



COURSE OVERVIEW FE0791
Radiographic Testing Level-II Training & Certification
(SNT-TC-1A)

Course Title

Radiographic Testing Level-II Training & Certification (SNT-TC-1A)

Course Date/Venue

October 26-30, 2026/TBA Meeting Room,
Royal Rose Hotel, Abu Dhabi, UAE or,
Online Virtual Training

Course Reference

FE0791

Course Duration/Credits

Five days/ (40 hours)/4.0 CEUs/40 PDHs



Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art equipment.

This course is designed to provide participants the theory lectures and practical training with a preliminary understanding of Radiography Testing (RT) as per the ASNT Recommended Practice No. SNT-TC-1A for Personnel Qualification and Certification in Nondestructive Testing.



The course will discuss the basic radiographic principles including interaction of radiation with matter, math review, exposure calculations, geometric exposure principles and radiographic-image quality parameters.



The participants will be able to identify darkroom facilities and apply systematic techniques and processing for facilities and equipment, film loading, protection of radiographic film in storage, manual and automatic film processing, film filing and storage; recognize indications, discontinuities and defects in radiographic testing; enumerate the various manufacturing processes and associated discontinuities; and explain the radiological safety principles review in controlling personnel exposure, time, distance, shielding concepts, ALARA concept, radiation-detection equipment and exposure-device operating characteristics.



Radiographic viewing, application techniques, castings and weldments evaluation as well as reviewing of standards, codes and procedures for radiography will also be covered during the course.

Sample Questions for general examinations are presented in the separate question booklets that can be obtained from ASNT International Service Center. Participants will further demonstrate familiarity with and ability to operate the necessary equipment for RT, record and analyse the resultant information to the degree required as well as test flawed specimen and component and analyse the results of NDT as part of the practical training.

Course Objectives/Outcomes & Benefits for the Participants

Upon the successful completion of the course, each participant will be able to:-

- Get certified as a “*Certified NDT Level II in Radiographic Testing*”
- Review the basic radiographic principles and become familiar with darkroom facilities, techniques and processing
- Provide practical knowledge on the indications, discontinuities and defects in radiographic testing
- Enumerate the various manufacturing processes and associated discontinuities applicable for radiographic testing
- Emphasize the radiological safety principles and become acquainted with radiographic viewing
- Employ the various application techniques for radiographic evaluation and interpretation
- Carryout the evaluation of castings and weldments and explain the applicable standards, codes and procedures for radiography

Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of radiographic testing in accordance with the ASNT international standard for all engineers and other technical staff working in the field of welding technology and quality assurance of welded joints using radiographic testing and in order to investigate material with such technique.

Exam Eligibility & Structure

Exam candidates shall have the following minimum pre-requisites: -

All Participants of this course must have Level-I in RT before they can attend this Level-II course.

Initial Training & Experience Levels			
Level	Training Hours	Experience	
		Minimum Hours in RT Method	Total Hours in NDT
I	40	210	400
II	40	630	1200

A person may be qualified directly to NDT Level II with no time as a certified NDT Level I, providing the recommended training and experience consist of the sum of the hours recommended for NDT Level I and Level II.

Examinations Category & Criteria

Vision Examinations

- Near-Vision Acuity
 - This examination should ensure natural or corrected (no pharmacological agents) near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size letter at the distance designated on the chart but not less than 12 inches (30.5 cm) on a standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable. This should be administered annually.
 - Pharmacological agents (eye drops) that would improve or enhance visual acuity at any distance shall not be used
- Color Contrast Differentiation
 - This examination should demonstrate the capability of distinguishing and differentiating contrast among colors or shades of gray used in the method as determined by the employer. This should be conducted upon initial certification and at five-year intervals thereafter
 - Vision examinations expire on the last day of the month of expiration

General (Written)

- This General examinations should address the basic principles of the applicable method
- In preparing the examinations, the NDT Level III should select or devise appropriate questions covering the applicable method and techniques described by the employer's written practice and the applicable elements of the outline in ANSI/ANT CP-105
- The minimum number of questions that should be given is 40
- A valid ACCP, ASNT NDT or ASNT 9712 Level II certificate may be accepted as fulfilling the General examination criteria for each applicable method if the NDT Level III has determined that the ASNT examinations meet the requirements of the employer's written practice. This acceptance should be documented

