

Major modifications and repairs

Maritime Rules Parts 40A, 40C and 40D

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What this position statement contains

This position statement aims to help commercial ship owners to understand:

- when a modification or repair to their ship may be major
- their duties to obtain design approval for and in-construction survey of a major modification or repair.

Issue

Ship owners and surveyors have sought advice from Maritime NZ on how to interpret and apply the maritime rules in regard to major modifications and major repairs. (Refer Maritime Rules Parts 40A, 40C and 40D, and also Parts 19 and 44.)

Questions the owner should ask before doing work

Owners and operators of a commercial ship have a duty to comply with the relevant maritime rules. Before embarking on modification or repair work owners and operators (and their boat-builder) should ask:

- Is this major work?
- Does the work require design approval?
- Should the work be overseen by a recognised surveyor?

Duties of the owner and operator

Design approval of major alterations

An owner must ensure that, if their ship undergoes a major modification, the ship's design is approved by a surveyor holding the appropriate design approval (DA) recognition. This is called 'design approval'.

The recognised surveyor must confirm that the design of a major modification is appropriate ('fit') for the ship's intended use and intended operating limits, and that the ship, when it has been modified, will comply with all relevant maritime and marine protection rules that apply to it.¹

¹ Refer rules 7(1)(c) of Maritime Rules Parts 40A, 40C and 40D

To do this, the recognised surveyor must consider the impact the modification will have on the design of the ship as a whole – for example the impact on structure or stability. Where the original design documentation is unavailable, the recognised surveyor will need to make an informed assessment of the existing ship and its design.

Construction survey of major alterations, modifications and repairs

An owner or operator must ensure that a major modification or major repair to their ship is overseen and approved by a surveyor who holds the appropriate surveyor recognition.²

Surveyors are recognised to survey ships during construction or major modification. Surveyors have different categories of recognition, covering different sizes and types of ship. The Maritime NZ website has a register of recognised surveyors.

Ships operating under MOSS must have a valid certificate of survey (CoS). To remain valid, the operator must ensure that any major modification or repair has been approved by a recognised surveyor.³

The surveyor must assess the modification or repair and be satisfied that:

- the hull, superstructure, decks, and valves of the ship are sound and serviceable,
- (if applicable) the steering gear and propulsion system of the ship are sound and serviceable, and
- 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.⁴

Major modification – definition

In this position statement the term 'major modification' is taken to mean both 'major modification' and 'major alteration or modification'.

In their definition provisions, Maritime Rules Parts 40A, 40C and 40D use the term 'major alteration or modification'. Part 44 uses the term 'major modification'. Part 19 uses the term 'major modification'. The definitions in Part 44 and Parts 40A, 40C and 40D use the same wording, except that the definitions in Parts 40A and 40C also have the words 'any safety equipment of the ship'.

Maritime Rules Part 40A. Definitions:

major alteration or modification

means the alteration or modification of a ship, including the replacement, removal or addition of -

(a) any part of a ship, that is likely to -

(i) significantly affect the structural integrity, tonnage, freeboard, cargo or passenger capacity, crew or passenger accommodation, conditions of assignment of load line, watertight subdivision, stability, structural fire protection; or

(ii) result in significant changes to the propulsion machinery, auxiliary machinery, steering or method of propulsion of the ship; and

(b) any safety equipment of the ship

² Refer rule 8 in Parts 40A, 40C, 40D

³ Refer rule 19.64

⁴ Refer Part 44, Appendix 2, and rule 44.41(2)

Significant

'Significantly' and 'significant' are important words in the definition, but are not defined in the rules. As a result, the terms will be given their natural and ordinary meanings.

Dictionaries provide the following descriptions:

Collins: "A significant amount or effect is large enough to be important or affect a situation to a noticeable degree". "Something that is noticeable is very obvious, so that it is easy to see, hear, or recognize"

Merriam-Webster: "Having or likely to have influence or effect: important; of a noticeably or measurably large amount"

Oxford: "Sufficiently great or important to be worthy of attention; noteworthy".

Maritime NZ considers that the natural or ordinary meaning of significant is something important or that has a measurable impact or effect.

Major repair

Most of the elements listed in the definition of major repair appear in the definition of major modification. Ship owners and surveyors should apply the same approach to major repairs that they apply to a major modification.

