



GEOPHYSICAL LOGGING PROBES

Gyroscopic Deviation

GYRO

MEASUREMENT PRINCIPLE

The probe employs a combination of the precision WellNav DG69 rate gyro unit and accelerometers to measure the probe's orientation to a sighted bearing at the surface (direction) and the earth's gravitational field (inclination). From the sighted surface bearing the probe's direction can be referenced to a known reference such as magnetic north, true north or a local grid north.

The gyro probe continuously transmits data to the surface logging unit during the survey which is monitored by the operator for integrity, tool face direction and probe rotation. **This is not a memory gyro system.**

Ideally suited for:

- Borehole directional surveys within metal drill rods.
- Borehole directional surveys within metallic formation (iron ore, magnetite).

Operations & Calibration:

- Minimum borehole diameter of 50mm.
- Air and/or fluid filled borehole.
- Open borehole, cased borehole or inside drill rods.
- Cement bond logging.

Typically recorded in an uphole and downhole logging direction at logging speeds of 10 m/min or more. Both logging runs are compared, pre-processing, for evidence of gyro drift. Drift correction available.

Final curve units can be degrees north for the direction and degrees from vertical for inclination. Calibration is set by the manufacturer.

Probes can be stacked to the bottom of the probe. Typical combinations are:

- Gamma, magnetic deviation, impeller flowmeter.

SINGLE PROBE RUN

COMBINABLE PROBE STACK



PHYSICAL SPECIFICATIONS

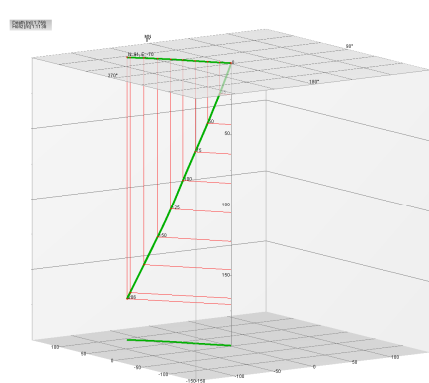
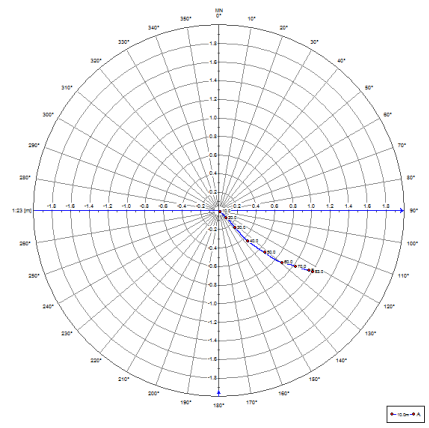
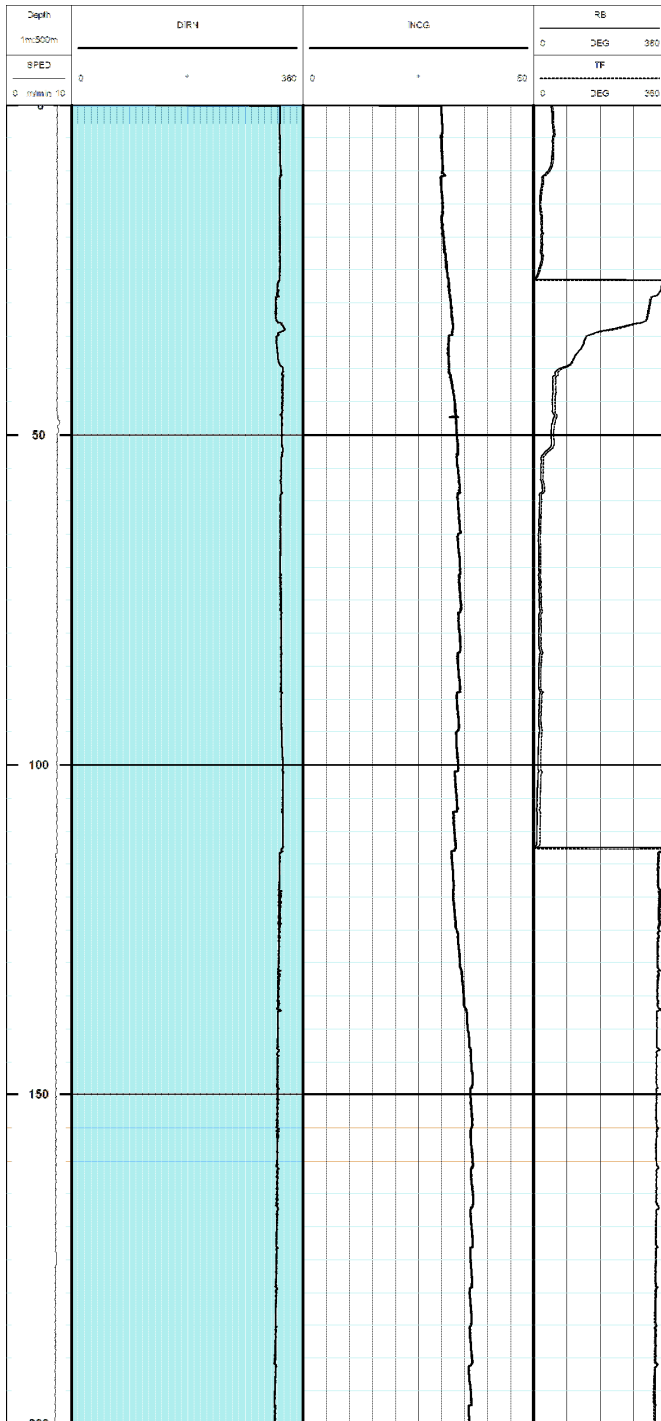
Weight	10.0kg
Length	1.20m
Diameter	45mm
Gyroscope	WellNav DG69 Rate System
Direction Accuracy	+/- 2.0°
Inclination Accuracy	+/- 0.4°
Maximum Pressure	20 MPa
Maximum Temperature	80°C



