



**National Training Society**

## **Ultrasonic Examination Written Instruction Guidelines**

- a) foreword (scope, reference documents);
- b) personnel;
- c) apparatus to be used, including settings;
- d) product (description or drawing, including area of interest and purpose of the test);
- e) test conditions, including preparation for testing and equipment calibration;
- f) detailed instructions for application of the test;
- g) recording and classifying the results of test;
- h) reporting the results.

Note: Although to write instructions a candidate may obtain inspiration from the general information accompanying the test specimen, he or she should remember that the NDT Certifying Agency requires a specific instruction to inspect a specific specimen.

### **A) Foreword (Scope, Reference Documents);**

#### **Scope**

- Method of Inspection (contact, shearwave)
- Description of anticipated indications (surface or subsurface)
- A written instruction that will permit a Level 1 CGSB certified Ultrasonic inspector to follow your steps and duplicate your results.

#### **Reference Documents**

- Company safety and quality procedures
- MSDS sheets
- Company inspection procedure
- CGSB 48.9712
- Ultrasonic instrument operating manual

### **B) Personnel;**

- Carry out NDT according to this instruction under the supervision of a certified Level 2 or 3 personnel.
- Perform the following tasks:
  - Setup the equipment.
  - Perform the test.
  - Record and classify the results of the test.
  - Report the results.

### **C) Apparatus To Be Used, Including Settings;**

- Flaw detector (make, model, serial #)
  - Cal due date
  - Range
  - Velocity
  - Zero offset
  - Frequency
  - Reference dB
  - Scan dB
- Transducers (make, model, serial #)
  - Diameter
  - Frequency
- Wedge (angles used)
- Cables (BNC to microdot, length)
- Couplant (grease)
- Reference blocks (type, material, serial #)
- Wax crayon, pencil
- Rags, measuring devices, drawing aids

**D) Product (Description or Drawing, Including Area of Interest and Purpose of the Test);**

- Area of interest 100% of weld, HAZ and base material
- Locate surface and subsurface indications
- Part number
- Material type
- Dimensions of test part (length, width, thickness)
- Welding preparation (bevel, groove, tee, lap, transition)
- Welding process (SMAW, GMAW, FCAW, GTAW)
- Part history (in-service or not)
- Surface Condition (clean, no paint, scale, rust or spatter etc)
- Drawing with dimensions and area of interest (reference to drawing)

**E) Test Conditions, Including Preparation for Testing and Equipment Calibration;**

- Examination carried out in clean, dry shop environment (20°C)
- Test specimen free of rust, scale, spatter etc.
- Step by step description of how to calibrate and set sensitivity
  - Time base, exit point, actual wedge angle, etc.
  - Sensitivity (DAC or W59)

**F) Detailed Instructions for Application of the Test;**

- Precleaning
- Visual inspection of test specimen and equipment
- Calibrate as per section E
- Scan plan (coverage, scanning surfaces)
- Step by step description of how to properly examine the part
- Diagram showing scanning patterns (raster, oscillate, overlap, transverse)
- Maximizing/sizing technique and evaluation of indications
- Post cleaning of test specimen

**G) Recording and Classifying the Results of Test;**

- Find all reportable indications and complete the reporting sheets provided with the specimen.
- Complete the reporting sheets/illustrations provided with the specimen by drawing the appearance of **all** reportable indications on the illustrations provided as accurately as possible and make a preliminary interpretation of your findings.
- Show the relative size, shape, length and location of the indications.
- All indications shall be evaluated as either “accepted” or “rejected” as per the instructions provided.

**H) Reporting the Results.**

- Record results of visual & ultrasound examination
- Create and complete drawing with all measurements and location of reportable indications (X,Y).