Surveyor X-4™
The Fourth Generation

Gyrodata's Surveyor X-4™ service provides a new level of reliable performance and precision in wellbore surveying and guidance.

Surveyor X-4™ service sets a new standard for gyroscopic wellbore surveying and guidance. Laboratory tests and extensive field trials have confirmed a ten-fold increase in shock capacity and an overall performance enhancement of thirty percent.

The Fourth Generation

Surveyor X-4™ technology incorporates advancements in downhole sensors, electronics, software modeling and mechanisms to increase resistance to shock and vibration—all leading to significant gains in performance, speed, accuracy and reliability.

Central to the development are a new sensor array and a fourth generation of downhole electronics. The new rate gyroscopic sensor is a ruggedized version of a state-of-the-art inertial guidance sensor, designed and built in-house specifically for the harsh wellbore environment.

Combined with additional shock isolation from a proprietary mechanism—the sensor array now provides an increase in shock resistance of an order of magnitude.

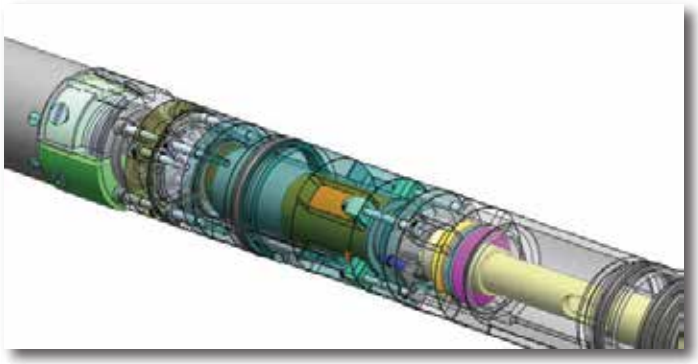
The new single-chassis downhole electronics module, which measures half the size of its predecessor, is also more rugged and reliable with faster and more powerful data processing.

Together, the isolated sensor and new electronics provide a significant reduction in the noise to signal ratio which, in turn, provides greater accuracy in survey measurement.

Performance accuracy has also improved due to the ability to maintain a tight laboratory calibration throughout an operation under vibratory conditions, and new software performance modeling in real-time further adds to data quality.

Features

- High shock rate-gyro sensor and mechanized housing increase reliability, performance and accuracy
- New 4th generation electronics mounted on a shorter, single chassis improve system reliability and provide a higher level of data acquisition accuracy
- Significant overall system reduction in noise-to-signal ratio provides higher accuracy survey measurement
- Completely new Version 4 surface software significantly improves post-acquisition sensor data, calibration processing and quality control procedures to assure more reliable and accurate survey measurement
- Overall, the Surveyor X-4™ brings its higher level of accuracy, speed and reliability to a number of important survey applications and operational configurations



Operating Configurations

Surveyor X-4™ Standard

The standard rate gyroscopic surveyor operates on electric wireline with real-time readout at surface.

Applications

- Single/multishot surveys in drillpipe, tubing, casing, or open hole
- Orientation of directional drilling assemblies, whipstocks, packers, perforating guns, logging tools, geophones and wellheads

Surveyor X-4™ Drop

The Drop surveyor operates on battery power and stores survey data downhole. The tool is released in the drillpipe prior to tripping to take surveys at connections while pulling out. The new ruggedized X-4 can run as a go-devil tool in free-fall instead of having to apply a time consuming pumping regime.

Advantages

- Saves rig-time by running during the trip out of the hole in drillpipe, compared to a normal gyro run on electric line in casing or a battery gyro run on slickline
- Eliminates electric line or slickline and all associated costs. Allows pumping and rotating while being dropped to prevent stuck pipe.
- Has virtually no depth limitation with up to 32 hours of run power and storage for 8,190 survey readings
- No wait at a connection during the trip out to take survey information
- Provides rate-gyroscopic survey accuracy in drillpipe prior to running casing
- Surveys upper casing strings during the trip out in drillpipe

Specifications

1.75"(OD) probe: 150ºC/300ºF, 10K psi
1.80"(OD) high pressure: 150ºC/300ºF, 15K psi
1.875" OD Probe: 150ºC/300ºF, 22K psi
2.06" OD Probe: 260ºC/500ºF, 20K psi
2.5"(OD) Standard pressure barrels: 94ºC/200ºF, 15K psi
3.0"(OD) Small heat shield: 150ºC/300ºF, 15K psi
3.5"(OD) Standard heat shield: 150ºC/300ºF, 15K psi
3.7"(OD) High-temp. heat shield: 260ºC/500ºF, 20K psi
Probe Length/Weight Range: 10-22'/ 30-125kg/66-275lb
Inclination operating range: 0-120º Inc. with pump down capability
Maximum continuous surveying speed: 300'/min.
Accuracy: An industry approved performance model can be provided

Contact 281-213-6300 - www.gyrodata.com