SURVEY GRIDS:

- **WEST COMSTOCK** **(620 gravity stations read)**
- **AUSTRAL** **(730 gravity stations read)**
- **OCEANA** **((760 gravity stations read)**
- **COMSTOCK MINE AREAS** **(1240 gravity stations read)**

- **WEST COMSTOCK**

The grid:

A view of burnt out north west area with steep slopes on eastern and western sides.

The southern central areas are dense tree cover.

THE SURVEY:

Control Data:

- All raw GPS survey controls are acquired in GDA94 datum (WGS84) and transformed in real time to survey grid references in AGD66 and AMG66 Zone 55 using the Tasmanian AGD66 transformation and geoid files.
- All map presentation is AMG66 zone 55 datum.
- All time references for gravity are EST daylight saving UTM plus 11 hours.
- All height references are AHD

GPS Base station:

- See base locations

Gravity sub base:

- A gravity sub base #222222 was located on the track below the GPS station high point. This was used as a local control to monitor of drifts with intermediate tie controls also used due to steep nature of this area.
- Location: 222222 356107.52E 5361255.50N 358.90m
- Observed gravity: 980269.92 milligals

Survey Lines:

- Lines were surveyed at 25m station intervals east west and 50m line intervals north south between 355000E to 356000E when access permitted.
- The northern grid area was relatively flat in the central section with steep hills and slopes on eastern and western flanks.
- Fires had burnt out some vegetation but creeks and gullies retained burnt vegetation and this was very difficult to negotiate on the steep slopes.
- Periods of heavy rains caused the local creek to flow with strength and depth and was not negotiable in these times.
- Steep slopes were not negotiable in the wet and fine weather dictated access to this area.
- A grid map shows extent of the proposed survey.

Gravity Survey:

- Gravity stations were located by RTK GPS in real time in the appropriate datum 25m station intervals along lines.
- All stations were given a unique six figure ID
- Comstock West Grid had prefix of 2, eg 200001 as starting number
- Additional survey points were taken to map significant terrain and not used by gravity readings.
- Readings were taken in loops from a control station, the loop duration dependent on access and terrain elevation.
- Steep slopes required some agility to read the meter without incident.

- All meter readings were observed at ground level.
- Reading points were close to the assigned 25m station interval except when culture prevented access to this point or along bush tracks.
- Strong northerly winds on some occasions almost blew the meter from the dish on hill tops and this required a choice of access on these days.
- Additional delays occurred when some periods of seismic activity predominated on the fine sunny days when optical levelling was chosen as the task to complete work in the dense growth areas.

- The steep slopes in this area favoured dry weather access and not full wet weather equipment.

- In dense vegetation areas positioning by GPS only was available and height controls established by optical level from GPS height control points.

GPS Data Processing:

- RTK GPS positioning at each gravity station was recorded in the GPS memory in GDA94 datum as raw data in addition to real time display in AMG66 zone55.
- This data was then transformed again to the required datum and transferred to a memory card for computer access.
- Format was Easting Northing Elevation and satellite elevation position error 0.00 to 0.05m
- No post processing was required with this data set.

Gravity Data Processing:

- All gravity stations were given a unique six digit ID
- Gravity data was recorded in loops from a control station, the field measurement being a relative gravity measurement referenced to the base station control.
- Gravity data was recorded at each station in instrument divisions.
- The time of measurement was recorded in EST daylight saving or UTM plus 11 hours.
- A Solo program combined the common GPS point ID to the gravity station point ID as these were stored in two separate instruments.
- This data set was then processed to produce a tidal corrected data set of instrument readings to check repeatability of stations before further processing.

- Longmans' formulae was used for the calculation of tidal changes at the local time and location.

