TELEDRIFT INC

Teledrift, Inc. is committed to serving the domestic and international oil and gas industry with in-expensive, real-time surveys tools designed and optimized for vertical well drilling.

Teledrift currently offers three tools that cover the market based on desired measurements and price differentiation. The tools are designed to be robust, user friendly 'stand alone' tools that can be used and operated by the rig personnel with minimal training.

WIRELESS DRIFT INDICATOR

The Teledrift Wireless Drift Indicator is the industryrecognized leader in low-cost drift only survey capabilities. The rugged, mechanical device measures well-bore angle in one-half degree or one degree increments and transmits that information from downhole to the surface electronic recorder via mud pulse telemetry. The first patents on mud pulse telemetry were issued for the Teledrift instrument, and the tool has been continuously improved to its current reliable, and proven state as a cost and time-saving alternative to single shot surveys.



PROSERIES MWD

TELEDRIFT INC.



The MWD tools have applications in the current vertical well markets as:

- · Inclination and azimuth survey tools.
- Monitoring tools in the straight hole performance motor drilling market.
- Transmittable survey tools behind rotary drilling tools.
- Less expensive alternative to full-kit MWD tools when toolface updates are not required.

Teledrift's commitment to new technology has resulted in the ProShot and ProDrift MWD tools. These fully digital, positive pulse Measurement While Drilling tools utilize the state-of-the-art technology to provide inclination and azimuth (ProShot), or inclination only (ProDrift) in real time, on-demand format. The ProShot and ProDrift MWD are designed to improve drilling efficiency and reduce the operator's overall drilling costs.



Teledrift: People Committed to Technical Excellence. 812 S.E. 83rd • PO Box 94395 • Oklahoma City, Oklahoma • 73143-4395 • (405) 631-4882 www.teledrift.com • teledrift@teledrift.com

PROSERIES ADVANTAGES

Economic Advantages

- Eliminate time required to stop drilling and run wireline survey instrument.
- · Increase productive time by keeping bit on bottom drilling
- Reduce the chance of the BHA becoming stuck through minimizing time that the drill string is not moving.
- · Allows more frequent surveys to be taken -
- > Reduces hole walk problems.
- > Pro-actively monitor the well bore and take minor corrective action through changing drilling parameters before major intervention is required.
- > Monitor boundary and lease line situations.
- Eliminate costly trips due to mechanical failure of wireline units.

Other Advantages of the ProSeries MWD

- Operated by the rig crew with minimal training significant savings in personnel costs.
- One tool can adjust for varying conditions over a long drilled section; eliminates the need to change the tool if drilling parameters change.
- Does not have to be assembled at the rig site by trained personnel; can be moved between wells by the rig crew.
- Compact, up-to-date technology design; easily transportable to the rig via pickup truck or other means.
- Small, self-contained surface system sets up easily and out-of-the-way in the rig dog house.
- > Detects, decodes, displays, and stores all survey data without human intervention or corruption.





Teledrift, Inc. is headquartered in Oklahoma City, OK. Our business model incorporates agents supplying the unmanned, rig-operated tools to the end customer from numerous locations; both domestically in the USA and throughout the world.

DISTRIBUTORS

OKLAHOMA

812 S.E. 83rd P.O. Box 94395 Oklahoma City, OK 73143 Ph: (405) 631-4882 Fax: (405) 631-8344 teledrift@teledrift.com

CANADA

Bay 7, 4275 78th Ave. S.E. Calgary Alberta T2C 2Y4 Ph: (403) 203-0840 Fax: (403) 720-5562 info@teledriftcanada.com



TELEDRIFT ENGINEERING

2100 N. State Hwy 360 Suite 706 Grand Prairie, TX 75050-1028 Ph: (972) 352-5300 Fax: (972) 352-5353 mgopalan@teledrift.com

USA AGENTS

OKLAHOMA Deaton Oilfield Instrumentation 404 Loomis Road Weatherford, OK 73096 Ph: (580) 515-3962 danny@okdpm.com

SOUTH TEXAS

Dennis Energy Services, Inc. South Texas Industrial Park #5 Hwy 359 East Laredo, TX 78044 Ph: (956) 712-1114 Fax: (956) 712-4788 Toll Free: 1-888-712-5595 dbdennis@dennisenergy.com or mgomez@dennisenergy.com

LOUISIANA

105 Easement Rd. Broussard, LA 70518 Ph: (337) 837-8320 Fax: (337) 837-5057 teledrift@bellsouth.net

ARGENTINA

Acceso Sur Km. 16.5 Lateral Este y Azcuénaga (5507) Luján de Cuyo Mendoza Ph: (54) 261-498 0473 Fax: (54) 261-498 6324 info@teledriftarg.com

