

Case Study

Malikai TLP



Case Study: Malikai TLP Deepwater Project

An oil major has awarded Technip the EPC contract for the first tension leg platform phase of the project in Malaysia. Technip and Malaysia Marine & Heavy Engineering Sdn Bhd (MMHE) formed a joint venture under the name of TMJV to execute the Malikai Project.

Construction of the platform took place at MMHE's yard in Pasir Gudang, a city in the state of Johor. Once finalized, the platform was towed to its final destination in the Malikai oil field, about 100 kilometers off of Sabah, Malaysia.

The platform is working in water about 500 meters deep and is moored securely in place by specially coated tendons.

This case study describes the transportation of the above-mentioned tendons from the special coating facility in New Iberia, Louisiana, USA to Pasir Gudang, Malaysia.

Project background

deugro was awarded the execution of freight forwarding services for the overall equipment and material required as part of the Malikai Project. The transportation of the

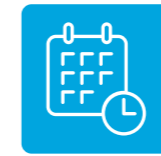
tendons, however, resulted in an out-of-contract scope, which was tendered for among competitive bidding with several freight forwarders.

The challenges that this shipment would pose to the teams in Singapore and Houston was at that stage not foreseeable.

deugro Singapore's project management team had several meetings with Technip, the oil major and MMHE to understand the requirements and the lessons learned from past operations with



