SERVICE SPECIFICATION

DNVGL-SE-0122

Edition March 2017

Noble Denton marine services - certification for towing vessel approvability
FOREWORD

DNV GL service specifications contain procedural requirements for obtaining and retaining certificates and other conformity statements to the objects, personnel, organisations and/or operations in question.

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CURRENT – CHANGES

This document supersedes 0021/ND, December 2015.
Changes in this document are highlighted in red colour. However, if the changes involve a whole chapter, section or sub-section, normally only the title will be in red colour.

Main changes March 2017

• General
GL Noble Denton has been changed to DNV GL or Noble Denton marine services.

• Sec.1 Introduction
— [1.3]: Extra background information has been added.

• Sec.2 Towing vessel categories
— Table 2-1: Tug category table has been added.

• Sec.3 Documentation required for entering the towing vessel approbability scheme
— [3.7]: New chapter has been added on certification and inspection in line with DNVGL-ST-N001, /1/. Note that the requirement in [3.7.7] for towline sockets to be renewed after 2.5 years has been changed from 2 years in DNVGL-ST-N001 [11.13.14.7] (06-2016 edition). This will be updated in the next revision of DNVGL-ST-N001.

• App.B Bollard pull and towing equipment tests
— Bollard pull test information in the old appendix B has been replaced with reference to DNVGL-RU-SHIP Pt.5 Ch.10 in Table 1-1

Editorial corrections

In addition to the above stated changes, editorial corrections may have been made.
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SECTION 1 INTRODUCTION

1.1 General

1.1.1 This service specification supersedes 0021/ND Rev 10 Guidelines for the Approval of Towing Vessels.

1.1.2 It describes the DNV GL Noble Denton marine services towing vessel approvability scheme (TVAS), how it is run and how vessels may enter it.

1.2 Objective

This service specification describes the requirements for a vessel to be entered into the DNV GL Noble Denton marine services towing vessel approvability scheme (TVAS). It does not cover the towage of specific vessels or barges, specifications for which may be found in DNVGL-ST-N001, /1/.

1.3 Scope of Noble Denton towing vessel approvability scheme

1.3.1 Purpose of scheme

1.3.1.1 The TVAS provides a register of towing vessels that meet recognized international standards for marine warranty survey (MWS) approval by DNV GL for various towing vessel categories (as defined in Table 2-1).

1.3.1.2 This document provides the standard against which a towing vessel will be assessed for the issue of a towing vessel approvability certificate and entry into the TVAS register.

1.3.1.3 The certification does not imply that approval by designers, regulatory bodies, harbour authorities and/or any other parties would be given. Nor does it imply approval of a vessel for any specific towage or operation for which further consideration of the suitability of the vessel for the towage or operation would be required. In particular, additional towline strength requirements for towing in ice are covered in DNVGL-ST-N001 [11.19.10], /1/.

1.3.2 Advantages to vessel owners, operators or charterers

1.3.2.1 A vessel in the TVAS should not normally require a suitability survey before a towage or rig move for vessels in the appropriate category, though the attending marine warranty surveyor (MWS) will do spot checks before a certificate of approval (CoA) is issued for a towage or rig move.

1.3.2.2 The advantage of the TVAS to potential vessel charterers is that they are assured of contracting well-found and well-equipped vessels that have been independently surveyed and monitored to a consistent technical standard without the need for additional suitability surveys.

1.3.2.3 The advantage for vessel owners or operators is that they can easily show that their vessels continue to comply with the requirements of a leading MWS company.
1.3.3 Operation of scheme

1.3.3.1 Owners or operators of vessels to be assessed for entry in the TVAS should contact DNV GL Noble Denton marine services through the TVAS manager via Marine.Consulting-London@dnvgl.com.

1.3.3.2 The TVAS manager then arranges a survey to be performed at a convenient time and place by a surveyor from the most suitable DNV GL Noble Denton marine services office. The survey will check that the vessel complies with the technical requirements in Sec.3 to Sec.8 (and summarised in App.A) as appropriate for the vessel category.

1.3.3.3 The survey report is sent to the TVAS manager who issues a towing vessel approvability certificate (TVAC), as appropriate, confirming the towing vessel category (in Sec.2) for which the vessel is approved and giving details of key surveyed items.

1.3.3.4 A list of vessels in the TVAS register is published monthly on the DNV GL website: https://www.dnvgl.com/services/marine-operations-and-surveys-3317.

1.3.3.5 Before each of the next 4 anniversaries of the certificate issue date the owner or operator is asked to confirm that all key items in the certificate remain at the same standard as when surveyed. After receipt of that confirmation the certificate is revalidated for another year by the TVAS manager.

1.3.3.6 After 5 years the vessel is re-surveyed and the cycle begins again.

1.3.3.7 Any changes of ownership, operator, name, registry or classification shall be notified to the TVAS manager who will decide if a further survey is required before a new TVAC can be issued.
### 1.4 Definitions

