

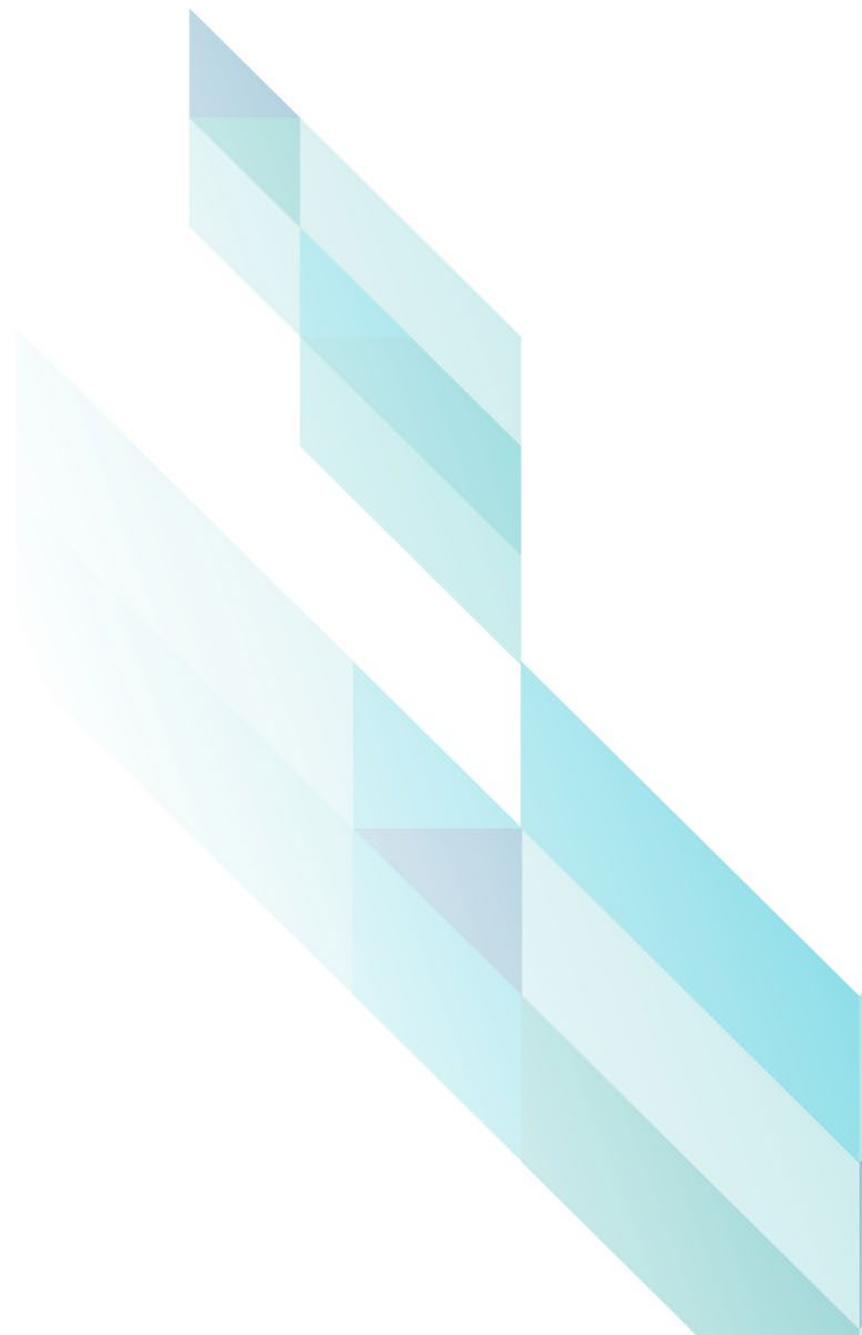


Australian Government

Australian Maritime Safety Authority

Vessel stability

Guidance: Marine Order 504 changes



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Vessel stability

Operators are required to address operational risks to vessel stability by meeting 2 new requirements:

- Identifying the risks to vessel stability in the risk assessment. (all vessels, except those eligible for a simplified SMS.)
- Keeping a record of modifications affecting vessel stability. (Class 1, 2 and 3 vessels.)

