

Expro Excellence

# Expro landing string enables high rate gas well test in harsh deepwater environment

## Subsea Well Access



### Objectives and background

- Our client planned to perform subsea Exploration and Appraisal operations from a semi-submersible at a water depth of 1,430m. However, due to the location of the operation they anticipated harsh met-ocean conditions
- Our client required a subsea test tree safety system (SSTTA) with a quick Emergency Shutdown (ESD) and Emergency Disconnect (EQD) response time
- During normal operations the lower flex joint angle is typically between 0 degrees and 2 degrees
- However, due to the expected conditions the lower flex joint angle was anticipated to be operating at 3 degrees for running / retrieval through the lower flex joint and 4 degrees when disconnecting / reconnecting the subsea test tree (SSTT) whilst in the BOP
- Our client required a global riser analysis (GRA) performed to show the equipment was theoretically suitable, in addition it was requested that the full system (as it would be used in operations) be validated by physical testing to prove the minimum angles specified above and the GRA results
- Expro carried out the validation testing in two tests; The first test was to validate running and retrieval of the complete SSTTA system, through the lower flex joint (at the BOP) and the second test was to replicate an unlatch and re-latch of the SSTT with the full system, through the lower flex joint
- The SSTTA system was successfully unlatched at 4 degree and 5 degree angles. Measurements of the test set up were taken with using a digital inclinometer which showed the actual angles were 4.5 degrees and 5.2 degrees
- The SSTTA system was successfully re-latched at a 4 degree angle. Measurements of the test set up were taken with using a digital inclinometer which showed the actual angle was 4.5 degrees

### Value to the client

- Expro provided a cost effective solution such that the validation testing could be performed, thereby providing the client with the verification that the theoretical results were validated
- The GRA evaluated the SSTTA to operate with flex joint angles of up to 4°, the physical testing validated the GRA results which were utilised to set the vessel watch circle
- Resultingly providing our client with a proven operating envelope, thus increasing the operational uptime, reducing waiting on weather
- Expro's landing string was qualified to operate in harsh environmental conditions, ensuring uninterrupted well test activity which is critical to gathering high value well test data

### Expro Excellence

- Expro utilised our validated 3" 15ksi ELSA-EA valves and 3" 15ksi Express-EA Electro-Hydraulic (EH) control system
- The GRA was conducted in-house using Expro's Engineering Team of mechanical and GRA specialists. The system components were modelled within the software along with the relevant capacity envelopes and was carried out in accordance with ISO 13628-7
- Expro designed the test configuration to replicate the interfaces and contact between subsea test tree assembly (SSTTA) and riser/ BOP as closely as possible

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We are really satisfied with Expro Subsea team who worked on DSS. They were proactive and efficient to perform desk test in this challenging environment and challenging schedule.”

Client

Safety



### Contact

For further information please contact:  
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