INTRODUCTION:

"Metal lab " is built on strong Material Testing & Non - Destructive Testing, NDT Training & certification Courses expertise, founded in 2004 by group of professionals to serve the industry.

Metal Lab was awarded ISO 9001 - 2008 Quality Management System Certification and ISO 17025 -2005 NABL Certification laboratory services among few of the Metallurgical lab and NDT Services in India.

Metal Lab is committed to provide most effective training with the expertise gained over the past two decades in the Inspection of Power stations Like **Thermal Power Plant, Nuclear Power Plant, Hydro Power Plant, Oil Refinery, Petro Chemical Unit, Chemical Plant, Fertilizer Plant, Cement Manufacturer, Railways, Infrastructure & Construction, Port, Mechanical, Instrumentation, Commissioning, Onshore Offshore Oil & Gas Plant, Aerospace, Foundry Unit, Forging Unit, , Pipeline, Automotive part Manufacturer , Fabricator, Steel Producer, General Industrial Companies**

Our Curriculum is formalized to provide custom training programs, best practices leading to gain thorough knowledge in practical Non – Destructive testing.

We are providing Level I, II Training and Certification as per Recommended practice SNT – TC – 1A – 2006 in the following NDT Methods.

- Ultrasonic Testing (UT)
- Magnetic Particle Testing (MT)
- Liquid Penetrant Testing (PT)
- Radiographic Testing (RT)
- Visual Testing (VT)
- UT of TKY Joints
- Radiographic Film Interpretation (RTFI)
- Ultrasonic Thickness Gauging (UTG)

This session is intended for managers, supervisors and inspection personnel and all individuals interested in the phased-array technology. It provides the basic testing principles, equipment usage, and current in -use applications for the pe tro-chemical, oil and gas industries and nuclear industries for welded structures

Phased Array Ultrasonic Testing (PAUT)

Time of Flight Diffraction (TOFD)

Metal Lab NDT Capabilities:

Ultrasonic Flaw Detection

Phased Array Ultrasonic Testing

Time of Flight Diffraction

Magnetic Particle Testing

Liquid Penetrant Testing

Ultrasonic Thickness Gauging

Chemical Analysis, Mechanical Properties, Micro Structure, Macro Analysis, Hardness, Positive Material Identification (PMI),Corrosion Test, Salt pray, Water Analysis, Rubber, Wood, Bricks, Paint, Oil, Soil etc...

Mechanical Calibration

Consultancy Services in NDT & metallurgy

Inspection (Material Testing & Non – Destructive Testing)

Training and Certification of NDT Personnel as per SNT – TC – 1A

Manpower recruitments in NDT & Welding

Metal Lab
NABL Accreditation Certificate No : T - 2387
An ISO 9001 - 2008 Certified Organization
New No.4, Old No.128/3, IInd Floor, East Vannier Street, West K.K.Nagar, Chennai-600 078.
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NDT TRAINING & CERTIFICATION COURSE – ULTRASONIC TESTING

LEVEL I & II 40 – Hours (5 Days)

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience				
Training	Level I	: 40 hrs	Level II	: 40 hrs
Experience	Level I	: 210 hrs	Level II	: 630 hrs

Overview

The course is intended to provide thorough knowledge in the principles of Ultrasonic Testing-UT and fundamentals of materials and pr ocesses such that the trainee would be able to identify suitability of UT for the material and inspection techniques, develop techniques and procedures, analyze the test results and document the same and be familiar with codes, standards and specifications.

COURSE CONTENTS

Level I Course Outline

1. Properties of Sound Waves,
2. Generation of Ultrasonic waves,
3. Interaction of ultrasound with matter & boundaries,
4. Types of Probes,
5. Test Methods,
6. Test Equipment,
7. Instrumentation,
8. Test Variables,
9. Inspection procedures,
10. Types of Discontinuities

Level II Course Outline

Review of Level I Course and

1. In-depth study of test Variables,
2. Immersion Techniques
3. Principles of DGS / DAC Methods,
4. Echo dynamics for Reflector Evaluation,
5. Codes, standards and Procedures
6. Acceptance Standards,
7. Evaluation of Test Equipment,
8. Manufacturing Process and Discontinuities

UT LEVEL I PRACTICAL TRAINING

Complete calibration of ultrasonic flaw detection equipment for various types of transducers, Discontinuity Detection, Locating the flaw and Size Estimation Techniques

UT LEVEL II PRACTICAL TRAINING

Same as for Level 1 course + Interpretation, Evaluation Of Indications using DGS/DAC. Evaluation Methods and Echo Dynamics, Beam Profile and Plotting

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NDT TRAINING & CERTIFICATION COURSE - MAGNETIC PARTICLE TESTING

LEVEL I & II — 16 – Hours (2 Days)

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience				
Training	Level I	: 12 hrs	Level II	: 08 hrs
Experience	Level I	: 70 hrs	Level II	: 210 hrs

OVERVIEW

The course is intended to provide detailed instruction in theory and practice such that the trainee shall be able to
a. Identify suitability of MT for material and inspection procedure.
b. Develop inspection techniques and procedure that shall be followed
c. Analyze, interpret and evaluate the test results.

