Ultrasonic Phased Array- Level II

Specific Training 80 hours

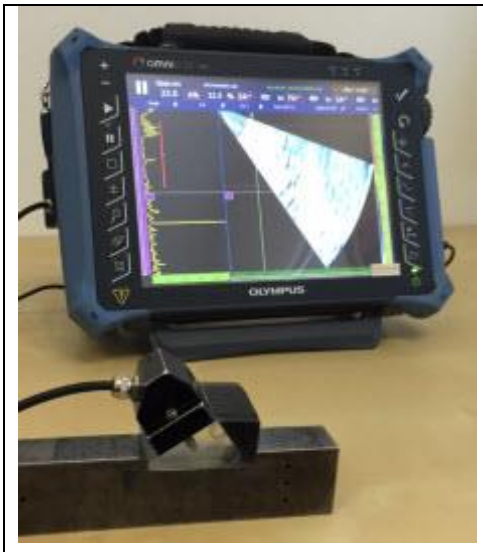
Training Course Outline

The Phased Array Level II training includes the Principles of Ultrasonic Phased Array Principles. The module will also cover PAUT in lieu of Radiography
The prerequisite for this Class is UT Level II

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 Level II Requirements of SNT-TC-1A.

PAUT Week 1 (40 hours): **Basic Principles of Phased Arrays and Manual PAUT**
PAUT Week 2 (40 hours): **Encoded Scans, Omni-PC and Analysis**



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

TRAINING

Training is conducted in Modules

Module PA1A: Phased Array Certification

Module PA 1B: 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 PA2: Phased Array Technology

- Probe frequency, element size and Aperture
- L-wave Probes
- S-wave Probes
- Probe definition

Module PA3 Phased Array Equipment
- Starting the instrument
- Navigating Menus
- Submenus

Module PA4: Omniscan Menus and Setups
- Navigation
- Menus, Submenus
- UT Settings, Focal laws
- Straight beam and Angle beam

Module PA5: Omniscan Calibration
- Sound velocity
- Wedge Delay
- Sensitivity
- TCG

Module 6 PhasoOmniPC – Analysis Software
- Loading data
- Analysis tools

Module 7: Phasor Menus and Setup
- Menus
- Setting
- Setting sectorial scan

Module PA8: Phasor calibration
- Sound velocity
- Wedge Delay
- Sensitivity
- TCG

Module PA9: Element Check
- Element Check

Module 10: Straight Beam Inspection
- Probe Selection
- Focal law
- Sweep Nagle

Module 11: Weld Inspection
- Setup
- Probe/part
- Scanning Weld Samples

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

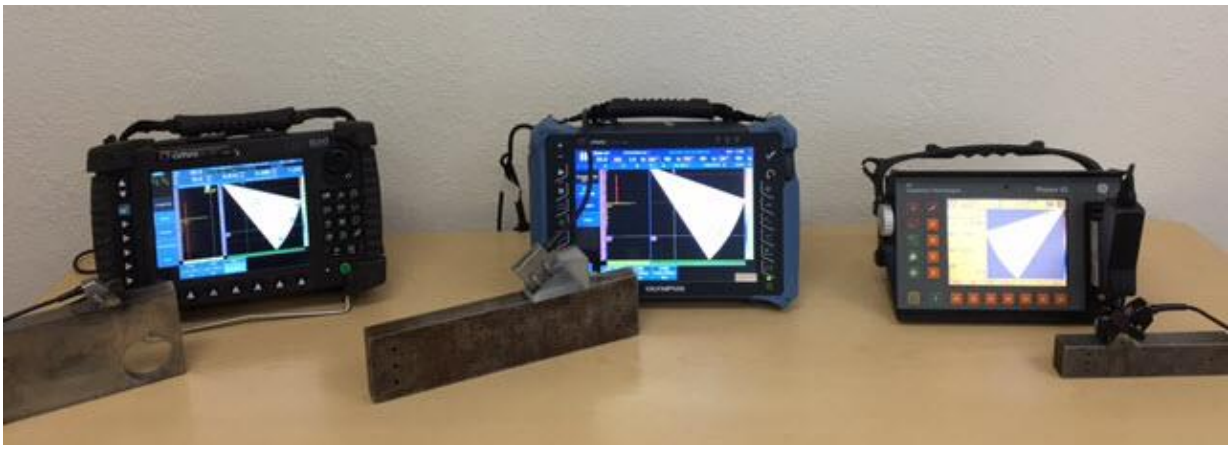
Module 14: Special Applications; Inspection of stainless steel, duplex steels and A 625 welds using refracted L-waves

- 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 S. Birring, "Selection of Phased Array Parameters for Weld Testing", *Materials Evaluation*, vol 66, Number 9, September 2008, p 931-934

Anmol S. Birring, "Sizing Discontinuities by Ultrasonics", *Materials Evaluation*, vol 68, Number 11, November 2010, p 1208-1215



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