

The
Journal



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**International
Committee for
Non-Destructive
Testing**

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The world Organisation for NDT

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Harmonization: a target for 2002!

The preparation of an International Guide based on ISO 9712 has been approved at the PGP meeting in Brisbane. Regional Groups will play an important role in the harmonisation process.

HARMONIZATION OF TRAINING & CERTIFICATION OF NDT PERSONNEL THROUGH REGIONAL GROUPS

Harmonization of training & certification of NDT personnel internationally is essential to achieve high standards of safety and performance of engineering components. Training & certification of NDT personnel, as an essential pre-requisite to safety and performance, is recognized by many NDT professional bodies. Thus, these professional bodies have initiated their own training & certification schemes following their own national standards. While some such programmes (such as ASNT, PCN, ISNT, etc.) are well structured and established, many are in various stages of development and acceptance. However, a unanimous opinion that has been expressed by the developed and developing nations is the need for world harmonization and recognition of NDT personnel. International harmonization would ensure uniform levels of competence and standard of testing throughout all the countries. The first step in the international harmonization is the identification of the common international standard on which the national standards can be based. Towards this end, the International Committee on NDT (ICNDT) has played a leading role towards acceptance of International Standards Organization document ISO 9712 as the basis for harmonization.

The essential requirement of international harmonization is the mutual recognition of the individual certification schemes. While globally this can be achieved in a single step, the logistics would make it rather difficult to implement. The better and pragmatic step and a realistic solution towards this is the identification of an accreditation agency and coordinating this activity regionally. Thus, it is well recognized that the regional groups must play a significant role towards achieving harmonization in an expeditious manner. The regional bodies can interact effectively amongst themselves, mutually identify the strength and weaknesses of their certification schemes and thus arrive at a common platform so that harmonization based on the international ISO 9712 among the region is ensured. ICNDT should play the role of ensuring uniform standard among the regions, providing global perspective and giving support to the needy countries towards achieving the standards of harmonization. Such a step should also take into account the needs, priorities and realistic assessment of the ground realities of these countries. ICNDT is committed to work closely with the regional groups and formulating/developing the guidelines for such regional harmonization.

It is appropriate to recall the participation of Dr. G. Nardoni and myself in the IAEA Coordinated meeting on Mutual Recognition of various Certification Schemes, August 27-29, 2001, Dhaka, Bangladesh. The meeting had very useful discussions. The major recommendations led to close working of ICNDT, Regional Groups of NDT and IAEA towards preparing a model quality manual for implementing the requirements of ISO 9712 and EN 45013. It was also recommended that IAEA and ICNDT should work together to prepare an agreement for administration and technical support towards the mutual recognition of the worldwide certification schemes already in existence.

September 11, 2001 terrorist attack on World Trade Centre, New York, USA and December 13, 2001 terrorist attack on Indian Parliament have shook the world. However, a few fanatic individuals and organizations cannot be allowed to deny billions of persons on this planet to enjoy the blessings of life on the Earth. ICNDT stands tall, among the international organizations, in its objectives, commitments and plans to bring a better quality of life and work in harmony to support and learn from each other towards a safer and better world.

I wish all the colleagues in ICNDT a joyous and prosperous year, 2002.



Baldev Raj
Chairman

Policy & General Purpose Committee, ICNDT

ICNDT Chairman address for 2002



Happy new year for ICNDT Members and all the international NDT community. We wish a world wide peace, joy and prosperity.

Giuseppe Nardoni

ICNDT: A year around the world



BUENOS AIRES
1st Ibero American Meeting on AE



HOUSTON
2nd Pan American Conference



DHAKA
IAEA/RCA Meeting



MADRID
EFNDT General Assembly



TREST
Int. Workshop NDT Progress



MOSCOW
3rd Int. Conf. Pipeline Inspection



BRISBANE
10th Asia-Pacific Conference



TOKYO
ISO/JSNDT Meeting



DAMMAN
Int. Conf. NDT & Corrosion



KIEV
5th Ukrainian Conference



ATLANTA
ASME Conference



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Address: Via A. Foresti, 5A - 25127 Brescia (Italy) Tel. ++39 030 3739173 - Fax ++39 030 3739176 - E-mail: aipnd@numerica.it

2001 Events

UKRAINE

5TH UKRAINIAN CONF. / NDT 2001 EXHIBITION, APRIL 24-27, KIEV

The 5th National Conference of Ukrainian Society for NDT and Technical Diagnostics was recently held in Kiev at the Paton Institute, the prestigious organisation which is a leading force in the field of welding.



(l-r) Mr Nardoni and Prof. Troitskij at opening ceremony

The Ukrainian Society is very active in the field of NDT : it organises in addition to this bi-annual Conference, many seminars and training courses, with a personnel certification scheme similar to EN473. A quarterly magazine and an info bulletin are also regularly issued. The Conference was very successful both for the quality of papers presented and for the large attendance which included several young students. The exhibition was enriched by many equipment manufacturers and service companies. Mr Nardoni, in his capacity as ICNDT Chairman, was openly and warmly welcomed by Prof. Troitskij, President of UksNDT.

RUSSIA

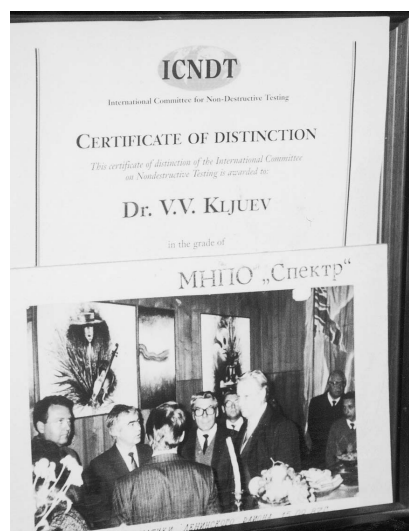
3RD INTERNATIONAL CONFERENCE PIPELINE INSPECTION. MAY 21-26, MOSCOW



V. Klyuev, S. Vahaviolos and E. Roche displaying ICNDT flag.



Distinguished attendees ready for the banquet



An historical picture: A very young Prof. Klyuev meeting Yeltsin, whom he served as personal secretary for three years.

RELEASE

CANADA

CANADIAN INSTITUTE FOR NDE

The Canadian NDE industry took a significant step forward recently with the amalgamation of the Canadian Society for Nondestructive Testing and the NDE Institute of Canada. Through the dedicated and combined efforts of both organizations, the Canadian Institute for NDE has evolved. "These two companies were originally formed to meet the requirements of the Canadian NDE community and by combining operations will create a more efficient and customer oriented organization, better able to meet the needs of today" states Mr. Al Higgins, Chairman of the Board of Trustees of the newly formed CINDE. The CINDE has taken a leadership position and our present structure now enables members access to technical information, quality training and scholarship programs, book ordering services and discounts, employment resources, networking opportunities and a strong voice to represent your interests in the standardization of NDT certification both nationally and globally. Mr. Higgins announced that this year of operation has been the most successful fiscal year in over a decade, providing strong economic growth, and significant improvements in the level of services offered to its customers and members. "We are very proud of the new organization and wish to thank the employees, sponsors, members and volunteers for their continued support throughout the merging of these two organizations," he said.

CINDE membership has increased both nationally and internationally and we are recognized as one of the premier training facilities for nondestructive testing. Trainees from across Canada, the USA, Latin America, Africa, Europe and the Far East come to attend CINDE training courses. Recently, at the membership's Annual General Meeting held on June 15, 2001, Mr. Micheal Dudley, Aerocom Inspection Service Limited and Mr. Bruce Metcalf, Chemetall Oakite both received Fellowship Awards for their continued significant contributions to the advancement of NDT. Also presented was a scholarship award in the amount of \$500.00 to Mr. Andjelco Tesic.

CINDE will host the 16th World Conference on Nondestructive Testing in Montreal in 2004. This conference will provide a forum to showcase the skills and products of the Canadian NDE industry.



Mr D. Marshall President of the 16th world Conference in Montreal 2004.

CZECH REPUBLIC

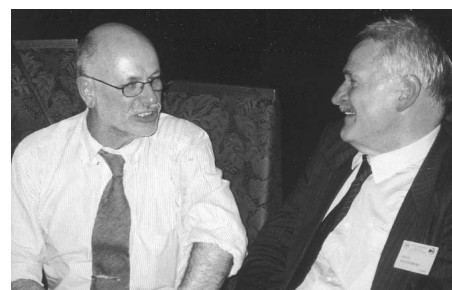
NDT IN PROGRESS-MEETING OF NDT EXPERTS JUNE 20 - 21, 2001 IN CASTLE TREST, CZECH REPUBLIC

The baroque castle of Trest in southwestern Moravia of the Czech Republic was the venue of a very interesting and

informative meeting of almost fifty NDT experts of the Czech Republic, Germany, France, United Kingdom, Italy, USA, Belgium, Austria and Switzerland. Several graduated young students preparing their PhD at the Technical University of BRNO were invited to join the sessions. The most important aim of this international meeting was to exchange and discuss expert's knowledge during the workshop and in pleasant atmosphere during social events beyond the sessions.



Dott. Obratz with Prof. Sikula is opening the meeting.



Trest. Mr Dobman, Fraunhofer Institute Director and Mr Wustemberg, BAM Berlin, always discussing NDT Research.



Trest. Research people searching for the best flavour of beers!

On June 20, the international workshop was inaugurated by the Past President of the Czech NDT Society, Mr. Obratz. He expressed his thanks to the organizers, the Czech and the German Society for NDT, and welcomed invited speakers and participants, especially the representatives of several NDT organizations and NDT societies: Dr. Nardoni, Chairman of ICNDT, Dr. J.M. Farley, ICNDT General Secretary, Dr. Roche, President of the EFNDT, Prof. Leluan, President of Cofrend, Dr. Luethi, the Past President of the Swiss Society for NDT and Mr. Aisenbrey, the Past President of the German Society for NDT.

The scientific program was divided into five half-day sections. The first section focused on NDT topics of Civil Engineering, demonstrating new methods such as new usage of ultrasonics, seismic technique, acoustic emission and moisture measurement.

The second workshop day was dedicated to radiation methods in the morning session and to the electrical and magnetic ones in the afternoon.

The final section on June 22 dealt with different topics as quality of NDT, NDE in Works of Art and neutron radiography. The workshop and the concept of section with invited speakers and common discussions at the end of each section was very well received. It could be the starting point for a new type of seminars continuously reflecting "NDT in Progress".

An abstract booklet and proceedings containing all presentations were issued at the beginning of the international workshop. These publications are still available in limited number. The abstract booklet will be sent on request free of charge. Proceedings (307 pp.) may be obtained against payment of 20 EURO. The limited number of requests will be accepted at the e-mail address: cndt@cndt.cz.

J. OBRATZ (CNDT) and R. LINK (DGZfP)

LIBYA

THIRD AFRICAN CONFERENCE ON NDT

The Third African Conference on NDT held in Tripoli-Libya during the period 22-24/10/2001, was organized by Tajoura Nuclear Research Center under the sponsorship of NASR (National Authority For Scientific Research), IAEA (International Atomic Energy Agency), AAEA (Arab Atomic Energy Agency and LAA (Libyan Arab Airlines). The conference has been attended by more than 400 people representing sponsors, engineers, NDT specialists and some related from Libya and different Arab and African countries.

During the conference, 35 technical papers were presented, covering different topics of NDT field.

In conjunction to the conference there were two technical meetings: The first one was aimed to the last steps for the foundation of Libyan Society For Non-destructive Testing (it will be soon).

The main speaker in this meeting was Mr Saadoun Eswihli.

The other meeting was for the establishment of ACNT (African Confederation for NDT).

