



Survey performance requirements

Periodic surveys of hull, decks and
superstructure
Wooden ships
July 2014

Prepared by
Director of Maritime New Zealand



Pursuant to Maritime Rule 44.25(3), and having met the relevant obligations of Maritime Rule 44.25(5) I, Keith Manch, hereby impose the following requirements as to the performance of surveys (survey performance requirements):

Signed at Wellington

This 16th day of June 2014

A handwritten signature in black ink, consisting of a stylized 'K' followed by a horizontal line and a period.

Keith Manch

Director of Maritime New Zealand

Survey performance requirements for periodic surveys of the hull, decks and superstructure of wooden ships

1. Basis in maritime rules

Survey performance requirements (SPRs) complement maritime rules that require a surveyor to exercise judgment. In the event of any conflict between an SPR and a maritime rule, the rule prevails.

This SPR has its basis in the following maritime rules:

Rule 44.25

Rule 44.25(3) states that: *“the Director may impose requirements as to the performance of a survey”* and Rule 44.25(4) states that *“when undertaking any survey, the surveyor must comply with any requirements imposed by the Director as to the performance of a survey”*.

40-series rules

Maritime Rules 40A.9, 40C.9, 40D.9 and 40E.7 relating to ship construction require that, for all ships: *“The construction of a ship must provide strength for the safe operation of the ship and to withstand the sea and weather conditions likely to be encountered in the intended area of operation, assuming that the ship is operated at its service draught and driven prudently at its maximum service speed.”*

In effect those rules (in combination with others) enable an existing ship that has previously been certified as meeting the above standard to have its certification renewed if, following a structural survey of the ship, a recognised surveyor is satisfied that the ship continues to meet the standard.

Rule 44.41

Amongst other things, Rule 44.41(2) requires that for a surveyor to issue a certificate of survey for an existing ship, the surveyor must be satisfied that:

- a) the hull, superstructure, decks, and valves of the ship are sound and serviceable;
- b) the steering gear and propulsion system of the ship, if applicable, are sound and serviceable;
- c) the ship and the ship's equipment are in all respects fit for their intended use and operating limits and meet all applicable maritime rules and marine protection rules.

2. Application

In combination, the 40-series rules and Rule 44.41(2) provide an outcome-based standard for ship construction. The scope of periodic (intermediate and renewal) surveys of ship construction covers surveying of the hull, decks and superstructure, for strength, watertightness, weathertightness, buoyancy and stability.

These SPRs apply to periodic surveys of the hull, decks and superstructure of all wooden-hulled ships.

Recognised surveyors must comply with these SPR when undertaking such a survey and producing the associated survey report. The SPRs do not include detailed specification of each test, but expect the surveyor to be capable of performing the tests indicated.

Rule Part 47: Load lines includes prescriptive requirements for renewal surveys of certain ships, focusing on markings and conditions of assignment (specifying requirements relating to sills, coamings, scuppers, discharge and exhaust pipes, freeing port arrangements and other watertightness and buoyancy matters).

As with other prescriptive requirements in the rules, the prescriptive requirements of Rule Part 47 are not included in these SPRs but must be referred to when undertaking a survey of relevant scope.

3. The survey performance requirements

General

When surveying the hull, deck and superstructure of an existing ship, the surveyor must:

1. ensure that the survey includes all elements specified as being in-scope of the survey as identified by the survey plan for the ship;
2. for each element covered in the survey, review (as available) the ship's design report, construction report and the recent relevant survey reports as references for identifying unapproved changes, and new or unresolved defects;
3. in the event that an unapproved modification¹ is identified, ensure that it is referred for approval to an appropriately recognised surveyor and that the outcome of the referral is recorded in the survey report;
4. investigate all cracks and decay in hull sheathing and planking to identify structural weaknesses, using suitable testing where visual inspection indicates substantive risk;
5. when checking that the vessel remains fit for purpose with regards to stability, take into consideration: wave height in the operating areas, freeboard, engine power and deck loading;
6. ensure that the survey plan approved by the surveyor includes:
 - an out-of-water survey of the keel and hull, including stripping of through-hull valves, not less frequently than once every five years;
 - inspection of the engine bed bolts, sheer planks under beltings and the hull under internal ballast, not less frequently than once every ten years;
 - where applicable, full inspection of the sailing rig by a suitably qualified person, not less frequently than once every five years;
 - inspection of bilge compartments, lockers, storage places and other voids not less frequently than once every five years;
7. always remain within the bounds of his or her competence, irrespective of the scope of recognition afforded to the surveyor by the Director. Outside those bounds, the surveyor must seek the advice of a recognised expert.

