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EL 3397, EL 3398 / 4598, EL 3399 / 4599, EL 3400 / 4600 AND EL 3415 / 4651

YELTACOWIE, HESSO, CHARLINGA, BOWEN HILL AND KANGAROO BLUFF

JOINT ANNUAL REPORTS AND JOINT FINAL REPORT TO LICENCES' SURRENDER, FOR THE PERIOD 16/8/2005 TO 14/2/2014

Submitted by
Uranium One Australia Ltd
2014

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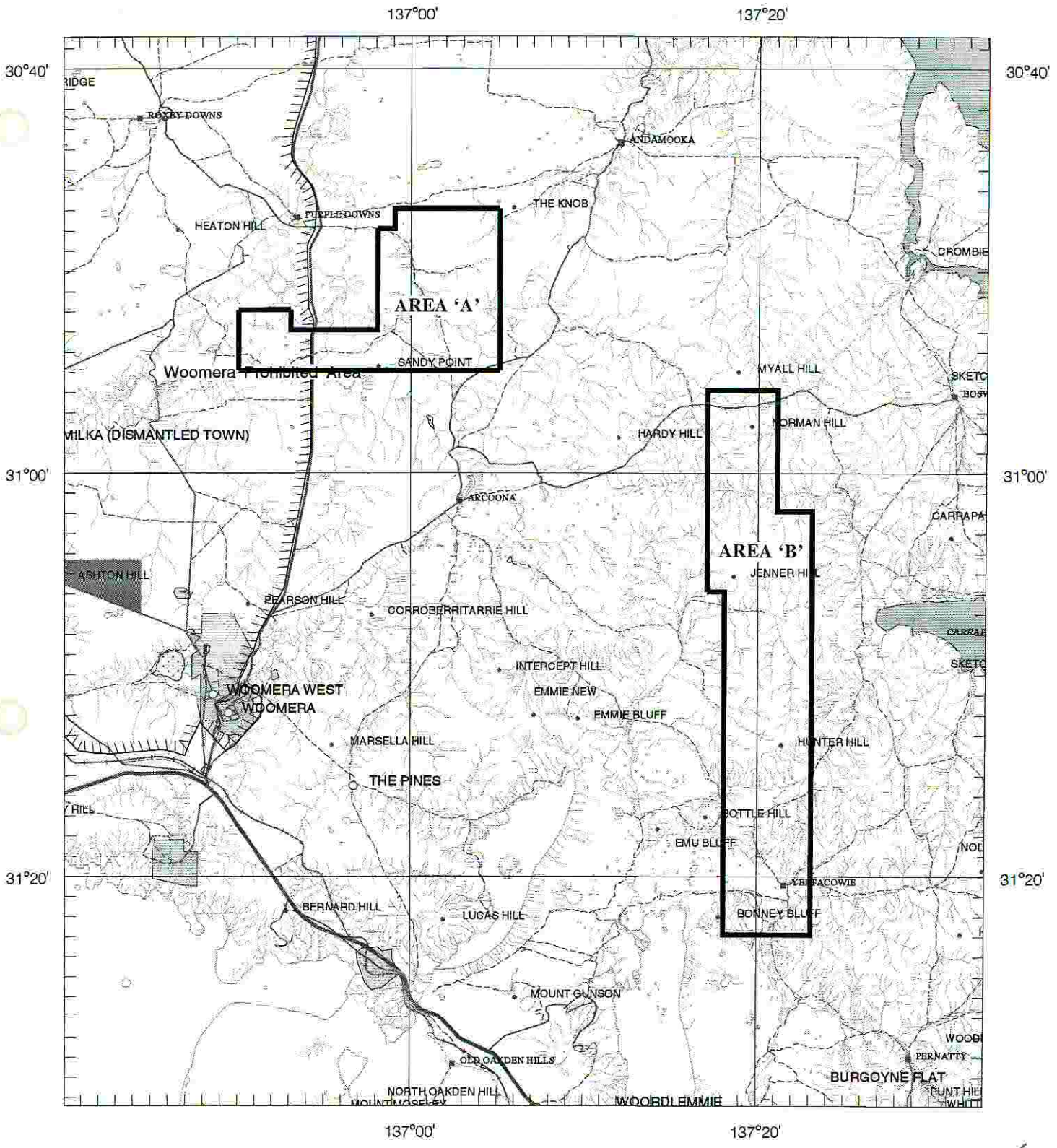
Government of South Australia
Department of State Development

SCHEDULE A



APPLICANT : **SOUTHERN CROSS RESOURCES AUSTRALIA PTY LTD**

FILE REF : **907/04** TYPE : **MINERAL ONLY** AREA : **609** km² (approx.)

1:250000 MAPSHEETS : **ANDAMOOKA TORRENS**

LOCALITY : **YELTACOWIE AREA - Approximately 140 km north of Port Augusta**

DATE GRANTED : **19-Aug-2005** DATE EXPIRED : **18-Aug-2006** EL NO : **3397**

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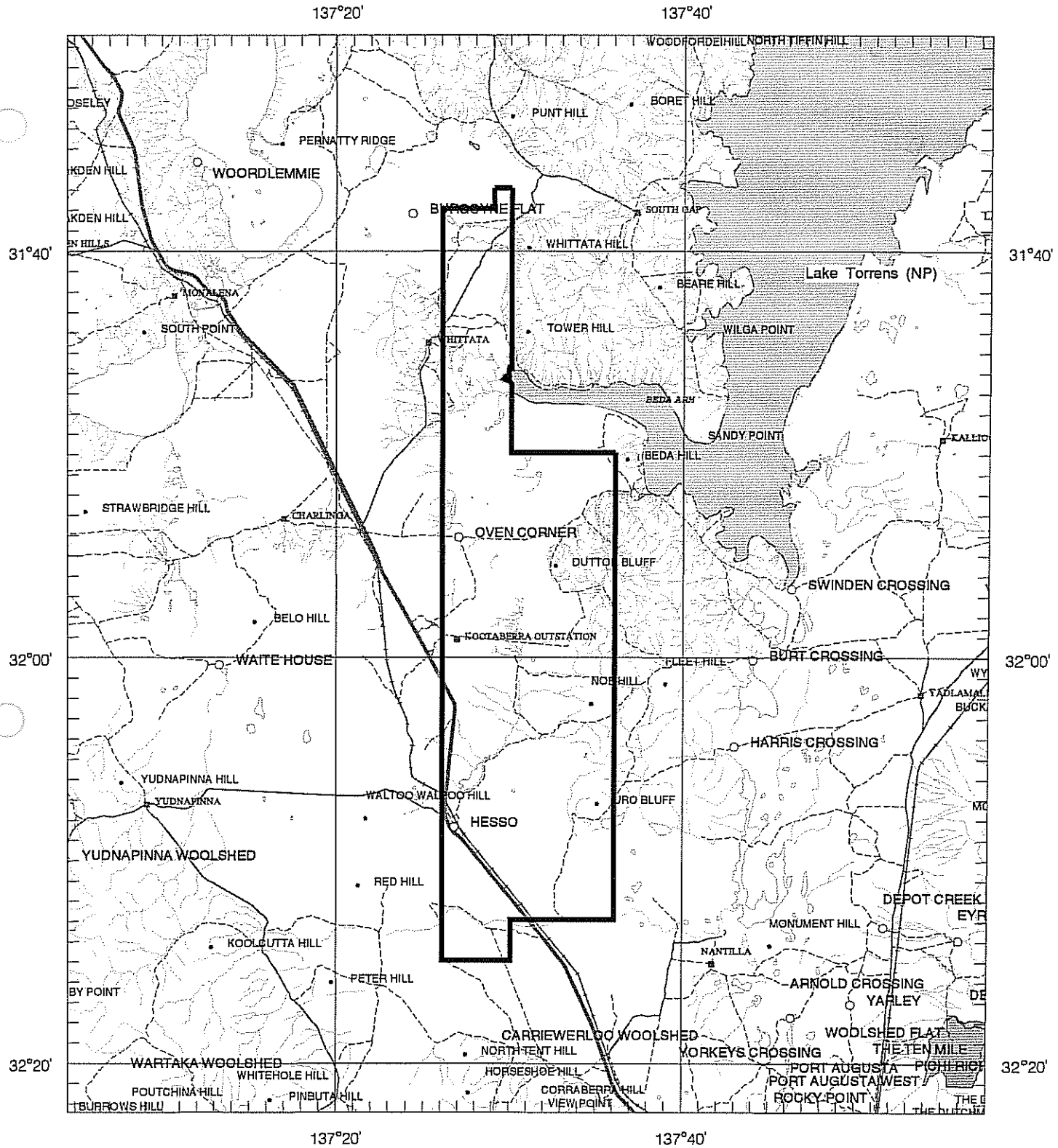

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LICENCE GRANTED IN : DATUM AGD66

GDA GEOCENTRIC DATUM OF AUSTRALIA

APPLICANT : **SOUTHERN CROSS RESOURCES AUSTRALIA PTY LTD**

FILE REF : **909/04** TYPE : **MINERAL ONLY** AREA : **836** km² (approx.)

1:250000 MAPSHEETS : **TORRENS PORT AUGUSTA**

LOCALITY : **HESSO AREA - Approximately 70 km NNW of Port Augusta**

DATE GRANTED : **19-Aug-2005** DATE EXPIRED : **18-Aug-2006** EL NO : **3398**

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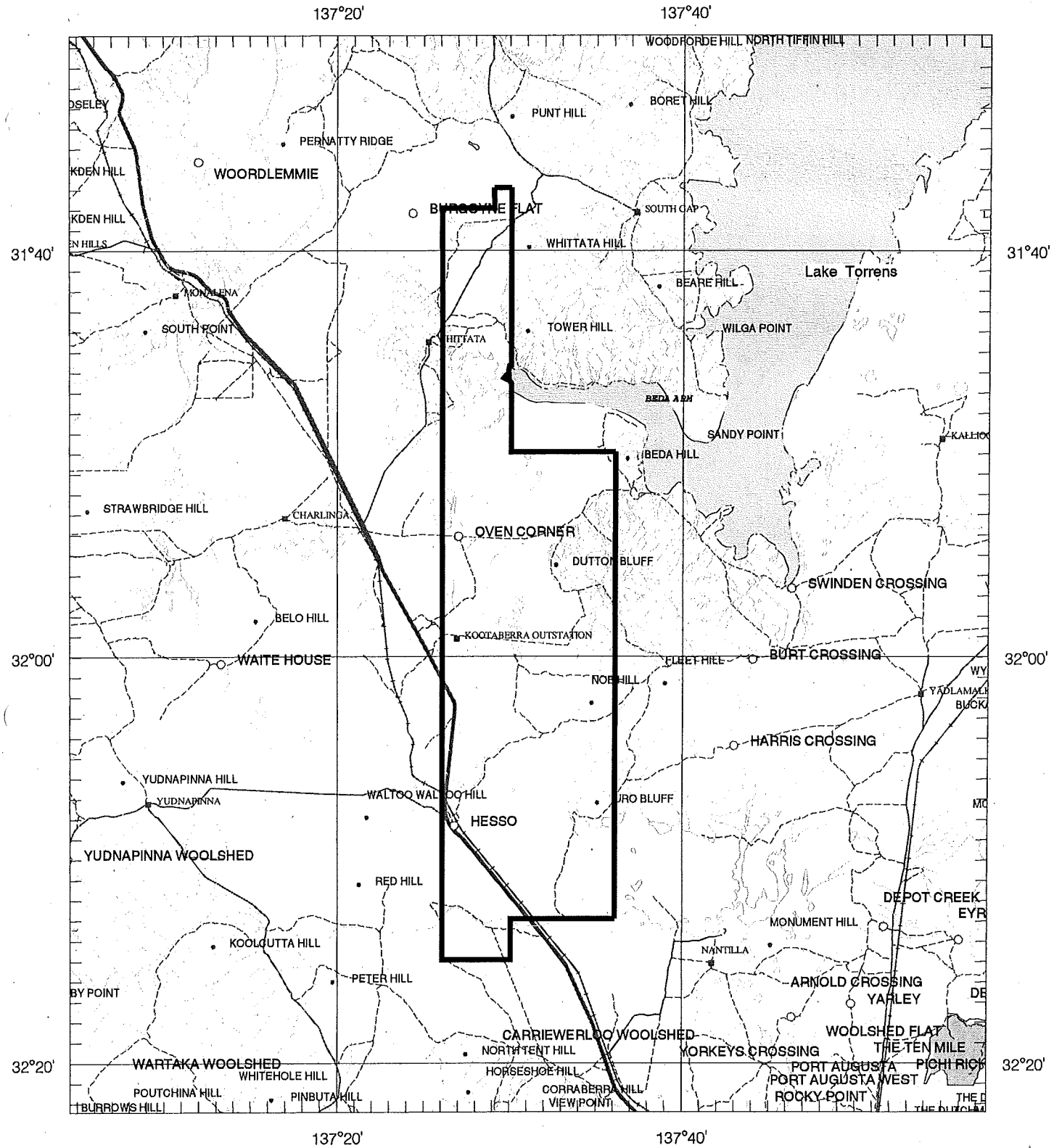

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LICENCE GRANTED IN : DATUM AGD66

GDA GEOCENTRIC DATUM OF AUSTRALIA

APPLICANT : **URANIUM ONE AUSTRALIA PTY LTD, MITSUI & CO URANIUM AUSTRALIA PTY LTD**

FILE REF : **187/10** TYPE : **MINERAL ONLY** AREA : **836** km² (approx.)

1:250000 MAPSHEETS : **TORRENS PORT AUGUSTA**

LOCALITY : **HESSO AREA - Approximately 70 km NNW of Port Augusta**

DATE GRANTED : **08-Nov-2010** DATE EXPIRED : **07-Nov-2012** EL NO : **4598**

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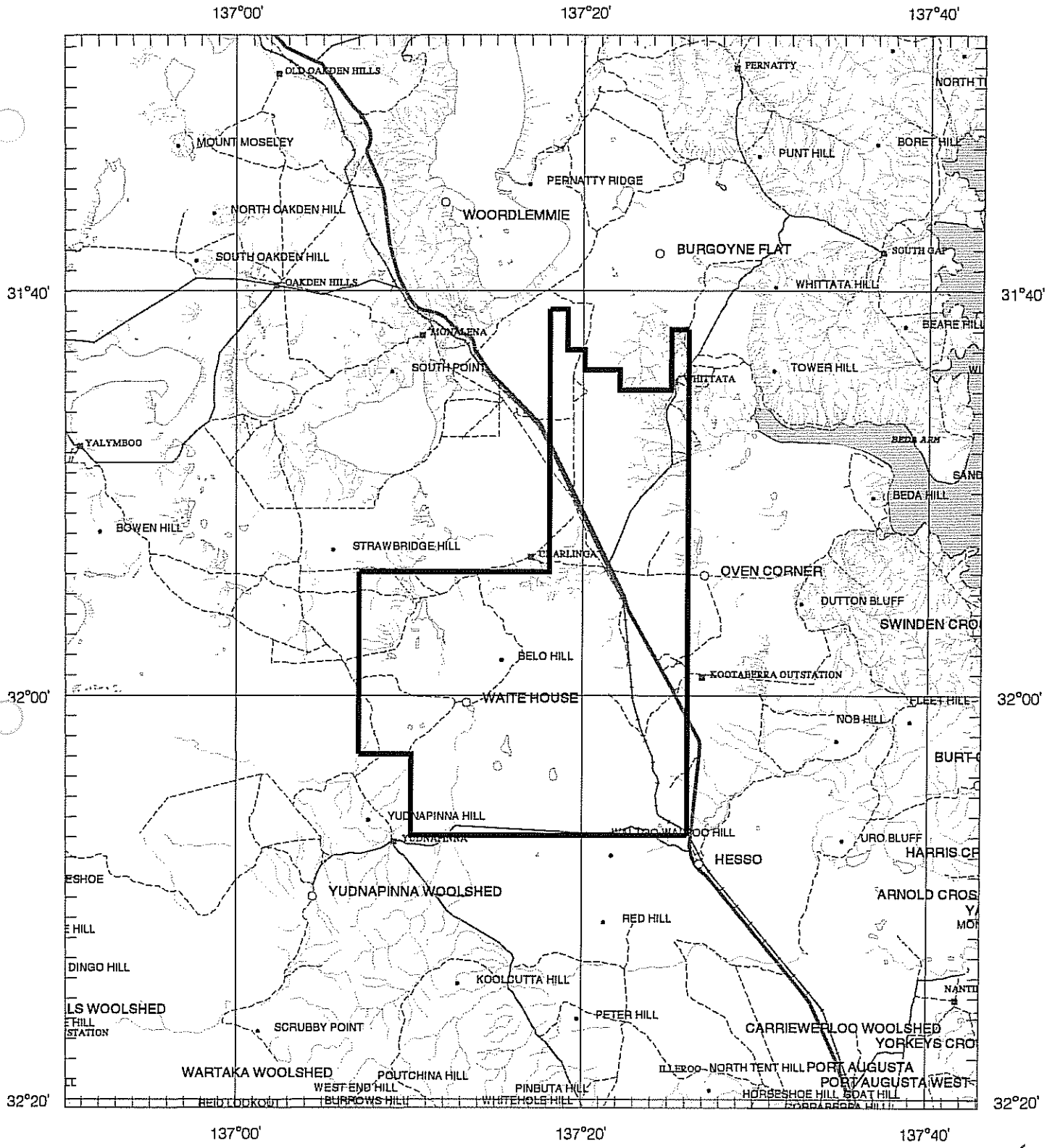

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APPLICANT : **SOUTHERN CROSS RESOURCES AUSTRALIA PTY LTD**

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1:250000 MAPSHEETS : **TORRENS PORT AUGUSTA**

LOCALITY : **CHARLINGA AREA - Approximately 80 km northwest of Port Augusta**

DATE GRANTED : **19-Aug-2005** DATE EXPIRED : **18-Aug-2006** EL NO : **3399**

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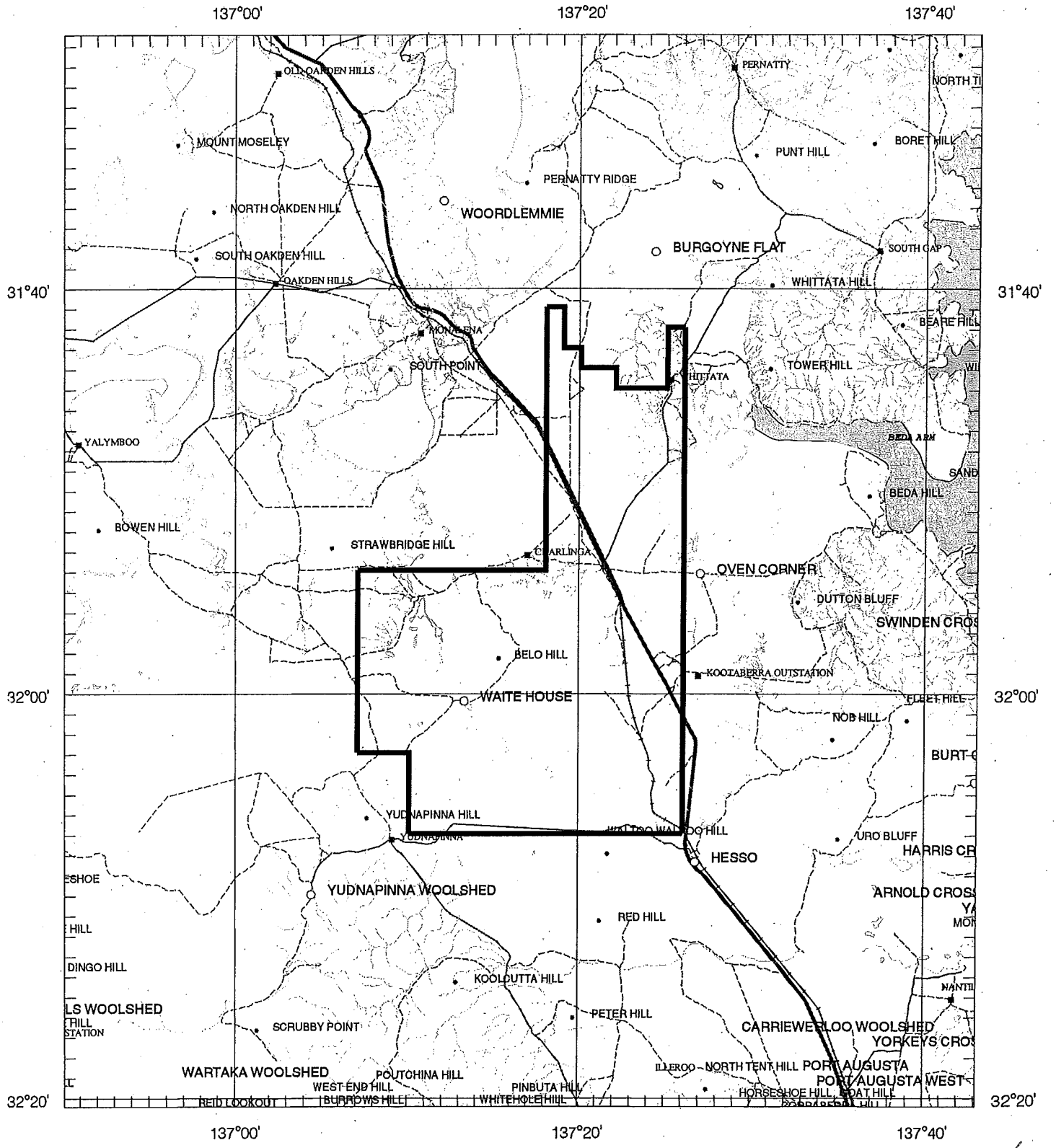

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FILE REF : **188/10** TYPE : **MINERAL ONLY** AREA : **926** km² (approx.)

1:250000 MAPSHEETS : **TORRENS PORT AUGUSTA**

LOCALITY : **CHARLINGA AREA - Approximately 80 km northwest of Port Augusta**

DATE GRANTED : **08-Nov-2010** DATE EXPIRED : **07-Nov-2012** EL NO : **4599**

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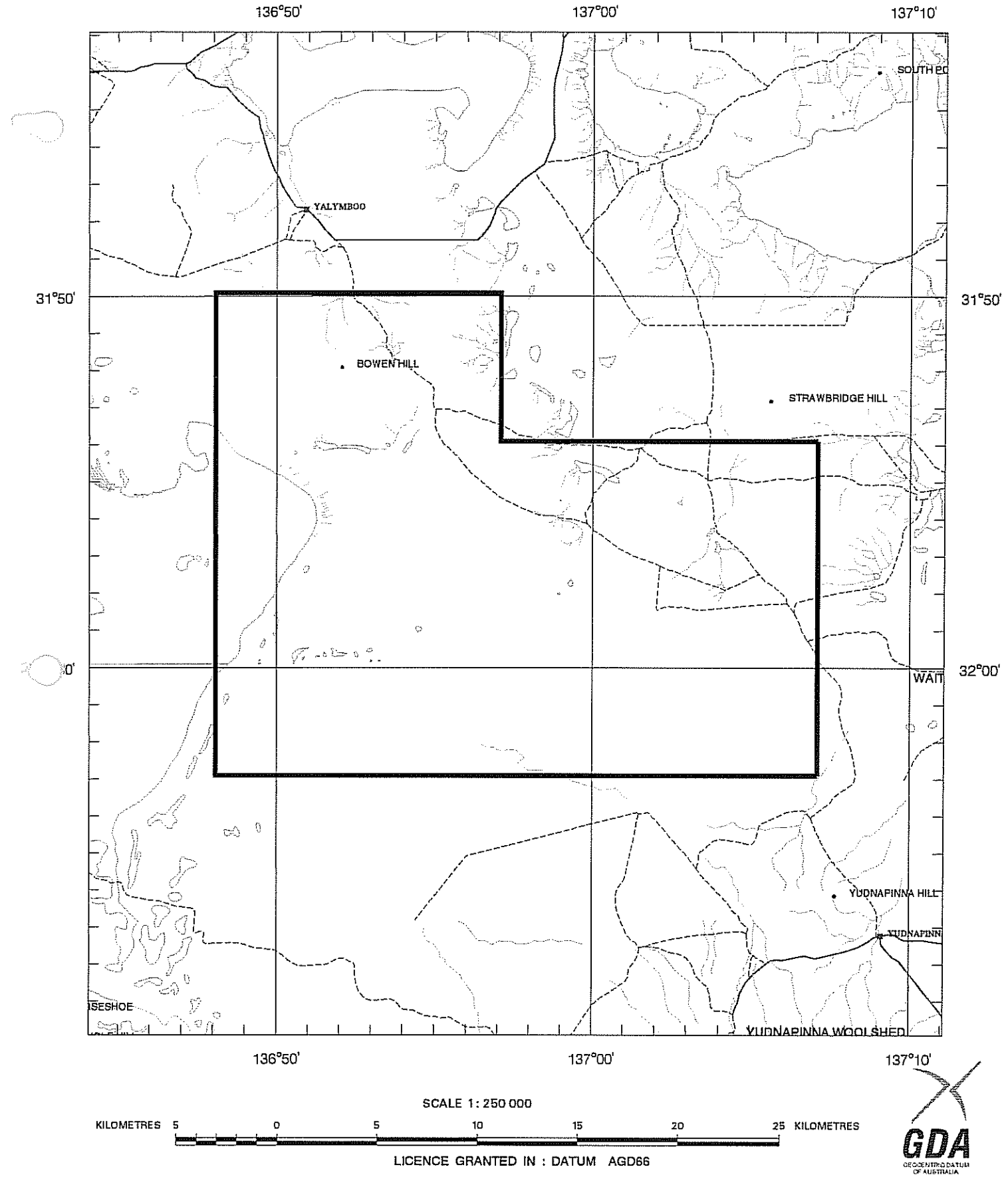

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FILE REF : **911/04** TYPE : **MINERAL ONLY** AREA : **603** km² (approx.)

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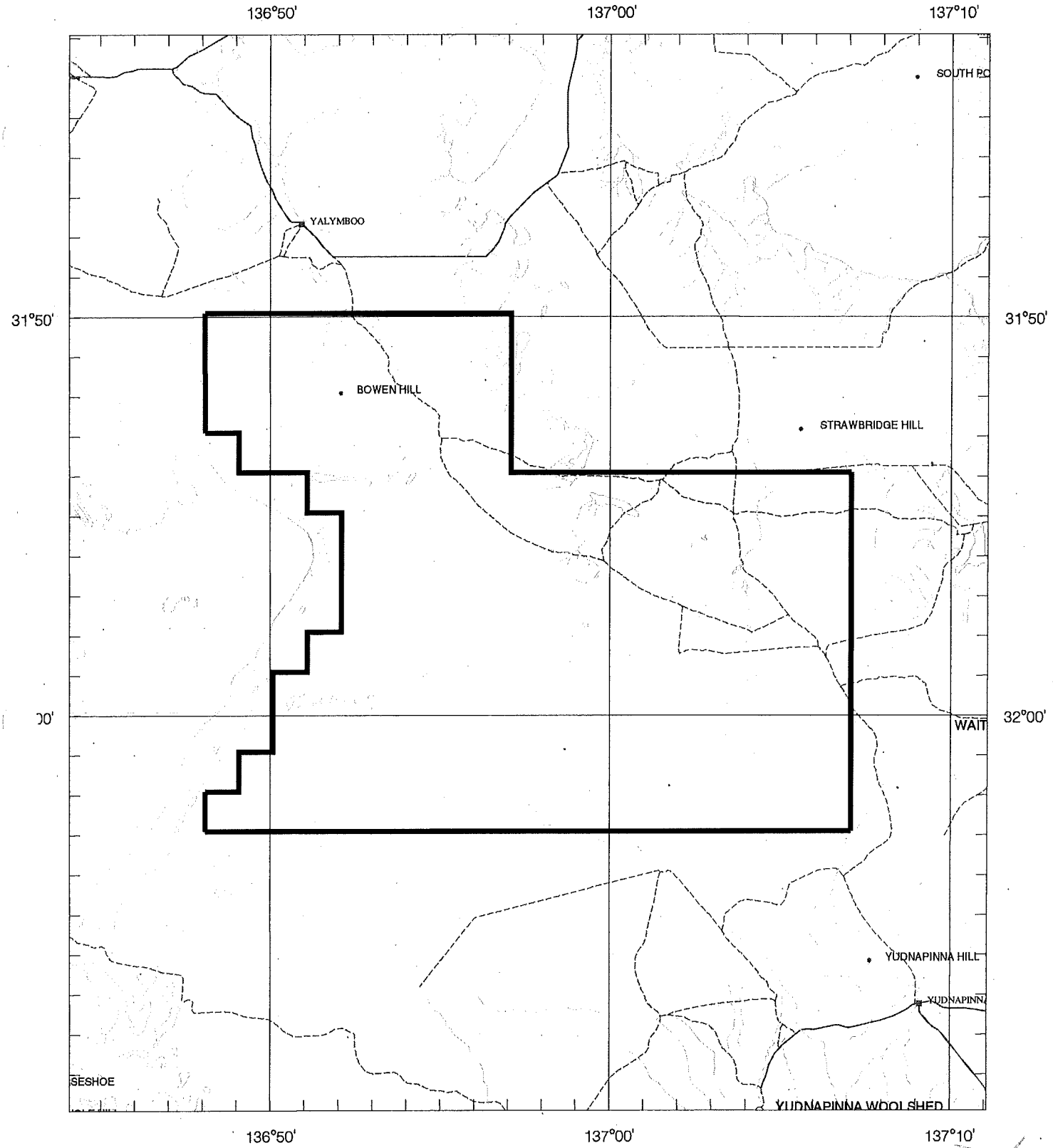
LOCALITY : **BOWEN HILL AREA - Approximately 110 km northwest of Port Augusta**

DATE GRANTED : **19-Aug-2005** DATE EXPIRED : **18-Aug-2006** EL NO : **3400**

SCHEDULE A



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GDA GEOCENTRIC DATUM OF AUSTRALIA

APPLICANT : **URANIUM ONE AUSTRALIA PTY LTD, MITSUI & CO. URANIUM AUSTRALIA PTY LTD**

FILE REF : **189/10** TYPE : **MINERAL ONLY** AREA : **533** km² (approx.)

1:250000 MAPSHEETS : **TORRENS PORT AUGUSTA**

LOCALITY : **BOWEN HILL AREA - Approximately 110 km northwest of Port Augusta**

DATE GRANTED : **08-Nov-2010** DATE EXPIRED : **07-Nov-2012** EL NO : **4600**

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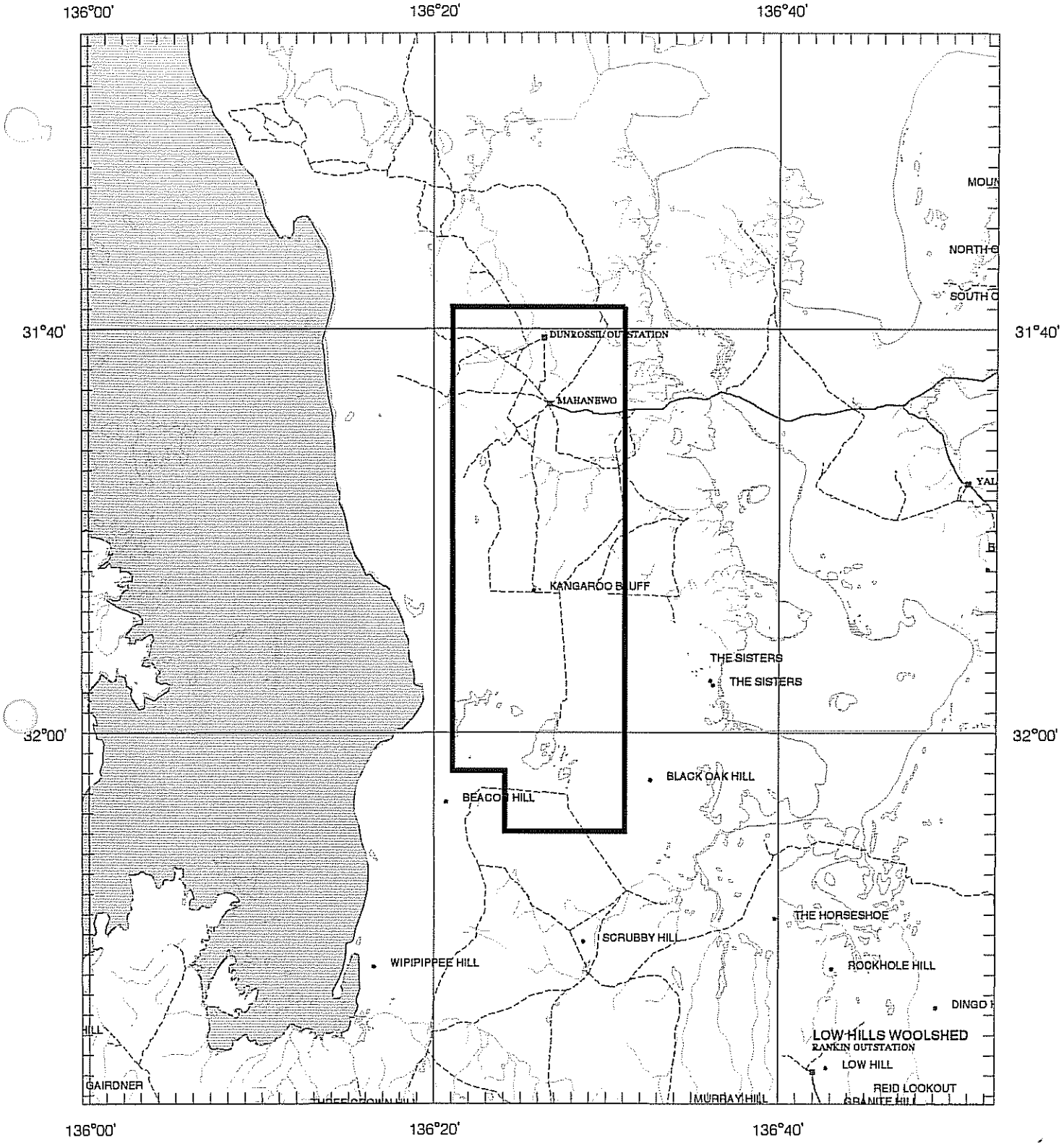

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APPLICANT : **SOUTHERN CROSS RESOURCES AUSTRALIA PTY LTD**

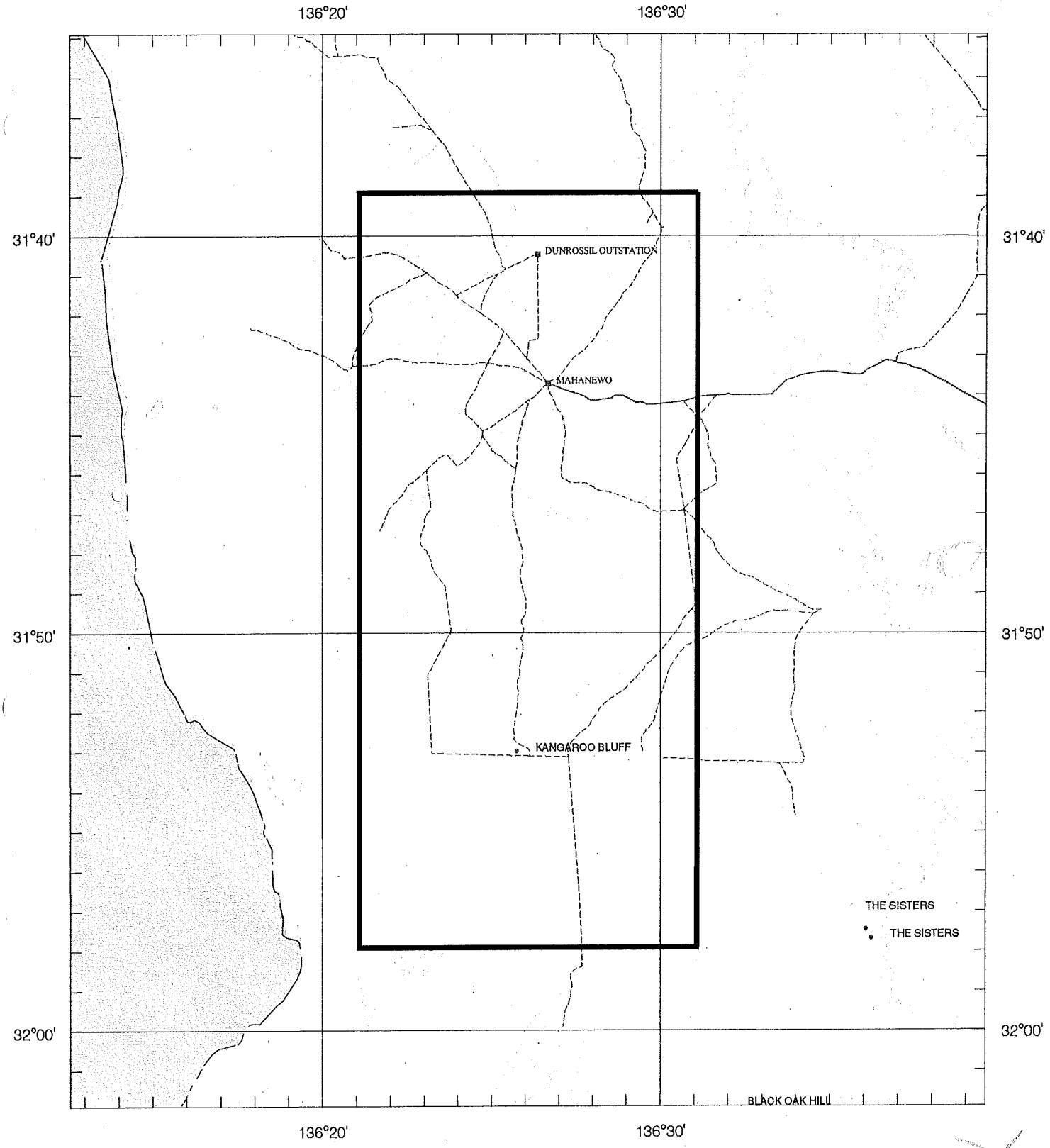
FILE REF : **83/05** TYPE : **MINERAL ONLY** AREA : **731** km² (approx.)

1:250000 MAPSHEETS : **GAIRDNER TORRENS YARDEA PORT AUGUSTA**

LOCALITY : **KANGAROO BLUFF AREA - Approximately 90 km southwest of Woomera**

DATE GRANTED : **16-Sep-2005** DATE EXPIRED : **15-Sep-2006** EL NO : **3415**

SCHEDULE A



SCALE 1 : 250 000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

LICENCE GRANTED IN : DATUM AGD66

GDA GEOCENTRIC DATUM OF AUSTRALIA

APPLICANT : **URANIUM ONE AUSTRALIA PTY LTD, MITSUI & CO URANIUM AUSTRALIA PRTY LTD**

FILE REF : **216/10** TYPE : **MINERAL ONLY** AREA : **554** km² (approx.)

