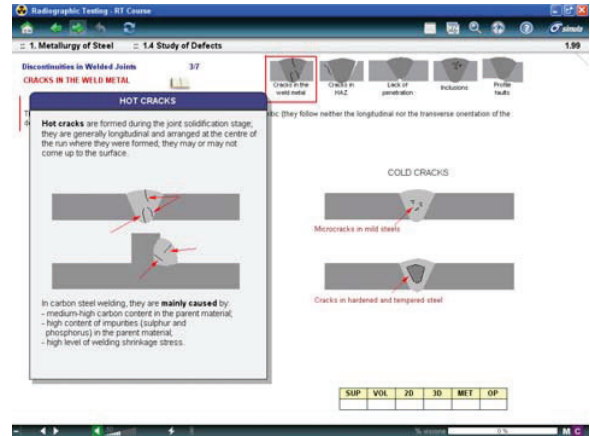


## RT - RADIOGRAPHIC TESTING

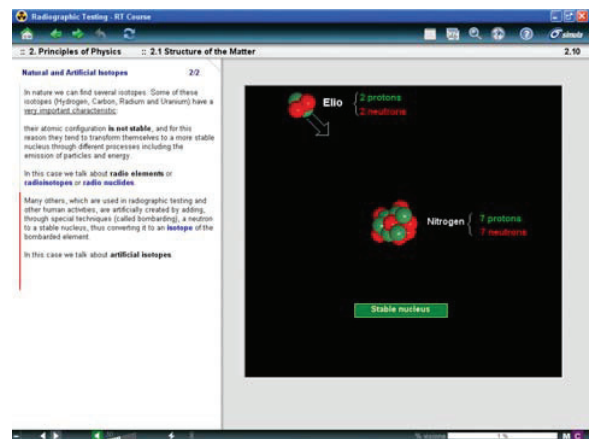
### 1. METALLURGY OF STEEL

- 1.1 Production of Carbon Steels
- 1.2 Heat Treatments
- 1.3 Mechanical Tests
- 1.4 Types of Fracture
- 1.5 Steel Products
- 1.6 Study of Defects
- Self-evaluation Tests



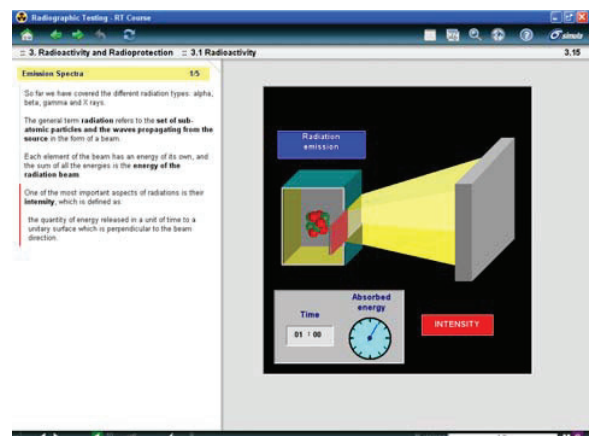
### 2. PRINCIPLES OF PHYSICS

- 2.1 Structure of the Matter
- 2.2 Electromagnetic Waves
- 2.3 Electricity
- Self Evaluation Test



