

# Deepwater Accuracy

Delivering precision lifting above one of the world's deepest production sites

## The Challenge

Cortland was tasked to develop a rigging solution to transfer a 400 Te steel lazy wave riser from a pipelay and construction vessel to a Floating Production and Storage and Offloading vessel (FPSO) in one of the world's deepest production sites in the Gulf of Mexico. The deepwater project was located in the lower tertiary geologic frontier and the subsea infrastructure was located at water depths of approximately 2,900 meters.

The challenge was to deliver a subsea load transfer and pull in package adhering to strict height and width limitations due to the FPSO's narrow i-tube and restricted height between hangoff interface and pull in sheave. Preparatory work showed it would not be possible to use a standard rigging set up as it would be too bulky and too long for transfer through the i-tube and the pull head would never reach the hangoff point. The total rigging had to be a maximum of 8.38 meters in height. Comprehensive rigging services and expertise were required.

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Custom Selantic® hardware and sling solution created and delivered by Cortland to allow subsea connection

## Project

Deep water 400 Te riser transfer from installation vessel to FPSO in the Gulf of Mexico

## Location

Gulf of Mexico

## Technologies used

Custom Selantic® slings  
Custom Selantic® connecting hardware

## Features

- 400 Te load transfer
- approximately 2,900 m water depth
- 8 m height restriction for rigging

*“Cortland worked closely with our team to deliver a custom solution that fit our very specific requirements, where there was little room to maneuver.”*

**Bryan Houston**  
Installation Contractor

Cortland is a global designer, manufacturer, and supplier of technologically advanced ropes, slings, and strength members. Collaborating with customers, our team uses its experience in high performance materials and market knowledge to transform ideas into proven products.  
[cortlandcompany.com](http://cortlandcompany.com)

### The Solution

A solution would require a custom-built package of hardware and slings to satisfy the exacting specifications, so Cortland's engineering team set out to design rigging to meet the primary goals of decreasing height and bulk.

The Cortland project engineering team used its global resources in their mission to create the ideal equipment for the installation contractor. Working with research and development colleagues in Norway, a compact fiber-to-fiber pull in hook and a fiber-to-fiber load transfer hook were specifically invented for the project. Both hooks have been developed with key driving parameters from Cortland's Selantic® sling design expertise.

The shape of the hooks were specially optimized to be low snag and narrow, to reduce the top to bottom interface length while a high capacity short Selantic sling was used to dramatically decrease the hook to hook connection length.

The fiber-to-fiber clevis load transfer hook connected directly to the Cortland pull-head; this removed the need for three shackles (two shackles back to back from pull head to load transfer hook and top interface on load transfer hook) normally used with a traditional configuration. This unique solution also allowed the connection to occur subsea, instead of through the moon pool, allowing greater room for accurate maneuver of hardware and slings.

The combination of Selantic slings and custom-designed hardware meant that Cortland could achieve a 1,452 Te MBL and still be as short as 1.5 meters. Selantic round slings are produced with accuracy to  $\pm 0.25\%$  length measured under load. The 400 Te forged hooks decreased the weight and height, allowing the installation contractor to meet the strict height and width limitation.

Benefits of the Cortland solution:

- Weight savings of 2.5 Te
- Subsea connection
- Ease of handling
- Pull in hook height savings of 3 meters
- ROV functionality

### The Project

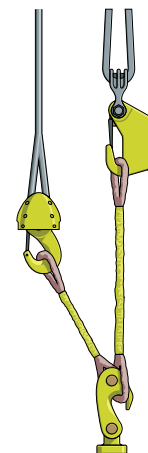
Compact items became key while transferring the riser from the vessel to the FPSO. The moment of transfer—dubbed the 'handshake'—was critical. The months of planning, design and manufacturing was backed up with around the clock communication available from the Cortland team to the project engineering team on the vessel during the operation.

The team met all pre-operation requirements, including the primary concerns of overcoming the challenges with the narrow i-tube. There was very little room for maneuver in height and width, but with collaboration between Cortland and the installation contractor, a solution was delivered that worked in terms of accuracy, strength and ease of handling. The result was a faster installation but more importantly a set-up that made the transfer possible at all.

For more information visit [cortlandcompany.com](http://cortlandcompany.com).



Traditional load transfer configuration through the moon pool



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