#### Table 1-1 Definition of terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>approved bollard pull</td>
<td>the continuous bollard pull which Noble Denton marine services is prepared to accept for towing service</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong></td>
</tr>
<tr>
<td></td>
<td>Continuous (static) bollard pull is obtained by a test at 100% of the maximum continuous rating (MCR) of main engines, averaged over a period of 10 minutes.</td>
</tr>
<tr>
<td></td>
<td>Where a certificate of continuous bollard pull, in conformity with the above, less than 10 years old can be produced, then this will normally be used as the approved bollard pull.</td>
</tr>
<tr>
<td></td>
<td>Approved bollard pull for tugs less than 10 years old, without a bollard pull certificate, may be estimated as 1 tonne/100 (certified) BHP of the main engines. Ice-breaking tugs may be less than this and the TVAS manager should be consulted via <a href="mailto:Marine.Consulting-London@dnvgl.com">Marine.Consulting-London@dnvgl.com</a>.</td>
</tr>
<tr>
<td></td>
<td>Approved bollard pull for non ice-breaking tugs over 10 years old, without a bollard pull certificate less than 10 years old, may be the greater of:</td>
</tr>
<tr>
<td></td>
<td>— the certified value reduced by 1% per year of age since the BP test, or</td>
</tr>
<tr>
<td></td>
<td>— 1 tonne/100 (certified) BHP reduced by 1% per year of age greater than 10.</td>
</tr>
<tr>
<td></td>
<td>Bollard pull tests should be performed in accordance with DNVGL-RU SHIP Pt.5 Ch.10 Sec.11 ([1.4.2], [2]. Bollard pull test certificates issued by other recognized classification societies are acceptable. Certificates issued by other bodies recognized by DNV GL Noble Denton marine services may be accepted provided that acceptable procedures for the tests are produced.</td>
</tr>
<tr>
<td>benign weather area</td>
<td>see [2.5.1] and DNVGL-ST-N001 [3.6], [1]</td>
</tr>
<tr>
<td>brake horse power (BHP)</td>
<td>the measure of horsepower at continuous engine output after the combustion stage</td>
</tr>
<tr>
<td>continuous bollard pull (CBP)</td>
<td>continuous bollard pull is obtained by a test at 100% of the maximum continuous rating (MCR) of main engines, averaged over a period of 10 minutes</td>
</tr>
<tr>
<td>competent person</td>
<td>person that has appropriate practical and theoretical knowledge and experience of the equipment and/or activity</td>
</tr>
<tr>
<td></td>
<td><strong>Explanation:</strong></td>
</tr>
<tr>
<td></td>
<td>Although the competent person may often be employed by another organisation, this is not necessary, provided they are sufficiently independent and impartial to ensure that in-house examinations are made without fear or favour. However, this should not be the same person who undertakes routine maintenance of the equipment as they would then be responsible for assessing their own maintenance work.</td>
</tr>
<tr>
<td></td>
<td>Note: Where local or national regulations define a competent person with more onerous requirements, then the definition in these local or national regulations shall apply.</td>
</tr>
<tr>
<td>minimum breaking load (MBL)</td>
<td>in this document this refers to the minimum allowable value of breaking load for a particular sling, grommet, wire or chain etc.</td>
</tr>
<tr>
<td>maximum bollard pull (MBP)</td>
<td>the bollard pull obtained by a test, typically at 110% of the maximum continuous rating (MCR) of main engines, over a period of 5 minutes</td>
</tr>
<tr>
<td>maximum continuous rating (MCR)</td>
<td>100% rating of the main engine as set by manufacturer</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>recognized classification society</td>
<td>member of IACS with recognized and relevant competence and experience in specialised vessels or structures, and with established rules and procedures for classification/certification of such vessels/structures under consideration</td>
</tr>
<tr>
<td>register</td>
<td>the list published monthly of all towing vessels entered into the towing vessel approvability scheme</td>
</tr>
<tr>
<td>survey</td>
<td>a systematic and independent assessment in order to verify compliance with this service specification&lt;br&gt;In this document this refers to attendance and inspection by a DNV GL Noble Denton marine services representative.</td>
</tr>
<tr>
<td>surveyor</td>
<td>personnel authorized to carry out surveys and to conclude whether or not compliance has been met</td>
</tr>
<tr>
<td>safe working load (SWL)</td>
<td>SWL is a derated value of the working load limit (WLL), following an assessment by a competent person of the maximum static load the item can sustain under the conditions in which the item is being used</td>
</tr>
<tr>
<td>tonnes</td>
<td>metric tonnes of 1,000 kg (approximately 2,204.6 lbs) are used throughout this document&lt;br&gt;The necessary conversions shall be made for equipment rated in long tons (2,240 lbs, approximately 1,016 kg) or short tons (2,000 lbs, approximately 907 kg).</td>
</tr>
<tr>
<td>towing vessel approvability certificate (TVAC)</td>
<td>the document issued by DNV GL Noble Denton marine services stating that a vessel complied with these specification at the time of survey, or was reportedly unchanged at the time of revalidation, in terms of design, construction, equipment and condition, and is considered suitable for use in towing service within the limitations of its category, bollard pull and any geographical limitations which may be imposed&lt;br&gt;It is valid for 5 years, subject to the owner or operator confirming to the TVAS manager every 12 months that no significant changes have taken place.</td>
</tr>
<tr>
<td>towing vessel approvability scheme (the scheme)</td>
<td>the scheme whereby owners of vessels may apply to have their vessels surveyed and entered into the scheme and the register</td>
</tr>
<tr>
<td>towing vessel report</td>
<td>the surveyor’s report on which the issue of a towing vessel approvability certificate (TVAC) is based</td>
</tr>
<tr>
<td>TVAS manager</td>
<td>the person administering the TVAS scheme on behalf of Noble Denton marine services, contactable via <a href="mailto:Marine.Consulting-London@dnvgl.com">Marine.Consulting-London@dnvgl.com</a></td>
</tr>
<tr>
<td>ultimate load capacity (ULC)</td>
<td>the certified minimum breaking load of wire rope, chain, shackle or similar&lt;br&gt;The load factors allow for good quality splices in wire rope. Ultimate load capacity of a padeye, clench plate, delta plate or similar structure, is defined as the load, which will cause general failure of the structure or its connection into the barge or other structure.</td>
</tr>
<tr>
<td>working load limit (WLL)</td>
<td>the maximum force which a product is authorized to sustain in general service when the rigging and connection arrangements are in accordance with the design&lt;br&gt;See safe working load (SWL).</td>
</tr>
</tbody>
</table>

**Table 1-2 Definitions of verbal forms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>shall</td>
<td>verbal form used to indicate requirements strictly to be followed in order to conform to the document</td>
</tr>
</tbody>
</table>
### 1.5 Abbreviations and acronyms

**Table 1-3 Acronyms and abbreviations**

<table>
<thead>
<tr>
<th>Short form</th>
<th>In full</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHP</td>
<td>brake horse power</td>
</tr>
<tr>
<td>POB</td>
<td>person on board</td>
</tr>
<tr>
<td>CBP</td>
<td>continuous bollard pull</td>
</tr>
<tr>
<td>CoA</td>
<td>certificate of approval</td>
</tr>
<tr>
<td>IACS</td>
<td>international association of classification societies</td>
</tr>
<tr>
<td>MBL</td>
<td>minimum breaking load</td>
</tr>
<tr>
<td>MCR</td>
<td>maximum continuous rating</td>
</tr>
<tr>
<td>MWS</td>
<td>marine warranty survey or marine warranty surveyor</td>
</tr>
<tr>
<td>NDT</td>
<td>non-destructive testing</td>
</tr>
<tr>
<td>SWL</td>
<td>safe working load</td>
</tr>
<tr>
<td>TVAC</td>
<td>towing vessel approvability certificate</td>
</tr>
<tr>
<td>TVAS</td>
<td>towing vessel approvability scheme</td>
</tr>
<tr>
<td>ULC</td>
<td>ultimate load capacity</td>
</tr>
<tr>
<td>UT</td>
<td>ultrasonic testing</td>
</tr>
<tr>
<td>WLL</td>
<td>working load limit</td>
</tr>
</tbody>
</table>
SECTION 2 TOWING VESSEL CATEGORIES

Vessels that are entered into the scheme or proposed for towing duties will be designated one of the six (6) categories as summarised in Table 2-1. The requirements for each category are stated below, and summarised in App.A.

