Appendix F

Completion Report

Gravity Survey

Zeehan Area, West Tasmania

Leaman Geophysics

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COMPLETION REPORT

GRAVITY SURVEY
ZEEHAN AREA, WEST TASMANIA

for

ZEEHAN ZINC LIMITED

by

Dr D E LEAMAN

July 2, 2007

INTRODUCTION

Gravity data have been acquired along the seismic traverses undertaken by Zeehan Zinc Limited in the Zeehan area of western Tasmania. These traverses radiate from the town of Zeehan along the principal roads; one traverse re-opened the route of the Mariposa tram in the south Zeehan area.

This data links and infills blocks of more detailed coverage in the area, and the more coarsely-spaced regional data accumulated over many years. The acquisition will, in conjunction with already extant geological and aeromagnetic data in the public domain, however, enable independent assessment of seismic interpretations when these become available. Compound, multi-method interpretation is essential in complex geological environments such as present at Zeehan: particularly where a good coverage of deep drilling is absent and ambiguity is inevitable using seismic data in isolation.

The survey was undertaken in April and early May, 2007 by Solo Geophysics based in Adelaide, South Australia, and supervised by Leaman Geophysics.

THE SURVEY

The survey operation was completed with a single crew (Brian Rau, Todd Sandercock) as a combined GPS and gravity survey.

The equipment used included a Leica 1200 dual frequency RTK base station for survey control, a Garmin GPS 60 for roving observations tied with a 4W/25W UHF 467.075 MHz radio link. Optical survey support required Sokisha B1 theodolite and 5 m staff. The resolution of the basic GPS survey component was better than 5 cm horizontally and 3 cm vertically. When observations might lead to errors in excess of 5 cm they were not recorded.

Gravity observations were complete with La Coste & Romberg meter G556 with calibration factors of 1.01388 to 1.01390 for the meter range required. The most recent check calibration was undertaken in November 2005.

The gravity base for the survey was the Tasmania State Tie Station (8451.9011) at the junction of the Zeehan and Murchison Highways (refer Mineral Resources Tasmania for details of station and location). This station has an assigned observed gravity value of 980298.00 mgal, an elevation of 186.12 AHD, and nominal/verified position of 366 000/365994.98 mE, 5362 300/5362 256.83 mN.

Elevation control was based on State survey marks linked to the RTK GPS control station. The fundamental tie and reference was station ST1115 on the hill behind the Zeehan Museum: 362 325.76 mE, 5362 257.81 mN, AHD 219.847, GDA94. Several subsidiary elevation reference points were established beside the routes traversed.

Six traverse segments were observed concordant with the nomenclature used for the seismic survey.

Line TB02-ZA: Murchison Highway (Renison to Zeehan junction). Observation spacing of 50 m, total 239 stations. Data number code 4000 series.

Line TB02-ZB: Mariposa traverse.
Segment from Strahan Road to Little Henty River; spacing 50 m.
Segment from Little Henty River to Zeehan Highway to Queenstown; spacing 25 m.
A number of survey problems were experienced on this traverse due to river crossings, soft ground, dense vegetation and the need to use optical levelling for some parts. Total of 215 stations.

Line TB02-ZC/ZD: Zeehan Highway to Queenstown. Observation spacing of 25 m.
ZC: 2200 number series, 375 stations. ZD: 0000 number series, 240 stations.

Line TB02-ZE: Granville Harbour Road. 3100 number series with spacing of 50 m. 133 stations.

Line TB02-ZF: Trial Harbour Road. Spacing of 50 m, 281 stations.

Total stations observed, 1483.

All gravity observations were taken at ground level and drift corrected using loop corrections followed by correction for tides. Bouguer reductions have been computed by Solo Geophysics using a density of 2.67 t/m^3 and then terrain corrected to a radius of at least 19 km by Leaman Geophysics. The terrain corrections are considered minima and any differences reflect map scales and resolution, or fine details of topographic irregularities very close to the meter. The latter were not described. Terrain corrections are typically less than 0.6 mgal but some exceed 2 mgal.

The density used allows consistent merging with the Tasmanian gravity data base and the reduced data are fully compatible with that data base. With the exception of some terrain corrections, especially those in excess of 0.4 mgal, the new reduced data has a precision better than 0.01 mgal in Bouguer anomaly. Stations with large terrain corrections, or in difficult to assess locations near the meter, may only have a precision better than 0.05 to 0.1 mgal depending upon the particular topographic feature. No special or local slope surveys were undertaken to define or resolve such problems since there is no justification. The data thus accumulated into the State data base is, in general, of better quality than any other elements older than 2002 and comparable with all recent surveys. It may be observed that most such surveys have also been undertaken by companies precursor to, or related to, Zeehan Zinc Limited. This is a high quality data set acquired in difficult terrain.

All data verification and checking was undertaken by David Leaman of Leaman Geophysics and reviewed and inserted in the official data base by Robert Richardson of Mineral Resources Tasmania.

New data, as acquired during the survey reported here, have been blended with the State Gravity Data Base and basic plots provided in image form.
The two images provided present raw Bouguer anomalies (as observed, corrected and reduced), and residual Bouguer anomalies (after removal of crustal trends using the method of Leaman & Richardson, 1989 and Roach *et al* , 1994.

Both data bases (raw Bouguer, residual Bouguer) have been supplied to Zeehan Zinc Limited in digital form for practical use, interpretation and plotting in any form required.

REFERENCES

Leaman, D. E., & Richardson, R. G., 1989. Production of a residual gravity field map for Tasmania and some implications. *Exploration Geophysics,* 20, 180-184.

Roach, M.J., Richardson, R.G., & Leaman, D.E.., 1994. Comparison of regional-residual separation techniques for gravity surveys. *Exploration Geophysics,* 24, 779-784.

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