TU Delft

Offshore & Dredging Engineering

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The application of marine access by Total Exploration and Production Netherlands

The gas production of a field in the decline phase combined with maturing assets and an especially low commodity prices result in a challenge regarding operating cost. Total Exploration and Production Netherlands (TEPNL) is looking at different ways to reduce its operating costs. The most difficult but also rewarding way to create cost savings is to focus on maintenance and repair activity optimization. Many activities require physical access to the structure and contribute to the operational costs.

The access of an offshore structure can be obtained in different ways. TEPNL's current operating mode for accessing her structures is a combination of: helicopter to transport people and a supply vessel to transport materials. The personnel transfer from a vessel to an offshore structure is called marine access. TEPNL is interested to know if any form of marine access could help to optimize offshore operations and this is the topic of this MSc thesis.

The access to a platform comes at a cost, the higher the accessibility (frequency of visits) the higher the costs involved. From a cost perspective the focus must be on the required level of access, rather than desire to be there "every day". In the evaluation of the operational costs of offshore logistics and access solutions, both the means of transporting people and equipment are considered. In this research a comparison is made between the different logistic scenarios based on the North Sea environment whilst taking into account company requirements. Assessment of options (e.g. helicopter, vessel, mooring method and transfer mechanism) has resulted in 4 key scenarios for a cost comparison: helicopter & supply vessel, walk to work vessel, crew transfer vessel & supply vessel and a jack up vessel.

The rather complex influence relations and significance of the many cost driving variables of marine access have been captured in a cost comparison model. The model has been described in a process flow diagram, which can be uses for cost comparison of the various options. The comparison model is based on the key variables: travel time, workday, personnel on board, wait on weather time and both rates of labour and logistic means. To optimize offshore operations in the North Sea field, the focus should be on: simultaneous servicing, reducing the frequency of platform visits, increasing duration of the visits, and taking benefit from the seasonal environmental conditions. The model demonstrates that costs saving from route or team optimizations are less significant.

The conclusion of this research is that from all investigated marine access scenarios an offshore support vessel with motion compensated gangway would be best for TEPNL offshore operations. Interchanging the current access means by a sole marine access solution, under the same operational strategy, would not lead to the desired cost savings. This supports and confirms TEPNLs choice in current operating mode. The desired cost saving from operating with a vessel requires a change in operating philosophy. It is recommended to study this further because the TEPNL platforms under consideration can accommodate one uniform marine access solution. This enables having a vessel in the field at location, which would increase the effective working time offshore. It is proposed that further study based on the outcome of this research should be carried out to assess cost attractive options for changes in operating mode for TEPNL.

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