drillteq
services

Geoplex
Drilling Technologies

www.geoplex.com

OUR VISION

To become one of the leading indigenous Oil and Gas service companies in Nigeria and West Africa by 2010.

OUR MISSION

To provide the best value in services for the oil and gas industry in Nigeria and West Africa.

Best value means providing the fit-for-purpose solutions that best meet our clients' criteria and resources through the following:

Maintenance of a keen competitive edge through efficiency, high service quality and good safety record.

Training, motivation and empowerment of the indigenous personnel to maintain top-quality service delivery at all times.

Develop a dominant market presence.

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Geoplex Profile

Geoplex - The fastest growing indigenous Service Company in Nigeria today was established in June 2002 to provide Oilfield Services to the upstream sector of the fast expanding Oil and Gas industry in Nigeria and the West Africa Coastal region. The Government policies aimed at encouraging and ensuring more participation by competent Nigerians in the upstream Oil & Gas Industry has contributed to our growth process.

Geoplex provide high quality Wireline Services and has recently grown into other Drilling Technology services as enumerated below. The aim is to provide the best value in these services to our clients. Great emphasis is placed on quality of services, timely and cost effective service delivery and client relations extending beyond the wellsite site.

Our mission is to provide high quality services in a safe, secure and healthy environment, at value to our clients.

The Board of Geoplex comprises well-placed Nigerians with extensive executive experience, manifesting in the emergence of a preferred service provider

The Management Team comprises persons with direct experience in the provision of Measurements and Logging While Drilling, Directional Drilling, Gyro Surveys and Electric Wireline Logging services, in collaboration with its Foreign Technical Partners.

SERVICES

DRILLING TECHNOLOGY SERVICES (Geoplex Drillteq Trademark)

- Orienteer MWD Systems
- Ultra-Slim/Light MWD Systems
- Sentinel Shock and Vibration Systems
- LWD Services including:
  - Gamma LWD
  - Trim Resistivity LWD
  - Density Neutron LWD
  - Acoustic LWD
- Guardian Pressure During Drilling Tool
- Steerable Motors (available in various hole sizes)
- Non Magnetic Drill Collars, NM Stab Mandrels
- Stabilisers
- Bent Subs
- North Seeking Gyro Single-shot
- North Seeking Gyro Continuous Multishot
- North Seeking Gyro Drop

Other services offered are Wireline services

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TRACK RECORDS

- Shell Nigeria - 3-year BLC (Big Lever Club) contract Wireline Services
- Exxon-Mobil Erha project 2 year contract - Cased Hole Services
- Addax Petroleum 2 year Contract Wireline Logging Services
- SNEPCO Deep water 2 year contract Cased hole Services
- Total Akpo Project 2 year contract Cased Hole Services
- Numerous call-out arrangements: DWC/Platform Petroleum, CONOIL, NPDC/SIPEC, Frontier Oil, NAOC, Moni Pulo, Chevron etc

ALLIANCES

Geoplex, in collaboration with its partners, has developed its services using mainly indigenous personnel, and commands a good share of the market. It is our intent to always deliver good return on investment to all stake-holders; FGN, NNPC, NAPIMS, Oil Producing Companies, Investors, Partners, Shareholders and Process Personnel while being responsible to the host communities.

We parade some of the industry best as our partners:

- Sondex/GE: Production Logging and MWD'LWD Technologies.
- Titan Specialties: Downhole Tools/Accessories
- Owen Oil Tools: Perforating and Pipe Cutting Systems
- DHSOil: North Seeking Gyro Technologies.
- Schlumberger: Open hole Logging.
- Baker: Directional Drilling, LWD/MWD.
- Elmar: Pressure Control System.

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Measurement While Drilling

Pilot MWD System

The low-maintenance Pilot MWD System is designed for simplicity of operation and assembly, and convenient transportation. Built to perform in difficult drilling environments, thePilotMWD System can operate in temperatures up to 150ºC and pressures up to 20,000 psi. The positive-pulse retrievable and reseatable tool accommodates a number of probe configurations, ensuring top performance in a variety of flow ranges in collar sizes from 3 ½" O.D. to 12" O.D. Th is modularity, combined with the Pilot MWD System's rugged and retrievable design, minimizes rig downtime and reduces financial risk.

Pilot MWD System Specifications	
Sensor	± 0.1° Inclination (0°- 180°) ± 1.0° Azimuth (0- 360°) ± 1.0° Toolface (0- 360°)
Pressure	20,000 psi
Operating Temperature	-25°C to 150°C/-13°F to 302°F
Flow Switch	Electronic
Pulse	Positive Pulse / 2 bits/s with SDT compression
Pulse Size	Adjustable
Lithium Battery	21 – 26 V.D.C./Different battery configurations available 200 – 400 operating hours depending on configuration
Tool length	24 feet minimum, depending on battery configuration and presence of gamma.
Shock	1000 g 0.5 mSec
Flow rates	100 to 1200 USGPM (dependent on BHA configuration)
Vibratration	25 G RMS , 0.5 Disp D.A
Drill collar sizes	3½, 4 ¾ ", 6 ½", 8", 9 ½" , 12"
Probe O.D.	1.88"
LCM	40-50 ppb Medium Nut Plug

Pulsers

High torque / high efficiency brushless DC motor design

- The Bottom Mount Pulser is **retrievable and reseatable**.
- Power efficiency provides long battery life.

