Radiography Interpretation Course Summary

Training hours minimum		
	Level I	**Level II**
Non-Radiographer	NA	40
Radiography Testing Level 1	NA	24

Note:

- *Training Hours maybe adjusted as described in the employer's written practice depending on the candidate's actual education level*
- *This is Limited Certification: these are NDT Level II certifications, but to a limited scope.*

Minimum Experience (Hours)			
Level I		**Level II**	
In Method	Total in NDT	In Method	Total in NDT
220	NA	220	NA

Note: *While fulfilling total NDT experience requirement, experience may be gained in more than one(1) method, however the minimum hours must be met for each method*

Number of examination questions/Practical Samples		
	Non-Radiographer	**RT Level 1**
General	40	40
Specific	20	15
Practical	10	10

Notes: *Ten (10) different check point requiring an understanding of test variables and the employer's procedural requirement should be included in this practical examination*

As per SNT-TC-1A - 2016 Recommended Practice for Personal Qualification and Certification in NDT

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Training Course Outlined

(Notes: Training should be outlined in the employer's written practice)

Level 2

For Non-Radiographer

1.0 Review of Basic Radiographic Principles
1.1 Interaction of radiation with matter
1.2 Math review
1.3 Exposure calculations
1.4 Geometric exposure principles
1.5 Radiographic-image quality parameters

2.0 Darkroom Facilities, Techniques and Processing
2.1 Facilities and equipment
2.1.1 Automatic film processor versus manual processing
2.1.2 Safe lights
2.1.3 Viewer lights
2.1.4 Loading bench
2.1.5 Miscellaneous equipment

2.2 Film loading
2.2.1 General rules for handling unprocessed film
2.2.2 Types of film packaging
2.2.3 Cassette-loading techniques for sheet and roll

2.3 Protection of radiographic film in storage

2.4 Processing of film - manual
2.4.1 Developer and replenishment
2.4.2 Stop bath
2.4.3 Fixer and replenishment
2.4.4 Washing
2.4.5 Prevention of water spots
2.4.6 Drying

2.5 Automatic film processing

2.6 Film filing and storage
2.6.1 Retention-life measurements
2.6.2 Long-term storage
2.6.3 Filing and separation techniques

2.7 Unsatisfactory radiographs - causes and cures
2.7.1 High film density
2.7.2 Insufficient film density
2.7.3 High contrast
2.7.4 Low contrast
2.7.5 Poor definition
2.7.6 Fog
2.7.7 Light leaks
2.7.8 Artifacts

2.8 Film density
2.8.1 Step-wedge comparison film
2.8.2 Densitometers

3.0 Indications, Discontinuities and Defects
3.1 Indications

3.2 Discontinuities
3.2.1 Inherent
3.2.2 Processing
3.2.3 Service

3.3 Defects

4.0 Manufacturing Processes and Associated Discontinuities
4.1 Casting processes and associated discontinuities
4.1.1 Ingots, blooms and billets
4.1.2 Sand casting
4.1.3 Centrifugal casting
4.1 .4 Investment casting

4.2 Wrought processes and associated discontinuities
4.2.1 Forgings
4.2.2 Rolled products
4.2.3 Extruded products

4.3 Welding processes and associated discontinuities
4.3.1 Submerged arc welding (SAW)
4.3.2 Shielded metal arc welding (SMAW)
4.3.3 Gas metal arc welding (GMAW)
4.3.4 Flux corded arc welding (FCAW)
4.3.5 Gas tungsten arc welding (GTAW)
4.3.6 Resistance welding

4.3.7 Special welding processes - electron beam, electroslag, electrogas, etc.

5.0 Radiological Safety Principles Review
5.1 Controlling personnel exposure
5.2 Time, distance, shielding concepts
5.3 As low as reasonably achievable (ALARA) concept
5.4 Radiation-detection equipment
5.5 Exposure-device operating characteristics

For RT Level 1

Radiographic Evaluation and Interpretation Course

1.0 Radiographic Viewing
1.1 Film-illuminator requirements
1.2 Background lighting
1.3 Multiple-composite viewing
1.4 Image quality indicator placement
1.5 Personnel dark adaptation and visual acuity
1.6 Film identification
1.7 Location markers
1.8 Film-density measurement
1.9 Film artifacts

2.0 Application Techniques
2.1 Multiple-film techniques
2.1.1 Thickness-variation parameters
2.1.2 Film speed
2.1.3 Film latitude

2.2 Enlargement and projection

2.3 Geometrical relationships
2.3.1 Geometrical un-sharpness
2.3.2 Image quality indicator sensitivity
2.3.3 Source-to-film distance
2.3.4 Focal-spot size

2.4 Triangulation methods for discontinuity location

2.5 Localized magnification

2.6 Film-handling techniques

3.0 Evaluation of Castings
3.1 Casting-method review
3.2 Casting discontinuities
3.3 Origin and typical orientation of discontinuities

3.4 Radiographic appearance
3.5 Casting codes/standards - applicable acceptance criteria
3.6 Reference radio graphs

4.0 Evaluation of Weldment
4.1 Welding-method review
4.2 Welding discontinuities
4.3 Origin and typical orientation of discontinuities
4.4 Radiographic appearance
4.5 Welding codes/standards - applicable acceptance criteria
4.6 Reference radiographs or pictograms

5.0 Standards, Codes and Procedures for Radiography
5.1 ASTM standards
5.2 Acceptable radiographic techniques and setups
5.3 Applicable employer procedures
5.4 Procedure for radiograph parameter verification
5.5 Radiographic reports