

Ultrasonic Phased Array- Level II

Specific 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 2020.



Phased Array Level II training. Equipment shown is Omniscan MX 32:128,

TRAINING

Module 1: Phased Array Certification

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

Module 3: Omniscan Instrument Menus

- Menus, Submenus
- UT Settings, sweep angle range, Focal laws

Module 4: Omniscan Setups

- Probe and Wedge selection
- Straight beam and Angle beam

Module 5: Probe and Wedge

Module 6: Depth Calibration

- Wedge delay
- TCG

Module 7: Reference Level calibration

Module 8: Element Check

Module 9: Weld Inspection

- Setup
- Probe/part
- Scanning Weld Samples
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Module 10: Straight Beam Inspection

- Probe Selection
- Focal law
- Sweep Nagle

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: Special Applications; 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



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