Training & Certification in Non-Destructive Testing

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Abstract:

NDT education, training & certification had evolved from a simpler time with less requirements, fewer educational providers, and an abundance of willing participants. Today there are many formal certification requirements with many options for education and training. This era of sophisticated technology demands more education and training for NDT practitioners to succeed in the advanced NDT methods. There are fewer qualified applicants at the advanced level and the demand is growing.

ASNT offers a number of refreshers courses designed to help NDT professionals review and expand their knowledge of important concepts in each NDT topic. The proposed wording in the Recommended Practice No. SNT-TC-1A: Personnel Qualification and Certification in Nondestructive Testing states that personnel being considered for initial certification should complete sufficient organized training. The organized training in accordance with ASNT and ISNT may include instructor-led training, self-study, virtual instructor-led training, computer-based training or web-based training. The British Institute of NDT had offered training programs and certification based on BS-EN-ISO. They provide PCN Level 1, 2, and 3 certification and also conduct audits for the approval of AQB and ATO and also a periodical audit to check the quality of the training programs.

Keywords:
Training, Certification, Education, PCN, ASNT, AQB

Introduction:

As with any area of the sciences, the nondestructive testing field is constantly evolving, with new technologies being developed and new applications found for existing technology. This results in a continually changing work environment in which it is difficult to maintain one’s professional knowledge and keep abreast of recent innovations in the industry. Knowing the available resources that will allow one to succeed in the workplace can mean the difference between remaining fresh and joining the obsolete equipment on the back of the shelf.

Whether one wishes to expand into a new NDT method or technique, obtain a higher level of certification, or simply refresh one’s memory and reinforce previously learned material for better job performance, there are ample educational materials and opportunities designed to assist NDT professionals. The American Society for Nondestructive Testing (ASNT), British Institute of Non-Destructive Testing (BINDT), other technical societies and a number of educational institutes and private corporations offer a wide variety of resources that provide individuals with the necessary tools for professional development and help them further in their career development.
**Formal Training:**

Today, the entry level positions are relatively easy to break into. Entry level candidates frequently have a high school or general equivalency diploma. They cannot advance far, however, without further education and training. The problem is how to attract new practitioners, further professionalize the occupation and fill the labor gap that is growing for ever more sophisticated NDT applications. There is a need for education and training to meet industry needs in a timely, efficient and adequate manner.

The proposed wording in the Recommended Practice No. SNT-TC-1A: Personnel Qualification and Certification in Nondestructive Testing states that personnel being considered for initial certification should complete sufficient organized training. The organized training may include instructor-led training, self-study, virtual instructor-led training, computer based training or web based training. It further states that computer based and web based training should track hours and content of training with student evaluations.

Sufficient organized training should 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. Historically, this has been accomplished with instructor-led training. Now is the time to think outside the box, have a paradigm shift or achieve a new normal by making web-based training one of the standard approaches in addition to instructor-led training. The combination of these forms of training is known as the blended approach, and allows for cost saving, improved efficiency and improved awareness. Note that web-based training is not adequate for transferring skills; improved competency qualification training with realistic flaws is needed for skill transfer.

**Shortage of qualified NDT personnel:**

Industries are experiencing a shortage of qualified NDT personnel in the advanced NDT techniques and applications. There are many applicants for entry level positions and an adequate supply of engineers and scientists with NDT degrees. The increasing need for more education, training & certification and advanced proficiency, however is thinning the ranks of qualified personnel need to advance further into the career of an NDT practitioner. While many entry level personnel may be attracted to the NDT profession, they cannot easily move up to the more advanced NDT techniques unless they are additionally educated and trained.

**ASNT Refresher Courses:**

ASNT offers a number of refresher courses designed to help NDT professionals review and expand their knowledge of important concepts in each NDT topic. A thorough review of each subject’s body of knowledge will provide an awareness of areas where further study is needed. Instructors for the courses are ASNT NDT Level III certificate holders in the method they are teaching.

The courses offered by ASNT include a basic NDT course as well as ones on other methods like ET, PT, MT, RT, UT etc.

The basic course is designed for NDT professionals with Level II or III experience and prior training, who need to review NDT methods and related documents to prepare for an examination or a change of position. The students leaves this course with a knowledge of:

- the key qualification documents (SNT-TC-1A and CP 189)
- the various programs that establish the criteria for NDT personnel certification
• the general theory and application of various NDT methods
• the various types of materials processing, fabrication and production technology
• the basics of metals processing.