Saadoun Eswihli
General Co-ordinator for NDT
Libyan society foundation

DAMMAN - SAUDI ARABIA



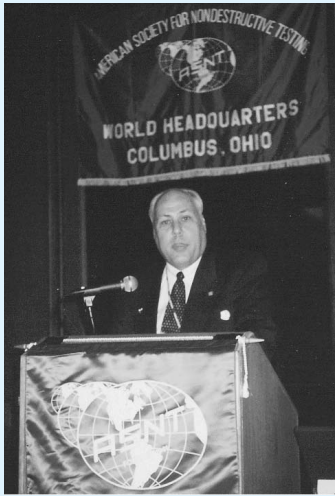
Conference reception desk at ASNT Chapter Meeting in Damman.



"Peter", Chairman of ASNT Chapter, opening the meeting.

ICNDT REGIONAL GROUP

Pan American Regional Group



Mr. Culberston
Chairman of PACNDT

PAN AMERICAN CONFERENCE ON NON DESTRUCTIVE TESTING

The Second Pan-American Conference on Nondestructive Testing (PACNDT) in Conjunction with ASNT's International Chemical and Petroleum Industry Inspection Technology (ICPIIT)

VII Topical Conference was held in Houston on 18-22, June 2001.

Next conference will be held in Rio de Janeiro in the year 2003.

ABENDE has now the presidency of the Pan American Regional Group.

TERMS OF REFERENCE PAN AMERICAN COMMITTEE ADOPTED IN KINGSTON, JAMAICA DECEMBER 1995 Revised June 2001

1. Definition

1.1 Non-destructive testing is a procedure, which covers the inspection and/or testing of any material, component or assembly by means, which do not affect its ultimate serviceability.

1.2 In the present state of knowledge the following methods of non-destructive testing are included:

a) radiography, b) ultrasonic, c) eddy-current, d) magnetic particle, e) liquid penetrant, f) visual and optical, g) determination of physical and technological properties, h) acoustic emission, i) thermography, j) vibration analysis

This list is not intended to be exclusive but merely indicative of the nature of tests involved.

2. Name

The organization shall be known as the Pan American Committee for Non-Destructive Testing. The abbreviated terms "PANNNDT" used below will be taken to refer to this organization.

3. Objectives

3.1 The objectives of the Committee shall be to promote collaboration among North, Central, South America and Caribbean countries, in all matters relating to the development and use of all methods of non-destructive testing.

3.2 To this end, the Committee shall in association with National and Regional Organizations on Non-Destructive Testing.

3.2.1 Encourage the organization of Pan American conferences on the methods and uses of non-destructive testing at intervals of three to four years.

3.2.2 To encourage the formulation of international standards on non-destructive testing in collaboration with the International Organization for standards (ISO) and National Standards Bodies.

3.2.3 Encourage the formation of Organizations on non-destructive testing so that accredited national representatives to this Committee can be appointed.

3.3 The PANNNDT Committee shall not engage in commercial or trade activities, and shall not concern itself with wage rates, prices or markets.

4. Membership

4.1 The PANNNDT shall be made up of one representative of each country, nominated by an appropriate national society or national body in that country which has registered its intention to collaborate and cooperate in the work of the Standing Committee.

Each country may nominate a second representative to the Pan American Committee, but he/she shall not be entitled to vote except in the absence of the first representative.

If the second representative is also absent, the delegation may appoint another representative from its own country. Proxies must be appointed in writing to the President prior to the commencement of a Pan-American Committee meeting.

4.2 Although a country's nominee may be attached to a commercial organization, it shall be understood that he/she represents his/her country's interests in the development of the uses and methods of non-destructive testing and must not concern himself/herself within the Standing Committee with those aspects debarred by Paragraph 3. above.

4.3 Countries that wish to join in the work of the Committee shall make written application to the President currently in office and their application shall be voted on by the Committee at the next conference, or by postal ballot. A majority vote in keeping with 10.3 in favour of their application will be necessary to ensure their representation on the Committee.

4.4 It is desirable in the interests of continuity to retain the same representatives on the Pan American Committee as long as possible. However, countries may change their representatives provided the President and Secretary currently in office are advised in writing by the National Organization concerned one month prior to the next meeting of the Pan American Committee.

5. Officers

5.1 The officers of the Pan American Committee shall be President, Two Vice-Presidents and a Secretary, and the Immediate Past President, ex officio.

5.2 The officers of the Pan American Committee shall be appointed by the country that will host and organize the next PANNNDT Conference, in accordance with the following:

5.2.1 The President, One Vice-President and the Secretary shall be from, and located in, the host country.

5.2.2 The other Vice-President need not be from the host country.

5.2.3 North American, Central American, South American and Caribbean information will be discussed and a decision in principle for the successive host country will be taken. Should no such invitations be received, member's countries will be invited to submit proposals in writing prior to the next committee meeting.

9.3 The normal interval between conferences under the aegis of the Pan American Committee shall be three to four years.

9.4 The time of the year and venue for each conference will be decided by the National Organization of the country acting as host.

15. Relations with the International Organization for Standardization

Although the Terms of Reference allow for discussion of matters requiring standardization, it must be understood that all requests for standardization must be dealt with by the National Standards Organization of the countries represented on the Pan American Committee, and all communications with the International Organization for Standardization shall be through the National Standards Organization, where they exist.



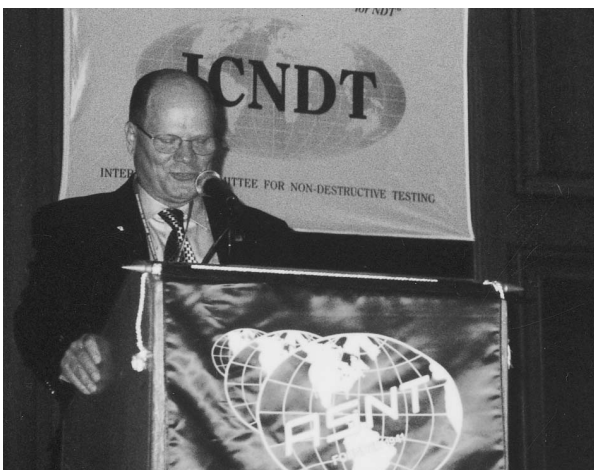
ASNT Members awarded during the PACNDT.



The Pan American Committee members who attended the meeting.



The ABENDE desk for the promotion of next Pan American Conference to be held in Brazil 2003.



Mr. Chuk - Opening of the ASNT's ICPIIT VII Topical Conference.



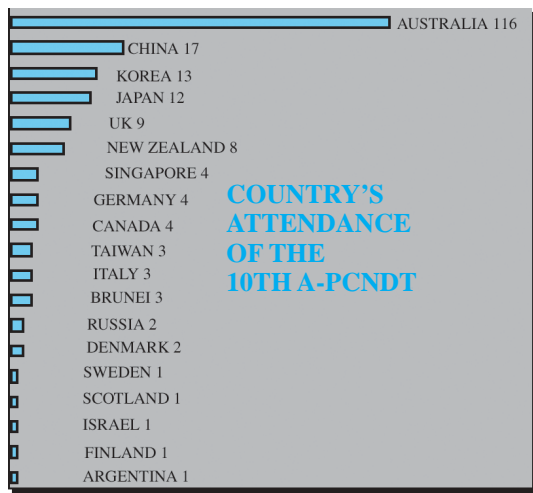
Participants to E-GLEA 2 and 1º Ibero - American on Acoustic Emission Sept. 10-14, 2001, Buenos Aires, Argentina



THE 10th ASIA - PACIFIC CONFERENCE ON NDT

The 10th Asia-Pacific Conference on Non Destructive Testing was held at the Brisbane Convention Centre on 17-21 September 2001. Over 220 delegates from 19 countries attended this important event. Papers presented were dealing with different industrial sectors including aeronautics, petrochemical, nuclear, utilities, transportation, etc. A relevant exhibition showed equipment and NDT products of 22 manufacturers. ICNDT and the Canadian Institute for NDE were also present with their booths. Congratulations are due to Derek Olley, A-PCNDT Chairman, John Maccarone, AINDT President, and their supporting staff for organising an excellent conference.

The Asia Pacific Regional Committee elected Dr K. Koh as new Asia-Pacific President. He is in charge in organising the next A-PCNDT which will be held on Jeju Island, South Korea from 3-7 November 2003.



John Maccarone, President of AINDT, opening the Conference

PGP MEETING

Hosted by The Australian Institute for NDT, a PGP Committee meeting has been held in Brisbane in conjunction with the Asian Pacific Conference. A relevant item has been the approval of the proposal to draw up an International Guide for Qualification and certification of NDT Personnel based on ISO 9712.

The minutes of this meeting are available on Internet at the ICNDT Web site

<http://www.icndt.org/PGPBrisbane.htm>

AGENDA FOR THE BRISBANE PGP MEETING

Monday 17 September 2001 at

- Welcome
- Approval of minutes of the last PGP meeting
- Follow up of the policy and activities approved during the 26th and 27th ICNDT meetings in Rome
- Communications of ICNDT Chairman
 - New application for Membership
 - Visits of ICNDT chairman to Calcutta, Kiev, Moscow, Houston, Trest (Czech)
 - Report of the meeting in Tokyo between ISO/TC 135 Chairman and ICNDT chairman
- Proposed "ICNDT International Guide for Qualification and Certification of NDT Personnel based on ISO 9712"
- Proposal for ISO Seminar in Barcelona 2002
- Co-operation with IAEA (mission to Bangladesh, August 2001, others)
- ICNDT policy for the Regional Groups
- Proposal for "fine tuning" of Constitution
- Development of Operating Procedures and Rules
- Legalization of ICNDT: Preparation of documents for the Barcelona 2002 ICNDT Meeting
- Introduction of ICNDT to Institutions/Authorities
- Activities of WGs
 - WG 1 Certification Harmonisation - Dr. Farley
 - WG 2 ICNDT Internet Communications - Prof. Onoe
 - WG 3 Research and University Education - Dr. Raj
- Activities of Secretariat
- Status of preparation for the 16th WCNDT Montreal 2004 (Marshall)
- Regional Groups
 - Asia Pacific NDT, Constitution, Activities, Conference
 - Pan American NDT, Constitution, Activities, Conference
 - European Federation NDT, Constitution, Activities, Conference



Derek Olley, Chairman of 10th APCNDT with his wife and Mr Nardoni.



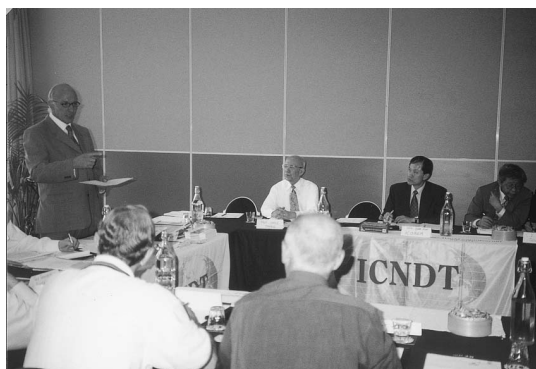
Prof. Onoe, ICNDT Honorary Member and Asia-Pacific Representative during conference works.

ATTENDANCE TO THE PGP MEETING IN BRISBANE

Mr G Nardoni Chairman ICNDT
 Dr J M Farley General Secretary, ICNDT
 Mr D Marshall President, 16th WCNDT
 Professor M Onoe Honorary Member and Asia-Pacific Repres.
 Dr K K Koh Korean NDT Society
 C Y Wang NDT Society of Taiwan
 A Sonneveld Australian Institute of NDT
 S Ghia Secretariat, ICNDT
 D Whitely Pan-America dep.Rep.
 D Olley President Asia-Pacific
 J R Thompson British Institute of NDT (part-time)



PGP work in progress



BY-LAWS ASIA PACIFIC COMMITTEE ON NON-DESTRUCTIVE TESTING

1. Objectives

The objectives of the Asia Pacific Committee on Non-Destructive Testing (A-PCNDT) are to advance science and engineering related to non-destructive testing in Asian and Pacific coastal countries by dissemination of information, encouraging research and to organize Conferences devoted to mutual understanding among scientific and technical NDT experts. The activities of A-PCNDT are conducted within the Terms of Reference of the International Committee for Non-Destructive Testing (ICNDT), point 3.1: "To promote International collaboration in all matters relating to the development and use of non-destructive testing." These By Laws are to be read in conjunction with the ICNDT Terms of Reference.

