



## PRESS RELEASE - OCTOBER 2005

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### COE DRILLING SUCCESSFULLY COMPLETES CLIFFHEAD HDD SHORE CROSSING

In Early 2005, Roc Oil WA Pty Ltd awarded the HDD Shore Crossing Subcontract to Coe Drilling Pty Ltd on the Cliff Head Oil Field Development Project.

The Cliff Head Oil Field will establish the offshore Perth Basin in Western Australia as Australia's fourth offshore oil producing region, after the Bass Strait, the North West Shelf and the Timor Sea.

#### THE PROJECT

The Project is a Joint Venture partnership between Roc Oil WA Pty Limited as Operator (37.5%), AWE (27.5%), Wandoo Petroleum Pty Ltd (24.0%) Arc Limited (6%) and CIECO Pty Limited (5%).

The work involved the installation of two 1000m parallel Shore Crossings at Arrowsmith South of Dongara, West Australia by way of Horizontal Directional Drilling (HDD) to facilitate the 10" Production pipeline and umbilical Conduit in one borehole and the 10" Water Injection in the second borehole.

The scope provided by Coe included the fabrication of the HDPE borehole liner's onshore behind the HDD Rig Spread. The eventual methodology proposed by Coe for the installation of the pipelines was the forward thrusting method, whilst the liners were installed by towing the Fabricated HDPE Liners offshore and pulling the liners back through the boreholes.

#### MOBILISATION, DESIGN & ENGINEERING

Detailed project engineering and design was required to satisfy the client and to confirm that the proposed methodology could achieve a successful installation of the product pipes and conduits. Comprehensive management plans were prepared for the project covering OH&S and Environmental Management as well as all aspects of the drilling and marine procedures including project risk analysis, engineering analysis covering stress analysis and marine mooring analysis for the marine spread.

Work commenced with mobilisation of the CoeDrill 550 & CoeDrill 180 Drilling Spreads from Coe's yard on the Gold Coast Queensland to site a distance of some over 4,700 km. In parallel the design and engineering for the project was undertaken in Perth using local consultants and specialist contractors. At the Drilling site additional Geotechnical investigations were undertaken to verify the expected conditions were suitable for an unlined borehole forward thrusting pipeline installation operation as carried out successfully by Coe on a similar Shore Crossing in the past. The additional investigations undertaken by Coe proved invaluable and showed a very narrow window of suitable rock formation in which the drilling was to be undertaken. The drilling lense was 5m thick under the beach and was overlaid with loose sands and underlying the rock was a weak conglomerate of gravels and sands known locally as the Yarragadee formation. The ultimate design adopted a lined borehole due to the highly fractured and inconsistent nature of the rock formation at the site. It was critical that the drill path remained within the rock formation to ensure that the borehole being drilled would remain stable during all stages of the drilling and pulling operations.



28" HDPE Liner Tow Out Operation

### FABRICATION OPERATIONS

On site Roc Oil fabrication the 1150m long 273.1mm x 14.3mm Grade 450 1 U PE & PUF Coated Oil Production Pipeline complete with Concrete coated tail onshore behind the HDD Drilling Spread. In parallel it prepared the 273.1mm x 14.3mm Water Injection, Power & Control Pipelines and Umbilical ready for use and positioned on Coe's pipeline rollers. The pipeline was welded and field joint coated prior to the pre-installation Hydrostatic testing of the completed pipe strings. Coe prepared the 28" HDPE PN 16 & 16" HDPE PN 16 Liners adjacent the Oil Production & Water Injection Pipelines in readiness for the tow out operation.

### DRILLING OPERATIONS

Drilling operations commenced in early June using the Coedrill 180 drilling spread on the Southern Borehole for the Water Injection installation. The final design was to install the Water Injection pipeline within a 16" HDPE Liner installed from offshore to shore.

The Pilot hole was drilled with a 12.25" TCI Bit and a 8" Mud Motor using a conventional Magnetic Guidance System. The drill string used was a 6 5/8". The ground conditions as expected consisted of Limestone of varying consistency. The rock strength was varied, but was of mainly low-medium strength.

Following completion of the Pilot Hole the borehole was opened up in progressive stages (17.5" & 24"). The marine spread and diving operations were in place during all stages of the crossing fitting and breaking out downhole tools.

At a 10m offset to the North the Coedrill 550 was set up and commenced drilling the Pilot Hole for the 10" Oil Production Pipeline using the same downtooling assembly as had been used on the Southern Borehole. The final design was to install the bundle within a 28" HDPE Liner installed from offshore to shore.

### HDPE LINER PULLBACK

Once all hole opening had been completed the prepared HDPE liners were towed out over the sand dunes and across the beach on rollers to minimise damage to the native vegetation. The marine support spread continued to pull the HDPE Liner offshore until in position and aligned with the HDD Exit. The HDPE Liners were flooded prior to the subsea hook up to the drill string pullback swivel.

### PIPELINE INSTALLATIONS

After installation of the HDPE Liners within the boreholes, Coe installed the 10" Concrete Coated Oil Production Pipeline and Umbilical Conduit within the 28" HDPE Liner and with the assistance of the marine support spread pushed out the 100m concrete coated tail on the seabed in readiness for the Roc Oil Laybarge to recover and lay away. Similarly the 10" Water Injection installation was completed installing the bundle within the 16" HDPE Liner with a 100m tail laid on the seabed with the assistance of the marine support spread.

Once completed the drilling spread was quickly de-mobilised and the CoeDrill 550 transported the 4,700KM journey to Brisbane to commence work on a 1500m 24" & 10" Oil Pipeline Crossing. The CoeDrill 180 was sent to Victoria to commence another Shore Crossing for a 750m 18" Saline WasteWater Outfall.



COEDRILL 550 Pilot Hole Operation



COEDRILL 550 Pullback Operation



10" Concrete Coated Production & Umbilical Conduit Installation in 28" HDPE Liner.

**Coe Drilling Pty Ltd**  
**11-13 Gibbs Street,**  
**Labrador,**  
**Queensland 4215**  
**Australia.**

