ONLINE ISSN : 1881-1760
PRINT ISSN : 1880-3717

Journal of the Japan Society of Naval Architects and Ocean Engineers
Vol. 6 (2007) pp.339-345

[PDF (619K)] [References]

Towing Performance and Safety Factor of a ship

Takako Kuroda, Shoichi Hara and Akihiko Matsuda

(Accepted November 12, 2007)

Summary: In order to make a plan of ship towing, it is necessary to investigate the towing performance of the tow ship, status of the towed ship, external force acting on the towed ship and sea conditions. The factors of the towing performance are derived from the towing gear and main engine power, which are evaluated by the bollard pull test in the case of the tugboat. When the general ship instead of the tugboat makes a towing operation, the towing performance with the main engine power is crucial. It is important to know the towing performance of the tow ship and tow force depending on the size of towed ships in several sea states in the emergency towing by the general ship.The bollard pull test and towing test in calm and rough seas have been carried out to investigate the tow force and tow power, critical tow force and the condition of safe towing. The towing safety factor is defined by the critical tow force divided by the maximum towline tension during towing. The factor less than 1 indicates the disability of towing. The critical condition is shown by the value between 1 and 2. Lastly its value larger than 2 indicates the safe towing. The towline tension is calculated by the Optimum Towing Support System developed by the National Maritime Research Institute. In this calculation, the patrol vessel as tow ship tows 5kinds of ships in several sea states. By using the ratio of critical tow force and calculated towline tension, the towing safety factor is estimated and the chart for the critical towing performance in several sea states using the displacement ratio between tow and towed ship has been shown. Even the operator of the general ship will be able to know the possibility of the safe emergency towing using the displacement of the towed ship in certain weather condition in this chart.

[PDF (619K)] [References]

Download Meta of Article[Help]
RIS