Online Training in the Certification Process

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This presentation is a cooperative effort with
Chuck Hellier of The Summit Group

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The History of eLearning

1924 Professor Sidney Pressey invented the “Automatic Teacher” – the 1st testing machine – and a total failure.

1954 BF Skinner, a Harvard Professor, invented the “teaching machine”. From the 1920s, psychologists have explored ways to automate teaching. He used this apparatus teaching a Harvard course in natural sciences, which enabled schools to administer programmed instruction.
The History of eLearning

1960  PLATO-Programmed Logic for Automated Teaching Operations was the first computer based training program (or CBT program).

1961  First teaching attempt with PLATO in higher education.

1965  First complete college course given solely using the PLATO system.

1969  First remote location added to the PLATO network (at nearby Springfield High School in Springfield, IL).
1966 Computer Aided Instruction (CAI) was introduced by Stanford University psychology professors to teach math in Palo Alto elementary schools.
1969  Al Gore invents the internet  Correction: The US DOD commissions Arpanet to create the internet. ARPANET was the network that became the basis for the Internet. Based on a concept first published in 1967, it was developed under the direction of the U.S. Advanced Research Projects Agency (ARPA). In 1969, the idea became a modest reality with the interconnection of 4 university computers.

1970  The computer, mouse and Graphic User Interface (GUI) are invented, and CBT begins at the NJ Institute of Tech.
1984  Steve Jobs introduced the Apple Macintosh, enabling online sharing and the introduction of eLearning.

1990’s  Virtual learning environments begin and the term “eLearning becomes a widely recognized term.

2000’s  Businesses adopt eLearning and develop courses as a central way to train workers.
The History of eLearning

• 2010, Social online learning grows with Massive Open Online Courses (MOOCs). MOOCs are free online courses available for anyone to enroll.

• MOOC’s, provide an affordable and flexible way to learn new skills, advance your career and deliver quality educational experiences at scale utilizing platforms like iTunes, Skype and others.
2012 A young man dedicated to delivering quality training by the name of Chuck Hellier leaves classroom training and introduces NDT body of knowledge and theory online learning via NDT Classroom Inc.
Advantages of Online Training

• Classroom time is unrestricted allowing students the time they need to study and review course material based on each student's learning needs.

• Retention rate studies of students that take online courses shows they retain between 25% to 60% more of the course material taught resulting in higher test scores, increased pass rate and better on the job performance.
SNT-TC-1A, 2011 Ed., defines training as: “an organized program developed to impart the knowledge and skills necessary for qualification”.

It states that such organized training “may include instructor led training, self-study, virtual instructor led training, computer based training or web based training”.

Computer-based training and web-based training should track hours and content of training with student exams to ensure understanding of the necessary information.

Of course, all training programs should be approved by the responsible NDT Level III.
Issues w/ Classroom-based Training Programs

• Lack of consistency between trainers
• Lack of defined qualifications for trainers
• Variations in course content
• Rarely do courses last for the advertised or recommended times
• Homework varies greatly if given at all!
• Manuals/handouts – poor quality and/or inconsistent
• Students don’t learn at the same pace (some fall behind, others get ahead)
• Distractions unrelated to the course (last night’s football game)
Pros of On-line Training

• Students Learn at their own pace and have the ability to review the course as many times as necessary to learn the material.

• Supplemental reading assignments should be required and tracked. Appropriate credit for this can be applied to the on-line time.

• Interaction with the online instructor can be available through email or direct contact.
Pros of On-line Training

- Practical lab sessions can be conducted at students’ workplace under the direction of their in-house instructor or Level III, or at a qualified NDT school or lab.

- Average cost of online training is $500 to $1,000 vs. classroom training cost of $3K or more for technicians that need to travel and $1K to $1,700 for students local to the school.
NDT Recommended Training Hours Include:

- Body of knowledge, theory & hands-on/practical training hours

<table>
<thead>
<tr>
<th>NDT Method Levels I&amp;II SNT-TC-1A</th>
<th>Level I Hours</th>
<th>Level II Hours</th>
<th>Total Recommended Training Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eddy Current (ET)</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Liquid Penetrant (PT)</td>
<td>4</td>
<td>8</td>
<td>12</td>
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<tr>
<td>Magnetic Particle (MT)</td>
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<td>20</td>
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<tr>
<td>Radiography (RT)</td>
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<td>80</td>
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<tr>
<td>Ultrasonics (UT)</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Visual (VT)</td>
<td>8</td>
<td>16</td>
<td>24</td>
</tr>
</tbody>
</table>
What is Blended Training

Blended training combines online training with hands on training in a 2 step process

• Step 1: Per SNT-TC-1A 7.1, the technician completes an online NDT course on the company’s and technician schedule covering the body of knowledge and theory training

• Step 2: Per SNT-TC-1A 8.5.1. hands on practical training provided by company Level III or other company approved instructor.

