CANADIAN MICRO GRAVITY

GT-1A Airborne Gravimeter

The GT-1A airborne gravimeter brings proven design and fully automatic operation to mobile scalar gravity measurement. Intelligent Platform Control combined with continuously recorded wide dynamic range allows the collection of high quality data through periods of turbulence. Proprietary software provides on-site delta-g values for post-flight evaluation.

- Easy installation
- Rugged construction
- Low power consumption
- Rotary or fixed-wing installation
- Automated warm-up & calibration
- Automated operation (no operator on board)
- Optimum data quality in a variety of flight conditions
- Sensitivity 0.1 mGals
- 300 Hz sampling and 18.75 Hz data recording
- Dynamic range: +/- 500 Gals

Fig 1.

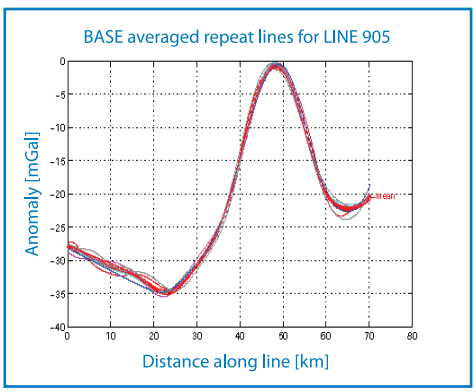

Fig 2. Fixed-wing repeat line RMS Error = 0.5 mGals

The wide dynamic range provides high precision data in calm to turbulent flying conditions; data is acquired through short periods of saturation in extreme turbulence by the automatic application of a reduced order Kalman filter, enabling platform misalignment to be computed and hence controlled; the automatic calibration program computes accelerometer scale factors and errors in perpendicularity between the accelerometer sensitive axis and the platform surface. The GT-1A installation in a fixed wing aircraft is shown in Fig 1 (courtesy of Airborne Petroleum Geophysics Ltd)

The GT-1A is hermetically sealed for protection when operating in environmental extremes. Short lead-ins improve survey efficiency and reduce costs. Filters depending on aircraft speed and flight conditions provide spatial resolution typically ranging from 1.2 kms to 3.5 kms.

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Specifications

Measurement range	9.75 to 9.85 m/sec^2
Dynamic range	+/- 500 Gals
Drift per day (corrected)	< 0.1 mGals
RMS error in gravity anomaly estimation (static mode up to 12 hours on bench)	
RMS error	0.6 mGals (+/- 1 LSD*)
Attitude limits	
roll	+/- 45°
pitch	+/- 45°
Operating temp	+5°C to +50°C
Power	
operating	150 W at 27Vdc
standby	50 W at 27Vdc
Weight (with base)	153.5 kg
Dimensions console	400 x 400 x 600 mm
Dimensions base	600 x 300 mm
Service life	30,000 hours
Error in gravity anomaly estimation (RMS)	
0.01 Hz cut-off	0.6 mGals (+/- 1 LSD*)

*Least Significant Digit
Specifications subject to change

Fig. 3 The GT-1A inertial platform design allows 45 degrees of roll or pitch during measurement. Built-in intelligent filters allow high quality data to be collected during periods when the aircraft motion briefly exceeds specifications of +/- 500 Gals.

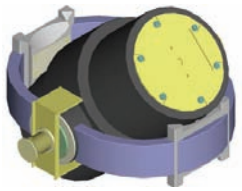

Fig 3.

Test Results (RMS error in mGals)

1. Lab: vibration, Scorsby, elevator	0.2
2. Lab: swing, temp., humidity	0.2
3. Moscow road test dynamic	0.2
4. Vologda fixed-wing repeat lines	0.5
5. Ladoga Lake fixed-wing grid	0.5
6. Kalgoorlie road test stationary	0.2
7. Kalgoorlie road test dynamic	0.3
8. Kalgoorlie fixed-wing intersections	0.6
9. Kalgoorlie fixed-wing grid	0.4
10. Kalgoorlie fixed-wing repeat line	0.5
11. Perth helicopter repeat line	0.6

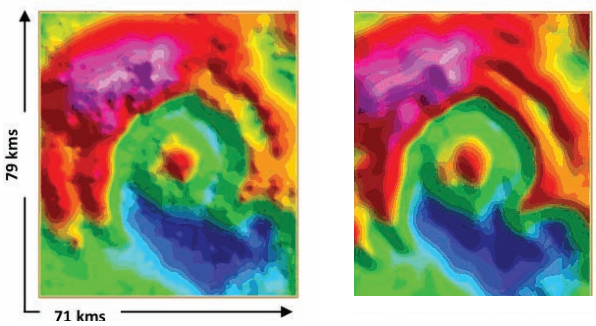

Fig 4.

Fig. 4 Fixed-wing grid survey over the Vredefort Dome southwest of Johannesburg (FAS 2004): NS lines spaced 1 km; left image is ground data courtesy the Geoscience Council of South Africa; right image is GT-1A data.

Fig. 5 To ensure that each GT-1A meets tough specifications, it must pass a variety of rigorous quality control tests.

Fig 5.

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For sales enquiries please contact sales@picoenvirotec.com

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