Table 2-1 Tug category summary

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Category</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ST – Salvage tug</td>
<td>Single tug towage in benign or non-benign weather areas.</td>
</tr>
<tr>
<td>2</td>
<td>U – Unrestricted</td>
<td>They shall have very good seakeeping qualities including good propeller immersion in bad weather to protect their towlines.</td>
</tr>
<tr>
<td>3</td>
<td>C – Coastal</td>
<td>Towage in benign weather areas or staged tow</td>
</tr>
<tr>
<td>4</td>
<td>R1 – Restricted</td>
<td>Assisting in multi-tug towage</td>
</tr>
<tr>
<td>5</td>
<td>R2 – Restricted</td>
<td>Benign weather area towage</td>
</tr>
<tr>
<td>6</td>
<td>R3 – Restricted</td>
<td>Assisting in multi-tug towage in benign weather areas</td>
</tr>
</tbody>
</table>

2.1 Ocean-going salvage tug (ST)

2.1.1

Vessels within this category are approvable for all towages within the limits of their bollard pull in all geographical areas subject to the vessel’s ice classification.

2.1.2

Vessels shall be equipped with two (2) main towing wires and a spare towing wire, all of which shall comply with the strength and length requirements of [4.1].

2.1.3

Vessels shall be adequately manned for towing operations in all geographical areas. Each vessel shall have a minimum complement of officers and crew as required in the safe manning certificates and also have the capability of accommodating increased manning levels where it is deemed necessary for a specific towage. See [6.3] and App.A.

2.1.4

Vessels shall be of such a design that they are capable of undertaking towages in all geographical areas subject to their ice classification and Sec.7. They shall have very good seakeeping qualities including good propeller immersion in bad weather. These qualities are unlikely to be satisfied with a length over all (LOA) less than 40 metres and a displacement of less than 1,000 tonnes.

2.1.5

Vessels shall have a minimum bunker capacity of at least 35 days consumption at 80% MCR.
2.1.6
Vessels shall be equipped with a workboat designed for open sea operation (e.g. a rigid inflatable) with sufficient power and capacity to carry four (4) persons plus material/equipment to the casualty/tow.

2.1.7
Vessels shall be equipped with the additional equipment listed in Sec.7.

2.2 Unrestricted towages (U)

2.2.1
Vessels within this category are approvable for all towages within the limits of their bollard pull in all geographical areas subject to the vessels’ ice classification.

2.2.2
Vessels shall be equipped with a main towing wire and a spare towing wire, both of which shall comply with the strength and length requirements of [4.2].

2.2.3
Vessels shall be adequately manned for towing operations in all geographical areas. Each vessel shall have a minimum complement of officers and crew as required in the safe manning certificates and also have the capability of accommodating increased manning levels where it is deemed necessary for a specific towage. See [6.3] and App.A.

2.2.4
Vessels shall be of such a design that they are capable of undertaking towages in all geographical areas subject to their ice classification and Sec.7. They shall have very good seakeeping qualities including good propeller immersion in bad weather. These qualities are unlikely to be satisfied with a length over all (LOA) less than 40 metres and a displacement of less than 1,000 tonnes.

2.2.5
Vessels shall be equipped with a workboat designed for open sea operation (e.g. a rigid inflatable) with sufficient power and capacity to carry four (4) persons plus material/equipment to the tow. A suitable man overboard boat may be considered as a workboat provided there is sufficient space to carry out a workboat function and the appropriate flag state is in agreement that it is permitted to be deployed for tasks other than man overboard duties.

2.3 Coastal towages (C)

2.3.1
Vessels within this category are approvable for all coastal towages within the limits of their bollard pull in all geographical areas subject to the vessels’ ice classification. Coastal towages are defined as routes for which a tow is able to safely reach a place of safety within the period of a reliable weather forecast, or are in benign weather areas.
2.3.2
Vessels shall be equipped with a main towing wire and a spare towing wire, both of which shall comply with
the strength and length requirements of [4.2].

2.3.3
Vessels shall be adequately manned for towing operations in all relevant geographical areas. Each vessel
shall have a minimum complement of officers and crew as required in the safe manning certificates and also
have the capability of accommodating increased manning levels where it is deemed necessary for a specific
towage. See [6.3] and App.A.

2.3.4
Vessels shall be of such a design that they are capable of undertaking towages in all relevant geographical
areas subject to their ice classification and Sec.7.

2.3.5
Vessels shall be equipped with a workboat with sufficient power and capacity to carry four (4) persons plus
material/equipment to the tow. The man overboard boat may be considered as a workboat provided there is
sufficient space to carry out a workboat function and the appropriate flag state is in agreement that it can be
deployed for tasks other than man overboard duties.

2.4 Restricted towages (R1)

2.4.1
Vessels within this category are approvable for assisting with towages within the limits of their bollard pull in
all geographical areas subject to the vessels’ ice classification.

2.4.2
Vessels shall be equipped with a minimum of one main towing wire which shall comply with the strength and
length requirements of [4.3].

2.4.3
Vessels in this category shall comply with the requirements for manning and seakeeping as outlined in
[2.2.3], [2.2.4], [6.3] and Sec.7.

2.4.4
If proposed as the lead or only tug for a particular towage, as may be allowed in [4.3.4] vessels shall
be equipped with a workboat with sufficient power and capacity to carry four (4) persons plus material/
equipment to the tow. The man overboard boat may be considered as a workboat provided there is sufficient
space to carry out a workboat function and the appropriate flag state is in agreement that it is permitted to
be deployed for tasks other than man overboard duties.
2.5 Benign area towages (R2)

2.5.1
Vessels within this category are approvable for towages within the limits of their bollard pull and the defined geographical limits of benign areas in DNVGL-ST-N001 [3.6], /1/.
Guidance note:
The following chart is extracted from DNVGL-ST-N001 [3.6], /1/.