2. Organization of the Committee Membership

consists of two kinds as follows:

a) **Regular Member.** A regular member is a representative who has been nominated by a national or regional NDT body in the Asia and Pacific Coastal area and approved by A-PCNDT. An alternative representative may be nominated, but only one voting representative is allowed to each member country or region.

b) **Associate Member.** An Associate Member is an individual from a region, where an official NDT body does not exist, who is recommended by two regular members.

c) **Supporting Member.** Any organization with similar objectives to ICNDT members may become a supporting member and assist in any activities.

The Committee consists of regular members and associate members. Meeting of the Committee is usually held in conjunction with a conference. Members who cannot attend each meeting may arrange for a proxy if required.

At each Meeting a voting decision is based on a majority. In the case of a tie the President makes a decision.

3. Election of Office Bearers

Voting delegate of or the person nominated by the next Conference host country shall be **President** of A-PCNDT. The President may appoint up to **three Vice Presidents** as follows:

a) One from the next conference host country, one from the last host country and one from another country the President chooses as appropriate. The next Conference host country will serve as **Secretariat**. In this case a sub-secretariat may be established in another member country to keep good communications between countries and to take care of A-PCNDT activities between conferences.

4. Activities

Activities by A-PCNDT may include but are not limited to any of the following:

a) To hold conferences, symposia, seminars and panel discussions etc.

b) Exchange of NDT Specialists between countries.

c) Educate and train NDT personnel.

d) Any other related activities considered necessary. English is the official language of each Conference. A national language of the host country may be used in the conference; however, papers, slides, pictures etc. must be in English.

5. Conferences

A conference should be held every four years. The host country or region for each conference shall be decided by ballot of all A-PCNDT regular and associate members. At the A-PCNDT committee meeting held at each conference the host country or region for the next conference shall be decided. A Steering Committee shall be formed by the host country or region to plan and prepare for each conference. The function of the Steering Committee shall be to organize the next conference. **ICNDT Terms of Reference** contain "Recommendations for the Organization of Future World Conferences for NDT". These are to be used as a guide. Proposed revisions to these **by-laws** are to be submitted to the Secretariat for inclusion in the Agenda for consideration at a meeting of the Committee.

6. Membership Dues

There are no Membership Dues. Registration fees shall cover the expenses for each organized activity. Any shortfall shall be the responsibility of the Host organization.

6. Withdrawal

Withdrawal from A-PCNDT shall be done in writing by individual members or member countries and addressed to the President.



Mr Kob, Chairman of 11th A-PCNDT, between Mr Nardoni and Mr Ghia, ICNDT Secretariat

ICNDT REGIONAL GROUP ASIA PACIFIC

ICNDT REGIONAL GROUP EFNDT - EUROPEAN FEDERATION FOR NDT

Madrid hosted the European Assembly of EFNDT. The state of progress of preparations for the 8th ECNDT, to be held in Barcelona on 17 through 21 June 2001, was presented by AEND. BERLIN will host the 9th European Conference on NDT. Positive actions is in progress between EFNDT and ASME for the inclusion of EN 473 in the ASME Code. EFNDT awards have been assigned to Prof. Schnitger^r and Dr. Obraz. Visit to the Certification Centre of AEND.

The European Federation for Non-Destructive Testing



E. Roche

This non-profit international association, governed by the Belgian law of 25 October 1919 as amended by law of 6 December 1954 has succeeded in 1998 the European Council for Non Destructive Testing (ECNDT).

This was founded in Florence in 1984 during the third European Conference on Non-Destructive Testing. The ECNDT have no legal. According to its statute, the main purpose of the Federation is to promote all aspects of scientific and pedagogic nature of non-destructive testing including the technology, research,

development application, training and information in all countries within the geographical area of Europe, according to the UN definitions and to initiate any actions likely to improve its quality and reliability. The Federation will contribute to the removal of technical barriers and act as spokesman for the non-destructive testing community in Europe.

As any association, the Federation may organize seminars, colloquium or conferences, may initiate and conduct studies, may take contact with governmental or non-governmental organizations and the European Commission.

The Federation is responsible for organizing European systems for the certification of individuals and organizations involved with non-destructive testing by harmonizing the national system and ensuring that they operate efficiently. To be full member of the Federation, it is necessary to be a non-profit organization, acting in the field of non-destructive testing and representative of all interest parties in their countries. It is also possible to be associate member. The structure of the Federation and its working groups are given in the diagram 1. Today the Federation consist of 27 full members and 7 associate members. Actually, in addition to the activity of the working groups, two actions are carried out by the Federation.

The first is the application of the European Certification Process (ECP) which was prepared by the WG3, now replaced by the Certification Executive Committee (CEC). The aim of ECP is to ensure a high degree of harmonization of the application of EN 473 concerning the certification of non-destructive personnel by the national certifying bodies of the EFNDT members.

E. Roche
President of EFNDT



Dr. Obraz, Past President of C2ECH NDT Society. For 30 years active member in ICNDT. Among the founder of the European council of NDT



Dott. Schnitger Past President of DGZfP. Strong promoter of EFNDT

ned documents presented by the Treasurer and guaranteed their validity.

6.2. Accounts as realised for 2000 exercise (doc. EFNDT/BOD/01-16) approved unanimously.

6.3. The 2001 Budget as realised on 15 October (doc. EFNDT/BOD/01-1) approved unanimously.

6.4. A draft provisional budget for 2002 (doc. EFNDT/BOD/01-18) was approved unanimously: membership fees would be kept at the same level as in 2001

8th ECNDT Barcellona (Spain), June 17-21, 2002



J. Serrano,
President of 8th ECNDT



7. Reports

7.1. Report from BoD

R. Roche reported on the main decisions taken during two BoD meeting held on 22 January 2001 in Brussels and 22 October 2001 in Madrid.

a) EFNDT structures:

- CEC members have been nominated with P. Sermadiras as chairman;
- Advisory Group members have been confirmed with G. Aufricht as chairman.

b) Contact with EU Commission (MM Herbert, Breckelmans, Putzeis, Weinberger, Lerhoch from DG Enterprise): Two items were dealt with:

- can EU be of some help when EN 473 certification is not accepted in America. Although this matter was recognised of a private nature, EU representatives promised to put this item as example of technical barrier in the future contacts EU-USA;
- how should RTPO manage approval of Ndt operators in the frame of PED?

EFNDT BoD has prepared recommendations on that topic and Advisory will established guidelines. As far as relations with USA are concerned, BoD will transmit to the Commission a status document based on B. Larsen's argumentation updated with last development with ASME.

c) Contact with ASME: due to the terrorist attack on New-York, R. Roche co attend ASME SC5 meeting in Norfolk. NDE programs were discussed at two meetings, in one of which Mr. Lorenz (Germany - EBA -European Boilermakers Association) took part.

The path being taken right now is for the SC5 to complete their review of EN 473. Once that is done, a guidance paper will be drafted describing how EN 473 can be used as the basis for the manufacturer's qualification program required by ASME Code. The SC5 is concerned that there will be many requests from other countries and is looking for a generic path to give guidance without adopting each standard/process into Section v. Next meeting of SC5 is scheduled on December 2001 in Florida. G. A agreed on Mr. Roche's report and considered that further discussion with ASME and common EFNDT-EBA action had to be conducted.

d) ECP documents related to specific sectors: forgings, castings, rough products and welds have been adopted.

e) Contact with CEN: an official liaison has been established with CEN/TC 138. Mrs Krystelj would represent EFNDT in the work of CEN BT working group dealing with landmines.

M. Farley informed that the next meeting of WG1 "certification of personnel" would probably take place on June 2002 in Barcelona. Mrs Krystelj gave a report on the 5th meeting of WG5 and informed of the wish to have the scope extended to marine landmines.

Resolution: EFNDT GA unanimously adopted the following new title of WG5: "Landmines detection" EFNDT GA recommended to all National Members to provide sizeable input in the work of WG5.

8. EFNDT Award

GA unanimously decided to limit to two the number of awards for 2002. The awards must be given to individuals.

By a secret ballot, the following people were awarded: D. Schnitger (†), J. Obraz.

It was further decided to ask Advisory Group to amend document EFNDT/BOD/99-18 "Rules for attribution of the EFNDT Award" in order to provide more detailed provisions and conditions for the awards.

Moreover, it was decided that an appreciation letter would be sent to those proposed people who have not been elected.



Mike Farley,
General Secretary
of EFNDT

9. ECNDT 2006 and 2010

DGZfP (Mr. Link) and CNDT (Mr. Mazal) respectively presented the application of Berlin and Prague to host the 9th ECNDT. By a secret ballot, Berlin was chosen with 9th ECNDT to be held during the period 17-30 September 2006.

10th ECNDT: the following applications were registered: Russian Ndt Society (Moscow), Hellenic Ndt Society (Athens), Czech Ndt Society (Prague).

10. EFNDT relations with others organisations

Relations with CEN: see 7.1e) above.

G.A approved Mr. Aufricht's proposal to establish liaison with IAEA/UNIDO and for that purpose asked Mr. Aufricht to find and get in touch with the proper representative of IAEA in Vienna.

11. Any other business

EAN meeting: Mr Hoogstraate gave a report of the last meeting of European Alara Networks where demands far relation with EFNDT were expressed, in relation with safe use of radiography. Training of radiographers appeared as a very important topic. WG2 (R. Link) were asked to handle this matter. ICNDT: President Nardoni informed about the recent mutual recognition agreement based on ISO 9712 signed by Ndt societies of Asian Pacific region. He stressed the need far contact between the different regions of ICNDT, asking for "think global".

WCNDT: M. FARLEY informed that UK would apply for the organization of the world conference in London in 2012 and wished to get support from EFNDT members.

G. A. decided to inform members of UK application and asked the Secretariat to get in touch with the Canadian organizer of the next World Conference in order to have a booth for EFNDT in Montreal with a specific communication.

8 th ECNDTY in Barcellona: J. Serrano presented a status on the organisation: 355 abstracts (282 oral and 73 posters) were received on 18-10-01, allowing a good technical programme presentation. However a larger participation of some European countries would be desirable.

Material characterization, aerospace, computer processing, petrochemical, pipelines and nuclear sector are the main technical topics. Exhibition: 1143 sqm over 1710 sqm have been booked on 18-10-01 by 43 exhibitors.

12. Place and time of next meeting

The General Assembly meeting will take place on 25 October 2002 in Paris. BoD newly elected on 25 October will meet on 26 October in Paris.

13. Closure of meeting

R. Roche closed the meeting at 2 p.m. He thanked on behalf of attendees Mr Romero and Mr Serrano and all the staff of AEND for their hospitality and the excellent conditions provided for meeting in Madrid.

Minutes of EFNDT General Assembly

October 23, 2001 - Madrid (Spain)

1. Opening

R Roche, President welcomed all attendees, with particular attention to representatives of a newly approved member, the Serbian Association for NDT.

2. Approval of agenda

Agenda was approved subjected to addition of:
-2 documents - EFNDT/GA/01-6 and 01-7 - under item 7.2;
-3 topics under point 11: ALARA meeting (Mr Hoogstraate), ICNDT (Mr Nardoni), WCNDT (Mr Farley).

3. Roll-call of delegates

A roll-call was made.



Mr Romero, President of AEND and Mr Serrano, Chairman of 8th ECNDT among AEND staff.

