



Level I & II Visual Testing

Training Course - VT-100

COURSE: A 24 hour course intended to address the body of knowledge outlined in SNT-TC-1A.

REFERENCE & TRAINING MATERIAL:

1. EPRI NDE Center - Visual Examination series 1 - 4
2. Quality Control Handbook - 3rd. Ed. - J. M. Juran
3. Certification Manual for Welding Inspectors - American Welding Society
4. Visual and Optical Testing - Nondestructive Testing Handbook 2nd Ed. - American Society for Nondestructive Testing.
5. Level I, II, and III Visual Testing Study Guide - American Society for Nondestructive Testing

1.0 Introduction

- A. Class rules and policies
 1. Grading System
 - a. Mid-Course Examination and Quizzes will not count towards final grade.
 - b. Final Examinations - A 30 question Level I/II comprehension examination will be given at the end of the class. The requirements to pass the course is a 70% score or greater on each examination.
 2. Purpose of Visual Testing
 3. Definition of Visual Testing
 4. Overview of Applications
 5. Quiz

2.0 Fundamentals

- A. Definition of Visual Testing
- B. When is Visual Testing Performed
- C. Why is Visual Testing Performed
- D. How is Visual Testing Performed
- E. Who Performs Visual Testing
- F. Light Characteristics
- G. Types of Light
- H. Light Sources
- I. Light Measurement
- J. Lighting Requirements
- K. Vision & the Eyes
- L. Vision Disorders
- M. Visual Acuity
- N. Visual Perception
- O. Object Attributes, Environmental, and Physiological Factors
- P. Review
- Q. Quiz



3.0 Testing Equipment - Direct Visual Testing

- A. Boroscopes
- B. Fiberscopes
- C. Videoscopes
- D. Gages and Measuring Devices
- E. Magnifiers and Optices
- F. Machine Vision
- G. Quiz

4.0 Metrology

- A. Basic Metric Units
 - 1. Decimal System
 - 2. Scientific Notation
 - 3. Conversions
 - 4. Exercises

5.0 Castings

- A. Permanent Mold Castings
- B. Non-Permanent Mold Castings
- C. Investment Castings
- D. Casting Defects

6.0 Other Testing Methods

- A. NDT Overview
 - 1. Magnetic Particle
 - 2. Liquid Penetrant
 - 3. Radiography
 - 4. Ultrasonic
- B. Destructive Testing
 - 1. Chemical Tests
 - 2. Metallographic Tests
 - 3. Mechanical Tests
 - 4. Hardness Testing
 - 5. Tensile Testing
 - 6. Bend Testing
 - 7. Impact Testing
- C. Sampling
- D. Statistical Process Control
- E. Calibration
- F. Bolting and Tensioning
- G. Pressure Vessels
- H. Pumps and Valves

7.0 Weld Inspection

- A. Welding Processes
- B. Weld Joints
- C. Weld Positions
- D. Weld Anatomy and Discontinuities
- E. Welding Symbols



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- F. Weld Defects
- G. Weld Evaluation of Discontinuities
- H. Quiz
- I. Training Workbook
- I. Weld Evaluation Exercises

8.0 Quality Assurance and Quality Control

- A. Quality Systems
- B. Quality System Elements
- C. Quality Engineering
- D. Quality Control

9.0 Review and Final Examination

- A. Final Comprehension Examination - 30 questions - closed book.
- B. Instructor Evaluation