Specific (Written)

- This specific examination should address the equipment, operating procedures and NDT techniques that the individual may encounter during specific assignments described by the employer's written practice and the applicable elements of the outline in ANSI/ASNT CP-105



- The specific examination should also cover the procedures, specifications or codes and acceptance criteria used in the NDT conducted by the employer
- The minimum number of questions that should be given is 20
- A valid ACCP, ASNT NDT, or ASNT 9712 Level II certificate may be accepted as fulfilling the Specific examination criteria for each applicable method if the NDT Level III has determined that the ASNT examinations meet the requirements of the employer's written practice. This acceptance should be documented. If this assessment cannot be accomplished, an employer-administered Specific examination should be completed

Practical

- The candidate should demonstrate familiarity with and ability to operate the necessary NDT equipment, record and analyse the resultant information to the degree required
- At least one flawed specimen or component should be tested and the results of the NDT analysed by the candidate
 - Phased Array Ultrasonic Testing and Time of Flight Diffraction Practical Examination. Flawed samples used for practical examinations should be representative of the components and/or configurations that the candidates would be testing under this technique and approved by the NDT Level III
 - Film Interpretation Limited Certification. The Practical examination should consist of review and grading of a sufficient number of radiographs to demonstrate satisfactory performance to the satisfaction of the NDT Level III. The number of radiographs should be addressed in the employer's written practice
- The description of the specimen, the NDT procedure including checkpoints and the results of the examination should be documented
- Specimens. Proficiency should be demonstrated in selecting and performing the applicable NDT technique within the method and interpreting and evaluating the results on one or more flawed specimens as appropriate for the method and approved and documented by the NDT Level III (Grading Key).
- Evaluation. The candidate should detect all discontinuities and conditions specified and documented by the NDT Level III. The written practice should address the acceptable detection rate as well as the maximum number of false calls acceptable.
- Grading. A checklist containing at least 10 different checkpoints requiring an understanding of NDT variables and the employer's procedural requirements should be included in this Practical examination. While it is normal to score the Practical on a percentile basis (*80% required*), the practical examination checklist should also contain a single checkpoint or multiple checkpoints that failure to successfully complete will result in failure of the examination. This requirement should be clearly marked on the checkpoint(s).
- A valid ACCP or ASNT 9712 Level II certificate may be accepted as fulfilling the Practical examination criteria for each applicable method if the NDT Level III has determined that the ASNT examinations meet the requirements of the employer's written practice. This acceptance should be documented. If this assessment cannot be accomplished, an employer-administered Practical examination should be completed.
- An example of a Practical examination checklist is attached as Appendix A to this Recommended Practice. The example checklist has been provided as guidance on the development of practical examinations for any method and level.

Additional Criteria

All written examinations will be closed-book except that necessary data such as graphs, tables, specifications, procedures, codes, etc., may be provided during the examination. All questions are approved by the responsible NDT Level III.



Qualification Certificate(s)