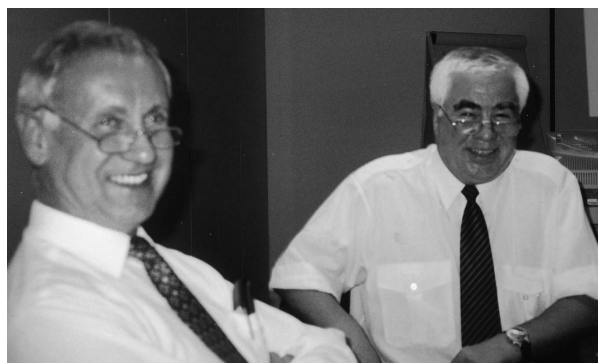
Doc GA/00-8 was adopted unanimously.

5. Appointment of two tellers

Mr Farley and Mr Hoogstraate were appointed.

6. Financial affairs

6.1. Report of auditor: Mr Romero confirmed he had exami-



Dr Link, DGZfP, smiling after the assignment of the 9th ECNDT (2006) to Berlin. Prof. Klyuev satisfied after receiving of accreditation for Moscow 2010.

7.2. Report from Working Groups

Reports included in docs EFNDT/GA/01-6, 01-7 were presented.



Prof. Klyuev, President of RSNDT and G. Aufricht (OSNDT) are visiting the AEND Test Pieces Storage Area for examination according to EN 473/ISO 9712.

A Draft Agreement for Mutual Recognition of NDT Personnel Certification Schemes According to ISO 9712 for IAEA/RCA member states

Australia, Bangladesh, India, Myanmar, Malaysia, Pakistan, Philippines, New Zealand, Rep. Of Korea and Sri Lanka signed the Agreement on 29 August 2001 in Dhaka, Bangladesh

IAEA REGIONAL CONSULTANTS MEETING

Dhaka, Bangladesh 27-29th August 2001

FOREWORD

IAEA has promoted projects for the dissemination and growth of NDT technologies. The main strategy of IAEA has been the Human Resources Development in different countries. This work and the policy of IAEA has resulted in achieving integrity and safety of plant and equipment for the benefit of people and the environment. The qualification and certification of NDT personnel according to ISO 9712 has been widely adopted. Various schemes operated in different countries are not recognised by other countries in the region. Thus, there is a need to harmonize the certification schemes in use by the different countries. As a result, a meeting of Regional Consultants was organized by IAEA at the Bangladesh Atomic Energy Commission Headquarters in Dhaka from 27th -29th August 2001. The purpose of this meeting was to draft an agreement for the Mutual Recognition of Various Certification Schemes in the region. The countries participating in the meeting were: Australia, Bangladesh, India, Myanmar, Malaysia, Pakistan, Philippines, New Zealand, Republic of Korea, and Sri Lanka. The President of ICNDT was invited by IAEA to give guidance to the participants.



The meeting has ended; the conclusions are promising. The head of Atomic Centre of Dhaka with his collaborators join the IAEA group for momentous picture of the event. Once again science gathers people together in the search of improvements that affect us all.

SUMMARY OF COUNTRY REPORTS

AUSTRALIA



Peter Sheedy

They have a well-established NDT personnel certification infrastructure. An Australian National Standard AS 3998.1992 which is an NDT Certification Scheme for General Engineering was developed based on the then draft of ISO 9712. 1992. The AS3998.1992 is currently under review and the revised standard is anticipated to be an exact copy of ISO 9712.1999. Another standard, which is being implemented, is AS3669.2001, which is an NDT Certification Scheme for the aerospace industry. The Australian Institute for Nondestructive Testing (AINDT) Certification Board is administering AS3998. They are currently working on their quality accreditation under EN 45013. Australia also has an existing mechanism/guideline for recognition of overseas qualification.

BANGLADESH



Enayet Ullah Molla

They have an established scheme for the certification of NDT personnel adopted from ISO 9712. A certification body named NDT Personnel Certification Committee is administering this scheme since 1986. This committee is recognized by the Bangladesh government and the national NDT Society – Bangladesh Society for Nondestructive Testing (BSNDT).

INDIA



Baldev Ray

They have an established standard for the certification of NDT personnel adopted from ISO 9712. A certification body called "National Certification Committee" was formed in 1990 and it was renamed in 1997 as the National Certifying body (NCB). The NCB has its own quality manual, course books and specimens with natural and artificial defects. The NCB is recognized by both the Bureau of Indian Standards and the Indian Society for Nondestructive Testing (ISNT).

MALAYSIA



Abd. Nassir Bin Ibrahim

They have an established scheme for the certification of NDT personnel since 1986 and this was adopted from the draft of ISO 9712 with modifications to incorporate some local requirements. This is being implemented by the National Vocational Training Council (NVTC) which is an agency of the Ministry of Human Resources. In April 2000, the scheme was revised to fully be in accordance with the requirements of ISO 9712:1999.

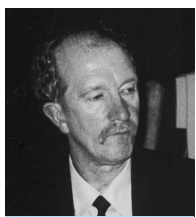
MYANMAR



Ei Thida Swe

They are conducting NDT training courses since 1993 but they have neither a certification scheme nor standard for certification of NDT personnel. There is plan of forming an NDT society.

NEW ZEALAND



Peter Hayward

They have a well-established NDT personnel certification infrastructure. The Certification Board for Inspection Personnel (CBIP) is the national body for the certification of NDT personnel since 1983. The CBIP NDT Personnel Certification Standards satisfies all of the requirements of ISO 9712.

PAKISTAN



Jamaluddin

They have an established scheme for the certification of NDT personnel according to the Pakistan Atomic Energy Commission (PAEC) document Number PAEC/SES/NDT001. The National Center for Nondestructive Testing (NCNDT) which is an establishment of the PAEC has been implementing this scheme since 1987. All the members of the certification body are from PAEC. Moves are now on the way to form a National Certifying Body to include members from the Pakistan Society for Nondestructive Testing (PSNT) and issuance of a national standard adopted from ISO 9712.

PHILIPPINES



James Porter

They have an established standard for certification of NDT personnel since 1987. This standard, PNS:146-1987 was adopted from the draft of ISO 9712 with some modifications. This is being implemented by a National Certifying Body, a non-profit organization recognized by both the Philippine Bureau of Product Standards (BPS), the standards body of the country, and the Philippine Society for Nondestructive Testing (PSNT). PNS:146-1987 was revised to incorporate all the requirements of the final ISO 9712 standard and was renamed PNS:146-1998.

REPUBLIC OF KOREA



Kang Suk-Chull

They have an existing National Technical Qualification System operated by Korea Manpower Agency. Their NDT Personnel Certification Scheme is not in compliance with ISO 9712. The Korean Society for Nondestructive Testing (KSNT) wants to adopt ISO 9712 but they admit this will not be in the near future. The Korea Electric Power Industry Code (KEPIC), issued in 1996, recognizes only the National Certificates issued by Korea Manpower Agency.

SRI LANKA



T.M.R. Tennakoon

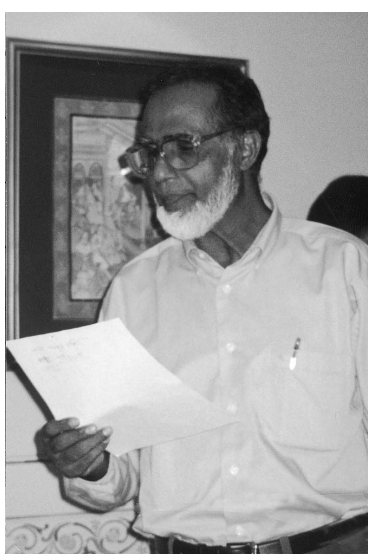
They have an established standard for the certification of NDT personnel. This standard SLS 996 was adopted from ISO 9712. The Examination Committee of the Atomic Energy Authority (AEA), established in 1996 and now renamed NDT Committee, is implementing this standard. Moves are now on the way to form a National Certifying Body (NCB). SLS-996 is recognized by both the Sri Lanka Standards Institution and the NDT Society of Sri Lanka.



Delegates of IAEA/RCA during the meeting for the preparation of draft agreement on ISO 9712



Delegates of IAEA/RCA Meeting sailing under UN fly



Dr. Md. Sanaullah, founder of the Bangladesh NDT Society. He is organizing the Certification Centre according to ISO 9712 in Dhaka. He is asking for any used equipment. For any details please contact ICNDT Secretariat.

TOKYO - VISIT OF ICNDT CHAIRMAN TO ISO-TC-135 SECRETARIAT AND JAPAN SOCIETY FOR NON DESTRUCTIVE INSPECTION

Mr Nardoni, ICNDT Chairman met Prof. Takagi, Chairman of ISO TC 135, in Tokyo on August 2001 to announce the proposal of ICNDT to prepare an International Guide for Qualification and Certification of NDT Personnel According ISO 9712. The meeting was held at Japan Society for Non Destructive Inspection (JSNDI) headquarters. Prof. Takagi expressed his complete agreement to the initiative. Prof. Takagi, accepted the proposal to include an ICNDT representative into ISO TC 135. On this occasion Mr Nardoni visited JSNDI Examination Centre; he was impressed of the high quality of the training books. ISO 9712 is now a standard for Japan Industry.



Tokyo, August 2001. ICNDT Chairman met Prof. Takagi and Prof Hatano, Chairman and Secretary of ISO TC-135 respectively.



JSNDI headquarters view



Training on NDT in welding



(l-r) Prof. Onoe with the Vice President of JSNDI and ICNDT Chairman



Examination session for qualification according ISO 9712

DRAFT AGREEMENT FOR MUTUAL RECOGNITION OF NON-DESTRUCTIVE TESTING (NDT) PERSONNEL CERTIFICATION SCHEMES ACCORDING TO ISO 9712 IN IAEA/RCA MEMBER STATES

1. REQUIREMENTS FOR MUTUAL RECOGNITION

A Certification Body seeking recognition of its Certification Scheme under this Agreement shall meet the following requirements:

- 1.1 The National Certification Body (NCB) shall be managed, or nominated as the Country's NCB, by the National NDT Society of the Country which is a member of the IAEA/RCA, participating in the Sub-Project on Non Destructive Testing.
- 1.2 The NDT Society shall be member of Asia Pacific Committee on Non- Destructive Testing (APCNDT) and/or member of the International Committee for Non Destructive Testing (ICNDT).
- 1.3 The Certification Scheme in use by the Country's NCB shall comply with the ISO 9712.
- 1.4 The NCB shall have a quality system that conforms to the requirements of EN450 13 and shall be accredited by a nationally recognized accreditation body.

2. OBJECTIVES

The objectives of this Mutual Recognition Agreement (MRA) are to:

- 2.1 promote harmonization and mutual recognition of NDT personnel certification schemes.

- 2.2 facilitate co-operation among IAEA/RCA National Certification Bodies and acceptance of ISO 9712 certificates issued in different countries.
- 2.3 promote uniformity in NDT training and examinations

3. PARTIES TO THE AGREEMENT

- 3.1 The Parties to the Agreement are the National Certification Bodies of the RCA Member States.
- 3.2 Other Parties may join this agreement if they are nominated by a member of Asia Pacific Committee on Non Destructive Testing (APCNDT) and/or a "member of International Committee for Non Destructive Testing (ICNDT).

4. OBLIGATIONS

Each Party to the Agreement shall:

- 4.1 commit itself to the pursuance of the objectives of the Agreement.
- 4.2 recognise the Personnel Certification Schemes which have been accepted and registered with the IAEA/RCA as meeting the requirements set out in this Agreement.
- 4.3 assist other parties in their efforts to give a clear overview of the certification activities in its own country.
- 4.4 provide other Parties with non-confidential information on the operation of its certification scheme(s).
- 4.5 consult with the governing boards and/or management committees of their managed/operated/nominated Certification Bodies.

