

SWINGS

Q-Borehole seismic positioning

The SWINGS* portable positioning system includes a shock-tolerant SWINGS unit, shown on the left, a navigation display and a keyboard.



The SWINGS seismic navigation and positioning system is used to accurately deploy equipment for surface seismic applications, particularly in shallow water and transition zone environments.

A proprietary Schlumberger technology, the SWINGS system has been updated and customized to add new functionality within the Q-Borehole* integrated borehole seismic system where it is used for source vessel control. SWINGS system capabilities include complex 3D vertical seismic profile (VSP) geometries and seismic measurement while drilling.

Portable and robust, the SWINGS system has a history of field-proven accuracy and reliability. The upgraded navigation and positioning system further extends the capabilities of the Q-Borehole integrated system to optimize all aspects of borehole

seismic, from planning, acquisition and processing through to interpretation.

The new SWINGS system is an extension of tried and tested technology for accurate seismic source positioning, improved quality control (QC) and equipment integration. The extension of this system to the greater Q-Borehole system contributes to a consistent, assured level of total service quality.

The SWINGS system delivers many quality, health, safety and environment (QHSE) benefits, including telemetric file transfer between the source vessel and the rig. This capability allows the vessel to maintain an appropriate distance from the rig. A dedicated helmsman's position display provides a continuous presentation of navigation information at all times, which is particularly important in guiding the vessel in adverse sea conditions.

Application

- Accurate source deployment and positioning for all borehole seismic configurations

Benefits

- Reduced rig time through improved real-time QC
- True firing on target for walk-aways and 3D VSP
- Lower manning requirement leading to reduced HSE exposure
- Q-Borehole seismic positioning service shared with WesternGeco
- Need for vessel to approach rig eliminated by file transfer link
- Single contractor conformance to Schlumberger QHSE standards
- Improved safety through uninterrupted display of helmsman's position information

Features

- Portable, robust navigation system
- Customized for borehole seismic
- Advanced technology for reliability, accuracy and integration
- Twin internal 12-channel global positioning system (GPS) receivers
- Real-time gun-pressure QC
- Dedicated helmsman's display for continuous guidance
- Single provider for integrated borehole seismic services

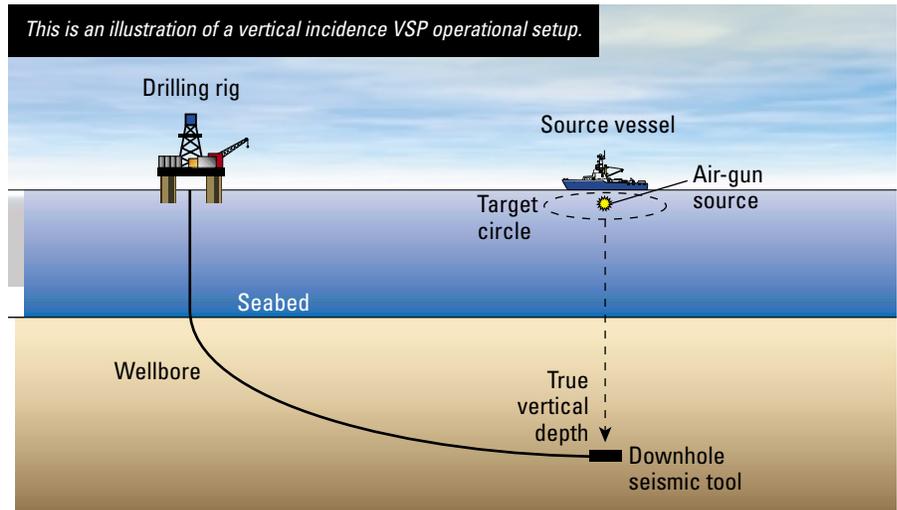


Accurate positioning

The SWINGS system features twin low-noise 12-channel internal GPS receivers. The receivers output positions at a high update rate of 5 fixes/s and accept Radio Technical Commission for Maritime Services (RTCM) format pseudorange corrections from individual stations, thereby allowing a continuous comparison between two receivers using distinct differential GPS reference stations. Submeter GPS accuracy provides source position determination within 3 to 5 m.

Rigside QC and telemetry

The SWINGS system includes an ultrahigh frequency (UHF) telemetry link that continually relays source position, fix quality and other data to the rigside logging unit, where they are displayed graphically on a laptop PC. The source position is passed to the MAXIS* Multi-task Acquisition and Imaging System at every shot for immediate recording with the seismic trace headers. This immediate recording of data eliminates any delays in merging position and seismic data. While off-line, the telemetry link can be used for file transfer between rig and source vessel.



Technical description

The SWINGS system is based on a versatile, robust platform. The SWINGS central processing unit (CPU) houses

- two 12-channel L1 GPS cards
- six RS232/RS422 interface ports
- four input/output closure-sensor channels
- two proprietary input/output system interfacing boards.

System timing is derived from the GPS timing signals for accuracy.

The majority of peripheral equipment is housed in an expansion unit, which includes

- a UHF modem
- a second CPU to drive helmsman's uninterrupted display
- a power supply with high noise immunity
- a pressure-transducer interface for real-time QC of gun performance.

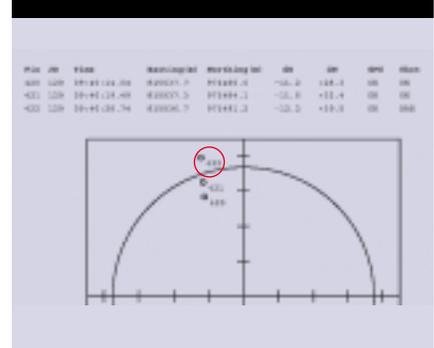
Other equipment and features include

- a high-performance fluxgate compass for heading control
- 100% equipment backup of major components as standard
- WellComp software utility to compute target positions from the well deviation data

Real-time SWINGS display shows shot positions relative to circle of tolerance.



Corresponding SWINGS postplot highlights shot fired outside circle of tolerance.



- GPS quality indicators displayed using International Marine Contractors Association or United Kingdom Offshore Operators Association guidelines.

www.connect.slb.com

SMP-5810

March 2002

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