

## ENI / GE

### GHANA OCTP PROJECT

#### ARTP C-Series Compensated Coiled Tubing Tension Lift Frame

ICON Engineering Pty Ltd (ICON) was contracted to supply an ARTP C-Series Compensated Coiled Tubing Lift Frame (CCTLF) for use on the Maersk Voyager while conducting work on the OCTP field offshore Ghana.



The ARTP C-Series module provides over-tension, under-tension and anti-recoil protection

The ICON ARTP Tension Frames are a range of coiled tubing lift frames with integrated passive heave compensation systems specifically designed to mitigate risks associated with accidental lock of a rig's primary drill string compensator during well completions, testing, interventions and other "locked-to-bottom" operations from floating rigs.

#### Risk: Rig Drill String Compensator Lock Up

The OCTP development project included drilling and completing new production wells utilising the Maersk Voyager drillship in ~1000 metres water depth.

Project risk assessments during the planning phase concluded that accidental lock-up of the rig's drill string compensator (active heave drawworks) was a serious risk with the potential consequence of a major accident event.

ICON's ARTP C-Series compensated tension lift frame was selected as an effective means of mitigating this risk as low as reasonably practicable.

#### Heave Compensation Equipment Overview

The ICON ARTP C-Series consisted of the following equipment:

- ARTP heave compensation module inclusive of a drill floor control panel and a conditioning monitoring and alarm system,
- Tension lift frame complete with dolly guide, 16t equipment winch and man rider winch,
- Winch HPU, umbilicals and shipping skids

#### Tension Lift Frame Design Customisation

The scope commenced with design customisation of the base model ARTP to suit Client, rig and third party interfaces, technical and quality requirements.

#### Procurement and Assembly

ICON utilised our existing network of fabricators and equipment suppliers to procure all equipment in accordance with our Client and third party quality requirements.

The ARTP equipment was assembled at the ICON Henderson yard, utilising engineers and technicians who are trained offshore personnel able to install, operate and maintain the ARTP.

#### Function Testing

Extensive onshore testing was conducted in accordance with the design codes. This included: proof load testing of the primary structural load path (API 8C), load testing all lifting equipment, pressure testing, leak testing, full system function testing and interface testing to all third party equipment.

A further extended testing regime including full scale vertical rig up and dynamic cyclic testing under simulated heave conditions was also conducted in ICON's purpose built test derrick.

#### Third Party Certification

The ICON ARTP C-Series was third party certified to give full assurance to our Client that the design, fabrication and testing conforms to all relevant industry standards.



Extensive onshore testing and third party certification of the ARTP C-Series Compensated Coiled Tubing Lift Frame (CCTLF) ensured all equipment is supplied in accordance with relevant industry standards and seamlessly integrates with rig operations