5. ADMINISTRATION OF THE AGREEMENT

The Agreement shall be administered by IAEA and ICNDT through the proposed IAEA/RCA Working Group on Mutual Recognition of NDT Certification Schemes of APCNDT constituted during the Dhaka Consultants Meeting (Refer to Annexure A- Membership and Terms of Reference of the Working Group)

6. APPLICATION FOR RECOGNITION

6.1 A Certification Body wishing to have its certification recognized under the Agreement shall submit the application to the office of the IAEA/RCA Coordinator in Vienna along with the following documents:

6.1.1 A letter, from the national NDT Society of the country in which the Certification Body is based, nominating the Certification Body for registration under the MRA.

6.1.2 A schedule detailing the scope of its Personnel Certification. (e.g. ISO 9712, EN45013, Quality Manual, Record of Examination and Certification etc.)

6.2 An application documents shall be accompanied by full translations into the English language.

7. EVALUATION OF THE APPLICATION FOR RECOGNITION

The IAEA/RCA Coordinator may arrange to review the presented evidence by seeking the advice of the IAEA/RCA Working Group on Mutual Recognition of NDT Certification Schemes constituted during the Dhaka Consultant Meeting. On the basis of specific request and the advice of the Working Group, IAEA/RCA may endeavor to enhance the competence and provide the assistance in preparing the document through the expertise of the regional NDT experts. This exercise is to enable getting accreditation by the NCB from the nationally recognized accreditation body. IAEA/RCA may utilize the expertise of ICNDT for this purpose.

8. APPEAL FOR RECONSIDERATION

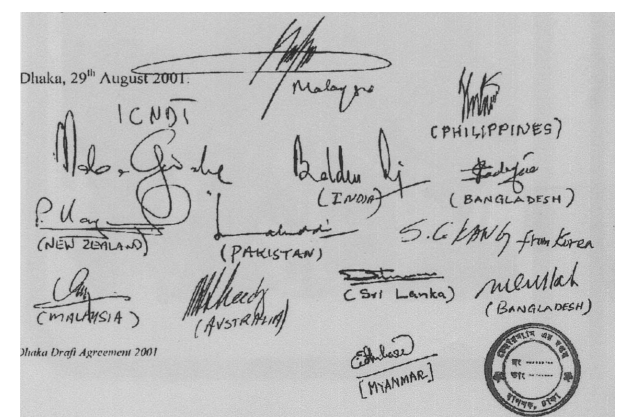
8.1 Where there is a bona fide reason, as recommended by the IAEA/RCA Working Group, why it is not reasonably possible for the applicant certification to demonstrate compliance with the EN45013, and the ability to deliver certification in conformance with the ISO 9712, an appeal for review may be requested by the NCB concerned.

8.2 The appeal review should be carried out by the WG 1-Certification Harmonization Working Group of the ICNDT who shall report its recommendation to the IAEA/RCA Coordinator, IAEA/RCA Working Group and ICNDT Secretariat.

9. ENDORSEMENT FOR MUTUAL RECOGNITION

Upon fulfilling the mutual recognition requirements, endorsement for MRA shall be issued to the NCB of the member states through the National NDT Societies by IAEA/RCA and ICNDT. Letters of endorsement should be sent to the Secretariat of other Mutual Recognition Parties.

Dhaka, Bangladesh. 29 August 2001



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ALGERIA	C.S.C.- Centre de Recherche Scientifique et Technique en Soudage en Controle	Route de Dely Ibrahim	Cheraga ALGER	BP64	+213 2 361 850	+213 2 361 850	Zergougmourad@Hotmail.com
ARGENTINA	ENDE - Ensayos no Destructivos y Est.-Comision Nacional de Energia Atomica	Av. General Paz 1499 - San Martin Pcia	Buenos Aires	1650	+54 11 4 754 7257	+54 11 4 754 7355	ende@cnea.gov.ar
AUSTRALIA	Australian Institute of NDT	PO Box 52, Parkville	Victoria	3052	+61 3 9326 7550	+61 3 9326 7272	aindt@immanet.asn.au
AUSTRIA	Austrian Society for NDT-OGZP	Krugerstrasse 16	Wien	A-1015	+43 1 798 6611-33	+43 1 798 6611-31	mittli@mittli.at
BANGLADESH	BSNDT-Bangladesh Society for NDT	c/o NDT Division, Atomic Energy Centre 4, Kazi Nazrul Islam Avenue	Dhaka	Ramma 1000	+880 2 509 498	+880 2 861 3051 (att.BSNDT)	mmuk@citechco.net
BELARUS	Belorussian Association for NDT and Technical Diagnostic	Akademiticheskaia Str 16	Minsk	220072	+375 17 220 1341	+375 17 220 1341	
BELGIUM	Belgian Association of NDT	Allee de la Cense Rouge 15	Angleur-Liege	B-4031	+32 4 3655 892	+32 4 3656 615	info@bant.be
BOSNIA and HERZEGOVINA	Bosnian and Herzegovinan Society for NDT	Tvornicka 3	Sarajevo-Ilidza, BiH	71000	+387 71 543 370	+387 71 543 370	
BRASIL	ABENDE- Associação Brasileira de Ensaio Não Destrutivos	Rua Guapiacu, 5 - Vila Clementino	Sao Paulo-SP	04024-020	+55 11 5071 0400	+55 11 5581 1164	info@abende.org.br
BULGARIA	BG S NDT- Bulgarian Society for NDT	108 Rakovska str.	Sofia	1000	+359 2 73 35 217	359 2 70 20 56	ndt@bgcict.acad.bg
CANADA	CSNDT- Canadian Society for NDT	135 Fennel Ave. W - c/o NDE Institute of Canada	Hamilton	L8N 3T2	011 905 387 1655	011 905 574 6080	dmarshall@ndeinst.org
CHINA, The People's Republic of	The Chinese Society for NDT	100 Huihe Road	Shanghai	200437	+86 21 654 40 277	+86 21 654 40 277	chsndt@public2.sta.net.cn
CHINA - Taiwan	SNTCT-Nondestructive Testing Society of China-Taipei	130, Kee- Lung Rd. Sec. 3	Taipei, Taiwan		+886 2 2363 0815	+886 2 2366 0732	sntct@snt.org.tw
COLOMBIA	Instituto Colombiano de Normativa Tecnicas y Certification	Carrera 37 No. 52-95	Santafe de Bogota', D.C.		0057 1 315 0377	0057 1 222 1435/315 2968	cliente@icontec.org.co
COSTA RICA	National Committee for NDT	c/o Inst Tec Costa Rica, Apartado 159	Cartago		+506 552 5333	+506 551 5348	lmunoz@itcr.ac.cr
CROATIA	CSNDT- Croatian Society of NDT	c/o FSB - Ivana Lucica 1	Zagreb	10000	+385 1 615 7129	+385 1 615 7129	matest@fsb.hr
CZECH Republic	Czech Society for NDT	c/o Brno University of Technology, Technická,2	Brno	CZ 616 69	420 5 4114 3230	420 5 4114 3231	mazal@ufme.vutbr.cz
DENMARK	The Danish Society for NDT	345 Park Alle	Broendby	DK-2605	+45 43 26 7000	+45 43 26 7011	bj@force.dk
ECUADOR	ESPOL- Escuela Politecnica del Litoral	P.O. Box 09-01-5863	Guayaquil		+593 4280231	+593 42 89 649	sendre@ipse.net
EGYPT	Egyptian Society for Industrial Inspection	3a Moaskar Romany Street, Rushdy	Alexandria		+203 546 4888	+203 545 4299	devcoint@hotmail.com
FINLAND	Finnish NDT Committee	PO Box 44	Helsinki	FIN-00811	+358 10 521 6339	+358 10 521 6339	luha.Sillanpaa@inspecta.fi
FRANCE	COFREND	1 Rue Gaston Boissier	Paris Cedex 15	F-75724	+33 144 19 76 18	+33 144 19 75 04	cofrend@worldnet.fr
GERMANY	DGZP	Max Plank Strasse, 6	Berlin	D-12489	49 30 678 101	49 30 678 07 109	mail@dgzfp.de
GREECE	Hellenic Society of NDT	PO Box 64066, Zografou	Athens Hellas	15710	+301 772 1312	+301 772 13 02	prasian @ central.ntua.gr
HUNGARY	Hungarian Organisation of NDT- Scientific Society of Mechanical Engineers- NDT section	Budapest 11 - FO UCTA 68 Hungary - PO Box 433	Budapest	H-1371	+36 1 202 0656	+36 1 202 0252	mail.gte@ntesz.hu
INDIA	Indian Society for NDT	Nungambakkam High Road	Chennai	600 034	0091 44 826 5984	0091 44 826 984	dmg@igcar.ernet.in
IRELAND	IWEI-Irish Institute of Welding & Engineering Inspection	c/o Enterprise Ireland, Glasnevin	Dublin 9		+353 1 808 2272	+353 1 857 0452	prendergastm@forbairt.ie
ISRAEL	Israeli National Society for NDT	5 Eliahu Shamir st.	Mishmar Hashiva	50297	972 3 960 55 59	972 3 960 41 60	shoef@netvision.net.il
ITALY	AIPND-Italian Society for NDT	via Foresti,5	Brescia	25127	+39 030 37 39 173	+39 030 37 39 176	aipnd@numerica.it
JAPAN	The Japanese Society for Non-Destructive Inspection	Natsume No 5 Bldg, 4th Fl, 67 Kanda-sakumagashi Chiyoda-ku	Tokyo	101-0026	+81 3 5821 5101	+81 3 3863 6524	acd@jsndi.or.jp
KENYA	KNDT - Non-Destructive Testing Society of Kenya	Secretariat Office, Macharios Road, PO Box 11873	Nairobi		254 2 54 1500	254 2 54 01 17	materials@roadsnet.go.ke
MALAYSIA	MSNT- Malaysian Society for NDT	c/o Malaysian Institute for Nuclear Technology Research (MINT)	Bangi Seleangor	43000	+60 3 825 0510	+60 3 825 0907	
MOLDOVA	ATND-Association on Nondestructive Testing (Moldova)	Academy str.,5 bir.229 Inst.of Physics of Moldovian Academy of Sciences	Chisinau	MD-2028-Moldova	+3732 738 109	+3732 738 149	daria.grabco@phys.asm.md
MONGOLIA	MSNDT- Mongolian Society for NDT	MTU Campus-2, Room X302, Sukhbaatar Duureg, P.O.B. 46/943	Ulaan Baatar		00 976 9919 2343	00 976 1 324121	B.TUMEN@MTU.Edu.MN
NETHERLANDS	KINT- Dutch Quality Surveillance and NDT Society	Austinplein 10 - NL 3249 BL	Herkingen	2102 ZM	+31 187 669 460	+31 187 669 003	kint@xs4all.nl
NEW ZEALAND	Certification Board For Inspection Personnel	PO Box 76134	Manukan City		+64 9 2622 885	+64 9 2622 856	met-ndt@hera.oprg.nz
NIGERIA	Nigerian Society for NDT	c/o Gammatec	Portharcourt		234 846 11027		gammatec@phca.linkserve.com
NORWAY	NSNDT- Norwegian Society for NDT	c/o Robit Technology . PO Box 100	Billingstad	N-1376	+47 66 98 12 00	+47 66 98 23 33	Dal@Robit.no
PAKISTAN	PASNT - Pakistan Society for NDT	c/o National Centre for NDT (NCNDT), SES Directorate, PO Box 1781	Islamabad		+92 51 44 6127	+92 51 44 6126	ncndt@comsats.net.pk
PHILIPPINES	PSNDT- Philippine Society for NDT	c/o Philippine Nuclear Research Institute, Commonwealth Avenue, Diliman	Quezon City		0632 920-8815	0632 920-1646	ajmateo@pnri.dosf.gov.ph
POLAND	Polish Society for NDT and Technical Diagnostic	ul Swietokrzyska 14 A	Warsaw	00-050	+48 22 826 45 55	+48 22 826 03 54	Jan_Mottl@yahoo.com
ROMANIA	ARoEND - Romanian Association for NDT	CP 41- 126	Bucharest		00 401 312 8220	0040 1 312 8220	
RUSSIA	The Russian Society for NDT and Technical Diagnostic	35 Usacheva Street	Moscow	119048	+70 95 245 5656	+70 95 246 8888	spektr@co.ru
SLOVAKIA	Slovak Society for Nondestructive Testing	c/o WRI- Racianska 71	Bratislava	83 259	+421 7 4924 6596	+421 7 4445 2145	vuzcop@ba.telecom.sk
SLOVENIA	SSNDT- Slovenian Society for NDT	Askerceva 6. Faculty of Mechanical Engineering, University of Ljubljana	Ljubljana	1000	+386 61 177 1203	+386 61 218 567	janez.grum@fs.uni.lj.si
SOUTH AFRICA	South African Institute for NDT	PO Box 670	Bergvlei	2012	+27 11 887 2626	+27 11 887 0623	saint@acenet.co.za
South KOREA	KSNT- Korean Society for NDT	1473 -10, Seocho-3Dong, Seocho-Ku	Seoul 137-868		+82 02 583 7564	+82 02 582 2743	ksnt@urltel.co.kr
SPAIN	Asociacion Espanola de END	Avda de Baviera, 16	Madrid	E-28028	+34 91 361 25 85	+34 91 361 47 61	informacione@aend.org
SRI LANKA	SNDT-Society for Non Destructive Testing, Sri Lanka	c/o Atomic Energy Authority - 343, Lanka Tractors LTD. Bldg. Olcott	Mawatha, Colombo 10.	441735/67	472749		srlaea@slt.lk
SWEDEN	Swedish Society for NDT	c/o SMS . Vartavagen 67	Stockholm	SE-11583	+46 8 459 5655	+46 8 782 9774	info@fop.a.se
SWITZERLAND	SGZP	c/o EMPA. Uberlandstrasse 129	Dubendorf	CH-8600	+41 1 823 55 11	+41 1 821 6244	thomasluethi@empa.ch
TUNISIA	COTEND- Commission Nationale Pour Les Controles Non-Destructifs	c/o Cetime, Ksar Said, BP 121	Tunis Cedex	1080	216(1)547 809	216 (1) 546 677	cetime@ati.tn
TURKEY	Chamber of Metallurgical Engineers	Hatay Sokak No 10/9 . Kizilay	Ankara	6650	+90 312 425 4160	+90 312 418 9343	metaloda@turnet.tr
UKRAINE	Ukrainian Society for Nondestructive Testing	11 Bozhenko St,	Kyiv, GPS	252650	+380 44 227 2666	+380 44 220 9482	paton@ukrpack.net
UNITED KINGDOM	British Institute of Non Destructive Testing	1 Spenser Parade	Northampton	NN1 5AA	+44 1604 630 124	+44 1604 231 489	info@bindt.org
URUGUAY	AENDUR-Asociación Uruguaya de Ensayos No Destructivos	Plaza Independencia,812 piso 2	Montevideo	11100	+5982 901 20 48	5982 902 1681	sinfanzon@ancap.com.uy
USA	ASNT - The American Society of NDT	1711 Arlington Lane - PO Box 28518	Columbus,	43228-0518	+1 614 274 6003	+1 614 274 6899	webmaster@asnt.org
VENEZUELA	Asociacion Venezolana de Ensayos No Destructivos	Apartado P. 47533	Caracas	1041	+58 2 6933 970	+58 2 6933 323	ASOVEND@inmail.com
VIETNAM	VANDT- Vietnam Association for NDT	46-Nguyen Van Ngoc St. - Thu Le - Ba Dinh	Ha Noi		+84 4 7661 796	+84 4 7333 566	vandt@vista.gov.vn
YUGOSLAVIA	Yugoslav Centre for Non Destructive Testing	Vojvode Stepe 51	Belgrade	11000	+381 11 460 465	+381 11 469 514	

