

# Eddy Current Testing Level I

Level I - 40 hours

Training Course Outline

## SCOPE

This course prepares a candidate to Perform Surface Eddy Current Inspection and

- Perform Specific Calibrations
- Specific NDT
- Specific Evaluations for Accept or Reject Determinations according to written Instructions
- Record Results

## TRAINING

Training material is presented in modules that are followed by quizzes



Eddy Current Equipment (a) Surface inspection Hocking, Nortec 1000, GE Phasec 3D  
(b) Nortec and TC 5700 for Tubing

## PERSONNEL CERTIFICATION

ASNT SNT-TC-1A 2020

NAS 410 Rev 5

Training, experience and examination requirements

Training Requirements

- Recommended Course Outline
- Training Hours
- Practicals
- Quizzes and examinations

## DISCONTINUITIES

- Types of Discontinuities: Inherent, Processing and Service
- Inherent: related to solidification of metal
- Primary Processing Discontinuities: Rolling, Forging, Drawing, Extruding
- Secondary Processing Discontinuities: Grinding, Heat Treating, Machining, Welding, Plating

- Service Discontinuities: Erosion, Wear, Fatigue, Corrosion, Creep

### **Module 1: Electricity**

- Voltage, Current and Resistance
- Ohm's Law
- Inductance
- Impedance

### **Module 2: Magnetism**

- Magnetism
- B-H Curve
- Permeability

### **Module 3: Electromagnetism**

- Faraday's Law
- Lenz's Law
- Mutual Inductance

### **Module 4: Introduction to Eddy Current Generation**

- Generation of Eddy Currents
- Impedance changes by Eddy Currents

### **Module 5: Generation of Eddy Currents**

- Standard Depth of Penetration
- Effect of frequency, conductivity and Permeability

### **Module 6 – Impedance Plane – Surface Inspection**

- Conductivity Curve
- Lift Off Curve
- Permeability

### **Module 7: ECT Instrumentation**

- Impedance Displays
- Strip Charts
- Absolute and Differential Modes
- Portable Surface Inspection Equipment

### **Module 8: Eddy Current Probes**

- Surface Probes
- Encircling Probes
- Tubing Probes

### **Module 9A: Surface Inspection and Applications**

- Probe Selection
- Frequency Selection
- Setting the Display
- Edge Effect

- Applications

### **Module 9B: Inspection of Carbon Steel Welds**

- Weld Probes
- Scan Plans
- Equipment Settings

### **Module 10: Test Parameters**

- Frequency
- Filtering
- Suppression of Permeability variations

### **SPECIFIC TRAINING**

- Surface ECT Procedure
- ASTM E-426

### **PRACTICAL TRAINING**

- Setting up the Instrument
- Selection of Frequency
- Calibrations
- Exercises
  - Conductivity curves
  - Lift Off Curves
  - Thickness Curves
  - Clad thickness curves
  - Notch standard curves
- Prepare test Reports

### **TRAINING EXAMINATIONS** (Not Applicable towards Certification)

- General
- Specific
- Practical Tests

Candidates must score a minimum of 70% in General and Specific tests and 80% in practical test to achieve a minimum average of 80% for all the three tests.



## **Birring NDE Center**

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