1:250000 MAPSHEETS : **GAIRDNER TORRENS**

LOCALITY : **KANGAROO BLUFF AREA - Approximately 90 km southwest of Woomera**

DATE GRANTED : **25-Jan-2011** DATE EXPIRED : **24-Jan-2013** EL NO : **4651**

EL 3397 Yeltacowie,

EL 3398 Hesso,

EL3399 Charlinga,

EL 3400 Bowen Hill and

EL3415 Kangaroo Bluff

COMBINED FIRST & SECOND ANNUAL REPORTS

For the Period Ending 15 August 2007, (EL3415) and 18 August 2007 (EL's 3397-3400)

TENEMENT HOLDER **Uranium One (formerly SXR)**

OPERATOR **Uranium One (formerly SXR)**

Prepared on October 25th 2007 by:
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(Note. Notification of business name change, from Southern Cross Resources Australia Pty Ltd to Uranium One Australia Pty Ltd, was forwarded to PIRSA during December 2006)

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ANNUAL TECHNICAL REPORT FOR EL 3397 YELTACOWIE, EL 3398 HESSO, EL3399 CHARLINGA, EL 3400 BOWEN HILL AND EL3415 KANGAROO BLUFF

FOR THE TWO YEAR PERIOD ENDING 18 AUGUST 2007 (EL'S 3397-3400) AND 15 AUGUST 2007, (EL3415)

1. SUMMARY

This is a combined report synthesised from activities carried out over the 12 months from 19 August 2006 to 18 August 2007 (EL's 3397-3400) and 16 August 2006 to 15 August 2007 (EL3415).

Activities conducted during the year on this group of exploration licences include:

- Seeking Native Title agreements from the claimants of the Barngarla and Kokatha Land Claims. By year end Uranium One will have an agreement to respond to from the Barngarla Claimants representative. However we have so far been unsuccessful in getting the Kokatha Claimants representative to respond to our enquiries. It is anticipated that access arrangements will be resolved in time to carry out proposed drilling programmes in 2008.
- Engagement of a precollar and diamond drilling contractor for our proposed 2008 drilling programmes.
- Submission of Notice of Entry documents to the pastoralists likely to be affected by our field programmes. In addition we have visited each of them personally to explain our planned work, our camping and logistical requirements and the proposed timing of our field programmes. The requirements submitted to them did not meet with any objection.
- Significant time reviewing the geology of our tenements, researching the nature and results of past work and planning our field strategies. This work was compiled into a report which is attached.
- Gravity surveys over the following tenements:
    - EL3397 (northern group of sub-blocks) where 375 stations were read with a station density of 800m x 800m
    - EL3397 (southern group of sub-blocks) where 1667 stations were read with a station density of 400m x 400m.
    - EL3415, 3398, 3399 and 3400 as one survey. Infill from 2km x 2km to 1km x 1km with 2436 stations.

The results of the gravity surveys are being processed at the time of writing and will be separately forwarded to PIRSA when completed.

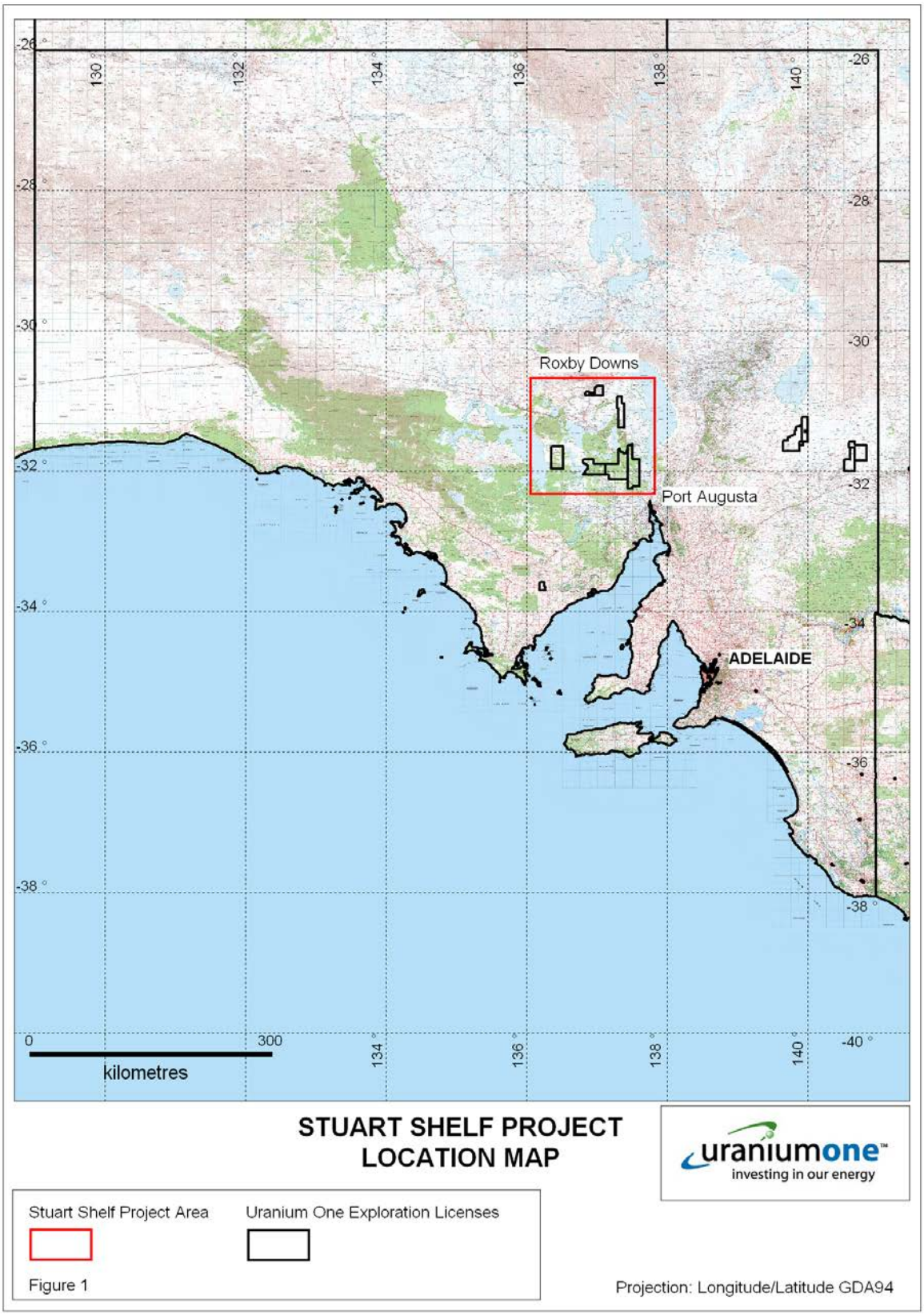

Figure 1: Project Location Map

2. KEYWORDS

Uranium exploration, hydrothermal fluids, IOCGU deposits, magnetic anomalies, gravity anomalies, exploration model, basement, Mesoproterozoic, Paleoproterozoic, Neoproterozoic, Tapley Hill Formation, Pandurra Formation, Wandereah Siltstone, Gawler Range Volcanics, Gairdner Dyke Swarm/Gairdner Dolerite, Wyalla Sandstone, Gawler Craton, Cariewerloo Basin, Stuart Shelf, diamond drilling, hydrothermal alteration, mantle, crust, moho, iron metasomatism.

3. INTRODUCTION

EL 3397 Yeltacowie was granted on 19th August 2005 for a term of one year and was renewed for a period of two years on 10th October 2006.

EL 3398 Hesso was granted on 19th August 2005 for a term of one year and was renewed for a period of two years from 19th September 2005 on 10th October 2006.

EL3399 Charlinga was granted on 19th August 2005 for a term of one year and was renewed for a period of two years from 19th September 2005 on 10th October 2006.

EL 3400 Bowen Hill was granted on 19th August 2005 for a term of one year and was renewed for a period of two years from 19th September 2005 on 10th October 2006.

Applications have been made for a further renewal of all these licences.

Southern Cross Resources (now Uranium One) is the sole holder and operator of these licences.

4. GEOLOGY

REGIONAL SETTING

The oldest rocks in the area of the tenements belong to the Gawler Craton - an Archean-Paleoproterzoic crystalline basement that underlies a very large area from the southern Eyre Peninsula coast to the Torrens Hinge Zone, more than 500km to the north east. This basement is represented by the highly deformed and metamorphosed marine shelf sediments of the Paleoproterozoic Hutchison Group and the Lincoln Complex metagranitoids. These units are in the order of 1950Ma to 1685Ma years old. Except for minor outliers the northern and eastern part of the Craton lies under later Mesoproterozoic and Neoproterozoic sedimentary and felsic volcanic cover that is thick and relatively undeformed. The eastern margin of the Gawler Craton is defined by the Torrens Hinge Zone, a graben like fault system that controlled deposition during the development of the Adelaide Geosyncline (800Ma - 500Ma).

A widely distributed but poorly understood sequence of hematitic siltstone occurs in the central eastern part of the Gawler Craton, the Wandearah Siltstone. It is only known from drilling and is a weakly metamorphosed succession of hematitic siltsone, dolomite and calcsilicates considered to be the youngest element of the Craton.

Voluminous felsic dominated volcanics, the Gawler Range Volcanics (GRV's) formed at around 1600Ma and were accompanied by large anorogenic granite plutons soon after (1585Ma). These are collectively known as the Hiltaba Suite and overly and intrude the older units. The Mesoproterozoic felsic magma subaerially erupted over the Paleoproterozoic basement in a mid-continental tectonic setting (intracratonic rifting of the Gawler Craton). The volcanics outcrop over a large area of the Eyre Peninsula but disappear under deep Mesoproterozoic and Neoproterozoic sediments in the northern and eastern part of the Craton. Limited drilling of the concealed parts of the Volcanics has demonstrated that they can be hydrothermally altered/metasomatised and host sulphides mineralisation. This contrasts with the Volcanics in the wide area as they are exposed in the central part of the Gawler Craton where they are only rarely altered.

At around 1400Ma a 400km long, northwest trending intracratonic trough referred to as the Cariewerloo Basin developed as a result of the uplift and erosion of the GRV's to the south east. It is filled with a monotonous sequence of unmetamorphosed flat lying arenaceous red bed sediments (Pandurra Formation) derived at least in part from the GRV's that underlie a substantial part of the basin. There is evidence that it a large thickness of Pandurra Formation has been removed by erosion during the Neoproterozoic/Adelaidean. Deep drilling on the Stuart Shelf has demonstrated that the Pandurra Formation is present beneath the Adelaidean as far east as the Torrens Hinge Zone, except for small areas of tectonic uplift where it was eroded prior to Adelaidean sedimentation.

The Neoproterozoic Stuart Shelf is located on the eastern margin of the Gawler Craton and comprises flat lying shallow water sediments disconformably overlying the Pandurra and ranging in thickness from around 300m to over a kilometre. The western margin of the Shelf is denoted by the disappearance of the sediments through stratigraphic thinning. The Torrens Hinge Zone is interpreted as being the eastern margin of the Stuart Shelf.

The other significant element of the geology of the region is a very large swarm of mafic dykes called the Gairdner Dyke Swarm. Individual dykes are greater than 50m in thickness, over 30km long, trend north west and are vertical. The dykes anastomose frequently and have a density of up to one per kilometre measured across strike. Unknown in outcrop, the dykes have

only been identified by limited drilling where they have exhibited chilled margins and caused sandstone metasomatism in the Pandurra Formation. Their emplacement date seems to be post Pandurra and pre-Adelaidean during a period of SW-NE basin extension when they may have intruded faults developed during this period. Their distribution is principally limited to a NW-SE area bounded by the Neoproterozoic and Mesoproterozoic sedimentary basins.

Syn-depositional faulting during the Neoproterozoic created an uplifted area/horst at Pernatty in the central part of the Stuart Shelf. As a consequence the overlying Adelaidean sediments have been removed by erosion exposing the underlying Pandurra Formation.

In the Olympic Dam area similar fault-bounded uplift has occurred. The uplift was post Mesoproterozoic and pre Neoproterozoic which was followed by the erosion of the Pandurra Formation (?Marinoan glaciation) before the emplacement and extrusion of the Olympic Dam deposit. The Adelaidean/Neoproterozoic sediments were then deposited on a Marinoan glaciated surface.

A similar uplift also occurred in the Oak Dam area about 70km SSE of Olympic Dam.

These three uplifted areas; Pernatty Culmination, Olympic Dam and Oak Dam manifest themselves as strong magnetic anomalies because of the reduced sedimentary cover and presence of Hiltaba Suite intrusive and extrusives.

5. PREVIOUS EXPLORATION

5.1 Summary

Modern exploration in the Stuart Shelf region commenced in the late 1960's - early 1970's as a consequence of advances in government geological mapping and synthesis and strong base metal prices.

Austminex in 1967 and Pacminex/CSR in 1970 commenced the first modern exploration in the Mt Gunson area where copper mineralisation had been known for more than 80 years. Their work was directed at discovering additional ore in existing deposits and exploring for new deposits in a similar setting. They drilled out the area of the Pernatty Uplift/Culmination with patterns of relatively shallow holes (generally <50m). Their strategy was directed at the Pandurra - Adelaidean unconformity using geochemistry and electrical geophysics. They were successful at both increasing the resources of existing deposits and further discoveries. Their work concluded that copper sulphide emplacement was influenced by:

- increased porosity and permeability induced in the sediments by the faulting associated with the Pernatty Uplift
- syndepositional faulting as hydrothermal pathways
- unconformities as both channel ways and impervious caps
- reactive (=carbonaceous) units within the Adelaidean sediments (Tapley Hill Formation).

Pacminex also conducted regional drilling programmes targeting the Pandurra/Adelaidean disconformity and the Gawler Range Volcanics/Pandurra unconformity both within the Pandurra outlier exposed by the Pernatty Uplift and up to 120km south of Mt Gunson following the main area of contact.

WMC Ltd followed soon after in the mid 1970's when they chose the Stuart Shelf as a likely site for strataform copper deposition. Deep (>500m) diamond drilling discovered the Olympic Dam deposit and several sub economic IOCGU deposits by 1980. This success drove an increase in exploration for this deposit style during the 1970's and 1980's. As these deposits are covered by Neoproterozoic sediments up to 1000m thick, drill targeting was based on near co-incident magnetic and gravity anomalism. The gravity highs were interpreted as indicators of dense hematite metasomatism and the magnetic anomalism as evidence of magnetite associated with deep mafic bodies and sources of the iron. Given that aeromagnetic and ground based gravity surveying was of a poor quality or based on wide station spacing, such targeting was difficult and many of the tenement holders had to undertake their own surveys.

At Emmie Bluff, 36km north of Mt Gunson, Stuart Metals discovered copper and minor cobalt mineralisation in two stratigraphic positions in one drill hole in 1984. The deepest intersection was in felsic volcanics and hematitic shales of the Wandearah Meta-siltstone whilst the shallower one was in the overlying Tapley Hill Formation.

The Tapley Hill Formation, the basal member of the Adelaidean of the Stuart Shelf became recognized by many explorers as able to host base metal mineralisation in its dolomitic and carbonaceous shaley parts which were probably best developed around the margins of the Pernatty Culmination.

Many exploration licenses were held during the period 1970-1983, a lot of regional geophysics completed and many holes were drilled. The pre-eminent targets were Olympic Dam and Mt Gunson styles of mineralisation - Olympic Dam because of its size and metal content and Mt Gunson because of its shallow depth of burial (making discovery and mining easier). As understanding developed of the tectonic setting of the former deposit and of the geology of the Stuart Shelf itself, companies became increasingly more sophisticated in the application and interpretation of exploration methods. Fault bounded basement highs with magnetic and gravity anomalism were keenly sought and geochemical techniques such as mobile metal ion analysis were used to try and 'see' through the sedimentary cover above areas of geophysical anomalism. Very little exploration effort was directed at seeking uranium in unconformity or other sedimentary settings (PNC in 1984-5 being an example) and the dolerites of the Gairdner Dyke Swarm were only mentioned by a few explorers.

From the early 1980's to 2002 very little exploration was carried out over the Gawler Craton and Stuart Shelf due to low metal prices and the political uncertainty about uranium mining in Australia. During this period the South Australian Government proactively committed substantial funds for airborne surveys and subsidies for drilling. Work done during this period was mostly directed at Olympic Dam style targets with a minor amount aimed at finding Mt Gunson copper analogues. The few holes that intersected Pandurra Formation did not encounter any radioactivity. Many of these holes did not reach the base of the Pandurra.

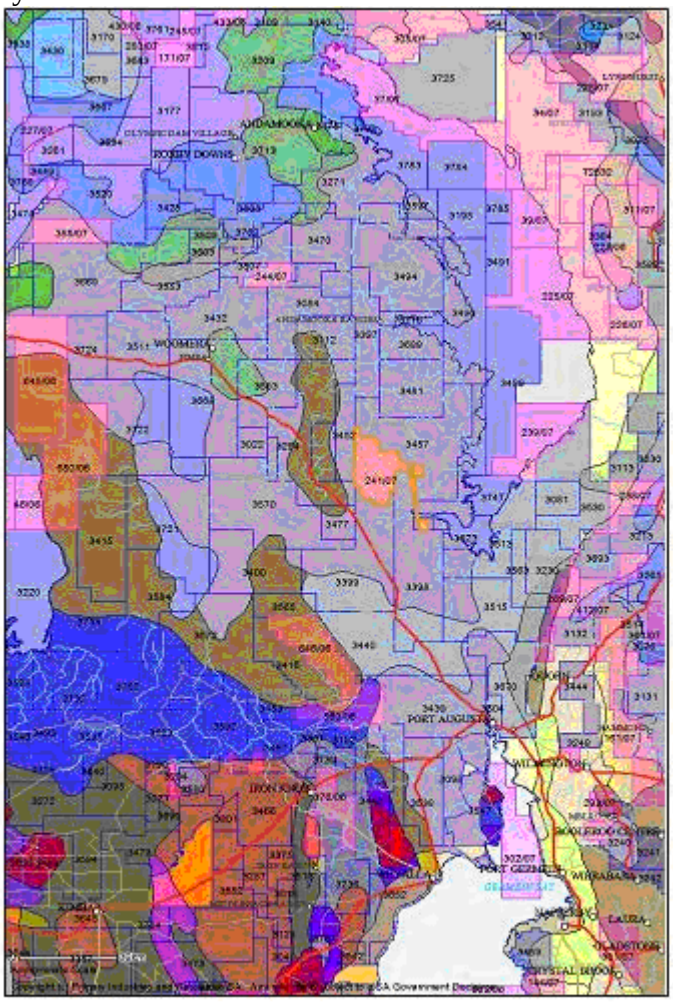

FIG 2 - Map showing tightly held tenement situation in Gawler Craton.

Since the metal prices started increasing from 2003 and nuclear power generation gained more acceptance in the wider community (as a partial panacea to counter global warming concerns) the region once again hosted active exploration. This has been aided by the commencement of mining at Prominent Hill, the Carrapateena and Punt Hill discoveries and the continuing discovery of additional ore at the Challenger Gold Mine.

Currently both the Gawler Craton and Stuart Shelf are blanketed with tenements and many deep drilling rigs are active. Carrapateena was discovered in 2004. Following its purchase of Western Mining Corporation, BHP Billiton is committing billions of dollars to develop a 40Mt+p.a. open cut and new processing facility at Olympic Dam. Companies newly floated on the ASX as dedicated uranium explorers are frantically exploring the Stuart Shelf in the hope of finding a deposit before their IPO funding is depleted. One of these is Monax Mining which has located deep IOCG type geology and mineralisation at Punt Hill.

In 2006 Hindmarsh Resources (wholly owned subsidiary of Megauranium since July 2006) used PACE (a Plan for Accelerating Exploration) funding to drill ten reverse circulation holes on their EL3572 about 30km south of the Uranium One EL's. Their target was sedimentary uranium at the base of the Pandurra Formation, within any reduced horizons in the Pandurra and in association with mafic dykes that intrude the Pandurra. The holes penetrated the Pandurra and stopped in Gawler Range Volcanics (Env11318) whilst some intersected mafic or acidic dykes. The Pandurra/GRV unconformity was less than 150m. Many of the holes were anomalous in thorium and in one hole slightly anomalous uranium was encountered in sediment in contact with a mafic dyke. The maximum uranium assay was 14ppm and thorium 94ppm. A bluish claystone was observed in the Pandurra wallrock adjacent to the mafics. This probably represents an alteration zone.

5.2 Previous Work

In the late 1970's Australian Selection explored under EL301 where they sought stratiform copper mineralisation in the basal Neoproterozoic Tapley Hill Formation (T.H.F.). This comprised percussion drilling of aeromagnetic anomalies. No T.H.F. was found west of Lake McFarlane (the whole of EL3415 is west of the Lake). All holes were radiometrically logged revealing that the Pandurra Formation was found to be lithologically consistent throughout the area drilled.

In 1977 Dampier Mining drilled one diamond drill hole to 154m (on EL322) near a pair of Gawler Range Volcanics (G.R.V.) outliers to investigate stratiform base metal potential of the Adelaidean sediments. The drilling demonstrated that there was no Adelaidean and that the G.R.V.'s were overlain by Pandurra Formation. No mineralisation was intersected.

In the early 1980's Afmeco explored EL708 for IOCG style mineralisation by shallow drilling aeromagnetic and gravity anomalies on the eastern side of Lake Gairdner. None was discovered. There was no shallow pre G.R.V. basement and the Pandurra Formation only contained background base metal and uranium values.

A number of companies have unsuccessfully explored for diamonds and kimberlites since the 1970's.

In the early 1980's PNC held EL1245 in the Kangaroo Bluff area of EL3415. Ground follow up of airborne radiometric anomalies confirmed them as salt lake related and the results of drilling uraniferous (?) dacite, a magnetic anomaly and a buried fault were negative.

In the early 1970's Pacminex carried out rotary drilling in the search for copper in the Lake McFarlane area. Results were negative.

In 1968-1970 Noranda carried out percussion drilling to seek shallow Pb-Zn mineralisation SE of Lake Dutton in the Woocalla Dolomite. A large sub-economic resource was delineated.

Shallow hammer drilling was completed in the 1970's by Abminco in a search for Mt Gunson style copper mineralisation at the base of the Whyalla and the top of the Pandurra Formation in the Yudnapinna area.

An index of open file reports pertinent to the exploration licences is digitally appended to this report (OpenFileIndex1.pdf).

6. CURRENT EXPLORATION RATIONALE

Within the Stuart Shelf the pre-eminent target is an Olympic Dam analogue. The Shelf sediments are considered a cover sequence and not a target in themselves. The targets are strongly iron metasomatised Hiltaba Suite intrusive/extrusive complexes that will have co-incident or near co-incident magnetic and gravity anomalies. Because the Carrapateena discovery was associated with relatively low order geophysical anomalism some companies are pursuing a low order anomaly strategy. However, Carapateena is yet to become a mine.

Because depth of cover is a critical economic element to the development of any deposit some companies are targeting the shallower and potentially uplifted areas to explore. These will hopefully have less than 500 metres of cover. Such areas are in the vicinity of Olympic Dam (i.e. Acropolis, Wirrda Well), Oak Dam and The Pernatty Uplift/Culmination at Mt Gunson. Regions where the cover is deeper than 400 metres will possibly make mining unprofitable because of the additional capital cost.

Depth to basement studies are based on the limited number of holes that have penetrated the cover (and are on open file) and geophysical interpretation. As such they are open to interpretation.

A few companies are starting to consider the uranium potential of the sediments of the Cariewerloo Basin and Stuart Shelf, however very little drilling (and quite shallow at that) is known to have been directed at such targets. To that extent, the entire region is under-explored.

The Pandurra Formation, which constitutes the Cariewerloo Basin has many stratigraphic similarities to the Athabasca Basin of Canada where high grade uranium deposits have been discovered since the 1950's (see below).

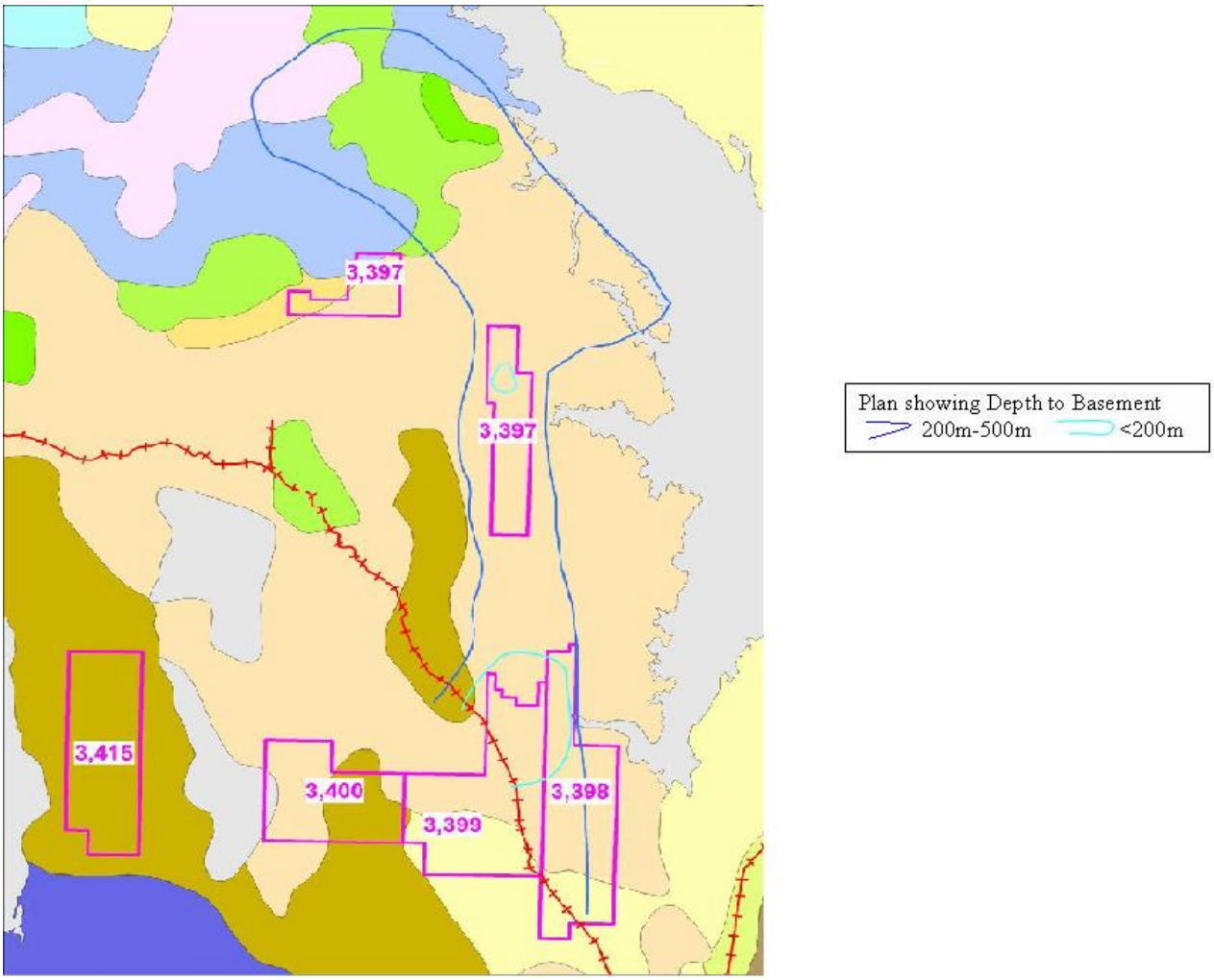

Figure 3: Depth to Basement.

The Basin is underlain by Gawler Range Volcanics which overlie the Gawler Craton suite of metamorphics. All three geological entities have been intruded by the Gairdner Dyke Swarm in the central eastern part of the Craton. (Figure 2)

The emplacement of dykes with a northwest trend has been linked to a major northeast–southwest-trending crustal extension event consistent with the onset of rifting, early graben development and basic volcanism during the early tectonic evolution of the Adelaide Geosyncline.

The dyke swarm is poorly understood, visible only from magnetic surveying and does not outcrop. Since the dykes are subvertical they are only rarely intersected.

The dykes have a very widespread distribution within the Craton (in excess of 600km x 100km) and are individually of significant dimension (>30m x 10km). This suggests that they are fed by a large mafic source/batholith lying deep beneath the Craton that is quite unrelated spatially, to the acid igneous Hiltaba Suite batholiths.

The dykes have the potential to:

- Tap and remobilize metal sources from within the crystalline basement;

• Facilitate the transport of hydrothermal fluids from a deep crustal/mantle mafic source utilizing the same Basin-creating structures;

• Provide a heat source to move the fluids and metasomatise the intruded sedimentary packages where pore space and reactive material is encountered. This has been observed in past drilling in respect to the Pandurra Formation .

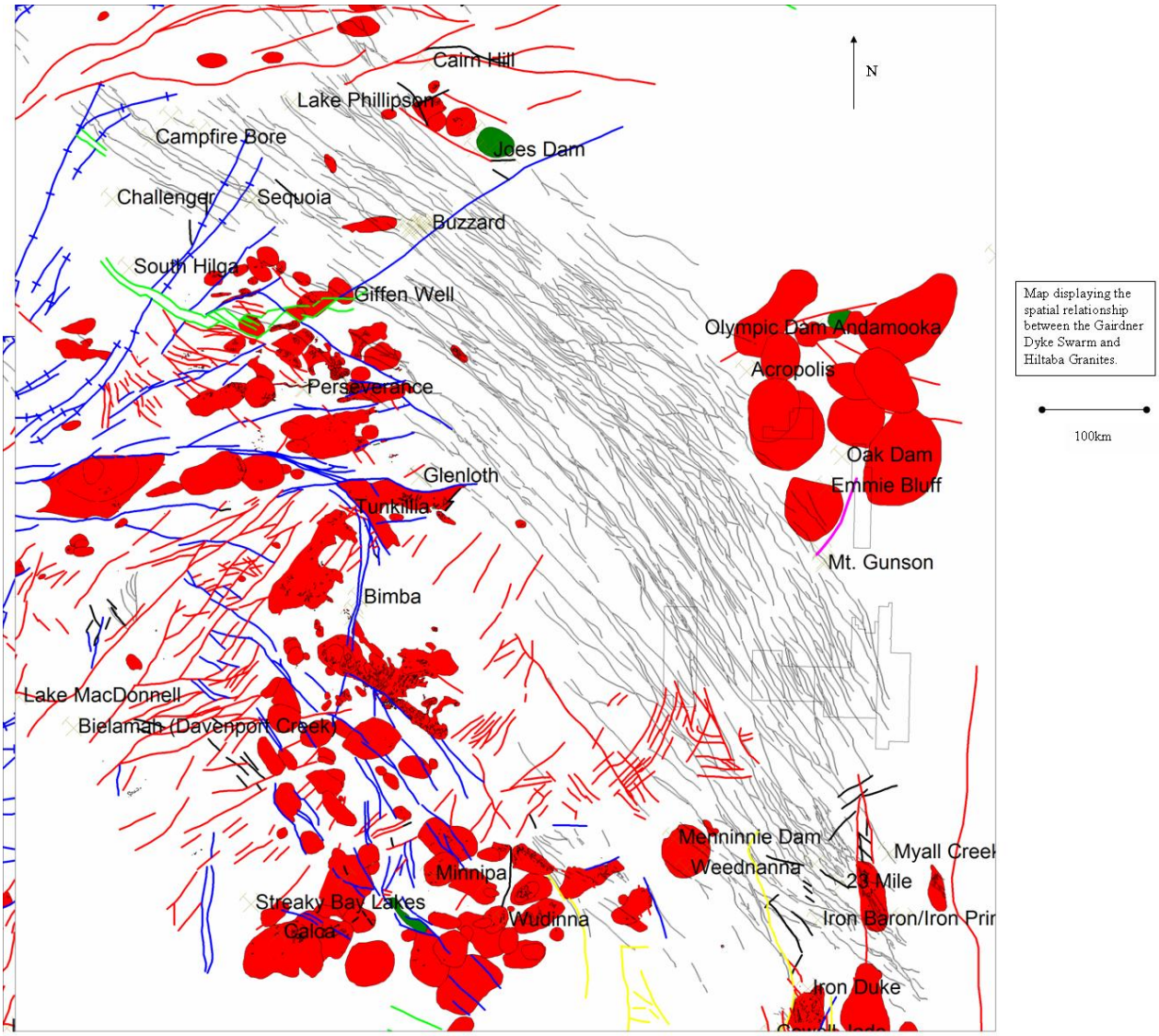

Figure 4: Gairdner Dyke swarm and Hiltaba Granites.

Table 1

Comparison between the Cariewerloo Basin and the Athabasca Basin of northern Canada		
CHARACTERISTIC	**ATHABASCA BASIN**	**STUART SHELF/PANDURRA FORMATION**
Uranium endowment	370,000t U3O8 in the two biggest mines	>2Mt U3O8 in O.D.B.C.
Relative grades	Extremely high grade	Very low grade and supplemented by Cu and Au revenues
Main deposit style	Unconformity style deposits	High Level plutonic/volcanic complex & voluminous Fe metasomatism, pre P.F. - 1590Ma
Basin Dimension	300km wide Basin	400km long x 100km wide
Basin depth	1500m deep	Not certain but >950m
Tectonic Setting	Intracratonic Syn and post depositional faulting	Intracratonic Syn and post depositional faulting
Host Formation and Age	Athabasca Sandstones: fluviatile to shallow marine intracratonic basin 1750-1500Ma	Pandurra Formation: continental fluvial depositional environment 1580Ma-1450Ma
Uranium Mineralisation	Unconformity sandstone hosted	None Known
Unconformity	Thick tropical weathering profile	Active erosional (+/-glaciated) surface
Lower Formations	Martin Formation: small arkosic basins	Variable: Gawler Range Volcanics, Wandearah Metasiltsone or Basement
Uranium Mineralisation	Vein deposits	None known, but carbonaceous shales and minor pyrite and chalcopyrite present
Basement	3200Ma - 1750Ma several orogenies & graphitic metapelite horizons	Archean to Paleoproterozoic, several orogenies & graphitic horizons in exposed parts of the Basement (Gawler Craton) eg Eyre Peninsula
Uranium Mineralisation	Small quantities in pegmatites, calcsilicates and arkoses	Small quantities in exposed areas of Gawler Craton on Eyre Peninsula

- Dykes similar to those of the Gairdner Dyke Swarm play an integral role in the migration and emplacement of the ore at Valhalla/Westmoreland, NW Qld.
  Mafic dykes at Prominent Hill are known to host re-mobilised uranium.
  The combination of the following factors makes the Pandurra Formation a prime yet poorly untested uranium target.

- Geological, age and tectonic similarities between the Cariewerloo Basin and the Athabasca Basin;

• Association of significant amounts of uranium and other heavy metals in pre Pandurra magmatic activity (Hiltaba Suite);

• Presence of uranium and carbonaceous units in the Gawler Craton Basement (Hutchison Group of Eyre Peninsula);

• Reasonable target depths (<500m);

• Basement high (=fault bounded horsts) in EL3397 (NW side of southern block) and the northern ends of EL3398 and 3399.

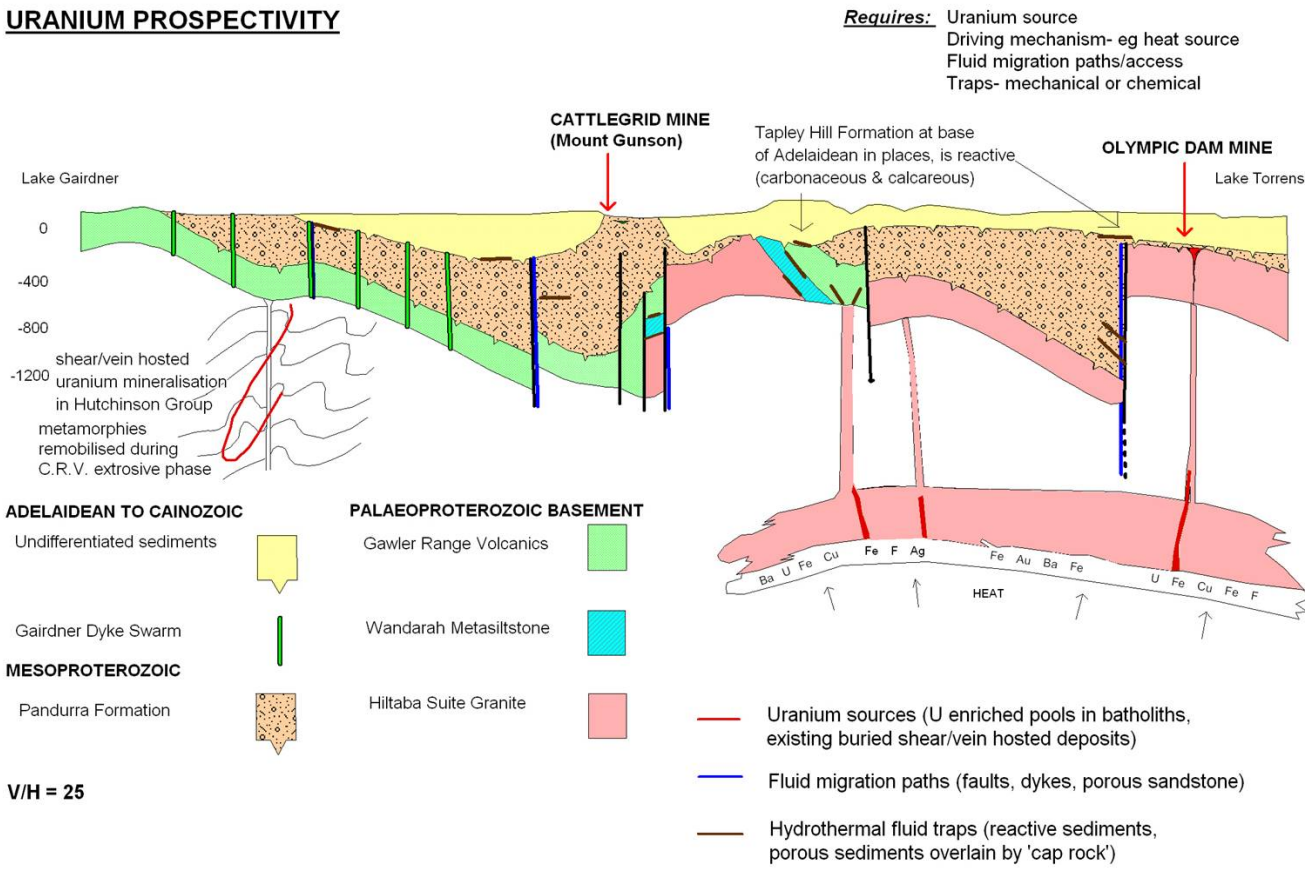

FIG 5 - Genetic Models of U Sources, Mobilization and Deposition

• Potential for oxidising environment of the Pandurra Formation interfacing with a reducing fluids emanating from deep in the basement or mantle;

• Both early and late deep structures to plumb as far as the lower crust and upper mantle and all that lies between;

• Large number of mafic dykes with the potential to remobilize uranium rich fluids;

• The fine grained and reactive Tapley Hill Formation (Adelaidean) that occupies a basal position above the Pandurra has the capacity to both physically and chemically trap migrating ore fluids at the disconformity;

• Some Gairdner dykes that have been intersected by drilling have metasomatised the surrounding sediment, demonstrating their capacity to be involved in ore forming processes.

