographic procedures
- f) Radiograph interpretation, radiography image quality indicators
- g) Radiographic techniques
- h) Film processing
- i) Methods of viewing radiography
- j) Radiographic testing procedures for welds
- k) Precautions against radiation hazards

5. VISUAL INSPECTION TESTING

- a) Introduction for VT

- b) Equipments for VT
- c) Magnifying glass magnifying mirror
- d) Microscope Boroscope
- e) Endoscopes or Endoprobes
- f) Flexible fibre optic Boroscope
- g) Video image scope

6. ULTRASONIC TESTING

- a) Introduction,principle & types
- b) Ultrasonic probes
- c) Types of transducers
- d) Ultrasonic testing techniques
- e) Methods for evaluating discontinuities
- f) Ultrasonic testing procedures for different component
- g) Applications,advantages,liitations and documentations
- h) Applications in inspection of casting,forgings,rails and dimension measurements

7. WELDING INSPECTION

- a) Duties and responsibility of ainspector
- b) Terms and definitions, symbols
- c) Destructive testing and NDT of welds
- d) WPS/ PQR/ WPQR
- e) Welding Techniques

- f) Welding consumables
- g) Weldability of steel
- h) Welding defects and its remedy
- i) Heat treatment, preheat, PWHT
- J) Codes and standards

8. PIPING INSPECTION

- a) Basics of piping- introduction, pipes, fittings, flanges, valves, piping symbols
- b) Block is flow diagram
- c) Process flow diagram
- d) Piping and instrumentation diagram
- e) equipment layout
- f) Pipe arrangement drawings, sections & elevation
- g) Pipe routing
- h) Pipe supports
- i) Piping Isometrics
- j) Pipeline design
- k) Pipeline construction
- l) Codes and standards
- m) Isometric charts

9. SECTION CODES

10. PROCEDURES

11. REPORT MAKING

12. INTERVIEW PREPARATIONS

13. EXAMS

14. PRACTICAL CLASS - LAB