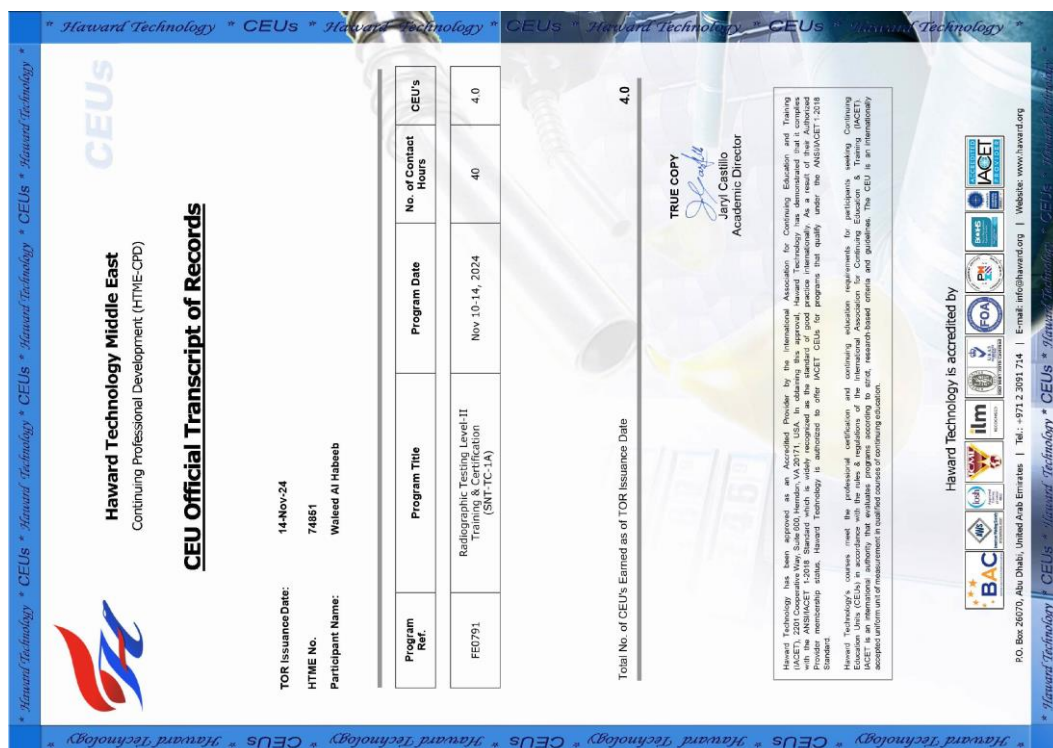
- (1) Internationally recognized Qualification Certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a “*Certified NDT Level II in Radiographic Testing*”. Qualification Certificate is valid for 5 years.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-



- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET Accredited Continuing Education Units (CEUs) earned during the course.



Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations:

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **4.0 CEUs** (Continuing Education Units) or **40 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

For classroom option: Mr. Talaat Mohamed

Mr. Talaat Mohamed, PGDip, BSc, is a **Certified Inspection Engineer (NDT-ASNT) & Certified Welding Inspector (CWI-AWS)** with **over 30 years** of extensive experience within the **Oil, Gas, Petrochemical, Petroleum and Refinery** industries. His thorough experience widely covers **Non-destructive Testing** in **Radiography, Ultrasonic, Penetrant, Magnetic Particle, Visual Testing** and **Welding Inspection**. Further, he is also an expert in **Equipment Analysis & Piping Design, Welding, Corrosion & Risk Based Inspection, Fitness-for-Service Assessment, Boiler & Pressure Vessel,**

Fabrication, Vibration, Heat Treatment, Inspection & Repair Procedures, Material Damage Mechanism, Material Failure Analysis, Mechanical Integrity, Isomerization, Distillation & Reforming Units, Pipelines, Pressure Piping, Stationary Equipment, Tank Inspection, Fired Boilers & Heaters, Heat Exchangers, Coolers, Pressure Vessels, Drums, Storage Tanks, Furnaces, Heaters, Pipelines, Columns, Reactors, Strippers and Safety Valves. He is also well-versed in UltraPIPE software, PCMS software and Lloyd's Register RBMI software as well as the API 571, API 510, API 572, API 570, API 653, API 560, Welding & Brazing Qualifications, API 573 and ASME B31.3 standards. He is currently the **Inspection General Manager** of Cairo Oil Refining Company (CORC) wherein he is responsible in developing the strategies for inspection and testing as well as designated as a certifying authority for ASNT-NDT levels certification according to SNT-TC-1A Personnel Qualification and Certification in Non-destructive Testing.

During his career life, Mr. Talaat has gained his practical and field experience through his various significant positions such as the **Inspection General Manager, Technical Studies Department Manager, Isomerization Inspection Department Manager, NDT & Inspection Section Head, Training Instructor, Technical Trainer, NDT Instructor, Inspection Engineer, QA/QC Team Leader and Team Leader** for numerous international companies like the Khalda Petroleum Company, Suez Oil Processing Co., Agiba Co., El-Nasr Petroleum Co., Suez Oil Co., General Petroleum Co., Petrobel Co., Egyptian Gas Co., Gulf Petroleum Co., as well as for Cairo Oil Refining Company, Welding Academy, GASCO and United Gas Derivatives Company.