The refresher courses for ET, PT, MT, RT, UT are designed to provide the student with a fresh overview of the method’s body of knowledge and an awareness of areas in which further study is required. Method-specific refresher courses are designed to provide the student with a knowledge of:

• the basic principles and theories relating to the method
• the classes of equipment and materials commonly used in it
• responses typically encountered during testing
• how procedural requirements are extracted from specifications and standards
• any safety and health considerations relating to the method.

BINDT Authorised Qualifying Bodies:

AQB: An organization approved by BINDT following a successful formal admit to conduct and administer PCN examinations strictly in accordance with published requirements.

The British Institute of NDT (BINDT) is an Accredited Certification Body operating the PCN Scheme in accordance with the provisions of a range of International and European standards. Certification policy and the PCN Scheme is administrated by a Management Committee constituted by the Council of the British Institute of NDT.

The Management Committee is responsible for setting, maintaining and reviewing competency standards at applicant and approved Authorised Qualifying Bodies and will justify for allowing any particular AQB to conduct PCN qualification examinations.

Aspirant PCN Qualifying Bodies apply for assessment and authorization. After the successful audit, certificate of authorisation valid for two years, will represent the contract between the AQB and BINDT. Once authorized, AQB will re-apply for authorization at two years intervals.

Quality Management System:

The AQB shall provide BINDT with controlled quality management system documentation (and maintain this documentation up-to-date) detailing the scope of examination, and applicable management and staff structures, together with documentation detailing its facilities, equipment, specimens, control arrangements and procedures, which shall be shown to comply fully with these requirements and be adequate to maintain a consistent standard of PCN examination. The documented quality system shall include a statement of the AQB’s safety policy and shall also include terms of reference for staff.

Quality system:

The AQB shall devise and maintain fully documented quality system, including operating procedures, covering all aspects of the organization and control of PCN examinations. The intent of the quality system shall be to ensure the effective control of, and consistency within, the examinations conducted on behalf of BINDT. The quality system shall cover as a minimum, all of the areas detailed below:

• Co-ordinator’s duties and responsibilities
• Chief examiner’s duties and responsibilities
• Examiner’s duties and responsibilities
- Invigilator’s duties and responsibilities
- Staff training and qualification
- Examination facilities, including premises, specimens and equipments.
- Examination procedural data
- Security (of specimens, records and information)
- Facilities for visiting representatives of BINDT

**Demand for Practitioners:**

The demand for intermediate and advanced NDT practitioners will increase as more nuclear power plants are built. In looking at the future of the NDT workforce for nuclear industry, surveys indicate that by 2014, there will be 500 inspectors available as per selected nuclear plants, whereas 900 will be required. This will yield a shortfall of 400 advanced NDT inspectors for the nuclear industry.

This number of shortfall is only for the nuclear industry and if we take into consideration of the industries like oil & gas, refinery, power sectors, aerospace, steel industries, automobiles etc. the demand for advanced NDT inspectors are still more.

Currently there is also a need for more American Petroleum Institute inspectors and American Welding Society certified weld inspectors.

**Other Resources:**

Some other technical organizations provide resources for educational materials in the field of NDT. They offer seminars and information for certification in focused areas such as welding and pressure vessel inspector training in advanced NDT. There are lot of service provider companies who also do training & certification in advanced NDT and also conduct seminars, with links and tips to downloadable materials on their website at [www.ndts.co.in](http://www.ndts.co.in) there are also companies who provide in-company training, as well as video and CD-ROM courses designed for those who require the flexibility to navigate through the course at their own speed.

**Conclusion:**

The resources for continuing NDT education, Training & Certification are virtually limitless. This is only a small sampling of resources; others can be found by networking with other individuals in the NDT field or by contacting organizations like NDTS India (P) Ltd. etc. about the programs they have available for education. These resources allow individuals to plan the educational program that is appropriate for their own needs. Many organizations like us are now providing flexibility with their courses and seminars via the internet that even the busiest individuals can take part in programs to further develop their skills. In the NDT field, education, training & certification is a continual process for those wanting to succeed in their careers.