Expro Excellence

Acumen metering provides potential production optimization solutions in Brunei

Well Testing | Acumen

Objectives and background

- Expro provide multi-service Well Test services for Brunei Shell Petroleum (BSP), inclusive of Fluid Sampling and Analysis, Drill Stem Testing (DST), Tubing Conveyed Perforating (TCP), Well Test and Subsea Well Access services
- BSP were experiencing production challenges related to an offshore production hub. Initially commissioned in 1978 with one platform; three more satellite production platforms were subsequently added over ensuring years. Located 35km from the mother platform; processing and compression facilities were also required
- From 2013, decreasing oil production potential from the facility's low-pressure wells was observed and believed to be due to increasing flowline pressures. This back-pressure challenge became increasingly evident as more wells were added – each bringing little to no incremental production. Another growing concern was rates of gas production in the hub exceeding the design production capacity of the system
- A study was carried out in 2014 to investigate possible mitigations for the high back-pressure conditions. Several scenarios were considered - all involving gas compression; however, none were actioned due to budgetary constraints
- In 2019, BSP formed a team to develop a solution. One of the key findings from the team was a lack of reliable data supporting the potential for oil production upsides, by lowering back pressure. The software models were unable to provide reliable predictions, due to insufficient metering data

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- Expro were engaged to provide a well test and metering solution which would divert and temporarily dispose of gas locally – reducing system back pressure below current conditions. A reliable metering solution would be critical to the validity of the trial's results
- With a challenge of minimizing process interruption while measuring flow rates at multiple points across several platforms; Expro proposed its industry-unique, non-intrusive, clamp-on SONAR flow meters for the test
- A total of six SONAR meters were quickly deployed to measure production rates of the individual wells and diverted gas. Data from the meters along with other sensors from the test were collected for logging and display on Expro's versatile EDGE data acquisition platform
- Process safety was of paramount concern. An emergency shutdown system (ESD) for the test package was designed to interface with the platform-based production shutdown (PSD) system control room
- Physical limitations of the small offshore platform proved challenging. Unique equipment capable of operating within strict weight limitations were required, along with detailed deck management plans and structural reviews
- An additional logistical challenge was introduced with the 'delta' variant outbreak in the COVID-19 global pandemic; resulting in closure of borders timed with commencement of operations. These restrictions required Expro's operations team to remain in country for extended duration, including long quarantine periods

Value to the client

- Incremental liquid production to the mother platform up to +15% was measured by the Expro SONAR meters; due to debottlenecking of local diversion and disposal of gas
- The successful execution of the project represented significant progress for BSP in acquiring reliable data (at optimised process conditions); proving that total liquid production increased by debottlenecking entrained gas locally - which will now form basis of a long-term design solution to optimize production
- Expro provided a bespoke Well Test solution to Brunei Shell Petroleum with minimal process interruption with its unique, Acumen-engineered solution

> **"Designing, procuring, installing and commissioning the package in the limited time that was available was an outstanding achievement."**
>
> Well Test SME

Bespoke solution

Contact

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