



STANDARD FOR CERTIFICATION

No. 2.9

Approval Programme No. 402A

FIRMS ENGAGED IN ULTRASONIC THICKNESS MEASUREMENTS OF SHIP'S STRUCTURE

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DET NORSKE VERITAS

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FOREWORD

DET NORSKE VERITAS (DNV) is an autonomous and independent foundation with the objectives of safeguarding life, property and the environment, at sea and onshore. DNV undertakes classification, certification, and other verification and consultancy services relating to quality of ships, offshore units and installations, and onshore industries worldwide, and carries out research in relation to these functions.

Standards for Certification

Standards for Certification (previously Certification Notes) are publications that contain principles, acceptance criteria and practical information related to the Society's consideration of objects, personnel, organisations, services and operations. Standards for Certification also apply as the basis for the issue of certificates and/or declarations that may not necessarily be related to classification.

A list of Standards for Certification is found in the latest edition of Pt.0 Ch.1 of the "Rules for Classification of Ships" and the "Rules for Classification of High Speed, Light Craft and Naval Surface Craft".

The list of Standards for Certification is also included in the current "Classification Services – Publications" issued by the Society, which is available on request. All publications may be ordered from the Society's Web site <http://exchange.dnv.com>.

The Society reserves the exclusive right to interpret, decide equivalence or make exemptions to this Standard for Certification.

This issue supersedes Approval Programme No. 402A of May 2005.

Main Changes:

— references to the ISO9000 series have been updated.

Comments may be sent by e-mail to rules@dnv.com

Comprehensive information about DNV and the Society's services is found at the Web site <http://www.dnv.com>

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1. Application

Firms carrying out thickness measurements on board ships, the results of which are used by DNV Surveyors in making decisions affecting classification, are subject to approval by DNV in accordance with the mandatory procedures in this requirement.

All firms shall be certified as one of the following three categories:

Category I: Authorised to do measurements onboard all types and sizes of ships.

Category II: Authorised to do measurements onboard fishing vessels of all sizes, and non-ESP¹⁾ ships of less than 500 GT.²⁾

Category II, Extended: Authorised to do measurements onboard fishing vessels of all sizes and ships of length less than 100m. except ESP ships of all sizes and general cargo ships of more than 500GT²⁾. I.e. ESP ships of all sizes and general cargo ships of more than 500 GT can only be measured by Category I companies.

Category I companies shall be certified according to chapters 3 to 5 of this document. Category II and Category II, Extended shall be certified according to chapter 8.

- 1 ESP ships: Ships subject to Enhanced Survey Programme, i.e. oil tankers, tankers for chemicals and bulk carriers, with the mandatory class notation ESP.
- 2 As per the International Convention on Tonnage Measurement of Ships, 1969.

2. Objective

The objective of this programme is to ensure that measurements and reporting of structural scantlings are correct. This is done by ensuring that firms engaged in thickness measurements have qualified personnel that are able to recognise corroded or pitted areas and understand ship's drawings, implemented written systems for training, control, verification and reporting, in addition to the necessary technical equipment and facilities to render professional assistance.

This programme is in agreement with requirements stated in IACS Z17, as amended.

3. Procedure for Approval

3.1 Documentation

The following documents are to be submitted to the Society for review:

- Outline of company, e.g. organisation and management structure, including subsidiaries
- Experience of the company regarding thickness measurements of ship's structure
- List of operators/supervisor, documenting training, experience and qualifications
- Description of equipment used including routines for maintenance and calibration
- A guide for operators of such equipment
- Training programmes for operators
- Quality Manual and/or documented procedures covering requirements in 3.3
- Record of customer claims and of corrective actions requested by certification bodies
- Work Procedures.

3.2 Auditing

Upon reviewing the submitted documents with satisfactory result, the firm is audited in order to ascertain that it is duly organised and managed in accordance with the submitted documents, and that it is considered capable of conducting ultrasonic thickness measurements of ship structure.

Approval is conditional on a practical demonstration of thickness measurements on board as well as satisfactory reporting being carried out.

