

SNT-TC-1A 40 Years of Employer Certification for NDT Personnel

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Abstract. 2007 marks the publication of the latest edition of SNT-TC-1A^[1]. It is now 40 years since the issue of the first edition and this paper will take a brief look at the development of the employer based certification programme and consider the differences between the various editions published over the past 40 years.

Throughout the presentation reference will be made to the importance of the employer and the development of a Written Practice which meets his needs; there will also be information on the relationship between the employer and Level 3.

The presentation will also take a look at some of the issues which have arisen over the years relating to the employer based certification.

Finally consideration is given to how other NDT operator certification schemes (such as EN4179^[2] EN 473^[3] and ISO 9712^[4]) deal with the relationship between the employer and the NDT operator and how much each system owes to SNT-TC-1A.

1. Introduction

Throughout the industrial world many NDT operators are trained, examined and certificated into Employer Quality Systems. These Quality Systems will have a Written Practice which is based on the Recommended Practice SNT-TC-1A for the training and certification of their NDT personnel.

Every Written Practice might be different in a manner which is specific to the Employer. This difference needs to be understood by purchasers of non destructive testing services to ensure that the needs of the purchaser are met in full.

Over the years the document SNT-TC-1A has been misused and misunderstood – a review of its history and its purpose might help to lay the foundations for a better comprehension of its purpose.

2. In the Beginning

The first edition of SNT-TC-1A was published in 1966 – its title is derived as follows:

SNT- Society of Nondestructive Testing
TC – Technical Committee
1A – 1st Committee was given this title

The purpose of this document was to provide a set of guidelines for NDT operator certification.

Each edition is reviewed by a committee of volunteers for ASNT and is revised as is seen necessary at the time.

The 2006 edition (published in February 2007) is the 12th edition and is now available.

It is important to repeat that the document is not and has never been a Standard - it contains guidelines which the Employer uses to create a Written Practice.

SNT-TC-1A is a Recommended Practice.

It is further made clear that the Written Practice created must be acceptable, not only to the Employer, but also to the Purchaser.

3. Editions

- a. 1966
- b. 1968
- c. 1971
- d. 1975
- e. 1980
- f. 1984
- g. 1988
- h. 1992
- i. 1996 (1)
- j. 1996 (2) with 1998 Addenda
- k. 2001
- l. 2006

Each edition is a Recommended Practice – NOT a Code, Specification or Standard.

Each edition requires the Employer to establish a Written Practice.

SNT-TC-1A proposes that the guidelines may be modified by the Employer to suit his needs but the Written Practice created must always take account of the needs of the purchaser of the NDT services.

4. The General Structure

The general structure of the document has not changed since the first edition:

- a. Scope – what is the purpose of the document
- b. Definitions – terms used in each edition
- c. Methods – the NDT Methods recognised in each edition
- d. Levels – Levels 1, 2 and 3 defined
- e. Written Practice – the requirement that the Employer shall establish a Written Practice
- f. Education; Training and Work experience – detailed recommendations
- g. Examinations – physical and general/ specific and practical exams
- h. Certification – responsibility of the Employer
- i. Termination – change of Employer
- j. Recertification – methods of continuing certification

5. Detailed Review of the Main Sections

5.1 Definitions

In 1966 only 3 terms were defined – qualification, certification and certifying agency.

By 2006 15 terms were defined including NDT, Outside Agency and Limited Certification reflecting changing times.

5.2 Methods - Main

1966 5 methods recognised Ultrasonic Testing, Magnetic Testing, Liquid Penetrant Testing, Eddy Current Testing (in 1984 it became Electromagnetic Testing and in 2006 became subdivided into 4 techniques - AC Field; Eddy current; Electromagnetic Testing; Flux Leakage and Remote Field) & Radiographic Testing

- 1974 Neutron Radiography and Leak Testing (4 techniques) added
- 1980 Acoustic Emission
- 1988 Visual Testing
- 1992 Infra-red Thermography
- 1996 (1) Vibration Analysis
- 2001 Laser Testing (2 techniques)
- 2006 Magnetic Flux Leakage

Total methods by 2006 – 13

5.3 Methods – Limited Certification

In 2006 Limited Certification categories were defined for Digital radiography, Radiographic Interpretation, Digital UT and A Scan UT for Thickness Measurement.

6. Eye Test

1966 – Near Vision J1.

1974 – Near vision J2 and has stayed at J2 despite all other certification programmes going to J1.

