

Phased Array Ultrasonic Testing - Level II

Training 80 hours
Training Course Outline

SCOPE

This course introduces the basic principles of ultrasonic phased arrays and prepares the candidate use Phased Array for ultrasonic examinations. Training will include practicals on plates/pipes with embedded flaws

The training is conducted over a two week period to meet the requirements of SNT-TC-1A 2024.

PREREQUISITE

Prerequisite for PAUT Class is UT II – 80 hours

TRAINING MODULES

Module 1: Phased Array Level II Certification as per SNT-TC-1A 2024

Module 2: Phased Array Physics

- Beam Profile of a Conventional Probe
- Near Field and Beam Spread
- Conventional Focusing
- Phased array Focusing using Time Delays
- Beam Steering and Element Size
- Menus, Submenus

Module 3: Omniscan Instrument Menus

- UT Settings, Gain, Sound path range
- Angle range
- Focal laws

Module 4: Omniscan Setups

- Probe and Wedge selection
- Straight beam
- Angle beam

Module 5: Probe and Wedge

- Entering Probe
- Entering Wedge

Module 6: Depth Calibration

- Velocity
- Wedge delay

Module 7: Reference Level Calibration

- Sensitivity: Equalizing amplitude over angles for single depth
- Time Control Gain TCG: Equalizing amplitude over angles for multiple depths

Module 8: Element Check

Module 9: Weld Inspection

- Setup
- Probe/Part
- Welding codes and TCG Calibration
- Scanning Weld Samples

Module 10: Straight Beam Inspection

- Probe Selection
- Focal law
- Sensitivity Calibration
- Sweep Angle

Module 11: Flaw Definition and Sizing

Module 12: Encoded Scans

- Setup of scanner
- Encoder Calibration
- Scanning Weld Samples

Module 13: PAUT in lieu of RT

- ASME Section V, Article 4, Appendix VIII and IX
- ASME Section VIII, Section 7.5.5 (previously Code Case 2235-09)
- B31.3 Code Case 181-2, Use of Alternate Acceptance Criteria
- Examples of Accept/Reject

Module 14: Phasor Menus and Setup

- Menus
- Setting
- Setting sectorial scan

Module 15: Phasor Calibration

- Sound velocity
- Wedge Delay
- Sensitivity
- TCG

Module 16: Inspection of stainless steel, duplex steels and A 625 welds using refracted L-waves

- Generating of Refracted L-waves
- Limitation of Refracted L-waves
- Inspection of welds in stainless steels and duplex steel
- Inspection of A625 closure welds
- Inspection of A625 clad

References

Anmol Birring, "Phased Array Ultrasonic Testing – A Tutorial" Quality Magazine, July 2023

EXAMINATIONS

- General
- Specific
- Practical

Candidates must score a minimum of 70% in each written tests, 80% in practical test and a 80% average for all the three tests.



Birring NDE Center

515 Tristar Drive
Webster, Texas 77598
832-533 8366
email: training@nde.com
www.nde.com