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Evaluation of Performance for the Optimum Towing Support System

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Summary: When disabled ship accidents occur, optimum towing operation for safety is important to prevent secondary accident such as collision and grounding, which induce oil spill leakage after drifting. Optimum Towing Support System (OTSS) is a simulation program, which has been developing by the National Maritime Research Institute to calculate towing condition of tow and towed ships under waves, wind and current. OTSS can predict drifting motion of disabled ship, trajectory of tow and towed ships, towline tension and so on. In order to investigate applicability of OTSS to the actual ship on the sea, towing test by using patrol vessels of the Japan Coast Guard was carried out. The results of straight and turn towing in calm and rough seas are compared with the calculated results by OTSS, and performance for OTSS is evaluated. These results demonstrate that predicted results of towing motion in wave by OTSS are in a good agreement with the measured results rather than those in calm sea. Based on experimental results of towing test in turning, turning characteristics of tow and towed ships during towing are clarified. Moreover, influence of towing on turning performance of tow ship is indicated in comparison with turning test results of a single ship. These results obtained by towing tests show that OTSS is available for the prediction of towing condition in rough sea.

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