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Mitsui E&S Shipbuilding Co., Ltd.  
Mitsui O.S.K. Lines, Ltd.  
Tokyo University of Marine Science and Technology  
Akishima Laboratories (Mitsui Zosen) Inc.

### **Auto Berthing and Un-Berthing Demonstration Test Conducted**

TOKYO—Mitsui E&S Shipbuilding Co., Ltd. (MES-S; President: Tetsuro Koga; Headquarters: Chuo-ku, Tokyo), Mitsui O.S.K. Lines, Ltd. (MOL; President & CEO: Junichiro Ikeda; Head Office: Minato-ku, Tokyo), Tokyo University of Marine Science and Technology (TUMST; President: Toshio Takeuchi; Headquarters: Minato-ku, Tokyo), Akishima Laboratories (Mitsui Zosen) Inc. (President: Taiji Maeda; Headquarters: Akishima-shi, Tokyo) today announced the completion of a demonstration test (from December 2018 to February 2019) using the TUMST training ship *Shioji Maru* for their proposed joint demonstration project related to the safety of vessels' auto berthing and un-berthing. The project was selected for Japan's Ministry of Land, Infrastructure, Transportation and Tourism (MLIT)'s FY2018 autonomous vessel demonstration project.

The project team completed a total of 54 auto berthing operations using a virtual pier set on the open water, and gained useful data for R&D on auto berthing systems. Before conducting the test, the team formulated the ship operation plan, test guidelines, and criteria for canceling the operation ahead of time due to safety concerns, at the same time completing a thorough safety assessment under various phenomena by using the simulation environment.

The team plans a demonstration test with a large-size coastal ferry in FY2019 after substantially examining the development of ship operation control system and test methods to address the following issues:

- Realization of auto berthing control in consideration of vessel speed, course, and distance with sufficient safety margin, without making seafarers recognize risk.
- Realization of appropriate maneuvering control in consideration of the large-size ferry's maneuvering performance characteristics.
- Determination of definite criteria for making decisions of continue/stop on auto

operation in consideration of events such as machinery and equipment failures that occur during auto operations and other phenomena such as sudden changes in surrounding environmental conditions.

- Determination of guidelines for the transition of ship operation from the system to the crew after the cancellation of the automatic operation considering safety and situation.

MES-S, MOL, TUMST, and Akishima Laboratory will contribute to the achievement of safe, reliable ocean transportation through activities including the auto berthing and un-berthing demonstration project and other efforts to promote the development of autonomous vessels.



\* Simulation of auto berthing and un-berthing operations, and demonstration test

// Movie (Japanese ver.) uploaded online //

[Mitsui E&S Group Official Channel](https://www.youtube.com/user/mesprdept) (<https://www.youtube.com/user/mesprdept>)

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