

For more reading on Stability issues of a double-hulled tanker from AMSA

- The transverse stability—the ability of a ship to remain upright and a measure of its resistance either to take on a list or to capsize completely—of single hull tankers has never really been a problem. Single hull tankers need longitudinal bulkheads which run throughout the length of the cargo tanks to provide longitudinal strength. The transverse spacing of these bulkheads can be chosen to give tank sizes of approximately equal capacity and bottom support structure of manageable proportions.
- This is not the case with double hull tankers where the inner hull provides sufficient longitudinal strength without the need for additional longitudinal bulkheads for structural purposes, resulting in much wider cargo tanks with substantially increased free surface effect.
- The free surface effect is the degradation in transverse stability which occurs when there are slack surfaces—the liquid surface in any tank which is not filled so full that surface movement is effectively restricted by the deck structure in way of the tank hatch.
- When combined with the effect of the double bottom ballast tanks that effectively raise the center of gravity of the cargo, there is a consequential large reduction in intact stability. This can readily occur during simultaneous cargo and ballast handling operations and requires careful management of all liquid transfer operations, ideally supported by the provision of appropriate quality operational information on board the double hull tanker in question.
- In terms of damage stability, ensuring compliance owing to the intact stability issues referred to above is not easy and much more care needs to be taken in distributing the cargo on board a double hull than single hull tanker. Whilst this task is helped by the use of on board computers, it is underpinned by the need to provide an accurate and comprehensive trim and stability manual, ideally before the ship enters commercial service.