The Same NDT Certification Scheme for Everybody: a Dream or a Need

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Abstract. The aims of the different standards or recommended practices for the NDT personnel qualification and certification are quite similar, only the way to reach them is different. Is it possible to design a certification scheme satisfying all major standards, trying to decrease their weaknesses and to increase the global quality at an acceptable cost for the industry? Is it a dream? The author's opinion is that such a scheme is not only possible but is a need for the future and that the only question to be answered is "when?"

Introduction

Can you always trust the results of a non destructive examination only by the fact that the report is signed by a level 2? The answer is NO, only because there are so many ways to become level 2, so many recommended practices, so many procedures, so many standards… And if you decide to make some investigations, it will take you a lot of time and cost a lot of money. Moreover, the result of your investigation can be in some occasions acceptable if you don't have a very deep knowledge of the subject and unacceptable if you are a specialist in NDT personnel certification.
Our dream is to have a better knowledge of the performance of the operator when he signs "level 2". Is it possible?

History and actual situation

1.1 History

At the beginning of NDT personnel certification, there was one and only one reference document: the recommended practice SNT-TC-1A. Based on this document, some employers, in very few activity sectors, wrote a procedure to explain how they proceeded to qualify and certify NDT personnel.

Later, some standards appeared, in France, in Germany, in UK, all different, some very complicated and difficult to understand.

The need for some harmonisation, within Europe and in the world, made that different, national or non-national, standards or recommended practice, appeared, were revised and still exist: EN473, ISO 9712, SNT-TC-1A, IS-13805, ANSI/ASNT CP 189, EN 4179, NAS 410, …….

1.2 Current Situation

Actually, a lot of certification schemes exist, depending of the activity sector, the history, and the requirements of the customers.

EN473, ISO 9712, SNT-TC-1A, IS-13805, ANSI/ASNT CP 189, EN 4179, NAS 410, and some others exist simultaneously.

The example of the company manufacturing a same bolt for the petrochemical industry, the railways industry, the nuclear industry in France, the nuclear industry in the USA and the aerospace industry is well known. Such a company needs to have five different systems of certification for its NDT personnel. Five different schemes to examine the same bolt with the same method, the same technique and the same procedure! Is it acceptable? We think NO. It is too expensive, too difficult to manage and it brings no advantage in terms of quality, since only the acceptance criteria are, sometimes, different.

NDT personnel certification is a need for the industry, to demonstrate the competence, it is a need for the customers to have the necessary confidence but sometimes the nonsense is too expensive.

Advantages and disadvantages of the actual schemes

Any scheme has advantages and disadvantages. The purpose of the next paragraphs is to remind some of them.

2.1 Employer's certification

When correctly used, the main advantage of a certification based on a recommended practice and defined in the employer's procedure is that the certification is dedicated to the production of the employer and can be up to "procedure specific".

Special techniques, sometimes depending on the equipment (like TOFD in UT or real time digital radiography) or special tools or technology (like phased array) are very easily considered is this scheme.

Another advantage is that a level III supervision is strictly necessary within the company to manage the system.

The main disadvantage, of course, is within the words "by the employer" because all employers do no have the same understanding…

The major problem of this certification scheme is that under the same words "level II", very different situations can occur, depending on the employer point of view and procedure.

The employer's certification is probably the best for important companies but presents very often the disadvantages of a third party certification when applied by small companies too small to have their own structure and who need to work with "outside agencies" as the "outside" Level III has sometimes no deep knowledge of the specific aspects.

2.2 Third party certification

Third party certification has the main advantage, when correctly used, of being independent of the employer and to be the same for everybody. A minimum level of knowledge is defined under the words "level 2" and the definition is only depending on the standard used.

On the other hand, the specific knowledge of the certified people can be very poor. More over, some employers have had a very bad misunderstanding of the scheme and have no level 3 within the company!

There is no harmonization within the definitions of the activity sectors and according to a same standard the sectors can be very different from one country to another, some countries having also considered sectors not foreseen in the standard and based on special techniques or tools which are quite specific to the equipment used.

For small countries, the third party examination presents also another disadvantage; for practical and economical reasons, very few activity sectors can be considered and the certification cannot be used by everybody (for example "foundry" in Belgium).

A same scheme for everybody, a dream or a need?

Is it possible to have a same scheme for everybody?

Such a scheme should be interesting for the employers, decreasing the costs of multiples certifications and allowing important simplification. For example, when manufacturing a pressure equipment according the PED, a manufacturer may used the ASME BPV Code for the design and the construction, including the examination, but the NDT certified people must be "approved" by a Recognized Third Party Organization (RTPO); in Europe, the main Certification Bodies are recognized as RTPO and many people are therefore automatically "approved" but an American manufacturer, using correctly the ASME Code, has to let his personnel to be approved by a RTPO.

Such a scheme should also be interesting for the customer: a minimum level of knowledge being defined for the NDT personnel and everybody speaking the same language.

Is it a dream to imagine a same scheme for everybody? Considering the advantages and the disadvantages of the actual certification scheme, trying to decrease the disadvantages, to increase the advantages, to decrease the costs, we consider that such a scheme is possible.

Moreover, we consider that such a scheme is a need: to allow small countries to have their own scheme, to allow major countries to simplify the current situation, to allow manufacturers to have access everywhere in the world, to allow customers for a same confidence everywhere…

Of course, the minding of many people is to be changed and all the Certification Bodies have to act together to define a new standard:

What should be this standard?

Developing a new standard is never writing on a white sheet of paper: existing standards and recommended practices are very good basis to be taken into consideration, together with the actions to be taken to decrease their weaknesses.