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Well:
Gyro Survey Report

Company: [] Log Date: [] Max. Dev.: []
 Project: [] Project: [] Date Ref.: GL (UE + On)
 Location: [] Project: []

Hole Top (TVD): 0m Holemark: 215.5' Gauge: FIC
 Hole Bottom (TVD): 200.0m Distance: 192.7m Top (TVD): []
 Hole Bottom (TVD): 170.0m RLS: 5.2' (On) Base (TVD): []

Plan View North Northing Easting

Drift

WB Id	TOP Id	EAST Id	NORTH Id	DEPTH	ROLL Id	INCL Id	DIR Id
00.00	00.00	00.00	00.00	0.00	0.00	0.00	0.00
00.01	00.01	00.01	00.01	0.01	0.01	0.01	0.01
00.02	00.02	00.02	00.02	0.02	0.02	0.02	0.02
00.03	00.03	00.03	00.03	0.03	0.03	0.03	0.03
00.04	00.04	00.04	00.04	0.04	0.04	0.04	0.04
00.05	00.05	00.05	00.05	0.05	0.05	0.05	0.05
00.06	00.06	00.06	00.06	0.06	0.06	0.06	0.06
00.07	00.07	00.07	00.07	0.07	0.07	0.07	0.07
00.08	00.08	00.08	00.08	0.08	0.08	0.08	0.08
00.09	00.09	00.09	00.09	0.09	0.09	0.09	0.09
00.10	00.10	00.10	00.10	0.10	0.10	0.10	0.10
00.11	00.11	00.11	00.11	0.11	0.11	0.11	0.11
00.12	00.12	00.12	00.12	0.12	0.12	0.12	0.12
00.13	00.13	00.13	00.13	0.13	0.13	0.13	0.13
00.14	00.14	00.14	00.14	0.14	0.14	0.14	0.14
00.15	00.15	00.15	00.15	0.15	0.15	0.15	0.15
00.16	00.16	00.16	00.16	0.16	0.16	0.16	0.16
00.17	00.17	00.17	00.17	0.17	0.17	0.17	0.17
00.18	00.18	00.18	00.18	0.18	0.18	0.18	0.18
00.19	00.19	00.19	00.19	0.19	0.19	0.19	0.19
00.20	00.20	00.20	00.20	0.20	0.20	0.20	0.20

Rows are sorted on depth (shallow to deep)

SINGLE PROBE RUN

COMBINABLE PROBE STACK