Client
TMJV Technip /
MMHE



**Preparation
Period**
Aug. 2014 to
Dec. 2015



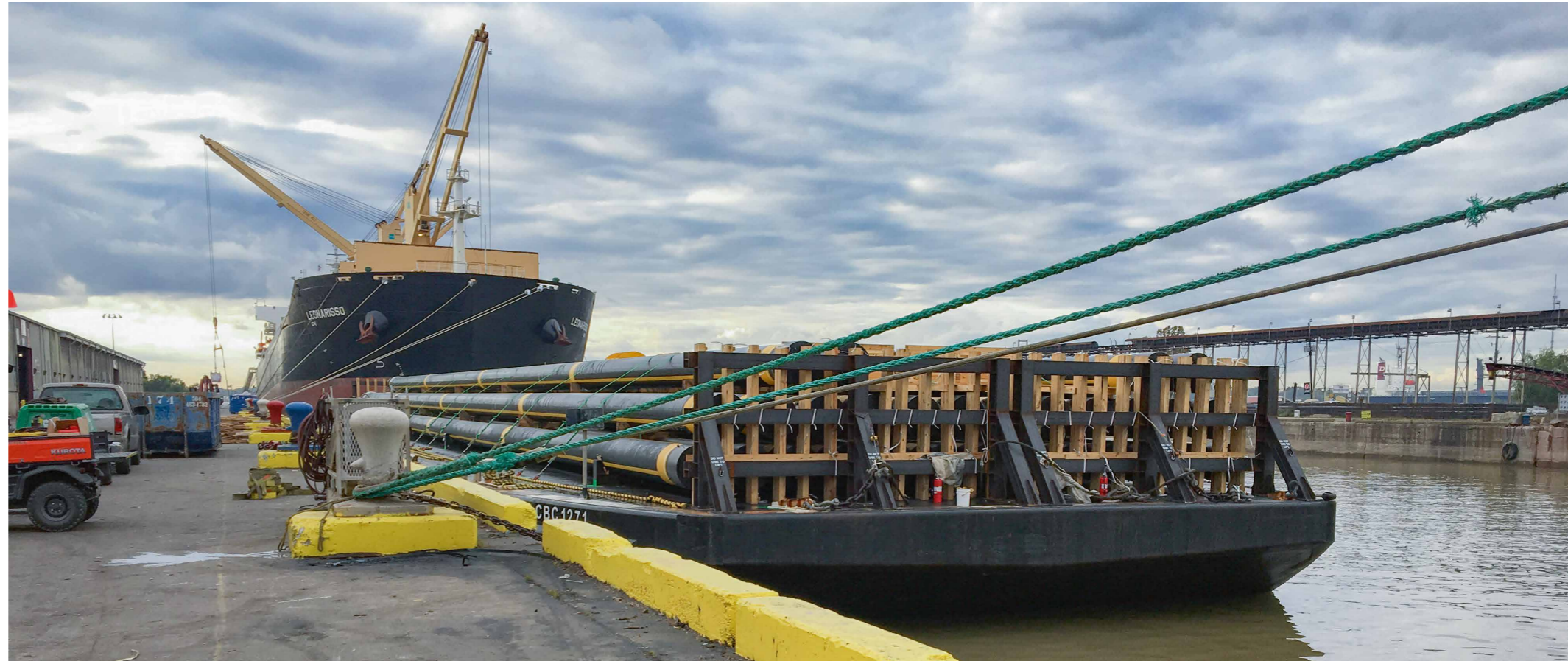
Investment
Approx.
USD 2,972,000



Volume
Approx.
4,020 FRT



**Origin and
Destination**
From USA to
Malaysia



similar tendons. In parallel, deugro Houston had several meetings and cargo inspections at the coating yard to optimize the cargo handling and stowage procedures. Avoiding damages to the highly specialized and sensitive coating of the tendons was put forward as a top priority.

Over the course of a year, deugro designed, engineered and fabricated a dedicated grillage, dunnage and sea-fastening system in cooperation with dteq Transport Engineering Solutions (dteq) for the job. Part of the design challenge

was to be able to reuse the materials used on the river barge when transferring the cargo to the oceangoing vessel at the port. This was only possible by closely

» Part of the transport design challenge was to be able to reuse materials. «

working together with the carrier's engineering and cargo supervision teams.



Pipe stow grillage ready for installation on board

deugro's scope of work

The transportation scope included the movement of 60 tendons plus 14 pallets of spare parts, Free In in New Iberia, Louisiana and Liner Out at MMHE in Pasir Gudang.

deugro had to charter two 260-foot barges, as well as suitable tugs and an oceangoing heavy lift vessel, specially for this project.

The length of the tendons and the requirement to load them under deck limited us to vessels with cargo holds that are not separated by bulk heads. We settled on the *Industrial Kelly*, a P1-type vessel that offers a hold up to 87 meters in length.

Furthermore, it was deugro's responsibility to arrange for stevedoring during the transshipment from barges to oceangoing vessels in New Orleans.

The loading operation onto the barges took place at the fabricator's yard. While the first barge was released on and towed towards New Orleans, the second barge was receiving cargo.

The transshipment required 11 days to complete, and then the *Industrial Kelly* started her six-week voyage to Pasir Gudang. Upon arrival at MMHE's yard in Pasir Gudang, the discharging operation commenced and took 10 days to complete.

Main challenges

In tender clarification meetings with Technip, we learned that damages to the coating of the tendons had been a major issue in the past.

These damages were caused by movement and friction during the ocean voyage, which was the result of insufficient grillage and dunnage.

It was therefore deemed mandatory for our transportation proposal not to only be commercially viable but also to include a technical proposal outlining measures to avoid damages.

Significant funds and man-hours were invested to come up with a dedicated sea-fastening design. The sophistication of our proposal was the major differentiator and led to an award for the scope.

Over the course of several weeks, the assigned Marine Warranty Surveyor and dteq's team of engineers went through seven revisions of the method statement for transportation. Details like the grade of steel and type of wood used had to be agreed upon before dteq could produce detailed fabrication drawings. Only then could the manufacturing of the tailor-made construction commence.

Shipment highlights

The multimodal transportation involved the full charter of the heavy lift vessel *MV Industrial Kelly* (P1 type), equipped with two 80-metric-ton safe working load (SWL) cranes.

Her hold was just long enough to accommodate the tendons with a length of up to 73.5 meters.

Dedicated stanchions nearly 3.5 meters high at the forward end of the vessel provided the required strength to hold the tendons in place against longitudinal acceleration forces.

Stevedores at the Port of New Orleans built a special dunnage structure to fill the gap between the tendons and the stanchion stoppers. All wood works were made-to-measure on the spot.