ASME in the 3rd MILLENNIUM



With three major items in sec. V, Non Destructive Testing, ASME has made a great contribution to the reliability and safety of pressure vessel technology.

The first one is represented by Code Case 2235.3 that allows ultrasonic examination in lieu of radiography for 1/2" or greater weld thickness if computerized systems are used. The second one is related to digital image acquisition and treatment for radiography and radioscopy. The third one is the acceptance of the ACCP schemes for the certification of NDT personnel (independent certification scheme) . ACCP, according to ASNT statement, is aligned to the international standard ISO 9712, which is being adopted by most countries. This has as its aim the realisation of a reliable system which will guarantee skill and knowledge of NDT personnel and facilitate the harmonization process.

1 Ultrasonic Examination in Lieu of Radiography

Case 2235-2
Use of Ultrasonic Examination in Lieu of Radiography
Section VIII, Divisions 1 and 2

Inquiry: Under what conditions and limitations may an ultrasonic examination be used in lieu of radiography, when radiography is required in accordance with Section VIII, Division 1, para. UW-11(a) and Section VIII, Division 2, Table AF-241.1?

Reply : It is the opinion of the Committee that all welds in material 1/2 in. or greater in thickness in pressure vessels may be examined using the ultrasonic (UT) method in lieu of the radiography (RT) method, provided that all of the following requirements are met:

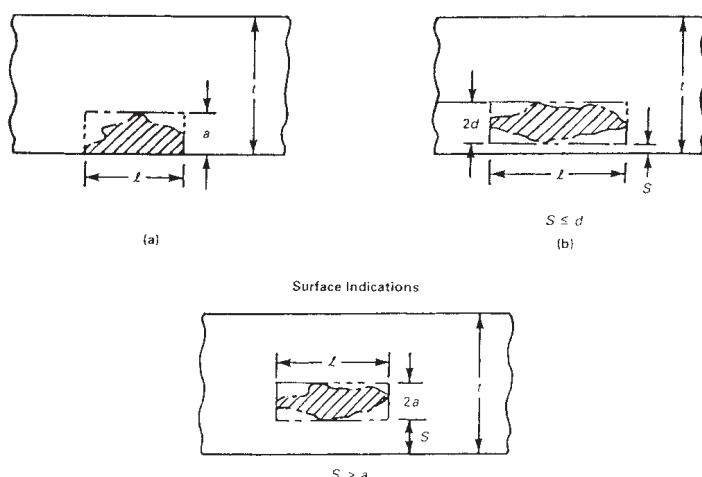
- The ultrasonic examination area shall include the volume of the weld, plus 2 in. on each side of the weld for material thickness greater than 8 in. For material thickness 8 in. or less, the ultrasonic examination area shall include the volume of the weld, plus the lesser of 1 in. or k on each side of the weld.
- The ultrasonic examination shall be performed using a device employing automatic computer enhanced data acquisition.
- A documented examination strategy or scan plan shall be provided showing transducer placement, movement, and component coverage that provides a standardized and repeatable methodology for weld acceptance. The scan plan shall also include ultrasonic beam angle used, beam direction with respect to weld centreline, and vessel volume examined for each weld. The documentation shall be made available to the Owner upon request.
- Data is recorded in unprocessed form. A complete data set with no gating, filtering, or thresholding for response from examination volume in subpara. (a) above shall be include in the data record.
- Personnel performing and evaluating UT examination shall be qualified and certificated in accordance with their employer's written practice. SNT-TC-1A, or CP-189 shall be used as guideline. Only Level II or III personnel shall analyze the data or interpret the results.

TABLE 2
FLAW ACCEPTANCE CRITERIA FOR 1 in TO 12 in THICK WELD

Aspect Ratio a/t	1 in. < t < 2 1/2 in (note 1)		4 in. < t < 12 in (note 1)	
	Surface Flaw a/t	Subsurface Flaw a/t	Surface Flaw a/t	Subsurface Flaw a/t
0.00	0.031	0.034	0.019	0.020
0.05	0.033	0.038	0.020	0.022
0.10	0.036	0.043	0.022	0.025
0.15	0.041	0.049	0.025	0.029
0.20	0.047	0.057	0.028	0.033
0.25	0.055	0.066	0.033	0.038
0.30	0.064	0.078	0.038	0.044
0.35	0.074	0.090	0.044	0.051
0.40	0.083	0.105	0.050	0.058
0.45	0.085	0.123	0.051	0.067
0.50	0.087	0.143	0.052	0.076

GENERAL NOTES:

- t = thickness of the weld excluding any allowable reinforcement. For a butt weld joining two members having different thickness at the weld, t is the thinner of these two thicknesses. If a full penetration weld includes a fillet weld, the thickness of the throat of the fillet weld shall be included in t
- A subsurface indication shall be considered as a surface flaw if the separation (S in Fig. 1) of the indication from the nearest surface of the component is equal to or less than half the through thickness dimension ($2d$ in Fig. 1 sketch (b)) of the subsurface indication.



2 Digital imaging for radiography and radioscopy

Appendix III
Digital image acquisition, display, and storage for radiography and radioscopy

III-210 SCOPE

Digital image acquisition, display, and storage can be applied to radiography and radioscopy. Once the analog image is converted to digital format, the data can be displayed, processed, quantified, stored, retrieved and converted back to the original analog format, for example, film or video presentation.

Digital imaging of all radiographic and radioscopy examination test results shall be performed in accordance with the modified provisions to Article 2 as indicated herein.

APPENDIX IV

INTERPRETATION, EVALUATION, AND DISPOSITION OF RADIOGRAPHIC AND RADIOSCOPIC EXAMINATION TEST RESULTS PRODUCED BY THE DIGITAL IMAGE ACQUISITION AND DISPLAY PROCESS

IV-210 SCOPE

The digital image examination test results produced in accordance with Article 2, Mandatory Appendix II, and Article 2, Mandatory Appendix III, may be interpreted and evaluated for final disposition in accordance with the additional provisions to Article 2 as indicated herein.

The digital information is obtained in series with radiography and in parallel with radioscopy. This data collection process also provides for interpretation, evaluation, and disposition of the examination test results.

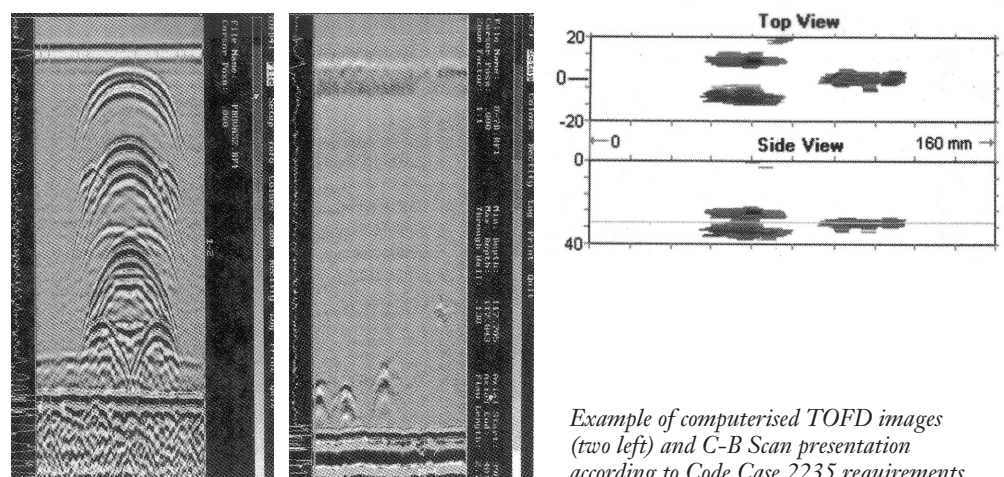
3 Certification of NDT personnel

Article 1
GENERAL REQUIREMENTS

REQUIREMENTS

- Nondestructive Examination Personnel shall be qualified in accordance with the requirements of the referencing Code Section.
- For those Code Sections that directly reference this Article for the qualification of NDT personnel, the qualification shall be in accordance with one of the following documents:
 - SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing; or
 - ANSI/ASNT CP-189, ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel; or
 - ACCP, ASNT Central Certification Program.