Where several servicing stations are owned by a given company, each station is to be assessed and approved separately, according to the same requirements as for the main company.

One-man-firms are not accepted on large vessels.

3.3 Quality Assurance System

The firm shall have a documented system covering at least the following:

- maintenance and calibration of equipment
- training programmes for operators
- supervision and verification to ensure compliance with operational procedures
- recording and reporting of information
- quality management of subsidiaries and agents
- job preparation
- periodic review of work process procedures, complaints and corrective actions, issuance,
- maintenance and control of documents.

A documented Quality system complying with the most current version of ISO 9000 series and including the above items, would be considered acceptable.

3.4 Requirements

3.4.1 Training and qualification

The firm is responsible for the training and qualification of its personnel. This is to include rule requirements. The operators carrying out the measurements shall be certified to a recognised National or International industry NDT standard (i.e. EN 473 level I or ISO 9712 level I or equivalent, like ASNT-SNT-TC-1A). Operators shall have had a minimum of one (1) year tutored on-the-job training.

The operator shall have adequate knowledge of ship's structures, sufficient to select a representative position for each measurement.

Operators and supervisors shall be able to speak English.

The responsible supervisor shall have had minimum two (2) years experience as an operator. The responsible supervisor shall be qualified according to a recognised National or International industry NDT standard (e.g. EN 473 level II or ISO 9712 level II or similar).

3.4.2 Supervision

The firm shall have a permanently employed supervisor available to the operators. The supervisor may, however, work as an operator.

3.4.3 Personnel records

The firm shall keep records of approved operators and supervisors. The record shall contain information on age, formal education, training and experience.

Operators and supervisors shall be able to speak English.

3.4.4 Equipment and facilities

Instruments using pulsed echo technique, either with oscilloscope or digital instruments using multiple echo are required.

Single echo instruments are not accepted. A record of the equipment used shall be kept. The record shall contain information on maintenance and calibration. Confirmation from the manufacturer that the instruments satisfy the requirement above shall be enclosed in the instrument record.

3.4.5 Work procedures

The firm shall have documented work procedures covering planning, execution and reporting including items listed in chapters 3.4.6, 3.4.7 and 3.4.8.

3.4.6 Preparation

- Practise of verification of readings by attending DNV surveyor to be agreed.
- The supplier is responsible for using the latest version of the report form that can be found on www.dnv.com, under Maritime, Publication List.
- The surveyor's presence shall be recorded in the report.
- All data given in the minimum thickness list shall be entered into the template before the job is started, as part of the preliminary preparation.
- Operators and supervisor are to carry ID cards with photo.
- An up-dated list of approved operators and supervisor is to be kept at the approving office so that identification can be verified by the attending surveyor. Readings taken by non-listed operators will be rejected.
- The operators shall attend the planning meeting which is held before each job is started. Owner's representative and class surveyor will also attend the meeting.

Equipment shall be calibrated with the class surveyor present.

3.4.7 Execution

- Each major class job (IS/RCH) is to be carried out by at least two qualified operators working together.
- Thickness measurements of less extent may be carried out by one operator.
- Measurements that are not carried out in co-operation with DNV will not be accepted. The firm is to inform the owner accordingly.
- When onboard the operator/supervisor shall have his/her certificate and identification papers readily available. The operator shall notify the DNV surveyor of any structural deficiencies or abnormal measurements detected. That includes areas with substantial corrosion, which shall be mapped with an increased number of measurements, taken in co-operation with the surveyor.
- Unless otherwise specified, the measurements should be taken in line with the DNV Guideline for thickness measurements, available at www.dnv.com, under Maritime, Publication List.

3.4.8 Sub-contractors are not to be used

To hire certified operators from another approved service supplier is not considered sub-contracting. This is, however, to be included in the report.

3.4.9 Verification

The firm shall have the DNV surveyor's verification of each separate job.

3.4.10 Reporting

The UTM report shall be made in DNV's electronic reporting format, available at www.dnv.com, under Maritime, Publication List.