7. EXPLORATION POTENTIAL AND TARGETING WITHIN THE URANIUM ONE TENEMENTS

7.1 CARIEWERLOO BASIN

Most of the Uranium One Gawler Craton acreage lies in a large block of four tenements that cover the shallower parts of the Cariewerloo Basin - EL's 3398, 3399, 3400 and 3415.

There is no drilling greater than 300m over these tenements, all of which terminated in Pandurra Formation and there is no known mineralisation within or anywhere near them.

The known geology of the tenements comprises Gawler Range Volcanics overlying a crystalline Paleoproterozoic basement. The Pandurra Formation overlies the eroded Gawler Range Volcanics followed by the basal units of the Adelaidean (mostly Tapley Hill Formation) in a disconformable relationship in the north eastern part of the block. The Gairdner Dyke Swarm intrudes the Pandurra in all the ELs except 3397.

Only Pandurra Formation lies within Kangaroo Bluff EL3415 (no Adelaidean overlying it).

The other significant element of the geology is the Mesoproterozoic Gairdner Dyke Swarm which, according to the magnetic imagery, intrudes the Pandurra Formation in all the Cariewerloo Basin tenements. The Swarm seems to be composed or two sets of dykes with a difference in strike of about 20-25deg in. The sets intersect in an anastamosing complex. The most northerly striking set seems to be later than the other and in places cause small displacements on the earlier set. This situation may have been the result of a changing tectonic environment during the Basin rifting.

The northern parts of EL3398 and 3399 cover:

• a basement high which has the potential to be fault bounded,

• the flanks of a prominent gravity Bouger gravity anomaly,

• a high density of Gairdner dykes,

• The western most Exploration Lease (EL 3415) is located over the southern margins of the Pandurra Formation where it onlaps the Gawler Range Volcanics,

• where a network of intersecting mafic dykes exists and,

• on the margins of a very large Bouger gravity anomaly.

7.2 STUART SHELF

The Yeltacowie EL3397 comprises two blocks of ground, being the:
Northern Block. The northern one is located over 800m - 900m deep Stuart Shelf sediments that overly about 200m of Pandurra Formation. As such the tenement potential is downgraded for Olympic Dam target potential. At this stage the disconformity between the Pandurra and the overlying Adelaidean Tapley Hill Formation is also considered too deep to be a plausible exploration target.
Southern Block. The other part of this tenement is a narrow north-south trending block of country that is wedged in between the Carapateena discovery area and the Mt Gunson copper

deposits. It is likely to comprise a significantly thinner cover of Pandurra Formation and Adelaidean sediments. Four previous drillholes within this part of EL 3397 indicate that the base of the Pandurra is at about 300m - 400m. The Pandurra overlies Gawler Range Volcanics which would presumably sit on Gawler Craton metamorphics such as the Hutchison Group, although drilling has not penetrated the Paleoproterozoic anywhere near this area.

A large regional fault first identified at Mt Gunson and clearly displayed on the geophysical image of the area, The Cattlegrid Fault, strikes into the northern part of this southern block of ground. Base metal mineralisation at Mt Gunson and Chianti (Gunson Resources target) lies along this fault. It is clearly a structure that has acted as a conduit for the migration of metal-carrying hydrothermal fluids.

Strong gravity anomalism is present at the southern end of the Cattlegrid Fault that coincides with the Mt Gunson Cu deposits. This is suggestive of a large mafic body at depth that may have been the source of the copper rich fluids that have been tapped by the Cattlegrid Fault.
At the southern end of the block a linear magnetic anomaly is co-incident with the flanks of a gravity anomaly that is a 'spur' off the line of drilling that Monax Mining has been pursuing at their Punt Hill Project (deep IOCG mineralisation). Unlike the prominent geophysical target presented at Olympic Dam the anomaly being targeted by Monax is much more subdued and depth to basement is >700m.

The other important element of the geology of this EL is the likely presence of the Tapley Hill Formation. This is a basal Adelaidean sequence of calcareous and carbonaceous siltstones that represents the first marine transgression of the Stuart Shelf after the Marinoan Glaciation. This unit has the potential to act as both a chemical (carbon) and physical (impervious fine grained sediment) trap for metals carried by ascending hydrothermal fluids.

In summary the southern block of the Yeltacowie EL is prospective because of:

• presence of a large regional NNE fault striking into the NW part that is known to be associated with copper,

• Mineralisation in other places (Emmie Bluff and Mt Gunson) along its strike,

• a subdued gravity anomaly co-incident with a linear magnetic anomaly at the southern end of the EL. This is suggestive of a dense body of rock cut by a significant structure that appears to be a spur off a regional magnetic trend that Monax has demonstrated carries IOCG mineralisation,

• presence of chemically reactive and physical trap rock sediments (Tapley Hill Formation) on a disconformity at the base of the Adelaidean stratigraphy,

• a Gawler Range Volcanic 'basement' to the Pandurra Formation which is known to be mineralised in other parts of the unexposed Gawler Craton and which is at a reasonable depth (<400m).

Drill targets in the southern block of the Yeltacowie EL are suggested along the strike extension of the Cattlegrid Fault and at the southern end over subtle but co-incident magnetic and gravity anomalies

8. GEOPHYSICS

Gravity surveys were completed over the following tenements:

- EL3397 (northern group of sub-blocks) where 375 stations were read with a station density of 800m x 800m.
- EL3397 (southern group of sub-blocks) where 1667 stations were read with a station density of 400m x 400m.
- EL3415, 3398, 3399 and 3400 as one survey. Infill from 2km x 2km to 1km x 1km with 2436 stations.

See the digitally appended DaishSat report for details (Cariewerloo Basin Gravity Survey DaishSat Report.pdf) and Haines Survey report (YeltacowieGrvSvy.pdf).

The details of the surveys are appended and the results are being processed at the time of writing. This information will be forwarded to PIRSA when processing is completed.

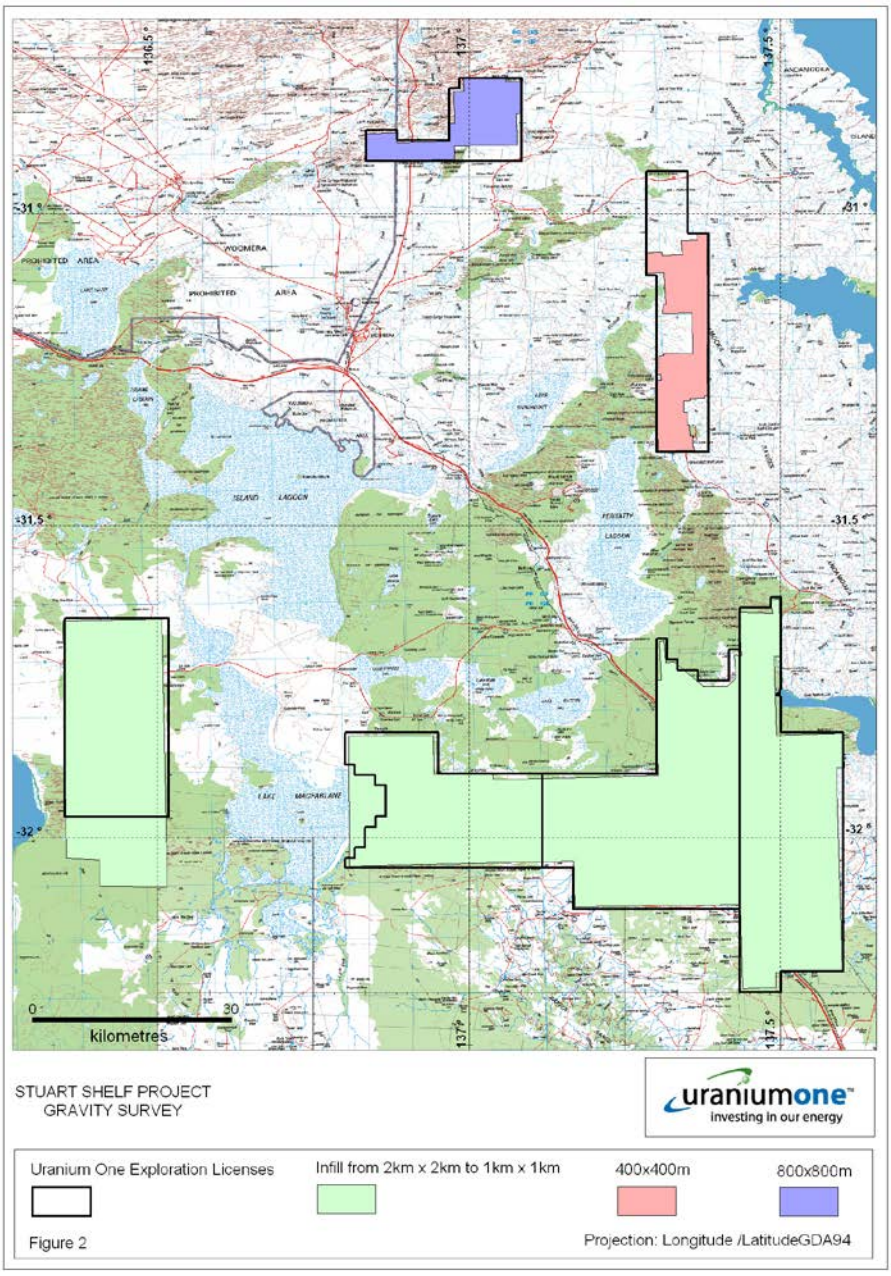

FIG 6 Map Showing Location of Gravity Surveys and Station Spacing

9 PROJECT EXPENDITURE

See the digitally appended Six Monthly Reports for details (SixMonthRpts.pdf)

10. RECOMMENDATIONS

During the third year of tenure Uranium One plans to perform the following work over the held Exploration Licences:

- Complete the interpretation and report on the gravity surveying and
- conduct a diamond drilling programme on each of the Licences. Drilling will be directed at investigating the base of Pandurra Formation, the thinner parts of the Gawler Range Volcanics, Wandearah Metasiltstone and their relationship with the Gairdner Dyke Swarm. Drill hole targeting will be guided by stratigraphic analyses and geophysical interpretations.

11. REFERENCES

Drexel, J.F., Preiss, W.V., 1993 and Parker, A.J., *The Geology of South Australia Volume 1 The Precambrian Bulletin 54.* Department of Mines and Energy South Australia

Parker, A.J., 1987 *Archaean to Middle Proterozoic Mineralization of the Gawler Craton (including the Stuart Shelf region) SA. REPT.BK.NO 87/84.* Department of Mines and Energy South Australia.

Company Open File Reports as separate PDF's included in this package.

Gawler Craton - Stuart Shelf Non-Company Reports

Geol. Province	Tenement	Date	Title	Reference	Category
Eromanga Basin;Gawler Craton;Stuart Shelf		1985	GAIRDNER, S.A. Sheet SH/53-15, Inter. Index. 1:250 000 Geol. Series - Explan. Notes	ExpNotes GAIRDNER	MESA publications
Gawler Craton;Stuart Shelf		1981	Geology of northern Eyre Peninsula.	Lib 10(10) p: 4-7	MESA publications
Stuart Shelf		1969	Pandurra copper prospect preliminary report.	MRR 127 p: 069-075	MESA publications
Adelaide Geosyncline;Stuart Shelf	EL00207	1977	Prelim. report on stratig. drilling in EL 207 and adj. areas, N. Yorke Peninsula.	MRR 147 p: 061-067	MESA publications
Stuart Shelf	EL187, EL228	1982	Myall Creek copper prospect.	MRR 151 p: 058-064	MESA publications
Stuart Shelf		1969	Geology of the Cultana 1:63 360 map area (revised version of RB 56/17).	RB 63/00135	MESA publications
Stuart Shelf		1969	Pandurra copper prospect preliminary report.	RB 65/00068	MESA publications
Adelaide Geosyncline;Stuart Shelf	EL00207	1977	Prelim. report on stratig. drilling in EL 207 and adj. areas, N. Yorke Peninsula.	RB 77/00142	MESA publications
Stuart Shelf		1969	Geology of the Cultana 1:63,360 map area.	RI 034	MESA publications
Stuart Shelf		1974	Base metal mineralisation in the Pernatty Lagoon region.	RI 042	MESA publications
Gawler Craton;Stuart Shelf;Kararan Orogeny;Mount Woods Inlier		Sep-03	Gawler Craton 2003. State of play - The Excursion.	RB 2003/00017	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Stuart Shelf	SML00527	1973	Pernatty Lagoon barite deposit.	RB 71/00161	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Stuart Shelf		1980	Roopena stratigraphic diamond drillholes 1 and 1A.	RB 80/00147	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Erom. Basin, L. Eyre Basin, Adel. Geosyn., Stuart Shelf, Torrens Hinge		1981	Progress report on Geology of the Curdimurka region.	RB 81/00001	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Stuart Shelf;Gawler Craton		1981	Gawler Range Volcanics in diamond drillhole Myall Creek RC1.	RB 81/00029	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Gawler Craton;Stuart Shelf;Cultana Inlier;Torrens Hinge Zone		Feb-91	Beda Volcanics and Backy Point Formation of the eastern Gawler Craton.	RB 90/00016	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Stuart Shelf;Gawler Craton		Sep-91	Mineral occurrences of the GAIRDNER 1:250 000 map sheet area.	RB 91/00089	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)
Cariewerloo Basin;Gawler Craton;Stuart Shelf		Sep-93	Pre-Adel. basement to the Stuart Sh, S.A.: DH database and prelim. Geol. Interp.	RB 93/00035	MESA unpublished reports (excl hydrogeol, engin geol and engin geophys)

Gawler Craton - Stuart Shelf Open File Company Reports

Envelope No.	Reference	Mineral Title (EL's unless otherwise stated)	Period	Explorer	Comments	Full Text Avail.
1043		SML0256	1968-1970	Noranda	Lake Dutton base metal search in Woocalla Dolomite, 30 percuss holes identified large area of sub-econ Pb Zn mineralisation	
1174		SML00204	1969	BHP	Pandurra Cu mine investig., soil sampling, IP and 2 vert percuss holes. Conclusion same as previuos investigations: Cu confined to a tear fault induced by basement wrench faulting. Limited strike potential, dolerite dyke may have been source of Cu or occupy a fluid path/fault.	
1230		SML00315	1968-9	Stuarts Bluff Minerals	Pernatty Lagoon (Mt Gunson) base metal search	
1541		SML00499	1970-1	Noranda	Base metal search for syngenetic mineralisation in vicinity of faults on flanks of Pernatty Culmination. Weak sulphides in tectonically brecciated dolomitic shale overlying Pandurra Fm. Low grade Zn mineralisation in LD3 south of Lake Blythe.	
2273		50	1973-5	Pacminex/Mt Gunson Mines	Reg explor for stratabound Cu, Whyalla-Lake Torrens, 157 rotary holes, no geochem anoms.	
2292	RB91/00007	29	1976	Pacminex	Plan of Mt Gunson Mine	
2484		154	1974-5	Otter Exploration	Base metal explor E of Pernatty Lagoon targetting stratabound mineral in Late prot metaseds.12 rotary percuss holes failed to reach the prospective depth.	
2555		183	1975-6	Australian Selection	IOCG search 15km E of Arcoona Homestead. 20RC holes found low Cu/Zn values in Tregolana Shale and on unconformity with the Pandurra Formation.	
2564	Env 06667	186	1975-7	CSR	Exploration for Cattlegrid-type deposits SW of Lake Torrens, airborne surveys and 47 percussion holes. Also sought to delineate Cainozoic peleochannels near Pandurra Hstd.	
2575		81	1973	Pacminex	Base metals sought near Lake MacFarlane, 13 rotary holes terminated in Pandurra Formation or younger, no mineralisation found.	
2585		187	1975-7	Australian Selection	Uro Bluff. Targetting stratabound Cu in Tapleys Hill Fm and diamondiferous kimberlites (SW of Port Augusta). Low grade Cu/Pb/Zn discovered at base of Tapleys Hill Fm.	
2627		199	1975-7	CSR	Continuing 'Brownfields' exploration for Mt Gunson repeats W of Pernatty. AEM, drilling, embayments of Woolcalla Dolomite considered prospective.	
2630		200	1975-6	Australian Selection	Inconclusive drilling through Cainozoic cover to try and reach Pandurra erosion surface in the area of the Wandearah Plains.	
2643		206	1975-7	Delhi International Oil	Lake Torrens salt and brine search. Found anomalous but sub-economic Cu,Pb, Zn in basalts and Wyalla Sandstone. (BDH2 and 3)	
2703		226	1976-8	Australian Selection	Red Lake area next to Arcoona Plateau, Pandurra erosion surface where drilling intersected 'significant' Cu-Pb-Zn min. in basal Tapley Hill Form. at the Pond Wells Prospect.	
2785		199	1975-6	Pacminex	Targetting Mt Gunson type mineralisation, but Whyalla Sandstone overlying Pandurra Form. Pre-requisites not present, base metal mineralisation indicated in shales of Tapley Hill Form.	
2803		252	1976-8	Australian Selection	Olympic Dam target, 15km SE Arcoona Homestead, anom. Cu in hem/magn. altered Treg Shale and on Pandurra erosion surface, 410ppm U over 2m in PEB 13 (94m EOH)	
2862		261	1976-8	Australian Selection	Targetting Mt Gunson type mineralisation, 60km E of Woomera, mapping and drilling suggested a basement high in the vicinity, no mineralisation intersected.	
2992		302	1977-9	Australian Selection	Stratigraphic percussion drilling to locate the eroded top of the Pandurra Formation. Sparse Cu mineralisation intersected.	
2996		301	1977-9	Australian Selection	Targetted stratabound Cu in Tapley's Hill Formation. Percussion drilled magnetic highs with anomalous Pb-Zn intersected. Radiometric logging correlated stratigraphy. No mineralisation in Pandurra or at its basal contact with the Gawler Range Volcanics.	
3024		332	1977-9	CSR	Targetting shallow Mt Gunson style strataform Cu mineralisation, southern Stuart Shelf. Minor Cu mineralisation intersected in hole EX173 at Tapley Hill/Pandurra contact.	
3025		338	1977-9	Pacminex	59 drillholes in Winnie Pinnie, Lake Dutton and Bookaloo areas.	
3026		399	1977-9	CSR	Mt Gunson type target. Gravity and aeromag interp, follow up geophysics and drilling.	
3036		322	1977-8	Dampier Mining	Mahanewo, strataform base metal search in Adelaidean seds on western edge of Stuart Shelf. One DDH to 176m. No mineralisation.	
3072		329	1977-9	Australian Selection	Uro Bluff. Targetting stratabound Cu in Tapleys Hill Fm. and diamondiferous kimberlites. Low grade Cu/Pb/Zn discovered at base of Tapleys Hill Fm. (same as Env 2585)	
3093		370	1978	Delhi International Oil	Lake Torrens salt and brine search. Found anomalous but sub-economic Cu,Pb, Zn in basalts and Wyalla Sandstone. (BDH2 and 3). Same as Env 2643	
3123		352	1978	Abminco	No information in summary	
3131		362	1977-8	CRA	Ground gravity and mag survey to investigate a 6mgal residual grav anomaly under SE part Lake Gairdner. Anomaly no located and explained by poor station levelling.	

Gawler Craton - Stuart Shelf Open File Company Reports

Envelope No.	Reference	Mineral Title (EL's unless otherwise stated)	Period	Explorer	Comments	Full Text Avail.
3228		392	1978	Carpentaria Exploration	Photointerpretation Curdimurka/Stuart Creek area	
3245		389, 676, 1046	1978-83	Australian Selection/CEC	Red Hill/E of Pernatty Lagoon. Further drilling of mineralisation at base of Tapley Hill Form and of a mineralised siltstone breccia below the Gawler Range Volcanics (Wandearah Siltstone??). See Env 2703	
3411		424, 801	1978-83	CEC/Australian Selection / Geopeko	Emmie Bluff. O.D. targetting 15km SE of Arcoona Homestead. Three prominent aeromag anomalies drilled. Low grade Cu-Pb-Zn intersections from Fe enriched Pandurra above Gawler Range Volcanics. No significant U or kimberlitic indictaor minerals.	
3552		534	1979-81	CSR/Sumitomo/Nissho	Stratab. base metal search in southern Stuart Shelf. Studied previous stratig. drilling and 11 more holes drilled. IOCG search plus detaiuled geophys in the Illeroo area. (Env 3024 area)	
3635		509	1979-80	Australian Selection	Stratform base metal search, 3 more percussion holes SE of Lake McFarlane. No mineralisation discovered, depth to Pandurra increases to the east.	
3693		510, 933, 1107, 1134, 1170, 1198, 1205	1982-3	CEC/MIM/Aust Sel./Geopeko	1369m hole at Buller Dam on W flank of Acropolis aeromag anomaly terminated in Pandurra Form. Trial aeromag and radiom surveys over Portulacca and Eucolo grav anoms. Located a magnetic ridge which was not drilled.	
3701		542, 950	1979	Pacminex	10 drill holes and a stratigraphic study in the Charlinga area.	
3769		582, 973	1979-86	Delhi/Acquitaine/Urangell./CSR/Triako	Same ground as EL370 (Env 3093) see RB81/50	
3878		628, 1015	1980-3	Esso and Acquitaine	Regional and infill geophysical surveys in Roxby Hill area NW Woomera for IOCG deposits. One DDH to 500m intersected Adelaidean sediments underlain by a suite of dolerite and melaphyre intruding Pandurra. No anoms or radiation.	
3994		713	1980-2	Afmeco	O.D. target on linear gravity ridge S of Lake McFarlane with potential for sedimentaary U at the Pandurra Formation/Gawler Range Volcanics contact. Intersected dolerite and rhyolites with weak base metal anoms assoc with the dolerite and in sahaley parts of the Pandurra.	
4040		708, 935	1982-3	Afmeco	Drilled mag/gravity anoms for O.D. style mineralisation near Kangaroo Bluff on E side Lake Gairdner. No geochem anomalism, no shallow pre Gawler Range Volcanics basement and Pandurra contains only background U and base metals.	
4115		768	1980-1	Australian Selection	Multi-element geochem analysis of core from SAD1 showed only weak REE anoms from GRV. Therefore licence surrendered	
5506		1003	1982-4	BHP Minerals	11 percussion holes drilled for kimberlite targets. None found.	
5868		1245	1984-5	PNC	Sed U and base metal search E of Lake Gairdner and 70km SW of Woomera. Ground follow up of airborne radiometric anomalies resolve all but one to K sources in salt lakes. Outcrop of U bearing dacite drilled near a fault interpreted from aeromag. No mineralisation found.	
6562		783, 784, 1316	1981-6	Western Mining	Comprehensive report on WMC exploration in the Start Shelf area over many years. Full report downloaded.	
6591		50, 81, SML96, SM121, SML139, SML494, SML527, SML641, 29, 199, 186, 338-9, 332, 542-3 534, 950-2	1970-1988		Summary index for exploration data for the Mount Gunson / Stuart Shelf areas.	
6611		542	1977	Pacminex	Petrology study of samples of Tapley Hill Formation. Conclusion was that the Formation was deposited in restricted shallow water basin environments around fringes of Pernatty Culmination, therefore only small deposit very fine grained sulphide potential.	
6628		81	1975	Mt Gunson Mines	Diamond Drilling report, Gully area Mt Gunson - no mineralisation in shales of the Woocalla Dolomite	
6640		186, 338, 339	1976-1978	CSR	Groundwater geochemistry in CSR's tenements	
6663		50	1974	Pacminex	Report on the Mt Whyalla Barite Mine, Pandurra area. Shear zone cutting Pandurra Formation filled with high grade barite probably derived from GRV by low temp fluids.	
6735		861, 933, 1046, 1107, 1134, 1170, 1174, 1198, 1205, 1237, 1283, 1393, 1500, 1509,1617	1983-96	MIM, Geopeko	IOCGU exploration SE of Arcoona Station and near Woomera. Open File research and drilling of geophysical anomalies. Best result in SAE6 over Emmie Bluff gravity anomaly where Cu+Au found in hematite and magnetite basement below a granitic breccia from 923m-1030m. Also 6m of 1.5%Cu and anom Zn and Ag in the overlying Tapley Hill Formation	
6962		00543, 00950-2, 01319	1979-87	CSR, Placer, WMC	Targetting Mt Gunson and O.D. style mineralisation. Comprehensive geophysical surveys and drilling programmes discovered 'numerous mineralised zones in Adelaidean and basement rocks'. Full report downloaded	
8216		1617, 1659, 1808	1989-96	MIM, Peko	Target O.D. style mineralisation 15km SE of Arcoona Homestead - Emmie Bluff. Follow up on Env06735. Full report downloaded.	

Gawler Craton - Stuart Shelf Open File Company Reports

Envelope No.	Reference	Mineral Title (EL's unless otherwise stated)	Period	Explorer	Comments	Full Text Avail.
8292		1623	1989-91	Aberfoyle	Kupferschiefer - style Cu sulphide targets within Tapleys Hill Formation in Pernatty Ridge area. Literature review, minor drilling and lead isotope analyses of THF and Wandearah Metasiltstone core indictated that the lead is radiogenically derived and orebody targets lie at 500m -1500m depth.	
8482		190, 784, 1316, 1338	1975-91	WMC/BP/PNC	Targetting base and precious metal deposits associated with aeromagnetic anomalies and co-incident gravity highs lying within a previously relinquished area of the Stuart Shelf. 11 deep diamond drill holes targetted geophysical anomalies and discovered minor mineralisation. Depth of cover prevented any electrical methods from being effective.	
8687		861, 1617	1989-92	Geopeko, MIM	Mt Gunson-style and basement-hosted O.D. style Cu-U-Au style targets. Review of past work on these EL's.	
9002		1989	1994-5	R.J.Haren, Caldera	Drainage sampling for diamonds and base metals near G2 lineament 30km SE of Woocalla. One anomaly identified which did not survive a follow up survey.	
9137		1895	1993-6	Helix, Livre Holdings	Ground magnetic follow up of airborne surveys, followed by drilling (6RC holes) of the shallower ones located thin magnetic sediments within the cover rocks. Drainage sampling for diamonds did not locate any indicator minerals.	
9527		02339, 02988	1997-2005	Tasman Resources	Targetted a small area near NE shore of Lake Torrens for O.D. or Mt Gunson type mineralisation. Soil sample traverses followed by mobile metal ion (MMI) partial leach multi-element analyses identifed anomalism associated with low amplitude linear magnetic anomalies. Newly acquired aeromagnetic data was modelled to try and locate geosynclinal rift faults that may have been reactivated during the Delamerian and could have then acted as mineralising channelways.	
9715		2516, 2567	1998-2001	Stuart Metals,	A review of previous work in the Mt Gunson district did not identify targets for further work.	
9953		02924, 02926	2002-3	Avoca Resources	O.D. and Mt Gunson mineralisation styles in 2 areas 50km NW and 100km North of Port Augusta. A review of past work was followed by detailed gravity and soil sampling (MMI). The latter did not reveal any anomalism.	
10256		3032	2002-3	Minex	Denial of Native Title access to the floor of Lake Torrens at Carrapateens Arm resulted in licence surrender without any work having been done.	
10728		2639, 2756, 3008, 3022, 3112	1999-2004	Stuart Metals, Gunson Res.	Targetting (1) strataform Cu like the African Copperbelt and White Pine in Michigan in The Adelaidean sediments with Cu having been leached out of the Pandurra redbeds or from the basement - such as the deposits at Windabout and MG14 that are hosted by the dolomitic black shales of the T.H.F. (2) O.D. style (3) any Au style found in the Gawler Craton. One 450m hole and 2km x 2km gravity surveying.	
10798		3209	2005	Tasman Resources	PACE drilling programme. Results of drilling 25km NE of Olympic Dam, altered, brecciated, granitic and volcanoclastic lithologies.	
10801		3209	2005	Tasman Resources	PACE drilling programme., 30km south of Olympic Dam over old WMC prospect.	
11030		2979	2005	Havilah, Red Metal	PACE drilling programme., 70km SE of Woomera.	
11036		2879	2005	RMG Services	PACE drilling programme. Description of CAR1 and CAR2, the discovery holes at Carrapateena.	
11107		3209	2005	Tasman Resources	PACE drilling programme. Results of drilling 25km NE of Olympic Dam.	
11223		2979	2006	Red Metal/Havilah	4 PACE partly funded DDH's into subtle gravity anomalies coinciding with a major NW-trending fault zone and assocaited sericite alteration 50km S of Carrapateena. No mineralisation intersected.	

URANIUM ONE
CARIEWERLOO BASIN GRAVITY SURVEY

PROJECT 07044

August - September 2007

Report Number 07044
JR Wood

CLIENT
URANIUM ONE

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1. INTRODUCTION

A precision GPS-Gravity survey was carried out between the 23rd of August and the 9th of September 2007 for Uranium One. A total of 2,436 new gravity stations were surveyed in Central South Australia.

Gravity data were acquired using a Scintrex CG3M automated gravity meter. Position and level data were obtained using Ashtech Z12 geodetic grade GPS receivers operating in post-processed kinematic mode. Data were acquired using Daishsat helicopter-borne methods.

Gravity data were reduced using standard reductions on the ISOGAL84 gravity network. GPS data were reduced to MGA coordinates with levels expressed as metres above the Australian Height Datum.

Photo 1: Typical terrain within the survey area.

2. SURVEY OVERVIEW

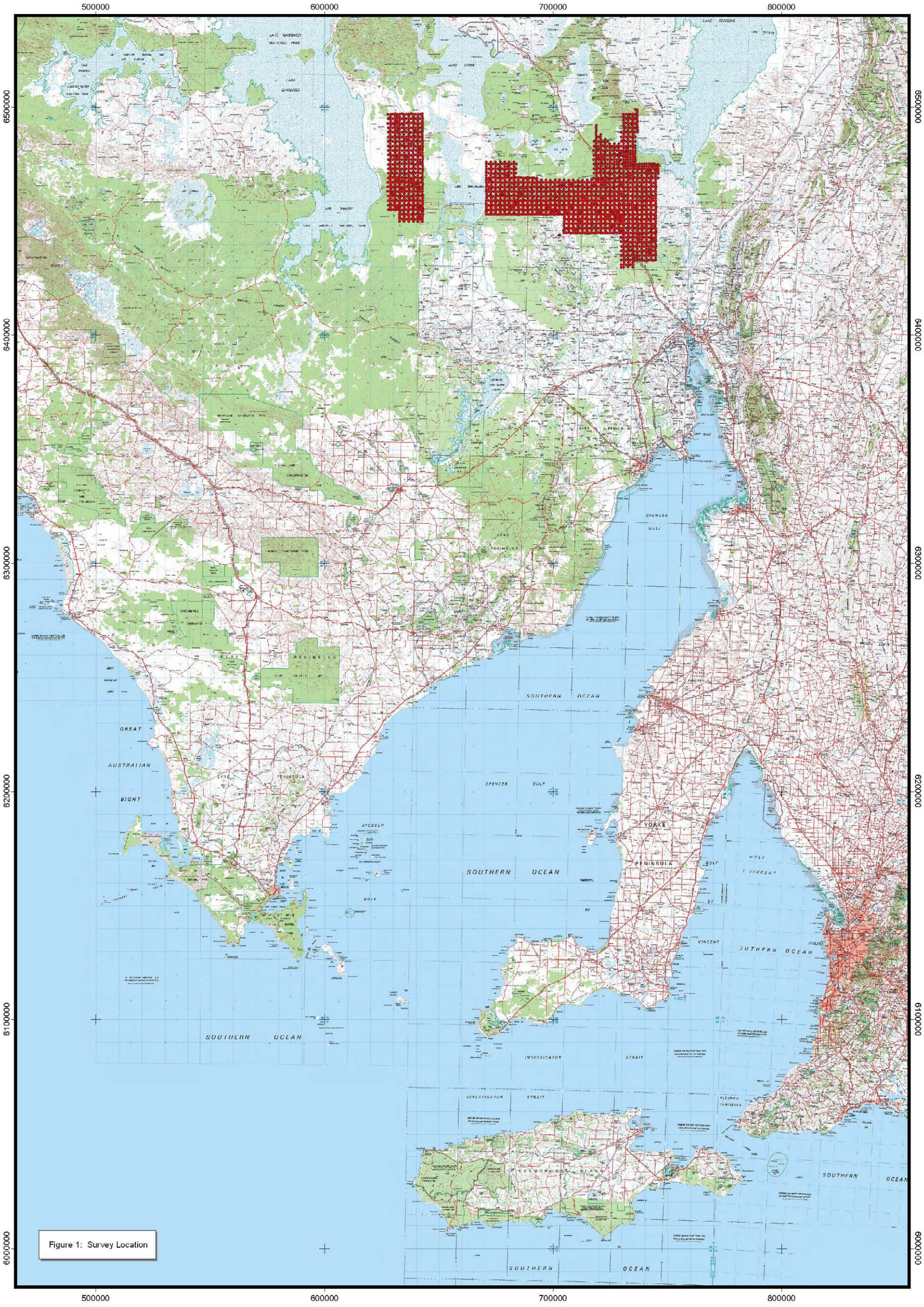
The regional gravity survey covered a large area between the Southern tip of Lake Torrens and the Eastern edge of Lake Gardiner. It was based out of Yudnapinna Station approximately 80 km North West of Port Augusta. The location of the survey is shown in Figure 1.

The survey area covered approximately 3000 square kilometers with station roads providing vehicle access to helicopter refueling locations.

The terrain encountered during the survey was varied, ranging from relatively flat rangeland to steeper rocky outcrops. Some areas of the survey were thickly vegetated requiring the offset of some points.

Gravity surveying was conducted on a grid with station and line spacing being 1 or 2 km depending on the detail required. Appendix A contains a plot of the final station locations.

Photo 2: Yudnapinna station.


500000
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LAKE GARDNER
NATIONAL PARK
LAKE GARDNER
LAKE TORRENS
GREAT
AUSTRALIAN
BIGHT
EYRE
PENINSULA
SPENCER
GULF
YORKE
PENINSULA
SOUTHERN
OCEAN
INVESTIGATOR
STRAIT
KANGAROO
ISLAND
Figure 1: Survey Location

3. PERSONNEL AND EQUIPMENT

3.1 Personnel

The supervisor in charge of the project was David Daish. David was responsible for daily management of the job and for nightly data processing to ensure quality and integrity. Gravity and GPS measurements were carried out by:

David Daish, Senior Surveyor
Andrew McCarthy, Surveyor
Gavin McPherson, Surveyor

Four helicopter pilots were used for the helicopter surveying:

Rick Keece
Andrew Catt
Peter McDonald
John Warr

Final data reduction and inspection were performed by the company Geophysicist, Grant Coopes.

Photo 3: Dense vegetation necessitated offsetting some points.

3.2 Survey equipment

The following survey equipment was utilised on the gravity survey:

- Scintrex CG-3M digital gravity meter (S) SN: 711 410
- Two Leica System 1200 GPS receivers
- Notebooks for data processing and backup
- Magellan FX324 GPS receivers for helicopter navigation
- Garmin Handheld GPS receivers for vehicle navigation
- Notebook computers for data processing and backup
- Various chargers, solar cells and batteries

3.3 Vehicles

Due to the type of terrain to be encountered, 4WD Landcruiser vehicles were used for the duration of the job. To maintain the high Daishsat safety record, vehicles were fitted with a range of safety equipment including:

- One 20l jerry can of water
- Dual fuel tanks
- Two spare tyres
- HF radio and satellite phone with car kit
- Self-recovery equipment including a hand winch, snatch straps and rope
- Tyre pliers to effect tyre repairs in the field
- Tools and spares to enable field repairs as necessary
- Survival kit with EPIRB emergency locator beacon

3.4 Helicopter

Ferry between the gravity stations was necessitated by a Robinson R-44 Helicopter – call sign VH-HZH. This particular helicopter was well suited to the project as changeable air filters allowed for dusty landings.

3.5 Accommodation

The helicopter crew camped in buildings located at the Yudnapinna Homestead. The station was well serviced with electricity and water available on site.

3.6 Communications

All survey crews and support vehicles were equipped with hand-held Globalstar satellite phones as well as UHF and VHF transceivers. "Omnitrack" satellite based tracking was used on all vehicles (including helicopters) to enable asset monitoring via a web interface.

Scheduled communications were made by all crews to the communications centre at the base camp at hourly intervals. Communication with the Perth and Murray Bridge offices was ongoing for the duration of the job.

Photo 4: Robbinson R-44 Helicopter with surveyor making a gravity measurement.

4. GPS SURVEYING AND PROCESSING

4.1 Set out of the grid

This was done concurrently with the gravity data acquisition using navigation grade receivers operating in autonomous mode. Where possible, the readings were taken as close to the ideal coordinates as possible. As the receivers were operating in autonomous mode, set out accuracy was usually better than 10m.

Raw kinematic GPS data were logged by a dual-frequency Leica 1200 receiver inside the helicopter cabin, with the GPS antenna mounted on the rear tail shaft boom. Static GPS data were logged at each of the base stations using a Leica 1200 GPS receiver for later post-processing.

At the repeat stations, a washer tied with flagging and marked with the station number was used for identification. At each station, the station number, position and RL were recorded digitally by the crew.

4.2 Survey datum and control

The gravity surveying, and hence any gravity reductions, used the Australian Height Datum (AHD) as the reference datum. A new GPS/Gravity base station was established using at least two days worth of static data and connections to ITRF stations using Geoscience Australia's online GPS processing system, AUSPOS. For more information on this system, please visit the Geoscience Australia website at http://www.ga.gov.au/geodesy/sgc/wwwgps/. Final deviations of better than 5mm were obtained for x, y and z, for all occupations. Appendix D contains the GPS base station information.

4.3 Processing of the position and level data

The raw GPS data were recorded onto the internal RAM of the GPS receivers. The data were downloaded nightly onto laptop computer for post processing using Waypoint Grafnav v7.00.

Waypoint combines the processing components, GrafNav and GrafNet, in a complete package.
GrafNav processes data for one baseline (e.g. one base and one remote). GrafNav is normally used for kinematic data which it is extremely well suited for. It can also process single static baselines. Receiver types can be mixed and matched via the use of a common format. This component of Waypoint was used for processing the kinematic data acquired each day.