Figure 2-1 Benign weather areas

---e-n-d---o-f---g-u-i-d-a-n-c-e---n-o-t-e---
2.5.2
Vessels shall be equipped with a main towing wire and a spare towing wire, both of which shall comply with the strength and length requirements of [4.4].

2.5.3
Vessels shall be adequately manned for towage operations within the geographical limits of benign areas. These vessels shall have the capability of accommodating increased manning levels where it is deemed necessary for a specific towage. See [6.3].

2.5.4
Vessels shall be of such a design that they are capable of undertaking towages within the geographical limits of benign areas. See Sec.7.

2.5.5
If proposed as the lead or only tug for a particular towage, vessels shall be equipped with a workboat with sufficient power and capacity to carry three (3) persons plus material/equipment to the tow. The man overboard boat may be considered as a workboat provided there is sufficient space to carry out a workboat function and the appropriate flag state is in agreement that it is permitted to be deployed for tasks other than man overboard duties.

2.6 Restricted benign area towages (R3)

2.6.1
Vessels within this category are approvable for assisting with towages within the limits of their bollard pull and the defined geographical limits of benign areas.

2.6.2
Vessels shall be equipped with a minimum of one main towing wire which shall comply with the strength and length requirements of [4.5].

2.6.3
Vessels shall comply with the requirements for manning and seakeeping as outlined in [2.5.3], [2.5.4], [6.3] and Sec.7.
SECTION 3 DOCUMENTATION REQUIRED FOR ENTERING THE TOWING VESSEL APPROVABILITY SCHEME

Prior to a survey of the vessel being carried out for entry into the scheme, and in order to assess the likelihood of successful entry, copies of the following documents should be submitted to the TVAS manager via Marine.Consulting-London@dnvgl.com.

3.1 General specification
General specification should include, but is not limited to, general details of:
— overall dimensions and tonnages
— classification
— propulsion equipment
— speed, consumption and bunker capacity
— towing and anchor-handling equipment
— anchoring system
— accommodation capacity and layout.

3.2 General arrangement plans
General arrangement plans should show the overall arrangement of the vessel, and should be sufficiently detailed to show the deck area including the towing, anchor handling and mooring equipment.

3.3 Towing/anchor-handling winches
Specifications of the towing/anchor-handling winch and its foundation.

3.4 Towing equipment
Specifications of all towing equipment carried including briddles, chains, towing wires, pennant wires, stretchers, towing shackles and connecting links.

3.5 Certificates
Copies of the following valid documents (unless not legally required, typically for some vessels less than 500 gt) shall be submitted to the TVAS manager or made available to the surveyor at time of survey:
— certificate of registry
— international load line certificate
— certificates of class for hull and machinery
— cargo ship safety equipment certificate
— cargo ship safety radio certificate
— safety construction certificate
— certificate of safe manning
— international oil pollution prevention certificate
— safety management certificate
— international ship security certificate
— ballast water exchange certificate (if required)
— certificates for all required briddles, chains, tow wires, pennants, stretchers, and shackles and connecting links.
These certificates shall be issued or endorsed by bodies approved by an IACS member or other recognized certification body accepted by DNV GL:
— bollard pull certificate (by a recognized authority or body)
— approved stability booklet.

3.6 Salvage equipment

For the entry of ocean-going salvage tugs (ST), details of the salvage equipment should be submitted. A list of the minimum requirements appears in Sec.7.

3.7 Certification and inspection

3.7.1
Valid certificates (less than 5 years old) shall be submitted for all towing gear hardware (e.g. chains, wires and shackles) from the towing winch to the towing connections. Certificates shall be issued or endorsed by bodies approved by a recognized classification society or other body accepted by DNV GL. For delta plates, less than 5 years old, calculations agreed with DNV GL in advance can be acceptable instead of certification.

3.7.2
Apart from towing bridles or pennants connected to underwater connections (such as on semi-submersible pontoons) all towing gear hardware shall be subjected to a documented inspection by a competent person not more than 12 months before use and shall be thoroughly visually inspected before each use. Items with any significant wear or damage shall be repaired and thoroughly inspected again, or replaced, before use.

3.7.3
Additionally all delta plates, master links and shackles shall be inspected less than 2.5 years before each use with MPI and UT to confirm there are no defects.

3.7.4
For any towing gear that cannot be inspected annually, an inspection regime shall be agreed in advance with the vessel operator. Higher safety factors shall be agreed to allow for corrosion, fatigue and longer times between inspections. The maximum age for such equipment shall be 5 years from new and typically the safety factors should be increased by an extra 20% per year after the first.

3.7.5
Towlines shall not be in use for longer than 100,000 nautical miles, of which no more than 50,000 miles shall have been in adverse weather conditions (nominally > Beaufort force 6). Within 5 years from new or from any previous similar test about 10 m to 12 m of towline shall be cut out and break tested or proof loaded to 1.5 x BP without yielding. Max. towline life shall be 5 years if not adequately documented in a towline log. Tow wires shall be terminated with hard eye thimbles or closed sockets.

3.7.6
Anchor handling work wires should generally not be used for towing due to the high probability of damage. The only exception is when the wire log shows only very light use and after a rigorous inspection of the whole wire by an independent competent person appropriately certified to do such inspections.
3.7.7
Where a closed socket (normally spelter type) is used to form the towline termination it shall be renewed at intervals not exceeding 2.5 years (excluding time before fitting when new on the tug), irrespective of the condition of the socket and its wire. Except when re-socketed at sea for (temporary) contingency reasons socketing shall only be done by a certified specialist, approved by a recognized classification society. Renewed means the wire cropped back to steel that shows no sign of deterioration and the use of either a new socket or one which has undergone rigorous NDT.