COURSE CONTENTS

Level I Course Outline

1. Basic of Magnetism,
2. Magnetization Techniques,
3. Inspection Mediums,
4. Inspection Techniques,
5. Indication Classification,
6. Test Equipments and Accessories
7. Demagnetization,
8. Types of Discontinuities.

Level II Course Outline

Review of Level I Course and

1. Selection of Techniques,
2. Codes, standards and Procedures
3. Acceptance Standards
4. Manufacturing Process and Discontinuities,
5. Interpretation of Indications,
6. Preservation of Indications,
7. Evaluation of Test Equipment

UT LEVEL I PRACTICAL TRAINING

Yokes, Prods, Headshot, Central Conductor, Coil Techniques, using dry, wet ordinary and wet fluorescent powders, Demagnetisation

UT LEVEL II PRACTICAL TRAINING

Same as Level-I + Interpretation, evaluation and recording of test results

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NDT TRAINING & CERTIFICATION COURSE - LIQUID PENETANT TESTING

LEVEL I & II — 16 – Hours (2 Days)

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience				
Training	Level I	: 04 hrs	Level II : 08 hrs	Total : 12 -hrs
Experience	Level I	: 70 hrs	Level II : 140 hrs	Total : 210 - hrs

OVERVIEW

The PT course is presented in a manner that promotes understanding and the ability to make immediate application. This is an excellent course for NDT trainees who wants to have Level I and II training in order to qualify for certification as well as facility personnel who are responsible for or oversee the application of Liquid Penetrant Testing

COURSE CONTENTS

Level I Course Outline

1. Basics of Penetrant testing,
2. Penetrant groups,
3. Pre-cleaning methods,
4. Penetrant testing methods and techniques,
5. Types of developers,
6. Inspection procedures,
7. Sensitivity & resolution checking of test systems
8. Types of discontinuities.

Level II Course Outline

Review of Level I Course and

1. Selection of techniques,
2. Manufacturing processes and discontinuities,
3. Interpretation of indications,
4. Preservation of indications,
5. Evaluation of test materials.
6. Penetrant materials quality control
7. Codes, standards and procedures

PT LEVEL 1 PRACTICAL TRAINING

Visible (Red) and fluorescent Penetrant testing of various types of engineering components using dry, wet, solvent suspended developers.

PT LEVEL II PRACTICAL TRAINING

Same as for Level I + Interpretation and Evaluation

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NDT TRAINING & CERTIFICATION COURSE - RADIOGRAPHY TESTING

LEVEL I & II — 40 – Hours (5 Days)

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience				
Training	Level I	: 40 hrs	Level II	: 40 hrs
Experience	Level I	: 210 hrs	Level II	: 630 hrs

OVERVIEW

The course is intended to provide through grounding in the principle of Radiographic Testing-RT and fundamentals of material and process such that the trainee would be able to

a. Identify suitability of RT for the material and inspection technique
b. Develop techniques and procedures that can be followed by a Level I operator
c. Analyse the test result and document the same
d. Be familiar with codes, standards and specifications for RT to evaluate results of the tests
e. Be conversant with all statutory and safety norms of the authorities under jurisdiction

COURSE CONTENTS

Level I Course Outline

1. Nuclear Physics-Interaction of Radiation with Matter,
2. Shielding, Radiation Detectors, Biological Effects,
3. Radiation Protection, Basic Rules & Techniques,
4. Sources of Radiation and their characteristics,
5. Film Radiography
6. Film Processing,
7. Inspection Techniques and Procedures,
8. Sensitivity & Definition, I.Q.I"s, Other Accessories,
9. Types of Discontinuities.

