Title: RANS Simulation of the Viscous Flow around Hull of LNG Ship in Confined Water

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Abstract: This research work describes the hydrodynamic effects of lateral and vertical forces on Liquefied Natural Gas (LNG) ship hull which are produced due to the effect of the restricted water by using Computational Fluid Dynamics (CFD) techniques. Liquefied Natural Gas (LNG) tanker often travels through shallow waters with visible banks for its operations. Manoeuvring of vessel in restricted water is relatively difficult and exposed to higher risk level. Travelling the ship near the bank may result in generating hydrodynamic loads such as sway force and yaw moment on ship hull besides changing velocity and pressure contours around the hull and the generation of asymmetric flow around the ship, hence may lead to potentially dangerous situations. In this research work the behaviour of a LNG carrier in confined water where there is a restriction in water depth and in waterway width has been studied experimentally and numerically. Influence of hydrodynamic forces and moments on the hull ship and wake pattern behind ship hull has been investigated using CFD. The numerical results have been validated by comparison with model testing in Marine Technology Center (MTC) of University Technology Malaysia (UTM).