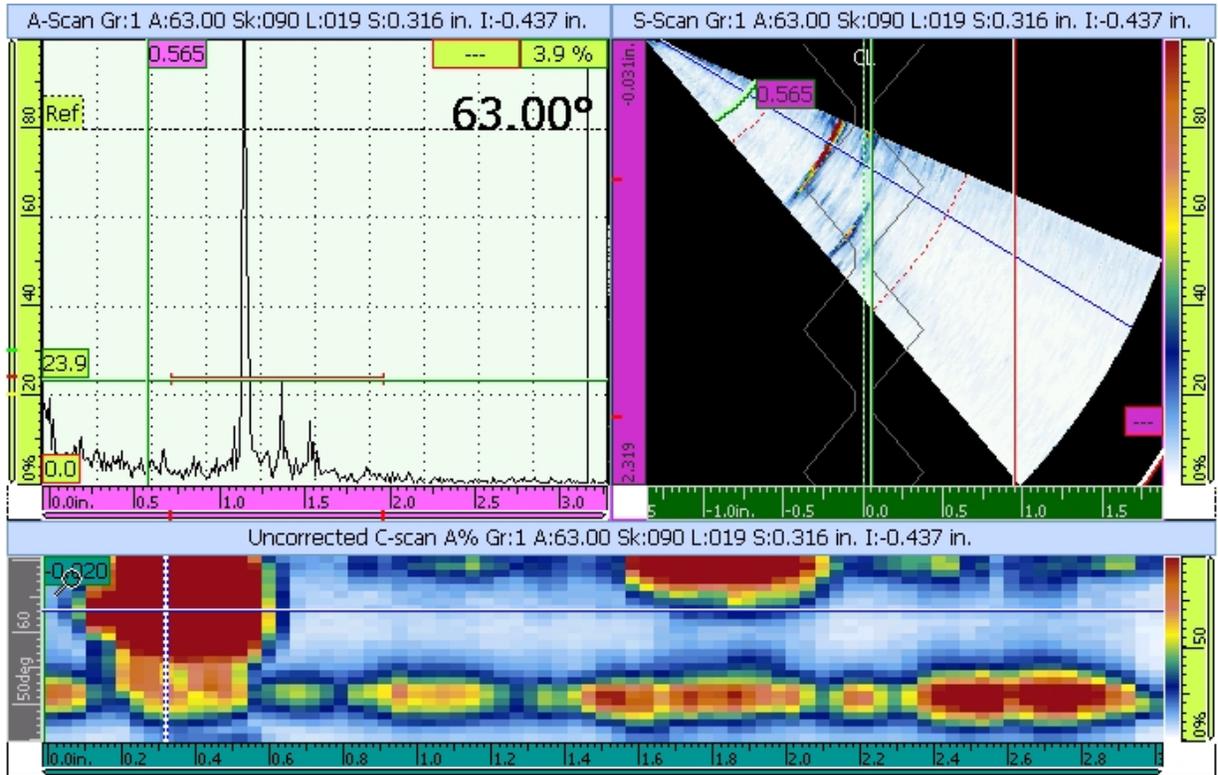


TECHKNOWSERV CORP. 2022 Non-destructive Testing Training Catalog, Schedule, and Rates



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TECHKNOWSERV CORP.
498 Meckley Road
State College, PA 16801
814 237 0144 • www.techknowserv.com
tomhay@techknowserv.com

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2022 Non-destructive Testing Training Catalog, Schedule, and Rates

1 Why Choose TKS?

For over 20 years TKS' staff have worked at the highest level in non-destructive testing R&D, engineering services, inspection services, training and education. TKS has over 400 clients worldwide many of which are returning customers. Our educational specialists are required to provide field services and are not exclusively classroom instructors. As a result, you will receive the **theoretical** and **practical** training that you require to be a successful NDT inspector. TKS is an approved Olympus NDT training partner.

Launched in 2020 and continuing in 2022, TKS offered remote learning with the option to practical test remotely. The hybrid approach is cost effective but requires additional logistics to be met.

2 Lead Instructor and NDT Course Designer Biography

Thomas R. Hay, Ph.D., P.E. and ASNT Level 3 #107162 has over 20 years of NDT experience and thousands of hours of training experience. He received his Ph.D. from Penn State University's prestigious Ultrasonic Lab and has been an ASNT Level 3 since 2001. Additionally, he is a practicing P.E. in U.S. and Canada.

His career started in NDT product development building automated ultrasonic and eddy-current inspection solutions.

After many years in product development he spent more than a decade performing R&D at the highest levels for different clients including the National Science Foundation, Department of Energy, Department of Defense, Transport Research Board, and Department of Transportation.

In parallel he has led an engineering and non-destructive testing service line for a variety of clients world-wide. As of 2022, Dr. Hay has over 400 clients worldwide.