Level II Course Outline

Review of Level I Course and

1. Non-conventional Radiography
2. Techniques in radiography
3. Codes, standards and Procedures
4. Acceptance Standards,
5. Manufacturing processes and discontinuities,
6. Interpretation of Radiographs

PT LEVEL 1 PRACTICAL TRAINING

Radiography of Castings and welds using X-ray and Gamma ray

PT LEVEL II PRACTICAL TRAINING

Same as level-I + Interpretation, evaluation of Radiographs, recording of test results and preparation of test reports

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NDT CERTIFICATION COURSE ON VISUAL TESTING

LEVEL I & II — 24 – Hours (3 Days)

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience		
Training	Level I : 08 hrs	Level II : 16 hrs
Experience	Level I : 70 hrs	Level II : 140 hrs

COURSE OBJECTIVES

a. Identifying various weld discontinuities
b. Understanding the relevant welding technology related to visual inspection
c. Understanding the need for documentation in welding
d. Familiarity with codes and standards related to inspection requirements
e. Carrying out inspection of parent materials and consumables
f. Perform visual inspection of welds, report on them and assess their compliance with specified
g. Gaining sufficient knowledge to successfully complete the CSWIP 3.0 Visual Welding Inspector examinations

COURSE CONTENTS

1. Fundamentals of light and lighting
2. Physiology of vision
3. Fundamentals of Imaging
4. Visual Weld testing practices
5. Effect of fatigue
6. Fibre optic Bore scopes
7. Documentation of visual testing
8. Analysis of visual testing

VT LEVEL II PRACTICAL TRAINING

Light Intensity Measurements, Evaluating discontinuities in Cast, Rolled, Forged, Weldedand inspection of engineering components

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TRAINING ON ULTRASONIC TESTING OF WELDS (TKY JOINTS)

LEVEL II 2 Days

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience		
Training		16 hrs
Experience	Level II Experience	400 hrs

OVERVIEW

This specialized course is presented in a manner that promotes understanding and the ability to conduct T-K-Y Joints Ultrasonic inspection. This is an excellent course for practicing engineers to learn in depth concepts of critical weld examinations. This course covers underlying concepts of TKY weld examination of offshore structural fabrication as per API RP 2X and AWS D1.1

COURSE CONTENTS

• API-RP 2X (Tubular Connections)
1. Selection of probes.
2. Construction of DAC.
3. Evaluation of defects..
4. Acceptance criteria

• AWS D 1.1 (Non tubular connection Steel Structures)
1. Statically loaded.
2. Cyclically loaded Structures.

• Construction of weld cross section involving curvature using profile-gauge and other methods
• Estimating change of angle, beam-path, surface distance for curved surfaces
• Construction of a flaw locating rule for T K Y Weld Inspections
• Applying acceptance criteria
• Ultrasonic inspection report preparation

PRACTICAL TRAINING

• Sample Test Specimens containing T, K, Y welded joints on plates and pipes

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NDT COURSE ON ULTRASONIC THICKNESS TESTING

LEVEL II (Limited Certification) 2 Days

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience	
Training	Level II : 08 - hrs
Experience	Level II : 40 - hrs

COURSE OBJECTIVES

To provide a basic knowledge of ultrasonics to enable a participant to carry out thickness gauging tests according to an established procedures. The course is especially designed to provide a sound theoretical knowledge and practical skills for carrying out ultrasonic thickness testing

COURSE CONTENTS

1. Introduction
2. Ultrasonic Fundamentals
3. Ultrasonic Transducers - Construction and Operation
4. Longitudinal Waves
5. Interfaces
6. Effects of Reflector/Test Geometry
7. Pulse-Echo Test Set up
8. Couplants and Coupling Techniques
9. Ultrasonic Instrumentation
10. Thickness Measurement

LEVEL II PRACTICAL TRAINING

Ultrasonic thickness testing of pipes, tubes, hollow machined components, castings, plates and corroded parts

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CERTIFICATION COURSE ON RADIOGRAPHIC FILM INTERPRETATION

LEVEL II 3 Days

As per ASNT SNT – TC – 1A – 2006 Recommended Qualification Hours for Initial Training and Experience	
Training	Level II : 18 - hrs
Experience	Level II : 22 - hrs

COURSE OBJECTIVES

a. Understand the basic principles of the radiographic inspection procedure, understand the radiographic film processing, procedures, recognize limitations in exposure quality and understand potential causes of processing artifacts

b. Assess radiographic quality and understand viewing condition requirements;

c. Interpret radiographic codes and specifications and write reports based on code requirements;

d. Understand origins of defects and locate and recognize radiographic images of defects with a high probability of detection

COURSE CONTENTS

Course outline

1. Review of the Radiographic Variables Related To Film Interpretation
2. Film
3. Radiographic Viewing
4. Radiographic Image Quality
5. Exposure Techniques
6. Discontinuities
7. Radiographic artifacts
8. Codes, Procedures, and Written Practices
9. Radiographic Report Forms

Level II Practical Training

Calibrating and using densitometers, evaluating radiographs related to casting and welds