Mr. Talaat has a **Bachelor** degree in **Mechanical Engineering** and a **Post-Graduate Diploma** in **Metallurgy & Material Engineering**. Further, he is a **Certified ASNT Level III NDT Inspector** in **Radiographic Testing (RT), Ultrasonic Testing (UT), Penetrant Testing (PT), Magnetic Particle Testing (MT) and Visual Non-destructive Testing (VT);** a **Certified Welding Inspector (CWI-AWS),** a **Certified Instructor/Trainer;** a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM);** and holds a certification in Quality Assurance, ISO 9000, API Heat Exchangers & Cooling Towers, Internal Quality System Auditing and Internal Quality System Auditing for ISO 9001/2000. Moreover, he is an active member of the American Society of Non-destructive Testing (**ASNT**), the Engineers Syndicate, the Society of Mechanical Engineers, the American Welding Society (**AWS**) and the Supreme Committee of Quality and delivered countless trainings, workshops and seminars worldwide.



OR,

For virtual option: Dr. Wael Hoziefa



Dr. Wael Hoziefa (ASNT ID# 306394), PhD, MSc, BSc, ASNT-NDT, is a **Senior NDT Weld Inspector** in **Magnetic Particle Testing (MT)** with extensive years of experience within the **Oil, Gas, Refinery** and **Petrochemical** industries. His wide expertise includes in the areas of **ASNT-NDT** Inspection & Testing, **Thermal/Infrared Testing (IR)**, **Magnetic Particles** Inspection, **Magnetic Flux Leakage**, **Metallurgical** Failure Analysis & Prevention, **Welding Technology Testing & NDT**

Procedures, Non-Destructive Testing & Engineering Materials, NDT Methods & Application, Measuring Tools Calibration & Inspection Techniques, Welding & Fabrication, Welding Processes, Welding Inspection, Welding Procedure Specification, Welding Metallurgy, Welding Quality & Control, Welding Engineering, Welding & Machining, Welding Safety, Welding Defects Analysis, Welding Joints & Coating Inspection, Forging & Welding, Metallurgy & Materials Engineering, Material Selection & Failure Analysis, Fitness-for-Service (FFS), Cathodic Protection, Process Inspection, Failure Analysis Investigation & Production, Failure Analysis Techniques, Measuring Tools Calibration & Inspection Techniques, Piping System, Pipe Testing, Pressure Testing Procedure, Welding Engineering, Welding Safety, Welding Inspection, Welding Electrodes Monitoring & Control, Leak Testing, Welding Procedure Specifications (WPS), Welder Qualification Testing, Welding & Machining, Welding Defects Analysis, Welding Technology, Welding Joints & Coating Inspection, Metal Technology, Post Weld Heat Treatment, Hardness Testing, Stream Inspection, AWS, CWI, EMI, API and ASME international codes, standards and specifications. He is currently the **General Manager wherein he is responsible in administrating trainings, inspection and testing of ASNT-NDT methods.**

Throughout his career life, Dr. Wael has gained his practical experience through his various significant positions and dedication as the **Executive Operation Manager, Operation Manager, Head of Department Educational Quality Control, Welding Engineer, NDT Leader/Inspector, QA/QC Team Leader, Consultant/Lecturer** and **Senior ASNT-NDT Instructor/Trainer** from various companies like the KIT for Engineering Innovation Co., Belayim Petroleum Co., El Sewedy Cement, Mardive Group, German University, Al-Azhar University, Mining Studies & Research Center (MSRC), Modern Academy, Baldwin Engineering Co. MIDCO Oilfield Services and other power plant, cement and fertilizer companies just to name a few.