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Surface Rig Display

- The easy to use touch screen interface unit is robust and compact for optimum drill floor placement.
- Wireless two-way communication between the Pilot MWD System , the rig display and the lap top computer allow efficient survey data monitoring and optimal data handling plus regular tool health check and remaining battery life.
- Optimum tool configuration allows minimum "hand decoding".
- The windows-based, full color graphics LCD screen of the Rig Floor Display can be viewed in normal rig operating conditions.

Pressure Transducer	Digital RS485 or 4-20 mA loop
Touch screen Color Display	10.4", Sunlight readable, Backlight, 20 GB memory
Interface Depth Tracking	Pason / Chimo / Depth wheel / TruVu / manual depth input
Dimension / Weight	14" x 9" x 5" / 12 Lbs
Operating Temperature	-15°C to 80°C / 5°F to 176°F

Directional Module

- High efficiency switching power supply (batt 1 to batt 2).
- Secure , 2 way wireless communication to surface system.
- Highest quality, harsh environment components and construction.
- Downlink to toolface mode.

Internal Connections

- All internal connections in the ***Pilot MWD*** tool are made using the **Sondex Rotary connector**.
- The reliability of the rotary connector significantly improves MTBF.
- Reduces repair costs and dramatically increase the integrity of the downhole connections.

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Oriental MWD Platform

Orienteer is the Geoplex brand name for our Measurement While Drilling (MWD) range of equipment which is renowned for providing simple, highly reliable and functional solutions for all types of directional surveying and steering operation. The transmission system is based on proven patented technology which, according to the transmitter option selected by the customer, can utilize mud pulses or electromagnetic signals to send data to surface.

Standard Transmitter

The Orienteer platform consists of four main components:

Transmitter Assembly

The transmitter sends the encoded data to surface via different means, depending on the option selected. Our sales personnel will be pleased to advise which option is right for the expected operating environment.

- The available transmitter options are negative mud pulse, positive mud pulse and electromagnetic telemetry for 2 /8” to 9 1f O.D. Applications.

Actuator Power Control

The APC receives encoded data from the Survey Electronics Assembly and changes it in order to activate the transmitter an send downhole data to surface.

- 1.895 O.D., 15000psi, 15OC
- 2’ 0.0., 20000psi, 150°C
- For use from 2 7/ to 9 / O.D. applications

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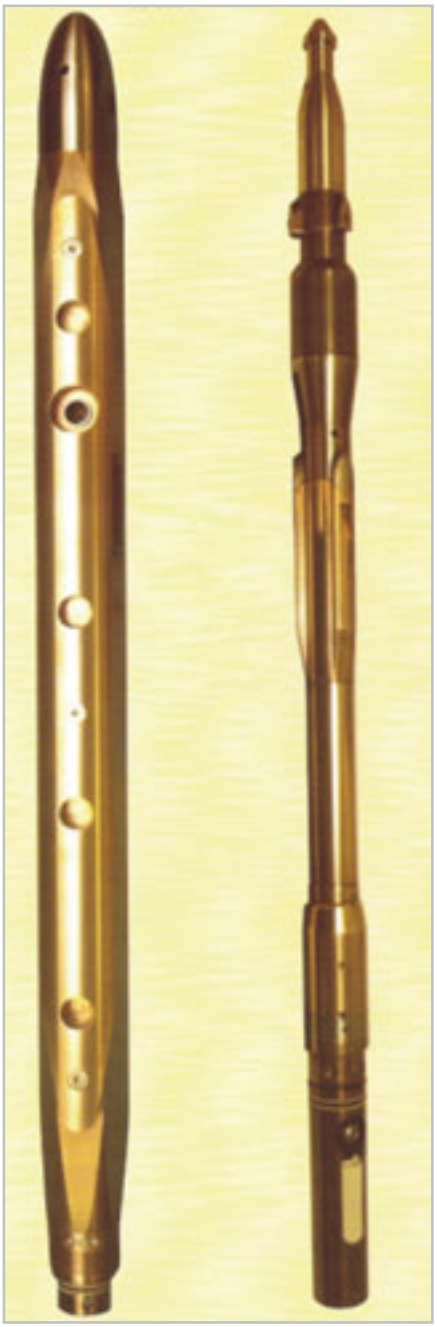

Standard transmitter & Retrievable Positive Pulser

Power Supply Assembly

The PSA supplies power to the complete Survey Electronics Assembly, the Power Controller Assembly and the Transmitter Assembly.

- 1.895° 0.D., 15,000 psi1 150 °C
- 2° 0.D., 20,000 psi, 150°C
- Single D (Standard) 1 M Joules high capacity Lithium Thionyl Chloride battery. Minimum lifetime (continuous transmission) is 100 hrs.
- Double 0 (Optional) 2.4 M Joules high capacity Lithium Thionyl Chloride battery option1 extends battery life for long motor and steering runs. Minimum lifetime (continuous transmission) is 240 hrs.
- For use from 2 ⅞" to 9 ½" O.D. applications.