Maritime Rules Parts 40A, 40C and 40D definitions:

major repair means a repair in respect of any damage, defect, breakdown or grounding of a ship that is likely to significantly affect the structural integrity, conditions of assignment of load line, watertight subdivision, stability, structural fire protection, main propulsion machinery, method of propulsion, steering gear, or vital auxiliary machinery of the ship:

Tonnage, freeboard, cargo or passenger capacity and crew or passenger accommodation and safety equipment are not listed in the definition of major repair. A change to these elements would be a modification, not a repair.

Major modification and change of scope of certification

A major modification to a ship does not automatically mean that its scope of certification changes. A ship is 'converted' or has a 'change of use' when it changes from one category to another.

The rules clearly differentiate between a major modification and a change of scope of certification. A major modification addresses 'a part of the ship' – i.e. the ship's physical properties – while scope of certification refers to what the ship does and how the ship is used.

The term 'converted' appears in the pre and post 27 May 2004 definitions in Parts 40A, 40C and 40D, and is not used anywhere else in the Rules. The key phrase in the definition is the words "to which [Part 40A etc.] applies". These words mean that the new Part applies from the date when the ship is converted to its new use.

Example: Major modification, change of certification and 'pre' and 'post' 27 May 2004 ships

A fishing ship registered in New Zealand in 2002 undergoes a major modification to increase its length and enlarge the wheelhouse and cabin area.

The design of the modification requires design approval due to its potential impact on the ship's stability (refer rule 40D.7(1)(c)). To assess the design the recognised surveyor must consider the impact the modification will have on the design of the ship as a whole. In effect the surveyor must consider and approve the design of the ship in its new form, incorporating the components of the ship affected by the modification.

Electrical work for the new section requires electrical design approval and should comply with current rule standard(s). There is no requirement to upgrade the wiring and electrical systems in the original sections of the ship. However, the designer and design approver will need to ensure that the old and new systems are compatible. Depending on the circumstances, the new work and original work may sit side by side. In other cases, the wiring on the entire vessel may need to be upgraded.

The work carried out to make the modification must be approved by a recognised surveyor (refer rule 40D.8(2)).

After the major modification the ship continues to work as a fishing ship with the same operating limits. Its scope of certification has not changed.

The ship has not been 'converted' into a different category or use to which other Part 40-series rules apply. Part 40D still applies, so it continues to be a pre-27 May 2004 ship.

scope of certification, in relation to a ship, means the ship's category, activity, type, operating limits, minimum crew, maximum number of passengers on board, maximum number of people on board, and maximum cargo capacities:

category, in relation to a ship's scope of certification, means the intended purpose of the ship in terms of passenger ship, non-passenger ship, fishing ship, sailing ship, or any combination of these purposes:

post-27 May 2004 ship—

(a) means a ship—

(i) for which construction commences; or

(ii) which is converted into a [*passenger ship/non-passenger ship/ fishing ship*] to which [Part 40A 40C 40D] applies, on or after 27 May 2004; and

(b) **post 27 May 2004** in relation to any ship or boat has a corresponding meaning:

Important elements on a ship

The major modification and major repair definitions list a number of important elements. These are addressed below under the headings stability and watertight integrity, structure, people on board, steering and propulsion.

Specific ships vary in design, use and area of operation. Whether a modification or repair to these elements is a major modification or a major repair is a matter of judgement, and will depend on the specific circumstances that apply to a particular ship.

Examples of modifications or repairs that are likely to be significant are provided below.

The list is not intended to be exhaustive, and may depend to some extent on where the ship's size and where it operates. Regardless of whether a modification or repair is included in the examples, ship owners and operators should always consider whether a proposed modification or repair to an important element could have an important or measurable impact or effect on their ship. If they are in doubt, owners and operators should check with a recognised surveyor.

Stability and watertight integrity

Watertight subdivision, intact stability, conditions of assignment of load line, freeboard, cargo capacity

Could the modification or repair affect the ship's stability or watertight integrity? Examples of major modification could include:

- an alteration to a deck or watertight bulkhead that could have impact on subdivision, watertightness or buoyancy
- a reconfiguration of the ship that moves the longitudinal centre of gravity (LCG) or vertical centre of gravity (VCG) by more than 2%
- removing, repositioning, installing or modifying ballast, lifting equipment, net reels, trawl apparatus, towing points
- change in lightship weight of more than 2%
- change in bulwark height, increase in well length or decrease in sheer that would result in the need to increase the freeing port area by more than 5%
- change of freeboard / loadline criteria.