GrafNav and GrafNet share the same processing engine that has been under continuous development since its original inception by Waypoint in 1992. The core of this robust engine is its carrier phase kinematic (CPK) Kalman filter. Some of the major advantages of Waypoint's kernel are:

Fast processing - The GrafNav kernel is one of the fastest on the market. It will process ~0.8 epochs per MHz per second on a Pentium II.
Robust Kalman filter - From experience with processing GPS data from fast jets and NASA sounding rockets, the processing kernel has become extremely robust. Efforts have been made to account for all of the various data error possibilities given the different types of GPS receivers that GrafNav/GrafNet can handle.
Reliable OTF - Waypoint's on-the-fly (OTF) algorithm, called Kinematic Ambiguity Resolution (KAR), has had years of development and stresses reliability. Variations are implemented for both single and dual frequencies, and numerous options are available to control this powerful feature
Accurate Static Processing - Three modes of static processing are implemented in the processing kernel. Fixed static is the most accurate. A quick static solution is also available as an alternative, while the float and iono-free float solution is useful for long baselines.
Dual Frequency - Full dual frequency support comes with GrafNav/GrafNet. For ambiguity resolution, this entails wide/narrow lane solutions for KAR, fixed static and quick static. Ionospheric processing is very important with the peak of the ionosphere's cycle occurring in 2000. The GrafNav kernel implements two ionospheric processing modes including the iono-free and relative models. The relative model is especially useful for airborne applications where initialization is near the base station, and this method is much less susceptible to L2 phase cycle slips.
Forward and Reverse - Processing can be performed in both the forward and reverse directions. Both GrafNav and GrafNet also have the ability to combine these two solutions to obtain a globally optimum one.
Velocity Determination - Since the GrafNav kernel includes the L1 Doppler measurement in its Kalman filter, velocity determination is very accurate. In addition to this, a considerable about of code has been added specifically for the detection and removal of Doppler errors.
Long Baseline - Because precise ephemeris and dual frequency processing is supported, long baselines accuracies can be as good as 0.1 PPM.

For more information about Waypoint processing software, and in particular, Grafnav, please visit the Waypoint http://www.waypnt.com/grafnav_d.html.

Simple transformations to MGA and AHD were done using the GPS derived WGS84 positions.

MGA94 coordinates were obtained by simply projecting the GPS-derived WGS84 coordinates using a UTM projection with zone 53S. For all practicable purposes, the WGS84 geodetic coordinates are equivalent to GDA94 geodetic coordinates, so no transformation is necessary. For more information about GDA94 and MGA94, please visit http://www.ga.gov.au/geodesy/datums/gda.jsp.

AHD heights were calculated via Waypoint software using the latest geoid model for Australia, AUSGEOID98. Information about the geoid and the modeling process used to extract separations (N values) can be found at http://www.ga.gov.au/geodesy/ausgeoid/. To obtain AHD heights, the modeled N value is subtracted from the GPS derived WGS84 ellipsoidal height (Figure 2).

$$H_{AHD}=h_{WGS84}-N$$

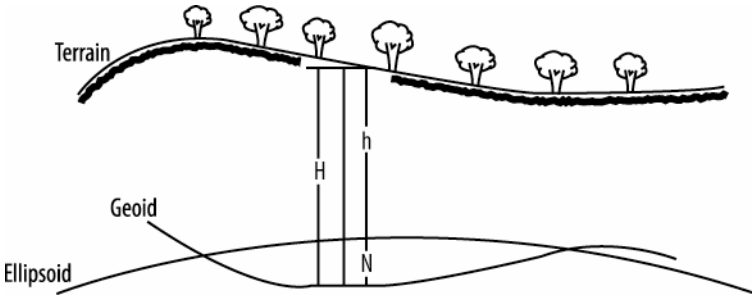


Figure: 2: Geoid-Ellipsoid separation

4.4 GPS Performance

Performance from the Leica receivers was excellent. There were no stations that required repeating due to GPS failure or poor coordinate quality.

5. GRAVITY SURVEYING AND PROCESSING

5.1 Gravity data acquisition

Gravity observations were made concurrently with the GPS measurements (Photo 6). Two observations were made for each station, with each observation consisting of a 20-second or greater stacking time. Multiple observations were made at each station so that any seismic or instrumental noise could be immediately detected. The tolerance between readings was set at 0.03 of a dial reading (0.03 mGals). Vertical and horizontal levels were restricted to 5 arc seconds at all times. At each station, the station number, time and two gravity readings (in dial units) were recorded in DAISHSAT carbon-copy gravity field books. The Scintrex meters also automatically record the station, time and readings digitally to allow for downloading to computer.

5.2 Gravity base station

A gravity base station was used for calculation of absolute gravity and drift determination. Details of the gravity base are contained in Appendix D. When in the field, a base station reading was taken in the morning before observing and at evening after the last observation. When taking a base station reading, the observed gravity values were stacked over 60 seconds to ensure accuracy. Observations were repeated until the readings repeated to 0.010 of a dial reading or less.

The gravity base station was set up at Yudnapinna Station proximal to the homestead buildings as well as the helicopter pad. The station was established via ABA ties with an existing Daishsat gravity base in the area.

5.4 Gravity data processing

Raw gravity data were processed on a daily basis to check for quality and integrity. This interim process produced a set of Bouguer Anomaly values which were contoured and imaged to provide a check for any anomalous readings that would need repeating. Geosoft GRAVRED software was used for the gravity reduction in the field. Upon conclusion of the job, the data were reprocessed using the contract specified GA formulae with Daishsat proprietary software. Other software used on this project includes Arcview, ChrisDBF, RasterTC, Waypoint and ERMapper. The formulae used for final processing are listed below:

Instrument scale factor: This correction was used to correct a gravity reading (in dial units) to a relative gravity unit value based on the meter calibration.

Tidal correction: This correction was used to correct for background variations due to changes in the relative position of the moon and sun. The Scintrex calculated ETC was removed and a new ETC calculated using Geosoft Formulae and the surveyed GPS latitude. The formulae used are contained in Appendix G.

Instrument Drift: Since gravity meters are mechanical, they are prone to drift (extension of the spring with heat, obeying Hooke's law). If two base readings are taken one can assume that the drift between the two readings is linear and can therefore be calculated. The drift and tidal corrected value is referred to as the *observed gravity*.

Normal Gravity: The theoretical value of gravity was calculated using the 1967 variant of the International Gravity Formula and used to latitude correct the observed gravity.

$$Gn=9,780,318.456*(1+0.005\ 278\ 895*\sin^2\phi+0.000\ 023\ 462*\sin^4\phi)$$

where ϕ represents degrees of latitude;

Free-Air Correction: Since gravity varies inversely with the square of distance, it is necessary to correct for changes in elevation between stations to reduce field readings to a datum surface (in this case, AHD).

$$(3.08768 - 0.00440\ \sin^2\phi)*h - 0.000001442*h^2\ \mu ms^{-2}\text{ per metre}$$

Bouguer Correction: This correction accounts for the attraction of material between the station and datum plane that is ignored in the free-air calculation. A value of 2.67 tm^3 was used in the correction.

$$0.4191*\rho\ \mu ms^{-2}\text{ per metre}$$

where ρ = density 2.67 tm^3

Free Air Anomaly: This is obtained by applying the free air correction (FAC) to the observed gravity reading.

$$FAA=G_{OBSG84}-Gn+FAC$$

Bouguer Anomaly: This is obtained when all the preceding reductions or corrections have been applied to the observed gravity reading.

$$BA267=G_{OBSG84}-Gn+FAC-BC$$

5.5 Gravity meter drift calibration

While the survey was in progress, the Scintrex meter was cycled overnight as a check on instrument drift. Changes were made to the drift constant where appropriate.

5.6 Terrain Corrections

Terrain corrections were rigorously applied to the final data in an effort to minimize the effect of terrain encountered near areas of moderate to high relief. Digital elevation data of the area were used by the program RASTERTC to perform near zone to far zone corrections. The software utilised was coded by Geophysical Software and is ideally suited to this project. For more details regarding the method and a more in depth discussion of the algorithm used, please visit http://geopotential.com.

The terrain correction procedure corrects gravity measurements for the effect of terrain from a distance Rmin to a distance Rmax. Each gravity station is processed independently, and therefore corrections calculated for a particular station do not depend upon possible location errors of other stations.
The correction procedure divides the circular area enclosed by Rmax into an inner zone and an outer zone; the radius separating the inner and outer zones is denoted Rmed. A surface is fit to the elevations between Rmin and Rmed; this surface is numerically integrated to calculate that portion of the terrain correction that is due to the terrain located in the interval Rmin <= R <= Rmed. The figure below illustrates the subdivision of areas used in the calculation.

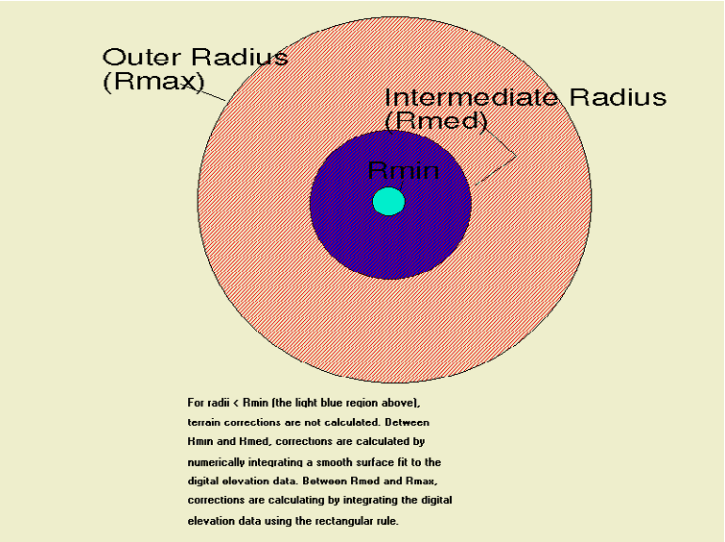


Figure 3: Calculation areas used by RASTERTC

The program uses triangulation and interpolation procedures to interpolate elevations between Rmin and Rmed. Between Rmed and Rmax, the terrain effect is calculated by assuming that each elevation sample represents the elevation of a rectangular compartment; a line element formula is used to calculate the effect of each such compartment. Terrain compartments lying between Rmed and Rmax that partially intersect the circular radius Rmed are treated in such a way that only the effect of that portion lying outside Rmed is added to the overall terrain effect. A similar procedure is applied to those compartments that partially intersect the outer radius Rmax

Note that the numerical integration procedure used to calculate the effect of terrain lying between Rmin and Rmed essentially integrates the effect of a line element between the two radii. This integration is repeated every 8° to obtain the effect of all the terrain lying within the circular region. The radial portion of the integration is performed using an adaptive technique called QUAN8.

A terrain surface is used close to the station location because the elevations provided by the DTM are samples and do not actually represent mean elevations of rectangular compartments. The use of a surface provides a terrain representation that should be much closer to reality than the use of compartments of constant mean elevation. At a certain distance from the station, the procedure of considering the elevation samples as representing the mean elevation of a rectangular compartment should yield numerical results than are not distinguishable from the results that would be obtained by actually using mean elevations of compartments whose size would necessarily be larger than 30 m on a side. In fact, the method used is equivalent to numerically integrating the terrain effect (at distances greater than Rmed) using a rectangular rule. Because the compartment size is relatively small, use of the rectangular rule should be rather accurate.

The elevation of the gravity station is not directly used during the computation of the effect of terrain effects. Instead, the elevation at the horizontal location of the gravity station is calculated from the multiquadric representation of the terrain surface, and this calculated elevation is used in the computation of the effect of terrain. The actual elevation of the gravity station is not used at all.

Numerically, the procedures used for the calculation of the terrain effect are extremely accurate, especially when compared to terrain corrections calculated using template methods. However, the corrections calculated are no better than the terrain data that are used to represent the terrain about each gravity station.

Various parameters were experimented with to obtain the optimum result for this particular survey. A brief discussion of the process and trials used to obtain the final result follows. All output files from the correction procedure have been included on the DATA CD to make follow-up interpretations easier. Note that all terrain corrections used a rock density of 2.67 tm^3.

5.6.1 DEM Preparation

Before attempting terrain corrections, an accurate DEM was sourced from an SRTM (Shuttle Radar Topography Mission) excerpt. The Shuttle Radar Topography Mission obtained elevation data on a near-global scale to generate the most complete high-resolution digital topographic database of Earth. SRTM consisted of a specially modified radar system that flew onboard the Space Shuttle Endeavour during an 11-day mission in February of 2000. For more information regarding the mission and the resultant elevation dataset, please visit http://www2.jpl.nasa.gov/srtm/

This data is provided at ~90m centres, but was re-gridded to a 25m cell size to enhance resolution. Terrain over the area varied from 0m to 1000m above sea level, with some severe terrain proximal to some of the stations on the eastern side of the grid. The DEM is shown in Figure 4.

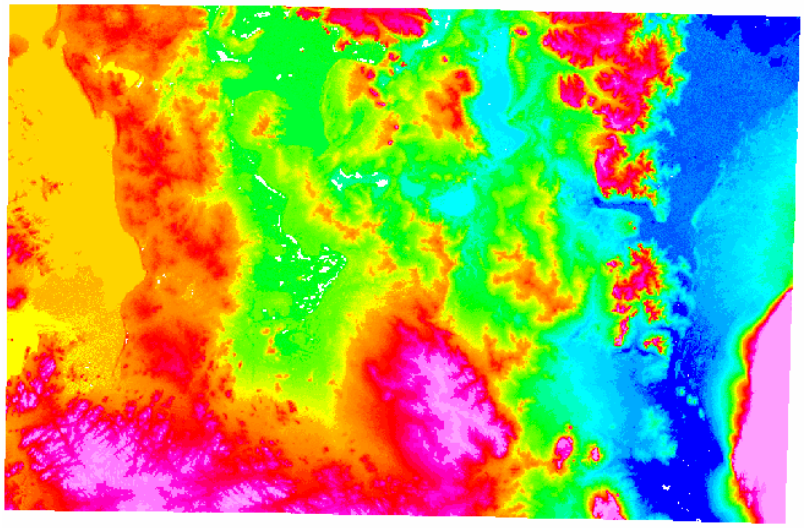


Figure 4: Digital Elevation Model for the Cariewerloo Basin and Surrounds

5.6.2 RASTERTC Correction

A terrain correction from 25m to 30000m from the gravity station was conducted using RASTERTC, with the following radius parameters:

Rmin = 25m
Rmed = 250m
Rmax = 30000m
Azimuthal Integration Angle = 6 degrees

Rmin was selected to correct for all terrain in the immediate vicinity of the station and coincided with the cell size of the SRTM grid. Rmax was specified to allow correction for the extreme terrain at large distances from the station (outer zone). Rmed of 250m was chosen so that the terrain would be “sampled” at an interval close to that of the grid cell size when using an integration angle of 6 degrees. During the radial integration, near the maximum radial portion of the integration (250m), the terrain surface is being sampled at approximately Rmed(sin(angle)), where "angle" is the azimuthal integration angle selected and R is the maximum radius chosen for the surface integration.

When calculating the RASTERTC correction, the station GPS elevations were not used. Instead, the elevation at the horizontal location of the gravity station was calculated from the multiquadric representation of the terrain surface, and this calculated elevation was used in the computation of the effect of terrain. The actual elevation of the gravity station is not used at all. The use of the actual elevation, rather than one consistent with the DTM terrain, effectively leads to gravity stations being located in deep holes or on very steep hills, whereas in fact such terrain features probably do not exist in the immediate vicinity of the gravity station.

5.6.3 Accuracy of the corrections

The terrain correction procedure produced highly accurate corrections for the most part. As with any terrain correction procedure, the accuracy of the final correction is dependant on the accuracy of the DEM used.

RASTERTC outputs a difference variable (GPS height – Interpolated DEM height) for each survey station and it is found that for most of the survey, these differences are less than 5m, which is insignificant when dealing with terrain corrections on a regional scale. The average difference is -3.4m, with a standard deviation of 1.3m. Figure 5 shows the distribution of these differences.

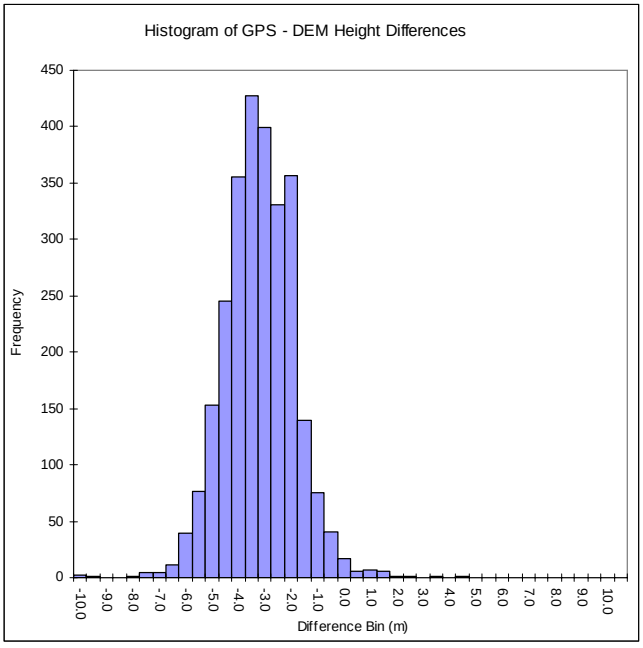


Figure 5: Difference between interpolated DEM elevation and station GPS elevation

Since the DEM has been confirmed as being accurate, one can rely on the corresponding terrain corrections as being also highly accurate. Indicators of quality are provided for both the innermost terrain correction and the outer terrain correction. On the listing and the output files, such indicators are listed under the column headings "QF-Inner" and "QF-Outer", respectively. If the TC calculation is OK, the quality factors should be 0 for both the inner- and the outer-zone portion of the calculation. Otherwise, the quality factors provide an indication of what might be wrong.

Additionally, a rough indicator of how well the terrain in the immediate vicinity of a gravity station is represented by the available elevation samples is obtained by examining the spatial distribution of the elevation samples. In the radial interval Rmin to Rmed, RasterTC counts the number of samples falling within the 8 octants surrounding the station. If any of these octants are missing elevation samples, that fact is noted, and the tabulated quality factor simply notes how many of octants are missing samples (see Table 4).

The QF-Outer codes are simple to interpret. A result of 0 means that the outer-zone calculation proceeded successfully. If a portion of the outer-zone terrain is missing from the elevation grids supplied, the value of QF-Outer will reflect the per cent of terrain that was available (rounded to the nearest per cent). For example, if QF-Outer is 91, the implication is that 9% of the terrain in the outer zones was missing for some reason, and that the terrain correction calculated for that particular station is too small by some amount.

QF-Inner	Meaning of Error Code
0	Inner-zone terrain calculation OK
1	No elevation samples occur in 1 octant surrounding the gravity station
2	No elevation samples occur in 2 octants surrounding the gravity station
3	No elevation samples occur in 3 octants surrounding the gravity station
4	No elevation samples occur in 4 octants surrounding the gravity station
5	No elevation samples occur in 5 octants surrounding the gravity station
6	No elevation samples occur in 6 octants surrounding the gravity station
7	No elevation samples occur in 7 octants surrounding the gravity station
22	Duplicate elevation nodes encountered while calculating terrain gradients
23	All elevation nodes collinear or triangulation structure corrupted
24	Invalid parameters passed to gradient calculation routine
26	Convergence not attained in calculation of terrain gradients
48	Internal logic error while attempting to delete duplicate nodes
49	Unable to allocate memory while deleting duplicate nodes
96	Internal error occurs while attempting to triangulate nodes near station
99	Less than 3 elevation samples are available near station
101	Duplicate nodes occur in elevation samples near station
-99	Unable to allocate sufficient memory for inner-zone TC calculation

Table 4: QF-Inner Error Codes

Raw and processed GPS and gravity data are contained on CDROM as Appendix H. Hardcopy plots of station location and coloured images are contained in Appendix A.

6. RESULTS

Raw and processed GPS and gravity data are contained on CDROM as Appendix E. Hardcopy plots of station location and coloured images are contained in Appendix A.

6.1 Stations Surveyed and Survey Progress

In total, 2,436 new stations were acquired during the survey. A brief production summary for the survey is show in Table 2 below.

Generally, production was varied with the crew achieving over 170 stations per day when they could work unhindered. Production was hampered by dense bush making safe landings difficult. Helicopter maintenance and poor weather also resulted in loss of production in some instances. The crew used this downtime to conduct the gravity control survey. There was no downtime due to geophysical/GPS equipment failure.

Cariewerloo Basin Gravity Survey		
Gravity stations acquired (including repeats)	2612	stations
Gravity station repeats	176	7.2%
New gravity stations acquired	2436	stations
Total accidents	0	accidents
Total hours lost from accidents	0	hours

Table 2: Gravity Production Summary

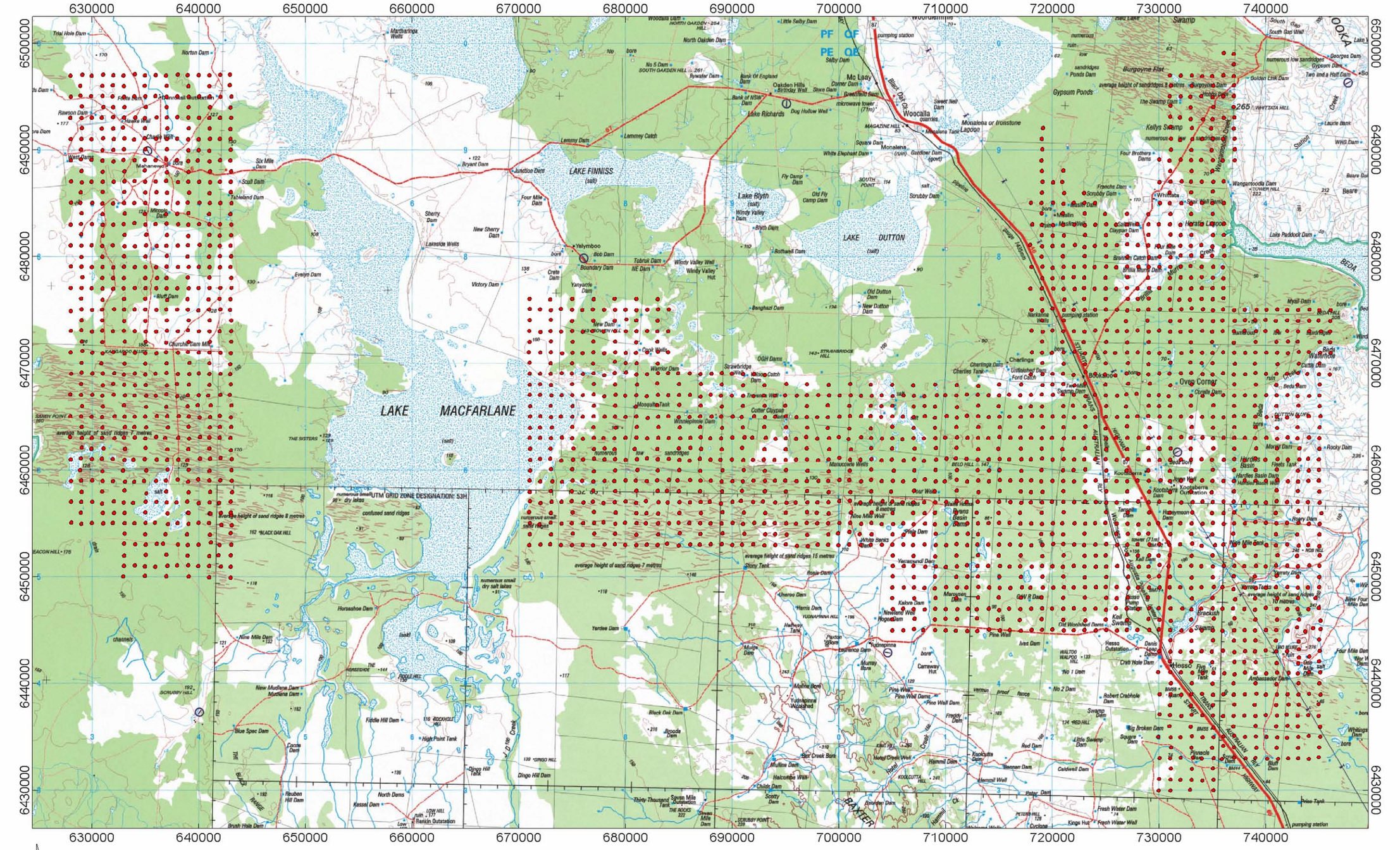
6.2 Data Repeatability

Analysis of the repeat data shows that measurement repeatability is excellent for both GPS and gravity observations. Appendix B contains histograms and summary statistics from the analysis. Based on the repeat data, one can assume the following typical accuracies for the observables:

Z position observation: < 0.062m
Gravity observation: < 0.028mGals

APPENDIX A

Plots of station location / Images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LAKE DUTTON
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Lake Blyth
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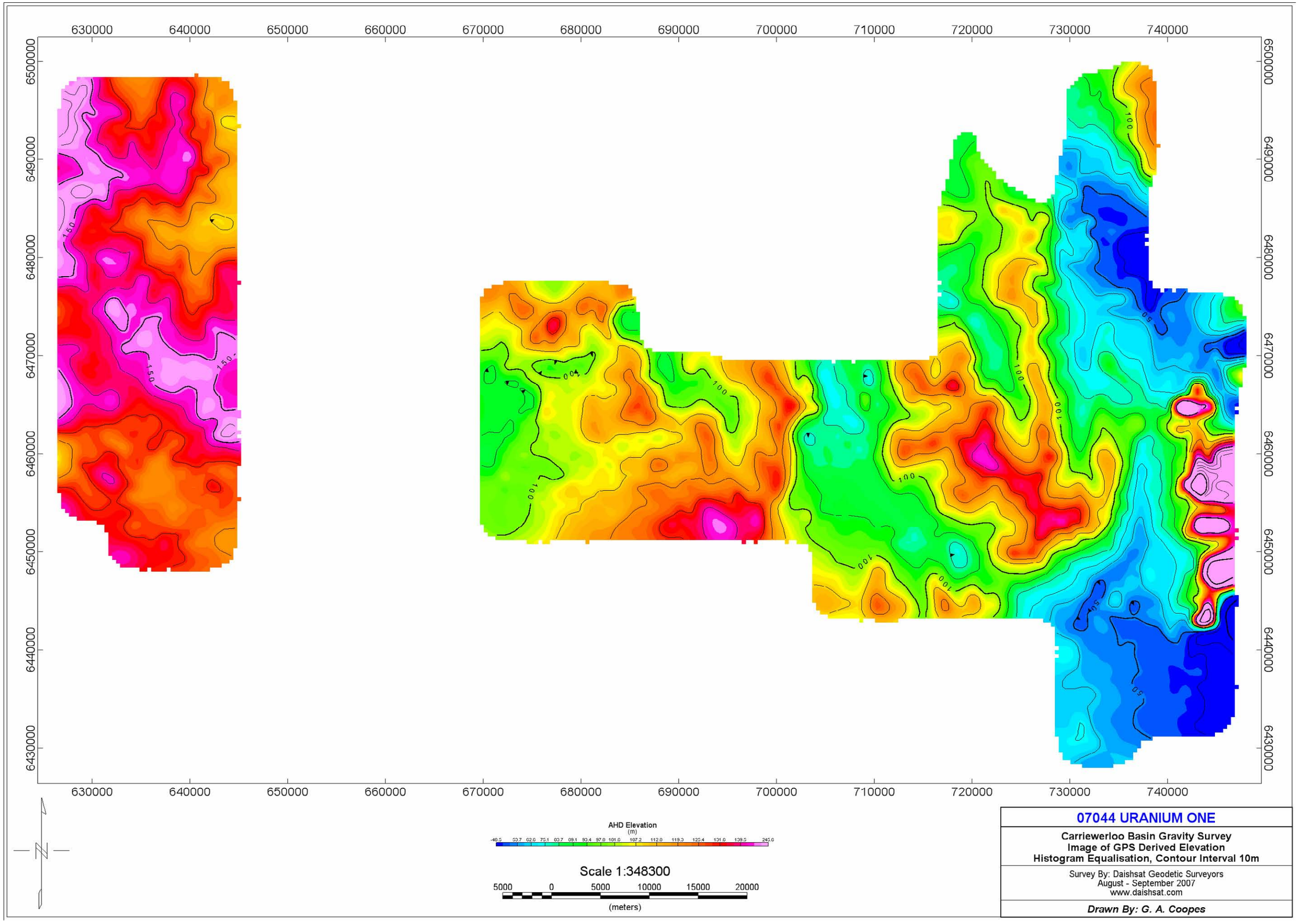
Lake Richards
Woocalla
quarries
Monalena or Ironstone
Lagoon
Gypsum Ponds
Burgoyne Flat
Kellys Swamp
Swamp
Ovag Corner
Bookabie
Charlinga
Hesso
Whittata
Herrits Lookout
Yelymboo
Boundary Dam
Bob Dam
Windy Valley Hut
Windy Valley Well
Junction Dam
Lemmy Dam
Lemmy Catch
Bryant Dam
Four Mile Dam
Sherry Dam
New Sherry Dam
Lakeside Wells
Victory Dam
Evelyn Dam
Yanyarrie Dam
Crete Dam
Tobruk Dam
NE Dam
Benghazi Dam
New Dam
Cook Wells
Warrior Dam
Mosquito Tank
Winnepinnie Dam
Strawbridge Dam
Kaloso Catch Dam
OGH Dams
Old Dutton Dam
New Dutton Dam
Bothamill Dam
Blyth Dam
Windy Valley Dam
Old Fly Camp Dam
Fly Camp Dam
Scrubby Dam
Monalena (ruin)
Gardiner Dam (govt)
Monalena Tank
Square Dam
White Elephant Dam
Sweet Nell Dam
Woocalla Dam
Mc Leay Dam
Bank Of England Dam
Bank of NSW Dam
Oakden Hills Birthday Well
Sloxe Dam
Breakfield Dam
Dog Hollow Well
Rywater Dam
No 5 Dam SOUTH OAKDEN HILL
North Oakden Dam
Little Salby Dam
Salby Dam
Woodsmiths
pumping station
Black Oak Ck
Trial Hole Dam
Norton Dam
Rawson Dam
Hawke Well
Charlie Well
Mackenevoo Dam
West Dams
Six Mile Dam
Scull Dam
Tableland Dam
Moppa Dam
Bluff Dam
Churchill Dam Mill
Nine Mile Dam
Horseshoe Dam
Fiddle Hill Dam
Blue Spec Dam
Cocks Dam
Reuben Hill Dam
Brush Hole Dam
Kessel Dam
North Dams
Rankin Outstation
New Mudlana Dam
Mudlana Dam
Yeroo Dam
Yardea Dam
Mulga Dam
Herris Dam
Yudnapinna Dam
Yudnapinna Wellshed
Black Oak Dam
Broods Dam
Mullina Dam
Halcombe Weir
Childs Dam
Scotty Dam
Boorden Dam
Seven Mile Outstation
Thirty Thousand Tank
High Point Tank
Dingo Hill Tank
Dingo Hill Dam
Kaloka Dam
Newland Well
Rogers Dam
Yerramundi Dam
Stony Tank
Rosie Dam
Marooden Dam
Carraway Hut
Murray Bore
Pine Wall Dams
Pine Wall
Ivec Dam
Creb Hole Dam
Robert Crabhole Dam
Swamp Dam
Big Broken Dam
Square Dam
Little Swamp Dam
Red Dam
Caldwell Dam
Koolcutta Dam
Hammil Dam
Hammil Well
Peter Dam
Fresh Water Dam
Fresh Water Well
Kings Hut
Cyclone
Brackish Swamp
Kail Swamp
Old Woolshed Dams
Four Brothers Dams
Frenchs Dam
Scrubby Dam
Claypan Dam
Brown Hill Catch Dam
Brown Hill Dam
Lake Paddock Dam
Wangamoodla Dam
Tower Hill
Myall Dam
Sunflower Dam
Wallaroo
Beda Dam
Beda
Rocky Dam
Morey Dam
Harolds Basin
Harolds Tank
Hesso Tank
Hesso Five Tank
Whitings Dam
Price Tank
Pinnacle Dam
Bluff Dam
Ambassador Dam
Four Mile Dam
Wangamoodla Creek
Stanford Creek
Laurie Bank
WHG Dam
Golden Link Dam
Two and a Half Dam
Georges Dam
Gypsum Bank
Beare
Beare Bank
Beda
Wallaroo
Darrie Dam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AHD Elevation
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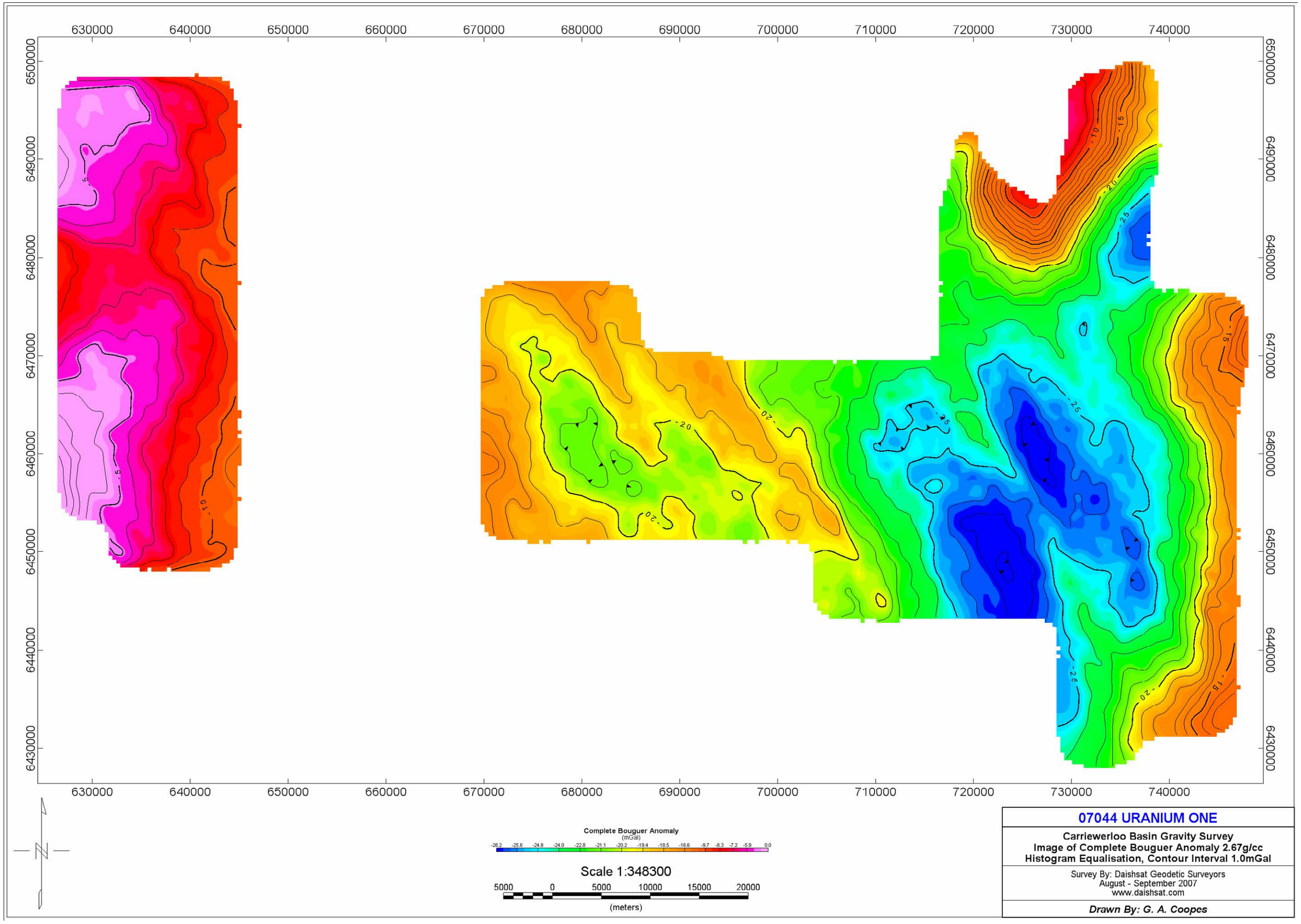
Scale 1:348300
5000 0 5000 10000 15000 20000
(meters)
07044 URANIUM ONE
Carriewerloo Basin Gravity Survey
Image of GPS Derived Elevation
Histogram Equalisation, Contour Interval 10m
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes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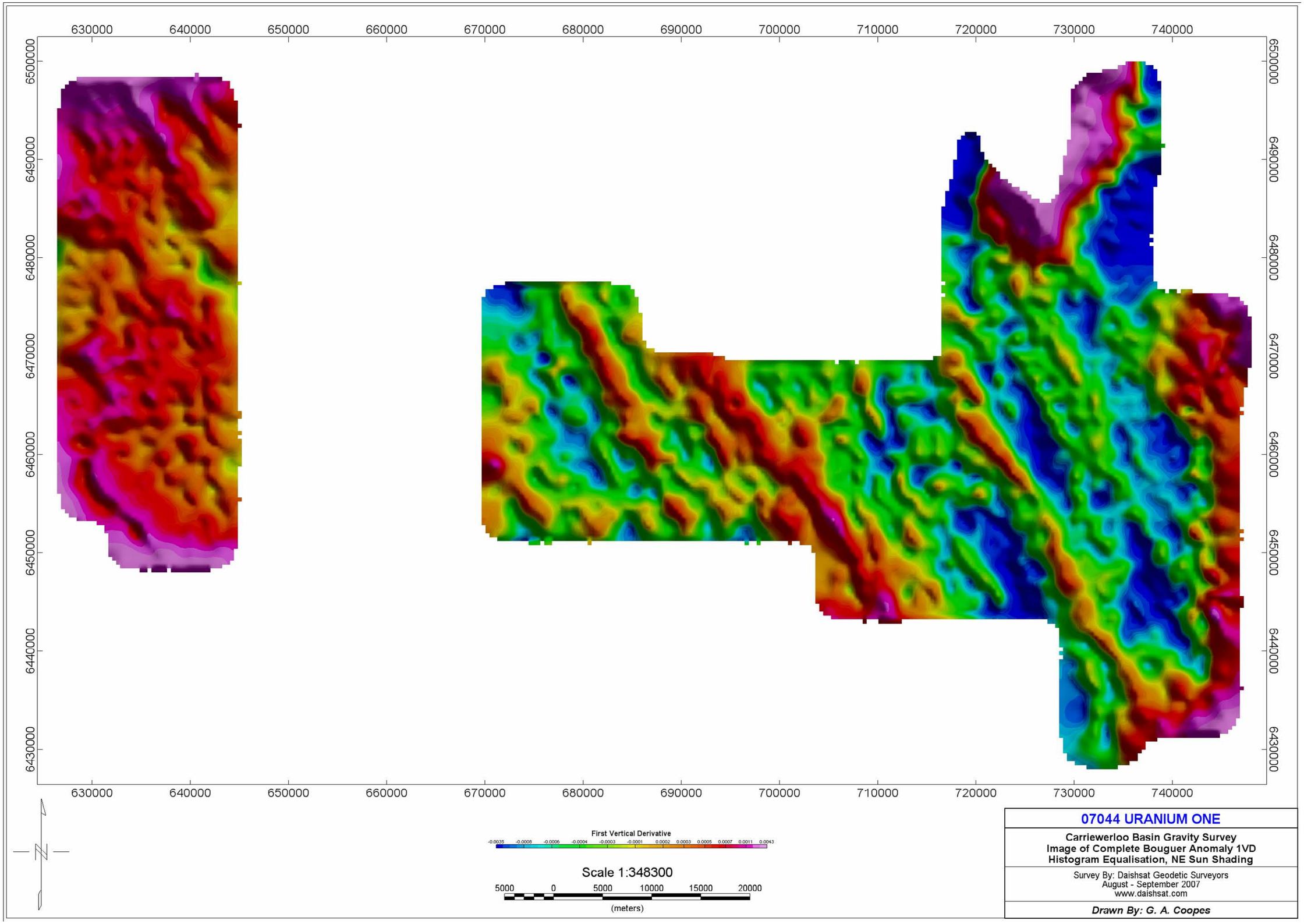
Complete Bouguer Anomaly
(mGal)
-28.2 -25.6 -24.8 -24.0 -22.8 -21.1 -20.2 -19.4 -18.5 -16.6 -9.7 -8.3 -7.2 -5.9 0.0
Scale 1:348300
5000 0 5000 10000 15000 20000
(meters)
07044 URANIUM ONE
Carriewerloo Basin Gravity Survey
Image of Complete Bouguer Anomaly 2.67g/cc
Histogram Equalisation, Contour Interval 1.0mGal
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes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First Vertical Derivative
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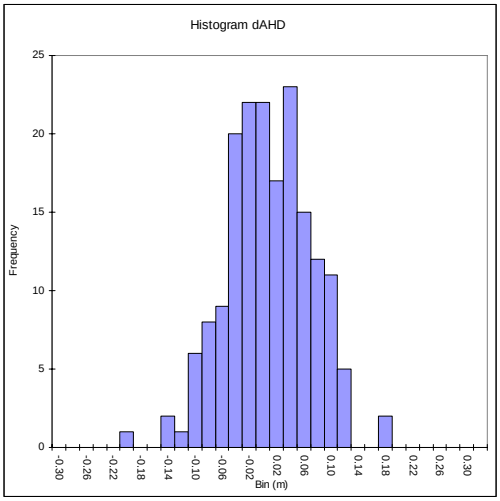
Scale 1:348300
5000 0 5000 10000 15000 20000
(meters)
07044 URANIUM ONE
Carriewerloo Basin Gravity Survey
Image of Complete Bouguer Anomaly 1VD
Histogram Equalisation, NE Sun Shading
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes

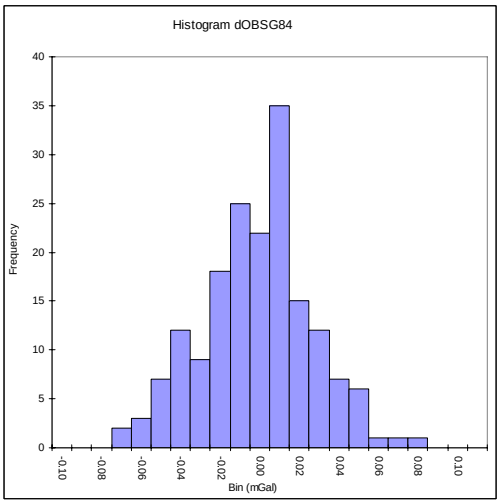
APPENDIX B

Repeat Tabulation and Analysis

Histogram dAHD



Histogram dOBSG84



Summary Statistics

Summary Table	*dAHD*	*dOBSG*
Mean	-0.001	-0.006
Standard Error	0.005	0.002
Median	-0.003	-0.004
Mode	-0.006	0.001
Standard Deviation	0.062	0.028
Sample Variance	0.004	0.001
Kurtosis	0.379	0.142
Skewness	-0.123	-0.055
Range	0.390	0.154
Minimum	-0.211	-0.079
Maximum	0.179	0.075
Sum	-0.137	-0.975
Count	**176**	**176**

APPENDIX C
Survey Specifications

Client	URANIUM ONE
Survey Name	Cariewerloo Basin
Operators	DD, AC, GM
Techniques Employed	GPS, Gravity
Station Spacing	1km, 2km
Line Spacing	1km, 2km
Gravity Meter	Scintrex CG-3M (S) 711410
GPS	Leica 1200
Number of Points Surveyed	2436
Gravity Base	Daishsat Base 0342
Date of Survey	23rd August to 9th September 2007

APPENDIX D
Base Station Information

GPS Gravity Base 0342 Yudnapinna Station

MGA94		GDA94	
EASTING (m)	702908.439	LATITUDE (DMS)	32 07 21.17813 S
NORTHING (m)	6443954.798	LONGITUDE (DMS)	137 09 03.02093 E
ZONE (UTM)	53S	GDAHT (m)	133.953
HEIGHT (AHD, m)	131.222	N (AUSGEOID98, m)	2.730
OBSERVED GRAVITY		**SURVEYED BY**	
979447.211 mGal		GPS - Daishsat using a multiple static sessions and the AUSPOS online GPS Processing system. Expected accuracy of station coordinates better than 0.005m. Gravity – Multiple loops to existing Daishsat Gravity base 341. Expected accuracy better than 0.01 mGals	

MISCELLANEOUS DETAILS

This station consists of a small star picket protruding 5cm out of the ground, and is witnessed by a larger stat picket positioned 30cm to the right. A circular concrete slab is also located beside these star pickets and is the gravity base.