CLIENT: Zeehan Zinc
AREA: Zeehan Tasmania
GRID: Comstock North
ROTATION= 0.0000 MERCZONE=55 CALIB.FACTOR = 1.01390
BASE # 01;GRAVITY:9803101.400;EAST=xxxxxx ;NORTH=xxxxxxx : Motel Base
BASE # 02;GRAVITY:9802980.000;EAST=xxxxxx ;NORTH=xxxxxxx : Highway Base
LAST BASE
LOOP:09;METER:556;DATE:270306;OPERATOR:B.RAU
LINE Line
LINE Line
000000.00 000000001. 3825.15 839 000.00 86 0.017 01 3825.17
356107.52 5361255.50 3785.42 1019 358.90 86 0.082 222222 3785.50
355524.48 5361650.54 3808.15 1116 235.45 86 0.106 200196 3808.26
355399.24 5361650.11 3803.96 1136 255.53 86 0.109 200709 3804.07
355374.82 5361649.76 3803.32 1140 258.68 86 0.111 200710 3803.43
355349.92 5361649.57 3801.56 1146 266.85 86 0.111 200711 3801.67
355324.28 5361649.89 3800.45 1151 271.95 86 0.111 200712 3800.56

Format:
east, north, meter value, time, elevation, julian date, tidal correction, station ID, tidal corrected meter value.

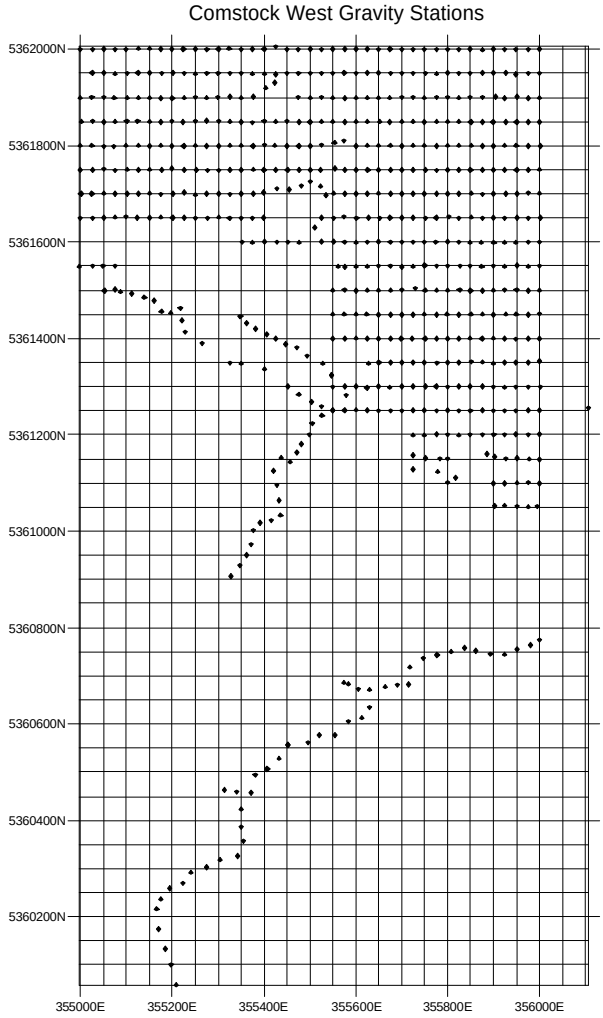
- This final data set was processed to produce the following example result.
- This includes instrument drift at base, daily drift, latitude and Bouguer calculation.
- The Observed 65 value is a drift corrected tie to a base station with a recorded AGSO Isogal65 value.
- The final calculations are derived by the standard AGSO Isogal65 formulae.
- Only a single Bouguer density of 2.67 gms/cc was required to be calculated and terrain corrections for this survey are by consultant Dr. David Leahman.

pegID	Observed65	Elevn	Lat66	Long66	AMG_Est66	AMG-Nth66	F/air	D 2.67	Zone
222222	980269.82	358.90	-41.887396	145.265628	356107.52	5361255.50	31.56	-8.60	55
200001	980274.11	339.03	-41.887423	145.264323	355999.29	5361250.29	29.71	-8.23	55
200002	980274.87	335.18	-41.887416	145.264031	355975.08	5361250.54	29.28	-8.22	55
200003	980275.22	333.05	-41.887417	145.263723	355949.56	5361249.98	28.98	-8.29	55
200004	980276.42	327.42	-41.887411	145.263423	355924.64	5361250.06	28.44	-8.20	55