Structure

Structural integrity, structural fire protection

Could the modification or repair affect the ship's structure? Examples of major modification could include:

- a change to the ship's dimensions – for example inserting a new section into the ship
- a modification or a complete or substantial replacement of any component or assembly that affects the structural integrity of the ship

- an increase in propulsion power that invalidates the assumptions and calculations used to determine the ship's structural performance
- the permanent removal of, alteration to, or complete or substantial replacement of structural fire protection elements, components or assemblies that protects the ship from fire.

People on board

Passenger capacity, crew or passenger accommodation, safety equipment

Could the modification or repair affect the people on board? Examples of major modification could include:

- an increase in the certificated passenger numbers
- an increase in the number of passenger berths
- modifications to the approved means of egress, such as extending escape route distances, restricting openings, replacing stairways with ladders, or removing lighting
- removing or reducing approved toilet and sanitary facilities
- reducing the approved number of bunks for crew
- reducing ventilation by more than 10%
- reducing lighting levels of more than 30%, and any reduction in the level of emergency lighting
- reducing survival craft, lifebuoys, life jackets and distress flares or modifying emergency alarm systems
- increasing survival craft, or other equipment where this could impact on lightship weight and stability.

Machinery, steering and propulsion

Propulsion machinery, auxiliary machinery, method of propulsion of the ship, steering

Could the modification or repair have a significant effect on steering or propulsion? Examples of major modification could include:

- the replacement of the ship's engine with a more powerful engine that invalidates the original structural or stability design assumptions and calculations
- the redesign and replacement of auxiliary machinery essential for the propulsion or safety of the ship, or electrical systems and generators
- the redesign and replacement of all or most of the ship's method of propulsion, or of key components of the propulsion system, including the shaft
- the redesign or reconfiguration of all or most of the ship's steering system, where different parts replace the original system.

Work that is not major – ‘like for like’ repair or replacement

Maintenance work is not normally major modification or major repair work. This work is often referred to as ‘like for like’.

The table below provides examples of like for like repairs or replacement. As a comparison, examples of work that is likely to be major are provided in the second column.

The table is not intended to be exhaustive, and some maintenance work can be major. Regardless of whether a repair is included in the examples, ship owners and operators should always consider whether proposed work is maintenance or refurbishing work, or work that could have a noticeable, important or measurable impact or effect on important elements of their ship. The answer will depend on the extent of the work involved and the specific circumstances of the ship, including its design, use and area of operation. If they are in doubt, owners and operators should check with a recognised surveyor.

Examples of ‘like for like’ repair or replacement	Examples of major repair or replacement
<p>The repair, maintenance of or replacement of a structural component provided that comparable materials or components are used.</p>	<p>The complete or substantial alteration or replacement of part of the ship's structure.</p>
<p>The repair, maintenance of and replacement of internal linings, fittings and furnishings provided that:</p> <ul style="list-style-type: none"> • comparable materials are used, and • the work does not involve asbestos, and • the work does not alter structural fire protection elements. 	<p>Modifications that have a negative impact on the approved means of egress, such as extending escape route distances, restricting openings, replacing stairways with ladders, or removing lighting.</p>
<p>The repair and maintenance of the engine, auxiliary machinery, elements used to propel the ship and elements used to steer the ship.</p>	<p>The complete or substantial replacement of the ship's engine, means of propulsion, auxiliary machinery essential for the propulsion or safety of the ship, or electrical systems and generators.</p>
<p>The replacement of an outboard motor with the same or similar motor.</p> <p>The replacement of an outboard motor with a more powerful outboard motor where the vessel was originally designed for a higher maximum power rating</p>	<p>The replacement of an outboard motor with a larger motor or twin outboard motors, where the vessel was not originally designed for a higher maximum power rating or designed to carry twin outboard motors.</p>
<p>Replacement of components or assemblies provided that comparable components or assemblies are used.</p>	<p>The redesign and reconfiguration of existing steering arrangements.</p> <p>The complete or substantial replacement of the ship's steering system.</p>