Analysis of Jack-up Transportation in Overland Construction
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ABSTRACT
Launchings of jack-up drilling unit are the biggest difference between overland construction and traditional construction. The launching key points of CJ46 jack-up drilling unit which is under construction in SHANGHAI WAIGAOQIAO SHIPBUILDING CO., LTD are researched in this paper. First of all, the strength of CJ46 jack-up jacked is analyzed by using the finite element method when jack-up sit in the dock before transporting, and the jacking plan is improved. Then after CJ46 jack-up drilling unit overland construction completed, the important processes of transporting on barge is introduced. Finally, the stability analysis of CJ46 jack-up wet towing is achieved.

KEY WORDS: jack-up drilling unit; overland construction; transporting process; stability analysis

INTRODUCTION
Since the construction cycle of is much longer than traditional ships, and the unstable demand cycle, it is obvious that the construction in the dock will seriously affect the utilization ratio of the dock. In order to maximize the utilization of docks, the overland construction scheme is adopted to the jack-up drilling unit CJ46 project.

At present, during ship and marine engineering structures overland construction process, considering the different launching ways, there are mainly three shipbuilding types, which are as follows: the ground-barge tandem construction method, the ground-dock tandem construction method, the ground-shipway tandem construction method (Xu, 2011) (Huang, 2011). Considering shipyard equipment and site conditions, the project of using the ground - barge tandem construction method is employed to build the jack-up drilling unit. Here firstly the structural strength is checked before the units slide on the barge, and then make a simple presentation of the sliding process, the stability analysis of CJ46 jack-up wet towing is achieved.

STRENGTH VERIFICATION ON JACKING SITUATION

Finite Element Model
Structural strength of platform in jacking condition is verified in hoisting by FEM, and the finite element model of hull is built by MSC. Patran software with about 500mm × 500mm mesh size, as shown in Fig.1. The model weight and center of model gravity are adjusted same to actual hull.

Fig. 1 jack-up finite element model

Load Case
According to locations of jacking equipments in the arrangement plan as shown in Fig.2, the model is simple support at these locations as shown in Fig.3. One node is support at every location of jacking equipment, because center of jacking equipments are at node. Influence of environment loads is ignored, so the gravity is considered only in calculation.

Fig. 2 arrangement plan of jacking equipments