

# AnTech®



## 5" POLARIS™ CTD System

### Increase production by drilling underbalanced with Coiled Tubing

The POLARIS™ BHA comes in both gyro and magnetically steered forms. It is a unique tool that is targeted at larger hole sizes, between 6" and 8-1/2". Larger hole sizes require higher flow rates, which are not possible through smaller tools, and many alternative drilling options are limited by their inability to operate in aerated fluids such as nitrogen mist and foam.

Both the magnetic and gyro steered BHAs have the same navigation capability. The gyro steered BHA is very short which has advantages for deployment. The magnetic steered BHA provides steering capability in conditions where it is not possible to provide stable conditions for gyro measurements.

The gyro steered POLARIS™ has achieved two significant records:

- World first: use of GWD in a fully horizontal well
- World first: use of GWD in an air drilled well

POLARIS™ can be used with PDMs and turbines.

### Applications

The POLARIS™ tool is suitable for all types of Coiled Tubing Drilling. Typical applications include:

- Re-entry Drilling
- Shallow Grass Roots Wells
- Coal Bed Methane
- Gas Storage
- Underground Coal Gasification (UCG)

Tubing End Connector

Cable Head

Electric Release

WOB/TOB Module

Continuous Rotating Orienter (CRO) and Sensor Assembly

*Int/Ext Pressure, Temperature, Vibration*

Magnetic Steering Module

Gamma

PDM (or Turbine)

PDC Bit

Tubing End Connector

Cable Head

Electric Release

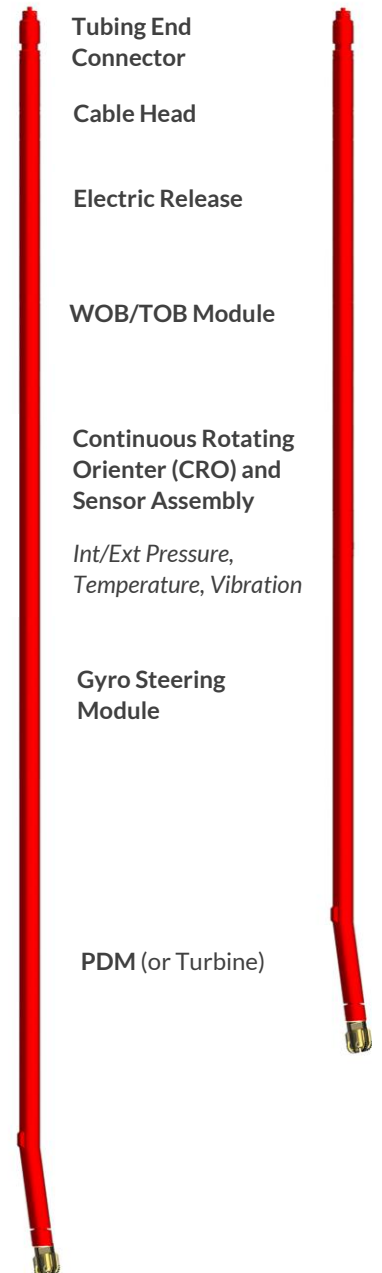
WOB/TOB Module

Continuous Rotating Orienter (CRO) and Sensor Assembly

*Int/Ext Pressure, Temperature, Vibration*

Gyro Steering Module

PDM (or Turbine)



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## Features & Benefits

**Short length** – Tool rig up is done in one single section above the master valve, speeding up operations, reducing connections and avoiding the need for live well deployment. They can also be pressure deployed through the BOP using a Dual Ball Valve Sub if required.

**All-electric system** – The wireline system is independent of the fluid in the well, so the tool can be used in aerated fluid applications and can operate in underbalanced conditions.

**Electric Orienter** – A fully Continuous Rotating Electric Orienter (CRO) gives precise directional control and enables the tool to drill the build and straight section in one run.

**Complete sensor package** – Real time information is provided for weight-on-bit (WOB), torque-on-bit (TOB), temperature, pressure, vibration, inclination and azimuth, both magnetic and gyro tool face, gamma ray and CCL. This allows real-time monitoring of tool position and drilling conditions for optimum performance.

**Tuned for vibrations** – Designed to withstand harsh downhole vibrations in aerated fluids, with metal-to-metal seals, improving sealing and protecting the tool's components.

**Straight flow path** – Drilling fluids flowing at high velocities can cause cavitation and erosion. The straight flow path through the tool minimizes these problems, and the short length helps reduce the pressure drop along the BHA.

**RockSense<sup>SM</sup>** - Real-time, at-bit, synthetic porosity signature service for bed boundary identification. No additional hardware. Inch-by-inch data.

## Specifications

Dimensions	
Outside Diameter	5" (127.0mm)
Inside Diameter	1.5" (38.1mm)
Length without motor and bit	Gyro steered: 19.2ft (5.9m) Magnetic steered: 33.4ft (10.2m)
Length with motor and bit	Gyro steered: 46.7ft (14.2m) Magnetic steered: 59.4ft (18.1m) (dependent on motor and bit used)
Mechanical	
Max. Operating Pressure	7,500psi (517bar)
Max. Differential Pressure	3,000psi (200bar)
Max. Tensile Rating (@ 80% yield)	50,000lbf (220kN)
Max. Compression Rating	26,000lbf (115kN)
Max. Torque Rating	4,000lb-ft (5,440Nm)
Max. Build Rate	20°/100ft (20°/30m)
Environment	
Max. Operating Temperature	185°F (85°C) (Gyro steered) 302°F (150°C) (Magnetic steered)
Fluid Types	Non-corrosive. All inc air, nitrogen foam and mud
Vibration (continuous)	30g <sub>n</sub> (@10-500Hz)
Vibration (shock)	50g <sub>n</sub> Maximum (0.5ms half sine)
Electrical	
Wireline Conductors	7-conductor (standard) 1-conductor (optional)