

Contract: Kizomba A & B FPSO Installation
Client: ExxonMobil
Location: Offshore Angola



Challenge

Noble Denton was instructed by ExxonMobil to arrange the station-keeping of the world's largest FPSO, *Kizomba A* and its sister, *Kizomba B*, during their connection to the mooring system. The size and configuration of the Kizomba FPSOs posed several challenges, including close proximity to a producing TLP, the presence of a large array of near-surface hybrid riser groups and unpredictable environmental conditions.

Calling on its extensive technical resources Noble Denton prepared detailed engineering & marine procedures and provided operational support to meet both the exacting requirements of the client and the environment.

Expertise provided

ExxonMobil contracted Noble Denton for two installation projects, *Kizomba A* and *Kizomba B*, off the Angolan coast, each with a value of about \$10million.

The work scope for the initial project, *Kizomba A*, included holding the world's largest FPSO on location throughout its connection to a pre-laid fifteen-point deepwater mooring system.

In addition to positioning services, the work on *Kizomba B* also covered all deck operations on board the FPSO to pull in and pre-tension the moorings.

Noble Denton's consultation included the development of all installation procedures; performance of all temporary-phase analysis; procurement of relevant third-party services and equipment; execution of an extensive marine simulation prior to the field; attendance throughout the operations; and preparation of as-built documentation.

The Noble Denton-Semco Alliance took an innovative approach to solving the client's issues.

After developing the installation procedures, Noble Denton verified the robustness of its process with an extensive series of simulations in a Marine Simulator. This enabled the team to test all environmental combinations in real-time for each stage of the mooring hook-up.

This step was essential to determining a safe process for any possible combination of wind-wave-current at each stage of the mooring leg connection. The exercise not only provided an opportunity to address a range of 'what-if' scenarios and develop insights into operating under actual conditions, but also offered an effective team-building programme for the offshore crews.

Positioning lines for the tugs were made up with large diameter plasma rope, which provides high strength, ease of handling, and floats, eliminating the risk of positioning lines becoming caught in the sub-surface riser system.

Outcome and benefit

In addition to a successfully delivered project, Noble Denton's approach ensured substantial cost savings for ExxonMobil. This was achieved by using the same marine spread to both tow and install the unit.

Semco's provision of vessels and deck crews considerably simplified logistics. This, coupled with Noble Denton's engineering, procedural, and analytical skills, proved to be of immeasurable value as did the Semco/Noble Denton partnership which removed the complexity normally associated with multiple contractors.

Noble Denton has since pioneered marine simulations on a number of FPSO projects, and established this as a cost-effective means of verifying the installation process.

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