



COURSE TITLE : **ULTRASONIC TESTING
LEVEL-I (ASNT: SNT-TC-1A: 2011)**

SPONSORING DEPARTMENT : **NON DESTRUCTIVE TESTING (NDT) TRAINING CENTER**

COURSE DESCRIPTION:

This course will provide an understanding of the Fundamentals, and the person will be able to perform Specific Calibrations, Specific Examinations & Record Results.

LEARNING OBJECTIVES:

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| 1. Personnel Certification | 8. Attenuation |
| 2. Manufacturing discontinuities | 9. Thickness measurement |
| 3. Wave modes | 10. Immersion testing |
| 4. Acoustic impedance | 11. Flaw detection - 0 degree |
| 5. Refraction and reflection | 12. Specific angle probe calibration |
| 6. Piezoelectric transducers | |
| 7. Pulser receiver | |

COURSE OUTLINE:

- Hands-On Practical on many corroded specimens and Lamination check for Plate & Pipes.
- Hands-On Practical on Flawed forged specimens.
- Review & Discussions.
- Mock Up Tests, Home Works, and Examinations.
- Test will be conducted in 3 methods:
1. General 2. Specific 3. Practical
- The candidate successfully completes the course if he gets a minimum score of 70% in each test (General, Specific and Practical) and a minimum of 80% for the average of 3 tests.

WHO SHOULD ATTEND THIS COURSE:

- Should be High School graduate of science branch (minimum recommended level of education).
- Should have a minimum experience of 210 hours in method and 400 hours in NDT.
- Certificates: Near Vision acuity (Jaeger Number 2 or Ortho-Rater 8), and Color Contrast Differentiation has to be submitted at the time of registration.

METHODOLOGY (THEORY/LAB. OR BOTH):

Theory and Lab.

MEDIUM OF INSTRUCTION:

English (course materials and visual aid packages are in English).

COURSE DURATION: 1 week

HOURS PER DAY: 8 hours

TOTAL HOURS: 40 hours



COURSE TITLE : **ULTRASONIC TESTING**
LEVEL-II (ASNT: SNT-TC-1A: 2011)

SPONSORING DEPARTMENT : **NON DESTRUCTIVE TESTING (NDT) TRAINING CENTER**

COURSE DESCRIPTION:

Fundamentals: Ultrasonic sound beams: wave travel modes, reflection, refraction, scattering, and attenuation. Equipment: Testing, calibration & operation. Specific application: welded joint & forging. Interpretations and evaluations of test results. The trainee will be capable of making independent decisions after referring to the relevant codes and standards.

LEARNING OBJECTIVES:

- ❑ Basic operation of a pulse echo system; Pulse length and considerations for penetration and resolution requirements.
- ❑ Definition of penetration and resolution; pulse damping; Pulse repetition frequency; the piezoelectric phenomenon; The "A" scan presentation, Basic design and operation of a general purpose ultrasonic flaw detector.
- ❑ Basic design and operation of transducers; Types of waves and their characteristics; Refraction and mode conversion.
- ❑ Practical consideration of sound velocity; Acoustic impedance and practical considerations.
- ❑ Refraction index; Beam physics; Review of the basic operation of an immersion testing facility; the advantages and disadvantages of the techniques; Focus transducer technology; Calculating water path distance.
- ❑ Horizontal linearity/vertical linearity; near surface resolution/far surface resolution; sensitivity/ signal to noise ratio; Distance Amplitude Correction (DAC); Evaluation of flaws for type of defect.
- ❑ Interpreting results based on ASTM / ASME standards and specifications.
- ❑ Interpret the Company Procedure to perform acceptance/rejection.

COURSE OUTLINE:

- ❑ Hands-On Practical on many weld specimens with Plate, Pipe, T, Nod and Nozzle configurations.
- ❑ Hands-On Practical on Flawed forged specimens.
- ❑ Review & Discussions.
- ❑ Mock Up Tests, Home Works, and Examinations.
- ❑ Test will be conducted in 3 methods:
1. General 2. Specific 3. Practical
- ❑ The candidate successfully completes the course if he gets a minimum score of 70% in each test (General, Specific and Practical) and a minimum of 80% for the average of 3 tests.

WHO SHOULD ATTEND THIS COURSE:

- ❑ Should be High School graduate of science branch (minimum recommended level of education).
- ❑ Should have a minimum experience of 630 hours in method and 1200 hours in NDT.
- ❑ Certificates: Near Vision acuity (Jaeger Number 2 or Ortho-Rater 8), and Color Contrast Differentiation has to be submitted at the time of registration.

METHODOLOGY (THEORY/LAB. OR BOTH): Theory and Lab.

MEDIUM OF INSTRUCTION:

English (course materials and visual aid packages are in English).

COURSE DURATION: 2 weeks

HOURS PER DAY: 8 hours

TOTAL HOURS: 80 hours