Dr. Wael has a **PhD** and **Master's** degree in **Metallurgical & Materials Engineering** and **Bachelor's** degree in **Metallurgy, Mining & Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified ASNT-NDT Level III Inspector** in **Magnetic Particle Testing (MT)**; a **Certified TUV Rheinland NDT Level III** in **Thermal/Infrared Testing (IR)**, **Visual Inspection Testing (VT)**, **Magnetic Particle Testing (MT)**, **Ultrasonic Testing (UT)**, **Liquid Penetrant Testing (PT)**, **Radiographic Testing (RT)** and **Ultrasonic Digital & A-Scan Thickness Measurement Configured with Casting, Forging & Welding**; a **Certified Welding Inspector (AWS-CWI)** and an **Authorized Piping Inspector** of **API-510, API-653, API 571 & API-570**. He has published numerous books and researches and delivered numerous trainings, courses, workshops, seminars and conferences internationally.

Virtual Training (If Applicable)

If this course is delivered online as a Virtual Training, the following limitations will be applicable:-

Certificates	Only soft copy certificates will be issued to participants through Haward's Portal. This includes Wallet Card Certificates if applicable
Training Materials	Only soft copy Training Materials (PDF format) will be issued to participant through the Virtual Training Platform
Training Program	The training will be for 9.5 hours per day starting at 0730 and ending at 1700
H-STK Smart Training Kit	Not Applicable
Hands-on Practical Workshops	Not Applicable
Site Visit	Not Applicable
Simulators	Only software simulators will be used in the virtual courses. Hardware simulators are not applicable and will not be used in Virtual Training

Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Course Fee

F2F Classroom: US\$ 6,000 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Online Virtual: US\$ 3,000 per Delegate + **VAT**.



Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: **Monday, 26th of October 2026**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Review of Basic Radiographic Principles Interaction of Radiation with Matter • Math Review • Exposure Calculations
0930 – 0945	Break
0945 – 1200	Review of Basic Radiographic Principles (cont'd) Geometric Exposure Principles • Radiographic-Image Quality Parameters
1200 – 1300	Lunch
1300 – 1400	Darkroom Facilities, Techniques & Processing Facilities & Equipment • Film Loading • Protection of Radiographic Film in Storage
1400 – 1415	Break
1415 – 1530	Darkroom Facilities, Techniques & Processing (cont'd) Processing of Film – Manual • Automatic Film Processing • Film Filing & Storage
1530 – 1650	Darkroom Facilities, Techniques & Processing (cont'd) Unsatisfactory Radiographs – Causes & Cures • Film Density
1650 – 1700	Recap
1700	End of Day One

Day 2: **Tuesday, 27th of October 2026**

0730 – 0930	Indications, Discontinuities & Defects Indications • Discontinuities • Defects
0930 – 0945	Break
0945 – 1200	Manufacturing Processes & Associated Discontinuities Casting Processes & Associated Discontinuities
1200 – 1300	Lunch
1300 – 1400	Manufacturing Processes & Associated Discontinuities (cont'd) Wrought Processes & Associated Discontinuities
1400 – 1415	Break
1415 – 1650	Manufacturing Processes & Associated Discontinuities (cont'd) Welding Processes & Associated Discontinuities
1650 – 1700	Recap
1700	End of Day Two

Day 3: **Wednesday, 28th of October 2026**

0730 – 0930	Radiographic Safety Principles Review Controlling Personnel Exposure • Time, Distance, Shielding Concepts • As Low as Reasonably Achievable (ALARA) Concept
0930 – 0945	Break
0945 – 1200	Radiographic Safety Principles Review (cont'd) Radiation Detection Equipment • Exposure Device Operating Characteristics
1200 – 1300	Lunch



1300 – 1400	Radiographic Viewing Film-Illuminator Requirements • Background Lighting • Multiple-Composite Viewing • IQI Placement • Personnel Dark Adaptation & Visual Acuity
1400 – 1415	Break
1415 – 1650	Radiographic Viewing (cont'd) Film Identification • Location Markers • Film Density Measurement • Film Artifacts
1650 – 1700	Recap
1700	End of Day Three

