

Title: Standardization of Existing and the Need for New Tools for the DP Industry

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Abstract

Design, planning and optimization of marine operations are today mainly based on experience of project teams but rely also a lot on available engineering tools and numerical models. When station keeping comes into play one of the essential tool is the capability plots. Despite the useful specification made by the International Maritime Contractors Association (IMCA) for DP capability plots, we are still suffering today from a lack of standardization and technical limitations when it comes to assess stationkeeping performances of a ship. For harsh weather environment – and not limited to the North Sea - where equipment is likely to be used close to design limits, approximations and conservative approach widely adopted for running DP capability study can prevent operators from finding suitable vessel and/or window for their operations. In some cases it may simply kill a project in the bud or even worse interrupt the running of an operational program after massive investments.

This paper intends to review those weak points and attempts to propose updated methodologies and additional requirements for the establishment of calculations with the objective of improving the vessel selection process through a sharp and fair comparison of performances. The final goal being to enhance the global operating strategy which includes safety, efficiency and costs of operations.

In addition to this “quasi-static” studies, complex simulators can be used to render the dynamics of the structures. Multi-physics simulators are today available but with some restrictions. Real successful technology DP is today facing important challenges with more and more complex operations in harsh environmental conditions like drilling operations in South Africa or in South America. Moreover the development of DP technology for Arctic operations is also recognized as one of the next challenge. In these cases the standard mathematical models and algorithms are not adapted and will be subject to deep changes. Furthermore additional requirements may raise for marine renewable energy (MRE) installations. In this context many limitations of the standard models and systems can also be reported while the large scale deployment for MREs is an unmatched argument in favour of DP. But when dealing with the safety of professionals the models, the accuracy and the validity of systems and simulators must be questioned and assessed. Finally the paper will focus on the DP system itself and more precisely on the DP Human Man Interface (HMI). The risk of human error has been widely depicted in the literature and HMI is the first contact between the DP system and the DP Operator. Thus this paper will propose some principles for the HMI designs for improving the operators to switch between competitors systems.