Tentative definition of the standard

3.1 Basic principles

Based on the needs of different countries (small or great), of the industry and of the customers, some basic principles can be defined:

In a first step:

- Third party certification to be considered as a base for any NDT personnel
- One or more Certification Body per country, accredited according to ISO 17024 and a guide dedicated to the certification of NDT personnel, asking for a audit team including a technical expert from another country, recognised by EFNDT or ICNDT
- Mutual recognition agreement between the CB
- Few activity sectors, defined in terms of products and/or possible defects, with the same definition for any country
- ISO 9712 may be used as guidelines
- ….

In a second step:

- Employer's certification according to an internal procedure written in conformity with the requirements of the international standard
- Certification by a CB to be considered as a prerequisite for the employer certification
- Assigned Level 3 responsible for any employer
- ….

Using these basic principles, it can be considered that the requirements of the usual standards or directive (including ASME BPV Code and PED) should be fulfilled regarding the certification of the NDT personnel.

3.2 Some more considerations for the "new standard"

Based on our knowledge, our experience and some reflections, considerations can be given about the prerequisites, the examinations, the certification and its renewal.

Considering the needs of the countries where few training possibilities exist, the fact that internet is accessible everywhere at anytime and the need to have a complete separation between training and certification, our opinion is to reduce the minimum required duration of the training courses, which is also very different from one people to another (depending on the experience and the initial education level) and therefore, very difficult to define within a standard. Our proposal is to define the minimum knowledge, per method, per sector and per level. This knowledge should be acquired by training courses (with a defined minimum duration), completed by self-study or by additional training courses, depending on the initial education level and on the experience.

Concerning the minimum experience requirements, our opinion is that it must be maintained and that two durations should be defined: a first, as prerequisite for the third party certification, a second, as prerequisite for the employer certification. A minimum period of experience prior any examination should be defined.

Currently, some candidates, trained in training centre independent but close to an examination centre can succeed, with a minimum of chance, even if they are a little bit "too short", because the limited number of questions and/or because the use of multiple choice questions. It is not acceptable for the industry (the employers) and for the customers! We propose to increase the number of questions and/or to use simultaneously multiple choice and written questions for the basic and for the "sector specific" examinations. The questions should cover the whole content of the "minimum knowledge", The technical content and level of the questions should be evaluated during the audit for the accreditation, according guidelines from international organizations, to assume a minimum of harmonization.

For the practical examination, we propose to have more specimens to examine, with or without flaws or defects and, for the level 2, to have a written part, open book, where indications are described and where the candidate must define the (non) acceptability, according several standards.

We consider also that, concerning the third party certification, "bridges" are necessary between different sectors: a same bolt from a same manufacturer is examined according the same procedure for conventional, nuclear or aerospace applications and it should be considered that a third party certification in the sector "Metallic products" or "Aerospace" is equivalent, as basic certification, before the final employer's certification.

Our opinion is that the evolution of the techniques is so important that it is no more acceptable to consider renewal or re-certification to be based on experience continuity or on practical examination only. Therefore, if the renewal of the certification for the third party certification should be based on experience continuity, the re-certification for the third party certification should consider basic, specific and practical examination and the re-certification for the employer's certification should consider employer's specific and practical examination. Consideration could also be given to documented continuous training. Concerning the employer's certification, consideration should be given to the "job specific" or "technique specific" certification as it seems evident that the certification should be completed when specific equipment is changed (for example change from analogue to digital for the UT equipment).

The overall responsibility of the manufacturer remains and the certification of its NDT personnel is from its responsibility. Employing people certified by a third party gives the employer a guarantee of minimum knowledge, recognized at an international level.

3.3 Discussion

A first question is "who takes advantages of such a system"?

The answers are multiples and easy to find:

- anybody who is currently using EN473 or ISO 9712 or EN 4179/NAS 410
- anybody who wants to use the Code Case 2235 to replace radiography by UT
- any American manufacturer who wants to make a pressure vessel according the PED (the approval of the NDT personnel by a RTPO will be very easy)
- anybody working according ASME BPV, including section XI
- anybody working according API 1163 (referencing ASNT ILI-PQ)
- …

Another question is "is it not too expensive"?

Our opinion is that a unique certification will always be cheaper that multiple certifications, even if the cost and duration of the examinations for the certification will increase. The confidence of the customers will also save a lot of time in discussion.

A last question could be "how to go from the present situation to the new one?"

A great care should be considered describing the "transition period" but it is necessary to define clearly a maximum duration for the previous certifications. Otherwise, one of the main goals of the new approach (minimum level of knowledge) will be lost for at least one generation!

Conclusion

Everybody feels a need for a unique, harmonized NDT personnel certification scheme assuming a good quality, with a minimum guaranteed level of knowledge, at a reasonable cost and where any customer, any employer can find its own requirements.

It seems also evident to us that "limited" is only valid for level I and "specific" for Level II but that the Level III must remain "general", covering all the aspects of the NDT, completed, if necessary, by a parallel "specific" Level II if the Level III has to perform examinations on the production.

The system described in our "tentative" should be considered as a basis for reflections and for a new global approach to replace the present situation which becomes too difficult and too expensive for many employers and many customers.

The main problem is not to define the new approach; it is the difficulty, for everybody, to accept to change something that seems to work correctly. Look around, it does not work properly: customers are asking more and more specific examinations because they have no real confidence; more and more standards for the certification of the NDT personnel appear and a lot of people have even no idea of their misunderstanding…

We think that such a new approach is not a dream. It is a need for the future, a need for the industry, a need from the customers. The impulse to develop such a new standard must come from the industry and from the customers. We hope it will come soon.

Important remark

The content of this document comes from a reflection of the authors and does not represent necessarily the opinion of their respective employers nor that of the BANT where they act as active members.