EAST TEXAS

Magnum Drilling Services, Inc. 5423 W. Oak Palestine, TX 75801 Ph: (903) 988-8094 Fax: (903) 731-9262 ben@magnumdrillingservices.com

ROCKY MOUNTAINS

Survey Rentals, Inc. 2242 N. 6 Mile Road Casper, WY 82604 Ph: (307) 234-7121 Fax: (307) 234-9085 sriwyo@aol.com

WEST TEXAS

Gammaloy Holdings, Ltd 2150 W. 38th Street Odessa, TX 79768 Ph: (432) 550-5600 Fax: (432) 363-6114 tildend@gammaloy.com

CALIFORNIA

Control Directional 100 5th Street Isleton, CA 95641 Ph: (530) 662-0233 Fax: (530) 666-4510

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The **Teledrift ProShot MWD** tool is a self-contained, positive pulse, measurement while drilling tool utilized for straight wellbore drilling. The tool itself is ~7 1/2 feet long, and fits inside its own 10 foot long non-mag drill collar. The MWD tool can be shipped to the rig site loaded inside the drill collar, ready to be picked up and loaded into the BHA by the rig crew or trained Teledrift representative.

KEY BENEFITS

TELEDRIFT INC.

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Designed around a new and proprietary mud pulser and a state-of-the-art sensor package, ProShot MWD provides inclination to the nearest tenth of degree and azimuth to the nearest degree.

Combined with a sophisticated, robust, and user friendly surface display, the complete ProShot MWD system is a "stand alone" MWD tool that can be used by the rig crew with minimal training.

- Positive mud pulse telemetry system

 no wireline or other equipment to
 run in the hole.
- Inclination resolution to .1 degrees

 greater hole control through increased survey accuracy.
- Azimuth resolution to 1 degree

 available azimuth w/inclination surveys for greater well control.
- Latest technology digital system with integral system checks and flags – no

guessing if the survey is good or not.

- 50 ppb Medium Nut Plug LCM capacity – usable in poor drilling conditions.
- Small surface system footprint w/touchscreen controls – can be setup in the doghouse with minimum interference.
- Operated by rig crew w/minimal training – robust, reliable system designed for minimum maintenance.
- Low daily operating cost cost effective for the operator.

PROSHOT MWD SPECIFICATIONS

Available Tool Sizes

- 8" 203 mm 6 5/8" REG
- 6 1/2" 165mm 4 1/2" XH
- 4 3/4" 122mm 3 1/2" IF
- **Max Operating Pressure**
- 15000 PSI
- 10.34 MPa
- Max. Operating Temperature
- 150° C
- 302° F
- Flow Rates
- 100 to 800 GPM
- 0.38 to 3.03 m3/min

- Max. LCM Content
- 50 ppb Med. Nut Plug
- Max. Sand Content
- <7% Optimal
- Power Source
- Lithium Battery Pack
- ~600 Hours
- Transmission
- Positive Mud Pulse
- **Inclination Range**
- 0.0° to 49.9°
- **Inclination Resolution**
- 0.1°

• ±0.2°

Inclination Accuracy

- Inclination Repeatability
- ±0.05°
- Azimuth Range
- 0° to 359°
- **Azimuth Resolution**
- 10

Azimuth Accuracy

- ±3° @ (>5° Inclination)
- **Azimuth Repeatability**
- ±0.5°

*Subject to Final Design Specs.



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			Edit	100	100	29 Oct
			Edit	110	110	29 Oct
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(1)			Edit	480	480	3 Nov
T	E		Edit	490 Manual 9	490 Survey	3 Nov Rejected
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PUMP PRESSURE

The Survey Progress Screen provides instructions and feedback to enable easy and effective monitoring of downhole activity and telemetry.

SURVEYS

All logged surveys are visible at any time under the View/Edit Survey Screen. Manual surveys from other sources can also be entered into the system.

	Bit	Survey	Accepted S	Surveys		
	Depth	Depth	 ↑ Time	Inclination	Azimuth	
Edit	90	90	29 Oct 21:55	11.3°	198°	Reject
Edit	100	100	29 Oct 22:03	11.3°	198°	Reject
Edit	110	110	29 Oct 22:12	11.3°	198°	Reject
Edit	230	230	30 Oct 23:24	41.6°	355°	Reject
Edit	Manual	245	2 Nov 21:29	49.9°	102°	Reject
Edit	302	302	2 Nov 21:51	49.9°	102°	Reject
Edit	340	340	3 Nov 10:36	49.9°	102°	Rejert
Edit	350	350	3 Nov 10:41	49.9°	102°	Reject 💥
Edit	480	480	3 Nov 14:32	49.9°	102°	Reject
Edit	490	490	3 Nov 14:37	49.9°	102°	Reject
Add Manual Survey Rejected Surveys Unclaimed Surveys Done						

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The **Teledrift ProDrift MWD** tool is a self-contained, positive pulse, measurement while drilling tool utilized for straight wellbore drilling. The tool itself is =6 feet long, and fits inside its own 10 foot long steel drill collar. The MWD tool is shipped to the rig site loaded in the drill collar and is ready to be assembled into the BHA'by the rig crew or trained Teledrift representative

KEY BENEFITS

Designed around a new and proprietary mud pulser and a state of the art sensor package, ProDrift MWD provides inclination to the nearest tenth (0.1) of degree.

