PRACTICAL SHIP WEATHER ROUTEING FOR LIQUEFIED NATURAL GAS CARRIERS

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To Maira and Ozil
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The research developed a realistic model which encompasses the ship routeing process, weather prediction methods, ship environment interaction and route optimization algorithm. The optimization models were constructed for Tenaga Class Liquefied Natural Gas Carriers (LNGC) using minimum time, minimum fuel consumption or combination of both as objective functions. The ship service performance data which was derived from the analysis of actual records of her past voyages are incorporated in the ship routeing algorithm. The data has enabled a good comparison between simulations and actual results. Ship routeing simulation based on two methods i.e. standard route and simplified shortest path algorithm was performed and the outcomes have demonstrated the economic and safety benefits. The results indicate that potential cost saving is high likely and optimum benefit is not fully acquired by the current standard route practice. Ship routeing may generate savings in terms of both time and fuel consumption. Furthermore, it was found that a shorter distance route is not necessarily an optimal solution. The optimal solution arise from the consideration of all aspects i.e. dynamic weather changes, voyage optimization, model constraints and objective function.