

/ Expro Excellence

Well Intervention

Expro's world-first, large diameter slickline installation provides innovative solution that saves Marathon time and money



Objectives

- Marathon awarded Expro a contract to provide conveyance service for modular perforating operations with slickline on the Alba Field, off Equatorial Guinea
- Some of the wells were 14,000ft deep and deviated, as well as underbalanced

Expro Excellence

- Expro's team determined a new, larger gauge slickline wire would be required which would overcome the challenge of larger gun size and pulling wireline weights never previously attempted
- The very first, production and operation of the largest gauge slickline with a diameter of 0.160" was invented and installed by Expro
- Ran a number of 48ft, 3 3/8" perforating guns on slickline and stacked them in lengths exceeding 1,000ft
- Firing head was run last on the top and the guns, detonated – the same slickline wire retrieved the firing head and guns before the guns deteriorated to a dangerous condition

- Due to presence of CO₂ in the reservoir the wire had to be made of a particular alloy (GD 31MO) to reduce corrosion risk, however this created further challenges for the team
- All equipment certified for zone 1 and 2, and work was carried out to UK North Sea standards
- The entire operation was completed quickly - wells were perforated in underbalanced conditions

Value to client

- Innovative approach by Expro provided Marathon with a world-first solution
- Saved Marathon time and money – much quicker than conventional braided line, as well as solving many of the well control issues braided wire might create
- Guns run faster and using less equipment
- Estimated savings of 25% in running costs compared to braided wire method

Increasing the wire size created additional challenges for the Expro team:

- Larger pulling weights increase forces through the stuffing box back bracket
- Larger circumference wire required modifications for good well containment
- Greater friction between the wire and packings became more intense
- Rope socket technology had to be refined to stay with tried and tested conventional method
- Increased well pressure effect on larger wire cross-sections increased size and weight of tool-strings
- Increase equipment performance to meet larger slickline forces
- Increased work hardening effects on wire increase minimum radius to 20"

Expro collaborated with Marathon to ensure the wire was designed correctly and operated safely to support the specifications – with a typical breaking strain of 4,400lb, the new slickline had a safe working limit of 2,640lb pulling weight, compared with 1,536lb for conventional slickline.

Contact

For further information, please contact:

André Minnis

Product Line Manager – Slickline
Well Intervention

andre.minnis@exprogroup.com

www.exprogroup.com/wellintervention