Combined with a sophisticated, robust, and user friendly surface display, the complete ProDrift MWD system is a "stand alone" MWD tool that can be used by the rig crew with minimal training The ProView Surface System detects, decodes, and displays the data for the driller. When the survey is complete, the driller enters in the survey depth and accepts or rejects the survey. Latest technology digital system with interal system checks and flags Positive mud pulse telemetry system Inclination resolution to 1 degrees Battery powered ~ 800 hrs. operating life 302°F maximum operating temperature 50 ppb Medium Nut Plug LCM capacity Small surface system footprint with touch-screen controls. Simple interface - Operated by the rig crew w/minimal training.

Low daily operating cost Improved drilling efficiency. Higher rates of penetration Reduced overall drilling costs.



PRODRIFT MWD SPECIFICATIONS

Available Tool Sizes • 8 = 203 mm 6 5/8' REG • 6 1/2" = 165mm 4 1/2 XH • 4 3/4" = 122mm 3 1/2 IF Max Operating Pressure • 15000 PSI • 10 34 MPa

Max: Operating Temperature

302° F

Flow Rates • 100 to 800 GPM • 0:38 to 3:03 m³/min Max: LCM Content • 50 ppb Med: Nut Plug Max: Sand Content • <7% Optimal Power Source • Lithium Battery Pack

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Transmission • Positive Mud Pulse Inclination Range • 0.0° to 23.0° Inclination Resolution • 0.1° Inclination Accuracy • ±0.2° Inclination Repeatability • ±0.05°



The ProDrift MWD tool has an integral Totco ring on the top of the tool should the rig desire to drop a single shot survey instrument onto the MWD tool.

~800 Hours

PRODRIFT MWD

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- · Latest technology digital system with interal system checks and flags.
- · Positive mud pulse telemetry system
- · Inclination resolution to .1 degrees
- · Battery powered ~ 800 hrs. operating life.
- 302°F maximum operating temperature.
- 50 ppb Medium Nut Plug LCM capacity.
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- · Low daily operating cost.
- · Improved drilling efficiency.
- · Higher rates of penetration.
- · Reduced overall drilling costs.



MWD SPECIFICATIONS PRODRIFT

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- **Power Source**
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- ~800 Hours

Transmission

· Positive Mud Pulse **Inclination Range** • 0.0° to 23.0° **Inclination Resolution** • 0.1° **Inclination Accuracy** • ±0.2° **Inclination Repeatability** • ±0.05°



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PROVIEW SURFACE SYSTEM



The ProView Surface System is a stand-alone driller's display designed to provide the rig personnel all the functionality required to run the ProSeries MWD tools. This includes:

- Intuitive touch screen controls
- Integrated Data Management
- Survey Reports
- · Ability to manually add survey information
- Survey tool management
- Data storage and access capabilities

Intuitive Touch Screen Controls

All functionality of the ProView Surface System is controlled by a color touch screen on the front of the box. The controls and flow of information is designed to be intuitive and user friendly.

Integrated Data Management

The ProView Surface System has built in capabilities to manage the data generated by the surface system and downhole tools. When the well is initiated, a file is generated that is unique to that well. All data collected during that drilling program is stored in that file and can be retrieved by the Well Operator or a trained Teledrift Representative. The driller can determine whether a survey is accepted or rejected, but cannot manipulate the data; thus a permanent record of all activities is generated and kept in the system. Access to job files and survey reports is done with the highest degree of confidentiality, so you can be assured that your data is not accessible to anyone but you.





Survey Reports

The surface system generates survey reports that can be reviewed and downloaded at any time. Survey reports can be downloaded to an external USB jump-drive via a port built into the surface system. They are pre-formatted in an easy to read text file and ready to print out as required.

Ability to manually add survey information

After a well file has been created, the driller can manually add externally generated surveys to the file for inclusion in the reports if desired. The process is intuitive and the screen controls will guide the driller through the data entry.

Survey tool management

The ProView Surface System offers instructions and readouts to enable the driller to be aware of the survey process at any time. When rotation is stopped, and the rig pumps are turned off, the surface system will inform the user of the steps required to obtain a valid survey from the downhole tool. Each step is carefully documented so that the driller does not have to rely on other inputs to obtain the survey.