Exterior hull

To the extent that the elements are covered by the survey plan, when surveying the exterior hull and fittings, the surveyor must:

8. inspect for hull profile distortion or deformation, and identify causes as applicable;
9. inspect the hull above and below the waterline for damage, defects, cracks, marine borer, decay, ineffective caulking and any other form of weakness or lack of watertightness in the sheathing or planking;
10. test the integrity of the hull material, by visual inspection and by physical tests on a representative of the sheathing or planking, as applicable;
11. test a representative sample of the fastenings of the sheathing or planking, and if suspect test for wasting or necking. Not less often than once every 10 years, draw a sample and measure for wastage;
12. inspect the keel for cracks, marine borer and hogging or sagging, including the integrity of any sacrificial keel and shoes;
13. inspect stem and deadwoods for damage, cracks, marine borer and decay, and check the interfaces between timber and planking are secure and watertight;
14. inspect external ballast for signs of cracking or other deterioration of the ballast, of the condition of the fastenings, and for its clearance from planking and frames, and for secureness on the hull;
15. where full-hull skin (eg FRP skin over un-caulked planks) is used for watertightness, inspect for integrity of bonding (eg for signs of delamination or blistering);

¹ That is, a modification that has been made to the ship or its equipment, which might affect the ship's fitness for its intended use or operating limits, and which has not been approved by an appropriately recognised surveyor.

16. where sheathing is used to protect hull areas prone to wear or damage (eg from trawl doors or pots), inspect sheathing for damage, loose fastenings and marine borer attack. Where there is an indication that the hull underneath might be compromised, remove the sheathing for direct inspection;
17. inspect the adequacy of the antifouling and timber coating protection systems, including the secureness, operation and likely lifetime of any sacrificial anodes;
18. inspect beltings, anchor platforms and boarding platforms for impact damage, cracking, movement and loose fastenings;
19. inspect all fittings (eg propeller struts, rudder tubes, boarding platform support struts) and their fastenings for damage, corrosion, movement, fastenings failure, and the surrounding hull areas for damage or decay;
20. as applicable, inspect outboard motor mounting for cracks, excessive movement, distortion of the transom; and the sufficiency, tightness and condition of the motor securing bolts. Also inspect surrounding structure for damage or cracking;
21. inspect the secureness of installation and the sealing of the portlights, the fastenings, and the suitability of the materials used;
22. inspect all inlets, discharges (including garbage chutes), scuppers, vents, exhausts and outlets for watertightness and weathertightness (including checking the effectiveness of valves and seacocks) and for compliance with any conditions of assignment;
23. when surveying the hull out of water:
 - inspect that any sea chests are clear of marine growth and that grills, grates and roses will allow water to pass through; and that fastenings are sound;
 - inspect the fittings related to the propulsion and steering systems for secureness and watertightness;
 - Inspect the functional condition of valves and seacocks in their dismantled state;
 - inspect the external ballast for looseness decay and cracks, and remove the ballast where there is evidence of deterioration of its secureness to the hull.

Hull interior

To the extent that the elements are covered by the survey plan, when surveying the interior hull and fittings, the surveyor must:

24. inspect interior hull surfaces for damage, cracks and decay and indications of moisture ingress, and where the surfaces are covered by linings inspect beneath the linings by sample removal or intrusion through the lining, to an extent determined by the nature of the lining and other indications of risk to the condition of the hull;
25. inspect stem, apron, breasthooks, knees and bollards for cracks, decay, electrical or galvanic action and other deficiencies. Also test a sample of fastenings and through-bolts for wasting or necking;
26. inspect gunwale, beamshelf, deckbeams, frames, ribs and stringers for cracks, marine borer, decay, electrical or galvanic action and other deterioration;
27. inspect internal bulkheads, stiffeners and partitions, for cracks, marine borer, decay, electrical or galvanic action and other deterioration;
28. inspect internal bilge compartments for damage, cracks and indications of oil and water in the bilges. Check for blockages to drainage holes;
29. inspect lockers, storage places and other voids for cracks, decay and leakage;
30. inspect all mountings, backing blocks and fastenings (including keel bolts) related to external fittings, for cracks, decay, corrosion and leakage;
31. inspect and test hinge and securing mechanisms of internal access doors;
32. inspect area around deck hatches for damage, decay and leakage, including the condition and operation of securing dogs and hatch drains;
33. inspect engine mountings and engine bed bolts (jet unit or other inboard engines) for movement, corrosion, excessive wear, and damage including where secured to the hull;