3.7.8
Aluminium or alloy ferrules shall not be used on any pennant or towline.

3.7.9
If testing of towing gear is required, then the requirements of App.B – shall be followed.

3.7.10
Table 3-1 summarises the required expiry times for the above certificates and inspections shown above.

**Table 3-1 Certificate and inspection document requirements**

<table>
<thead>
<tr>
<th>Item</th>
<th>Certificate valid for</th>
<th>Time since documented inspection by a competent person (unless new)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bollard pull</td>
<td>&lt; 10 years</td>
<td>Not applicable. See approved bollard pull in Table 1-1</td>
</tr>
<tr>
<td>Delta plates, master links and shackles</td>
<td>&lt; 5 years</td>
<td>&lt; 12 months and MPI and UT &lt; 2.5 years</td>
</tr>
<tr>
<td>Pennants, bridles and towlines</td>
<td>&lt; 5 years</td>
<td>&lt; 12 months</td>
</tr>
<tr>
<td>Lashing equipment</td>
<td>&lt; 4 years</td>
<td>&lt; 12 months</td>
</tr>
<tr>
<td>Spelter sockets</td>
<td>&lt; 2.5 years</td>
<td>&lt; 12 months</td>
</tr>
</tbody>
</table>
SECTION 4 TOWING EQUIPMENT REQUIREMENTS

4.1 Ocean-going salvage tugs (ST)

4.1.1
Vessels shall be equipped with two (2) main towing wires on separate winch drums, and one spare towing wire, each of adequate strength to satisfy the requirements of minimum breaking load (MBL) as follows:

Table 4-1 Towline minimum breaking loads for salvage tugs

<table>
<thead>
<tr>
<th>Continuous bollard pull (BP)</th>
<th>Minimum breaking load (MBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP ≤ 40 tonnes</td>
<td>3.0 x BP</td>
</tr>
<tr>
<td>40 &lt; BP ≤ 100 tonnes</td>
<td>(220 – BP) x BP/60</td>
</tr>
<tr>
<td>BP &gt; 100 tonnes</td>
<td>2.0 x BP</td>
</tr>
</tbody>
</table>

4.1.2
For towing vessels with very large bollard pulls (typically over 280 tonnes) it may be difficult to satisfy the requirements of Table 4-1 above due to problems in safely handling the large towlines required. In these cases the effective towing bollard pull for selecting the towline MBL may be reduced to not less than 280 tonnes provided that
1) the vessel is fitted with towline tension monitoring,
2) the tug Master is in agreement
3) the reduction is documented in the towing procedures and Certificate of Approval,
4) the tug master shall take extra care in bad weather to protect the towline
   and if practicable:
   5) the winch should be adjusted to pay out at 80% of the towline MBL, and
   6) the tug engines should be mechanically or electronically limited to produce a maximum static bollard pull (i.e. the effective bollard pull) of not more than 50% of the towline MBL.

4.1.3
The minimum deployable length (L), as explained in [4.6.1] of both main wires and the spare towing wire shall be determined from the formula:

\[ L = \left( \frac{BP}{MBL} \right) \times 2,000 \text{ [m]} \]

except that in no case shall the deployable length be less than 800 metres (see also [4.6.5]).

4.1.4
A towing log indicating service history, maintenance and inspections shall be kept for each tow wire and each synthetic stretcher held on board the vessel.
4.1.5
If a surge chain is supplied then the MBL shall not be less than that of the main towing wire. The surge chain shall be a continuous length of welded studlink chain with an enlarged open link at each end.

4.1.6
Vessels shall be equipped with at least four (4) towing pennants of not less than the required MBL of the towing wire, and of the same lay, 2 of which can be used to make up an emergency bridle.

4.1.7
Vessels shall be provided with the components for one towing bridle, which may be either all chain, or a combination of chain and wire. The ultimate load capacity (ULC), in tonnes, of each bridle leg shall be not less than:

\[
\text{ULC} = 1.25 \times \text{MBL} \quad \text{(for MBL} \leq 160 \text{ tonnes)} \text{ or } \\
\text{ULC} = \text{MBL} + 40 \quad \text{(for MBL} \geq 160 \text{ tonnes)} \text{ with a maximum of ULC of 400 tonnes (considered to be the maximum able to be handled at sea without a crane)}
\]

4.1.8
Vessels shall be equipped with at least twelve (12) towing shackles in accordance with the requirements of [4.6.12] to [4.6.14].

4.2 Unrestricted (U) or coastal (C) categories

4.2.1
Vessels shall be equipped with both a main and a spare towing wire, each of adequate strength to satisfy the requirements of minimum breaking load (MBL) as follows:

<table>
<thead>
<tr>
<th>Bollard pull (BP)</th>
<th>Minimum breaking load (MBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40 tonnes</td>
<td>3.0 x BP</td>
</tr>
<tr>
<td>40 to 100 tonnes</td>
<td>(220 - BP) x BP/60</td>
</tr>
<tr>
<td>Over 100 tonnes</td>
<td>2.0 x BP</td>
</tr>
</tbody>
</table>

4.2.2
For towing vessels with very large bollard pulls (typically over 280 tonnes) it may be difficult to satisfy the requirements of Table 4-2 above due to problems in safely handling the large towlines required. In these cases the effective towing bollard pull for selecting the towline MBL may be reduced to not less than 280 tonnes provided that

1) the vessel is fitted with towline tension monitoring,
2) the tug master is in agreement
3) the reduction is documented in the towing procedures and certificate of approval,  
4) the tug master shall take extra care in bad weather to protect the towline  
   and if practicable:  
5) the winch should be adjusted to pay out at 80% of the towline MBL, and  
6) the tug engines should be mechanically or electronically limited to produce a maximum static bollard  
   pull (i.e. the effective bollard pull) of not more than 50% of the towline MBL.

4.2.3  
The minimum deployable length (L), as explained in [4.6.1] of both main wires and the spare towing wire  
shall be determined from the formula:  
\[ L = \frac{BP}{MBL} \times 1,800 \text{ [m]} \]
except that in no case shall the length be less than 650 metres for Unrestricted categories or 500 metres for  
coastal (see also [4.6.5]).

4.2.4  
A towing log indicating service history, maintenance and inspections shall be kept for each tow wire and each  
synthetic stretcher held on board the vessel.

4.3 Restricted categories (R1)

4.3.1  
Vessels shall be equipped with one main towing wire of adequate strength to satisfy the requirements of  
minimum MBL as follows.

<table>
<thead>
<tr>
<th>Bollard pull (BP)</th>
<th>Minimum breaking load (MBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40 tonnes</td>
<td>3.0 x BP</td>
</tr>
<tr>
<td>40 to 100 tonnes</td>
<td>((220 – BP) \times BP/60)</td>
</tr>
<tr>
<td>Over 100 tonnes</td>
<td>2.0 x BP</td>
</tr>
</tbody>
</table>

4.3.2  
The minimum deployable length (L), as explained in [4.6.1] of the towing wire shall be determined from the  
formula:  
\[ L = \frac{BP}{MBL} \times 1,800 \text{ [m]} \]
except that in no case shall the deployable length be less than 650 metres (see also [4.6.5]).