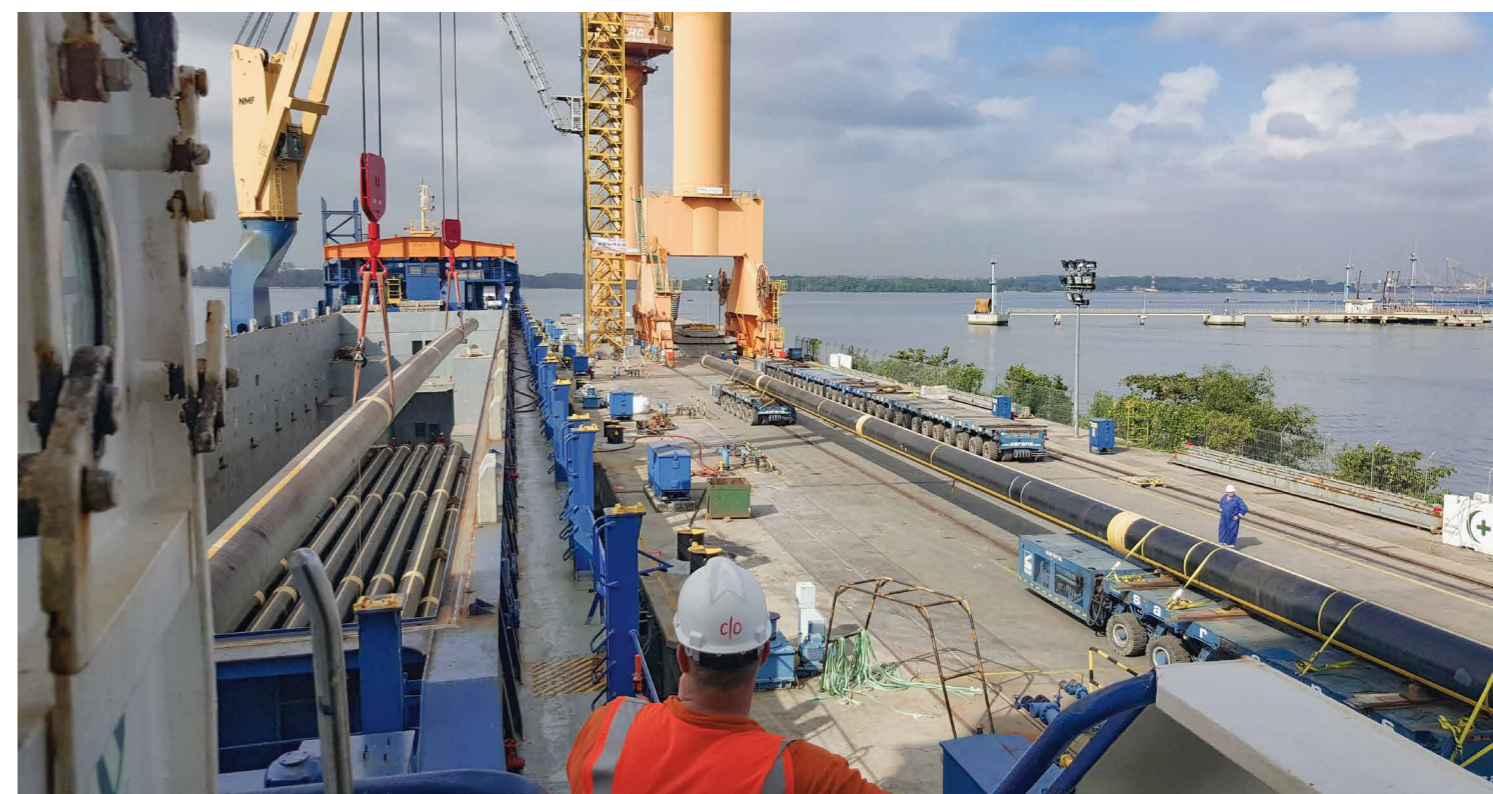
Loading sequence

Determining the loading sequence for transfer from barge to vessel was quite intricate.

The final transportation manual was a 13-page document describing the detailed loading sequence. The sequence is unique and had to be followed to a T.

It took dteq's engineers many hours to come up with a concept that allowed for the reuse of the materials used on the barges on board the vessel, thus reducing costs for additional materials.

» Determining the loading sequence for transfer from barge to vessel was quite intricate. «



Excellence and experience
are what have been
making deugro's services
unique for nearly
100 years.



Discharging operation at MMHE's
jetty in Pasir Gudang, Johor, Malaysia

deugro.com

a company of the **deugro group** 

