

Full depth TLP model testing

The 30 m deep pit in MARIN's Offshore Basin makes it possible to test TLPs, including their tendons, in ultra deep waters without truncation of the tendons. Report dives into the deep pit of the Offshore Basin and explains the deepwater test setup for a TLP, as part of the concept selection for the PONY field.

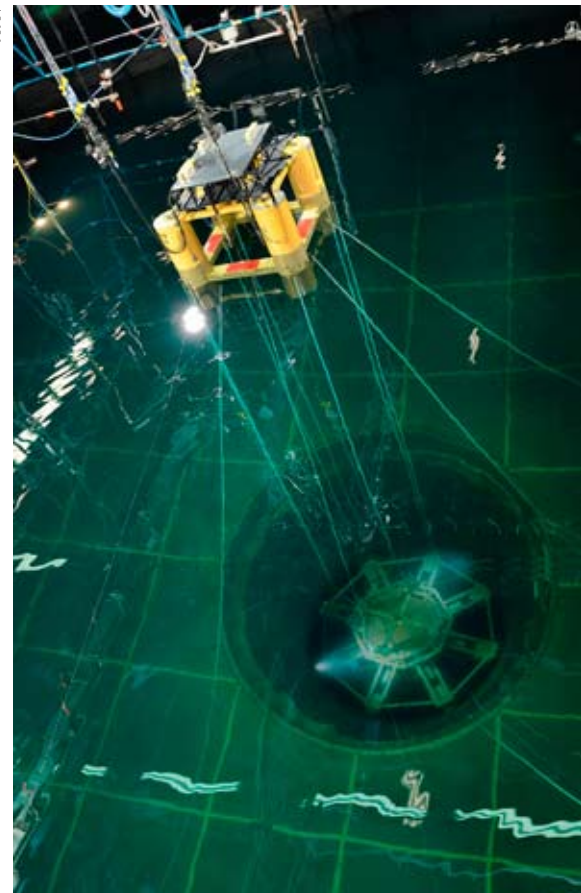
Modelling the full length of the tendons results in a correct representation of set-down effects and the related air gap decrease, which is especially important in severe weather conditions when the air gap is most critical.

In the present concept selection phase HESS and INTECSEA are exploring the option of a TLP for the development of the PONY field. This field is located in the Gulf of Mexico in a water depth of 1021.1 m. At a scale of 1 to 60, this requires a water depth of 17 m in the basin, which was realised by using the basin's deep pit.

The figure shows the importance of correct modelling of the full tendon length. Due to the environmental loading the platform will get a horizontal offset, which will result in setdown of the platform. For shallow water and the same horizontal offset Δx the platform setdown is larger than for deep water, which results in a decrease of the air gap between the water level and the underside of the deck.

By means of a moveable floor the water depth in the Offshore Basin can be varied from 0 to 10 m at model scale (600 m full scale, at a scale of 1 to 60). This large water depth, however, is not sufficient for full depth TLP testing in ultra deep waters. A second special feature of the Offshore Basin is the deep pit located underneath the moveable floor in the basin. The water depth in the deep pit is adjusted by a

second movable floor. When the floor in the pit is positioned at the correct depth the tendons and TLP are installed in the basin and the tendon pretensions are adjusted carefully. Now the TLP is ready for testing in its full deep water depth. □



TLP installed in the deep pit in the Offshore Basin

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