Day 4: Thursday, 29th of October 2026

0730 – 0930	Application Techniques Multiple-film Techniques • Enlargement & Projection • Geometrical Relationships
0930 – 0945	Break
0945 – 1200	Application Techniques (cont'd) Triangulation Methods for Discontinuity Location • Localized Magnification • Film Handling Techniques
1200 – 1300	Lunch
1300 – 1400	Evaluation of Castings Casting-method Review • Casting Discontinuities • Origin & Typical Orientation of Discontinuities
1400 – 1415	Break
1415 – 1650	Evaluation of Castings (cont'd) Radiographic Appearance • Casting Codes/Standards – Applicable Acceptance Criteria • Reference Radiographs
1650 – 1700	Recap
1700	End of Day Four

Day 5: Friday, 30th of October 2026

0730 – 0830	Evaluation of Weldments Welding Method Review • Welding Discontinuities • Origin & Typical Orientation of Discontinuities
0830 – 0930	Evaluation of Weldments (cont'd) Radiographic Appearance • Welding Codes/Standards – Applicable Acceptance Criteria • Reference Radiographs or Pictograms
0930 – 0945	Break
0945 – 1030	Standards, Codes & Procedures for Radiography ASTM Standards • Acceptable Radiographic Techniques & Setups • Applicable Employer Procedures
1030 – 1115	Standards, Codes & Procedures for Radiography (cont'd) Procedure for Radiograph Parameter Verification • Radiographic Reports
1115 – 1215	Lunch
1215 – 1415	Theoretical Examination
1415 – 1430	Break
1430 – 1530	Theoretical Examination (cont'd)
1530 – 1630	Practical Examination
1630 – 1645	Course Conclusion
1645 – 1700	Presentation of Course Certificates
1700	End of Course

Practical Sessions

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will carryout NDT inspection using our “Radiographic Testing (RT) Equipment”.



Applications

The Model 880 devices are used for industrial applications of gamma radiography, mainly with Iridium-192, to inspect materials and structures in the density range of approximately 2.71 g/cm³ through 8.53 g/cm³. The Model 880 devices also accommodate low energy isotopes to permit radiography of materials and structures of thin sections of steel and low-density alloys. The Model 880 exposure devices are also designed for use with low activity sources with high photon energies that are used for mass absorption (gamma scanning) studies of high-density materials up to 18.7 g/cm³.

Standard Source Assembly

Metallic Iridium-192 discs and pellets are doubly encapsulated in welded stainless steel or titanium capsules. The sealed sources are designed and tested to achieve an ISO/ANSI minimum classification of 97C64515 and to comply with the IAEA and USDOT requirements for ‘Special Form’ radioactive material. The ISO/ANSI classification 97C64515 stated in this manual refers to the complete source capsule which is attached to the source assembly. This classification also applies to the Se-75, Co-60 and Cs-137 versions of the source assemblies.

The sealed source is swaged to one end of a source holder consisting of a short flexible steel cable which has a female half of a connector at the other end, used for coupling to a control cable connector. The female connector also incorporates a stainless steel stop-ball swaged onto it (older versions of this source wire had the stop-ball as a separate component from the female connector). The purpose of the stop-ball is to provide mechanical positioning of the source assembly within the exposure device's shielding and to provide a means of securing the source assembly in the exposure device's locking mechanism.

Model 880 Delta authorized contents

Isotope	Assembly Model Number	Gamma Energy Range	Half Life	Approximate Steel Working Thickness	Device/Source Maximum Capacity
Ytterbium-169	*	8-308 keV	32 days	2-20 mm	108 Ci 4.00 TBq
Selenium-75	A424-25W A424-25**	66-401 keV	120 days	3-29 mm	150 Ci 5.55 TBq
Iridium-192	A424-9 A424-23**	206-612 keV	74 days	12-63 mm	150 Ci 5.55 TBq
Cobalt-60	A424-19	1.17-1.33 MeV	5.27 years	50-150 mm	65 mCi 2.40 GBq
Cesium-137	A424-30	663 keV	30 years	12-63 mm	380 mCi 14.0 GBq