When the referencing Code Section does not specify qualifications or does not reference directly Article 1 of this Section, qualification may simply involve demonstration in routine



Example of computerised TOFD images (two left) and C-B Scan presentation according to Code Case 2235 requirements.

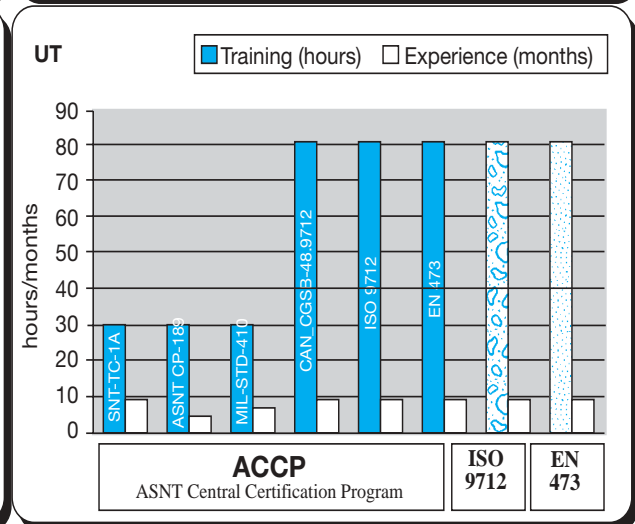
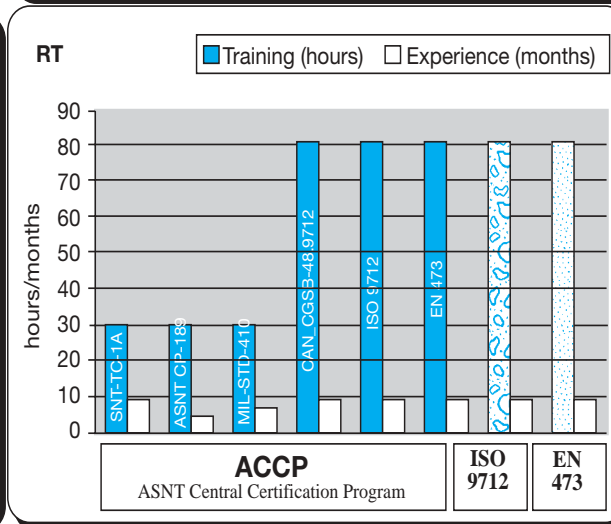
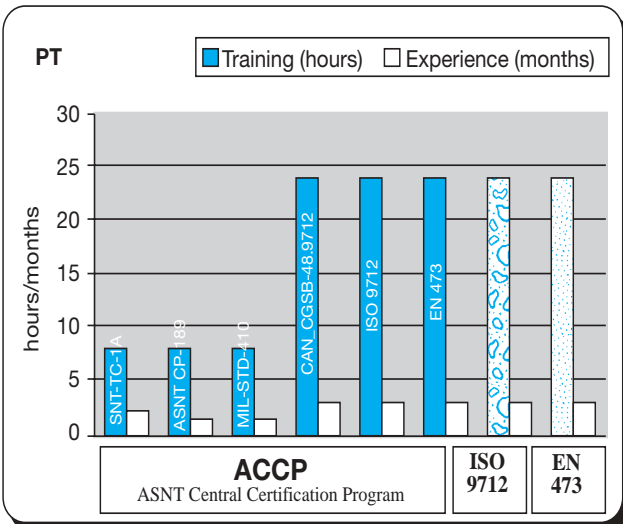
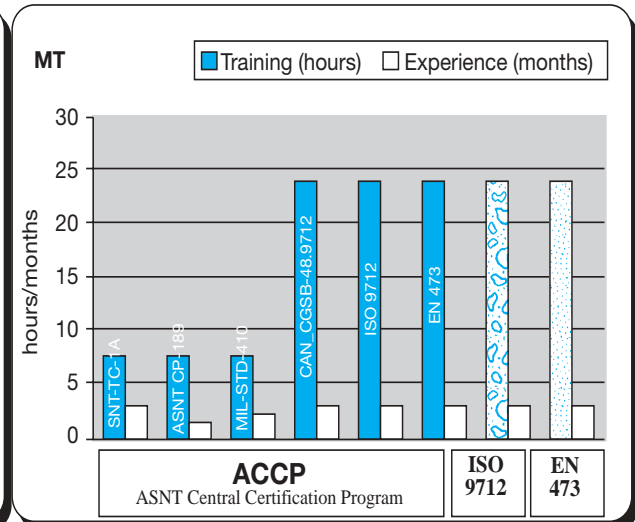
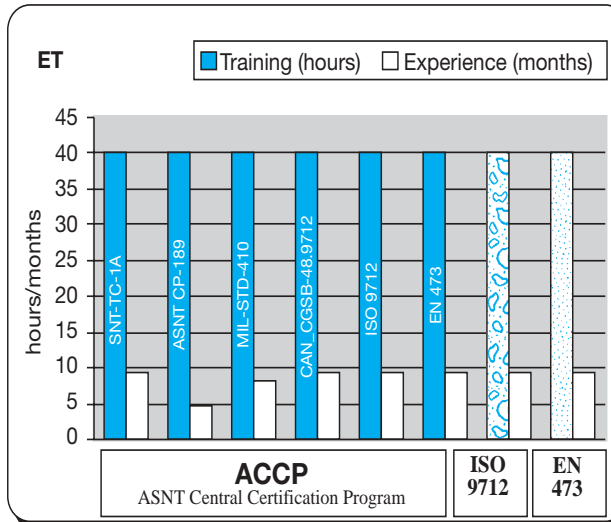
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CERTIFICATION OF NDT PERSONNEL

MOST RELEVANT CERTIFICATION SCHEMES FOR NDT PERSONNEL

Comparison of Level II training and experience qualification requirements for five NDT methods (Electromagnetic testing, Magnetic particle testing, Liquid penetrant testing, Ultrasonic testing and Radiographic testing)



ACCP is the ASNT Central Certification programme. According to ACCP a candidate has the choice to select the proper scheme according to which he like to be qualified and certified. At present ACCP foresee six outstanding schemes: SNT-TC-1A; ASNT-CP-189; MIL STD 410; CAN-CGSB-48-9712; ISO 9712; EN 473.

ICNDT Chairman has been invited to participate in the ASME annual conference in Atlanta. ICNDT was welcomed by NDT Committee section V.

The 2001 Pressure Vessels and Piping Conference (PVP01) was held on July 22nd through to 26th, 2001 in the Hyatt Regency Atlanta, Georgia. The conference technical program contained 160 technical sessions, five major symposia, three tutorials, a student paper competition, as well as NDE and software demonstration forums. The conference proceedings have been published in 22 volumes. The Conference Program Committee invited the ICNDT Chairman to participate in this great event.

2001 ASME Pressure Vessels and Piping Conference

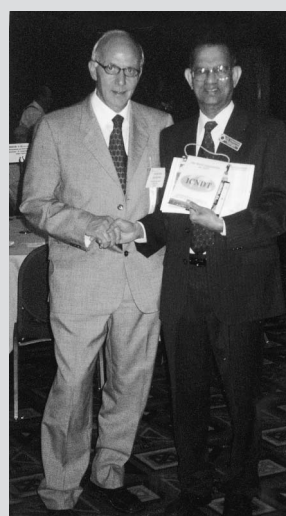
Hyatt Regency Atlanta, Atlanta, Georgia, USA



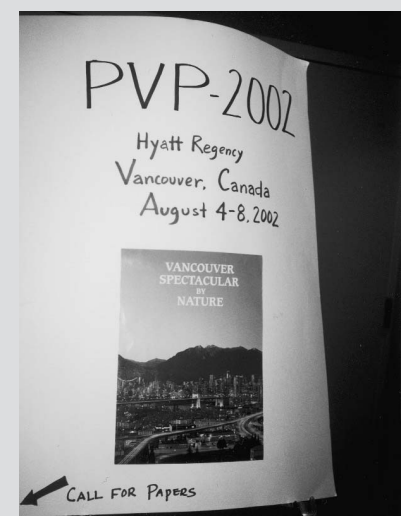
ASME Sec. V NDT Committee during their meeting in Atlanta



D. Bray, Vice President of ASME Material and Structural Group (left) and G. Ramirez (centre), Chairman of NDT session with some NDT speakers.



G. Nardoni, ICNDT Chairman (left) and J. Sinnappan, Conference General Chairman of PVP Conference in Atlanta



First announcement of ASME next PVP Conference in Canada

ISO 9712: MORE SIGNIFICATIVE ITEMS

NDT Method Abbreviation

– acoustic emission testing	AT
– eddy current testing	ET
– leak testing	LT
– magnetic particle testing	MT
– penetrant testing	PT
– radiographic testing	RT
– ultrasonic testing	UT
– visual testing	VT

5. RESPONSIBILITIES

5.1. General

The certification system, which shall be controlled and administered by a certification body (with the assistance, where necessary, of authorized qualifying bodies), includes all procedures necessary to demonstrate the qualification of an individual to carry out tasks in a specific NDT method, and leads to certification of competence.

5.2. Certification body

5.2.1. The certification body shall conform to the requirements of EN 45013.

5.2.2. The certification body shall be supported by a technical committee composed of representatives of NDT societies, committees, users, suppliers, government departments and other interested parties as appropriate. This committee shall be responsible for setting and maintaining the technical standards of examination. Its members shall be qualified for the tasks by an appropriate combination of NDT certification and/or experience.

5.2.3. The certification body:

- shall initiate, promote, maintain and administer the certification scheme according to this standard;
- shall approve properly staffed and equipped examination centres which it shall monitor;
- may delegate, under its direct responsibility, the detailed administration of qualification to authorized qualifying bodies, which could represent sectors;
- shall issue all certificates;
- shall be responsible for ensuring the security of all examination materials (specimens, master reports, question banks, examination papers, etc.);
- shall ensure that specimens are not in use for training purposes;
- shall be responsible for the definition of sectors (see annex B).

5.3. Authorised qualifying bodies

5.3.1. Where established, the authorized qualifying body shall:

- work under the control of the certification body;
- be independent of any single predominant interest, for example, when an authorized qualifying body covers a sector, the authorized qualifying body shall be comprised of more than one company active in the sector concerned;
- conform to the specification issued by the certification body;
- apply a documented quality management system approved by the certification body;
- have the resources and expertise necessary to establish and control examination centres, including examinations and the calibration and control of equipment;
- establish, monitor and control examination centres;
- prepare and supervise examinations under the responsibility of an examiner authorized by the Certification Body;
- maintain appropriate qualification and examination records according to the requirements of the certification body.

5.3.2. If there are no authorized qualifying bodies, the certification body shall fulfill the requirements of the qualifying body.

5.4. Examination centres

5.4.1. The examination centre shall:

- work under the control of the certification body or authorized qualifying body;
- apply a documented quality management system approved by the certification body;
- have the resources needed to administer examinations, including the calibration and control of equipment;
- prepare and conduct examinations under responsibility of an examiner authorized by the certification body;
- have adequate qualified staff, premises and equipment to ensure satisfactory qualification examinations of the levels, methods, and sectors concerned;
- use only those documents and examination questionnaires established or approved by the certification body;
- use only specimens prepared or approved by the certification body for the practical examinations conducted at that centre (when more than one examination centre exists, each shall have specimens of comparable test difficulty containing similar discontinuities).
- maintain appropriate qualification and examination records according to the requirements of the certification body.

5.4.2. An examination centre can be situated at an employer's premises. In this case, examinations shall be conducted only in the presence of, and under the control of, an authorized representative of the certification body.

5.5. Employer

5.5.1. The employer shall introduce the candidate to the certification body or the authorized qualifying body and document the validity of the personal information provided. The documentation shall include the declaration of education, training and experience needed to establish the eligibility of the candidate.

