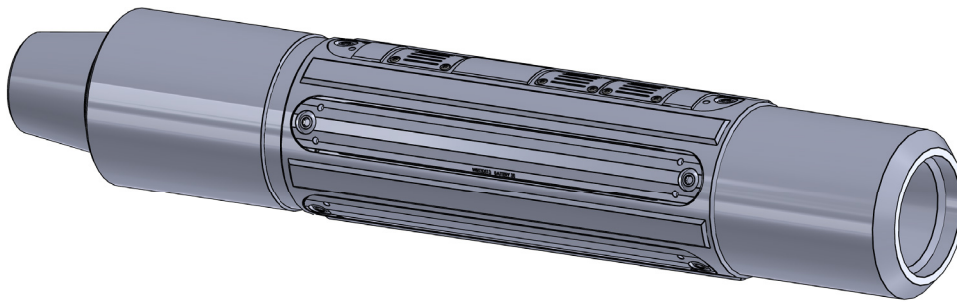


At-Bit Azimuthal Propagation Resistivity & Azimuthal Gamma Tool



PLACE YOUR WELL ACCURATELY WITH THE INDUSTRY'S FIRST AT-BIT TOOL THAT OFFERS BOTH AZIMUTHAL RESISTIVITY AND AZIMUTHAL GAMMA IMAGES.

Make quick well-placement decisions with the most versatile at-bit geosteering technology.

Maximize the value of an asset by performing accurate wellbore placement in response to reservoir lithology variations or formation fluids changes.

Both standard version (150°C) and high-temperature version (175°C) are available.

FEATURES & BENEFITS

- Provides both compensated azimuthal propagation resistivity and azimuthal gamma measurements near the bit from one sub
- Capable of measuring 16 sectors of gamma and resistivity in memory and up to 4 quadrants of each in real time
- Measures both bulk resistivity and total gamma near the bit
- Designed to run below motor or above RSS
- Compatible with virtually any type of muds including oil-base mud

APPLICATIONS

- Stop precisely at desired casing or coring points
- Illuminate thin beds with high-resolution resistivity images
- Detect formation resistivity heterogeneity or fluid contacts via azimuthal resistivity images near the bit
- Navigate reservoirs with 3D bedding variations
- Improve well placement reaction time with less risk of drill-out

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GeoTracker DUO provides near bit azimuthal resistivity and azimuthal gamma, whether in rotating or sliding mode, to give early warning of approaching bed boundaries before the target zone is exited.

GeoTracker DUO provides bulk resistivity and total gamma measurements near the bit which may give early indication of an overpressured zone or lithology change.

GeoTracker DUO, when run below a mud motor, transmits data across the motor, via a field-proven EM short-hop communication system, to the MWD system above the motor for further transmission to the surface in real time.

GeoTracker DUO performs in any type of wells drilled with water-base mud, oil-base mud, or other types of drilling fluids.

TOOL FEATURE HIGHLIGHTS

- Compatible with virtually any type of muds, which makes it a suitable choice to run in complex hole conditions
- Very short length (2.92 ft. or 0.89 m) enables very close sensor-to-bit distance
- High-capacity tool memory to record days of measurement data
- Drop-in EM short-hop receiver module retains MWD tool string retrievability
- Available in 6-3/4 in. or larger collar sizes

SPECIFICATIONS

| | | | |
|---------------------------------|---------------------------------------------------------|---------------------------|-------------------------------|
| Tool Size | 4.75 in. (120.65mm) | 6.75 in. (171.45mm) | 8 in. (203.2mm) |
| Length | 35 in. (889mm) | | |
| Nominal OD/MAX OD/MAX ID | 5.0 in./ 5-1/4 in. / 1.313" | 6-3/4 in. / 7 in. / 2 in. | 8 in. / 8-1/4 in. / 3-1/4 in. |
| Connection Pin Up | 3-1/2 REG (IF Option) | 4-1/2 REG (IF Option) | 5-1/2 REG (IF Option) |
| Connection Box Down | 3-1/2 REG | 4-1/2 REG | 5-1/2 REG |
| Yield Strength | 15,140 lbf-ft. | 29,900 lbf-ft. | 50,000 lbf-ft. |
| Make-Up Torque | 12,000 lbf-ft. | 24,000 lbf-ft. | 46,000 lbf-ft. |
| Max DLS | Rotating | 15°/100 ft. | 8°/100 ft. |
| | Sliding | 30°/100 ft. | 16°/100 ft. |
| Max Downhole Drilling Torque | 12,000 lbf-ft. | 24,000 lbf-ft. | 46,000 lbf-ft. |
| Max RPM (Downhole) | 200 | | |
| Max Flow Rate | 340 gpm | 750 gpm | 1,000 gpm |
| Max Operating WOB | 25,000 lbs | 50,000 lbs | 75,000 lbs |
| Max Sand Content | <1% | | |
| Max Number of Recuts | 4 | | |
| Collar Gap Length | 35 in. (889mm) | | |
| Collar Gap Max OD | 4.75 in. | 6.75 in. | 8 in. |
| Collar Gap Connection | 3-1/2 IF | 4-1/2 IF | 5-1/2 IF |
| Collar Gap Yield Strength | 18,000 lbf-ft. | 34,000 lbf-ft. | 75,000 lbf-ft. |
| Collar Gap Make-Up Torque | 12,000 lbf-ft. | 24,000 lbf-ft. | 58,000 lbf-ft. |
| Receiver Electronics Housing OD | 1.875 in. | | |
| Inclination @ Bit | 0 – 180 degrees / ±0.2 degrees (sliding) | | |
| Range/Accuracy | 0 – 180 degrees / ±0.2 degrees (sliding) | | |
| Measurement Point to Bit | 12 in. | | |
| Azimuthal Res. @ Bit | 0.2 – 2,000 ohmm, 10% (<10ohmm) or 10 mmhos (>10 ohmm) | | |
| Range/Accuracy | 0.2 – 2,000 ohmm, 10% (<10ohmm) or 10 mmhos (>10 ohmm) | | |
| Depth of Investigation | Up to 30 in. (0.76m) | | |
| Azimuthal Gamma @ Bit | 0-1000 AAPI, ±5 API @ 250 API | | |
| Range/Accuracy | 0-1000 AAPI, ±5 API @ 250 API | | |
| Azimuthal Res. & Gamma @ Bit | 16 | | |
| Number of Sectors | 16 | | |
| Measure Point to Bit | 16 in. (0.41m) | | |
| Battery Life | up to 150 hours | | |
| RPM | Max 200 for Minimum Fatigue | | |
| Formation/Mud Resistivity | 2 – 200 ohmm for optimal short-hopping | | |
| Vibration | Max 20 grms, 50 – 100 Hz | | |
| Shock | Max 500 G, 0.5ms (z-axis), 1000 G, 0.5ms (x- or y-axis) | | |
| Max Bend Setting | 1.50° | 1.50° | |
| Max DLS Rotating | 8°/100 ft. | 6°/100 ft. | |
| Max Surface RPM | 60 | 60 | |
| Max Mud Motor RPM | 180 | 180 | |

¹ Do not run any motor stabilization with Geo Tracker sub.