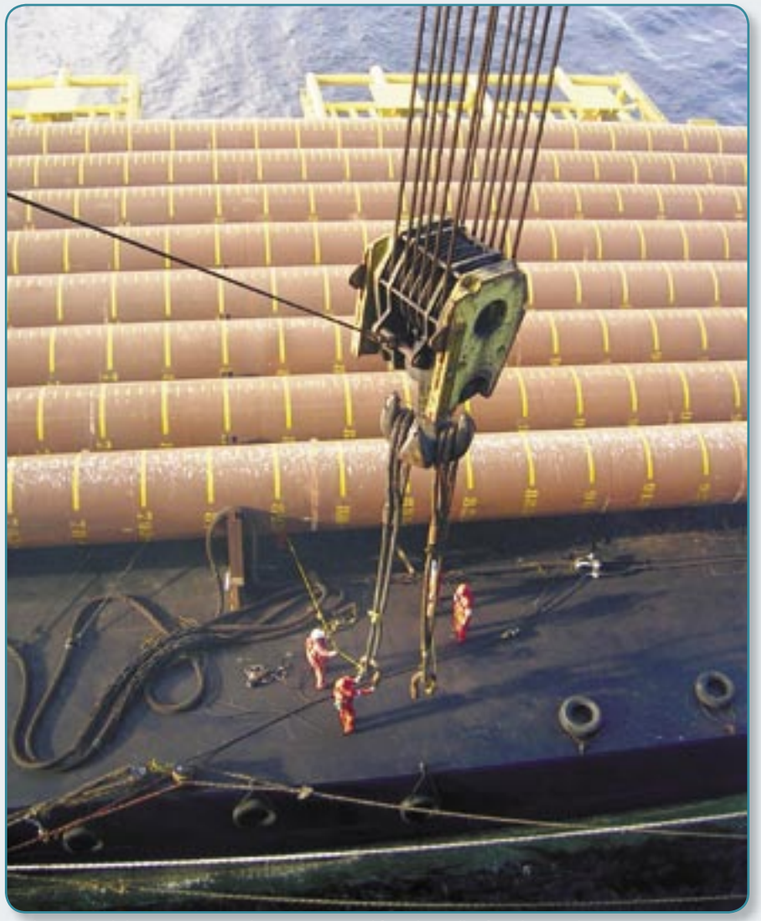
HMC Experience Leads to TLP-Installation Success for Kizomba B

"Although Heerema Marine Contractors (HMC) had installed the Kizomba A tension leg platform (TLP), there were still new aspects to the Kizomba B TLP project," says Jurgina Feith, HMC project manager. "One of these was the different combination of parties involved."

To date, HMC has installed 13 TLPs — the most of any contractor. In addition to Kizomba A and Kizomba B in West Africa (so far the only TLPs in this region), the 13 TLPs include 10 in the Gulf of Mexico and one in the North Sea.



Workers aboard the transportation barge prepare to lift and install a foundation pile.

A Logistical Challenge

The Kizomba B project required close cooperation between HMC in the Netherlands and Angola and Daewoo Shipbuilding and Marine Engineering in South Korea, where the TLP was built.

Feith notes these projects always require a significant amount of organizational skills to ensure that all resources come together at the same time and at the same place. "You can consider it a logistical challenge."

With Kizomba B, HMC had the opportunity to contribute experience from Kizomba A, which led to improved efficiencies at the DSME yard in South Korea in preparing the TLP for transportation and installation.

The project consisted of two phases, both executed by HMC's biggest asset — the *Thialf* heavy-lift crane barge.

First-Phase Installation

During the first phase, the *Thialf* installed eight foundation piles, which HMC had transported to the Kizomba B field area from fabrication yards in Angola.

"We installed the piles in about 3,300 feet of water (1,012 meters) in 14 days, well within the schedule," says Feith.

The piles, each 435 feet (132 meters) long with an 84-inch (213-centimeter) outer diameter, were driven to target penetration with a free-riding underwater hydraulic hammer. No templates were used to guide or support the piles during stabbing or driving. HMC installed the piles safely and well within tolerance.

Second Phase

For the second phase, HMC transported the tendon sections from U.S. Gulf Coast yards to West Africa and transferred them to the deck of the *Thialf*.

Using the vessel's cranes, the tendon strings were assembled and supported with a tendon buoyancy module (TBM). These strings were connected to the top of the foundation piles, and the TBMs were inflated to keep the tendons upright. As the eighth and last tendon was installed, the TLP completed the wet tow from Luanda Bay and was ready to be connected to the tendons.

Tendon sections are upended and joined aboard the *Thialf*.

The TLP was maneuvered above the top of the tendons, and guide wires were connected through the porches to the top of the tendons. HMC ballasted the TLP down to engage the tendons in the porches. Upon reaching the specified draft, the TLP was fixed by starting deballasting and gradually building up to the design tension in the tendons.

After storm-safe tension had been reached, the installation aids were removed. For this particular TLP design, the installation aids consisted of the TBMs and temporary stability modules (TSMs). Each TSM weighs 450 tons and measures about 62 feet (19 meters) long, 20 feet (6 meters) wide and 90 feet (27.3 meters) high. Due to the overhang of the deck of the TLP, the lifting of the TSMs required specially designed rigging.

On Track and on Time

In contrast to the North Sea, beautiful weather in Africa doesn't mean that you can always work well offshore. The long-period swell in this region sometimes generates enough vessel motion that work must be stopped.

HMC workers assemble a tendon prior to installation.

The completed TLP with the *Thialf* and its giant cranes in the foreground

"Despite these occasional conditions, we succeeded in a fast installation of the tendons, a smooth ballasting operation and TLP installation," says Feith. "This resulted in TLP installation within schedule."

Hein Mulder, CEO of HMC, states that the installation of Kizomba B further adds to HMC's proven track record of installing deepwater facilities.

"The experience and lessons learned from these projects are used to continuously improve our performance and maintain our position as the market leader in the transport and installation of all types of deepwater facilities."

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