1. Risk assessment

Stability refers to the ability of a vessel to return to its upright position after being heeled over by wind, waves, or other forces. A vessel that does not have sufficient stability is at risk of capsizing.

We introduced the requirement for operators to identify risks to vessel stability in their risk assessment because failure to adequately assess stability risks may lead to a vessel capsizing.

How to identify and manage stability risks

Step 1. Educate

Educate your master and relevant crew about stability limitations of your vessel and how its operations compare to the load cases presented in the stability documentation.

Step 2. Assess risks

Key risks to vessel stability that you may identify include:

- modifying a vessel or installing new equipment or fishing gear
- overloading or weight creep
- towing
- loss of watertight integrity or water on deck
- free surface effects including water on deck
- accidental flooding
- rough sea state and weather conditions.

Learn about stability risks for [fishing vessels](#), [construction barges](#) and [towing operations](#).

The best way to verify if a risk to stability has been appropriately considered is to assess the vessel against the applicable stability criteria in the [National Standard for Commercial Vessels \(NSCV\)](#), or if applicable, [the Uniform Shipping Laws Code \(USL Code\)](#)

Competent persons such as [accredited marine surveyors](#) and naval architects, are best placed to assess vessel stability.

In some instances, operations may have to be modified for the vessel to remain stable and compliant with the stability book. If you don't know, ask a competent person such as [accredited marine surveyors](#) and naval architect.

Note: The presence of stability documents on their own does not ensure that the vessel will be stable in all operational scenarios. If in doubt, ask a competent person, such as [accredited marine surveyors](#) and naval architects.

Note: The requirement to identify stability risks in the risk assessment does not apply to a vessel eligible for simplified SMS, however, owners of these vessels should identify and manage any stability risks, such as vessel loading, through the risk assessment process.

Scenarios and examples

16m Class 3B fishing trawler

A 16m Class 3B fishing vessel undertakes fishing operations within 100 nautical miles of its home port. The vessel typically spends 21 days at sea.

The owners/operators get together with the master and crew and identify stability risks using the [Guide to Fishing Vessel Stability](#). After assessing the risks, the owner updates the risk assessment and procedures to include the identified risks and controls.

Risk	Hazard	Controls
Adding/removing/relocating/replacing equipment (e.g. fishing gear, brine tanks, engine)	Loss of/reduced stability	<ul style="list-style-type: none"> Identify what is to be added, replaced, relocated or removed Check that replacement equipment is the same size/weight as item being removed Engage Accredited Marine Surveyor to assess stability changes and update stability book Advise AMSA Master and crew training Record in logbook
Shifting fishing gear		<ul style="list-style-type: none"> Fishing gear to be well secured Gear stored on deck to be stored as low as possible and secured Stabiliser boom arms to be made fast when not in operation
Loading of catch in areas not covered by stability book		<ul style="list-style-type: none"> Catch to be stored only in approved areas identified by stability book

		<ul style="list-style-type: none"> • Signage showing approved areas for storage of catch • Master and crew training
Shifting catch		<ul style="list-style-type: none"> • Secure product in storage to prevent movement
Trawling		<ul style="list-style-type: none"> • Assess the sea-state and swell direction • Tow point of vessel to be as low as possible
Snagging of fishing gear		<ul style="list-style-type: none"> • Quick release and weak links added to the trawl lines • Hook up emergency plan • Crew trained and drilled in managing risks of fouled or snagged gear
Swamping of the deck and free-surface effects		<ul style="list-style-type: none"> • Where possible avoid conditions where breaking waves or following seas could cause the decks to be swamped • Always keep freeing ports open while at sea and ensure they are clear of obstructions • Ensure freeing ports comply with the standards and regulations (survey) • Keep all bilge water to a minimum • Keep fuel and ballast tanks either full or empty, to minimise the free-surface effect on board • Training for master and crew on stability risks and understanding elements that influence stability
Melted ice – free surface effects		<ul style="list-style-type: none"> • Ensure refrigeration unit is regularly serviced • Pumping or draining of the space as a matter of urgency
Consumption of fresh water and fuel vs increase in catch load		<ul style="list-style-type: none"> • Use of stability book to check loading conditions at different stages of trip

		<ul style="list-style-type: none"> • Training for master and crew on stability risks and understanding elements that influence stability
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2. Record of modifications affecting stability

Modifications to the structure or equipment of a vessel may change its stability and the way it behaves at sea. Previous coronial findings have found that vessel modifications were factors in vessel sinking or capsizing.