Prior to commencing measurements onboard, in addition to the measured values, the original scantlings, the minimum thickness and the substantial corrosion limits are to be stored in the electronic report.

When on board, measured thicknesses are to be continuously recorded in the DNV Electronic Report Form, based on the op-

erator's working notes, photos and sketches and are regularly to be made available for the attending surveyors review and verification.

Upon completion of the measurements onboard the operator is to provide the DNV surveyor with a temporary electronic draft of the results presented in the DNV Electronic Report Form, and supplied with the operator's notes, as found necessary. The location of the measurements is to be illustrated by sketches or drawings.

The preliminary report is to include a longitudinal strength evaluation when required, (IMO Res.A.744(18) Annex12) valid for oil tanker with length above 130 meters and over 10 years of age, e.g. at the third renewal survey and subsequent renewal surveys.

Final reporting in electronic form and in printed version or in a non-editable electronic form (e.g. ".pdf"-format) is to be presented to the DNV surveyor within two (2) weeks after the job is terminated. The firm shall have the surveyor's verification of each separate job, documented in the report by his signature and the text "Verified and Evaluated"

The report shall include a copy of the Certificate of Approval of the firm, containing the names of all approved operators and supervisors.

4. Approval

4.1 Initial audit

Upon satisfactory completion of both the audit of the firm and the demonstration test, DNV will issue a Certificate of Approval stating that the firm's service operation system has been found to be satisfactory.

The certificate will clearly state the type and scope of services and any limitations or restrictions imposed. The certificate will also contain a list of certified operators and the supervisor.

The firm will be included in DNV's records of approved service suppliers, Register No.102 (<http://exchange.dnv.com>) and in IACS' List of Approved Service Suppliers (www.iacs.org.uk).

4.2 Renewal audit

Renewal or endorsement of the certificate shall be made at intervals not exceeding three (3) years by verification through audits that approved conditions are being maintained. Intermediate audits may be required by DNV as found necessary. At least 3 months before the period of validity expires, the supplier shall apply to DNV for renewal of the Certificate of Approval.

5. Information of alterations to the Certified Service Operation System

In case any alteration to the certified service operation system of the firm is made, including changes related to UTM operators, such alteration shall be reported to DNV, immediately.

Audits are required when deemed necessary by DNV.

6. Cancellation of Approval

Approval may be cancelled in the following cases:

- Where the measurements were improperly carried out or the results were improperly reported.
- Where a Surveyor finds deficiencies in the approved service operation system of the firm and appropriate corrective action is not taken

- Where the firm fails to inform DNV of any alteration as in §5 above
- Where willful acts or omissions are ascertained
- When new rule requirements make this necessary.

In cases where the approval is cancelled other IACS members will be informed. A list of approved and rejected UTM firms can be found on IACS' website: www.iacs.org.uk (see: Other Technical – Service Supplier Approval)

Queries related to the list of DNV Approved UTM companies may be forwarded to: Approved.Service.Suppliers@dnv.com

7. Re-approval

A firm whose approval has been cancelled, may apply for renewal provided that the non-conformities, which resulted in cancellation, have been corrected and effectively implemented. Once DNV has confirmed that all corrective actions have been effectively implemented, then re-approval may be permitted.

A supplier, whose approval by another society has been cancelled, will have its approval by DNV pending until the cancelled approval is restored. The supplier is not to undertake jobs on DNV-classed vessels in this period and is to inform the owner accordingly.

8. Category II companies - Limited Approval of Firms locally engaged in ultrasonic thickness measurements of ship's structure.

8.1 Application

Firms carrying out thickness measurements on fishing vessels of all sizes and non-ESP¹⁾ ships below 500 GT²⁾, may be qualified according to the requirements in this chapter.

If the company in addition complies with IACS Unified Requirements Z17, it may carry out thickness measurements on-board fishing vessels of all sizes and non-ESP ships with length less than 100 meters, except "general cargo carriers" above 500GT, as per the definition set in the DNV Rules Pt.7 Ch.2 Sec.2 E101 or IACS Unified Requirements Z7.1. The company will then be labelled "Category II, Extended". The extended applicability will then be stated in the heading of the certificate.

