

Introduction of the experimental mooring performance evaluation method for a turret moored Arctic offshore structure

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Abstract

The Korea Research Institute of Ships and Ocean Engineering (KRISO) is developing a model testing methodology for the mooring performance analysis of Arctic offshore structures. The remote DP control system using the optimized thrust distribution and the ice-vaning algorithm, the tunnel and the azimuth propulsion system which are capable of real-time measurement of the thrust and torque, and the large capacity DP propulsion system for the model testing in managed ice conditions were done as a part of the research [1 and 2]. The mooring system which can be operated with DP systems in the ice tank of KRISO [3] has been the recent research. However, because the ice tank at KRISO has carriages, rails, and various equipment for the underwater operations in the bottom of the tank, the conventional mooring system could not be installed in the bottom of the ice tank. Therefore, the dry mooring system was developed to perform the mooring model test in the ice tank. Generally, a dry mooring system is installed on a towing carriage and the part producing the mooring stiffness combined with devices such as turret and gimbal then connected to the model (Fig. 1). This type of system for model testing was verified by HSVA [4 and 5]. In this study, the newly developed dry mooring model test was used to conduct the mooring model test in the managed ice condition, and the results were analyzed to establish a method for evaluating the performance of the Arctic mooring model test (Fig. 2).

Keywords: Arctic offshore structure, ice-vaning, mooring system, turret moored vessel, ice model test,

References

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Biography

Dr. Young-Shik Kim is a senior researcher at Korea Research Institute of Ships & Ocean Engineering (KRISO), interested in motion analysis and control for the marine system. He joined KRISO in 2003 just after graduation from university and has developed his specialties on seakeeping model test with various type of offshore structures and ships. Recently, he has participated in Arctic offshore structure research field, dedicates himself to develop a new Arctic dynamic positioning control algorithm