The base is located in an open area bounded by the farm cottages to the east and west, a storage shed to the north and the main homestead so the south. The base is approximately 30m east of the veranda of the south western cottage.

The base may be accessed by entering Yudnapinna station from the access road and driving to the middle of the compound where the base is visible in an open area to the west of the road running between the farm sheds to the main homestead.

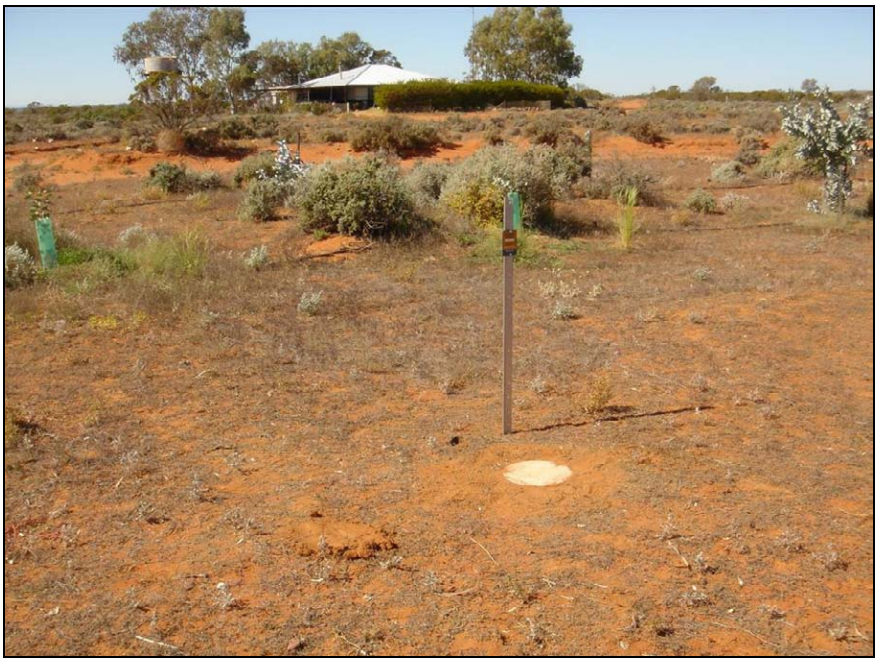


Photo of Daishsat Base 0342 showing distinguishing features

APPENDIX E

Data DVD

(Attached To Back Cover)

0710

YELTACOWIE GRAVITY SURVEY

SXR URANIUM ONE AUSTRALIA

MARCH-APRIL 2007

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Introduction

A regional GPS gravity survey designated as Yeltacowie Gravity Survey has been carried out in two areas 35 kilometres north east and 45 kilometres east of Woomera in South Australia from 10 March 2007 to 24 April 2007 on behalf of SXR Uranium One Australia.

The proposed survey comprised two areas: Yeltacowie South and Yeltacowie North. Yeltacowie South comprised 1428 stations in 97 irregular west east lines coincident with MGA94 with line and station spacings of 400 metres bound in the south west by MGA94 Zone 53 71800E 6526000N and in the north east by 727200E 6564400N. Yeltacowie North comprised 315 stations in 20 irregular west east lines coincident with MGA94 with line and station spacings of 800 metres bound in the south west by MGA94 Zone 53 675390E 6578400N and in the north east by 699390E 6592800N. All station positions were specified in two supplied comma separate variable files.

Yeltacowie South was completed as proposed except for 3 stations inaccessible due to Lake Yeltacowie; there were 2 stations with excessive eccentricities due to the lake and a further 26 with excessive eccentricities due to terrain. Yeltacowie North was completed as proposed with four stations having excessive eccentricities due to lakes.

Figure 1 below shows the location of the survey area.

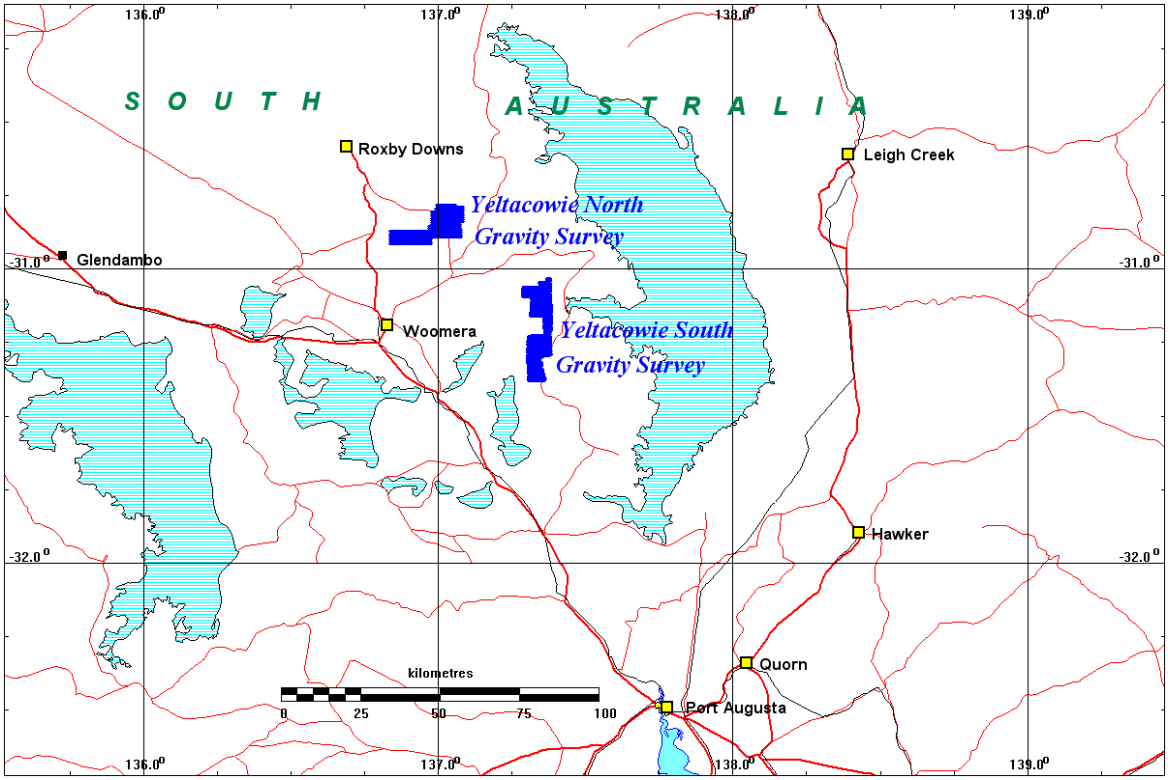

Figure 1. Location Diagram

There were 61 stations in Yeltacowie South repeated for quality assurance purposes giving a repeat rate of 4.3 %. For Yeltacowie North 21 stations were repeated for a repeat rate of 6.7%. To show compatibility with previous surveys 9 stations from previous Haines surveys were repeated as well as 12 from existing PIRSA data. The PIRSA data supplied was NOT compatible with this survey.

The Bouguer anomaly processing has been performed using a country rock density of 2.67 g/cc.

GPS Survey and Gravity Datum

Horizontal Datum:	Geocentric Datum of Australia1994 (GDA94) Map Grid of Australia 1994 (MGA94) Zone 53
Vertical Datum:	Australian Height Datum (AHD)
Gravity Datum:	Isogal 1984 / IGSN 71

Survey and Gravity Base Stations

Four new base stations were established in the survey areas in positions to provide good VHF radio coverage for the RTK GPS system. The bases for Yeltacowie South were designated as 2007.1002, 2007.1003 and 2007.1005 and the base for Yeltacowie North was designated 2007.1004. All bases are marked with a short star picket driven flush with the natural surface and witnessed by a 1 metre high star picket within 0.3m of the ground mark. An aluminium tag is attached to each witness picket marked with the inscription "Haines Surveys Gravity 2007.1002" etcetera.

Two existing bases. 2006.4201 and 2006.6601, were also used. Descriptions and control details for these bases are shown in the survey reports titled "Copper Range Gravity Survey" for Copper Range Limited and dated July-August 2006 and October 2006.

Survey Control

Horizontal and vertical control for 2007.1002, 2007.1003, 2006.1004 and 2007.1005 has been established using the AUSPOS online GPS processing service provided by Geoscience Australia. This method provides control within the GDA94 Datum to within +/- 5 cm. It largely replaces the need for finding local survey marks or allows accurate control to be established when local marks are not available.

For 2007.1002 a total of 20.2 hours (at 10 second intervals) of observations were logged over 3 days. The following outlines the cartesian coordinate precision obtained for each day.

1 Sigma	sX(m)	sY(m)	sZ(m)	yyyy/mm/dd
1002	0.016	0.016	0.011	2007/03/17
1002	0.017	0.017	0.011	2007/03/18
1002	0.013	0.013	0.009	2007/03/19

For 2007.1003 a total of 14.9 hours (at 10 second intervals) of observations were logged over 3 days. The following outlines the cartesian coordinate precision obtained for each day.

1 Sigma	sX(m)	sY(m)	sZ(m)	yyyy/mm/dd
1003	0.012	0.008	0.004	2007/03/24
1003	0.021	0.011	0.011	2007/03/25
1003	0.010	0.007	0.007	2007/03/26

For 2007.1004 a total of 20.3 hours (at 10 second intervals) of observations were logged over 3 days. The following outlines the cartesian coordinate precision obtained for each day.

1 Sigma	sX(m)	sY(m)	sZ(m)	yyyy/mm/dd
1004	0.016	0.011	0.011	2007/03/31
1004	0.015	0.010	0.010	2007/04/01
1004	0.012	0.008	0.008	2007/04/02

For 2007.1005 a total of 18.1 hours (at 10 second intervals) of observations were logged over 3 days. The following outlines the cartesian coordinate precision obtained for each day.

1 Sigma	sX(m)	sY(m)	sZ(m)	yyyy/mm/dd
1005	0.021	0.012	0.012	2007/04/05
1005	0.015	0.010	0.010	2007/04/06
1005	0.010	0.010	0.005	2007/04/08

Since GDA94 and WGS84 (Global Positioning System Datum) are virtually equivalent the GDA94 values can be directly input into the GPS processing software for all calculations.

Vertical control has been converted to the Australian Height Datum (AHD) height using the GDA94 height determined from AUSPOS and the AUSGEOID98 gravimetric geoid.

Gravity Control

Gravity control for the four new bases has been established on the Australian Fundamental Gravity Network (Isogal 1984/IGSN 71) using repeated loops opening and closing on a previously established Haines intermediate gravity base 6235.5062 in Woomera using control values obtained from Haines Surveys records.

Survey and Gravity Control Values

Control information (**WGS84 heights have been derived using AusGeoid98**):

YELTACOWIE SURVEY / GRAVITY CONTROL

	GDA94			MGA94 Zone 53		AHD	Isogal84
Station	Latitude	Longitude	Height	Easting	Northing	Height	Gravity mgal
2007.1002	-31° 17' 50.46410"	137° 20' 35.33350"	197.852	723022.843	6535073.510	193.274	979372.986
2007.1003	-31° 13' 28.08090"	137° 21' 29.03000"	245.818	724615.587	6543124.139	241.105	979348.497
2007.1004	-31° 05' 10.13618"	137° 18' 39.59623"	205.373	720451.492	6558554.223	200.567	979341.796
2007.1005	-30° 53' 29.74950"	136° 55' 19.47110"	119.054	683716.615	6580829.256	114.904	979348.455
2006.4201	-31° 22' 29.24031"	137° 18' 44.77081"	147.953	719918.613	6526549.516	143.566	979391.001
2006.6601	-31° 21' 39.56003"	137° 17' 32.41481"	151.184	718038.567	6528119.585	146.830	979390.624
6235.5062	-31° 11' 52.34988"	136° 48' 59.52059"	174.394	673071.713	6547046.758	170.982	979360.070

GPS Observations and Processing

Carrier phase GPS data has been collected using *Trimble 4000* series Geodetic receivers.

Measurements for detail gravity observations have been made using Real Time Kinematic (RTK) techniques giving horizontal and vertical precisions of at least 5 cm.

RTK processing has been has been completed using Trimble TSC1 firmware and Trimble Geomatics Office version 1.50 software.

Gravity Observations

Gravity measurements have been made using the *Scintrex CG5 Autograv* instrument numbered 9024865 and the *Scintrex CG3 Autograv* instrument numbered 601307.

Readings of 120 seconds were taken at base stations. Readings of 40 seconds were taken at all other gravity survey points. Base station readings were taken at the beginning of the day and at the end of the day's fieldwork.

All Autograv instruments apply an instrument drift correction to their final gravity readings. Any residual drifts between opening and closing base station readings are corrected by the gravity post processing software. The instruments also apply Earth Tide Corrections to their final gravity reading at each station. The various instrument calibration constants are contained in the daily gravity data files.

Point Numbering and Marking

For the gravity surveys an 8 digit point number is used to identify each gravity station. The first 4 digits indicate the line number. The second 4 digits indicate the station number

For this gravity survey the lines are west-east on MGA94 and the 8 digits are constructed from the planned coordinates for each gravity station using:

For Yeltacowie South

Line No = (MGA N – 6500000) /100 Station No = (MGA E – 700000)/10

For Yeltacowie North

Line No = (MGA N – 6500000) /100 Station No = (MGA E – 600000)/10

For example:

Planned gravity station coordinates

6526400.000N 719600.000E

Line No = 2640 Station No = 1960

That is, Pt No = 26401960

Station numbers have not been expanded in the processed data.

The gravity stations have not been marked in the field.

Gravity Processing

The gravity values for this survey are related to the *Australian Gravity Base Station Network* using the *Isogal84 (IGSN 71)* values at known Gravity Stations as provided by *Geoscience Australia*.

Note that all gravity values shown in these surveys are expressed in units of milligals.

The field gravity observations have been processed using standard formulae and constants to produce a Bouguer Anomaly for each gravity station.

The meter reading as recorded in the raw Scintrex data file is corrected for instrument tilts, meter drift and Earth Tide. Post processing corrections are detailed below.

Drift

The residual drift between base station readings is calculated for each station reading proportionately by time. This is the drift value shown in the processing output.

$$\text{Drift} = [\,(t_1 - t_n)\,((b_2 - b_1)/(t_2 - t_1))\,]$$

t_n = time of meter reading at each station
b_1 = base meter reading prior to station reading
t_1 = time of base reading b_1
b_2 = base meter reading after station reading
t_2 = time of base reading b_2

Observed Gravity

This is the observed gravity value in milligals.

$$\text{Obs_g} = b_g + (r_n - \text{drift}) - b_1$$

b_g = base stn gravity value (Isogal84)
r_n = meter reading at each station as shown in the gravity meter log file
drift = residual drift correction as shown above
b_1 = base meter reading prior to station reading

Anomaly

This is the difference between the observed gravity and the theoretical gravity value at each station. The theoretical value is calculated using the *1967 International Gravity Formula*.

$$\text{Anom} = \text{Obs} - g_{th}$$

Obs = observed gravity as explained above

$g_{th} = 978031.8 \ (1 + 0.0053024 \sin^2\phi - 0.0000059 \sin^2 2\phi)$

$\phi =$ WGS84 Latitude

Free Air Correction

The freeair correction is calculated using

$$\text{Freeair} = 0.3086 \ H$$

H = height above sea level (AHD height)

Bouguer Correction

$$\text{Bouguer} = -0.04191 \ \rho \ H$$

ρ = density (2.67 g/cc used for this survey)

H = height above sea level (AHD height)

Bouguer Anomaly

$$\text{Bouguer Anom} = \text{Anom} + \text{Freeair} + \text{Bouguer}$$

Results Formats

Printed results of the gravity processing (with Bouguer corrections at density 2.67 g/cc) are included in the Appendix of this report. The results are also supplied in digital form on compact disk with the following of files being supplied.
YeltacowieNth.CSV YeltacowieSth.CSV REPEATS.REP

Yeltacowie<aaa>.CSV Format
This is a Comma Separated Variable format file. This format facilitates data import into spreadsheet and database software. Each record (line) contains the following data fields:

"Pt#"	Station identifiers used in data loggers, line and station numbers combined
"Line"	Station line number
"Stn"	Station number
"Date"	Date of observation
"Day"	GPS day number
"Time"	Time of observation
"GDA94_Lat"	WGS84/GDA94 Latitude used in GPS observation
"GDA94_Long"	WGS84/GDA94 Longitude used in GPS observation
"GDA94_Ht"	Height above the ellipsoid defined by the WGS84 Datum
"MGA94(ZONE53)E"	Easting value for observation on the MGA94/GDA94 Datum
"MGA94(ZONE53)N"	Northing value for observation on the MGA94/GDA94 Datum
"AHD_Ht"	Height of observation in the Australian Height Datum
"Meter_Ser_No"	Gravity meter serial number
"Meter_Rdg"	Gravity meter observation value in mGals
"Meter_Error"	Measurement of the quality of the gravity observation (a function of the SD of the observation set used and the duration of the set)
"ETC"	Earth Tide Correction applied to the gravity observation
"Drift"	The component of the meter drift between opening and closing gravity base observations applied to the observation
"Corr_Meter"	The meter observation with the drift applied
"dg"	The difference in gravity between the base and the observation
"Obs_g"	Observed gravity of the station
"Anom"	Difference between observed and theoretical gravity
"Freeair"	Free air correction (see above)
"Bouguer(2.67)"	Bouguer correction using a density of 2.67g/cc (see above)
"Bouguer_Anom"	Bouguer anomaly (see above)

REPEATS.REP Format
This file contains the stations that were repeated for quality control purposes. The repeats are generally selected at random but it is usual that the last observation of the day is reobserved as the first observation the following day. Depending on access and the logistics within the project, repeat stations are also attempted on points surveyed during the middle of the previous day. Quite often, repeats are taken at locations which are readily accessible eg, stations near tracks and fencelines. The REPEATS.REP file has the following format: Essentially the original observation is listed with the repeat observation listed below then the difference between the two listed.

Pt #	Day	E	N	H	G	Bouguer
Pt #	*Day(original observation)*	*E*	*N*	*H*	*G*	*Bouguer*
Pt #	*Day(repeat observation)*	*E*	*N*	*H*	*G*	*Bouguer*
		Diff. E	*Diff. N*	*Diff H.*	*Diff. G*	*Diff. B.*

Field gravity observation files with the extensions .txt (CG5 gravity meter), .DAT (CG3 gravity meter) and .DC are also supplied in a subdirectory named OBS.

*.txt and *.DAT

These are the raw data files from the *Scintrex CG3 and Scintrex CG5* gravity meters. There is a separate file for each day's data. The files are identified by the Julian day number (001 = Jan 1st) with the prefix G. eg. G112 = day 112 (22nd April).

*.DC

These are the GPS Real Time Kinematic Data Collector files. They are ASCII format files containing the GPS vectors from the base station. The data is structured in a Trimble format (DC file Version 7.

PRODUCTION LOG

Yeltacowie Gravity Survey Production Log

Date	GPS Day	Observed	Repeats	Comments
09-Mar-07	D068			Mobilise to Woomera Ex Adelaide
10-Mar-07	D069	42		Commence Yeltacowie South Gravity Survey
11-Mar-07	D070	44	2	Continue Gravity Survey
12-Mar-07	D071	36	1	Continue Gravity Survey
13-Mar-07	D072	44	2	Continue Gravity Survey
14-Mar-07	D073	40	3	Continue Gravity Survey (1 previous survey repeated obs)
15-Mar-07	D074	43	2	Continue Gravity Survey
16-Mar-07	D075	41	2	Continue Gravity Survey
17-Mar-07	D076	43	5	Continue Gravity Survey (3 previous survey repeated obs)
18-Mar-07	D077	47	2	Continue Gravity Survey
19-Mar-07	D078	40		Continue Gravity Survey
20-Mar-07	D079	48	2	Continue Gravity Survey
21-Mar-07	D080	44	5	Continue Gravity Survey
22-Mar-07	D081	41	2	Continue Gravity Survey
23-Mar-07	D082			RDO
24-Mar-07	D083	41	2	Continue Gravity Survey
25-Mar-07	D084	24	4	Continue Gravity Survey (2 previous survey repeated obs)
26-Mar-07	D085	37	1	Continue Gravity Survey
27-Mar-07	D086	40	3	Continue Gravity Survey (1 previous survey repeated obs)
28-Mar-07	D087	47	2	Continue Gravity Survey
29-Mar-07	D088	44	4	Continue Gravity Survey (2 previous survey repeated obs)
30-Mar-07	D089	31	4	Continue Gravity Survey (2 previous survey repeated obs)
31-Mar-07	D090	45	5	Continue Gravity Survey
01-Apr-07	D091	46	2	Continue Gravity Survey
02-Apr-07	D092	46	2	Continue Gravity Survey
03-Apr-07	D093	41	2	Continue Gravity Survey, Crew rotation
04-Apr-07	D094	43	2	Continue Gravity Survey
05-Apr-07	D095	18	2	Commence Yeltacowie North Gravity Survey
06-Apr-07	D096	29	3	Continue Gravity Survey
07-Apr-07	D097	35	2	Continue Gravity Survey
08-Apr-07	D098	38	2	Continue Gravity Survey
09-Apr-07	D099	41	2	Continue Gravity Survey
10-Apr-07	D100	35	2	Continue Gravity Survey
11-Apr-07	D101	42	3	Continue Gravity Survey
12-Apr-07	D102	13	6	Continue Gravity Survey
13-Apr-07	D103	56	3	Continue Gravity Survey
14-Apr-07	D104	8	2	Complete Yeltacowie North Gravity Survey
15-Apr-07	D105	41	2	Recommence Yeltacowie South Gravity Survey
16-Apr-07	D106	42	2	Continue Gravity Survey
17-Apr-07	D107	40	2	Continue Gravity Survey
18-Apr-07	D108	44	2	Continue Gravity Survey
19-Apr-07	D109	21	10	Continue Gravity Survey (8 previous survey repeated obs)
20-Apr-07	D110	43	2	Continue Gravity Survey
21-Apr-07	D111	44	4	Continue Gravity Survey (2 previous survey repeated obs)
22-Apr-07	D112	51	2	Continue Gravity Survey
23-Apr-07	D113	41	3	Continue Gravity Survey (1 previous survey repeated obs)
24-Apr-07	D114	18	3	Complete Yeltacowie South Gravity Survey (1 prev svy repeat)
	Total	1738	120	

Repeat Observation Results

Yeltacowie South

Pt	Day1	Day2	Diff E	Diff N	Diff Hgt	Diff g	Diff BAn	Vector	Abs Diff g	Abs Diff BAn
26802240	69	70	-0.010	-0.154	-0.079	0.002	-0.013	0.154	0.002	0.013
26802280	69	70	-0.380	0.150	-0.086	0.032	0.015	0.409	0.032	0.015
27202200	70	71	-0.198	-0.033	-0.008	0.023	0.022	0.201	0.023	0.022
28002200	71	72	-0.487	-0.197	0.046	0.008	0.017	0.525	0.008	0.017
30002120	71	72	0.477	-0.859	-0.044	-0.002	-0.011	0.983	0.002	0.011
30002200	72	73	0.138	-0.241	0.061	-0.019	-0.007	0.278	0.019	0.007
30402160	72	73	-0.055	0.194	0.023	0.006	0.011	0.202	0.006	0.011
32002200	73	74	-0.285	0.196	-0.062	-0.004	-0.016	0.346	0.004	0.016
32002240	73	74	0.165	1.100	-0.002	0.000	0.001	1.112	0.000	0.001
26802360	69	75	0.043	0.108	0.008	0.009	0.011	0.116	0.009	0.011
32002240	73	75	0.007	1.135	0.024	-0.034	-0.028	1.135	0.034	0.028
34802320	75	76	0.149	-0.099	0.045	0.023	0.032	0.179	0.023	0.032
35202240	75	76	0.020	-0.207	-0.009	0.034	0.032	0.208	0.034	0.032
36002320	76	77	0.106	-0.031	0.025	-0.033	-0.028	0.110	0.033	0.028
36402280	76	77	0.586	0.026	0.001	-0.022	-0.021	0.587	0.022	0.021
38002520	77	79	-0.004	-0.288	-0.067	-0.002	-0.015	0.288	0.002	0.015
36801920	78	79	3.080	-1.800	0.035	-0.025	-0.020	3.567	0.025	0.020
38802640	77	80	-0.009	0.743	-0.057	-0.033	-0.044	0.743	0.033	0.044
36402080	78	80	2.822	-1.611	-0.038	0.016	0.007	3.249	0.016	0.007
36402120	78	80	3.130	-1.580	-0.039	0.048	0.039	3.506	0.048	0.039
36402160	78	80	2.978	-1.315	0.038	0.020	0.026	3.255	0.020	0.026
38402440	79	80	0.762	-0.304	-0.045	-0.016	-0.025	0.820	0.016	0.025
38802600	77	81	-0.089	-0.264	-0.080	0.006	-0.010	0.279	0.006	0.010
38802440	80	81	-0.012	-0.133	-0.027	0.035	0.030	0.134	0.035	0.030
40402680	77	83	0.063	-0.127	-0.088	0.043	0.025	0.142	0.043	0.025
40802680	77	83	-0.084	0.030	-0.095	0.043	0.024	0.089	0.043	0.024
40801920	83	84	0.497	-0.104	0.037	0.011	0.018	0.508	0.011	0.018
41202680	83	84	0.009	0.099	0.088	-0.005	0.012	0.099	0.005	0.012
41602680	83	85	0.098	-0.013	0.090	-0.028	-0.010	0.099	0.028	0.010
42802520	85	86	-0.383	0.070	0.052	-0.017	-0.007	0.389	0.017	0.007
43202480	85	86	-0.046	-0.208	0.055	0.008	0.019	0.213	0.008	0.019
43202480	85	87	-0.069	-0.193	0.088	-0.010	0.007	0.205	0.010	0.007
43202520	85	87	0.255	0.281	0.000	-0.049	-0.049	0.379	0.049	0.049
44002480	87	88	-0.197	0.017	-0.094	-0.009	-0.027	0.198	0.009	0.027
43202440	85	89	0.139	0.198	0.011	0.006	0.008	0.242	0.006	0.008
43202400	86	89	0.133	-0.048	0.081	0.001	0.017	0.141	0.001	0.017
47602480	89	90	-0.159	0.481	-0.065	-0.016	-0.028	0.507	0.016	0.028
48002480	89	90	0.365	0.781	-0.020	0.010	0.007	0.862	0.010	0.007
48802480	89	90	0.274	-0.033	0.009	-0.015	-0.013	0.276	0.015	0.013
50002520	89	90	-0.314	0.019	0.068	-0.015	-0.001	0.315	0.015	0.001
51602040	90	91	0.125	-0.098	-0.027	-0.003	-0.008	0.159	0.003	0.008
52802080	90	91	0.222	-0.370	0.087	-0.038	-0.021	0.431	0.038	0.021
53202080	90	92	-0.202	-0.474	0.003	-0.047	-0.047	0.515	0.047	0.047
54402080	91	92	0.043	0.561	0.022	0.023	0.028	0.563	0.023	0.028
53202160	92	92	0.000	0.000	0.000	-0.001	-0.001	0.000	0.001	0.001
56002080	91	93	0.042	0.017	0.006	-0.052	-0.051	0.045	0.052	0.051
55202440	92	93	0.003	-0.149	-0.012	0.006	0.003	0.149	0.006	0.003
56802240	93	94	-0.597	0.079	0.017	-0.014	-0.011	0.602	0.014	0.011
56802320	93	94	-0.492	0.135	0.002	0.043	0.044	0.510	0.043	0.044

Pt	Day1	Day2	Diff E	Diff N	Diff Hgt	Diff g	Diff BAn	Vector	Abs Diff g	Abs Diff BAn
56002400	93	105	0.043	0.030	-0.027	0.005	0.000	0.052	0.005	0.000
58002200	94	105	0.134	0.069	0.047	-0.008	0.002	0.151	0.008	0.002
55202360	93	106	0.572	0.330	0.027	-0.001	0.005	0.660	0.001	0.005
54802600	105	106	0.036	-0.251	0.039	0.005	0.012	0.254	0.005	0.012
55202560	105	107	0.127	-0.099	0.020	0.008	0.012	0.161	0.008	0.012
52002560	106	107	0.300	0.204	0.077	0.021	0.036	0.363	0.021	0.036
55202480	105	108	-0.070	0.094	0.045	0.027	0.036	0.117	0.027	0.036
56002640	107	108	0.021	-0.199	0.009	0.037	0.039	0.200	0.037	0.039
55202440	92	109	0.238	-0.251	0.063	-0.017	-0.005	0.346	0.017	0.005
58001840	94	109	0.670	0.011	0.021	0.022	0.027	0.670	0.022	0.027
58401840	109	110	0.139	-0.241	-0.029	0.017	0.011	0.278	0.017	0.011
58402040	109	110	0.086	-0.033	0.004	0.020	0.021	0.092	0.020	0.021
58802000	110	111	0.235	-0.318	0.046	-0.011	-0.002	0.395	0.011	0.002
59201800	110	111	0.191	-0.324	0.024	-0.013	-0.008	0.376	0.013	0.008
60001800	111	112	0.062	-0.008	-0.016	0.007	0.004	0.063	0.007	0.004
60002040	111	112	0.013	-0.065	0.026	-0.018	-0.013	0.066	0.018	0.013
60802360	112	113	-0.092	-0.047	0.014	0.016	0.018	0.103	0.016	0.018
60802640	112	113	-0.064	-0.145	0.031	-0.020	-0.014	0.158	0.020	0.014
62802360	113	114	-0.323	0.104	0.030	0.007	0.013	0.339	0.007	0.013
62802600	113	114	0.210	-0.004	-0.027	-0.013	-0.018	0.210	0.013	0.018

Mean	0.001	0.002	0.508	0.018	0.018
Min	-0.052	-0.051	0.000	0.000	0.000
Max	0.048	0.044	3.567	0.052	0.051
Count	69	69	69	69	69
SD	0.023	0.022	0.764	0.014	0.013

Previous Haines Surveys Repeated Observations

Pt	Day1	Day2	Diff E	Diff N	Diff Hgt	Diff g	Diff BAn	Vector	Abs Diff g	Abs Diff BAn
37002800	109	76	0.210	0.638	0.016	0.059	0.063	0.672	0.059	0.063
46002800	111	88	0.608	0.640	0.018	0.062	0.066	0.883	0.062	0.066
49002800	112	88	0.514	-0.174	-0.084	0.028	0.011	0.543	0.028	0.011
50002800	112	89	0.656	-0.130	-0.224	0.001	-0.043	0.669	0.001	0.043
53952757	113	109	0.715	0.746	0.014	0.029	0.032	1.033	0.029	0.032
51952757	114	109	-0.790	0.408	-0.112	0.035	0.013	0.889	0.035	0.013
52452757	114	109	0.732	-0.831	-0.020	-0.017	-0.022	1.107	0.017	0.022
55002800	115	109	-0.674	-0.794	0.051	-0.015	-0.006	1.041	0.015	0.006
57002800	115	109	0.343	0.075	-0.022	0.005	0.001	0.351	0.005	0.001

Mean	0.021	0.013	0.799	0.028	0.029
Min	-0.017	-0.043	0.351	0.001	0.001
Max	0.062	0.066	1.107	0.062	0.066
Count	9	9	9	9	9
SD	0.029	0.036	0.256	0.022	0.024

Previous PIRSA Repeated Observations

Pt	Day1	Day2	Diff E	Diff N	Diff Hgt	Diff g	Diff BAn	Vector	Abs Diff g	Abs Diff BAn
90000211	366	73	0.349	-0.203	-1.807	0.304	-3.701	0.404	0.304	3.701
90000964	366	76	0.587	0.293	2.735	-0.718	-3.790	0.656	0.718	3.790
90000024	366	84	0.585	-0.277	3.623	-0.137	1.646	0.647	0.137	1.646
90000276	366	86	0.166	-2.832	-0.025	-0.038	3.868	2.837	0.038	3.868
90001004	366	89	0.029	0.318	-9.228	-0.030	5.475	0.319	0.030	5.475
90000271	366	109	0.035	0.501	7.867	-1.871	0.759	0.502	1.871	0.759
90000347	366	109	-0.515	-0.395	-11.954	2.520	0.631	0.649	2.520	0.631
90000519	366	109	0.420	1.064	-2.933	-0.360	8.781	1.144	0.360	8.781
90000069	366	111	0.059	-0.010	-0.488	-1.164	11.582	0.060	1.164	11.582
90000519	366	111	0.173	0.151	-3.021	-0.355	8.768	0.230	0.355	8.768
90000051	366	113	-0.812	0.530	0.349	-0.440	6.048	0.970	0.440	6.048
90000174	366	114	0.122	-0.594	-1.272	0.237	6.778	0.606	0.237	6.778

Mean	-1.346	-0.171	3.904	0.752	0.681	5.152
Min	-11.954	-1.871	-3.790	0.060	0.030	0.631
Max	7.867	2.520	11.582	2.837	2.520	11.582
Count	12	12	12	12	12	12
SD	5.324	1.044	4.903	0.721	0.785	3.422

