

Rusayl Institute llc.

P.O. Box 16, Rusayl 124, Sultanate of Oman

Tel: +968 2444-6979, Fax: +968 2444-6757

Email: rioman@omantel.net.om

Website: www.rioman.org

RADIOGRAPHIC TESTING LEVEL I

CODE: NDT 09

COURSE OBJECTIVE:

The course provides additional input on basic radiographic principles, darkroom facilities, techniques, manufacturing processes, discontinuity in metals, evaluation and interpretation of radiographs of castings, welds etc as per various codes/ standards/ procedures.

COURSE OUTLINES:

- Basic principle of Radiation
- Basic Mathematics
- Properties of matter:- atom, molecule, properties of protons, electrons and neutrons, atomic structure, atomic number, atomic weight
- Electromagnetic Source
 - Curies
 - Half life, radioactive decay
 - Specific activity

Types of Radiation

- X- Ray
 - Gamma ray
 - Alpha, beta, gamma, neutron
 - Energy Characteristics
 - Interaction of Radiation with matter
 - Ionization,
 - Photoelectric effect
 - Compton Scattering
 - Pair production
 - Attenuation of electromagnetic radiation-shielding
 - Half value thickness and tenth value thickness(HVT and TVT)
 - Inverse square law
 - Biological effects of radiation
 - Radiation detectors including dosimeter, survey meter, film badge, TLD's
 - Exposure device and radiation sources
 - Composition of Industrial X-Ray Film
 - Radiographic Screens
 - Lead intensify Screens
 - Fluorescent Intensifying Screens
 - Important of Screen Film contact
 - Screen Cleanliness and care
 - Fluoroscopic technique
 - Principle of shadow formation
 - Radiographic Screens
- Geometrical unsharpness

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- Latent image
- Arithmetic of Radiography exposure
- Film Speed
- Radiographic contrast
- Film and subject contrast
- Definition
- Graininess and mottle
- Image quality indicators
- Shims
- Film handling, loading and processing
- Exposure technique including single image, double wall single image, double wall double image and panoramic techniques
- Personnel Monitoring
- Work Practices
- Types of discontinuities

SPECIFIC TRAINING:

Discussion of Specific ASTM E 94

PRACTICAL TRAINING:

Radiographic Calculator, Calculation of exposure time, GM Counter

Setting up a Radiograph Examination (In client facility only)

- Calculation of SFD depending on the appropriate geometrical unsharpness
- Single wall
- Double wall
- Panoramic
- Developing (in client facility only)
- Viewing

EXAMINATIONS:

- General,
- Specific

WHO SHOULD ATTEND?

This course is suitable for beginners and personnel with an existing NDT knowledge. High school Pass, with a minimum experience of 3 months in NDT field also suitable for Managers, Supervisors, Auditors, NDT Inspection, Welding, Inspection Engineers/Inspectors.

COURSE DURATION: 5 DAYS

CANDIDATES CAN LOOK FORWARD TO:

Qualified NDT Level III Instructor(s) as necessary to conduct the course. On successful passing of the examination, candidate will receive NDT, Level I in accordance with SNT-TC-IA Certificate in Radiographic Testing.

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RADIOGRAPHIC TESTING LEVEL II

CODE: NDT 09

COURSE OBJECTIVE:

The course provides additional input on basic radiographic principles, darkroom facilities, techniques, manufacturing processes, discontinuity in metals, evaluation and interpretation of radiographs of castings, welds etc as per various codes/ standards/ procedures.

COURSE OUTLINES:

GENERAL TRAINING

- Review of Basic Principles of Radiation
- Basic Mathematics Review
- Geometrical Unsharpness,
- Geometrical Exposure Principle
- Image Quality Indicators
- Darkroom Facilities
- Techniques and processing, Safe light
- Processor, Viewer lights,
- Film Loading, Film Storage,
- Developer, Stop Bath, Fixer, Washing,
- Prevention of Water spots, Drying, Unsatisfactory Radiographs,
- High or Low Film Density, High or Low Contrast, Poor Definition
- Fog, Light Leakage, Film Artefacts
- Densitometers and Step Wedge Film Comparison
- Multiple Film Techniques, Film Latitude
- Background Lighting, Penetrameter Placements
- Classification of Discontinuities, Inherent, Process ad service
- Casting Processes and Associated Discontinuities
- Welding : Types of Welding Processes and Weld Discontinuities Safety
- Controlling Personnel Exposure, Time, Distance
- Shielding Concepts, ALARA Concept
- Radiation Detection Equipment, Manufacturing Processes and Associated Discontinuities Casting, Wrought Processes, Welding Application Techniques.

SPECIFIC TRAINING

Radiography Testing Procedures, Codes, ASME Sec V, Sec VIII, API 1104, AWS D1.1 Standards, ASTM E 94

PRACTICAL TRAINING

Radiographic Interpretation, Illuminator Requirements, Pentameter Placement, Personnel Dark Adaptation, Visual Acuity, Film Identification, Location Markers, Film Density Measurements, Film Artifacts, Practice Film Viewing, Reference radiographs, Weld interpretation Reference

EXAMINATIONS

General, Specific, Practical Tests

WHO SHOULD ATTEND?

This course is suitable for beginners and personnel with an existing NDT knowledge. High school Pass, with a minimum experience of 9 months in NDT field also suitable for Managers, Supervisors, Auditors, NDT Inspection, Welding, Inspection Engineers/Inspectors, NDT Level I Certification holders.

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COURSE DURATION: 5 DAYS

CANDIDATES CAN LOOK FORWARD TO:

Qualified NDT Level III Instructor(s) as necessary to conduct the course. On successful passing of the examination, candidate will receive NDT, Level II Certificate as per SNT-TC- IA in Radiographic Testing