4.3.3  
A towing log indicating service history, maintenance and inspections shall be kept for each tow wire and each  
synthetic stretcher held on board the vessel.
4.3.4
DNV GL will not in normal circumstances approve single tug towages where the tug is equipped with only one tow wire. However, vessels in category R1 may in certain circumstances be approved for single tug towages where the towage is in sheltered waters or within the limits of a reliable weather forecast. Approval of a vessel for this type of towage will be subject to a specific assessment.

4.4 Benign area categories (R2)

4.4.1
Vessels shall be equipped with both a main and spare towing wire each of adequate strength to satisfy the requirements of minimum BL as follows:

\[ \text{MBL} = 2.0 \times \text{BP} \]

4.4.2
The minimum deployable length (L), as explained in [4.6.1] of both main wires and the spare towing wire shall be determined from the formula:

\[ L = \frac{\text{BP}}{\text{MBL}} \times 1,200 \text{ [m]} \]

except that in no case shall the deployable length be less than 500 metres (see also [4.6.5]).

4.5 Restricted benign area categories (R3)

4.5.1
Vessels shall be equipped with a towing wire of adequate strength to satisfy the requirements of MBL as follows:

\[ \text{MBL} = 2.0 \times \text{BP} \]

4.5.2
The minimum length (L) of the towing wire shall be determined from the formula:

\[ L = \frac{\text{BP}}{\text{MBL}} \times 1,200 \text{ [m]} \]

except that in no case shall the length be less than 500 metres (see also [4.6.5]).

4.6 All entered vessels

4.6.1
The towline deployable length shall not include the minimum remaining turns on the winch drum, and the distance from the drum to the stern rail or roller. One full strength wire rope pennant which is permanently included in the towing configuration may be considered when determining the deployable length.

4.6.2
All towing wires shall have hard eyes formed by a heavy-duty gusseted thimble, pee-wee or a closed spelter socket fitted at the outer end.
4.6.3
The main towing wire(s) should be spooled onto the towing winch drum(s) using adequate tension. The end of the wire shall be adequately secured to the winch drum.

4.6.4
Where a spare towing wire is carried, it shall be stowed on a winch drum, or reverse stowed on a reel. Where the spare wire is stowed on a reel, it shall be accessible even in heavy weather, and be in such a position as to ensure that transfer to the main towing drum can be achieved safely and efficiently.

4.6.5
Where a reduced towline length demands a higher minimum breaking load (MBL) in order to satisfy the towline length formula, then this increased MBL shall be the required MBL when determining the strength of the other components in the towing arrangement.

4.6.6
If the vessel ever uses a towing pennant, it shall carry two on board. ST vessels shall be equipped with at least 4 pennants as described in [4.1.6] to [4.1.7].

4.6.7
Towing pennants, if carried, shall:
— be of the same lay as the towing wire, and
— have a breaking load not less than the required breaking load of the main towing wire, and
— have a length appropriate to their intended service; typically these will be in the range of 10 to 50 metres long, and
— have hard eyes formed by a heavy-duty gusseted thimble, pee-wee or a spelter socket at each end.

4.6.8
If a soft-eyed pennant is carried (e.g. for putting over a bollard or for anchor handling), then such pennant shall be additional to the other requirements of this section.

4.6.9
If synthetic stretchers are used, at least 2 shall be carried. For benign areas, one (1) synthetic stretcher may be acceptable.

4.6.10
If synthetic stretchers are used, they should be in a sound condition and their minimum breaking load should be at least:
— as recommended by the manufacturer and
— 1.5 times the required towline minimum break load (MBL).

When determining the required towline MBL the considerations in [4.6.5] shall be taken into account.
4.6.11
The synthetic stretchers shall have a heavy-duty gusseted thimble at each end and be adequately protected against chafe. They should also be stored in line with the manufacturer’s recommendations and protected from solvents and sunlight.

4.6.12
Vessels shall be equipped with at least 6 (12 for category ST) towing shackles or approved connecting links.

4.6.13
The documented minimum breaking load of shackles forming part of the towline (including any shackle between the towline and the bridle apex) shall be at least 130% of the required breaking load of the towline to be used.

4.6.14
If the SWL or WLL of a shackle is documented but the minimum breaking load is not, the towing vessel owner should obtain a document (which could be a company brochure) from the shackle manufacturer stating the minimum safety factor – defined as minimum break load/SWL (or WLL as appropriate). This is because there is a large range in shackle safety factors.
SECTION 5 TOWING WIRE PROTECTION AND CONTROL REQUIREMENTS

5.1 Protectors

5.1.1 Sufficient towing wire protectors shall be provided to prevent the towing wire from being damaged by abrasion and chafe against tow bars, cargo protection rails, bulwarks, stern rail, tail gate or stern roller.

5.1.2 If a fixed gogwire system or towing pod is used, then whenever possible, towing wire protectors should also be provided for the towing wire at the gogwire shackle or towing pod.

5.2 Tow bars, cargo protection rail, bulwarks, stern rail, tailgate and stern roller

5.2.1 The top of the tow bars, cargo protection rail, bulwarks, stern rail, tail gate and stern roller shall be free of sharp edges, corners or obstructions which could damage the towing wire or prevent it from free lateral movement.

5.2.2 Where, during normal towing conditions, the towing wire bears on tow bars, cargo protection rail, bulwarks, stern rail or tailgate, the radius of bend shall be at least ten (10) times the diameter of the towing wire.

5.3 Adjustable gogwire system

5.3.1 Preference shall be given to the use of an adjustable gogwire system.

5.3.2 The winch or capstan used to adjust the gogwire system shall be controlled from a safe location.

5.4 Fixed gogwire system

5.4.1 If a single wire or single chain gogwire system is used, then the connection point on the aft deck shall be on the centreline of the vessel.
5.4.2
The length of the single wire or single chain of the gooseneck system shall not exceed half the distance between the cargo protection rails or bulwarks, whichever is less.

5.4.3
Either a wide body sling shackle, having an enlarged bearing surface at the bow, or a purpose-designed sheave, shall be used to connect the gooseneck system to the towing wire.