Survey Electronics Assembly, (SEA)

The SEA contains industry standard tn—axial magnetometers, inclinometers and control electronics. They allow full directional survey and steering operations over the complete inclination range of 0-180°. The SEA is programmable both on surface and downhole.

- 1.895° 0.D., 15,000 psi, 150 'C
- 2" 0.D., 20,000 psi, 150 °C
- For use from 2 ⅞" to 9 ½ " 0.D. applications.

The Orienteer platform features:

- A single tool can be used in all BHA sizes ranging from 2 ⅞" to 9 ½" collar 0.D.
- Simple upgrades allow mud pulse or electromagnetic transmitter operations with the same tool string.
- Client specific Geoplex training enables non-specialists to operate the system efficiently.
- The probe based design makes the system ideally suited to horizontal, re-entry and slim hole drilling. Short radius applications (-.1°/foot build or turn) are possible without specialised equipment.
- The system is small and compact, with all critical tool components being helicopter transportable.
- The system is easy to assemble and test under diverse wellsite conditions.

SEA electronics

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Transmitter Options

Mud Pulse Transmitters

Standard Orienteer Transmitter

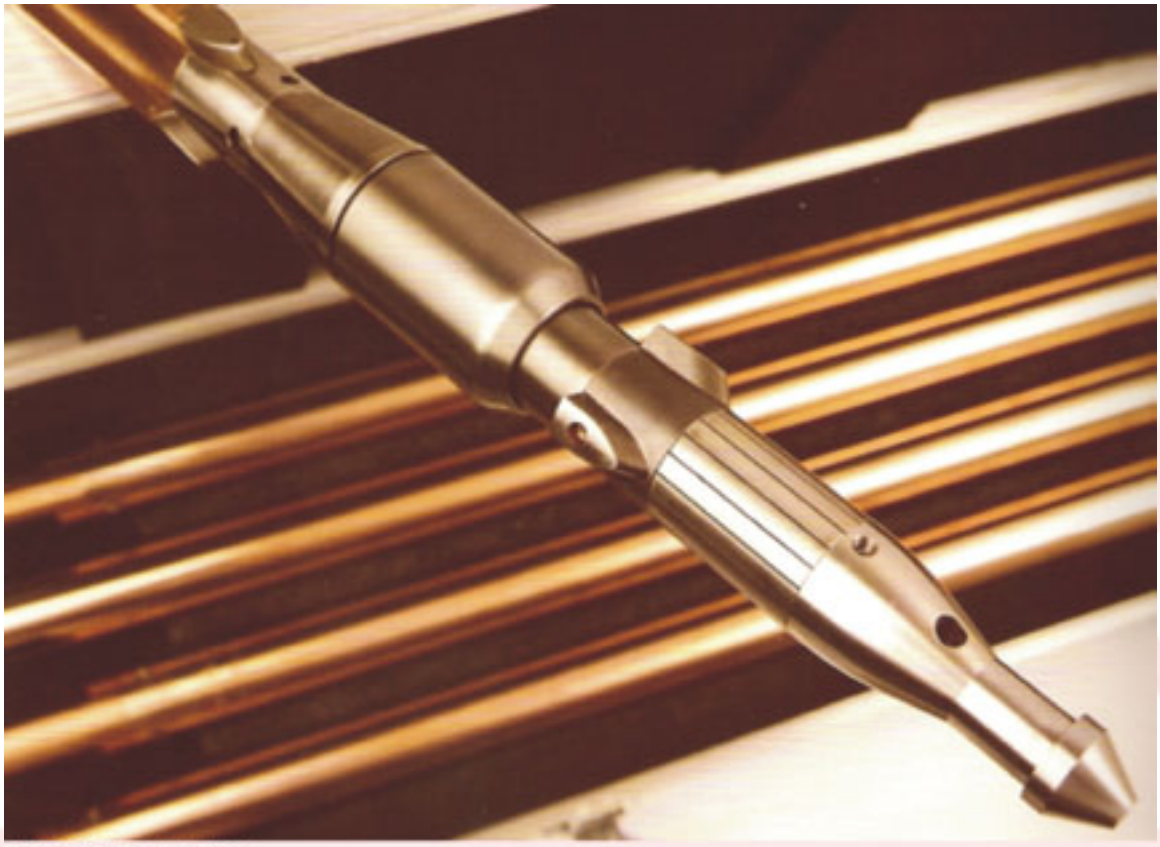
(For 4 ¼" to 9 ½" non-mag drill collar applications.)

The standard Orienteer transmitter generates a sequence of small pressure losses in the drilling fluid in order to transmit the data recorded downhole to surface. These pulses are created by opening and closing an internal valve which, when opened for 500 msec., allows a small amount of drilling fluid to pass from the inside of the drill string to the annulus. The small change in pressure created inside the drill string is detected at the surface as a relatively small (30-SOpsi) drop in standpipe pressure which is known as a negative pressure pulse.

Retrievable Orienteer Transmitter

(For 4 ¼" to 9 ½" non-mag drill collar applications.)