3 Training and Related Services

TKS provides formal classroom and client-site training for nondestructive testing professionals. Training classes are designed according to ASNT-TC-1A, CP-189, NAS 410 and ISO 9712 standards.

Personnel qualification services include documentation review, training, and qualification examinations. Documentation review is performed to assure education, training, experience and qualification exams meet the client's codes, specification and requirements.

Written, general, and specific examinations meeting the client's code, specification and/or requirements in accordance with ASNT Recommended Practice SNT-TC-1A, ANSI/ASNT CP-189-2006, ACCP, and NAS 410.

Procedure development and review backed by industry experience combined with extensive involvement with ASNT and ASTM standards development ensures document(s) acceptable for use by your NDT personnel and clients.

The following consulting services are available:

- Personnel qualification services
- Written Practice development
- Method selection and implementation
- Inspection plan formulation
- Inspection project management
- Technical Reporting
- Third Party Client Representation
- Codes & Specifications interpretation

4 Course Descriptions

Below is a brief description followed by a detailed outline of each course offered by TKS.

4.1 Acoustic Emission Level I

The Level I course is designed to introduce newcomers to acoustic emission testing. A general overview on the method is provided focusing on basic theory and applications. The student is introduced to acoustic emission data acquisition, sensor installation, advantages/limitations of the technique. The course meets SNT-TC-1A and CP-189 requirements.

4.2 Acoustic Emission Level II

The Level II course instructs the student on all aspects of acoustic emission testing. The course addresses the basics of sensor operation, preamplifier function, cable options, analog-to-digital conversion, and inspection data interpretation. This course is a hands-on course that requires

the student to set up and perform acoustic emission testing (download PDF). The course meets SNT-TC-1A and CP-189 requirements

4.3 Mag Particle Testing Level I and II

A short course that discusses the principles of MT testing, advantages, and limitations. Practical training on real world specimens is provided (download PDF). A three-day course that covers the theoretical and practical aspects of this technique with practical exercises using industry standard equipment. The course meets SNT-TC-1A and CP-189 requirements.

4.4 Liquid Penetrant Testing I and II

A short course that discusses the principles of PT testing, advantages, and limitations. Practical training on real world specimens is provided (download PDF). A two-day course that covers the theoretical and practical aspects of this technique with practical exercises using industry standard equipment. The course meets SNT-TC-1A and CP-189 requirements.

4.5 Ultrasonic Testing Level I

A complete introductory course designed for staff with minimal background in ultrasonic testing. An in-depth introduction on topics ranging from ultrasonic theory to instrumentation is provided. Using our multi-media training tools we are able to clearly explain important ultrasonic nondestructive testing principles. Level I focuses most on straight beam inspection as well as ultrasonic thickness testing. Angle beam aspects are introduced towards the end of the course.

4.6 Ultrasonic Testing Level II

Advanced Level II training focuses on materials, ultrasonic theories such as Snell's Law, manufacturing processes, and ultrasonic inspection applications. Level II focuses primarily on angle beam testing with an emphasis on weld inspections. Some PAUT is introduced in this 40-hour course.

4.7 Phased Array Ultrasound (PAUT)

This advanced course focuses on PAUT applications, principles of PAUT probes and sound fields, focal laws, beam steering, ray tracing, and weld inspection. This course is recommended for ASNT/ACCP Level 3, UT Level 2 weld inspectors and engineers or project managers seeking a greater understanding of PAUT.

Phased array ultrasound (PAUT) is an advanced NDT method that may be used for most conventional ultrasound applications. Due to the technology's ability to focus and steer the ultrasound inside the part it is rapidly becoming the industry standard for critical weld inspection and small crack detection. PAUT may also be used in more conventional corrosion survey applications.

4.8 Total Focus Method (TFM) / Full Matrix Capture (FMC)

This advanced course focuses on TFM/FMC wave sets, acoustic intensity maps, synthetic aperture focusing theory, and performance comparisons to PAUT probes and sound fields, focal laws, beam steering, ray tracing, and weld inspection. This course is recommended for

ASNT/ACCP Level 3, UT Level 2, PAUT Level 2, weld inspectors and engineers or project managers seeking a greater understanding of PAUT.

4.9 Flow Iron Recertification

This training course focusing on visual inspection of the flowline assemblies and components (internal & external) to identify any damages, flaws, defects or excessive wear, UT Thickness calibration and inspection procedure to verify wall thicknesses, magnetic particle testing to identify the presence of any surface defects in flowline assemblies, introduction to pressure testing on high-pressure frac iron components to their specified cold working pressure rating.

