



APPROVAL OF MANUFACTURER

No. 330

Standard for Certification 2.9

BOILERS AND PRESSURE VESSELS

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DET NORSKE VERITAS

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FOREWORD

DET NORSKE VERITAS is an autonomous and independent Foundation with the objective of safeguarding life, property and the environment at sea and ashore.

DET NORSKE VERITAS AS is a fully owned subsidiary Society of the Foundation. It undertakes classification and certification of ships, mobile offshore units, fixed offshore structures, facilities and systems for shipping and other industries. The Society also carries out research and development associated with these functions.

DET NORSKE VERITAS operates a worldwide network of survey stations and is authorised by more than 120 national administrations to carry out surveys and, in most cases, issue certificates on their behalf.

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 the Pt.0 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 list of publications is also available from this site.

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1. General

1.1 Scope

This program gives the procedures to be followed to obtain the Society's approval for the manufacture of boilers and pressure vessels Class I and II, in accordance with the requirements of Pt.4, Ch.7 of DNV Rules for Classification of Ships, High Speed Light Craft or Naval Surface Craft.

1.2 Range of Approval

Approval may comprise one or more of the following product and activity categories:

Product Categories:

Welded products:

- Welded boilers
- Welded Pressure vessels, Class I & II
- Welded Pressure Vessels Class II

Un-welded products:

- Seamless gas bottle, class I & II

Approval for production of welded boilers will qualify for the production of all the other categories of welded products.

Activity Categories:

- Fabrication
- Design and Fabrication
- Design, Fabrication and Testing (NDE)

1.3 Validity

The approval will be valid for four years. To maintain the approved status, the manufacturer must be re-inspected every four years. Application for renewal should be made not later than three months before the expiry date of the certificate.

Any alteration to the approved condition during the period of validity, e.g. method of manufacture, maximum dimensions or conditions of supply, is to be reported to the Society. A re-inspection and / or re-testing may be required when deemed necessary by the Society.

2. Approval Procedure

2.1 Submission of documents

Application for Approval should be sent to the local DNV office together with the following information:

- Name and address of the manufacturer.
- Product categories and Activity categories for which Approval is requested.
- Types of boilers and / or pressure vessels being produced (design pressures, sizes etc).
- An outline of the organisation structure, including engineering / design, planning, purchasing, storing, manufacturing, and quality control responsibilities.

- Quality assurance scheme / quality certifications and approvals held.
- An outline of manufacturing facilities and equipment.
- Manufacturing flow charts indicating all process steps, and the associated testing and inspection points.
- Reference to written procedures for testing and inspection. Procedures need not be submitted, but must be available for review at the manufacturer's works upon request.
- A list of equipment used for mechanical testing, pressure testing and non-destructive testing.
- Qualification of personnel engaged in testing and inspection.
- Description of system used for identification and traceability of materials and products.
- Description of arrangement for heat treatment, including dimension / weight limitations.

2.2 Works inspection

After receipt and review of the information requested in 2.1, the DNV surveyor will carry out a works inspection to verify that the necessary manufacturing, testing, and inspection facilities are available, and supervised by qualified personnel.

2.3 Approval of Manufacturer Certificate

Manufacturers whose works has been inspected, and whose approval documentation has been reviewed with satisfactory result, will be granted an "Approval of Manufacturer" certificate.

The certificate will be published on the DNV internet site at <http://exchange.dnv.com/tari/>.

3. Information on Manufacturing Route

This section lists information to be provided relevant to the manufacturing route for the products for which Approval is sought:

3.1 General information

- Equipment for material handling, number of cranes, size and lifting capacity per area/ shop
- Equipment for material preparation and forming, cutting machines, bending rollers, bending presses, machining equipment, adjustment and position equipment, surface treatment and processing
- Equipment for preheating
- Equipment for welding, welding processes used
- Equipment for heat treatment, including type of furnace, size, temperature range, temperature control and recording
- Equipment for Non-Destructive Testing
- Equipment for hydraulic pressure testing.

3.2 Information on welding details

This section lists information to be provided relevant to the welding procedures and routines used for the products for which Approval is sought:

- Welding procedure specifications (WPS) for all types of materials and thickness ranges for which approval is sought
- Welding procedure qualification records that cover the WPS's to be applied
- Welding co-ordination and quality requirements for welding operators
- List of certified welders with qualification range, welding method, position and material type.

3.3 Information on destructive and non-destructive testing

Information about equipment and qualified personnel working with:

- Destructive testing (tensile, impact, hardness, bend test etc.)
- Metallography/ macro analysis
- Non-destructive testing, including methods in use, and standards used for procedures, acceptance criteria, personnel qualification.

3.4 Sub-contractors

If any of the above mentioned steps in the production route is performed by sub-contractor(s), information about the subcontractor and his work procedure, to the same level of detail as requested above, has to be submitted. If found necessary, the Surveyor may decide to visit the subcontractor as part of his Approval survey.

4. Approval Testing

4.1 General

Approval testing is to be carried out on a representative boiler or pressure vessel, taken from the running production.

The approval testing may, depending on the Surveyor's consent, be carried out on a vessel intended to be classed with the society.

Approval testing is to be conducted by the manufacturer, witnessed and verified by the DNV surveyor, unless carried out at a recognised, independent laboratory.

4.2 Scope

The approval test is to demonstrate that the product complies to all requirements set to it in the Rules. The scope shall comprise, but not be limited to, the following items:

- Review of documentation from manufacture, to verify traceability, and that materials and welding details comply to the requirements of the Rules.
- Weld production test (when required by the Rules)
- Non-destructive testing, in compliance with agreed procedures and Rule requirements
- Hydraulic test in compliance with Rule requirements Survey report.

A survey report, including the enclosed check list, is to be worked out by the surveyor, and used in conjunction with the other submitted documents when considering Approval.

5. Appendix A: Checklist – List of Documentation

| No. | Item | Symbol | Remark |
|-----|---|--------|--------|
| 301 | General Is Manufacturers Application Received? | | |
| | Is Surveyors Report Filled In? | | |
| 402 | Application for Approval <i>Product Category:</i> – Welded boilers – Welded Pressure Vessel Class I & II – Welded Pressure Vessel Class II – Seamless (un-welded) Pressure Vessel | | |
| | <i>Activity Category:</i> – Fabrication – Design and Fabrication – Design, Fabrication and Testing | | |
| 403 | Presentation of Manufacturer | | |
| 404 | Description of Manufacturer's Organisation | | |
| 405 | Description of the Product | | |
| 406 | Production Facilities and Equipment | | |
| 407 | List of Qualified Welders and Welding operators | | |
| 408 | Welding Procedures | | |
| 409 | Heat Treatment Facilities and Equipment | | |
| 410 | Description of Production Control | | |
| 411 | Destructive Testing and Non-destructive Examination | | |
| 412 | Sub Contractors | | |
| 413 | Reference List | | |
| 414 | Existing Approvals | | |
| 502 | Approval – Testing Is inspection of the Manufacturing Premises Performed by DnV Surveyor? | | |
| 503 | Is Welding Production Tests Documented? (Destructive Test) | | |
| 504 | Is Non-destructive Examination Performed and Documented? | | |
| 505 | Is Hydraulic Pressure Testing Performed and Documented? | | |

Symbols to be used:

X: To the Surveyor satisfaction.

R: Not in order.

N/A: Not applicable.

When left blank: Not received.