5.5 Towing pod

5.5.1
The centre line of the towing pod shall be in line with the centre line of the towing wire winch drum.

5.5.2
The towing pod shall be well faired and have a bend radius of at least ten (10) times the diameter of the towing wire.
SECTION 6 OTHER REQUIREMENTS

6.1 Towing winch requirements

6.1.1
Vessels in all categories shall be provided with at least one towing winch, (two towing winch drums for category ST).

6.1.2
The towing winch and its connection to the vessel shall be strong enough to withstand a force equal to the breaking load of the tow wire acting at its maximum height above deck, without over-stressing either the winch or the deck connections.

6.1.3
If the power for the towing winch is supplied via a main engine shaft generator during normal operating conditions, then another generator shall be available to provide power for the towing winch in case of main engine or generator failure.

6.1.4
If a multi-drum winch is used, then each winch drum shall be capable of independent operation.

6.1.5
The towing winch drum(s) shall have sufficient capacity to stow the required minimum length of the tow wire(s).

6.1.6
A spooling device shall be provided such that the tow wire(s) is effectively spooled on to the winch drum(s).

6.1.7
The towing winch brake shall be capable of preventing the towing wire from paying out when the vessel is towing at its maximum continuous static bollard pull and shall not release automatically in case of a power failure.

6.1.8
The winch shall be fitted with a mechanism for emergency release of the tow wire.

6.1.9
There shall be an adequate means of communication between the winch control station(s) and the engine control station(s) and the bridge.
6.1.10
If there is only one towing winch then the crew must be able to demonstrate that a spare tow wire can be safely run onto the towing winch within 6 hours of a towline break in bad weather.

6.2 Stability requirements

6.2.1

6.2.2
In addition, if the vessel has IACS class notation "Tug" or “Towing Vessel”, the stability booklet shall contain an example loading condition that fulfils the classification society’s notation. The vessel’s master shall show the attending surveyor how the example loading condition relates to the voyage(s), including whether any roll reduction tanks are in use.

6.2.3
If the example loading condition varies, the master shall document adequate stability, including for the arrival fuel loads. The relevant print out(s) from the onboard calculations (e.g. loadmaster) shall be given to the surveyor.

6.2.4
If the vessel cannot show that it satisfies IACS class notation "Tug" or “Towing Vessel” as described above, then the heeling lever (defined below) shall not exceed 0.5 times the maximum GZ for the most critical loading condition.

Heeling Lever = \[0.6 \times \text{max. bollard pull} \times \text{vertical distance between Hawser and centre of the propeller(s)}\]/displacement.

6.2.5
The height of the hawser shall be measured at:
— the fixed gog, or the side rails if higher, if a fixed gog is always used, or
— the top of the winch drum (with no towline deployed), or the side rails if higher, if a fixed gog is not always used.

6.2.6
If the maximum GZ occurs at an angle greater than 30 degrees of heel then the GZ value for 30 degrees of heel shall be used instead of the angle of maximum GZ.
6.3 Manning and accommodation requirements

6.3.1
Vessels in all categories shall be manned to meet the minimum requirements laid down by statutory regulations.

6.3.2
Manning levels for vessels in all categories will be subject to the requirements of a specific towage.

6.3.3
Where vessels are required to undertake long duration towages, difficult towages or where the tow is unmanned, they shall have adequate certified accommodation to enable manning levels to be increased. Any increase in manning levels will be subject to the limitations of the regulations relating to life-saving appliances.

6.3.4
Table 6-1 shows the minimum required certified accommodation and life-saving for each category.

Table 6-1 Minimum accommodation and LSA requirements

<table>
<thead>
<tr>
<th>Category</th>
<th>Certified accommodation and life-saving appliances for a minimum POB of</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST when engaged in towing operations</td>
<td>12 including a minimum of 5 certificated officers. These would normally be the master, 2 deck officers and 2 engineer officers.</td>
</tr>
<tr>
<td>U, C and R1 when engaged in towing operations</td>
<td>8 including a minimum of 4 certificated officers. These would normally be the master, 1 deck officer and 2 engineer officers.</td>
</tr>
<tr>
<td>R2 and R3 when engaged in towing operations</td>
<td>Not specified, but to include a minimum of 3 certificated officers. These would normally be the master, 1 deck officer and 1 engineer officer.</td>
</tr>
</tbody>
</table>

6.4 Seakeeping requirements

6.4.1
Vessels in all categories shall be of such a design to allow them to operate safely and effectively in their designated areas.

6.4.2
Vessels in all categories shall be purpose-built for towing operations or be of a multi-purpose design having towing capability.

6.4.3
Vessels shall be assigned an appropriate classification by a recognized classification society.
6.4.4
The length and normal operating draught of the vessel shall be adequate to maintain propeller effectiveness and reduce slamming in heavy weather conditions.

6.4.5
Vessels in category ST, U, C and R1 shall have a raised forecastle with a height of at least 2 metres above the freeboard deck. The forecastle shall be of such a design to ensure minimum water retention.
SECTION 7 ADDITIONAL EQUIPMENT REQUIRED FOR SALVAGE TUGS (ST)

7.1 General
All vessels in category ST shall carry the equipment as listed in the sections below.

7.2 Lifting equipment
A deck crane or derrick with a minimum capacity of two (2) tonnes for transferring equipment.

7.3 Pumps
At least 2 portable salvage pumps (at least 2 inch (5 cm) suction diameter) with an ample supply of suitable hoses.

7.4 Generators
2 portable generators and cabling to allow power to be distributed to the casualty/tow. If the portable pumps are electric then one generator shall be able to power any 2 pumps and the other generator power at least one pump.

7.5 Air compressor
Portable air compressor suitable for salvage purposes with ample supply of hoses or facility to allow compressed air to be distributed to the casualty/tow. If the portable pumps are pneumatic then one compressor shall be able to power any 2 pumps and one additional compressor power at least one pump.

7.6 Welding/cutting
Portable welding and cutting equipment with ample supply of extension cables, hoses and consumables.

7.7 Damage control
Assorted steel plate, timber, canvas, cement, sand, tools, etc. for damage control purposes.

7.8 Spare parts
An adequate inventory of spare parts shall be carried, for the vessel to allow repairs to be carried out during long voyages.