• For Example: If you take an online Ultrasonic Testing Level II course, the Level III of the company normally conducts hands on training in accordance with SNT-TC-1A and as it relates to the company equipment, procedures and products their technicians will examine. These hours will count towards the 40 Hour recommended training.
SNT-TC-1A Training

7.1 Personnel being considered for initial certification should complete sufficient organized training. The organized training may include instructor-led training, personalized instruction, virtual instructor-led training, computer-based training, or web-based training. Computer-based training and web-based training should track hours and content of training with student exams in accordance with 7.2.
7.1 The sufficiently organized training shall be such as to ensure the student is thoroughly familiar with the principles and practices of the specified NDT method related to the level of certification desired, and applicable to the processes to be used and the products to be tested. All training programs should be approved by the NDT Level III responsible for the applicable method.
3.1.3 An organized and documented program of learning activities designed to impart the knowledge and skills necessary to be qualified to this standard. Formal training may be a mix of classroom, practical and programmed self instruction as approved by the Responsible Level 3 or Examiner.

6.1.1 Training Outlines

• All training shall be conducted in accordance with a detailed course outline approved by the Responsible Level 3. The outline shall include a list of references from which the training material is derived.
Components of an NDT Certificate
Components of an NDT Training Certificate

- Student Name
- Course Name
- Date of Completion
- Instructor Name and Signature
- What recommended or required training does the course meet?
  - SNT-TC-1A (Recommended Practice)
  - NAS410 (Standard)
  - CP-189 (Standard)
  - EN9712 (Standard)
Qualifying Statements of an NDT Certificate

Which one would you accept for online training?

A. **Certificate of Completion.** This certificate is proudly presented to John Doe, online training course, Ultrasonic Testing I, Feb 02 2019. The satisfactory completion of this course in addition to the required reading assignments and “hands –on” practical lab sessions, satisfies the 40 hour training recommendations in SNT-TC-1A and the training requirements of NAS-410, CP-189, and EN-9712.

B. **Certificate of Training,** awarded for the successful completion of: Ultrasonics Testing Level I, John Doe, Successful testing on: Ultrasonic Testing Level I Specific Principles & Applications Materials & Processes. A minimum of 40 hours Theory Training and Testing in accordance with Recommended Practice SNT-TC-IA 201 1, NAS-A I O and ASNT CPI 05-2006, CP 189 (theory) Qualification requirements.
CERTIFICATE OF COMPLETION

This Certificate is Proudly Presented to

Charles Kerby

ONLINE TRAINING COURSE

NDT CLASSROOM PENETRANT TESTING I&II

OCTOBER 04 2018

CHARLES HELLIER

Level III - NDT Classroom, Inc.

The satisfactory completion of this online course in addition to the required reading assignments and “hands-on” practical lab sessions, satisfies the 24 hour training recommendations in SNT-TC-1A and the training requirements of NAS-410, CP-189, and EN-9712.
Radiation Safety Training and Certificates
What Does the NRC Say

NRC Requirements for Online Training Acceptance Calls for:

• In accordance with 10 CFR34.43, training, we accept web based training with additional classroom and laboratory training that covers hands on training of radiation detection instruments. This additional hands-on training includes but not limited to use, operation, calibration, and limitations of radiation survey instruments: survey techniques: and use of personal monitoring equipment.
Certifying States have documented their acceptance of Online Training to be 28 hours of Online and 12 hours of hands on safety training methodology:

- Alabama
- Georgia
- Maine
- Illinois
- Iowa
- Louisiana
- North Dakota
- Oklahoma
- Texas
NDTMA 2019 Annual Conference

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

DAVID L. LAKEY, M.D.
COMMISSIONER

AUGUST 1, 2014

William G. Cronberger
Chief Business Development Officer
NDT Classroom
710 Main St.
Buffalo, NY 14202-1915

Dear Mr. Cronberger:

The Department has conducted a review of the NDT Classroom Radiation Safety V2 radiographer training course with respect to whether it meets the requirements of the 40 hour radiographer training course requirements outlined in Title 25 of the Texas Administrative Code §288.285(c)(1). A determination was made that the course did not meet the 40 hour time requirement in Rule.

