

## DIAMOND OFFSHORE, SANGOMAR FIELD DEVELOPMENT OCEAN BLACKRHINO

### Systems Upgrades and Modifications, Senegal

ICON Engineering embraced advances in technology to remotely engineer modifications to Diamond Offshore's Drillship 'Ocean BlackRhino' for Woodside Energy's Sangomar Field Development in Senegal, West Africa.

- Perth and internationally-based equipment packages supplied by project business partners.



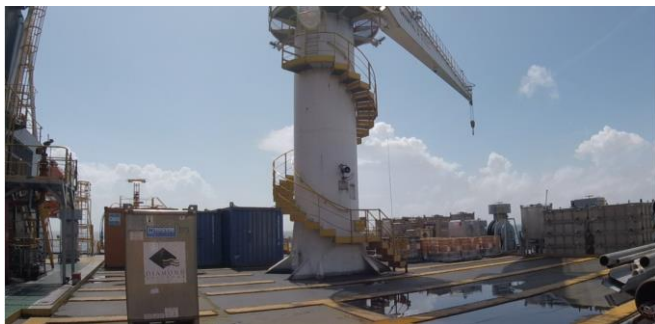
**Diamond Offshore's Ultra Deepwater Drillship, Ocean BlackRhino**

The project commenced in 2020 with ICON facing worldwide Covid restrictions, a constrained schedule and limited construction materials available in the Canary Islands shipyard. In response, ICON used 3D Point Cloud surveys as a key tool in the design and employed its interface management experience and skillset to ensure successful, timely, incident free completion of the project's design scope.



**Ocean BlackRhino Well Testing Area with Burner Boom**

The project included detailed design of work packages spread across drilling, well test, completions and subsea IWOCs / Landing String operations.



**Ocean BlackRhino Well Testing area prior to commencement**

Key to the success of the project were the management strategies Perth-based ICON Engineering used to manage worldwide stakeholders and key interfaces:

- The 3D Point Cloud survey team mobilised out of Louisiana, USA while the vessel operated in US waters.
- All design was undertaken inhouse at ICON's Perth office in collaboration with the Astican shipyard in Las Palmas, Canary Islands, vessel operator; Diamond Offshore, USA and development key stakeholder Woodside Energy.
- Design certification was completed by American Bureau of Shipping (ABS), Singapore.



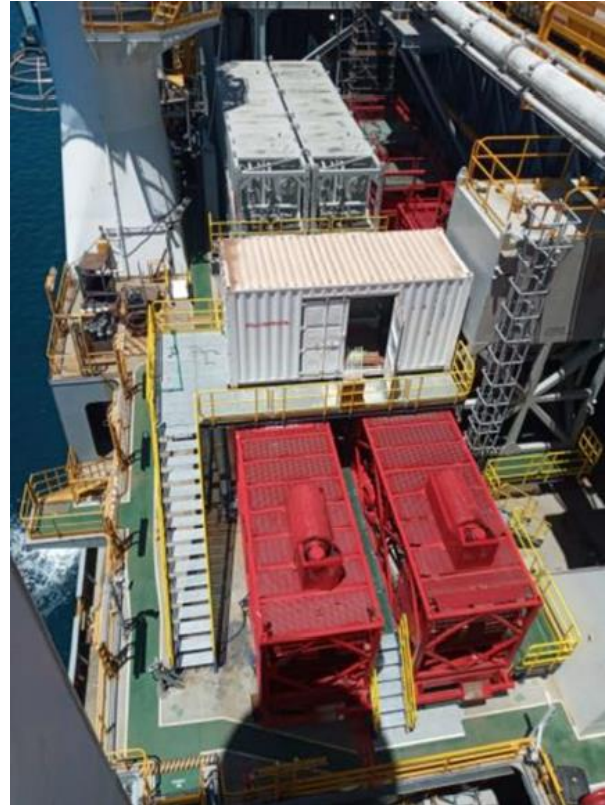
**Subsea Tree installed on PSV**

Key components in a 16,000 work-hour engineering design package included:

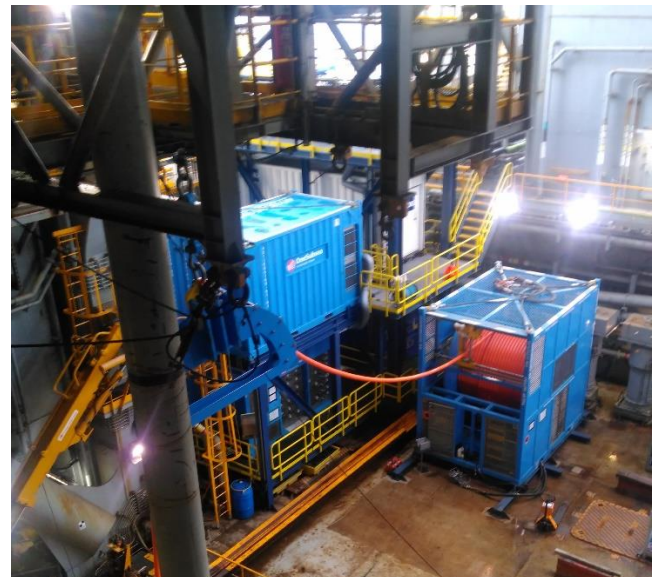
- Extensive electrical and utilities services tie-ins throughout the vessel;
- Dedicated decks for sea-fastening and ergonomic operations of all business partner equipment;
- Dedicated vessel hang-offs and umbilical management systems to support subsea functions such as umbilical handling monorail c/w pneumatic trolley & hoist;
- Modular inspection stands and platforms for vessel-based subsea tree deployment / recovery & platform support vessel transfer;
- High pressure drilling, completions and well testing services, piping stress analysis and specifications, supports and over-boarding;
- Vessel interfaces for installation of a 30m Burner Boom and integrated deployment systems.



Burner Boom Support Cradles and Kingpost



Overhead view of Completions Gravel Pack Area



Subsea Equipment on Main Deck, aft of moonpool