Colour vision – the ability to distinguish between the colours used in the Method – unchanged throughout.

7. Training Hours (Magnetic Testing as an example) using Grammar School Level of Education

1966 - 21.5 hours to Level 2 (13.5 + 8)

1975 - 40 hours to Level 2 (24 + 16)

1988 to date – 20 hours to Level 2 (12 + 8)

Radiography has had a more varied history.

1966 – 56 hours to Level 2 (20 + 36)
1975 – 180 hours to Level 2 (80 + 100)
1980 – 160 hours to Level 2 (80 + 80)
1984 – 168 hours to Level 2 (88 + 80)
1988 – 79 hours to Level 2 (39 + 40)
1996 to date – 80 hours to Level 2 (40 + 40)

SNT-TC-1A is the only certification document I am aware of which has different NDT training times depending on your educational level.

8. Work Experience Variation

8.1. Magnetic Testing

1966 MT1 6 months
MT2 1.5 years

1975 MT1 1 month
MT2 3 months

8.2. Radiography

1966 RT1 12 months
RT2 3 years

1975 to date RT1 3 months
RT2 9 months

There has clearly been a significant change in attitudes to training and work experience periods. Indeed, EN473 plans to make changes to its training hours requirement in the proposed new edition currently going through the voting procedure.

9. The Company Level 3 (not ASNT Level 3)

Between 1966 and 1971 for the Level 3 there was no general or specific examination but a practical test was proposed. However, it was stated that this may be waived by the employer based on documentary evidence. In 1975 the full examination for Level 3 proposed general and specific theory plus the practical but the waiving of the exam for the Level 3 was still accepted (until the 1988 edition).

The 1980 edition changed the Level 3 exam to include the Basic exam plus the Method examination comprising general and specific theory papers but now no practical exam. (It was a requirement that Level 3 candidates would demonstrate a minimum period of time at Level 2 (or equivalent to Level 2) prior to sitting the Level 3 exams).

In 1988 the practice of waiving the Level 3 exam was removed.

NOTE: In 1976 ASNT introduced their ASNT NDT Level 3 programme as an independent theory test which included a Basic examination and a Method examination as determined by ASNT themselves. The programme began with a 6 month grandfathering programme and was then followed by examinations which are now available at exam locations around the world.

10. Weighting Factors

From 1966 - 1988 the Employer decided his own weighting factors (within the limits supplied in SNT-TC-1A and put them into the Written Practice.

In 1988, however, the weighting factors were removed and replaced by simple averaging (however, all flaws in the practical test are to be located to pass the practical test).

11. Authority to Work

The Level 3 may have responsibilities within the Written Practice but in all cases it is the employer who is responsible for authorising the operator to work. (This is in fact also the case in Central Certification.)

This authority to work will be based on all aspects of the Written Practice being in place.

12. Expiry Dates – Recertification

1966 – no expiry date proposed – to be defined by the employer in the Written Practice.

1971 – all Levels 3 years

1984 – Level 3 expiry moves out to 5 years

2006 – Level 1 and 2 expiry moves out to 5 years

13. Other 2nd Party Schemes

EN4179/NAS410 European/US Aerospace programmes demand a company Written Practice to meet the needs of the purchasers of the employer's services.

14. 3rd Party Schemes

ISO9712; EN473 – In both cases the exams are provided by the third party independent of the employer.

The format of the exams is pretty much as that created by SNT-TC-1A, the big difference being that the employer can have NO input into the examination process.

15. Conclusions

- a) Almost all current NDT operator certification programmes follow the format provided by SNT-TC-1A.
- b) There are many thousands of NDT personnel around the world who are examined into company Written Practices based on SNT-TC-1A.
- c) My experience is that the second party process of NDT operator certification and employer responsibility is not fully understood.
- d) If the system is used in the way intended by ASNT it provides a well structured programme for NDT personnel certification.
- e) SNT-TC-1A in 2006 is STILL a recommended practice.

- f) The employer must create a Written Practice and is responsible for giving the operator the authorisation to work.

References

- [1] ASNT Recommended Practice SNT-TC-1A 2006 Edition – Personnel Qualification and Certification in NDT
- [2] BSEN4179 2005 – Qualification and Approval of Personnel for NDT
- [3] EN473 2000 – Non Destructive Testing – Qualification and Certification of NDT Personnel – General Principles
- [4] ISO 9712 2005 – Non Destructive Testing Qualification and Certification of Personnel