

## Steps in calculating stability

### Inclining Experiment

An experiment to determine the height of the centre of gravity of the vessel by moving weights and measuring heel angles. The boat should be in as near empty condition as possible, with tanks empty and all gear on board accounted for. Official inclining experiments must be witnessed by a Surveyor from a certifying authority.

### Stability Check

Using the inclining experiment results and the Lines Plan of the vessel, the Naval Architect calculates the stability of the vessel in several operating conditions. If the vessel meets the requirements easily or with only minor changes to operating practice then a Stability Book can be produced; however, if there is a problem with the stability then a stability investigation is needed.

### Stability Investigation

The Naval Architect investigates the cause of any stability problems the vessel has and makes recommendations as to how they can be solved; for example, by adding ballast, changing the tank arrangement, reducing weight or making changes to the structure.

### Stability Book

Once any problems have been solved and the conditions have been calculated and agreed with the Surveyor, a Stability Book is made up. This is kept on board and shows the limits of safe loading and tables showing the weight and deadweight at each draught, the tank capacities, and the stability characteristics of the vessel.

### Stability Approval

If the vessel is required by law to have a stability book on board, this book must be submitted to the DCMNR for approval. This is a process which usually takes some time. Once the book is approved a copy must be kept on board at all times.

## If you think you need a stability check

Contact us at the address/telephone number below or talk to us at the show. We will be happy to take your details and the details of your boat, find out what requirements you need to meet, and give you a quote to perform the calculations and submit them to the certifying authority.

Even if you do not need a stability book, or already have one, we can also help with problems such as violent or quick rolling by investigating the stability of the vessel and making recommendations.

## What is stability?

By the stability of a boat, the authorities mean the strength of its resistance to heeling or capsizing. Several aspects of stability are assessed, from its basic stability when sitting upright, to the angle it will roll to before flooding takes place. Some important factors for good stability are a low centre of gravity, good freeboard and a well-designed hull.

## Stability and Safety

A boat with good all-round stability will be likely to weather even severe conditions and remain safe; however, it is important to investigate the stability of a working vessel and know its limits, as even a boat with good stability can capsize if it is overloaded, or if the weight is loaded too high. The purpose of stability calculations is to determine how much the vessel will carry, and where it can be stowed without making the vessel unsafe.

## Stability and the Law

Most stability calculations are undertaken because of legal requirements. This does not apply to all boats, but in the Republic of Ireland at the time of printing the following commercial fishing vessels are required to keep stability information on board:

- New vessels 15m length and over
- Existing vessels 24m length and over