The retrievable Orienteer transmitter generates a sequence r short pressure increments in the circulating system to transmit the data recorded downhole to surface. These pulses are created by partially closing a valve against the mud flow, thereby creating a momentary increase in circulating pressure known as a positive pressure pulse.
The tool design allows recovery by wireline of the entire Directional/Gamma downhole tool string.



Retrievable Positive Pulser

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Slim-Hole Orienteer Transmitter Options

Many oil and gas wells are completed in small diameter casing. A significant proportion of these wells are candidates for re-drilling and re-completion to tap by-passed reserves that have not been reached by the existing well pattern. Until relatively recent times, had been necessary to pull the small diameter casing in order to re-drill these wells.

The Ultra—Slim and Ultra-Lite transmitter options are simple low cost upgrades for standard size Orienteer tools which can steer the cc when exiting from casing windows. Slim-hole Crienteer has helped to successfully drill sidetracks worldwide in these conditions as well as significant horizontal sections which have resulted in maximised production.

Ultra-slim Transmitter with patented Geolink thread

Orienteer Ultra-Lite Transmitter

(For short radius operations with 2 ½“ , 2 ⅞” and 3 ⅛” O.D. applications.)

The Orienteer Ultra-Lite transmitter incorporates the field-proven Orienteer positive pulse technology. The low power consumption allows much longer in-hole life from the same battery pack.

The proprietary Geolink thread has been designed to allow build rates of 1°/ft. and has been tested to 9000ft.lbs torque and B000psi differential pressure.

Orienteer Ultra-Slim Transmitter

(For short radius operations with 3 ½“ drill collar applications.)

The Ultra—Slim 3 ½” transmitter was the first of its kind in the world. Experience with short radius and multilateral applications is extensive and has resulted in a proven and highly reliable system. A description of the tool design and its application in Shengli Oilfield, China, for this purpose can be found in a SPE Technical Paper (5PE48862) which was jointly written by Shengli Drilling Research Institute and Geolink personnel.

There are no up-sets or special stabilisers required, the unique transmitter assembly is integrated into the beryllium-copper sub in order to save space. The Ultra-Slim incorporates negative mud pulse technology into an overall O.D. of 3 ½” in order to save space and maximise the unit’s tensile and torsional strength.

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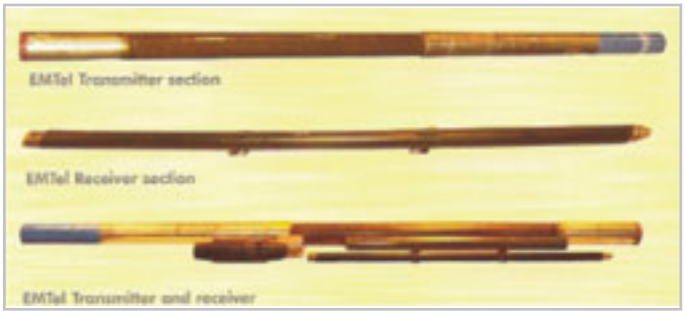
Electromagnetic Transmitter

Orienteer EMTel
(For 4 3/4" to 9 ½" O.D. applications)

Electromagnetic telemetry uses the drill string as a dipole electrode to transmit downhole data to surface. For land operations the receiver electrode antennae is positioned in the ground away from the rig in order that noise from the rig motors does not interfere with the signal.

Geolink's EMTel system is ideally suited for use in under balanced drilling operations regardless of borehole fluid type. EMTel can be configured for a range of drill collar sizes from 4 3/4 - 9 1/3 inches and is fully compatible with any of the Orienteer MWD or LWD sensors.



Rig Floor Display (RFD)

Sentinel Shock and Vibration Monitoring Option

The Borehole Directional Sensor is a combination instrument for measuring the components of the earth's gravitational and magnetic fields with respect to a precisely defined reference frame. The tool is supplied as an integral part of the Orienteer system, but is also available for special applications as required by customers.

Downhole tool electronics: Gamma Ray, Survey Electronics Assembly & Actuator Power Control (T - B)

Borehole Directional Sensor

The Borehole Directional Sensor is a combination instrument for measuring the components of the earth's gravitational and magnetic fields with respect to a precisely defined reference frame. The tool is supplied as an integral part of the Orienteer system, but is also available for special applications as required by customers.

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Directional Sensor

The Geolink Directional Sensor is a robust and compact survey instrument which provides highly accurate measurements of Azimuth, Inclination and Tool Face from the wellbore.

The Geolink Directional Sensor provides measurements for borehole direction and angle using Tri-axial Flux Gate Magnenometers and Q-Flex type Accelerometer packages respectively. A built-in temperature sensor enables appropriate corrections to be made to these measurements. Tool face readings can be obtained from either the magnenometer or the accelerometer packages according to borehole angle and/or operator choice. Local magnetic and gravity field values are recorded for survey quality control purposes.