WIRELESS DRIFT INDICATOR

The Wireless Drift Indicator speeds the drilling process by providing almost instantaneous surface recordings of wellbore deviations, thus eliminating the need for making round trips or running survey tools on wire line into the drill pipe at required intervals.

Stop Pump

INDUSTRY LEADER

LEDRIFT INC.

The Teledrift Wireless Drift Indicator is the industryrecognized leader in low-cost drift only survey capabilities. The rugged, mechanical device measures well-bore angle in one-half degree or one degree increments and transmits that information from downhole to the surface electronic

recorder via mud pulse telemetry. The first patents on mud pulse telemetry were issued for the Teledrift instrument, and the tool has been continuously improved to its current reliable, and proven state as a cost and time-saving alternative to single shot surveys.

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Angle	NUMBER OF SIGNALS						4th Signal		
Range	1	2	3	4	5	6	2nd Sig	inal Z	
1/2 - 3	1/2	1	1 1/2	2	2 1/2	3	1st Signal		
1 - 3 1/2	1	1 1/2	2	2 1/2	3	3 1/2		Start Pump	
1 1/2 - 4	1 1/2	2	2 1/2	3	3 1/2	4			
2 - 4 1/2	2	2 1/2	3	3 1/2	4	4 1/2			
2 1/2 - 5	2 1/2	3	3 1/2	4	4 1/2	5			
3 - 5 1/2	3	3 1/2	4	4 1/2	5	5 1/2	S	ample Chart	
3 1/2 - 6	3 1/2	4	4 1/2	5	5 1/2	6	6+		
4 - 6 1/2	4	4 1/2	5	5 1/2	6	6 1/2	6 1/2+		
4 1/2 - 7	4 1/2	5	5 1/2	6	6 1/2	7	7+		
5 - 7 1/2	5	5 1/2	6	6 1/2	7	7 1/2	7 1/2+		
5 1/2 - 8	5 1/2	6	6 1/2	7	7 1/2	8	8+		
6 - 8 1/2	6	6 1/2	7	7 1/2	8	8 1/2	8 1/2+		
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7 1/2 - 10	7 1/2	8	8 1/2	9	9 1/2	10	2	A A	
DEVIATION ANGLE IN DEGREES									



THE 'TELE' CONCEPT

The Wireless Drift Indicator speeds the drilling process by providing almost instantaneous surface recordings of wellbore deviations, thus eliminating the need for making round trips or running survey tools on wire line into the drill pipe at required intervals.

The Wireless Drift Indicator, which is operated by rig personnel, is a rugged, stainless steel, mechanical device that measures wellbore angle in one-half degree or one degree increments and transmits that information from down hole to the surface electronic recorder via mud pulse telemetry.

Teledrift offers two versions of the Wireless Drift Indicator. The first gives

Available Tool Sizes

10.0" Collar	6.75" Collar
9.50" Collar	6.50" Collar
9.00" Collar	6.00" Collar
8.00" Collar	4.75" Collar
7.00" Collar	

Available Tool Ranges

1/2° - Tool Range 1/2° to 10 1/2° 1° - Tool Range 1° to 9° Wide Angle - Tool Range 1° to 17° pulses equating to $3\frac{1}{2}^{\circ}$. The range of the tool can be adjusted to give you a maximum reading to $10\frac{1}{2}^{\circ}$. The second version is configured to measure in onedegree (1°) increments, with a maximum of seven pulses equating to 7°. The range of the 1° tool can be adjusted to give you a maximum reading to 9°. While on the surface at the rig site, the range on both tools can be quickly field adjusted, to read to greater maximum inclinations.

readings in one-half degree (1/2°)

increments, with a maximum of seven

Teledrift also offers a 'Wide Angle' instrument that measures deviation in one-degree (1°) increments, up to 17°.







Key Benefits

- Less chance of getting stuck – minimize nondrilling time.
- Faster surveys at any depth – not dependent on running instruments on wireline.
- More frequent surveys

 can survey as often as desired.
- Save costly down time

 track your wellbore more precisely utilizing increased number of surveys.

- Resolution to one-half or one degree.
- No hydraulic hook-ups

 simple transducer, cable, surface recorder.
- Permanent record of surveys – hard paper copy of all the surveys.
- Less costly than full MWD pay only for the information that you require.

HOW TELEDRIFT WORKS

The Wireless Drift Indicator consists of a pendulum at the bottom of the tool that moves along a series of graduated stop shoulders, and a signaling plunger at the top that traverses a series of seven annular restrictions to produce pressure pulses in the mud stream. Plunger travel is controlled by a patented coding system so that deviation of the hole from the vertical increases the number of pulses generated. A maximum of seven signals can be generated, each representing an increment of wellbore angle of one (1°) or one-half ($\frac{1}{2}^{\circ}$) degree, depending on the tool being utilized.