### 3. RADIOACTIVITY AND RADIOPROTECTION

- 3.1 Radioactivity
- 3.2 Radioprotection
- Self Evaluation Test



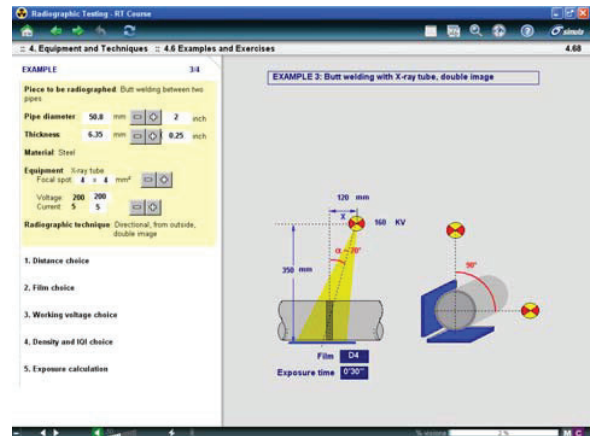
**NDT Supply.com, Inc.**  
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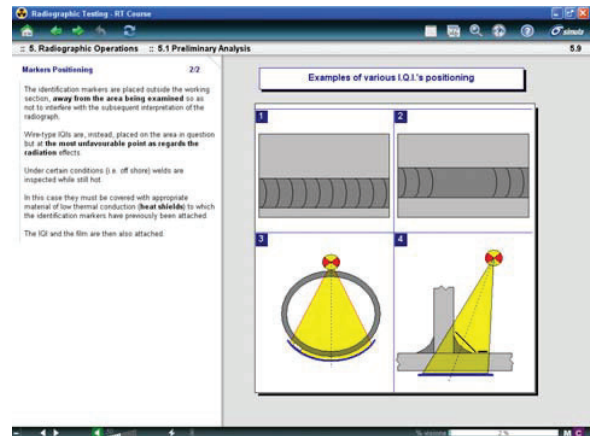
#### 4. EQUIPMENT AND TECHNIQUES

- 4.1 Radiation Generators
- 4.2 Films
- 4.3 Image Quality
- 4.4 Exposure Factors
- 4.5 Radiographic Techniques
- 4.6 Examples and Exercises
- Self Evaluation Test



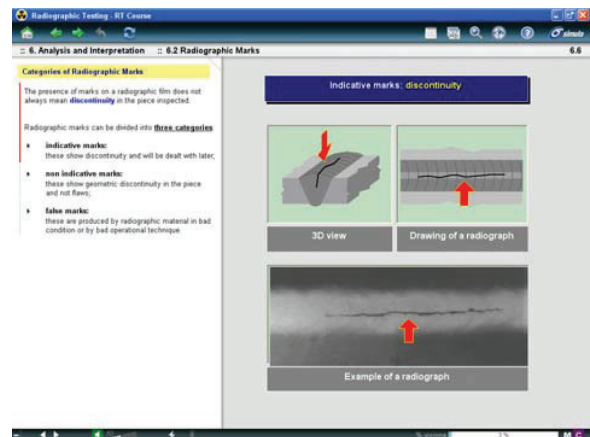
#### 5. RADIOGRAPHIC OPERATIONS

- 5.1 Preliminary Analysis
- 5.2 Radiographic Inspection
- 5.3 Developing
- Self Evaluation Test



#### 6. ANALYSIS AND INTERPRETATION

- 6.1 Analysis Instruments
- 6.2 Radiographic Marks
- 6.3 Radiograph Reading
- Self Evaluation Test



#### VIDEOTHEQUE

**FINAL TEST:** Over 600 final tests.

**NORMS:** Over 100 norm references

## RADIOGRAPHIC TESTING: DETAILED INDEX

### **1. METALLURGY OF STEEL ([>> RT](#))**

#### **1.1 Production of Carbon Steels**

- Manufacturing Process
- Iron-Carbon Diagram
- Addition of Elements
- Classification of Steels
- Designation of Steels
- Stainless Steels

#### **1.2 Heat Treatments**

- Full Annealing
- Normalisation
- Hardening
- Tempering
- Thermo-chemical Treatments:  
Cementation / Nitriding

#### **1.3 Mechanical Tests**

- Tensile Test
- Hardness Test
- Resilience Test
- Creep Test

#### **1.4 Types of Fracture**

- Tough Fracture
- Brittle Fractures
- Fatigue Fractures

#### **1.5 Steel Products**

- Classification of Products
- Forged Pieces, Castings
- Rolled Plates, Pipes
- Welded Joints