¹⁾ ESP ships: Ships subject to Enhanced Survey Programme, i.e. oil tankers, tankers for chemicals and bulk carriers, with the mandatory class notation ESP.

²⁾ As per the International Convention on Tonnage Measurement of Ships, 1969.

Note:

IACS UR Z17 is available on the Internet at <http://www.iacs.org.uk/> under "Unified Requirements" and then "Survey and Certification".

UTM companies which were certified by DNV prior to April 2004, have already been verified to follow IACS UR Z17 requirements. Only exemption is companies which were given a "limited approval for providing thickness measurement services in local geographic areas". Such companies, and all Category II companies certified first time after April 2004, would have to have compliance with IACS UR Z17 verified through an audit before given an extended Category II certificate.

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8.2 Objective

The objective of this limited approval programme is to ensure

that firms engaged in thickness measurements have qualified personnel that are able to measure thicknesses, recognise corroded or pitted areas and understand ship's drawings in addition to having the necessary technical equipment to render professional assistance.

8.3 Procedure for Approval

8.3.1 The following documents are to be submitted to the Society for review:

- Description of company's management structure and manning
- Name of operators and Supervisor, documenting training, experience and qualifications
- Description of equipment used including routines for maintenance and calibration.
- A guide for operators of such equipment.

8.3.2 Operator

The operators carrying out the measurements shall be certified to a recognised National or International NDT standard (i.e. EN 473 level I or ISO 9712 level I or equivalent, like ASNT-SNT-TC-1A or Nortest). Operators shall have had a minimum of one (1) year on-the-job training. The operator shall have adequate knowledge of ship's structure sufficient to select a representative position for each measurement.

A UTM Guideline may be downloaded at <http://www.dnv.com> under Maritime and Publication List.

8.3.3 Equipment

Instruments using pulsed echo technique, either with oscilloscope or digital instruments using multiple echo, single crystal technique are required. Single echo instruments are not accepted. Confirmation from the manufacturer that the instrument satisfies the requirement above shall be enclosed in the instrument record.

8.3.4 Work Execution

- The firm is to attend the planning meeting that is held before each job is started.
- Measurements that are not carried out in co-operation with DNV, unless otherwise agreed, will not be accepted. The firm is to inform the owner accordingly.
- The operator shall notify the surveyor of any structural deficiencies detected.

8.4 Reporting

Measured thicknesses are to be continuously recorded and to be made available for the attending surveyors.

The operator is to report in a recognised system and may illustrate the result by sketches or on the drawings.

In addition to the measured values, the original scantlings, the minimum thickness and the substantial corrosion limits, are to be included in the report.

Final reporting is to be presented to the DNV surveyor within one (1) week after the job is terminated. The firm must have the surveyor's verification of each separate job, documented in the report by his signature.

The report shall include a copy of the Certificate of Approval, containing the names of all approved operators.

8.5 Certification

Upon satisfactory completion of both the audit of the firm and the demonstration test, DNV will issue a Certificate of Approval stating that the firm's service operation system has been found satisfactory.

Any alteration to the certified service operation system shall be reported to DNV, immediately.

The certificate shall clearly state the type and scope of services and any limitations or restrictions imposed. Renewal or endorsement of the certificate is to be made at intervals not exceeding three (3) years by verifying that the approved conditions are being maintained.

Audits are required when deemed necessary by DNV.

8.6 Cancellation of Approval

Approval may be cancelled in the following cases:

- Where the measurements were improperly carried out or the results were improperly reported.

- Where a Surveyor finds deficiencies in the approved service operation system of the firm and appropriate corrective action is not taken
- Where the firm fails to inform DNV of any alteration
- Where willful acts or omissions are ascertained
- When new rule requirements make this necessary.

A firm whose approval has been cancelled, may apply for renewal provided that the non-conformities, which resulted in cancellation, have been corrected and effectively implemented. Once DNV has confirmed that all corrective actions have been effectively implemented, then re-approval may be permitted.