- Industry Leading Instrument Accuracy
- Robust and ighly Reliable
- Sondex Drilling Division proprietary technology, manufactured in the UK
- Compatible with all Geolink MWD Systems
- Available in both Standard and Slim-holesizes

Measurement	Range	Accuracy
Azimuth	0-360°	+/-0.5°
Inclination	0-180°	+/-0.05°
Tool Face	0-360°	+/-0.5°
Magnetic Field	+/-100uT (+/- 1000mGauss) nominal	+/-0.075uT (+/- 0.75mGauss)
Temperature	0-200°C	+/- 1°C
Environmental		
Temperature	Operating: 0-150°C Survival: -20 - 165°C	
Vibration	20g RMS 30-300 Hz Random, 30g 50-300 Hz Sine	
Shock	1000g 0.5ms, half sine	

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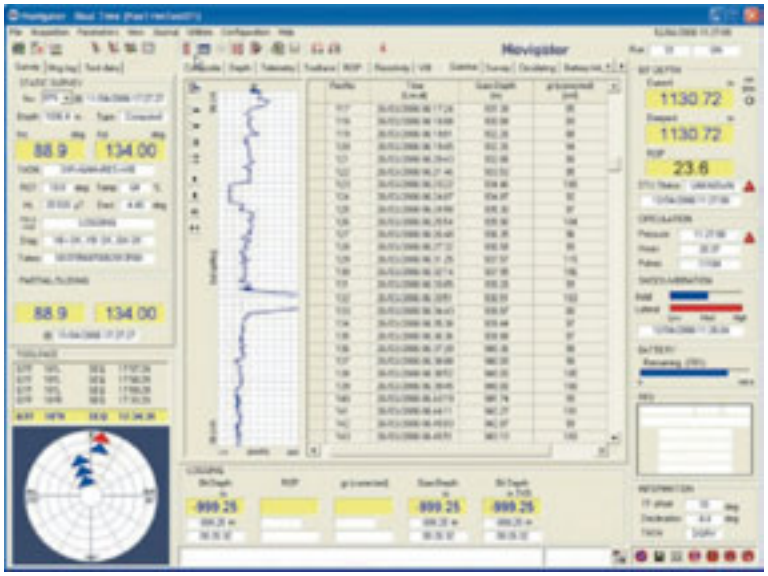
Sentinel Vibrator Sensor



The Geolink Sentinel Vibration Sensor enables continuous monitoring of downhole shock and vibration. Using this information the driller can maximise ROP and minimise bit and string damage.

The Real-Time Screen displays the various data required to monitor the data output from the MWD or LWD system. The screen includes a display of axial and lateral vibration levels (mid height, right) which is mirrored on the Driller's display.

Shock sensors are added as standard to all new and refurbished tools. They consist of two solid state accelerometers, orthogonally mounted in the X (lateral) and Z (axial) axes of the MWD tool, on the Survey Electronics PCB. The Survey Electronics Assembly monitors the shock levels measured by the accelerometers over consecutive periods of 16seconds and categorizes the current level as being either Low (safe), Moderate (warning) or High (damage likely) for both axial and lateral readings. Normally the tool will only transmit readings to surface if the latter two conditions are present - by means of a single pulse at the end of each dynamic transmission. The data is presented graphically to the Driller on the Rig Floor Display - allowing him to monitor conditions and make appropriate changes to drilling parameters (e.g. Changing Weight on Bit or Rotary Speed). Establishing smooth, shock and vibration free drilling helps to optimise penetration rate and prevents damage to the drill string and downhole tools.

- Fitted as standard in all sizes (from early 2006).
- Robust and highly reliable - low maintenance.
- Simple operation - only reports potentially damaging conditions.
- Compatible with all Geolink MWD Systems.
- Graphical representation for easy interpretation•Data can be displayed in Real-Time on the RFD and laptop or plotted against depth for later analysis.
- Compatible with all Geolink MWD Systems
- Available in both Standard and Slim-holesizes

Measurement	Range	Resolution
Shock	+/- 105g	40mg
Environmental		
Temperature	Operating: -40 – 150°C Survival: -65 – 165°C	
Shock (powered)	1000g 0.5ms, half sine	
Shock (Unpowered)	2000g 0.5ms, half sine	

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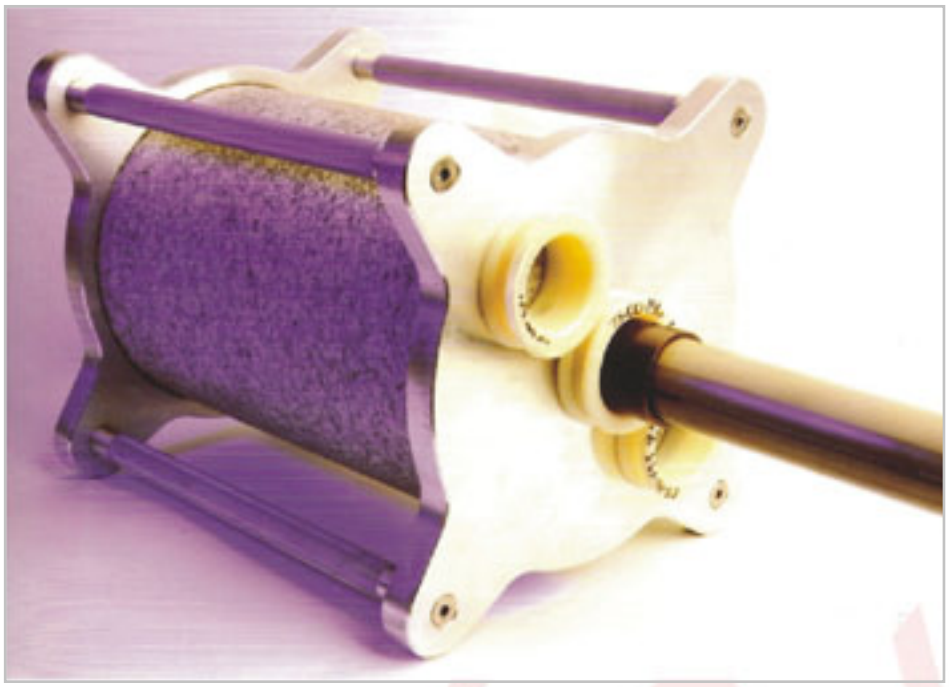
Logging While Drilling