- Final archive data format is then

pegID	AMG_Est66	AMG-Nth66	Elevn	Observed65	Terr	D2.67	D2.67T	GDA66East	GDA66North	F/Air	Zone
200001	355999.29	5361250.29	339.03	980274.11	1.54	-8.23	-6.69	-41.887423	145.264323	29.71	55
200002	355975.08	5361250.54	335.18	980274.87	1.40	-8.22	-6.82	-41.887416	145.264031	29.28	55
200003	355949.56	5361249.98	333.05	980275.22	1.25	-8.29	-7.04	-41.887417	145.263723	28.98	55
200004	355924.64	5361250.06	327.42	980276.42	1.11	-8.20	-7.09	-41.887411	145.263423	28.44	55
200005	355899.39	5361249.98	319.49	980278.19	0.96	-7.99	-7.03	-41.887408	145.263119	27.77	55
200006	355874.88	5361250.46	318.45	980278.35	0.99	-8.03	-7.04	-41.887399	145.262824	27.61	55

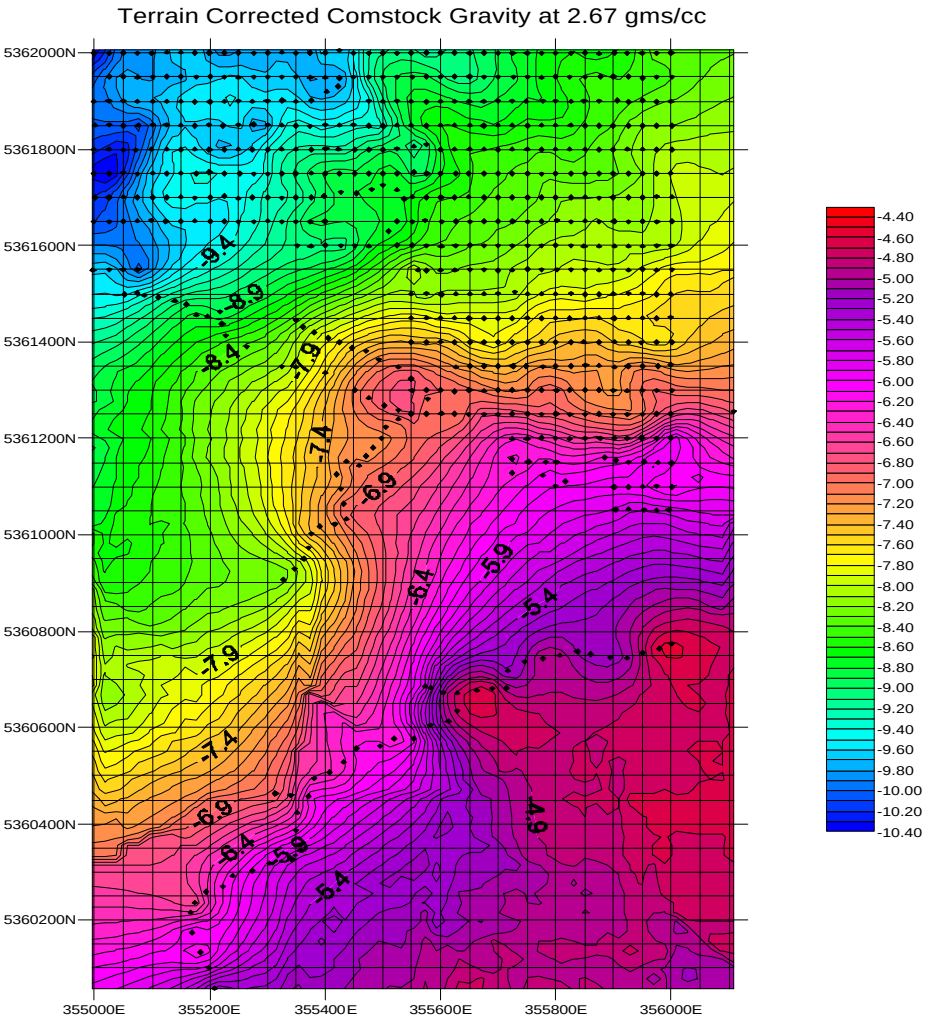
Grid stations map:



