

AccuSteer MWD System



The AccuSteer MWD—a premier directional drilling and geo-steering system, provides accurate downhole data necessary to optimize efficient wellbore placement by addressing the application of directional drilling, geosteering and drilling efficiency.

The Ryan AccuSteer™ MWD system has been developed specifically for the unconventional shale plays and is driven by Ryan's patented mud pulsing system. The system has been proven in the roughest drilling environments to reliably provide accurate data for directional drilling and geo-steering applications that require advanced measurements and survey.

AccuSteer's azimuthal gamma imaging improves on existing gamma imaging systems by allowing improved

detection of bed boundaries and formation dip enabling precise wellbore placement. Drilling dynamics such as Weight on Bit (WOB), Torque on Bit (TOB), Bend on Bit (BOB), and Stick Slip Index (SSI) measurements prevent premature BHA failure and improve drilling efficiency. Accurate annular pressure measurements enable real time ECD calculations.

Advantages of AccuSteer

Features	Benefits
No wellsite assembly required	Increases reliability with fewer hands on the tool at the wellsite
Industry's shortest length – 30 ft.	Provides fast and easy BHA makeup, reducing HSE risks
Propagation Resistivity	Identifies water/oil contact and formation boundaries using 3 varying depths of investigation
Azimuthal Gamma Image	Identifies whether a change in gamma resulted from drilling up or down geologic structure
Annulus and Bore Pressure	Increases visibility to downhole pressure dynamics for early kick and cuttings buildup detection and assurance of staying within the pore and fracture pressure boundaries
Drilling Dynamics (WOB/TOB/BOB/SSI)	Improves drilling efficiency and maximizes ROP
Continuous Inclination	Enhances positional awareness, eliminates check shots and results in a smoother wellbore
Shock & Vibration	Measures downhole vibrations to help avoid hazardous drilling conditions before problems arise



RYAN DIRECTIONAL SERVICES

A NABORS COMPANY

On Site. On Time. On Target.

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Accurate and reliable decoding is enabled by Ryan's advanced signal decoding. State-of-the-art sensor technology is applied with advanced packaging techniques to provide surgically precise measurements while still being oilfield tough.

Because AccuSteer has the industry's shortest overall length – 30 ft., it offers improved wellsite handling and BHA control. Both transmitted and additional data is stored in memory for quality control and redundancy. Memory data is analyzed by Ryan experts to ensure quality using Ryan's proprietary diagnostic software.

The Ryan MWD product line is a proprietary family of advanced systems originally developed by Navigate Energy Services, which was acquired by Nabors in 2013,

and represents the latest in technology developed specifically for the unique requirements of land-based drilling applications. These tools are suited for applications where high reliability, precise wellbore placement, and drilling efficiency are crucial for success. This patented technology allows Ryan to provide a unique service to our customers that enables them to cost-effectively drill and accurately hit their targets. Our experienced engineering team and highly skilled field technicians are focused on addressing operator's unique needs and providing the highest level of quality service and customer support in the industry.

Contact us today to experience the Ryan difference.



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