Model 880 Sigma authorized contents

Isotope	Assembly Model Number	Gamma Energy Range	Half Life	Approximate Steel Working Thickness	Device/Source Maximum Capacity
Ytterbium-169	*	8-308 keV	32 days	2-20 mm	108 Ci 4.00 TBq
Selenium-75	A424-25W A424-25**	66-401 keV	120 days	3-29 mm	150 Ci 5.55 TBq
Iridium-192	A424-9 A424-23**	206-612 keV	74 days	12-63 mm	130 Ci 4.81 TBq
Cobalt-60	A424-19	1.17-1.33 MeV	5.27 years	50-150 mm	25 mCi 925 MBq
Cesium-137	A424-30	663 keV	30 years	12-63 mm	380 mCi 14.0 GBq

Dummy RT Projector



Model 880 Elite authorized contents

Isotope	Assembly Model Number	Gamma Energy Range	Half Life	Approximate Steel Working Thickness	Device/Source Maximum Capacity	
Ytterbium-169	*	8-308 keV	32 days	2-20 mm	108 Ci	4.00 TBq
Selenium-75	A424-25W A424-25**	66-401 keV	120 days	3-29 mm	150 Ci	5.55 TBq
Iridium-192	A424-9 A424-23**	206-612 keV	74 days	12-63 mm	50 Ci	1.85 TBq
Cobalt-60	A424-19	1.17-1.33 MeV	5.27 years	50-150 mm	25 mCi	925 MBq
Cesium-137	A424-30	663 keV	30 years	12-63 mm	380 mCi	14.0 GBq

Model 880 Omega authorized contents

Isotope	Assembly Model Number	Gamma Energy Range	Half Life	Approximate Steel Working Thickness	Device/Source Maximum Capacity	
Ytterbium-169	*	8-308 keV	32 days	2-20 mm	108 Ci	4.00 TBq
Selenium-75	A424-25W A424-25**	66-401 keV	120 days	3-29 mm	80 Ci	2.96 TBq
Iridium-192	A424-9 A424-23**	206-612 keV	74 days	12-63 mm	15 Ci	0.55 TBq

* Source assemblies with A1 quantities available for use in international jurisdictions.

** Approved for international transport, except in Canada.

Model 880 Atlas authorized contents

Isotope	Assembly Model Number	Gamma Energy Range	Half Life	Approximate Steel Working Thickness	Device/Source Maximum Capacity	
Ytterbium-169	*	8-308 keV	32 days	2-20 mm	108 Ci	4.00 TBq
Selenium-75	A424-25W A424-25**	66-401 keV	120 days	3-29 mm	81 Ci	3.0 TBq
Iridium-192	A424-9 A424-23**	206-612 keV	74 days	12-63 mm	27 Ci	1.0 TBq

* Source assemblies with A1 quantities available for use in international jurisdictions.

** Approved for international transport, except in Canada.

The tungsten shielded Model 880 Atlas was evaluated as a USDOT Type A transport container. The Model 880 Atlas is NOT approved as a Type B transport package. Labeling for the Model 880 Atlas reflects Type A information for the package instead of the Type B information labeling on all other Model 880 exposure devices.

Source output

Isotope	At 1 m per Ci (37 GBq)		At 1 ft per Ci (37 GBq)	
Ytterbium-169	0.125 R/hr	1.25 mSv/hr	1.3 R/hr	13.0 mSv/hr
Selenium-75	0.203 R/hr	2.03 mSv/hr	2.2 R/hr	22.0 mSv/hr
Iridium-192	0.48 R/hr	4.80 mSv/hr	5.2 R/hr	52.0 mSv/hr
Cobalt-60	1.30 R/hr	13.0 mSv/hr	14.0 R/hr	140 mSv/hr
Cesium-137	0.32 R/hr	3.20 mSv/hr	3.4 R/hr	34.0 mSv/hr

