



INTERNATIONAL COMMITTEE FOR  
NON-DESTRUCTIVE TESTING

*The World Organisation for NDT*

## REPORT

# ICNDT Workshop on NDT Laboratory Accreditation & Personnel Certification

15<sup>th</sup> APCNDT, Singapore 16th November 2017

This workshop was intended to allow members of different NDT societies to share information on their NDT laboratory accreditation schemes and to share the best practices in NDT Lab Accreditation to ISO/ IEC 17025 or ISO/IEC 17020. The workshop also shared knowledge on the personnel certification in the context of laboratory accreditation.

### List of speakers and topics (with [links to presentations](#))

1. Introduction & Scene Setting ( Need for reliability, quality chain, NDT infrastructure, role of standards, certification and accreditation)  
Mike Farley
2. Accreditation of NDT Laboratories by SAC/ SINGLAS – A review of Experience in Singapore  
Mr. Sze Thiam Siong
3. NDT Laboratory Accreditation to ISO / IEC 17025 – Australia Approach  
Paul Grosser
4. Accreditation for NDT Laboratory by HKAS following HOKLAS Scheme & Expectations for ISO/IEC 17025:2017  
Sajeesh K Babu
5. Accreditation of NDT Laboratory – European Perspective  
Mr. Bento Ottone Alves
6. Personnel Certification in India  
D.Doshi
7. The current status of ISO/IEC 17024 set up in South Korea  
Dr. Jongpo Lee and Kyungcho Kim
8. Recommendations by ICNDT WG1 for the upcoming changes in ISO 9712:2012  
Dr. Alexander Mullin

### Summary of Key Points and Topics for further discussion

In his opening remarks, [Dr Mike Farley](#) made the point that to achieve quality in NDT there needs to be proper attention to all the links in the quality chain and this in his opinion seems to be recognised (at least in part) in the ISO standards for accreditation of NDT Laboratories and Inspection Bodies.

[Sze Thiam Siong](#), Chairman of the Technical Committee for NDT of the Singapore Accreditation Council, explained the extensive use of accredited NDT laboratories in Singapore - 44 in total - across all industries. He identified two major challenges in complying with ISO 17025 for NDT:

- i) Lack of proficiency testing
- ii) Difficulty in adopting measurement uncertainty requirements

He commented that neither are necessary if NDT is considered to be an "Inspection" activity (ISO 17020) but both are mandatory if NDT is considered to be "Testing". SAC have produced their own Technical Note NDT 001 "Specific requirements for NDT Laboratories" to supplement/explain the standard. Technical Note 002 "Guidelines for recognition of NDT Personnel" has very specific requirements – the only Level 3's that are accepted are ASNT, PCN, CSWIP and SSNDT.

[Paul Grosser](#) is President of AINDT and a member of the NATA Board. There are 171 accredited NDT Laboratories in Australia and many standards used in the country mandate ISO 17025. He stressed a number of specific requirements in Australia, which take account of the operations often being remote from the headquarters NDT Laboratory:

- i) Each NDT Laboratory must have nominated technical control(lers) who must be ISO 9712 L3 in the method. These may delegate to a *local* senior L2 or L3 in another method.
- ii) The NDT Laboratory must have approved by the Level 3 and these must be validated/technically verified if not against a specific code or standard
- iii) Estimation of Measurement Uncertainty is mandatory when a client requires it, when required by the product code, or when relevant to the validity of the result (hence MU is not necessary when reporting all cracks found in a weld but is necessary if there is a quantitative acceptance standard!)
- iv) An internal proficiency test is required if the NDT task to be carried out is outside the scope of the individual's certification. In practice this leads to each NDT technician having their own approval matrix.
- v) Annual field technical control/ surveillance for each major method
- vi) Five yearly documented proficiency test of each technician (some employers achieve this by re-certification every five years as opposed to the ten permitted by ISO9712)
- vii) Biannual external proficiency test as a measure of the competence of a facility.

