QATAR TECHNICAL PETROLEUM CENTER
PCN MAGNETIC PARTICLE TESTING

Daily Schedule : 7:30am - 3:30pm
Training Date : Upon Request
Training Venue : Doha
Traning Fees : TBI

SCOPE

This course covers the principles of Magnetic Particle Testing and prepares a candidate to
- Setup and calibrate equipment
- Interpret and Evaluate Results with respect to Applicable Codes, Standards and Specifications
- Familiar with the scope and limitations of the Methods
- Write test reports.

TRAINING

Training Material is presented in Module that are followed by Quizzes
GENERAL TRAINING
Personnel Certification: ASNT SNT-TC-1A and NAS 410

MODULE 1: MANUFACTURING DISCONTINUITIES

- Types of Discontinuities: Inherent, Processing and Service
- Casting Discontinuities: Hot Tear, Cold Shut, Porosity, Shrinkage
- Primary Processing Discontinuities including discontinuities in Rolling, Forging, Drawing, Extruding
- Secondary Processing Discontinuities including discontinuities in Grinding, Heat Treating, Machining, Welding, Plating
- Service Discontinuities: Erosion, Wear, Fatigue, Corrosion, Creep, Hydrogen Attack

MODULE 2: THEORY OF MAGNETISM

- Magnetic field, Lines of force, Flux density
- Definitions of Permeability, Reluctance, Retentivity, Residual Magnetism and Coercive Force
- Diamagnetic, Paramagnetic and Ferromagnetic materials
- Leakage flux
- Fleming's Right Hand and Left Hand Rule
- Types of Magnetic Fields: Circular, Longitudinal, Vector
- Hysteresis Curve

MODULE 3: METHODS OF MAGNETIZATION

- Magnetization By Means of Electric Current
- Types of current AC, HWDC
- Circular field: Head Shot (Direct Contact), Prods and Central Conductor Techniques, Offset Central Conductor
- Advantages and disadvantages of circular field

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MODULE 4: EQUIPMENT

- Equipment consideration
- Wet Horizontal, Mobile and Portable Equipments
- Fluorescent testing, Black Light
- Accessories

MODLULE 5: MEDIUMS AND THEIR PREPARATION

- Dry and Wet method
- Particles: Dry and Wet
- Properties of particles
- Visibility of particles
- Methods of Application
- Contamination of Magnetic Particles
- Settling Test Procedure
- Concentration for Wet suspensions as per ASME Sec V Article 7
- Bath Maintenance

MODLULE 6: APPLICATIONS

- Residual and Continuous Method
- Magnetic Particle Inspection of Solid Cylindrical Parts, Gears, Multiple diameter Articles,
- Discs, Hollow Cylindrical Articles
- Selection of proper method of magnetization
- Verification of magnetic fields
- Checking the adequacy of field using the Pie gauge, shims
- Magnetic Rubber Inspection

MODULE 7: TYPES OF INDICATIONS

- Interpretation including Relevant, False, Non-relevant indications

MODULE 8: Codes and Standards (SPECIFIC TRAINING)

- MT Inspection Procedures

Codes

- ASME Section V Article 7 2004
- ASME Section VIII (Accept/Reject Criteria)

ASME B 31.1 – Power Piping
ASME B 31.3 – Petrochemical Piping

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About the Instructor

RAMALINGAM JANAKARAJ
Diploma in Mechanical Engineering

TECHNICAL QUALIFICATIONS

1. Ultrasonic Testing of Materials and Welds - Indian Institute of Welding September 1972
2. Industrial Radiography -Indian Institute of Welding September 1973
3. Basic Metallurgy -Institute of Engineering Inspection September 1975
4. Safety Aspects in Industrial Application of Radiation Sources.-Baba Atomic Research centre September -October 1977
5. Inspection of Testing Materials in Central Laboratory -Three Months of special Training,, Bharat Heavy Electrical Ltd., Tiruchirapalli. May 1971 to Aug 1971
6. ASNT Certified Level II - Radiography, Ultrasonic and Magnetic Particle Testing October 1987.
7. ASNT Certified Level III Cert# 67714 -Radiographic Testing. Nov 1987-Valid to Nov-2012
8. ASNT Certified Level III Cert # 67714 - Ultrasonic Testing Nov 1987-Valid to Nov-2012
9. ASNT Certified Level II - Magnetic Particle and Liquid Dye Penetrant Testing October 1989.
10. ASNT Certified Level III Cert # 67714 - DYE Penetrant Testing Nov 1989-Valid to Nov-2012
11. ASNT Certified Level IIICert # 67714 - Magnetic Particle Testing, Nov 1989-Valid to Nov-2012
12. Certified Welding Inspector QCI-88, No.91110431 - American Welding Society - November-1991
13. ISO-9000 Successfully completed an examination on a " Registered assessor Training Course Incorporating Subcontractor Control and Assessment"Cert. No./11/9572. conducted by B.V with P.E BATALAS - November 1992
14. ISO-9000 - Participated Quality /Assurance Phase III Programme conducted by D.N.V.- October 1993
15. CSWIP-Gr 3.1 Welding Inspector / Certificate # 2862 – 24th May 2000
16. CSWIP-Gr 3.2 Senior Welding Inspector / Certificate # 2863/2, 24th May 2000-Valid to 20thApril 2010
17. ISO 9000:2000 – Transition Auditor Training by DNV / Certificate # 3115/7 – May 2001
18. Automated UT Phased Array Data Interpreter Oceaneering OiS, ASNT Level II – March 2007
19. Automated UT Phased Array Data Interpreter, TWI Training & Certification – March 2007

EXPERIENCE

Thirty nine years experience in the inspection field as ASNT Level-III, Senior Welding Inspector, Senior NDT Inspector, Metallurgist, Vendor Co-Ordinator / Sr.Inspector, Company (NDT) Level III and QA/QC Manager in Oil, Gas, Petro-Chemical Related Industry.

- METALLURGICAL AND MECHANICAL TESTING
- WELDING INSPECTION
- VENDOR INSPECTION
- CORROSION SURVEY

EMPLOYMENT HISTORY

- Aug. 2008 to Present JanaNi Training & Consultancy Services, NDT & Welding Q/C Training at Trichy
- Aug. 1989 to August 2008 Oceaneering OiS, Abu Dhabi, UAE, QA/QC Manager and ASNT Level-III
- Nov.1985 to June 1989 EMIRATES INDUSTRIAL LAB., Dubai, UAE, Metallurgist
- June 1982 to Nov. 1985 OILFIELD INSPECTION SERVICES (ME), Abu Dhabi, UAE Metallurgist
- April 1970 to May 1982 KAVERI ENGINEERING INDUSTRIES Ltd, Tiruchy, India Dy.Manager