Selected attenuation data

Material	Approximate Material Density (g/cm ³)	Approximate Half Value Thickness				
		Inches (mm)				
		Ytterbium-169	Selenium-75	Iridium-192	Cobalt-60	Cesium-137
Concrete	2.35	1.140 (29.0)	1.180 (30.0)	1.700 (43.2)	2.400 (61.0)	3.00 (76.2)
Aluminum	2.65	-	1.100 (27.0)	-	-	-
Steel	7.80	0.170 (4.3)	0.315 (8.0)	0.512 (13.0)	0.827 (21.0)	0.900 (22.9)
Lead	11.34	0.032 (0.8)	0.039 (1.0)	0.200 (5.1)	0.500 (12.7)	0.250 (6.4)
Tungsten	17.80	-	0.032 (0.8)	0.130 (3.3)	0.310 (7.9)	0.225 (5.7)
DU	18.70	-	-	0.050 (1.3)	0.270 (6.8)	0.125 (3.2)

LED FILM VIEWER



Technical Specifications:

- Light Source – LED (White)
- Viewing density range – Up to 1.0 up to 4.5. D.
- Power source – AC, 230V 50/60Hz
- Max Luminance – 84,600 Cd/m²
- Film viewer body – Powder Coated Aluminium Body.
- Weight – 3.6 Kg
- Operating temperature: (-)10 C to (+) 60C .
- Cooling – High speed fans.
- Variable Light intensity control.
- Foot –switch control and cover on viewing screen.

Common features for all Film Viewers

- All film viewers are High Intensity type for viewing Industrial X-ray Films.
- A step-less control is provided for controlling Light Intensity.
- All film viewers are provided with Cooling fan, Heat absorbing glasses etc.
- A foot control switch helps in easy on-off operation.
- A built-in table lamp helps in making notes in dark.

Digit X Densitometer



"The densitometer of choice for the NDT industry"

The Digit-X NDT densitometer is designed to meet the need for a robust and dependable instrument to measure any film directly from a viewer. Weighing just 175g and powered by battery, the device is portable and extremely practical across different settings.

Digit-X is a favourite amongst professionals in the Non-Destructive Testing (NDT) sector used for applications in Oil & Gas, Construction, Engineering, Fabrication, Inspection and other services.

British-manufactured combining ease of use with high accuracy and repeatability.

The Digit-X NDT densitometer is manufactured by Xograph, which has nearly fifty years' experience in designing and building reliable quality instruments. The Digit-X NDT densitometer provides immediate, precise and repeatable results.

Sturdy and robust design

With its sturdy and robust design, minimal drift and no warm up time Digit-X provides fast dependable readings. The fibre optic probe allows small areas of film to be measured accurately with readings being displayed on the large clear LCD panel to 2 decimal places. Featuring 0.00 to 4.00 Optical Density.

Ready to use; backed by a 'no fuss' warranty

Digit-X comes complete with its own battery in a handy sturdy portable carry case, ready to use straight away. Backed by Xograph's established 'no fuss' one year warranty makes the Digit-X NDT densitometer the best-value choice for reading film on a viewer.

Digit-X NDT Densitometer Specifications

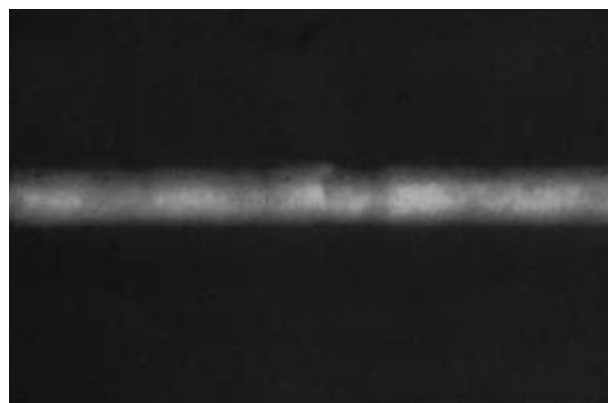
- Density Range 0.00 to 4.00 D
- Fibre Optic Aperture: 3mm
- Resolution: 0.01OD
- Accuracy: 0.05OD
- Repeatability: 0.02OD
- Drift: 0.0005/min
- Power Supply: 9v PP3 Battery
- Battery Life: Alkaline 2500 Hrs
- Size: 210x60x40mm
- Weight: 175kg



Standard Radiographs/Local Radiographs



Standard Film Strip



Sample Exposed RT Films

Course Coordinator

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