

Operations report — Gravity surveys of NGMA seismic traverses, 1995

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Abstract

As part of the National Geoscience Mapping Accord (NGMA) TASGO project, Industry Safety and Mines acquired gravity data along the onshore seismic reflection traverses. Repeat readings showed an accuracy of better than 0.1 mgal, and comparison with previously read and precisely levelled stations showed differences of 0.05 mgal or better after reduction of the data.

BASE STATIONS

All base stations used had previously been tied to Australian Geological Survey Organisation (AGSO) Isogal stations and have Isogal65 values. The base stations used were:—

<i>Station</i>	<i>G_{OBS} (Isogal65) (m/sec²)</i>	<i>Line</i>
Tullah	9.8027489	95AGS-T1
Que River	9.8017750	95AGS-T2
Mathinna	9.8025147	95AGS-T3
Tunbridge	9.8031485	95AGS-T4
Ross	9.8031257	95AGS-T4
Ouse	9.8036534	95AGS-T5

Base readings were made at least three times per day.

GRAVITY METER

Sodin meter number 183 was used for all readings. This meter was calibrated on the Hobart calibration range immediately prior to commencement of data acquisition and has a scale constant of 0.1014(5) mgal/scale division. Previous usage has shown this meter to have very good drift characteristics and repeatability.

DATA PROCESSING

All data were corrected for linear drift between base readings. The gravity data were integrated with the height data from the surveyor and reduced to Bouguer anomalies using the 1930 International

Gravity Formula and a Bouguer density of 2.67 t/m³. Terrain corrections were computed to a radius of 21 km using a density of 2.67 t/m³. Station numbers are of the form 9552.NNNN for line 95AGS-T1 and 9553.NNNN for the other lines.

STATISTICS

Line 95AGS-T1 — Pieman Road

415 stations

maximum check difference 0.07 mgal

average maximum check difference 0.03 mgal

Line 95AGS-T2 — Cradle Mountain Link Road

308 stations

maximum check difference 0.08 mgal

average maximum check difference 0.04 mgal

Line 95AGS-T3 — Mathinna

224 stations

maximum check difference 0.07 mgal

average maximum check difference 0.04 mgal

Line 95AGS-T4 — Tunbridge

138 stations

maximum check difference 0.09 mgal

average maximum check difference 0.06 mgal

Line 95AGS-T5 — Osterley

41 stations

maximum check difference 0.04 mgal

average maximum check difference 0.02 mgal

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