5.5.2. The employer shall not be directly involved in the qualification examination. Where the examination centre is within the employer's premises, or examination staff are provided by the employer, the Certification Body shall require additional controls to preserve impartiality.

5.5.3. In respect of certified personnel under their control, the employer shall:

- be fully responsible for all that concerns the authorization to operate
- be responsible for the validity of the results of NDT operations.

c) ensure that the annual visual acuity requirements of 7.1.1. (a) are met.

d) verify continuity in the application of the NDT method without significant interruption.

5.5.4. A self employed individual shall assume all responsibilities described for the employer.

6. LEVELS OF QUALIFICATION

An individual certificated in accordance with this standard shall be classified in one or more of the three following levels.

6.1. Level 1

6.1.1. An individual certificated to Level 1 has demonstrated competence to carry out NDT according to written instructions and under the supervision of Level 2 or Level 3 personnel. Within the scope of the competence defined on the certificate, Level 1 personnel may be authorized by the employer to:

- set up NDT equipment;
- perform the tests;
- record and classify the results of the tests in terms of written criteria;
- report the results.

6.1.2. Level 1 certificated personnel shall not be responsible for the choice of test method or technique to be used, nor for the assessment of test results.

6.2. Level 2

6.2.1. An individual certificated to Level 2 has demonstrated competence to perform non destructive testing according to established procedures. Within the scope of the competence defined on the certificate, Level 2 personnel may be authorized by the employer to:

- select the NDT technique for the test method to be used;
- define the limitations of application of the testing method;
- translate NDT codes, standards, specifications and procedures into practical testing instructions adapted to the actual working conditions;
- set up and verify equipment settings;
- perform and supervise tests;
- interpret and evaluate results according to applicable codes, standards or specification;
- prepare written NDT instructions;
- carry out and supervise all tasks at or below Level 2;
- provide guidance for personnel at or below Level 2, and
- organize and report the results of non destructive tests.

6.3. Level 3

6.3.1. An individual certificated to Level 3 has demonstrated competence to perform and direct non destructive testing operations for which he is certificate. Within the scope of the competence defined on the certificate, an individual certificated to Level 3 may be authorized by the employer to:

- assume full responsibility for a test facility or examination centre and staff;
- establish and validate NDT instructions and procedures;
- interpret codes, standards, specifications and procedures;
- designate the particular test methods, procedures and NDT instructions to be used;
- carry out and supervise all Level 1 and Level 2 duties, and
- guide personnel at all levels.

6.3.2. Level 3 personnel have demonstrated:

- the competence to evaluate and interpret results in terms of existing codes, standards and specifications;
- sufficient practical knowledge of applicable materials, fabrication and product technology to select NDT methods, establish NDT techniques, and assist in establishing acceptance criteria where none are otherwise available;
- a general familiarity with other NDT methods.

6.3.3. Level 3 personnel may, if authorized by the certification body, manage and supervise qualification examinations on its behalf.

7. ELIGIBILITY

The candidate shall fulfill the minimum requirements of vision and training prior to the qualification examination and shall fulfill the minimum requirements for industrial experience prior to certification.

7.1 Vision requirements - all levels

7.1.1. The candidate shall provide evidence of satisfactory vision as determined by an oculist, optometrist, medically recognized person, or the employer, in accordance with the following requirements:

- near vision acuity shall permit reading, without magnifying aids other than prescription lenses, a minimum of Times Roman N 4.5. or equivalent letters at not less than 30 cm with one or both eyes, either corrected or uncorrected;
- colour vision shall be sufficient that the candidate can distinguish contrast between the colours used in the NDT method concerned as specified by the employer.

7.1.2. Subsequent to certification, the tests of visual acuity shall be carried out annually and verified by the employer or the responsible agency (see 5.5.3 (c)).

7.2. Training - Level 1 and Level 2

7.2.1. The candidate shall provide evidence that a course of training in the method and level for which the certification is sought has been satisfactorily completed, and which is in accordance with the requirements of the certification body.

7.2.2. Information in Annex A may be used as a guide in the development of training and education syllabi.

7.2.3. The minimum duration of training undertaken by the candidate for certification shall be as defined in Table 1 for the applicable NDT method.

Table 1 - Minimum training requirements

NDT Method		Level 1 (hours) ^{a d e}	Level 2 (hours) ^{a b d e}
AT		40 ^c	64 ^c
ET		40 ^c	40 ^c
LT	A - Basic knowledge	8	16
	B - Pressure method	14	28
	C - Tracer gas method	18	36
MT		16	24
PT		16	24
RT		40 ^c	80 ^c
UT		40 ^c	80 ^c
VT		16	24

^a Training hours include both practical and theory courses.
^b Direct access to Level 2 examination requires the total hours shown for Level 1 and Level 2.
^c In case of national regulations concerning the duration of a week of work, the 40 hours are equivalent to the legal duration of a week of work.
^d Training duration may be reduced by up to 50% when the certification sought is limited in application or technique.
^e A reduction of up to 50% in the total required number of training hours may be accepted by the Certification Body for candidates who have graduated from technical college or university, or have completed at least two years of engineering or science study at college or university.

7.3. Training - Level 3

7.3.1. Taking into account the scientific and technical potential of candidates for Level 3 certification, preparation for qualification may be done in different ways: by attending training courses, conferences or seminars, studying books, periodicals, and other specialized printed materials.

7.3.2. Information in Annex A may be used as a guide to training and education.

7.3.3. The candidate shall provide documentary evidence, in a form acceptable to the certification body, of training and preparation for certification.

7.4. industrial experience - Level 1 and Level 2

7.4.1. Industrial experience may be acquired either prior to or following success in the qualification examination. Documentary evidence of experience shall be confirmed by the employer and submitted to the certification body or authorized qualifying body.

7.4.2. In the event that the experience is sought following successful examination, the results of the examination shall remain valid for up to two years.

7.4.3. The minimum requirements for duration of experience to be gained prior to certification shall be as specified in Table 2.

Table 2 - Minimum experience requirements

NDT Method	Experience (months) ^{a c d e f}	
	Level 1	Level 2
AT	6	12
ET	3	9
LT	Total experience	3
	Partial experience for pressure method only	2
	Partial experience for tracer gas method only	2
MT	1	3
PT	1	3
RT	3	9
UT	3	9
VT	1	3

^a Work experience in months is based on a nominal 40 hours/week or the legal week of work. When an individual is working in excess of 40 hours per week, he may be credited with experience based on the total hours, but he shall be required to produce evidence of this experience.
^b For Level 2 certification, the intent of this International Standard is that work experience consists of time as a Level 1. If the individual is being qualified directly to Level 2, with no time at Level 1 the experience shall consist of the sum of the times required for Level 1 and Level 2.
^c Experience duration may be reduced by up to 50% but shall not be less than one month when the certification sought is limited in application (e.g., automated testing).
^d Credit for work experience may be gained simultaneously in two or more of the NDT methods covered by this International Standard, with the reduction of total required experience as follows: two testing methods - reduction of total required time by 25%;
^e three testing methods - reduction of total required time by 33%;
^f four or more testing methods - reduction of total time by 50%.
 In all cases the candidate shall be required to show that, for each of the testing methods for which he seeks certification, he has at least half of the time required in Table 4.

**Annex C (normative)
Level 1 and 2 Specimens**

Table C1 - Minimum number and type of test specimens for the levels 1 and 2 practical examination

METHOD/LEVEL PRODUCT SECTORS	UT1	UT2	RT1	RT2	ET1	ET2	MT1	MT2	PT1	PT2	LT1	LT2	VT1	VT2	AT1	AT2
CASTINGS	2	2	2	2 + 12 radiographs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 datasets
FORGINGS	2	2	2	2 + 12 radiographs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 datasets
WELDS	2	2	2	2 + 12 radiographs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 datasets
TUBES AND PIPES	2	2	2	2 + 12 radiographs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 datasets
WROUGHT PRODUCTS	2	2	2	2 + 12 radiographs	2	2	2	2	2	2	2	2	2	2	1	1 + 2 datasets

^a Where the examination requires the testing of more than one area or volume, the second or any subsequent area or volume shall be different in character, e.g., in product form, material specification, shape, size and discontinuity type, from those tested previously.
^b For RT examination, Level 1 and Level 2 candidates shall radiograph at least two volumes - except for Level 2 candidates holding Level 1 certification, where at least one volume is to be radiographed.
^c For LT examination involving both pressure change and tracer gas, at least one volume shall be tested for each.
^d For AT examinations, the discontinuities are normally replaced by artificial sources. The Level 1 candidate shall demonstrate the ability to install the equipment, verify its sensitivity and record the test data. The Level 2 candidate shall also demonstrate the ability to interpret and evaluate at least two sets of previously recorded test data.

INDUSTRIAL SECTORS (which include two or more products)

- i) The practical examination shall include not less than three tests of separate areas or volumes.
- ii) The specimens tested shall be representative of all products, or shall be selected at random by the examiner from the product range which makes up the sector.
- iii) For radiographic film interpretation, the number of radiographs interpreted shall be not less than eight for each relevant product sector encompassed by an industrial sector.

three testing methods - reduction of total required time by 33%
 four or more testing methods - reduction of total time by 50%.
 In all cases the candidate shall be required to show that, for each of the testing methods for which he seeks certification, he has at least half of the time required in Table 2.
^e Up to 50% of the practical experience time may be achieved by an appropriate practical course, the duration of which may be weighted by a maximum factor of five (5). This procedure shall not be used in conjunction with that described in ^b. The course shall be concentrated on practical solutions of frequently occurring testing problems, and the programme shall be approved by the certification body.
^f the maximum possible reduction in duration of experience shall be limited to 50%

7.5. Industrial experience - Level 3

7.5.1. Level 3 responsibilities require knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through a variety of combinations of education, training and experience, which shall be documented and provided to the certification body. Table 3 details minimum experience related to formal education.

Table 3 - Minimum experience requirements, Level 3

Method of access	Educator	Experience (months) ^{a b}
Access to Level 3 by a certificated Level 2 operator	Graduate of at last three years accredited science or engineering college or university programme	12
	Successful completion of technical school or at least two years of engineering or science study at an accredited college or university	24
	No degree	48
Direct access to Level 3 by an uncertified operator with experience duration equivalent to Level 2 as per table 2. Note ^b (The candidate shall have successfully completed the practical examination for Level 2 in that NDT method)	Graduate of at least three years accredited science or engineering college or university programme	24
	Successful completion of technical school or at least two years of engineering or science study at an accredited college or university	48
	No degree	72

^a If the college or university degree is issued in non destructive testing, the experience required for access to Level 3 may be reduced by 50%
^b Credit for work experience may be gained simultaneously in two or more of the NDT methods covered by this International Standard, with the reduction of total required experience as follows:
 a) two testing methods - reduction of total required time by 25%;
 b) three testing methods - reduction of total required time by 33%;
 c) four or more testing methods - reduction of total time by 50%.
 In all cases the candidate shall be required to show that, for each of the testing methods for which he seeks certification, he has at least half of the time required in Table 4.

7.5.2. All candidates for level 3 certification in any NDT method shall have successfully completed (with a grade of ≥ 70%) the practical examination for Level 2 in the appropriate sector and method, except for the drafting of practical instructions for level 1 (see 8.3.11).

8. Qualification examination - CONTENT & GRADING

The qualification examination shall cover a given NDT method as applied in one or more specific industrial sectors.

8.1. Examinato in content - Level 1 and Level 2 general examinaton

8.1.1 The general examination shall include only questions selected in an unpredictable way from the certification body's or authorized qualifying body's collection of general examination questions valid at the date of examination. The candidate shall be required, as a minimum, to give answers to the numbers of multiple choice questions shown in Table 4.

8.1.2. The time allowed to the candidates for completion of each examination shall be based upon the number and difficulty of the questions. The average time allowed shall be no less than one minute nor longer than two minutes per multiple choice question.