[Sajeesh Kumar Babu](#) covered NDT Laboratory accreditation in Hong Kong. He began by summarising some of the important changes in the 2017 version of ISO17025:

- i) Introduction of risk-based thinking – allowing for some reduction in the prescriptive requirements, and replacement with performance-based requirements
- ii) Greater flexibility than previous edition in the requirements for processes, procedures, documented information and organisational responsibilities
- iii) a 'laboratory' has been defined as a "body that performs one or more of the following activities"
  - Testing
  - Calibration
  - Sampling, associated with subsequent testing or calibration"

He then provided some specific information on NDT Laboratory accreditation by HOKLAS:

- i) The approved signatory with overall responsibility for the operation of the accredited laboratories on NDT methods shall have the necessary

- qualifications, experience and technical knowledge to ensure that clients', testing standards, HKAS and HOKLAS requirements are met.(ie relevant ISO 9712 certification plus 4 years of experience of quality system)
- ii) Testing operators shall normally be supervised by a suitably qualified supervisor having the necessary qualifications, experience and technical knowledge. A person holding a valid certificate of Level 3 in applicable NDT method(s) issued by a recognized certification scheme, in accordance with international standard (e.g. BS EN ISO 9712 or equivalent) satisfies these requirements for MT, PT, RT and UT. The ratio of supervisor to testing operators shall be not less than 1 to 19.
  - iii) Testing operators shall have the necessary qualifications, experience and technical knowledge. A person holding a valid certificate of Level 2 in applicable NDT method(s) issued by a recognized certification scheme (e.g. PCN Level 2, ACCP Level 2 or equivalent in accordance with international standard (e.g. BS EN ISO 9712 or equivalent) satisfies these requirements for MT, PT, RT and UT. Laboratories are required to demonstrate that all personnel hold appropriate personnel certificate(s) and have received training in accordance with a documented programme, and that they possess a current certificate demonstrating their competence.
  - iv) There are very specific requirements on equipment calibration and verification
  - v) Measurement Uncertainty requirements of ISO 17025 are waived except for UT thickness measurement and coating thickness measurement
  - vi) Items to be tested shall be identified such that traceability is maintained throughout the examination process. Identification shall be such that the areas specifically examined, (e.g. welded seams), can be identified against the corresponding test results.
  - vii) Approved signatories or supervisory staff shall ensure that the work capacity is not exceeded on a day-to-day basis. If the actual amount of work completed is higher than the capacity, the approved signatory shall provide justification that the quality of test results has not been compromised before signing the test reports. The justification shall be recorded and relevant supporting evidence shall be kept. The maximum acceptable rates of NDT of welds are tabulated.
  - viii) Supervision is of particular importance for work performed on sites remote from the laboratory, e.g., in the Mainland. Laboratory management shall implement a system where HOKLAS approved signatories or other suitably qualified supervisors will conduct frequent unannounced on-site visits to check the work of on-site staff. The frequency of unannounced on-site visits shall be based on the quantities of site tests conducted. As a minimum, every on-site testing operator shall be checked at least once a year.
  - ix) It is the responsibility of the laboratory management to protect its operators from undue pressure intending to affect test results. A laboratory shall have documented arrangement to do so. During an assessment, the arrangement and records of implementation will be critically examined.

[Bento Alves](#) who is convenor of the EFNDT WG4 which covers accreditation of NDT gave a European perspective on the subject.

He opened by mentioning the new version of ISO 17025 (see also above). In Europe, this general standard for all types of laboratory is supplemented by an EA guidance document "EA-4/15 Guidance:2015 Accreditation for Non-Destructive Testing" and this will need to be updated to reflect

the new version of the standard. Input to this update from EFNDT/ICNDT would be valuable. There is also now greater attention being paid to NDT accreditation at the international (as opposed to European) level. The AIC (Accreditation Committee) and IC of ILAC (International Laboratory Accreditation Cooperation) are thinking about creating a Working Group 5 specifically for NDT Laboratories and if they do Dr Alves recommended that EFNDT/ICNDT should participate.