7.9 Fenders
Sufficient fenders to allow the tug to safely come alongside a casualty or tow.
SECTION 8 REFERENCES

8.1 References

/1/ DNVGL-ST-N001 Marine operations and marine warranty
/2/ DNVGL-RU SHIP Pt.5 Ch.10 Sec.11 Tugs and escort vessels
APPENDIX A SUMMARY OF TECHNICAL REQUIREMENTS

The following table provides a summary of the technical requirements contained in this specification for each category of vessel. Use of the table should be made together with reference to the appropriate text in the specification.

<table>
<thead>
<tr>
<th>Category</th>
<th>ST Salvage tug</th>
<th>U Unrestricted</th>
<th>C Coastal</th>
<th>R1 Assist</th>
<th>R2 Benign area</th>
<th>R3 Assist/benign</th>
</tr>
</thead>
</table>

**General design and range**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>ST Salvage tug</th>
<th>U Unrestricted</th>
<th>C Coastal</th>
<th>R1 Assist</th>
<th>R2 Benign area</th>
<th>R3 Assist/benign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate displacement (LOA &gt; 40m)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raised forecastle</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bunker capacity at 80% power</td>
<td>Yes</td>
<td>35 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Certificates/documentation**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>ST Salvage tug</th>
<th>U Unrestricted</th>
<th>C Coastal</th>
<th>R1 Assist</th>
<th>R2 Benign area</th>
<th>R3 Assist/benign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registry</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loadline</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class, hull for this category</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safe manning</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety equipment</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety radio</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All towing equipment</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bollard pull</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Towing wire log</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Towage and salvage equipment**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>ST Salvage tug</th>
<th>U Unrestricted</th>
<th>C Coastal</th>
<th>R1 Assist</th>
<th>R2 Benign area</th>
<th>R3 Assist/benign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towing winch</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of winch drums</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of main tow wires</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of spare tow wires</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Towline MBL, tonnes (BP&gt; 100t)</td>
<td>2.0 x BP</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Towline MBL, tonnes (40&lt;BP&lt; 100t)</td>
<td>(220 – BP) x BP/60</td>
<td></td>
<td></td>
<td></td>
<td>2.0 x BP</td>
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</tr>
<tr>
<td>Towline MBL, tonnes (BP&lt;40t)</td>
<td>3.0 x BP</td>
<td></td>
<td></td>
<td></td>
<td>2.0 x BP</td>
<td></td>
</tr>
<tr>
<td>Towline length, metres</td>
<td>(BP/MBL) x 2,000</td>
<td></td>
<td></td>
<td></td>
<td>(BP/MBL) x 1,800</td>
<td>(BP/MBL) x 1,200</td>
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<tr>
<td>Minimum towline length (m)</td>
<td>800</td>
<td>650</td>
<td>500</td>
<td>650</td>
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<tr>
<td>Towing pennants</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>2 (see [4.6.6])</td>
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<tr>
<td>MBL synthetic stretchers (if used)</td>
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<td></td>
<td></td>
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<td>≥ 1.5 x required towline MBL</td>
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<tr>
<td>Shackles/Connecting Links</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
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</tr>
<tr>
<td>Surge chain</td>
<td>Optional</td>
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# Service specification — DNVGL-SE-0122. Edition March 2017

## Noble Denton marine services - certification for towing vessel approvability

<table>
<thead>
<tr>
<th>Category</th>
<th>ST Salvage tug</th>
<th>U Unrestricted</th>
<th>C Coastal</th>
<th>R1 Assist</th>
<th>R2 Benign area</th>
<th>R3 Assist/benign</th>
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</thead>
<tbody>
<tr>
<td>Towing bridle (see [4.1.7])</td>
<td>1</td>
<td></td>
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<tr>
<td>Salvage equipment -see Sec.10</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Work boat</td>
<td>Yes</td>
<td>Yes*</td>
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<tr>
<td>Crane/derrick SWL</td>
<td>2 tonnes</td>
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<tr>
<td>Portable generator/electrics</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Portable pumps and hoses</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Portable compressor(s) and hoses</td>
<td>Yes</td>
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<tr>
<td>Portable welding/cutting equipment</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Damage control materials</td>
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<tr>
<td>Spares</td>
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<tr>
<td>Fenders</td>
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### Manning and accommodation

<table>
<thead>
<tr>
<th></th>
<th>Accommodation</th>
<th>LSA</th>
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<tbody>
<tr>
<td>Number of certificated officers</td>
<td>5</td>
<td>4</td>
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</table>

* A workboat is required for categories R1 and R2 if the vessel is proposed as the lead tug or only tug for a particular towage.
APPENDIX B BOLLARD PULL AND TOWING EQUIPMENT TESTS

B.1 Bollard pull tests

B.1.1
Bollard pull tests should be performed in accordance with DNVGL-RU SHIP Pt.5 Ch.10 Sec.11 [1.4.2] Tugs and Escort Vessels, /2/.

B.2 Towing equipment

B.2.1
The following requirements apply to the towing equipment tests of any vessel which DNV GL is requested to approve or attend.

B.2.2
Before carrying out any tests, it shall be ascertained that the equipment to be tested has been installed according to the manufacturer’s recommendations and can be operated safely.

B.2.3
The wire used during the winch tests shall be equal to the towing wire in breaking load, diameter and construction and shall be spooled onto the towing winch drum with a tension of 25% of the vessel’s CBP or 40 tonnes, whichever is less.

B.2.4
During stalling, brake and quick release tests, the wire shall be kept as near as possible to the centre line of the vessel.

B.2.5
The safe working load of the test equipment, fittings and any connection points ashore shall be at least ten (10) percent in excess of the designed maximum (static) bollard pull of the vessel.

B.3 Towing/anchor handling winches

B.3.1
Towing winches shall comply with DNVGL-RU SHIP Pt.5 Ch.10 Sec.11 [3.7] Tugs and Escort Vessels, /2/.
B.4 Fixed gogwire system, towing pod, line stops and guide pins tests

B.4.1
The spooling gear, if fitted, shall be disengaged during the fixed gogwire system, towing pod, line stops and guide pin tests.

B.4.2
The engine power or propeller pitch shall be gradually increased to the continuous bollard pull (CBP).

B.4.3
The test wire shall be at an angle of approximately 60° to the centreline, on each side of the vessel.

B.4.4
The duration of each test shall not be less than one (1) minute.
Changes - historic

There are currently no historical changes for this document.
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