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Crashworthiness assessment of naval structures subjected to a variety of maritime accidents, Part II: bow-hull collision

Besides double bottom, accidental impact load may target double side of any ship during a voyage and possibly triggers remarkable chain reaction, such as oil spill, life loss and carrier damage. Operation in several high-traffic routes makes passenger ship can be a target of various accidental events. However, considering to the research trend, researchers yet to conduct many works to estimate crashworthy double hull of passenger-ship type.

This work is addressed to conduct structural assessment of passenger ship subjected to accidental collision. Interaction with other ship is assumed as bow-hull interaction which a container carrier is selected to be the striking ship. Deformable structure is applied to the passenger ship which is observed as the struck ship. Several scenarios are built based on variety of target location and ship material to estimate crashworthiness criteria. The results concluded that bulbous bow of the striking ship produces severe indentation on lower hull of the struck ship. The indentation is wide enough for sea water to enter the ship. It is recommended based on results of this part that the lower structures on side skin to be applied by with high strength material to increase structural resistance against side penetration.

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