We introduced this change so that owners, masters and crew are aware of any modifications made to the vessel that may impact stability. This will help them decide how they use the vessel, and what conditions are safe to operate in.

Existing obligations: modifications

This requirement does not affect existing obligations to advise AMSA of vessel modifications, such as the obligations under:

- Marine Order 503 (Certificates of survey – national law) 2018
- Marine Safety (Class C restricted operations) Exemption
- Marine Safety (Certificates of survey) Exemption.

Under these requirements, vessel owners are legally required to inform AMSA of modifications made to their vessel. Depending on the extent of the modifications, the vessel may need to have its stability reassessed by an accredited marine surveyor and undergo other survey requirements.

How to record vessel modifications

You should record:

- hull or superstructure modifications
- addition, removal or relocation of fixed and moveable ballast
- addition or modifications to trawling, towing or lift apparatus apart from like-for-like replacement of apparatus that is addressed in the stability assessment of the vessel
- addition of external plastic curtains (clears)
- addition, removal or modification of the size or location of tanks such as fuel, fresh water, wastewater, lube oil, ballast water, sludge, live bait, fish tanks/fish bins or cargo tanks
- addition, removal, relocation or replacement of machinery including propulsion engines that are not a like-for-like replacement
- addition, removal, relocation or replacement of accommodation fit-out or equipment that would alter the displacement, trim or raise the centre of gravity of the vessel from the lightship condition for which it was previously approved e.g. cabins, refrigerators, air conditioners, compressors, cool rooms, ice rooms

- variation to the operational loading of the vessel including cargo and personnel weights and their location.

Note: This list of modifications is just a starting point. Different modifications may apply to your vessel.

You may record modifications in your logbook or in another document that can easily be accessed by the master and crew.

The record must include:

- a description of the modification
- the date of the modification.

Scenarios and examples

24m Class 1D charter vessel

A 24m Class 1D charter vessel undertakes sightseeing and dinner cruises within the sheltered waters limits of its local operating area. Cruises typically last between 2 to 4 hours.

Having undertaken a risk assessment to identify risks to stability, the owner ensures that the refit of the bar area within the main saloon is recorded in the vessel logbook and reviewed by the master and crew. The master and crew can discuss any issues or concerns with the owner.

Extract from logbook

Logbook		
Date	Occurrence	Signature
dd/mm/yyyy	Refitted bar area in main saloon with new servicing area, additional fridges and storage cabinets. Refit assessed and signed off by accredited marine surveyor on dd/mm/yyyy	<i>J M Owner</i>

When to seek expert advice

Talk to an accredited marine surveyor or naval architect about the effect on your vessel's stability:

- **before making alterations that add significant amounts of topside weight** - Remember that the higher the weight is placed the greater the effect. Weight added below the deck generally improves the vessel's ability to right itself but reduces freeboard and may decrease the vessel's range of stability.
- **when the total weight of all modifications becomes significant** - Weight added that is higher than the vessel's centre of gravity has a greater negative effect on stability. Removing weight below deck can also adversely affect stability.
- **if there is a chance that the vessel's lightship may change by more than 2%.**
- **if there is a chance that the vessel's longitudinal centre of gravity may change by more than 4%.**

If you don't know, ask a competent person, such as a naval architect.

Questions and answers

Q. How do I record the modifications?

A. You can record modifications in a way that suits your operation. This may be in your logbook or somewhere else. Whatever form the record takes, it must be up to date and able to be accessed easily by your master and crew, or a marine inspector if they request it.

Contact

Got a question about this requirement? Please [contact us](#)