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Improved Construction Method for Modern Drill Ships

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Abstract

This paper addresses the continuously increasing drilling depths with a series of new drill ship projects and presents an improved construction method based on one of the Builders most recent and modern drill ships which was built and delivered in December 2007. The differences from conventional drill ships in equipment and fabrication methods are presented. The use of ultramodern fabrication methods such as lifting facilities reducing the construction and assembly time, and project monitoring methods minimizing delivery time, is discussed.

The reduction in the construction time of the drill ship is a challenge for shipyards. The ever-growing demand of energy and the gap between demand and supply has made the resource sector to explore for energy in uncharted territory. This has pushed the exploration activities further into the sea where we are faced with more technical challenges. Hence modern day drill ships are designed to meet the ultra deep water drilling requirement. This makes the design of modern drill ship more complex than earlier designs. The complex design presents more challenges to the shipyard for construction of the drill ship in reduced time.

Our improved construction method of the drill ship has reduced the construction time **by 10% from earlier built drill ships**. This has been achieved by imparting modular design and erection of blocks, mechanical completion wherever possible before erection of the module, outfitting and hydro testing jobs before installation and interfacing of these mega blocks.

1.0 Introduction and Background

World wide demand of ultra deep water drill ships is ever increasing because of mankind's quest and pursuit to meet the world's energy requirement. This increased demand by operators around the world has resulted in drill ships designed with state of art equipment capable to drill in ultra deep water. Construction of modern drill ships with Improved Construction Method is a target milestone for the Builder in delivering the drill ship by the contractual delivery date. The delivered drill ship is one of the most modern drill ships which has been constructed utilizing improved construction methods and handed over successfully to the Client by the contractual delivery date.

This drill ship is a Dual Mast, Dynamically Positioned, Harsh Environment, Ultra Deepwater Drill ship. It has been constructed by SHI (the Builder) and delivered by the contractual delivery date. Salient features of the drill ship are:

- Capable to operate in water depth of 7500 ft extendable to 10000 ft. under zero discharge.
- Ultra modern drill ship with latest equipment viz. Dual Hoisting Tower, Tubular chute, Top Drive,
- Telescopic and slewable upper guiding arms in towers, Hydraracker, Iron roughneck, Control systems etc.
- Ultra modern drill ship significantly different than conventional drill ships delivered by SHI

Due to such extra features, as well as delivery requirements, it has become essential to seek improvements in project execution approach. This paper looks at the technical aspects for undertaking such improvements as well as project execution issues. It is also imperative that with dual demands due to increased sophistication of the drill ships as well as reduction in delivery duration, this will impact the engineering, procurement, fabrication and testing methods. All such areas have been explored, analyzed and discussed.

The shipyard's increased capacity of lifting facilities facilitate in construction of mega blocks up to 3600T on weight for both Hull and Topside with maximum outfitting installed.

The shipyard has both 3600T & 3000T floating cranes 800T Goliath Cranes and many LLCs of various capacities. Use of