Yeltacowie North

Pt	Day1	Day2	Diff E	Diff N	Diff Hgt	Diff g	Diff BAn	Vector	Abs Diff g	Abs Diff BAn
80808339	95	96	0.333	0.294	-0.046	-0.025	-0.034	0.444	0.025	0.034
80808899	95	96	0.536	-0.152	-0.003	-0.043	-0.044	0.557	0.043	0.044
80809059	96	97	0.311	0.198	0.037	0.016	0.023	0.369	0.016	0.023
81609059	96	97	-0.394	0.069	-0.060	-0.040	-0.052	0.400	0.040	0.052
83208979	97	98	0.000	0.026	0.002	0.047	0.048	0.026	0.047	0.048
83209139	97	98	-0.406	-0.728	0.030	-0.018	-0.013	0.834	0.018	0.013
86409299	98	99	0.160	-0.157	-0.034	-0.033	-0.039	0.224	0.033	0.039
86409619	98	99	-0.053	-0.041	-0.032	-0.007	-0.013	0.067	0.007	0.013
87209219	99	100	-1.246	1.512	0.119	-0.039	-0.015	1.959	0.039	0.015
87209619	99	100	-0.202	-0.150	0.076	-0.033	-0.018	0.252	0.033	0.018
87209219	99	101	-0.747	0.945	0.046	-0.032	-0.022	1.205	0.032	0.022
89609219	100	101	0.142	0.042	0.008	0.041	0.043	0.148	0.041	0.043
80008259	95	102	0.175	-0.050	-0.011	-0.035	-0.037	0.182	0.035	0.037
88809059	100	102	-0.687	-0.040	0.030	0.022	0.028	0.688	0.022	0.028
89609059	101	102	0.145	-0.272	0.025	-0.018	-0.014	0.308	0.018	0.014
90409619	101	102	-0.146	0.085	0.036	-0.003	0.004	0.169	0.003	0.004
92009619	101	102	0.219	-0.036	0.031	0.021	0.027	0.222	0.021	0.027
80808339	95	103	0.380	0.148	0.007	-0.016	-0.014	0.408	0.016	0.014
78407939	102	103	-0.170	-0.014	-0.032	0.009	0.003	0.171	0.009	0.003
79208419	96	104	0.056	0.084	0.025	-0.028	-0.023	0.101	0.028	0.023
81608419	96	104	0.002	0.247	0.007	-0.002	-0.001	0.247	0.002	0.001

Mean	-0.010	-0.008	0.428	0.025	0.025
Min	-0.043	-0.052	0.026	0.002	0.001
Max	0.047	0.048	1.959	0.047	0.052
Count	21	21	21	21	21
SD	0.027	0.028	0.449	0.014	0.015

Plots

Station Locations All Components 16
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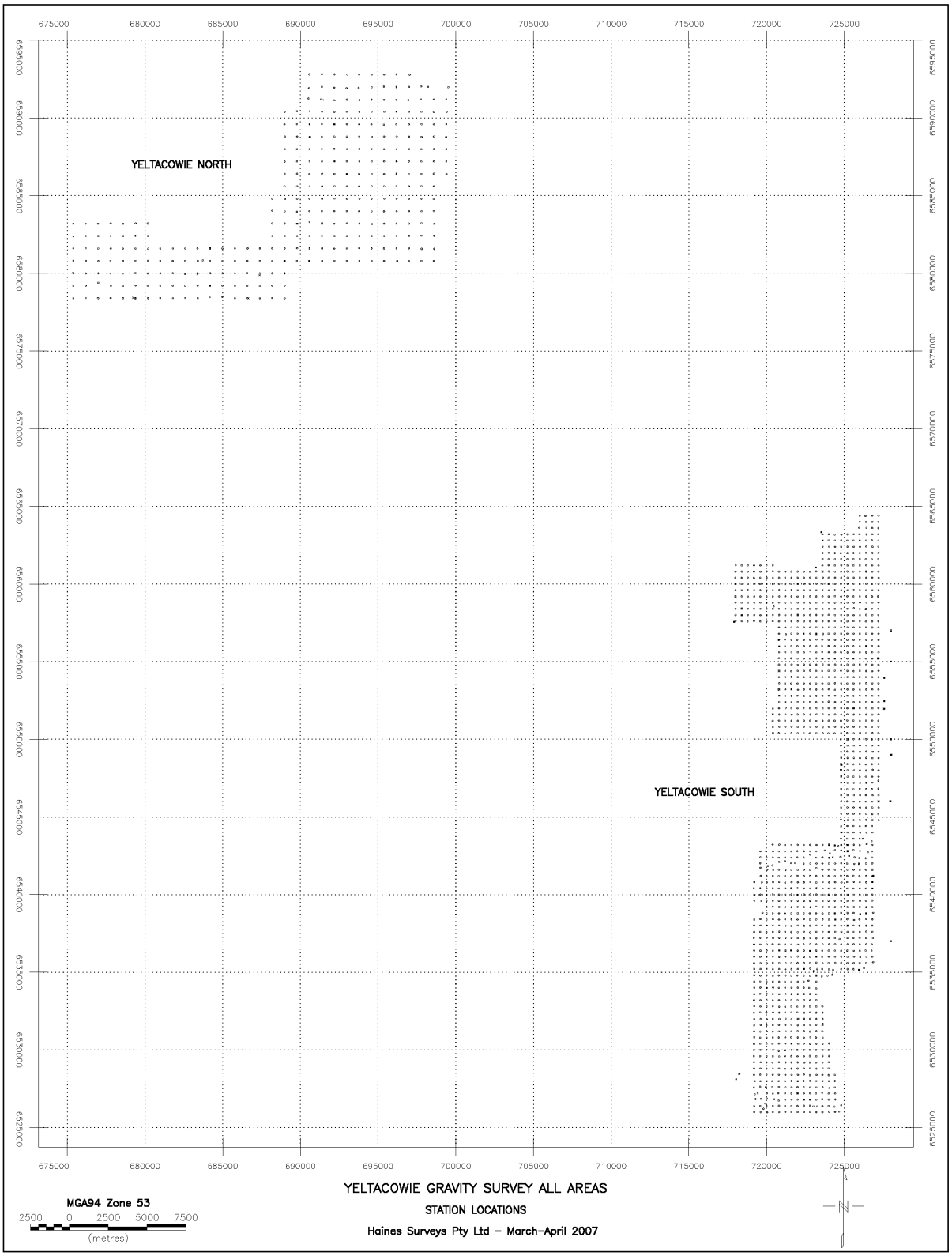
Station Locations Yeltacowie North 21
Bouguer Anomaly Contours and Zoned Colour Image Yeltacowie North 22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YELTACOWIE NORTH
YELTACOWIE SOUTH
MGA94 Zone 53
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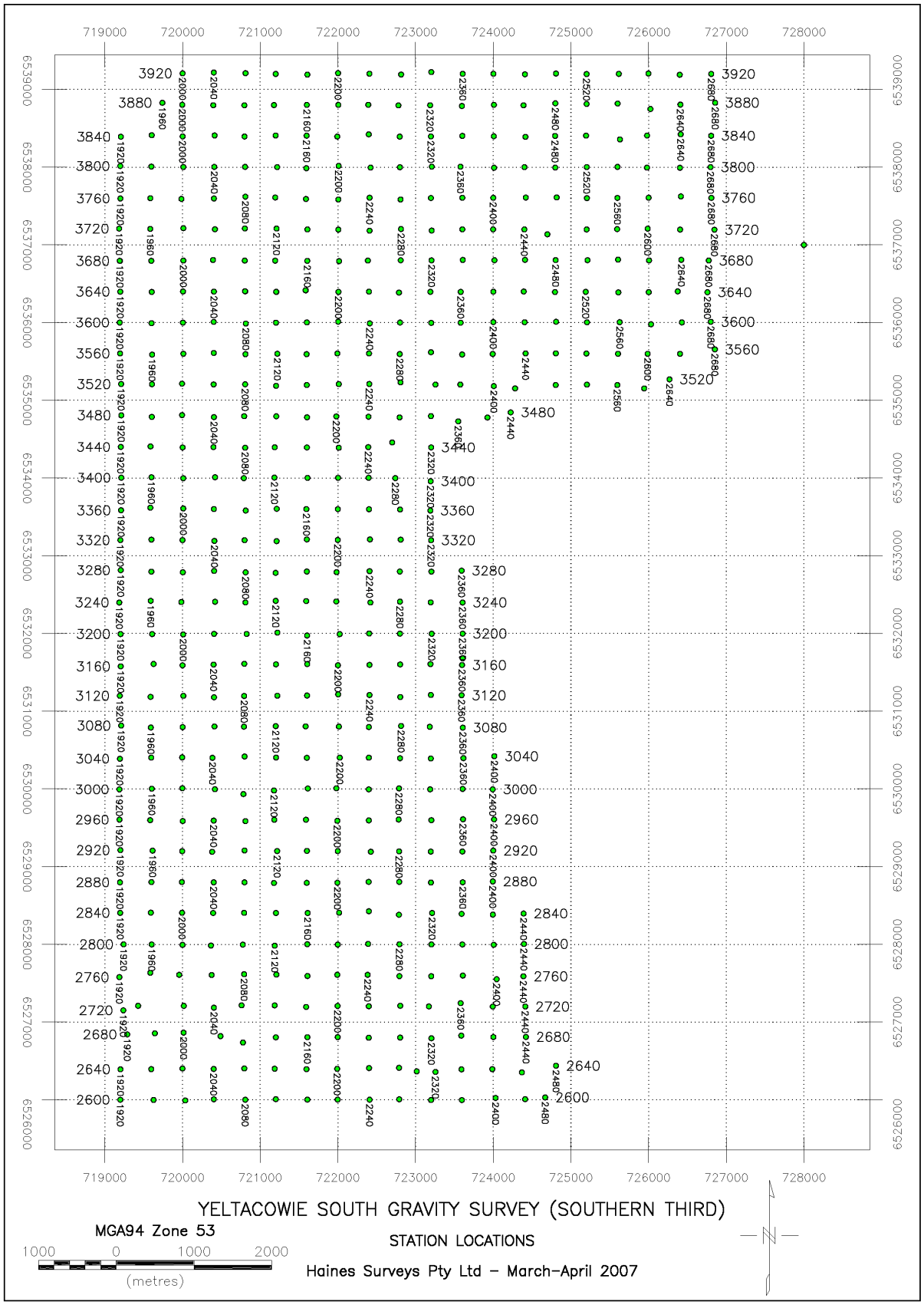
(metres)
YELTACOWIE GRAVITY SURVEY ALL AREAS
STATION LOCATIONS
Haines Surveys Pty Ltd - March-April 2007
N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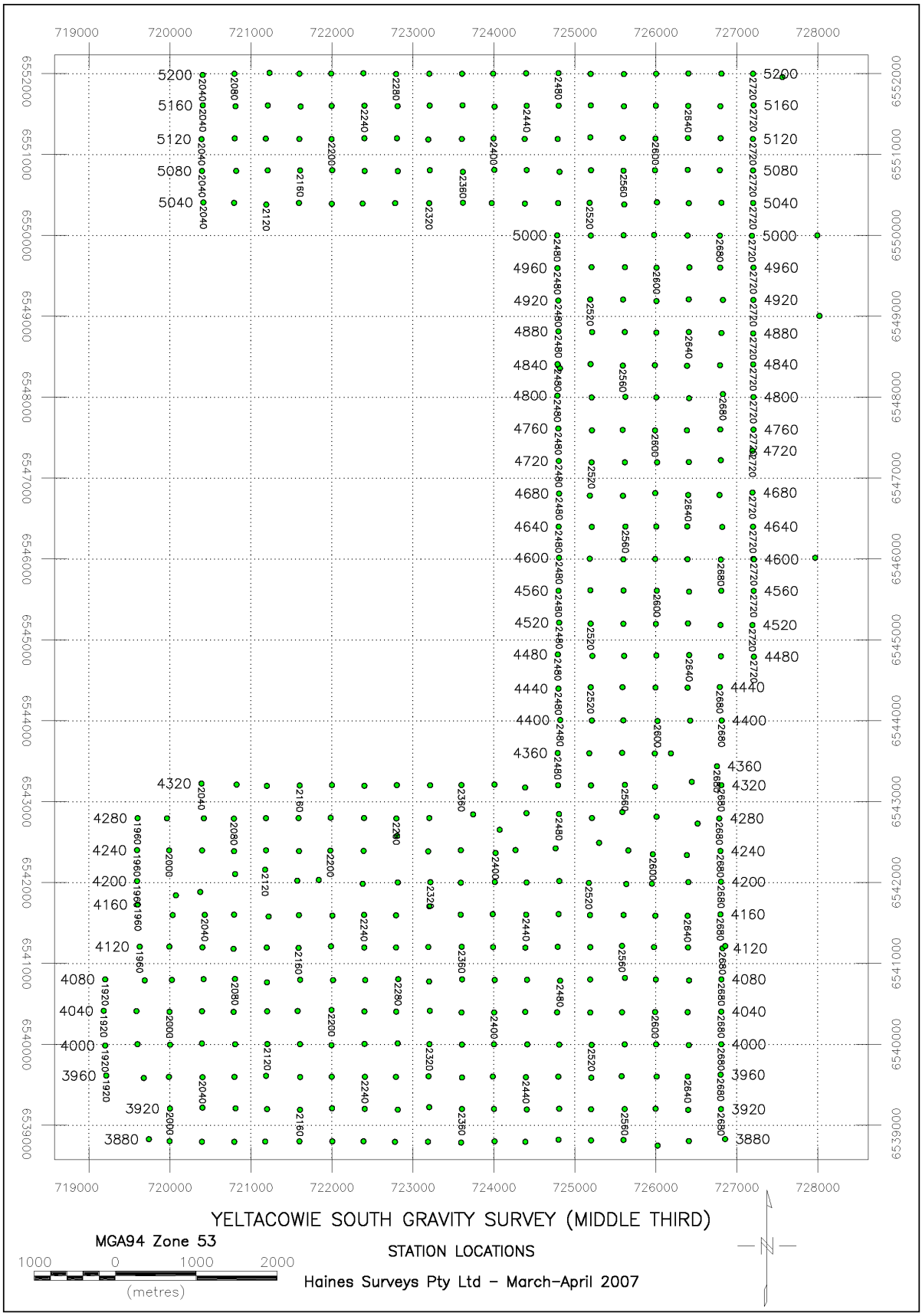
YELTACOWIE SOUTH GRAVITY SURVEY (SOUTHERN THIRD)
STATION LOCATIONS
Haines Surveys Pty Ltd – March-April 2007
MGA94 Zone 53
1000 0 1000 2000
(metres)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720000
721000
722000
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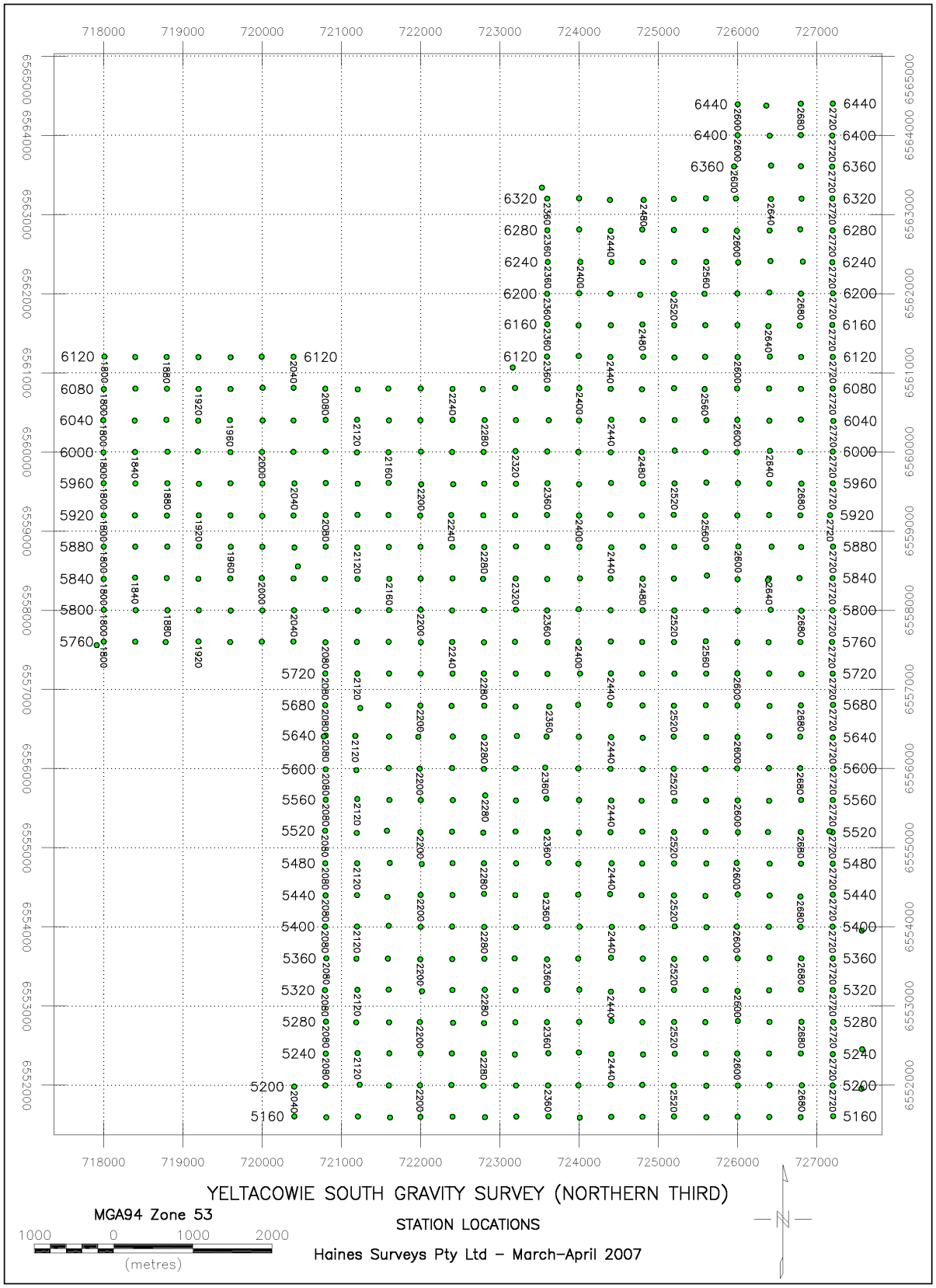
6539000
YELTACOWIE SOUTH GRAVITY SURVEY (MIDDLE THIRD)
STATION LOCATIONS
MGA94 Zone 53
1000 0 1000 2000
(metres)
Haines Surveys Pty Ltd - March-April 2007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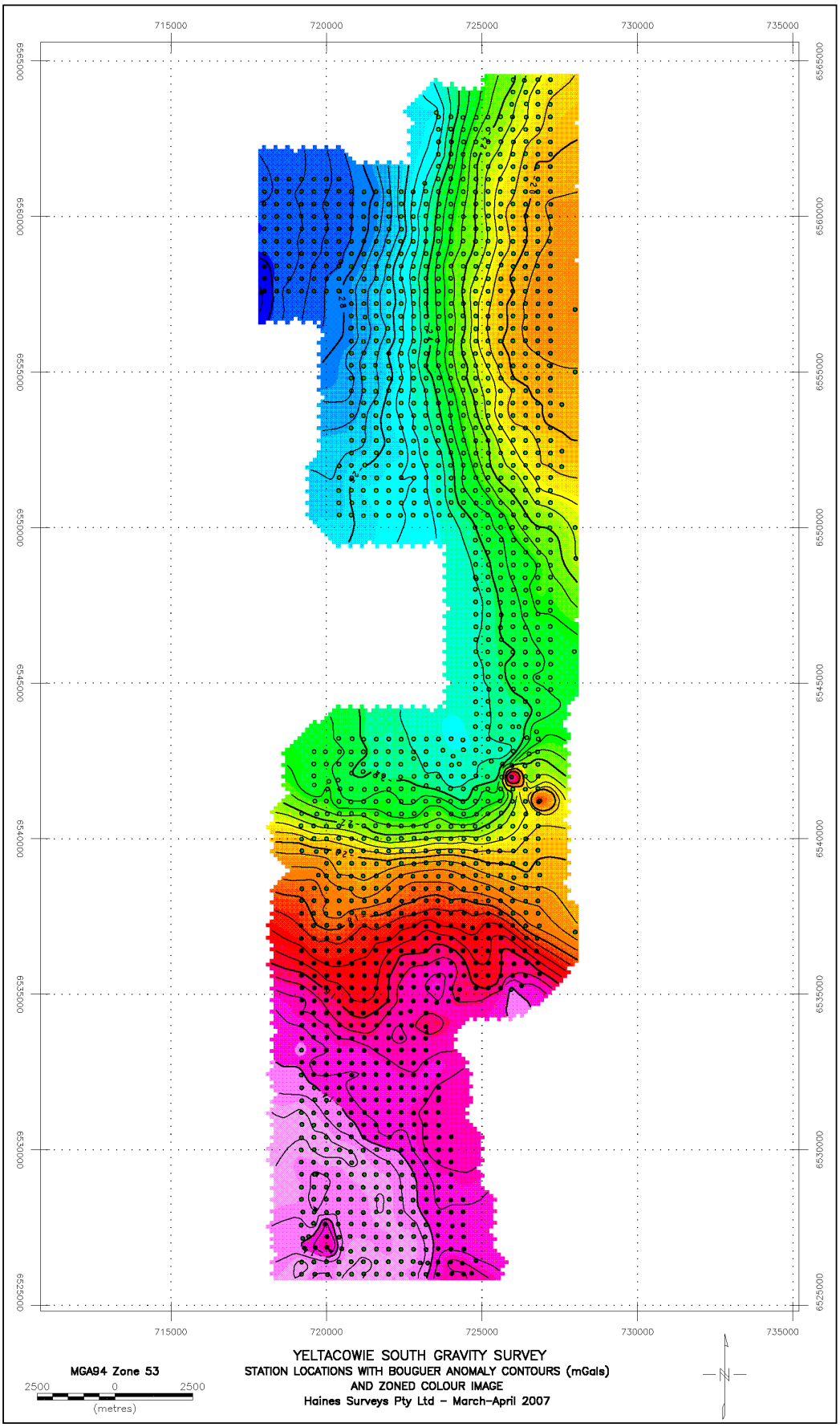
YELTACOWIE SOUTH GRAVITY SURVEY (NORTHERN THIRD)
STATION LOCATIONS
Haines Surveys Pty Ltd – March–April 2007
MGA94 Zone 53
1000 0 1000 2000
(metres)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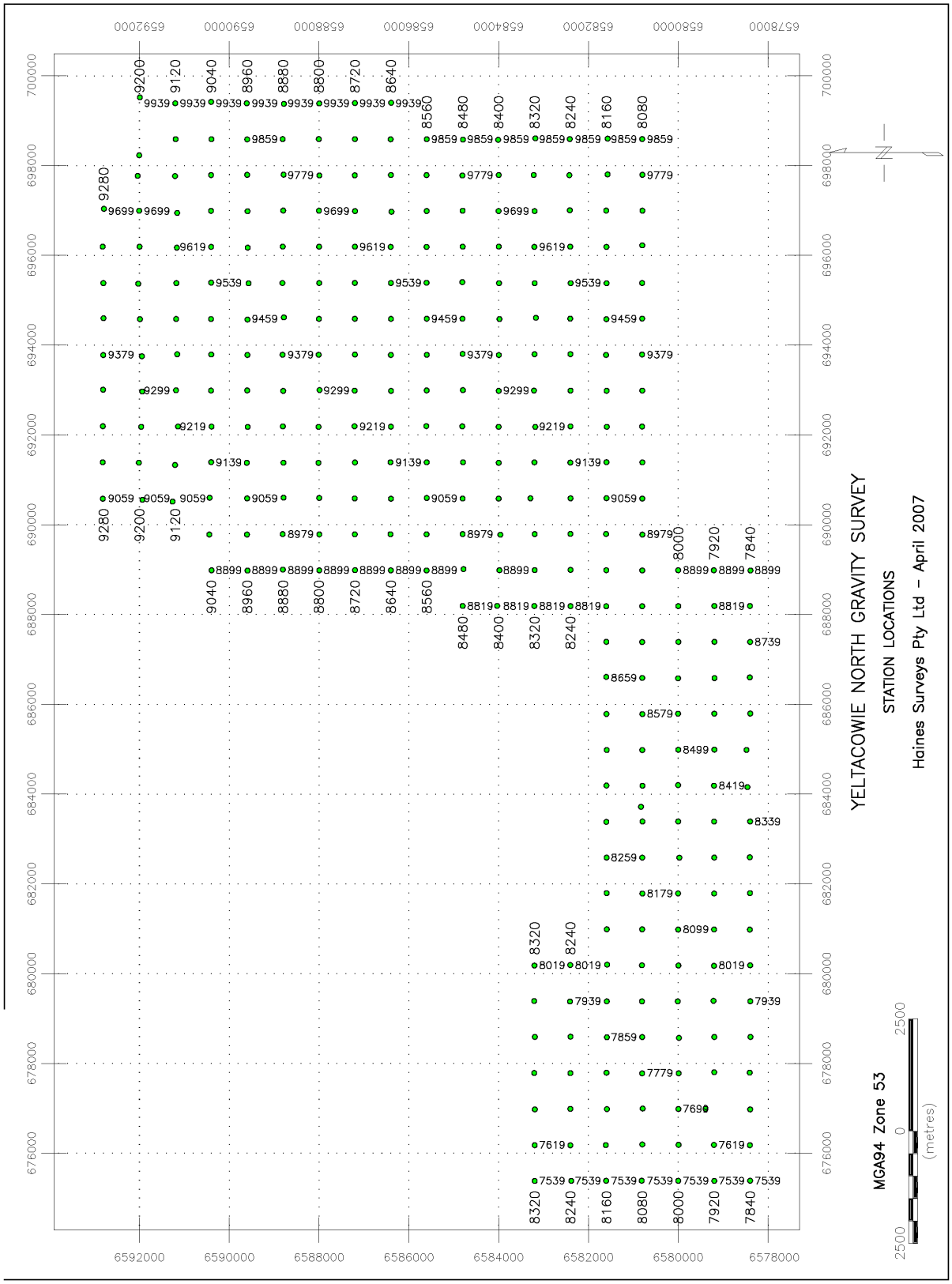
6525000
YELTACOWIE SOUTH GRAVITY SURVEY
STATION LOCATIONS WITH BOUGUER ANOMALY CONTOURS (mGals)
AND ZONED COLOUR IMAGE
Haines Surveys Pty Ltd – March–April 2007
MGA94 Zone 53
2500 0 2500
(metres)


YELTACOWIE NORTH GRAVITY SURVEY
STATION LOCATIONS
Haines Surveys Pty Ltd – April 2007
MGA94 Zone 53
(metres)
2500
0
2500
6592000
6590000
6588000
6586000
6584000
6582000
6580000
6578000
676000
678000
680000
682000
684000
686000
688000
690000
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696000
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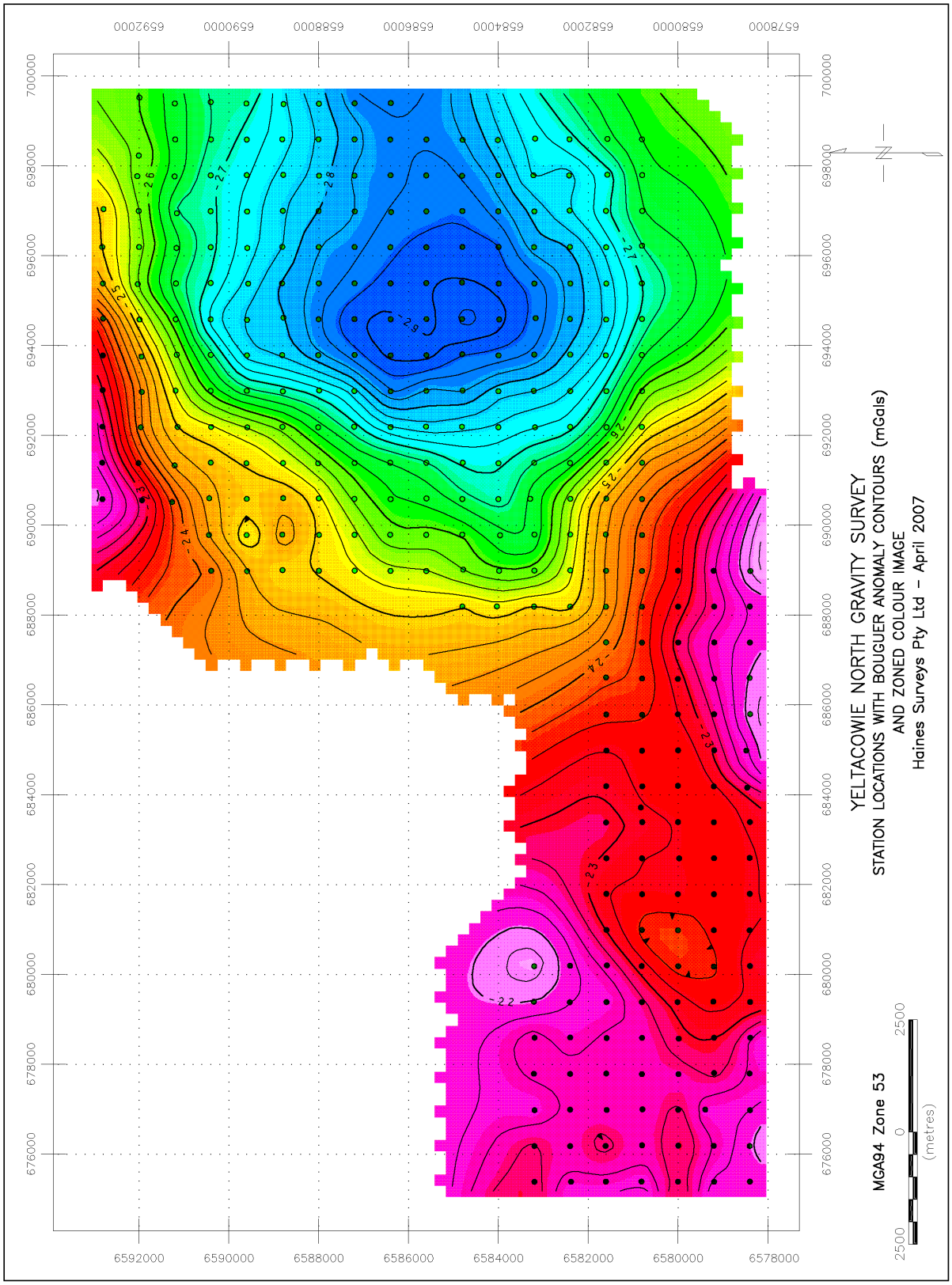
YELTACOWIE NORTH GRAVITY SURVEY
STATION LOCATIONS WITH BOUGUER ANOMALY CONTOURS (mGals)
AND ZONED COLOUR IMAGE
Haines Surveys Pty Ltd - April 2007
MGA94 Zone 53
2500
0
2500
(metres)
6592000
6590000
6588000
6586000
6584000
6582000
6580000
6578000
700000
698000
696000
694000
692000
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688000
686000
684000
682000
680000
678000
676000

Gravity Processing Results

Yeltacowie South

MGA94 ZONE 53 E	N	GRID Line	Stn	drift	corr'd meter	obs mgal	anom	freeair corrn	bouguer corrn (2.67)	bouguer anom	height (AHD)
D69											
719918.6	6526549.5	0	4201	+0.000	3650.130	979391.001	1.000	-41.931	44.304	-16.065	-13.692
719918.6	6526549.5	0	4201	+0.000	3650.130	979391.001	1.000	-41.931	44.304	-16.065	-13.692
719918.6	6526549.5	0	4201	+0.119	3650.130	979391.001	1.000	-41.931	44.304	-16.065	-13.692
719918.6	6526549.5	0	4201	+0.000	3650.011	979391.001	1.000	-41.931	44.304	-16.065	-13.692
719199.6	6526000.3	2600	1920	+0.020	3657.830	979398.701	-34.640	33.904	-12.294	-13.030	109.863
719627.5	6525997.7	2600	1960	+0.022	3657.026	979397.897	-35.439	34.426	-12.483	-13.497	111.555
720035.0	6525991.5	2600	2000	+0.024	3658.111	979398.982	-34.353	32.654	-11.841	-13.539	105.814
720402.8	6526007.0	2600	2040	+0.052	3660.202	979401.073	-32.245	29.988	-10.874	-13.131	97.175
720807.7	6526000.3	2600	2080	+0.054	3661.993	979402.864	-30.453	27.503	-9.973	-12.923	89.121
721200.5	6526007.4	2600	2120	+0.055	3662.210	979403.081	-30.225	27.033	-9.802	-12.994	87.598
721606.9	6526001.8	2600	2160	+0.061	3662.805	979403.676	-29.627	25.945	-9.408	-13.090	84.073
721997.0	6526002.7	2600	2200	+0.063	3661.782	979402.653	-30.644	27.389	-9.932	-13.186	88.754
722408.4	6526000.8	2600	2240	+0.064	3661.869	979402.740	-30.552	27.200	-9.863	-13.215	88.140
722790.1	6526006.3	2600	2280	+0.066	3661.759	979402.630	-30.652	27.153	-9.846	-13.345	87.988
723199.3	6525997.0	2600	2320	+0.103	3660.209	979401.080	-32.202	28.789	-10.439	-13.853	93.288
723595.5	6525995.8	2600	2360	+0.106	3657.258	979398.129	-35.148	32.103	-11.641	-14.686	104.027
724030.1	6526023.5	2600	2400	+0.107	3655.065	979395.936	-37.314	35.122	-12.736	-14.927	113.812
724409.8	6526008.1	2600	2440	+0.108	3652.379	979393.250	-40.006	39.321	-14.258	-14.942	127.418
724668.4	6526030.1	2600	2480	+0.109	3649.128	979389.999	-43.237	44.074	-15.981	-15.144	142.819
719201.6	6526392.1	2640	1920	+0.032	3654.903	979395.774	-37.283	38.312	-13.892	-12.863	124.148
719597.2	6526393.9	2640	1960	+0.031	3654.544	979395.415	-37.635	38.267	-13.876	-13.244	124.001
720795.7	6526403.1	2640	2080	+0.078	3659.003	979399.874	-33.151	31.525	-11.431	-13.057	102.156
721186.4	6526399.3	2640	2120	+0.077	3660.629	979401.500	-31.522	29.097	-10.551	-12.976	94.286
721595.5	6526393.5	2640	2160	+0.076	3662.339	979403.210	-29.810	26.346	-9.553	-13.017	85.374
721991.0	6526398.6	2640	2200	+0.074	3661.605	979402.476	-30.534	27.319	-9.906	-13.121	88.526
722401.5	6526408.5	2640	2240	+0.073	3661.262	979402.133	-30.864	27.787	-10.076	-13.152	90.043
722787.9	6526411.7	2640	2280	+0.071	3661.713	979402.584	-30.404	27.043	-9.806	-13.167	87.631
723014.8	6526366.1	2640	2300	+0.069	3661.315	979402.186	-30.832	27.388	-9.931	-13.375	88.748
723255.9	6526358.4	2640	2320	+0.102	3660.867	979401.738	-31.282	27.552	-9.991	-13.720	89.282
723590.7	6526391.5	2640	2360	+0.101	3658.887	979399.758	-33.233	29.359	-10.646	-14.519	95.135
723988.0	6526394.7	2640	2400	+0.100	3655.291	979396.162	-36.820	34.021	-12.336	-15.135	110.243
724368.6	6526352.3	2640	2440	+0.098	3653.754	979394.625	-38.382	36.647	-13.289	-15.023	118.754
724807.5	6526438.2	2640	2480	+0.096	3653.327	979394.198	-38.740	38.012	-13.783	-14.511	123.177
719289.0	6526840.8	2680	1920	+0.040	3636.536	979377.407	-55.324	64.430	-23.363	-14.257	208.783
719643.7	6526854.8	2680	1960	+0.042	3635.031	979375.902	-56.814	66.216	-24.010	-14.608	214.570
720013.7	6526864.0	2680	2000	+0.044	3630.951	979371.822	-60.881	70.687	-25.632	-15.826	229.058
720778.2	6526737.2	2680	2080	+0.081	3656.390	979397.261	-35.523	35.113	-12.732	-13.142	113.781
721201.3	6526802.9	2680	2120	+0.083	3658.517	979399.388	-33.342	31.821	-11.539	-13.059	103.115
721607.4	6526805.1	2680	2160	+0.084	3660.379	979401.250	-31.472	28.659	-10.392	-13.205	92.868
721997.5	6526806.1	2680	2200	+0.085	3661.008	979401.879	-30.836	27.390	-9.932	-13.378	88.757
722397.2	6526798.1	2680	2240	+0.087	3660.896	979401.767	-30.948	28.107	-10.192	-13.032	91.079
722801.2	6526800.7	2680	2280	+0.088	3660.859	979401.730	-30.977	28.056	-10.173	-13.094	90.914
723203.9	6526791.5	2680	2320	+0.089	3660.636	979401.507	-31.200	27.745	-10.060	-13.516	89.906
723588.3	6526825.5	2680	2360	+0.091	3659.712	979400.583	-32.093	27.994	-10.151	-14.250	90.712
724001.8	6526807.7	2680	2400	+0.092	3658.318	979399.189	-33.494	29.866	-10.829	-14.458	96.778
724420.4	6526808.3	2680	2440	+0.094	3657.806	979398.677	-33.999	30.953	-11.224	-14.270	100.300
D70											
718038.6	6528119.6	0	6601	+0.000	3650.851	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	-0.001	3650.851	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.150	3650.852	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3650.702	979390.624	4.000	-41.200	45.312	-16.430	-12.319
720489.2	6526819.0	2680	2040	+0.038	3655.048	979394.820	-37.909	38.530	-13.971	-13.350	124.854
722397.2	6526798.3	2680	2240	+0.117	3661.993	979401.765	-30.950	28.131	-10.201	-13.019	91.158
722801.5	6526800.5	2680	2280	+0.115	3661.926	979401.698	-31.009	28.083	-10.183	-13.109	91.000
719238.4	6527150.9	2720	1920	+0.016	3637.596	979377.368	-55.140	64.789	-23.493	-13.843	209.945
719428.3	6527208.9	2720	1960	+0.019	3640.558	979380.330	-52.133	60.183	-21.823	-13.773	195.019
720016.6	6527208.4	2720	2000	+0.024	3636.130	979375.902	-56.552	65.180	-23.635	-15.007	211.212
720404.0	6527185.2	2720	2040	+0.035	3652.572	979392.344	-40.121	41.686	-15.115	-13.551	135.080
720760.1	6527215.4	2720	2080	+0.041	3657.743	979397.515	-34.923	33.910	-12.296	-13.308	109.884
721186.5	6527214.3	2720	2120	+0.129	3658.780	979398.552	-33.880	32.317	-11.718	-13.281	104.722
721591.3	6527194.5	2720	2160	+0.127	3661.289	979401.061	-31.379	28.444	-10.314	-13.249	92.170
721995.9	6527207.0	2720	2200	+0.124	3662.049	979401.821	-30.604	27.130	-9.837	-13.311	87.913
722397.7	6527203.6	2720	2240	+0.121	3662.254	979402.026	-30.395	27.250	-9.881	-13.026	88.303
719187.4	6527578.4	2760	1920	+0.010	3640.005	979379.777	-52.422	60.469	-21.926	-13.880	195.945
719584.9	6527634.1	2760	1960	+0.056	3651.779	979391.551	-40.602	43.297	-15.700	-13.004	140.302
719957.6	6527607.8	2760	2000	+0.028	3640.509	979380.281	-51.885	58.185	-21.098	-14.798	188.546
720375.0	6527605.4	2760	2040	+0.045	3654.549	979394.321	-37.840	38.355	-13.908	-13.393	124.286
720792.9	6527615.8	2760	2080	+0.132	3659.435	979399.207	-32.940	30.735	-11.145	-13.350	99.594
721208.1	6527610.8	2760	2120	+0.135	3659.599	979399.371	-32.774	30.338	-11.001	-13.436	98.308
721608.4	6527593.1	2760	2160	+0.137	3662.076	979401.848	-30.303	26.779	-9.710	-13.235	86.775
721992.3	6527608.7	2760	2200	+0.140	3662.496	979402.268	-29.866	26.308	-9.539	-13.098	85.248
722383.1	6527607.8	2760	2240	+0.142	3661.704	979401.476	-30.653	27.263	-9.886	-13.276	88.343