In Europe, as in the Asia Pacific region (see above) there are difficulties in conforming to the standard where it is not sympathetic to the specifics of NDT in the areas of “Validity of results”, “proficiency testing” and “measurement uncertainty”.

As a result of a survey in 2015, Dr Alves was able to give some indication of the numbers of NDT laboratories in the different countries of Europe:

<b>Country</b>	<b>N° of Accredited NDT Labs (ISO 17025)</b>	<b>Country</b>	<b>N° of Accredited NDT Labs (ISO 17025)</b>
Denmark	7	Czech Republic	6
Poland	5 (600)	Estonia	11
Portugal	10	Finland	6
Russia	>300	Germany	137
Serbia	24	Lithuania	7
Spain	18	Luxembourg	1
Austria	<10 (34 Calibration,238 Testing,126 Inspection,70 Certif.)	Latvia	2
France	? (119)	Norway	5
Italy	(109)	Slovakia	10
Greece	10	Slovenia	6
Switzerland	3	Macedonia	1
Sweden	19	Turkey	13
United Kingdom	54 (82)	Malta	0
Belgium	18	Cyprus	1
Croatia	2	Czech Republic	6

Finally, Dr Alves challenged ICNDT and EFNDT to clarify responsibilities and ensure proper representation on the bodies creating standards and guidance in this area.

Dr [Diwakar Joshi](#), Vice President, Indian Society for Nondestructive Testing (ISNT)

presented on topic “NDT Certification Practices in India & the Way Forward”.

Standard IS 13805 The Indian standard for qualification and certification is IS 13805: 2004, General Standard for Qualification and Certification of Non-Destructive Testing Personnel — Specification which superceded the version first released in 1993. A revised draft standard is ready now, more in line with the latest ISO 9712:2012.

ISNT-NCB (National Certifying Body) has its own Level – III certification program and more than 450 candidates have been certified over the years. Considering all levels, more than 2500 candidates have been certified till now. The NCB is in the final stage of submitting the application for accreditation as per ISO 17024. There are three levels of qualification, Level-I, Level-II and Level-III. Generally, the number of candidates going for Level-II certification are more. Local language Level-I certifications are also taken. Verification of education, experience, training and vision test is carried

out by the training center and further verified by the examiner. Qualification examinations are conducted by NCB. There are 4 regional controllers of examinations all over India working under chief controller of examinations who reports directly to chairman NCB.

Special attention has been given to the training of trainers and to the challenges of dealing with people whose English is poor.

[Kyungcho Kim](#) presented on the current status of ISO/IEC 17024 set-up in South Korea.

The Korean Society for NDT has set up its own Certification Body to provide certification of NDT personnel in accordance with ISO 9712. The scheme, known as KPCN, complies with ISO17024. It is accredited by the Korean Accreditation Body and registered under the ICNDT Multilateral Recognition Agreement for Personnel Certification Bodies. Mr Kim commented on the extension of the IAF Multi-Lateral Agreement to include bodies involved in certification of personnel and hopes this will benefit the recognition of KPCN certification.

[Alexander Mullin](#), Chair of ICNDT WG1, presented the Recommendations by ICNDT WG1 for the upcoming changes in ISO 9712:2012. The recommendations are based on several ICNDT WG1 projects over the last four years, the outcomes from the NDT Certification conference in Vienna in 2017 and the submission of ICNDT to ISO TC135 SC7 at the commencement of the five year systematic review of ISO9712.

**Mike Farley** in his concluding remarks thanked the speakers for their presentations and the audience for their participation in the discussions. He noted that the countries of Asia-pacific region which had adopted accreditation had found some problems with the standard in areas such as measurement uncertainty but had built upon the standards in several important ways thought important to ensure quality in NDT. He considered it essential that ICNDT and the regions become more involved in the formulation of standards and guides relating to accreditation of NDT organisations and inspection bodies.

Report by Mike Farley.