Primary formation evaluation is an essential part of petrophysical modelling for oil companies when assessing reservoir potential. Logging While Drilling (LWD) technology provides operators with real time formation evaluation data during the drilling of a well with sensors that are included in the BHA. Information is sent to surface in real time and the tool simultaneously acquires and stores the data in memory for later download and presentation of high resolution logs. The use of LWD technology becomes of particular importance when traditional wireline measurements cannot be easily attained. It is especially useful as a geo-steering tool in horizontal well drilling in order to land the well accurately, thus maximizing production capacity.

Borehole Directional Sensor

The Orienteer Gamma Ray LWD tool can be attached to the directional tool string below the Survey Electronic Assembly to measure the natural gamma radiation from the formation as drilling progresses. The patented scintillation detector design has been developed to withstand the high levels of shock and vibration which the tool assembly is subjected to during drilling and provides a rugged and reliable measurement. The tools are calibrated to API cards and gamma ray data can be presented in API units.

Standard Ray calibrator & Gamma Ray sub electronics



- Standard tool has the ability to acquire data in real time and memory. The tool memory capacity is in excess of 200 drilling hours (at 16 second intervals).
- High Memory Gamma Tool has the ability to log in both real time and memory (at 8 second intervals) for in excess of 400 drilling hours.

- 1 7/ O.D., 15,000 psi, 150 oC
- 2' O.D., 20,000 psi, 150 oC
- For use from 2 7/8" to 9 ½" O.D. applications.

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TRIM Induction Resistivity LWD Tool

TRIM Resistivity Tool

Geolink's TRIM tool is the only LWD tool in the world that delivers a true induction resistivity log while drilling. Fully tried and tested, TRIM has been commercial for over 5 years and has been operated in a wide range of well conditions, proving its functionality, reliability and ruggedness.

TRIM is an Orienteer MWD plug-in extension option, offered in outside diameters ranging from 4 3/4" to 9 1/3 It is assembled below the Orienteer directional and gamma probes, providing a quality induction measurement as close to the bit as possible in normal drilling assemblies.

The TRIM resistivity measurement matches the industry standard deep induction wireline measurement in depth of investigation, with a thin bed resolution superior to the equivalent medium induction log. The system employs a data-processing algorithm which provides full shoulder-bed and skin-effect correction. Operating at a frequency of 20 KHz, TRIM has the added advantage of providing deeper readings than high frequency wave propagation tools. The main benefit of this is that TRIM can accurately resolve Rt, as it measures the formation beyond the invasion profile. It is also capable of sensing approaching bed boundaries much sooner during geo-steering operations.

TRIM's unique design, modular antennae and electronics assemblies ensure its calibration and maintenance procedures are simple to perform. This makes TRIM a tool that is ideally suited for use in remote areas. It is also easy and cost effective to maintain. Overall, TRIM offers the best solution available in the market today.

Guardian Pressure During Drilling Tool

Guardian PDD is a modular unit that measures annular and drill pipe hydrostatic pressure downhole during drilling. It is fully compatible with the range of Orienteer MWD and surface systems. Acquired pressure data is monitored at surface in real time and also stored in tool memory, allowing the driller and the MWD engineer to respond quickly to cuttings loading in the annulus, water flows, well kicks, etc. It is especially useful for monitoring and controlling ECD during under-balanced drilling operations.

Gaurdian PDD Sensor

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CPR Resistivity Tool

The Compact Propagation Resistivity (CPR) Tool utilises two frequencies (400Khz and 2Mhz), and three transmitterreceiver spacings to provide a total of six resistivity curves at six depths of investigation.

The CPR propagates a magnetic field into the formation at 2MHz and 400Khz, and measures phase difference-based resistivities at three transmitter-receiver spacings to providea total of six resistivity curves at six depths of investigation.

High vertical resolution compensated data is available in real-time and memory for comprehensive and accurate formation evaluation or geosteering applications.

The use of Ultima Labs patented Bore-hole Compensation System results in a shorter tool that offers state-of-the-art borehole compensation resulting in an overall shorter tool.

CPR's unique design allows simple replacement of electronic housings, wear sleeves and antenna shield sections when required.