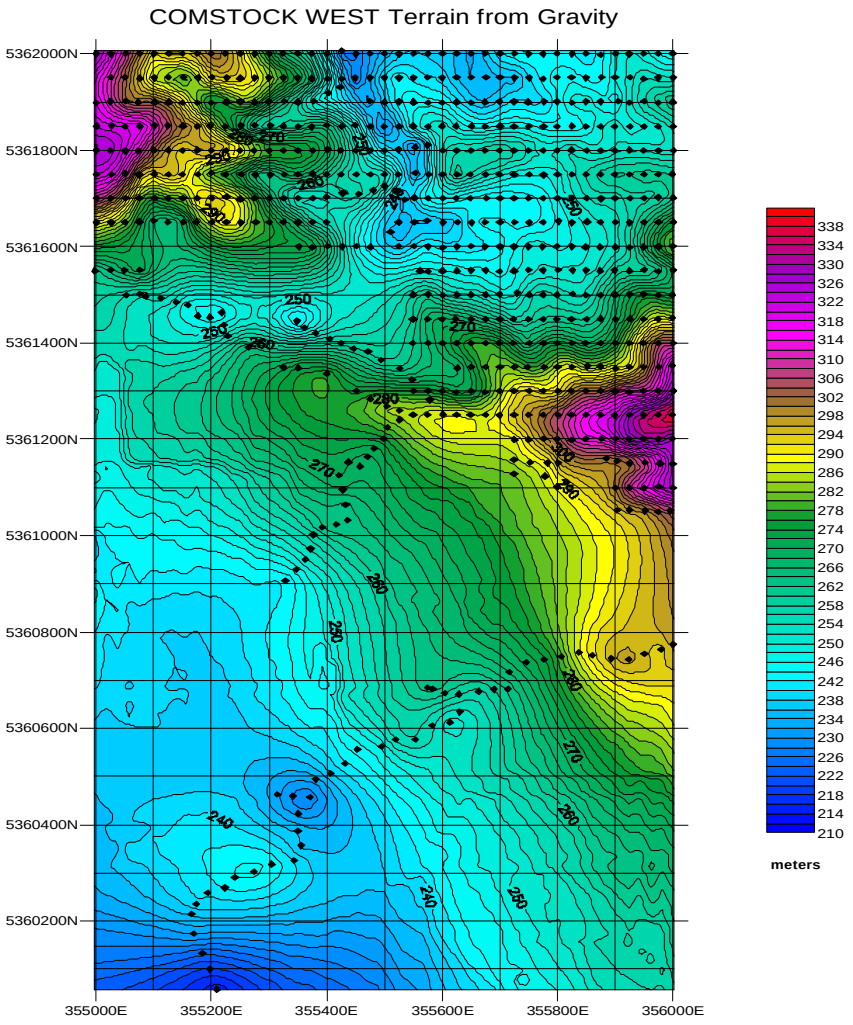
Additional stations were not completed due to survey direction.

The tracks in the southern and western forest required optical levelling as the GPS could not acquire satellite resolution to resolve accurate heights. GPS was used for horizontal locations and optical controls were tied to GPS elevations along the line when resolution was available.

Gravity Data



Solo Geophysics & Co 3A McInnes Street Ridleyton, South Australia 5006 Tel: 08 83468277: email sologeophysics@aol.com



Solo Geophysics & Co 3A McInnes Street Ridleyton, South Australia 5006 Tel: 08 83468277: email sologeophysics@aol.com

- **AUSTRAL**

The grid:

A view from south east grid location.

THE SURVEY:

Control Data:

- All raw GPS survey controls are acquired in GDA94 datum (WGS84) and transformed in real time to survey grid references in AGD66 and AMG66 Zone 55 using the Tasmanian AGD66 transformation.
- All map presentation is AMG66 zone 55 datum.
- All time references for gravity are EST daylight saving UTM plus 11 hours.
- All height references are AHD

GPS Base station:

- See base locations

Gravity sub base:

- A gravity sub base #777777 was located on the track above smelter site. The GPS station was at a higher point on old smelter foundation. This was used as a local control to monitor of drifts with intermediate tie controls also used due to steep nature of this area.
- Location: 777777 363050.87E 5358329.86N 195.77m
- Observed gravity: 980305.72 milligals

Survey Lines:

- Lines were surveyed at 25m station intervals east west and 50m line intervals north south between 362400E to 3637500E when access permitted.