#### **1.6 Study of Defects**

- Discontinuities in Steel
- Discontinuities in Forged Pieces
- Discontinuities in Castings
- Discontinuities in Rolled Plates
- Discontinuities in Pipes
- Discontinuities in Welded Joints

#### **1.7 Self-evaluation Tests**

- Heat Treatments
- Mechanical Tests
- Types of Fractures
- Production of Carbon Steels
- Study of Defects

### **2. PRINCIPLES OF PHYSICS ([>> RT](#))**

#### **2.1 Structure of the Matter**

- Structure of the Atom
- Natural and Artificial Isotopes
- Structure of Metals

#### **2.2 Electromagnetic Waves**

- Wave Concept
- Wave Parameters
- Electromagnetic Waves

#### **2.3 Electricity**

- Electrical Charge
- Electrical Field
- Potential Difference
- Electrical Current
- Resistance
- Joule Effect
- Transformer

#### **2.4 Self Evaluation Test**

- Structure of the matter
- Electromagnetic waves
- Electricity

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### **3. RADIOACTIVITY AND RADIOPROTECTION (>> RT)**

#### **3.1 Radioactivity**

- Radiations
- Decay
- X-rays
- Emission Spectra
- Penetration Power
- Ionization
- Absorption
- Unit of Measure

#### **3.2 Radioprotection**

- Meaning of Dose
- Biological Effects of Radiation
- Dose Limits
- Radiation Protection
- Radiation Measurement

#### **3.3 Self Evaluation Test**

- Radioactivity
- Radioprotection

### **4. EQUIPMENT AND TECHNIQUES (>> RT)**

#### **4.1 Radiation Generators**

- X-ray Equipment
- Gamma Ray Equipment
- Crawler-Fitted X and Gamma Sources

#### **4.2 Films**

- Film
- Sensitometric Curves
- Types of Films
- Film Choice
- Intensifying Screens
- Comparison Between X and Gamma Rays

#### **4.3 Image Quality**

- Sensitivity
- Image Quality Factors
- Image Quality Indicators
- Synthesis of Image Quality Parameters

#### **4.4 Exposure Factors**

- Exposure Diagrams
- Correction Factors
- Equivalent Radiographs
- Slide Rule for Gamma-Rays

#### **4.5 Radiographic Techniques**

- Weld Testing
- Casting and Forging Examination

#### **4.6 Examples and Exercises**

- EXAMPLES
- EXERCISES

#### **4.7 Self Evaluation Test**

- Radiation generators
- Films
- Image quality
- Exposure factors
- Radiographic techniques

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## 5. RADIOGRAPHIC OPERATIONS ([>> RT](#))

### 5.1 Preliminary Analysis

- Study of the Test Piece
- Films Preparation
- Markers Positioning
- Film Positioning
- Source Positioning
- Shield Positioning
- Cordon off the Controlled Area
- Filmed Synthesis of Preliminary

Analysis

### 5.2 Radiographic Inspection

- Setting of the X-ray Parameters
- Preparation of a Gamma-ray Equipment
- Operations to Carry Out a Radiograph
- Safety During the Exposure
- Safety After the Exposure

### 5.3 Developing

- Film Preparation
- Developing Process
- Equipment for Manual Developing
- Equipment for Automatic Developing
- Filmed Synthesis of the Developing

### 5.4 Self Evaluation Test

- Radiographic inspection
- Developing

## 6. ANALYSIS AND INTERPRETATION ([>> RT](#))

### 6.1 Analysis Instruments

- Negatoscopes
- Densitometers

### 6.2 Radiographic Marks

- Categories of Radiographic Marks
- False Marks
- Imperfect Radiographs
- Indicative Marks

### 6.3 Radiograph Reading

- Conditions of the Radiograph Reading
- General Interpretation Aspects
- Visibility of the Defects
- Acceptability Standard
- Radiograph Archive
- Reading Exercise

### 6.4 Self Evaluation Test

- Analysis instruments
- Radiographic marks
- Radiograph reading

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