- Three transmitter-receiver spacings, two operating frequencies (2MHz and 400KHz) - Six Resistivity Curves.
- Patented Depth Compensation System - Shorter overall tool length.
- Unique design - less expensive to own and maintain with no sacrifice to data quality.
- High vertical resolution - accurate formation evaluation capability.
- Standalone or combinable with Geolink and Pilot MWD systems.

Measurement	Range	Accuracy
2Mhz Shallow, Deep and Medium	0.1 to 1000 Ohm.m	+/- 2% (0.2 to 25.0 Ohm.m) +/- 0.8 mmho/m (>25.0 Ohm.m)
400KHz Shallow,Deep and Medium	0.1 to 400 Ohm.m	+/- 2% (0.1 to 10.0 Ohm.m) +/- 2.0 mmho/m (>10.0 Ohm.m)
General		
Memory Capacity	16Mbyte (~200 hours data storage nominal)	
Battery Life	~200 hours (Varies according to formation conductivity)	
Collar Sizes (O.D.)	Nominal 4¾ in (127mm)	5.37in (136mm) at wear bands
	Nominal 6¾ in (171mm)	7.37in (187mm) at wear bands
	Nominal 8in (203mm)	8.5in (216mm) at wear bands
Max Flow Rates Max Dogleg Severity	315 USGPM (19.8 l/s)	Rotating 17°/100ft, Sliding 35°/100ft
	660 USGPM (41.6 l/s)	Rotating 10°/100ft, Sliding 21°/100ft
	1100 USGPM (69.4 l/s)	Rotating 5°/100ft, Sliding 12°/100ft
Environmental		
Temperature	0 to 150°C	0 to 302°F
Pressure	20,000 psi	137.9Mpa

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Gamma Sensor

The Geolink Gamma Sensor uses wireline standard measurement technology in a specially ruggedised assembly to provide an accurate gamma log while drilling.

The Sondex Drilling Gamma Sensor utilises a scintillation counter (NaI Crystal) and a photo-multiplier mounted within a specially designed package which provides protection againstthe high levels of shock and vibration encountered in the drilling environment. The sensor ismounted in the LWD string as part of the Modular Gamma Ray Assembly (MGRA), capableof transmitting real time formation gamma ray information to surface for correlation andgeosteering purposes . It also stores high resolution data downhole for later download atsurface. The MGRA is calibrated against the API standard so that the log can be compareddirectly with wireline gamma logs. Geolink Navigator surface software automatically correctsthe signal for the attenuating effects of the drill collar and tool housing.

- Calibrated to the API Standard - directly comparable to wireline logs.
- AAPI Log Scale - Facilitates correlation and geosteering.
- Ruggedised Design - Highly reliable.
- Sondex Drilling division proprietary technology, manufactured in UK.
- Geolink Navigator surface software provides user friendly interface.
- Slim hole sizes available.

Measurement	Range	Accuracy
Equivalent API Units	3 1/8in DC 0-268 AAPI	+/- 1.5%
	4 3/4in DC 0-371 AAPI	
	6 3/4in DC 0-583 AAPI	
	8in DC 0-822 AAPI	
	9 1/2in DC 0-1,160 AAPI	
Other		
Vertical Resolution	6in /152 mm	
Max. Data Sampling	Every 8 seconds	
Memory Capacity	~240 hours	
Battery Life	~200 hours (Varies according to sensor power level)	
Update Resolution	Real Time	0.5' at 50'/hr - 1.5' at 150'/hr (Avg.)
	Memory	0.2' at 50'/hr - 0.7' at 150'/hr
Environmental		
Temperature	Operating: 0-150°C Survival: -20 - 165°C	
Pressure	15,000 psi (20,000 on request)	
Vibration	20g RMS 30-300 Hz Random, 30g 50-300 Hz Sine	
Shock	1000g 0.5ms, half sine	

Scintillator Counter

Sensor Module

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North Seeking Gyro

SEG's TARGET is an inertial surveying system (INS) especially designed for bore hole applications. It uses modern strapped-down gyros and accelerometers adopted from aerospace applications. In conjunction with advanced signal processing techniques this rugged package which is protected by a pressure housing provides unparalleled performance for all bore hole environmental conditions.

System Characteristics

The TARGET survey tool is made up of three major components – the downhole probe, Surface Unit and Cable Measuring Head. The probe mounts sensors, a processor and support electronics. Sensor outputs are acquired by the downhole processor which performs positioning calculations. Data are transmitted digitally to the surface computer through the wireline which also supplies power on the same single-conductor wireline. The Surface Unit incorporates the system power supply and the host computer that performs data recording, and probe control operations.

The TARGET tool incorporates a variety of innovations, such as:

- Strapped-down gyros and accelerometers
- Advanced sensor error compensation techniques
- Down hole signal processing in a state-of-the art micro-processor
- In-run inertial sensor calibration using sophisticated Kalman filter techniques
- Fuzzy decision logics High-bandwidth long-distance communication between the downhole
- INS and the surface host computer through a single conductor wireline and modems

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Directional Drilling Service

Dump sub

A hydraulically actuated valve assembly at the top of each tool allows the drill string to fill or drain when tools are tripping in or out of the hole. When pumps are on, the valve automatically closes to direct all mud flow through the motor.