The running time for the course is slightly under 17 hours. During that time the student is expected to have administrative overhead time, time for self-study and review of the presentation and supplemental material, as well as time to have question and answer sessions with the course instructor, radiation safety officer, an experienced radiographer, NDT Classroom or other subject matter expert as needed. Including this additional time the course takes 28 hours to complete.

The NDT Classroom course covers many of the basic elements required of a 40 hour radiographer training course, therefore it may be used as part of a complete 40 hour course provided that it is supplemented with an additional 12 hours of instruction. Additional training subjects should include:

A. Hands on training in the operation of a survey meter including battery checks, battery replacement, reading and changing scales and demonstration of response to a source of radiation.
B. Hands on demonstration of typical surveys including a look-out survey of a radiographic device and performance of perimeter surveys of a radiation area,
C. Training and demonstration of typical techniques for setting boundaries including routine source activity determinations, dose rate calculations, shielding calculations and surveys as they would be performed in the field.
D. Hands on demonstration on the use and wearing of personal dosimetry including badges, pocket and/or electronic dosimeters and alarming ratemeters including routine battery checks, battery replacement and battery checks when applicable.
E. Demonstration of the basic operation of radiographic equipment.

https://www.dshs.state.tx.us/radiation
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F. Demonstration of how to perform routine daily inspections of the radiographic equipment.
G. Demonstration of proper techniques to use to avoid common incidents such as:
   a. Properly attaching the source to the drive cable.
   b. Properly securing the camera to prevent falls.
   c. Properly securing the guide tube and/or collimators to prevent them from coming loose.
   d. Checking the area for objects that could fall on the camera or guide tube.
   e. Proper surveillance and securing of the camera while not in use.
H. Additional time for review for the final exam
I. Additional time for taking a proctored closed book final exam.

A company that intends to incorporate the NDT classroom course into their 40 hour course must submit a complete course outline to the Department for approval including: a list of training materials, a list of equipment available for hands-on training, a sample final exam with answer key, the instructors credentials or resume, and an example certificate of completion. The company must also state whether the course is for in-house training of their employees only, or will be commercially available. It will not be necessary to include detailed documentation on the NDT Classroom Radiation Safety V2 radiographer training course.

If the 40 hour radiographer training course is approved for in-house training only, the letter and procedures will be tied down in the last condition of the license. Otherwise a condition will be added to the license or registration authorizing the teaching of the course.

If you have any questions, please contact me at (512) 834-8888 extension 2206; or by electronic mail at ray.fleming@dshs.state.tx.us.

Sincerely,

Ray Fleming, Manager
Radioactive Material Licensing Group
Radiation Safety Licensing Branch

Golden Nugget Hotel, Las Vegas, NV February 12-14, 2019
CERTIFICATE OF COMPLETION

Blake Preston

completed 28 hours of online training on
Radiation Safety for Industrial Radiographers

Training Topics
- Atomic Structure & Types of Radiation
- Radiation Properties & Interactions
- Radiation Units & Terminology
- Sources of Ionizing Radiation
- Biological Effects of Ionizing Radiation
- Rad. Measurement & Instrumentation
- Protection Against Ionizing Radiation
- Radiation Control Regulations
- Rad. Material Transport Regulations
- Radiographic Equipment
- Rad. Safety Programs & Procedures
- Radiography Incident Case Histories

This course addressed radiation safety training requirements specified in 10 CFR 34.43(d) & equivalent Agreement State radiation control regulations

November 26 2018
Completion Date

Walt Cofer, CET
Instructor

has completed an additional 12 hours of formal & practical radiation safety training and proctored testing on Training Date(s) _________

I hereby certify that ___________________________ has completed 40 hours of individual radiography radiation safety training and has passed proctored written & practical exams as per state/NRC requirement

RSO Printed Name ____________________________
RSO Signature ____________________________
Company Name ____________________________
State ____________________________
Note To Level III’s & RSO’s

• Ask for a review copy of the course you intend to have your employees take
• Document your approval of the training
• NAS410 Level III’s should request a copy of the syllabus for your records in the event of an audit
• RSO’s should request Online Training vendor provide documentation from the their states Radiation Control agency Stating that the Online Training companies Radiation Safety course is accepted as stated by the State and NRC
Thank you for your participation in the NDTMA 2019 Annual Conference.