719241.7	6527999.8	2800	1920	+0.059	3649.491	979389.263	-42.630	46.135	-16.729	-13.223	149.499
719603.0	6527998.4	2800	1960	+0.054	3650.406	979390.178	-41.711	44.237	-16.041	-13.514	143.348
720000.3	6527993.3	2800	2000	+0.052	3654.812	979394.584	-37.302	37.975	-13.770	-13.097	123.056
720365.7	6527984.8	2800	2040	+0.049	3654.582	979394.354	-37.533	37.727	-13.680	-13.486	122.253
719197.6	6528404.9	2840	1920	+0.062	3652.140	979391.912	-39.689	41.456	-15.032	-13.264	134.337
719592.1	6528407.6	2840	1960	+0.064	3651.894	979391.666	-39.927	41.050	-14.885	-13.761	133.020
719994.2	6528406.3	2840	2000	+0.066	3653.605	979393.377	-38.211	38.901	-14.106	-13.415	126.058
720394.2	6528403.6	2840	2040	+0.068	3656.712	979396.484	-35.099	34.267	-12.425	-13.258	111.041
719195.2	6528797.3	2880	1920	+0.077	3654.480	979394.252	-37.064	37.476	-13.589	-13.178	121.438
719599.7	6528801.4	2880	1960	+0.076	3653.943	979393.715	-37.592	37.688	-13.666	-13.570	122.125
719991.4	6528801.6	2880	2000	+0.074	3654.359	979394.131	-37.170	37.033	-13.428	-13.566	120.004
720401.6	6528798.1	2880	2040	+0.072	3656.456	979396.228	-35.070	34.003	-12.330	-13.396	110.184
719199.8	6529212.5	2920	1920	+0.085	3655.995	979395.767	-35.249	34.376	-12.465	-13.338	111.392
719614.5	6529206.0	2920	1960	+0.087	3655.509	979395.281	-35.733	34.771	-12.608	-13.571	112.672
719996.2	6529198.5	2920	2000	+0.088	3655.847	979395.619	-35.395	34.388	-12.469	-13.476	111.433
720381.6	6529190.6	2920	2040	+0.090	3657.809	979397.581	-33.433	31.345	-11.366	-13.454	101.570
719188.4	6529604.5	2960	1920	+0.098	3657.247	979397.019	-33.714	31.962	-11.590	-13.341	103.571
719584.1	6529598.0	2960	1960	+0.096	3657.233	979397.005	-33.726	32.006	-11.606	-13.326	103.714
720002.8	6529587.1	2960	2000	+0.095	3659.081	979398.853	-31.880	29.462	-10.683	-13.101	95.469
720401.4	6529592.2	2960	2040	+0.093	3660.294	979400.066	-30.657	27.468	-9.960	-13.149	89.009
719188.2	6529993.7	3000	1920	+0.100	3658.798	979398.570	-31.881	29.459	-10.682	-13.104	95.459
719604.3	6530002.7	3000	1960	+0.101	3659.193	979398.965	-31.473	29.088	-10.547	-12.933	94.257
719998.4	6530008.6	3000	2000	+0.103	3661.080	979400.852	-29.576	26.231	-9.511	-12.856	85.000
720416.8	6529996.1	3000	2040	+0.104	3661.221	979400.993	-29.438	26.004	-9.429	-12.863	84.264
720784.1	6529933.2	3000	2080	+0.108	3661.190	979400.962	-29.509	25.901	-9.392	-12.999	83.930
D71											
718038.6	6528119.6	0	6601	+0.000	3651.884	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3651.884	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.155	3651.884	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3651.729	979390.624	4.000	-41.200	45.312	-16.430	-12.319
719999.5	6526401.9	2640	2000	+0.017	3656.864	979395.604	-37.434	37.667	-13.658	-13.425	122.058
720401.1	6526396.6	2640	2040	+0.020	3658.810	979397.550	-35.486	34.854	-12.638	-13.270	112.941
721996.1	6527207.1	2720	2200	+0.027	3663.058	979401.798	-30.627	27.132	-9.838	-13.333	87.921
722803.0	6527209.5	2720	2280	+0.029	3662.653	979401.393	-31.018	28.018	-10.160	-13.159	90.792
723171.9	6527200.9	2720	2320	+0.031	3662.014	979400.754	-31.657	28.224	-10.234	-13.667	91.458
723580.4	6527243.6	2720	2360	+0.034	3661.313	979400.053	-32.321	28.319	-10.269	-14.270	91.767
723993.6	6527199.6	2720	2400	+0.090	3661.100	979399.840	-32.559	28.611	-10.374	-14.323	92.712
724412.3	6527200.2	2720	2440	+0.093	3660.271	979399.011	-33.382	29.988	-10.874	-14.268	97.173
722791.8	6527590.8	2760	2280	+0.040	3661.796	979400.536	-31.599	28.641	-10.385	-13.343	92.809
723201.4	6527589.6	2760	2320	+0.038	3661.230	979399.970	-32.159	28.683	-10.401	-13.877	92.945
723608.5	6527598.6	2760	2360	+0.036	3660.175	979398.915	-33.202	29.393	-10.658	-14.467	95.245
724043.7	6527551.7	2760	2400	+0.099	3660.796	979399.536	-32.608	28.966	-10.503	-14.145	93.863
724388.5	6527589.1	2760	2440	+0.096	3660.647	979399.387	-32.724	29.121	-10.559	-14.163	94.364
720776.1	6527996.6	2800	2080	+0.050	3659.969	979398.709	-33.163	31.082	-11.270	-13.352	100.719
721186.7	6527982.7	2800	2120	+0.048	3661.403	979400.143	-31.733	28.658	-10.391	-13.467	92.864
721606.2	6528001.3	2800	2160	+0.046	3662.956	979401.696	-30.160	26.974	-9.781	-12.967	87.408
721997.8	6527997.3	2800	2200	+0.044	3663.696	979402.436	-29.417	25.604	-9.284	-13.097	82.969
720793.2	6528405.7	2840	2080	+0.053	3658.816	979397.556	-34.020	32.078	-11.632	-13.573	103.947
721202.8	6528403.6	2840	2120	+0.054	3660.298	979399.038	-32.533	30.054	-10.898	-13.377	97.388
721610.6	6528403.1	2840	2160	+0.056	3663.389	979402.129	-29.436	25.851	-9.374	-12.959	83.770
722016.0	6528406.9	2840	2200	+0.058	3663.457	979402.197	-29.359	25.526	-9.256	-13.089	82.717
722398.8	6528425.8	2840	2240	+0.059	3662.552	979401.292	-30.245	26.329	-9.547	-13.463	85.317
720797.6	6528798.2	2880	2080	+0.066	3660.008	979398.748	-32.544	30.070	-10.904	-13.377	97.441
721177.7	6528789.3	2880	2120	+0.064	3661.934	979400.674	-30.618	27.393	-9.933	-13.158	88.766
721599.2	6528791.3	2880	2160	+0.062	3663.227	979401.967	-29.317	25.503	-9.248	-13.062	82.641
721993.7	6528793.2	2880	2200	+0.061	3663.172	979401.912	-29.365	25.489	-9.242	-13.119	82.594
722396.1	6528803.8	2880	2240	+0.060	3662.729	979401.469	-29.794	25.565	-9.270	-13.499	82.842
720798.2	6529207.9	2920	2080	+0.067	3661.385	979400.125	-30.870	27.858	-10.101	-13.114	90.272
721218.2	6529200.4	2920	2120	+0.069	3662.634	979401.374	-29.620	25.936	-9.404	-13.089	84.043
721601.6	6529202.4	2920	2160	+0.070	3662.798	979401.538	-29.449	25.522	-9.254	-13.181	82.701
721998.3	6529200.5	2920	2200	+0.071	3662.719	979401.459	-29.523	25.513	-9.251	-13.262	82.672
722424.1	6529191.6	2920	2240	+0.073	3662.356	979401.096	-29.886	25.570	-9.272	-13.588	82.857
720809.8	6529585.4	2960	2080	+0.078	3662.807	979401.547	-29.175	25.542	-9.261	-12.895	82.766
721181.1	6529602.9	2960	2120	+0.076	3662.547	979401.287	-29.416	25.540	-9.261	-13.137	82.761
721589.0	6529603.7	2960	2160	+0.075	3662.310	979401.050	-29.647	25.544	-9.262	-13.365	82.773
721992.7	6529590.0	2960	2200	+0.074	3662.240	979400.980	-29.720	25.555	-9.266	-13.431	82.810
721177.7	6529979.2	3000	2120	+0.080	3662.099	979400.839	-29.592	25.605	-9.285	-13.271	82.972
D72											
718038.6	6528119.6	0	6601	+0.000	3652.967	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3652.967	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.147	3652.967	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3652.820	979390.624	4.000	-41.200	45.312	-16.430	-12.319
721998.3	6527997.5	2800	2200	+0.015	3664.771	979402.428	-29.425	25.590	-9.279	-13.114	82.923
722389.2	6528005.6	2800	2240	+0.017	3663.220	979400.877	-30.964	27.518	-9.978	-13.424	89.169
722793.0	6528001.1	2800	2280	+0.019	3661.509	979399.166	-32.672	29.712	-10.774	-13.733	96.281
723204.2	6527999.4	2800	2320	+0.020	3660.510	979398.167	-33.666	30.484	-11.053	-14.236	98.780
723601.8	6527998.4	2800	2360	+0.022	3660.599	979398.256	-33.571	29.935	-10.855	-14.491	97.004
724006.1	6527994.7	2800	2400	+0.023	3660.813	979398.470	-33.354	29.777	-10.797	-14.374	96.491
724394.9	6528004.8	2800	2440	+0.025	3661.022	979398.679	-33.131	29.510	-10.701	-14.322	95.627
722785.5	6528380.8	2840	2280	+0.036	3661.672	979399.329	-32.234	28.817	-10.449	-13.866	93.380
723212.5	6528403.6	2840	2320	+0.034	3660.147	979397.804	-33.736	30.450	-11.041	-14.327	98.672
723592.8	6528392.0	2840	2360	+0.032	3659.808	979397.465	-34.078	30.626	-11.105	-14.557	99.242
723995.0	6528382.4	2840	2400	+0.030	3658.783	979396.440	-35.103	32.235	-11.688	-14.557	104.454

724390.5	6528396.9	2840	2440	+0.028	3659.204	979396.861	-34.666	31.419	-11.393	-14.639	101.811
722790.2	6528804.2	2880	2280	+0.039	3662.165	979399.822	-31.435	27.581	-10.001	-13.854	89.376
723197.7	6528795.6	2880	2320	+0.041	3660.593	979398.250	-33.007	29.369	-10.649	-14.287	95.167
723606.6	6528799.0	2880	2360	+0.043	3659.456	979397.113	-34.135	30.670	-11.121	-14.586	99.385
723994.1	6528809.0	2880	2400	+0.045	3658.172	979395.829	-35.406	32.539	-11.799	-14.665	105.440
722788.1	6529195.9	2920	2280	+0.052	3661.462	979399.119	-31.854	28.069	-10.178	-13.963	90.956
723195.8	6529193.6	2920	2320	+0.050	3659.826	979397.483	-33.486	29.927	-10.852	-14.410	96.976
723602.4	6529194.0	2920	2360	+0.049	3658.255	979395.912	-35.050	31.878	-11.559	-14.731	103.300
723999.6	6529206.7	2920	2400	+0.047	3657.964	979395.621	-35.326	32.219	-11.683	-14.789	104.404
722398.6	6529595.2	2960	2240	+0.058	3662.066	979399.723	-30.967	26.886	-9.749	-13.830	87.122
722782.4	6529606.3	2960	2280	+0.063	3660.468	979398.125	-32.551	28.851	-10.461	-14.162	93.489
723202.9	6529597.3	2960	2320	+0.066	3658.408	979396.065	-34.611	31.361	-11.372	-14.622	101.624
723610.8	6529609.3	2960	2360	+0.068	3656.213	979393.870	-36.791	34.019	-12.336	-15.108	110.238
724010.5	6529608.1	2960	2400	+0.070	3656.691	979394.348	-36.308	33.043	-11.982	-15.246	107.075
721177.3	6529980.1	3000	2120	+0.131	3663.184	979400.841	-29.590	25.619	-9.289	-13.260	83.016
721612.6	6530005.4	3000	2160	+0.088	3661.782	979399.439	-30.967	27.055	-9.810	-13.722	87.671
721980.3	6530008.4	3000	2200	+0.086	3660.648	979398.305	-32.093	28.425	-10.307	-13.975	92.109
722397.7	6529993.8	3000	2240	+0.083	3659.818	979397.475	-32.927	29.572	-10.723	-14.078	95.825
722787.2	6530006.4	3000	2280	+0.081	3657.140	979394.797	-35.590	32.996	-11.964	-14.559	106.921
723187.8	6529994.6	3000	2320	+0.078	3655.354	979393.011	-37.378	35.072	-12.717	-15.023	113.650
723606.1	6529999.9	3000	2360	+0.075	3655.334	979392.991	-37.388	34.670	-12.572	-15.289	112.347
723993.2	6529994.7	3000	2400	+0.073	3655.875	979393.532	-36.845	33.626	-12.193	-15.412	108.962
719194.3	6530387.8	3040	1920	+0.109	3661.141	979398.798	-31.368	28.820	-10.450	-12.998	93.391
719597.1	6530402.7	3040	1960	+0.107	3661.600	979399.257	-30.892	28.076	-10.180	-12.996	90.978
719995.8	6530404.8	3040	2000	+0.105	3662.449	979400.106	-30.035	26.795	-9.716	-12.957	86.826
720385.5	6530399.9	3040	2040	+0.103	3659.862	979397.519	-32.620	30.284	-10.981	-13.317	98.133
720799.4	6530416.9	3040	2080	+0.100	3659.956	979397.613	-32.507	29.849	-10.823	-13.482	96.724
721204.3	6530403.0	3040	2120	+0.095	3657.728	979395.385	-34.739	32.374	-11.739	-14.104	104.907
721600.5	6530400.0	3040	2160	+0.091	3657.176	979394.833	-35.287	32.754	-11.877	-14.410	106.136
719210.6	6530814.8	3080	1920	+0.111	3661.204	979398.861	-30.996	28.394	-10.296	-12.897	92.010
719592.7	6530789.9	3080	1960	+0.114	3661.265	979398.922	-30.947	28.082	-10.183	-13.047	90.999
720002.0	6530795.3	3080	2000	+0.116	3660.455	979398.112	-31.747	29.071	-10.541	-13.217	94.203
720410.9	6530803.4	3080	2040	+0.118	3658.060	979395.717	-34.130	32.067	-11.627	-13.690	103.910
720790.5	6530801.2	3080	2080	+0.120	3658.335	979395.992	-33.850	31.431	-11.397	-13.817	101.849
721200.3	6530807.4	3080	2120	+0.125	3657.610	979395.267	-34.565	31.888	-11.563	-14.240	103.330
D73											
718038.6	6528119.6	0	6601	+0.000	3654.049	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3654.049	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.093	3654.049	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3653.956	979390.624	4.000	-41.200	45.312	-16.430	-12.319
721980.2	6530008.6	3000	2200	+0.060	3661.749	979398.324	-32.074	28.406	-10.300	-13.968	92.048
721600.6	6530399.8	3040	2160	+0.009	3658.252	979394.827	-35.293	32.746	-11.874	-14.421	106.113
722024.3	6530402.1	3040	2200	+0.059	3658.394	979394.969	-35.143	32.396	-11.747	-14.495	104.976
722398.4	6530402.2	3040	2240	+0.057	3658.999	979395.574	-34.532	31.780	-11.524	-14.276	102.982
722800.3	6530394.9	3040	2280	+0.056	3656.679	979393.254	-36.852	34.717	-12.588	-14.723	112.497
723196.8	6530391.6	3040	2320	+0.055	3655.952	979392.527	-37.575	35.272	-12.790	-15.093	114.297
723616.0	6530396.1	3040	2360	+0.053	3655.639	979392.214	-37.878	35.244	-12.780	-15.414	114.206
724013.8	6530420.5	3040	2400	+0.050	3657.125	979393.700	-36.368	33.060	-11.988	-15.296	107.130
721585.2	6530803.8	3080	2160	+0.010	3658.127	979394.702	-35.126	32.432	-11.760	-14.454	105.095
722012.7	6530801.4	3080	2200	+0.043	3657.064	979393.639	-36.185	33.815	-12.262	-14.631	109.577
722398.8	6530796.7	3080	2240	+0.045	3656.668	979393.243	-36.578	34.479	-12.502	-14.602	111.726
722813.4	6530809.8	3080	2280	+0.046	3656.771	979393.346	-36.459	33.994	-12.326	-14.791	110.156
723183.0	6530799.0	3080	2320	+0.047	3655.797	979392.372	-37.435	35.125	-12.737	-15.046	113.822
723607.6	6530788.6	3080	2360	+0.052	3656.653	979393.228	-36.580	33.389	-12.107	-15.298	108.196
719192.5	6531198.2	3120	1920	+0.026	3661.775	979398.350	-31.230	28.756	-10.427	-12.901	93.181
719588.8	6531184.2	3120	1960	+0.025	3661.361	979397.936	-31.648	28.895	-10.477	-13.230	93.632
720405.3	6531179.2	3120	2040	+0.015	3659.969	979396.544	-33.031	30.176	-10.942	-13.797	97.783
720793.2	6531195.9	3120	2080	+0.014	3658.454	979395.029	-34.528	31.819	-11.538	-14.247	103.106
721220.6	6531199.0	3120	2120	+0.013	3657.657	979394.232	-35.316	32.624	-11.829	-14.522	105.715
721603.3	6531201.6	3120	2160	+0.012	3657.350	979393.925	-35.615	32.951	-11.948	-14.612	106.776
722003.9	6531216.8	3120	2200	+0.042	3656.173	979392.748	-36.775	34.597	-12.545	-14.723	112.111
722407.2	6531208.0	3120	2240	+0.040	3657.191	979393.766	-35.757	33.253	-12.058	-14.562	107.755
722803.0	6531181.8	3120	2280	+0.039	3655.284	979391.859	-37.677	35.643	-12.924	-14.958	115.500
723196.7	6531209.0	3120	2320	+0.065	3656.615	979393.190	-36.320	33.296	-12.073	-15.098	107.894
723592.6	6531205.4	3120	2360	+0.066	3655.952	979392.527	-36.980	34.119	-12.372	-15.233	110.560
719204.5	6531577.1	3160	1920	+0.027	3661.234	979397.809	-31.496	28.692	-10.404	-13.208	92.974
719627.8	6531607.6	3160	1960	+0.028	3660.084	979396.659	-32.618	29.774	-10.796	-13.640	96.480
720000.3	6531589.5	3160	2000	+0.028	3660.298	979396.873	-32.411	29.221	-10.596	-13.786	94.689
720399.8	6531599.5	3160	2040	+0.029	3658.836	979395.411	-33.860	30.917	-11.211	-14.153	100.186
720795.4	6531609.4	3160	2080	+0.030	3658.418	979394.993	-34.265	31.145	-11.293	-14.413	100.925
721203.1	6531602.6	3160	2120	+0.031	3657.228	979393.803	-35.453	32.605	-11.823	-14.671	105.655
721605.4	6531606.1	3160	2160	+0.031	3657.449	979394.024	-35.224	32.201	-11.676	-14.699	104.344
722001.0	6531590.6	3160	2200	+0.032	3657.318	979393.893	-35.360	32.534	-11.797	-14.623	105.425
722407.2	6531596.2	3160	2240	+0.033	3656.299	979392.874	-36.369	33.882	-12.286	-14.772	109.793
722801.8	6531601.6	3160	2280	+0.076	3656.594	979393.169	-36.064	33.521	-12.155	-14.698	108.622
723191.9	6531606.1	3160	2320	+0.074	3655.591	979392.166	-37.057	34.693	-12.580	-14.945	112.419
723598.1	6531594.1	3160	2360	+0.068	3654.507	979391.082	-38.144	35.895	-13.016	-15.264	116.317
722022.7	6531992.2	3200	2200	+0.083	3656.523	979393.098	-35.864	33.281	-12.068	-14.651	107.846
722403.0	6531999.9	3200	2240	+0.081	3656.330	979392.905	-36.046	33.676	-12.211	-14.580	109.126
722799.1	6531997.7	3200	2280	+0.080	3655.551	979392.126	-36.820	34.765	-12.606	-14.661	112.654
723207.3	6531996.2	3200	2320	+0.079	3654.173	979390.748	-38.193	36.758	-13.329	-14.763	119.113
723606.0	6531997.7	3200	2360	+0.078	3652.762	979389.337	-39.597	38.423	-13.933	-15.106	124.509
723605.6	6531679.4	9000	0211	+0.073	3654.111	979390.686	-38.478	36.420	-13.206	-15.264	118.017

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723022.9	6535073.6	0	1002	+0.137	3637.520	979372.964	4.000	-53.754	59.691	-21.644	-15.708
723022.9	6535073.6	0	1002	+0.138	3637.521	979372.965	5.000	-53.753	59.691	-21.644	-15.707
718038.6	6528119.6	0	6601	+0.000	3655.180	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3655.180	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.173	3655.180	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3655.007	979390.624	4.000	-41.200	45.312	-16.430	-12.319
719202.7	6531992.4	3200	1920	+0.043	3660.791	979396.235	-32.770	29.737	-10.783	-13.816	96.360
719609.6	6531992.4	3200	1960	+0.042	3660.679	979396.123	-32.876	29.773	-10.796	-13.898	96.478
720008.4	6531987.6	3200	2000	+0.041	3659.049	979394.493	-34.503	31.654	-11.478	-14.327	102.572
720406.1	6531995.4	3200	2040	+0.040	3659.626	979395.070	-33.914	30.708	-11.135	-14.341	99.508
720825.2	6531994.1	3200	2080	+0.039	3658.188	979393.632	-35.347	32.458	-11.769	-14.658	105.179
721221.6	6532010.7	3200	2120	+0.037	3658.313	979393.757	-35.204	32.164	-11.663	-14.703	104.225
721603.8	6531973.9	3200	2160	+0.036	3657.270	979392.714	-36.268	33.698	-12.219	-14.789	109.195
722023.0	6531992.0	3200	2200	+0.035	3657.658	979393.102	-35.860	33.300	-12.075	-14.635	107.908
722402.8	6531998.8	3200	2240	+0.075	3657.461	979392.905	-36.046	33.677	-12.211	-14.581	109.128
719186.5	6532397.9	3240	1920	+0.044	3661.585	979397.029	-31.683	28.061	-10.175	-13.797	90.930
719591.1	6532420.1	3240	1960	+0.045	3658.615	979394.059	-34.630	31.579	-11.451	-14.502	102.329
719985.0	6532404.6	3240	2000	+0.047	3658.892	979394.336	-34.359	31.123	-11.285	-14.521	100.851
720419.0	6532408.3	3240	2040	+0.048	3659.286	979394.730	-33.956	30.571	-11.085	-14.470	99.064
720810.0	6532399.7	3240	2080	+0.049	3659.325	979394.769	-33.917	30.562	-11.082	-14.437	99.034
721199.5	6532420.0	3240	2120	+0.050	3658.680	979394.124	-34.541	31.433	-11.398	-14.506	101.856
721592.1	6532417.0	3240	2160	+0.051	3658.023	979393.467	-35.194	32.453	-11.768	-14.509	105.163
719205.1	6532814.4	3280	1920	+0.060	3660.771	979396.215	-32.195	28.215	-10.231	-14.211	91.428
719598.6	6532795.1	3280	1960	+0.059	3657.628	979393.072	-35.346	32.242	-11.691	-14.795	104.477
720004.1	6532787.5	3280	2000	+0.058	3658.662	979394.106	-34.312	30.917	-11.211	-14.605	100.186
720406.9	6532805.0	3280	2040	+0.056	3657.709	979393.153	-35.246	32.110	-11.643	-14.779	104.052
720812.6	6532786.5	3280	2080	+0.055	3658.327	979393.771	-34.635	31.374	-11.376	-14.637	101.666
721197.9	6532779.8	3280	2120	+0.054	3657.767	979393.211	-35.194	32.144	-11.655	-14.706	104.160
719199.7	6533201.6	3320	1920	+0.061	3660.178	979395.622	-32.508	29.260	-10.610	-13.858	94.816
719599.7	6533207.9	3320	1960	+0.063	3659.559	979395.003	-33.117	29.616	-10.739	-14.240	95.969
719999.9	6533201.9	3320	2000	+0.064	3660.021	979395.465	-32.653	28.497	-10.333	-14.489	92.342
720410.0	6533191.1	3320	2040	+0.065	3658.665	979394.109	-34.011	30.284	-10.981	-14.708	98.133
720799.4	6533200.7	3320	2080	+0.067	3659.121	979394.565	-33.542	29.604	-10.735	-14.672	95.930
721211.0	6533187.8	3320	2120	+0.079	3658.944	979394.388	-33.722	29.787	-10.801	-14.736	96.522
720813.2	6533581.9	3360	2080	+0.102	3658.790	979394.234	-33.597	29.146	-10.569	-15.019	94.447
721212.7	6533604.1	3360	2120	+0.086	3656.470	979391.914	-35.895	32.139	-11.654	-15.410	104.143
721594.6	6533600.7	3360	2160	+0.089	3655.358	979390.802	-37.003	33.949	-12.310	-15.364	110.010
720418.5	6534010.0	3400	2040	+0.097	3657.932	979393.376	-34.151	29.296	-10.623	-15.478	94.932
720788.8	6533998.2	3400	2080	+0.095	3656.443	979391.887	-35.643	31.161	-11.299	-15.782	100.974
721182.8	6534006.1	3400	2120	+0.093	3656.400	979391.844	-35.674	31.259	-11.335	-15.750	101.292
720000.6	6534393.6	3440	2000	+0.106	3657.992	979393.436	-33.820	28.865	-10.467	-15.422	93.536
720398.0	6534397.8	3440	2040	+0.108	3657.821	979393.265	-33.982	28.578	-10.363	-15.767	92.606
720806.3	6534390.0	3440	2080	+0.110	3656.796	979392.240	-35.007	29.811	-10.810	-16.005	96.602
721186.9	6534395.3	3440	2120	+0.111	3655.449	979390.893	-36.344	31.595	-11.457	-16.205	102.382
721600.9	6534393.5	3440	2160	+0.113	3653.686	979389.130	-38.102	34.835	-12.631	-15.898	112.881
719604.7	6534786.5	3480	1960	+0.126	3658.655	979394.099	-32.879	27.602	-10.009	-15.286	89.442
719994.2	6534809.9	3480	2000	+0.125	3658.362	979393.806	-33.149	27.417	-9.942	-15.674	88.843
720404.3	6534783.6	3480	2040	+0.123	3657.375	979392.819	-34.149	28.462	-10.321	-16.007	92.231
720793.6	6534796.1	3480	2080	+0.121	3654.990	979390.434	-36.519	31.437	-11.399	-16.481	101.870
721206.9	6534794.3	3480	2120	+0.119	3654.531	979389.975	-36.973	32.058	-11.624	-16.540	103.882
721602.5	6534781.0	3480	2160	+0.117	3652.957	979388.401	-38.551	34.790	-12.615	-16.376	112.735

D75

718038.6	6528119.6	0	6601	+0.000	3654.805	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3654.805	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.128	3654.805	979390.624	4.000	-41.200	45.312	-16.430	-12.319
718038.6	6528119.6	0	6601	+0.000	3654.677	979390.624	4.000	-41.200	45.312	-16.430	-12.319
723588.3	6526825.4	2680	2360	+0.009	3664.755	979400.574	-32.103	27.991	-10.150	-14.261	90.704
722403.0	6531998.8	3200	2240	+0.118	3657.120	979392.939	-36.012	33.669	-12.208	-14.552	109.102
721978.8	6532411.7	3240	2200	+0.015	3657.767	979393.586	-35.073	32.299	-11.712	-14.486	104.664
722418.5	6532398.9	3240	2240	+0.017	3656.396	979392.215	-36.447	34.028	-12.339	-14.757	110.266
722799.4	6532409.4	3240	2280	+0.019	3654.996	979390.815	-37.833	35.893	-13.015	-14.955	116.310
723194.6	6532400.4	3240	2320	+0.020	3653.969	979389.788	-38.861	38.095	-13.814	-14.579	123.446
723604.9	6532398.4	3240	2360	+0.022	3652.272	979388.091	-40.553	40.394	-14.647	-14.806	130.893
721600.0	6532797.0	3280	2160	+0.033	3657.733	979393.552	-34.834	31.720	-11.502	-14.616	102.786
721982.6	6532788.8	3280	2200	+0.031	3655.916	979391.735	-36.652	34.095	-12.363	-14.920	110.482
722407.9	6532802.0	3280	2240	+0.029	3654.135	979389.954	-38.416	36.426	-13.208	-15.199	118.035
722797.3	6532796.9	3280	2280	+0.028	3652.653	979388.472	-39.896	38.545	-13.977	-15.327	124.904
723204.1	6532796.1	3280	2320	+0.026	3652.766	979388.585	-39.778	39.078	-14.170	-14.869	126.630
723593.4	6532808.1	3280	2360	+0.024	3651.083	979386.902	-41.446	41.991	-15.226	-14.681	136.070
721599.9	6533210.5	3320	2160	+0.034	3656.095	979391.914	-36.173	33.084	-11.997	-15.086	107.208
721998.5	6533203.7	3320	2200	+0.037	3654.016	979389.835	-38.251	36.142	-13.105	-15.215	117.115
722412.8	6533209.8	3320	2240	+0.038	3652.754	979388.573	-39.502	38.295	-13.886	-15.093	124.093
722808.3	6533207.5	3320	2280	+0.040	3651.076	979386.895	-41.176	40.670	-14.747	-15.253	131.790
723199.8	6533200.0	3320	2320	+0.042	3648.741	979384.560	-43.510	44.269	-16.052	-15.294	143.450
721999.3	6533598.8	3360	2200	+0.050	3653.235	979389.054	-38.747	37.218	-13.496	-15.024	120.604
722400.3	6533598.7	3360	2240	+0.048	3650.180	979385.999	-41.795	42.183	-15.296	-14.908	136.693
722800.5	6533594.8	3360	2280	+0.046	3646.355	979382.174	-45.617	48.047	-17.422	-14.992	155.694
723190.0	6533582.1	3360	2320	+0.044	3642.696	979378.515	-49.279	53.200	-19.291	-15.370	172.392
721608.3	6534001.5	3400	2160	+0.052	3654.349	979390.168	-37.347	34.201	-12.401	-15.548	110.826
722002.4	6534002.2	3400	2200	+0.054	3652.049	979387.868	-39.641	38.352	-13.907	-15.195	124.278
722395.1	6534002.3	3400	2240	+0.055	3648.329	979384.148	-43.355	44.526	-16.145	-14.974	144.283
722739.3	6533998.7	3400	2280	+0.057	3638.978	979374.797	-52.703	58.345	-21.156	-15.514	189.063

723194.2	6533958.4	3400	2320	+0.060	3633.703	979369.522	-58.000	66.216	-24.010	-15.794	214.569
722011.2	6534389.8	3440	2200	+0.100	3651.328	979387.147	-40.081	38.667	-14.021	-15.435	125.299
722391.0	6534398.0	3440	2240	+0.090	3648.737	979384.556	-42.661	43.262	-15.687	-15.085	140.189
722698.7	6534458.2	3440	2280	+0.092	3643.747	979379.566	-47.602	50.930	-18.468	-15.140	165.037
723200.7	6534394.2	3440	2320	+0.063	3634.079	979369.898	-57.309	65.648	-23.804	-15.466	212.727
721979.8	6534793.1	3480	2200	+0.099	3651.297	979387.116	-39.821	37.339	-13.539	-16.021	120.996
722393.9	6534788.8	3480	2240	+0.097	3649.000	979384.819	-42.115	41.949	-15.211	-15.377	135.934
722794.3	6534780.0	3480	2280	+0.095	3644.552	979380.371	-46.563	49.391	-17.909	-15.082	160.047
723197.6	6534796.9	3480	2320	+0.065	3636.023	979371.842	-55.074	62.413	-22.631	-15.292	202.247
723549.1	6534729.5	3480	2360	+0.068	3637.610	979373.429	-53.530	60.458	-21.922	-14.995	195.910
723925.1	6534778.7	3480	2400	+0.071	3636.018	979371.837	-55.081	62.475	-22.654	-15.260	202.445
724224.1	6534844.5	3480	2440	+0.073	3635.417	979371.236	-55.630	62.810	-22.775	-15.595	203.531
722011.9	6535208.5	3520	2200	+0.103	3651.847	979387.666	-38.970	36.059	-13.075	-15.987	116.847
722404.6	6535210.0	3520	2240	+0.105	3650.929	979386.748	-39.881	38.594	-13.995	-15.282	125.063
722806.2	6535231.1	3520	2280	+0.106	3646.702	979382.521	-44.087	45.207	-16.392	-15.273	146.489
724006.9	6535182.4	3520	2400	+0.080	3637.272	979373.091	-53.534	59.708	-21.650	-15.476	193.480
724281.4	6535153.6	3520	2440	+0.078	3636.230	979372.049	-54.592	60.659	-21.995	-15.928	196.563
D76											
723022.8	6535073.5	0	1002	+0.000	3639.664	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3639.664	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.130	3639.664	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3639.534	979372.986	6.000	-53.733	59.644	-21.627	-15.716
721794.9	6535236.4	0	1098	+0.125	3654.755	979388.077	7.000	-38.543	34.751	-12.601	-16.392
721794.9	6535236.4	0	1098	+0.126	3654.756	979388.078	8.000	-38.542	34.751	-12.601	-16.391
723197.4	6534797.0	3480	2320	+0.005	3638.497	979371.819	-55.097	62.400	-22.626	-15.324	202.202
722404.6	6535210.2	3520	2240	+0.122	3653.392	979386.714	-39.915	38.597	-13.996	-15.314	125.072
723255.5	6535202.4	3520	2320	+0.009	3647.008	979380.330	-46.292	49.251	-17.859	-14.899	159.596
723575.9	6535203.2	3520	2360	+0.012	3648.081	979381.403	-45.213	47.945	-17.385	-14.654	155.362
724804.5	6535196.8	3520	2480	+0.016	3649.010	979382.332	-44.270	44.455	-16.120	-15.934	144.054
725205.2	6535202.1	3520	2520	+0.019	3650.667	979383.989	-42.603	41.711	-15.125	-16.017	135.162
725596.8	6535196.5	3520	2560	+0.021	3651.871	979385.193	-41.397	40.107	-14.543	-15.833	129.964
726268.9	6535269.7	3520	2640	+0.027	3655.930	979389.252	-37.275	34.877	-12.647	-15.044	113.018
721993.3	6535603.0	3560	2200	+0.060	3654.914	979388.236	-38.116	34.657	-12.567	-16.026	112.303
722401.1	6535603.2	3560	2240	+0.059	3653.749	979387.071	-39.274	37.142	-13.468	-15.600	120.355
722796.5	6535595.6	3560	2280	+0.056	3652.036	979385.358	-40.987	40.341	-14.628	-15.273	130.724
723198.1	6535618.4	3560	2320	+0.055	3650.630	979383.952	-42.370	42.646	-15.464	-15.187	138.193
723599.7	6535589.5	3560	2360	+0.052	3650.568	979383.890	-42.447	43.207	-15.667	-14.907	140.011
723992.6	6535596.4	3560	2400	+0.050	3649.839	979383.161	-43.165	43.975	-15.945	-15.136	142.497
724416.3	6535603.5	3560	2440	+0.047	3650.312	979383.634	-42.680	42.184	-15.296	-15.792	136.696
724805.8	6535603.8	3560	2480	+0.045	3651.161	979384.483	-41.825	40.212	-14.581	-16.194	130.305
725199.1	6535601.9	3560	2520	+0.043	3652.782	979386.104	-40.199	37.795	-13.705	-16.108	122.474
725605.8	6535598.7	3560	2560	+0.041	3652.251	979385.573	-40.726	38.786	-14.064	-16.004	125.685
725987.1	6535598.4	3560	2600	+0.039	3655.881	979389.203	-37.090	33.903	-12.294	-15.480	109.862
726404.3	6535598.0	3560	2640	+0.036	3654.095	979387.417	-38.870	36.765	-13.331	-15.436	119.135
726853.1	6535655.6	3560	2680	+0.032	3650.608	979383.930	-42.308	41.561	-15.070	-15.817	134.677
722004.3	6536012.2	3600	2200	+0.067	3654.627	979387.949	-38.107	34.166	-12.389	-16.330	110.712
722410.3	6535989.4	3600	2240	+0.070	3653.447	979386.769	-39.297	36.896	-13.379	-15.780	119.559
722799.8	6536000.4	3600	2280	+0.072	3652.545	979385.867	-40.185	38.598	-13.996	-15.583	125.074
723201.2	6535996.5	3600	2320	+0.073	3651.923	979385.245	-40.804	39.537	-14.336	-15.603	128.116
723580.1	6535998.7	3600	2360	+0.075	3652.194	979385.516	-40.525	39.445	-14.303	-15.383	127.820
724000.6	6536005.9	3600	2400	+0.077	3652.717	979386.039	-39.990	38.682	-14.026	-15.334	125.348
724404.0	6536004.3	3600	2440	+0.079	3653.546	979386.868	-39.156	36.495	-13.233	-15.895	118.260
724808.3	6536011.1	3600	2480	+0.081	3652.010	979385.332	-40.681	37.937	-13.756	-16.501	122.932
725206.3	6536003.7	3600	2520	+0.082	3651.784	979385.106	-40.907	38.275	-13.879	-16.510	124.027
725627.5	6536005.3	3600	2560	+0.084	3655.218	979388.540	-37.465	33.789	-12.252	-15.928	109.491
726031.0	6535978.4	3600	2600	+0.086	3655.390	979388.712	-37.306	33.715	-12.225	-15.816	109.251
726427.9	6536002.3	3600	2640	+0.088	3654.047	979387.369	-38.625	35.879	-13.010	-15.756	116.263
726800.0	6536009.8	3600	2680	+0.090	3649.026	979382.348	-43.635	42.695	-15.481	-16.422	138.350
722787.2	6536386.3	3640	2280	+0.118	3653.857	979387.179	-38.594	35.248	-12.781	-16.127	114.218
723190.6	6536395.9	3640	2320	+0.117	3652.957	979386.279	-39.481	36.648	-13.289	-16.122	118.755
723581.0	6536395.2	3640	2360	+0.116	3653.311	979386.633	-39.122	36.786	-13.339	-15.674	119.203
724001.2	6536398.1	3640	2400	+0.114	3653.468	979386.790	-38.956	36.152	-13.109	-15.913	117.147
724392.3	6536400.2	3640	2440	+0.113	3653.961	979387.283	-38.455	34.762	-12.605	-16.299	112.643
724794.7	6536392.5	3640	2480	+0.112	3652.798	979386.120	-39.618	35.871	-13.007	-16.754	116.237
725190.5	6536395.7	3640	2520	+0.110	3652.905	979386.227	-39.502	35.830	-12.992	-16.664	116.106
725610.3	6536388.6	3640	2560	+0.109	3655.811	979389.133	-36.595	32.366	-11.736	-15.965	104.880
726001.4	6536391.3	3640	2600	+0.107	3656.183	979389.505	-36.215	31.730	-11.505	-15.991	102.818
726374.2	6536402.2	3640	2640	+0.105	3652.698	979386.020	-39.686	36.232	-13.138	-16.592	117.409
726757.1	6536390.5	3640	2680	+0.103	3650.549	979383.871	-41.838	38.910	-14.109	-17.037	126.085
727999.1	6536999.0	3700	2800	+0.099	3647.418	979380.740	-44.510	39.596	-14.358	-19.272	128.307
725942.6	6535152.8	9000	0964	+0.024	3654.286	979387.608	8.000	-39.008	37.392	-13.558	-15.175
D77											
723022.8	6535073.5	0	1002	+0.000	3639.268	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3639.268	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.082	3639.268	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3639.186	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723201.1	6535996.5	3600	2320	+0.079	3651.560	979385.278	-40.771	39.529	-14.333	-15.575	128.091
722007.3	6536395.2	3640	2200	+0.006	3654.325	979388.043	-37.736	33.225	-12.048	-16.558	107.664
722400.7	6536398.5	3640	2240	+0.005	3654.071	979387.789	-37.981	34.286	-12.432	-16.127	111.103
722786.6	6536386.2	3640	2280	+0.003	3653.483	979387.201	-38.572	35.247	-12.781	-16.106	114.217
722808.9	6536802.0	3680	2280	+0.008	3653.918	979387.636	-37.836	33.417	-12.117	-16.537	108.286
723205.6	6536801.0	3680	2320	+0.009	3653.772	979387.490	-37.977	34.123	-12.373	-16.227	110.575
723607.4	6536805.9	3680	2360	+0.010	3653.941	979387.659	-37.798	33.685	-12.214	-16.328	109.154