Power section

Comprised of a rotor and stator, this sub-assembly operates on an adaptation of the Moineau-type positive displacement hydraulic pump in a reversed application. Non-congruent spirals in the rotor and stator create a seal that traps pockets of drilling fluid in successive stator cavities. Rotors turn by allowing fluids pumped into the motor to pass.

Drive assembly

The drive assembly consists of a drive shaft with a sealed and lubricated drive joint at each end. The drive joints are designed to withstand the high torque values delivered by the power section while creating minimal stress through the drive assembly components. This extends motor life and increases reliability.

Adjustable housing

The adjustable housing can be set at various angles ranging from 0 to 3° to provide a wide range of potential build rates for use in directional, horizontal and reentry wells. A universal joint assembly compensates for the motor's bend and eccentric rotor movement.

Sealed bearing assembly

Commander's sealed bearing assembly contains radial and thrust bearings that transmit axial and radial loads from the bit to the drill string. The entire assembly runs within a sealed, pressure-balanced oil reservoir. All drilling fluids are circulated through to the bit for maximum hydraulic horsepower. Integral blade stabilizers, screw-on stabilizers or offset kick pads.

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Surface System - Data Processing and Display

The Geolink surface system combines powerful signal and data processing with high quality data display and output in a modular package that can easily fit into limited spaces.

Navigator - MWD/LWD Software

Geolink supplies all Orienteer users with a bespoke MWD/LWD software application for Microsoft Windows 2000/XP operating environment. Designed for compatibility with existing Orienteer surface system equipment, Navigator provides a user friendly, easy to use application which takes you from mud pulse (or EM) signal demodulation to final data processing and presentation.

Navigator consists of a suite of modular applications specifically tailored to meet the requirements of Geolink customers, whether operating in basic directional MWD mode or in directional plus LWD mode. Including real time data demodulation and presentation, inventory (equipment) database, parameter control, data editing/processing and log presentation, Navigator provides a simple yet sophisticated tool for your MWD/LWD needs.

Navigator: MWD package for basic directional survey applications.
Navigator Plus: LWD package for directional survey and log data acquisition. Includes log processing and plotting capabilities.

Online Notebook PC

Directional MWD surface monitor

The rig floor display module is an intrinsically safe unit that is continuously updated with the survey data transmitted by the MWD tools in the RHA. The display shows:

- Tool face
- Azimuth and inclination data
- Drill string shock and vibration
- Bottom Hole Pressure (BHP)
- Effective Circulation Density (ECD), for under balanced drilling operations.

System Interface Box

Processes raw tool data before it is displayed on rig floor monitors and computers. It contains signal conditioning and intrinsic safety barrier protection for the Standpipe Pressure Transducer and Rig Floor Display. The SIB has an inbuilt chart plotter, analogue and digital signal filters in order to optimise signal detection. The filter settings and other functions are controlled from a hand—held terminal. It can provide data to external computer systems through the WITS stream output port and when used with Navigator software, is also capable of accepting depth and other data from third party rig instrumentation systems.

Online Notebook PC

A notebook PC is the main control and display for the surface system. It processes data from the SIB and displays pulse information, decoded directional and logging data for the MWD Engineer It also displays depth data from the Depth Tracking Unit (DPIJ) during gamma ray and resistivity logging.

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OEM / Partners

Geoplex main Technical Partner is Messrs. SONDEX of Hampshire, UK who is one of the world's leading manufacturers of tools and systems for Production Logging Services. SONDEX tools are being used worldwide by the three leading Production Logging Services providers. Based on the above and our business strategy, there is a tremendous synergy between SONDEX; whose business is primarily focused on research, design and manufacture of leading edge technology and reliable production tools, and Geoplex Limited, an indigenous company whose primary focus is providing value added Production Logging Services locally.

SONDEX

Leading edge, innovative, cost-effective solutions in MWD /LWD tools and equipment; Production Logging design and manufacturing.

A worldwide reputation with international oil and gas companies with over 20 years experience in the Wireline Production Logging sector.

Company divisions include: Mechanical and Electronics Engineering, Software Development, Technical Services, Sales and Marketing, Machine Shop and Quality Control.

SONDEX tools are used worldwide for major Oil Producing Companies in different countries including: Canada, United States, UK, Norway, Russia, Nigeria, Angola, Australia, Venezuela and Vietnam.

Products and Services include:

- MWD Tools and Equipment
- LWD Tools and Equipment
- Production Logging Tools
- Acquisition System
- Measuring System
- Wireline Units
- Pressure Control Equipment

Other services include:

- Specialty Oilfield Projects
- Software Development
- Machine Shop Services
- Electrical and Mechanical Designs
- Service and Repair Downhole Tools
- A good reference-list.
- Good R & D and track record of continuing development and evolution of software-based solutions and fine downhole tools.

DHSOIL

- World leader in design and manufacture of North Seeking Gyros. Proved industry reputation and reliability.

Geoplex
Drilling Technologies

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