5 2022 Course Schedule

<p><u>January</u> Jan 3-7 Phased Array II Jan 10-14 Phased Array II Jan 17-21 Flow/Frac Iron Recertification</p> <p><u>February</u> Feb 7-11 TFM/FMC Feb 14-18 TFM/FMC Feb 21-25 Flow/Frac Iron Recertification Feb 28 – March 4 UT Level I</p> <p><u>March</u> March 7-11 UT Level II March 14-18 Flow/Frac Iron Recertification March 21-25 Ultrasonic Thickness March 28- April 1 Magnetic Particle Testing April 4 – 8 Phased Array</p> <p><u>April</u> April 11-15 Flow/Frac Iron Recertification April 18-22 UT Level I April 25-29 UT Level II</p> <p><u>May</u> May 2-3 Liquid Penetrant Testing May 4-6 Magnetic Particle Testing May 9-11 Flow/Frac Iron Recertification May 16-19 TFM/FMC May 30 – June 3 TFM/FMC</p> <p><u>June</u> June 6-10 Phased Array II June 13-15 Flow/Frac Iron Recertification June 20- 22 Ultrasonic Thickness June 23-24 Magnetic Particle Testing</p>	<p><u>July</u> July 11-13 Flow Iron Recertification July 14-15 Liquid Penetrant Testing July 18-19 Magnetic Particle Testing July 25-29 Phased Array II</p> <p><u>August</u> August 1-5 Phased Array II August 15-19 TFM/FMC August 22-26 TFM/FMC</p> <p><u>September</u> Sept 12-16 Flow/Frac Iron Recertification</p> <p><u>October</u> Oct 4-5 MT Level II Oct 6-7 PT Level II Oct 10-12 UTT Level II</p> <p><u>November</u> Nov 7-11 Phased Array II Nov 21-25 Phased Array II</p> <p><u>December</u> Dec 5-6 Ultrasonic Thickness December 5-6 Liquid Penetrant Testing December 12-13 Magnetic Particle Testing December 19-23 Flow Iron</p>
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6 NDT Training Course Pricing

Course	Cost	Length
Acoustic Emission Level I	\$1950	40 hours
Acoustic Emission Level II	\$1950	40 hours
Magnetic Particle Testing Level 2	\$1250	20 hours
Liquid Penetrant Testing Level 2	\$1250	12 hours
Ultrasonic Testing Level I	\$1750	40 hours
Ultrasonic Testing Level II	\$1750	40 hours
Ultrasonic Thickness Testing	\$900	8 hours
Guided Wave Ultrasound Level II	\$5000	40 hours
Phased Array Ultrasound	\$3500	80 hours
Total Focus Method / Full Matrix Capture	\$3500	80 hours
Flow Iron Recertification Training	\$1750	30 hours

7 NDT Training Course Terms

Nondestructive training courses are designed and delivered to satisfy the guidelines set forth in The American Society for Nondestructive Testing's (ASNT) Recommended Practice No. SNT-TC-1A (2020), CP-189 and ISO-9712.

Level 1 and 2 attendees are administered a General, Specific, and Practical Examination. A passing composite grade of at least 80 percent is required with no individual examination having a passing grade less than 70 percent

Level 3 attendees are administered a General, Specific, Practical Exam, and Procedure Examination. A passing composite grade of at least 80 percent is required with no individual examination having a passing grade less than 70 percent.

Reexamination policy: In the event of a composite grade of less than 80%, or an individual test score of less than 70%, the candidate can retake the examination(s) on-line 2 weeks after the course completion date. The candidate will be supplied with a username and password to access the online examination. A \$75 fee is charged by TechKnowServ Corp (TKS) to administer each exam and payment must be made prior to the taking the exam.

Attendees that complete the training course and successfully pass the exam as outlined above will be provided with a certificate that states the attendee's name, the nondestructive testing method, level, course duration, course dates, course location, and is signed by the Level III course director. A separate cover letter will be provided to the attendee with a summary of test scores. Copies of the completed exams are not provided to attendees and will remain on file at TKS.

Payment for the training course(s) must be made in full prior to training commencement and certificate issue.

Hybrid classroom training must be completed within 2 week from the training course invitation. Customer must have required desktop/laptop or comparable platform to complete on-line training.

Nondestructive testing personnel certification is a process that involves Practical Experience, Classroom Training, and Examination. TKS nondestructive testing training courses are designed to satisfy the Classroom Training and Examination requirements for Employer based certification and to prepare the candidate for ASNT Central Certification (ACCP), and Recertification. As with all other NDT training courses, the NDT training course does not satisfy the Minimum Required Work Experience for certification.

REFUND/CANCELLATION POLICY: TKS must receive written notification of cancellation at least ten (10) business days prior to the first day of the course for a full refund minus any credit card transaction fees. If a trainee reschedules or cancels a program less than 10 business days before the class start date, only 50% of the course registration fee will be refunded. If TKS were to cancel a course, at least five days notice will be given and a full refund will be issued.