34. for water-jet powered ships, inspect hull around the intake strainer and mounting flange for impact damage, cracks and water ingress;
35. for stern drive and surface drive ships, inspect the drive mountings supporting structures and joins and fastening bolts for corrosion, cracking and water ingress;
36. as applicable, inspect stern tubes, shaft log and rubber tube mountings and surrounding structures for corrosion and leakage;
37. inspect the installation and seal of portlights in the hull, for secureness, watertightness and weathertightness. Include checking the effectiveness of portlight and deadlight dogs, and ready access to deadlights or blanks;
38. as applicable, inspect where posts, towing bollards or masts are secured to the hull, for damage, loose fittings, and secureness of bonding to strength members. Also check their entry through the deck for watertightness.

Decks and superstructure

To the extent that the elements are covered by the survey plan, when surveying the decks, superstructure and fittings, the surveyor must:

39. inspect for distortion or deformation of cabin and superstructure profile;
40. inspect deck (including areas covered by FRP and other coatings) for deficiencies, damage, decay, cracks, and unsound caulking and fastenings that affect deck integrity or allow water egress to the hull interior. Check surface of deck and any cockpit sole for slip resistance;
41. inspect mouldings and high-load areas of decks (including any outboard well and cockpit) and cabin structure for damage, decay or cracking;
42. as applicable, inspect the attachment of any mast foot on the deck for movement and any damage, decay, corrosion, or cracks in the surrounding deck structure;
43. as applicable, inspect masts, spars and booms for deficiencies, damage and suspect repairs. Check all penetrations for cracks and decay around fittings and fastenings, and check bonding and earthing for lightning protection;
44. inspect water-freeing arrangements (including the operation and effects of covers, grids and flaps on water freeing) for compliance with design approval and any conditions of assignment. As applicable, check cockpit drains and duckbill drains for effectiveness;
45. inspect the anchor winch mounting structure for movement (by running the anchor winch motor and gypsy) and wear and tear in the impact zone;
46. test secureness of guardrail and handrail mountings. Check through-bolts for tightness, and area around stanchions for cracking, decay and watertightness. Where flexible wires are used as lifelines, check the condition and tightness of siblings;
47. inspect windows, skylights and screens for secureness and weathertightness, including the suitability and effectiveness of shutters, deadlights and stormcovers, as applicable;
48. inspect all watertight and weathertight doors and sills for effectiveness and compliance with any conditions of assignment. Check doors and surrounding structures for damage, condition of the door seals, hinges, latches and securing dogs for watertightness or weathertightness, as applicable;
49. inspect all deck hatch covers, coamings, gaskets and securing mechanisms for watertightness or weathertightness, as applicable, and for compliance with any conditions of assignment. Test the locking mechanisms and check the hatch drains;
50. inspect all air pipes, ducts and ventilators for compliance with height and coamings requirements in rules and any conditions of assignment. Also check closure mechanisms, seals and fastenings for weathertightness;
51. inspect machinery space openings for robustness of casings, and compliance of sill heights with any conditions of assignment;
52. inspect manholes for adequacy of openings, weathertightness of covers and fastening mechanisms; and compliance with any conditions of assignment;
53. inspect spurling pipe closures for weathertightness and compliance with any conditions of assignment. Inspect chain lockers for effective drainage;

54. inspect all internal access doors for their operation and secureness of attachment;
55. inspect all deck and superstructure ladders, for the safety of their tread and their fastening to the ship structure.

The survey report

In addition to meeting the requirements prescribed in Maritime Rule Part 44, Appendix 2, clause 1.3, the survey report produced from a periodic survey of the hull, decks and superstructure must include:

56. findings from the survey of each survey element referred to in all relevant maritime rules and these SPRs;
57. a description of all deficiencies (new or historical) identified during the course of the survey, and the corrective actions required (including the timeframe for completion) that must be taken by the operator or owner for the ship to gain or retain a valid certificate of survey;
58. verification that the survey completed was consistent with the operative survey plan, and that the survey plan for future surveys has the approval of the surveyor.

The requirements in these SPRs complement the standards and requirements specified in the rules. The SPRs do not replace or reduce any responsibility the surveyor has under the rules.