



## **Execution of onshore testing using simulated large-sized ice ground for development of shallow methane hydrate harvesting technology**

**Tokyo, February 27, 2023** – MODEC, Inc. (“MODEC”, President & CEO: Takeshi Kanamori) has been participating in the underlying technology development related to the development of shallow methane hydrate harvesting technology conducted by the National Institute of Advanced Industrial Science and Technology (AIST) commissioned by the Agency for Natural Resources and Energy, an agency under Ministry of Economy, Trade and Industry (METI), and is developing harvesting technology using extensive vertical drilling method with disk-shaped, large diameter drill bits.

MODEC is pleased to announce that following the drilling performance tests conducted in October last year using a simulated soft mud ground, we have conducted a drilling performance tests on land using a simulated large-sized ice ground with the same strength as shallow methane hydrate, and have confirmed that the drilling performance has reached a level that enables efficient harvest of methane hydrate even in 100% content of shallow methane hydrate ground.

In the previous test, we used a simulated soft mud several tens of meters below the seabed with 20% content of shallow methane hydrate and the performance was confirmed to be sufficient to efficiently harvest granular methane hydrate in the soft mud.

With the continued cooperation of the Kitami Institute of Technology (KIT), we installed four steel tanks with a diameter of about 3m at the Okhotsk Regional Innovation Research Park in Kitami City, Hokkaido, and began to prepare for the test this time by producing a large-sized ice in the drilling tanks about 1m thick, simulating 100% content of shallow methane hydrate ground by naturally accumulating ice by layering and integrating commercial ice and water.

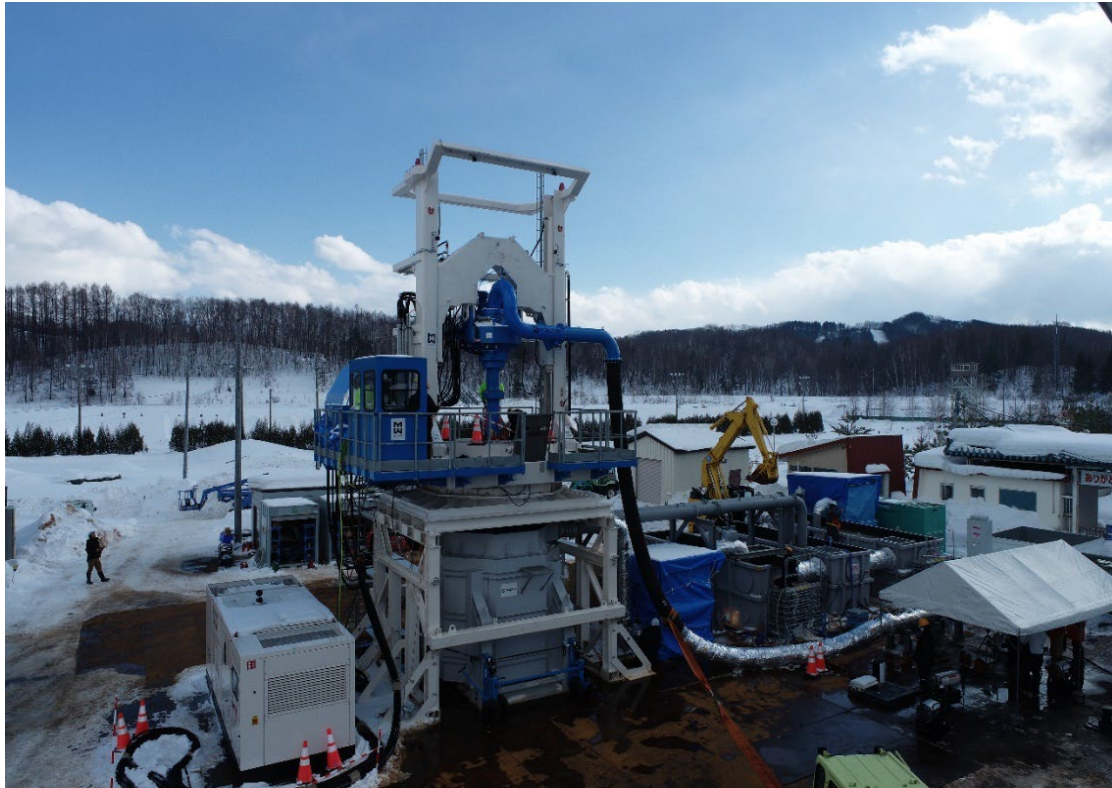
As we confirmed that the ice in the tanks had solidified sufficiently on January 31, 2023, we carried out drilling tests that took essentially six days through February 13. The Wirth Reverse Circulation Drilling Rig provided by HMH (<https://hmhw.com/>), an industry-leading provider of drilling technologies and services, was used for the drilling tests. As a result of drilling four large-sized ice in the drilling tanks using three different types of drilling bits with different characteristics and changing parameters, we confirmed that the drilling performance reached a level that allows efficient recovery even in 100% content of shallow methane hydrate ground, and succeeded in obtaining basic data necessary for estimating the drilling performance of actual drilling equipment, and for selecting actual drilling bits and equipment.

Based on the basic data obtained from the two drilling performance tests, we will develop the optimum combination of drill bits and equipment for various target areas for development of shallow methane hydrate in different conditions, and conduct simulations of the required power and drilling capacity to confirm the effectiveness and commercial profitability of this harvesting technology.

MODEC is the only company in Japan that provides total solutions related to floating facilities, including FPSOs (Floating Production, Storage & Offloading system).



MODEC aims to provide technologies for the manufacturing and operation of offshore production facilities for methane hydrate, a seabed resource that lies in seafloor deposits in the seas around Japan, by applying the technologies we have cultivated through the construction and operation of FPSOs.



Exterior view of drilling equipment



Outer view of drilling equipment



Large-sized ice in tank after drilling

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The information contained in this news release is true and accurate at the time of publication; however, it may be subject to change without prior notice.