724015.4	6536802.7	3680	2400	+0.011	3654.436	979388.154	-37.299	32.797	-11.892	-16.395	106.276
724408.9	6536807.7	3680	2440	+0.012	3653.530	979387.248	-38.196	33.605	-12.185	-16.776	108.895
724802.7	6536804.1	3680	2480	+0.013	3653.327	979387.045	-38.395	33.737	-12.233	-16.891	109.324
725213.4	6536802.9	3680	2520	+0.014	3655.078	979388.796	-36.639	31.515	-11.427	-16.552	102.121
725606.5	6536810.5	3680	2560	+0.015	3656.188	979389.906	-35.517	30.062	-10.901	-16.356	97.414
726005.0	6536799.8	3680	2600	+0.016	3655.288	979389.006	-36.419	30.846	-11.185	-16.758	99.955
726420.7	6536808.1	3680	2640	+0.017	3653.542	979387.260	-38.152	32.560	-11.806	-17.398	105.509
726773.7	6536799.6	3680	2680	+0.019	3649.079	979382.797	-42.616	38.677	-14.025	-17.963	125.331
723206.9	6537184.7	3720	2320	+0.031	3654.947	979388.665	-36.525	31.360	-11.371	-16.536	101.619
723602.5	6537199.9	3720	2360	+0.030	3654.155	979387.873	-37.300	31.864	-11.554	-16.989	103.255
723998.4	6537199.5	3720	2400	+0.029	3654.065	979387.783	-37.384	31.877	-11.559	-17.066	103.296
724400.1	6537198.8	3720	2440	+0.028	3653.575	979387.293	-37.868	32.446	-11.765	-17.188	105.138
724696.4	6537135.5	3720	2480	+0.027	3653.238	979386.956	-38.246	32.875	-11.921	-17.292	106.531
725202.4	6537198.7	3720	2520	+0.025	3656.285	979390.003	-35.146	28.762	-10.429	-16.813	93.200
725594.5	6537203.1	3720	2560	+0.024	3656.243	979389.961	-35.179	28.588	-10.366	-16.957	92.638
725987.8	6537208.3	3720	2600	+0.023	3655.843	979389.561	-35.569	28.279	-10.254	-17.544	91.635
726405.7	6537196.6	3720	2640	+0.022	3651.609	979385.327	-39.805	33.677	-12.211	-18.339	109.127
726847.1	6537195.3	3720	2680	+0.020	3649.519	979383.237	-41.889	36.440	-13.213	-18.662	118.081
723999.6	6537605.5	3760	2400	+0.034	3654.385	979388.103	-36.771	30.340	-11.002	-17.432	98.316
724419.2	6537609.2	3760	2440	+0.035	3656.116	979389.834	-35.030	27.666	-10.032	-17.396	89.650
724815.8	6537610.7	3760	2480	+0.036	3655.824	979389.542	-35.315	27.786	-10.075	-17.604	90.040
725205.4	6537602.0	3760	2520	+0.037	3656.268	979389.986	-34.871	27.354	-9.919	-17.436	88.639
725597.8	6537604.2	3760	2560	+0.038	3655.934	979389.652	-35.198	27.305	-9.901	-17.794	88.480
725999.9	6537606.3	3760	2600	+0.040	3654.284	979388.002	-36.840	28.910	-10.483	-18.413	93.680
726415.2	6537624.1	3760	2640	+0.041	3654.789	979388.507	-36.316	27.693	-10.041	-18.665	89.736
726807.2	6537604.5	3760	2680	+0.042	3652.852	979386.570	-38.261	30.471	-11.049	-18.839	98.738
725203.0	6538000.9	3800	2520	+0.050	3655.819	979389.537	-35.032	26.249	-9.518	-18.301	85.059
725599.3	6538003.9	3800	2560	+0.049	3655.555	979389.273	-35.288	26.356	-9.557	-18.488	85.406
725979.1	6537993.8	3800	2600	+0.048	3654.622	979388.340	-36.222	27.144	-9.842	-18.921	87.958
726403.6	6537992.2	3800	2640	+0.045	3654.868	979388.586	-35.971	26.522	-9.617	-19.066	85.944
726796.9	6538000.1	3800	2680	+0.044	3653.851	979387.569	-36.976	28.030	-10.164	-19.110	90.829
725630.8	6538356.4	3840	2560	+0.052	3655.208	979388.926	-35.380	25.550	-9.264	-19.094	82.792
725979.3	6538407.1	3840	2600	+0.054	3654.896	979388.614	-35.650	25.628	-9.293	-19.314	83.047
726413.0	6538422.6	3840	2640	+0.055	3654.521	979388.239	-36.007	25.968	-9.416	-19.454	84.149
726804.9	6538403.6	3840	2680	+0.056	3654.053	979387.771	-36.482	26.736	-9.695	-19.441	86.637
726023.3	6538748.1	3880	2600	+0.061	3654.600	979388.318	-35.699	25.126	-9.111	-19.683	81.420
726408.9	6538804.9	3880	2640	+0.059	3652.666	979386.384	-37.586	27.597	-10.007	-19.996	89.425
726856.3	6538829.2	3880	2680	+0.058	3654.759	979388.477	-35.468	24.617	-8.926	-19.777	79.769
726800.8	6539625.6	3960	2680	+0.064	3654.397	979388.115	-35.255	23.647	-8.575	-20.183	76.627
726808.5	6540001.3	4000	2680	+0.066	3654.280	979387.998	-35.101	23.229	-8.423	-20.295	75.273
726809.0	6540404.0	4040	2680	+0.067	3652.271	979385.989	-36.819	25.669	-9.308	-20.458	83.180
726810.3	6540803.0	4080	2680	+0.069	3651.882	979385.600	-36.920	25.481	-9.240	-20.679	82.570
D78											
723022.9	6535073.6	0	1002	+0.000	3641.874	979372.986	6.000	-53.732	60.157	-21.813	-15.388
723022.9	6535073.6	0	1002	+0.000	3641.874	979372.986	6.000	-53.732	60.157	-21.813	-15.388
723022.9	6535073.6	0	1002	+0.119	3641.874	979372.986	6.000	-53.732	60.157	-21.813	-15.388
723022.9	6535073.6	0	1002	+0.000	3641.755	979372.986	6.000	-53.732	60.157	-21.813	-15.388
720010.8	6531197.4	3120	2000	+0.037	3665.202	979396.314	-33.254	30.651	-11.114	-13.716	99.324
719208.9	6533585.5	3360	1920	+0.029	3664.639	979395.751	-32.102	28.280	-10.254	-14.076	91.640
719586.4	6533617.8	3360	1960	+0.030	3663.285	979394.397	-33.426	29.529	-10.707	-14.605	95.687
720009.8	6533608.6	3360	2000	+0.031	3664.125	979395.237	-32.587	28.090	-10.186	-14.682	91.025
720403.6	6533601.0	3360	2040	+0.033	3663.225	979394.337	-33.486	29.005	-10.517	-14.999	93.988
719211.6	6534004.4	3400	1920	+0.028	3663.345	979394.457	-33.093	28.997	-10.515	-14.610	93.964
719600.1	6534010.1	3400	1960	+0.027	3662.749	979393.861	-33.679	29.473	-10.687	-14.892	95.507
720009.3	6533997.0	3400	2000	+0.026	3663.481	979394.593	-32.950	28.227	-10.235	-14.958	91.467
719205.6	6534400.1	3440	1920	+0.023	3662.446	979393.558	-33.706	29.303	-10.626	-15.028	94.956
719588.5	6534406.5	3440	1960	+0.024	3663.295	979394.407	-32.846	27.961	-10.139	-15.024	90.606
719212.0	6534806.6	3480	1920	+0.021	3664.309	979395.421	-31.549	26.168	-9.489	-14.869	84.797
719209.9	6535209.4	3520	1920	+0.043	3663.065	979394.177	-32.501	26.828	-9.728	-15.402	86.933
719607.0	6535206.4	3520	1960	+0.044	3662.455	979393.567	-33.108	27.224	-9.871	-15.755	88.217
719993.7	6535214.7	3520	2000	+0.046	3662.067	979393.179	-33.484	27.205	-9.865	-16.143	88.156
720400.6	6535204.7	3520	2040	+0.047	3661.036	979392.148	-34.516	28.440	-10.312	-16.388	92.157
720806.2	6535206.1	3520	2080	+0.048	3659.425	979390.537	-36.120	30.495	-11.058	-16.682	98.818
721204.8	6535185.8	3520	2120	+0.050	3659.350	979390.462	-36.203	30.673	-11.122	-16.652	99.395
721600.3	6535197.0	3520	2160	+0.051	3657.902	979389.014	-37.637	33.129	-12.013	-16.521	107.353
719196.1	6535603.1	3560	1920	+0.060	3663.077	979394.189	-32.205	25.723	-9.327	-15.809	83.355
719608.4	6535588.2	3560	1960	+0.059	3661.869	979392.981	-33.418	26.962	-9.776	-16.232	87.368
720011.0	6535599.6	3560	2000	+0.058	3659.730	979390.842	-35.542	29.448	-10.678	-16.772	95.424
720402.1	6535609.0	3560	2040	+0.056	3661.108	979392.220	-34.151	27.348	-9.916	-16.720	88.618
720810.0	6535593.7	3560	2080	+0.055	3659.334	979390.446	-35.930	29.860	-10.827	-16.898	96.758
721220.8	6535599.5	3560	2120	+0.054	3659.559	979390.671	-35.695	29.765	-10.793	-16.723	96.453
721597.1	6535593.4	3560	2160	+0.053	3657.963	979389.075	-37.290	32.499	-11.784	-16.575	105.312
719192.0	6536000.6	3600	1920	+0.061	3661.570	979392.682	-33.425	26.592	-9.642	-16.475	86.170
719600.9	6535992.7	3600	1960	+0.063	3660.702	979391.814	-34.292	27.422	-9.943	-16.814	88.859
720004.7	6535999.9	3600	2000	+0.064	3660.718	979391.830	-34.265	27.043	-9.806	-17.028	87.631
720401.4	6536009.1	3600	2040	+0.066	3659.932	979391.044	-35.038	28.138	-10.203	-17.103	91.181
720814.4	6535987.6	3600	2080	+0.067	3659.871	979390.983	-35.109	28.450	-10.316	-16.975	92.189
721203.4	6535998.9	3600	2120	+0.068	3659.375	979390.487	-35.591	29.525	-10.706	-16.772	95.673
721600.6	6536003.0	3600	2160	+0.070	3658.157	979389.269	-36.799	31.599	-11.458	-16.658	102.395
719198.9	6536397.5	3640	1920	+0.084	3661.592	979392.704	-33.116	25.490	-9.243	-16.869	82.598
719604.1	6536394.1	3640	1960	+0.083	3659.932	979391.044	-34.772	27.439	-9.949	-17.283	88.914
720006.3	6536400.5	3640	2000	+0.082	3659.654	979390.766	-35.039	27.727	-10.054	-17.366	89.847
720404.2	6536398.8	3640	2040	+0.080	3658.937	979390.049	-35.752	28.888	-10.475	-17.339	93.609

720807.2	6536401.9	3640	2080	+0.079	3658.580	979389.692	-36.100	29.567	-10.721	-17.255	95.809
721208.4	6536394.7	3640	2120	+0.078	3656.836	979387.948	-37.843	32.301	-11.713	-17.255	104.670
721586.5	6536414.6	3640	2160	+0.076	3658.300	979389.412	-36.359	30.691	-11.129	-16.797	99.453
719195.1	6536793.0	3680	1920	+0.086	3660.984	979392.096	-33.438	25.347	-9.191	-17.282	82.136
D79											
723022.8	6535073.5	0	1002	+0.000	3641.537	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3641.537	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.097	3641.537	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3641.440	979372.986	6.000	-53.733	59.644	-21.627	-15.716
724615.6	6543124.2	0	1003	+0.082	3617.131	979348.580	-72.298	74.413	-26.982	-24.868	241.130
724615.6	6543124.2	0	1003	+0.083	3617.132	979348.581	1.000	-72.297	74.413	-26.982	-24.867
719192.0	6536794.8	3680	1920	+0.015	3660.672	979392.121	-33.412	25.336	-9.187	-17.262	82.101
719598.2	6536794.5	3680	1960	+0.014	3659.638	979391.087	-34.440	26.533	-9.621	-17.528	85.979
720010.6	6536798.6	3680	2000	+0.013	3658.627	979390.076	-35.442	28.110	-10.193	-17.524	91.090
720392.5	6536805.6	3680	2040	+0.012	3657.215	979388.664	-36.843	30.023	-10.886	-17.706	97.288
720801.4	6536797.4	3680	2080	+0.011	3657.742	979389.191	-36.315	29.609	-10.736	-17.443	95.947
721193.1	6536797.0	3680	2120	+0.011	3656.311	979387.760	-37.741	31.828	-11.541	-17.454	103.136
721606.4	6536794.2	3680	2160	+0.010	3657.176	979388.625	-36.871	31.029	-11.251	-17.093	100.549
722015.6	6536790.3	3680	2200	+0.009	3655.713	979387.162	-38.331	33.179	-12.031	-17.183	107.513
722386.2	6536798.5	3680	2240	+0.008	3656.423	979387.872	-37.609	32.662	-11.843	-16.791	105.838
719184.6	6537208.9	3720	1920	+0.016	3659.984	979391.433	-33.800	25.486	-9.241	-17.556	82.585
719585.1	6537205.3	3720	1960	+0.017	3658.575	979390.024	-35.206	27.135	-9.839	-17.911	87.928
720010.9	6537214.6	3720	2000	+0.018	3655.496	979386.945	-38.272	31.494	-11.420	-18.197	102.056
720417.7	6537201.1	3720	2040	+0.019	3655.780	979387.229	-37.991	31.186	-11.308	-18.114	101.055
720802.1	6537211.0	3720	2080	+0.020	3657.091	979388.540	-36.668	29.758	-10.790	-17.700	96.429
721210.1	6537210.2	3720	2120	+0.020	3657.720	979389.169	-36.033	29.119	-10.559	-17.472	94.360
721607.6	6537199.0	3720	2160	+0.021	3655.528	979386.977	-38.227	32.251	-11.694	-17.670	104.507
722005.9	6537196.3	3720	2200	+0.022	3656.555	979388.004	-37.196	31.100	-11.277	-17.373	100.778
722407.7	6537182.7	3720	2240	+0.023	3656.558	979388.007	-37.196	31.523	-11.430	-17.104	102.147
722812.3	6537204.1	3720	2280	+0.024	3655.975	979387.424	-37.758	32.461	-11.771	-17.067	105.189
719200.6	6537596.3	3760	1920	+0.037	3659.918	979391.367	-33.586	25.085	-9.096	-17.597	81.286
719586.0	6537600.0	3760	1960	+0.036	3657.809	979389.258	-35.687	27.542	-9.987	-18.132	89.247
719985.9	6537591.1	3760	2000	+0.035	3654.280	979385.729	-39.216	32.332	-11.724	-18.608	104.769
720405.0	6537596.4	3760	2040	+0.034	3652.626	979384.075	-40.860	34.641	-12.561	-18.780	112.251
720809.6	6537620.2	3760	2080	+0.033	3654.730	979386.179	-38.733	32.063	-11.626	-18.296	103.898
721193.7	6537609.4	3760	2120	+0.033	3654.751	979386.200	-38.714	32.125	-11.649	-18.237	104.099
721589.3	6537590.1	3760	2160	+0.032	3655.524	979386.973	-37.949	31.231	-11.324	-18.042	101.201
722005.9	6537584.0	3760	2200	+0.031	3655.761	979387.210	-37.710	31.028	-11.251	-17.933	100.544
722408.4	6537607.1	3760	2240	+0.030	3656.085	979387.534	-37.363	30.915	-11.210	-17.658	100.177
722806.5	6537584.0	3760	2280	+0.029	3655.308	979386.757	-38.150	32.284	-11.706	-17.572	104.616
723197.4	6537602.9	3760	2320	+0.028	3656.507	979387.956	-36.932	30.669	-11.121	-17.384	99.380
723602.5	6537606.0	3760	2360	+0.026	3657.268	979388.717	-36.162	29.467	-10.685	-17.380	95.487
719198.7	6538014.7	3800	1920	+0.038	3660.099	979391.548	-33.103	23.833	-8.642	-17.912	77.229
719598.8	6538007.7	3800	1960	+0.039	3657.520	979388.969	-35.681	27.193	-9.860	-18.349	88.116
720010.3	6538002.0	3800	2000	+0.041	3656.399	979387.848	-36.800	28.732	-10.418	-18.486	93.105
720408.3	6538003.6	3800	2040	+0.042	3654.165	979385.614	-39.027	31.884	-11.561	-18.704	103.319
720805.4	6538003.3	3800	2080	+0.043	3652.762	979384.211	-40.424	33.731	-12.231	-18.924	109.304
721218.7	6537999.8	3800	2120	+0.044	3653.225	979384.674	-39.957	33.050	-11.984	-18.891	107.096
721594.5	6537986.3	3800	2160	+0.045	3653.948	979385.397	-39.238	32.207	-11.678	-18.710	104.364
722009.8	6538015.8	3800	2200	+0.046	3655.000	979386.449	-38.159	30.788	-11.164	-18.534	99.767
722420.6	6537994.5	3800	2240	+0.047	3655.292	979386.741	-37.876	30.958	-11.225	-18.143	100.317
722798.2	6537999.2	3800	2280	+0.048	3655.392	979386.841	-37.767	30.962	-11.227	-18.031	100.332
723208.5	6538006.4	3800	2320	+0.049	3655.990	979387.439	-37.157	30.296	-10.986	-17.846	98.174
723577.9	6538005.8	3800	2360	+0.050	3657.293	979388.742	-35.849	28.492	-10.331	-17.688	92.326
724010.5	6537992.7	3800	2400	+0.051	3655.500	979386.949	-37.645	30.791	-11.165	-18.018	99.777
724401.1	6537999.9	3800	2440	+0.053	3658.587	979390.036	-34.546	26.172	-9.490	-17.864	84.810
724798.8	6537994.5	3800	2480	+0.055	3657.817	979389.266	-35.314	26.957	-9.775	-18.132	87.353
725203.0	6538001.2	3800	2520	+0.056	3658.090	979389.539	-35.030	26.270	-9.526	-18.286	85.126
724414.6	6538389.5	3840	2440	+0.059	3655.757	979387.206	-37.095	28.891	-10.476	-18.680	93.618
724796.1	6538401.4	3840	2480	+0.058	3657.749	979389.198	-35.088	25.795	-9.353	-18.646	83.588
725195.2	6538405.8	3840	2520	+0.057	3657.720	979389.169	-35.108	25.522	-9.254	-18.840	82.701
D80											
723022.8	6535073.5	0	1002	+0.000	3643.938	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3643.938	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.081	3643.938	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3643.857	979372.986	6.000	-53.733	59.644	-21.627	-15.716
720804.4	6536403.5	3640	2080	+0.011	3660.628	979389.676	-36.115	29.578	-10.725	-17.262	95.847
721205.3	6536396.3	3640	2120	+0.011	3658.852	979387.900	-37.890	32.313	-11.717	-17.294	104.709
721583.5	6536415.9	3640	2160	+0.010	3660.344	979389.392	-36.378	30.679	-11.125	-16.823	99.415
719206.5	6538391.6	3840	1920	+0.015	3662.339	979391.387	-32.992	23.160	-8.398	-18.229	75.050
719603.7	6538411.3	3840	1960	+0.016	3661.236	979390.284	-34.074	24.803	-8.994	-18.265	80.372
720001.2	6538395.6	3840	2000	+0.019	3659.263	979388.311	-36.053	27.156	-9.847	-18.744	87.997
720413.6	6538408.0	3840	2040	+0.020	3657.790	979386.838	-37.510	29.097	-10.551	-18.964	94.287
720798.3	6538394.0	3840	2080	+0.021	3657.220	979386.268	-38.085	29.939	-10.856	-19.001	97.017
721198.4	6538407.7	3840	2120	+0.022	3655.348	979384.396	-39.941	32.213	-11.681	-19.408	104.385
721597.7	6538405.1	3840	2160	+0.023	3656.926	979385.974	-38.359	30.109	-10.918	-19.167	97.566
721992.0	6538393.3	3840	2200	+0.024	3658.010	979387.058	-37.277	28.942	-10.494	-18.830	93.784
722397.6	6538421.4	3840	2240	+0.025	3657.739	979386.787	-37.522	29.792	-10.803	-18.532	96.540
722795.9	6538392.9	3840	2280	+0.026	3658.610	979387.658	-36.665	28.990	-10.512	-18.187	93.939
723197.1	6538395.3	3840	2320	+0.027	3658.436	979387.484	-36.831	29.139	-10.566	-18.258	94.424
723601.6	6538402.1	3840	2360	+0.028	3658.200	979387.248	-37.056	29.375	-10.652	-18.333	95.188
724007.7	6538397.7	3840	2400	+0.029	3659.832	979388.880	-35.421	26.970	-9.779	-18.230	87.395
724413.8	6538389.8	3840	2440	+0.030	3658.174	979387.222	-37.078	28.904	-10.481	-18.655	93.663

719741.0	6538827.8	3880	1960	+0.043	3661.431	979390.479	-33.576	23.330	-8.460	-18.705	75.601
719996.5	6538802.3	3880	2000	+0.042	3659.618	979388.666	-35.404	25.636	-9.296	-19.063	83.073
720396.2	6538796.4	3880	2040	+0.041	3657.502	979386.550	-37.518	28.327	-10.271	-19.463	91.791
720795.9	6538796.1	3880	2080	+0.040	3656.705	979385.753	-38.309	29.509	-10.700	-19.501	95.621
721177.2	6538799.2	3880	2120	+0.039	3656.817	979385.865	-38.189	29.164	-10.575	-19.600	94.505
721600.4	6538801.1	3880	2160	+0.038	3657.445	979386.493	-37.553	28.346	-10.278	-19.486	91.854
722005.9	6538800.9	3880	2200	+0.037	3657.315	979386.363	-37.677	28.816	-10.449	-19.310	93.375
722391.4	6538801.9	3880	2240	+0.037	3657.971	979387.019	-37.015	28.250	-10.244	-19.008	91.542
722779.3	6538795.0	3880	2280	+0.036	3658.115	979387.163	-36.870	28.280	-10.254	-18.844	91.640
723187.4	6538796.3	3880	2320	+0.035	3658.222	979387.270	-36.756	28.210	-10.229	-18.775	91.412
723596.4	6538786.3	3880	2360	+0.034	3658.753	979387.801	-36.225	27.529	-9.982	-18.679	89.205
724009.1	6538801.7	3880	2400	+0.033	3658.892	979387.940	-36.069	27.044	-9.806	-18.831	87.634
724389.4	6538795.7	3880	2440	+0.032	3659.398	979388.446	-35.562	26.033	-9.440	-18.968	84.358
726409.0	6538804.1	3880	2640	+0.064	3657.369	979386.417	-37.553	27.614	-10.013	-19.952	89.482
720001.0	6539206.6	3920	2000	+0.045	3660.538	979389.586	-34.192	23.489	-8.517	-19.220	76.116
720402.6	6539217.4	3920	2040	+0.046	3658.038	979387.086	-36.678	26.499	-9.609	-19.787	85.868
720811.2	6539209.2	3920	2080	+0.047	3658.166	979387.214	-36.550	26.251	-9.519	-19.817	85.065
721199.7	6539199.3	3920	2120	+0.048	3659.074	979388.122	-35.643	24.901	-9.029	-19.771	80.689
721607.0	6539191.0	3920	2160	+0.049	3658.242	979387.290	-36.474	26.236	-9.513	-19.752	85.016
722002.6	6539209.3	3920	2200	+0.050	3658.044	979387.092	-36.653	26.375	-9.564	-19.842	85.468
722406.3	6539201.8	3920	2240	+0.051	3658.176	979387.224	-36.521	26.557	-9.630	-19.593	86.058
722814.0	6539192.3	3920	2280	+0.052	3658.462	979387.510	-36.235	26.296	-9.535	-19.474	85.212
723202.3	6539223.6	3920	2320	+0.054	3658.422	979387.470	-36.247	26.382	-9.566	-19.431	85.489
723606.5	6539200.8	3920	2360	+0.055	3658.613	979387.661	-36.066	26.259	-9.522	-19.328	85.092
724002.3	6539201.5	3920	2400	+0.055	3658.756	979387.804	-35.916	25.948	-9.409	-19.377	84.083
724407.8	6539194.4	3920	2440	+0.056	3658.854	979387.902	-35.817	25.582	-9.276	-19.511	82.897
724807.4	6539204.7	3920	2480	+0.057	3658.919	979387.967	-35.739	25.076	-9.093	-19.755	81.258
725201.7	6539197.3	3920	2520	+0.059	3658.227	979387.275	-36.430	25.796	-9.354	-19.988	83.589
725616.1	6539200.5	3920	2560	+0.060	3659.140	979388.188	-35.508	24.368	-8.836	-19.976	78.964
725997.6	6539204.6	3920	2600	+0.060	3658.969	979388.017	-35.670	24.475	-8.875	-20.070	79.309
726400.6	6539189.3	3920	2640	+0.061	3658.624	979387.672	-36.020	24.980	-9.058	-20.098	80.945
726805.7	6539199.7	3920	2680	+0.062	3659.235	979388.283	-35.395	24.284	-8.806	-19.916	78.692
D81											
723022.8	6535073.5	0	1002	+0.000	3645.135	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3645.135	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.079	3645.135	979372.986	6.000	-53.733	59.644	-21.627	-15.716
723022.8	6535073.5	0	1002	+0.000	3645.056	979372.986	6.000	-53.733	59.644	-21.627	-15.716
724389.4	6538795.8	3880	2440	+0.009	3660.560	979388.411	-35.596	26.041	-9.443	-18.998	84.385
724799.0	6538821.3	3880	2480	+0.010	3660.331	979388.182	-35.801	25.912	-9.396	-19.284	83.967
725201.2	6538813.1	3880	2520	+0.011	3660.342	979388.193	-35.789	25.654	-9.302	-19.438	83.129
725600.9	6538818.1	3880	2560	+0.012	3660.579	979388.430	-35.543	24.985	-9.060	-19.617	80.963
726023.4	6538748.4	3880	2600	+0.060	3660.461	979388.312	-35.704	25.151	-9.120	-19.673	81.500
719214.5	6539614.1	3960	1920	+0.036	3660.568	979388.419	-35.076	24.239	-8.789	-19.626	78.545
719677.6	6539584.1	3960	1960	+0.034	3661.072	979388.923	-34.587	23.261	-8.435	-19.760	75.376
719988.8	6539598.2	3960	2000	+0.033	3660.429	979388.280	-35.215	24.054	-8.722	-19.883	77.944
720402.8	6539593.8	3960	2040	+0.032	3660.315	979388.166	-35.326	23.973	-8.693	-20.045	77.684
720797.3	6539597.9	3960	2080	+0.031	3660.106	979387.957	-35.526	24.144	-8.755	-20.137	78.236
721187.8	6539611.2	3960	2120	+0.030	3658.547	979386.398	-37.069	26.040	-9.442	-20.471	84.382
721608.8	6539595.6	3960	2160	+0.028	3659.162	979387.013	-36.459	24.995	-9.063	-20.527	80.995
721998.6	6539600.1	3960	2200	+0.028	3657.043	979384.894	-38.569	27.863	-10.103	-20.809	90.288
722408.4	6539599.2	3960	2240	+0.026	3657.175	979385.026	-38.431	27.879	-10.109	-20.662	90.340
722791.5	6539597.8	3960	2280	+0.025	3656.235	979384.086	-39.367	29.247	-10.605	-20.724	94.774
723194.6	6539605.0	3960	2320	+0.024	3656.670	979384.521	-38.920	28.786	-10.438	-20.572	93.280
723607.6	6539590.4	3960	2360	+0.023	3657.425	979385.276	-38.170	28.018	-10.159	-20.311	90.790
723987.4	6539602.2	3960	2400	+0.022	3657.911	979385.762	-37.669	27.226	-9.872	-20.315	88.225
724396.5	6539594.7	3960	2440	+0.021	3657.595	979385.446	-37.984	27.655	-10.028	-20.357	89.615
724797.0	6539601.0	3960	2480	+0.019	3658.685	979386.536	-36.884	25.640	-9.297	-20.541	83.084
725204.1	6539587.9	3960	2520	+0.018	3659.409	979387.260	-36.163	24.631	-8.931	-20.463	79.816
725578.3	6539606.1	3960	2560	+0.017	3659.657	979387.508	-35.896	24.156	-8.759	-20.499	78.275
726011.2	6539601.4	3960	2600	+0.016	3659.113	979386.964	-36.436	24.942	-9.044	-20.538	80.823
726394.4	6539602.5	3960	2640	+0.015	3659.914	979387.765	-35.629	24.026	-8.712	-20.314	77.856
719201.3	6539985.6	4000	1920	+0.037	3658.636	979386.487	-36.740	25.863	-9.378	-20.255	83.807
719600.5	6540002.6	4000	1960	+0.038	3657.230	979385.081	-38.128	27.289	-9.895	-20.734	88.428
720002.9	6539995.5	4000	2000	+0.039	3659.146	979386.997	-36.211	24.518	-8.890	-20.583	79.448
720396.2	6540011.2	4000	2040	+0.040	3657.946	979385.797	-37.393	25.980	-9.421	-20.834	84.188
720806.3	6540001.4	4000	2080	+0.042	3658.180	979386.031	-37.160	25.393	-9.207	-20.975	82.283
721203.5	6540004.0	4000	2120	+0.043	3655.430	979383.281	-39.902	29.086	-10.547	-21.363	94.252
721607.1	6540003.2	4000	2160	+0.044	3654.628	979382.479	-40.699	29.832	-10.817	-21.684	96.668
721995.6	6539990.4	4000	2200	+0.045	3654.160	979382.011	-41.170	30.419	-11.030	-21.781	98.570
722403.7	6540005.4	4000	2240	+0.046	3653.992	979381.843	-41.321	30.669	-11.121	-21.773	99.381
722813.0	6540011.9	4000	2280	+0.047	3653.574	979381.425	-41.728	31.514	-11.427	-21.641	102.120
723204.7	6540002.7	4000	2320	+0.048	3653.944	979381.795	-41.359	31.110	-11.280	-21.530	100.809
723607.2	6539997.6	4000	2360	+0.049	3654.861	979382.712	-40.439	29.974	-10.869	-21.334	97.128
724001.7	6540000.9	4000	2400	+0.051	3653.613	979381.464	-41.679	31.683	-11.488	-21.484	102.667
724413.9	6539999.6	4000	2440	+0.052	3655.485	979383.336	-39.801	29.074	-10.542	-21.270	94.212
724807.7	6539997.1	4000	2480	+0.053	3655.765	979383.616	-39.517	28.354	-10.281	-21.444	91.881
725207.8	6539993.5	4000	2520	+0.054	3657.562	979385.413	-37.717	25.855	-9.375	-21.237	83.780
725616.5	6540000.2	4000	2560	+0.055	3657.928	979385.779	-37.339	25.500	-9.246	-21.086	82.630
726003.7	6540000.5	4000	2600	+0.056	3658.441	979386.292	-36.820	25.041	-9.080	-20.859	81.143
726408.0	6539991.2	4000	2640	+0.058	3659.806	979387.657	-35.456	23.475	-8.512	-20.493	76.069
D83											
724615.6	6543124.1	0	1003	+0.000	3622.767	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3622.767	979348.497	7.000	-72.381	74.405	-26.980	-24.955

724615.6	6543124.1	0	1003	+0.067	3622.767	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3622.700	979348.497	7.000	-72.381	74.405	-26.980	-24.955
719183.2	6540414.7	4040	1920	+0.028	3656.144	979381.874	-41.043	31.191	-11.310	-21.162	101.074
719587.6	6540411.2	4040	1960	+0.027	3655.840	979381.570	-41.344	31.180	-11.306	-21.470	101.038
719995.9	6540402.7	4040	2000	+0.026	3655.969	979381.699	-41.215	30.695	-11.130	-21.650	99.464
720396.6	6540409.2	4040	2040	+0.025	3656.970	979382.700	-40.203	29.038	-10.529	-21.694	94.096
720786.9	6540401.5	4040	2080	+0.024	3657.111	979382.841	-40.062	28.648	-10.388	-21.801	92.832
721201.4	6540408.5	4040	2120	+0.022	3656.908	979382.638	-40.253	28.699	-10.406	-21.961	92.996
721578.0	6540412.4	4040	2160	+0.021	3654.752	979380.482	-42.401	31.478	-11.414	-22.336	102.004
721995.9	6540424.9	4040	2200	+0.020	3653.635	979379.365	-43.502	32.987	-11.961	-22.477	106.891
722402.4	6540406.4	4040	2240	+0.019	3653.152	979378.882	-43.992	33.762	-12.242	-22.473	109.404
722794.9	6540403.9	4040	2280	+0.018	3652.890	979378.620	-44.250	34.133	-12.377	-22.494	110.606
723209.9	6540414.4	4040	2320	+0.016	3652.809	979378.539	-44.317	34.326	-12.447	-22.438	111.231
723600.8	6540394.4	4040	2360	+0.015	3653.587	979379.317	-43.548	33.313	-12.079	-22.314	107.949
724004.1	6540395.0	4040	2400	+0.014	3653.246	979378.976	-43.882	33.867	-12.280	-22.295	109.745
724388.3	6540401.3	4040	2440	+0.013	3653.247	979378.977	-43.871	33.663	-12.206	-22.414	109.084
724781.9	6540396.6	4040	2480	+0.011	3655.095	979380.825	-42.020	30.949	-11.222	-22.293	100.287
725191.0	6540394.0	4040	2520	+0.010	3657.866	979383.596	-39.245	27.302	-9.900	-21.843	88.469
725583.7	6540397.0	4040	2560	+0.009	3658.102	979383.832	-39.000	27.395	-9.934	-21.539	88.772
725991.7	6540400.1	4040	2600	+0.008	3658.419	979384.149	-38.675	27.432	-9.947	-21.190	88.892
726393.8	6540397.9	4040	2640	+0.007	3658.973	979384.703	-38.116	27.078	-9.819	-20.857	87.746
726809.0	6540404.1	4040	2680	+0.006	3660.216	979385.946	-36.862	25.697	-9.318	-20.483	83.268
719201.2	6540803.6	4080	1920	+0.030	3652.704	979378.434	-44.202	34.948	-12.672	-21.927	113.246
719689.5	6540791.0	4080	1960	+0.031	3652.760	979378.490	-44.148	34.431	-12.485	-22.202	111.572
720025.2	6540796.6	4080	2000	+0.035	3653.244	979378.974	-43.655	33.430	-12.122	-22.346	108.329
720416.4	6540806.1	4080	2040	+0.036	3652.064	979377.794	-44.822	34.659	-12.568	-22.730	112.312
720804.0	6540809.1	4080	2080	+0.037	3653.429	979379.159	-43.449	32.622	-11.829	-22.656	105.711
721199.0	6540767.1	4080	2120	+0.039	3654.825	979380.555	-42.077	30.634	-11.108	-22.551	99.267
721608.8	6540797.7	4080	2160	+0.040	3652.263	979377.993	-44.611	34.081	-12.358	-22.888	110.438
722014.7	6540793.8	4080	2200	+0.041	3650.920	979376.650	-45.951	35.890	-13.014	-23.074	116.299
722412.0	6540794.6	4080	2240	+0.042	3649.846	979375.576	-47.018	37.283	-13.519	-23.254	120.812
722819.5	6540806.2	4080	2280	+0.043	3650.093	979375.823	-46.756	36.867	-13.368	-23.258	119.464
723201.3	6540776.8	4080	2320	+0.045	3651.595	979377.325	-45.270	35.335	-12.813	-22.748	114.500
723608.7	6540803.0	4080	2360	+0.046	3651.571	979377.301	-45.269	35.655	-12.929	-22.542	115.538
724011.2	6540795.7	4080	2400	+0.047	3650.859	979376.589	-45.980	36.019	-13.061	-23.021	116.718
724410.5	6540797.6	4080	2440	+0.048	3650.078	979375.808	-46.753	36.752	-13.326	-23.328	119.093
724819.2	6540787.2	4080	2480	+0.050	3653.296	979379.026	-43.536	32.212	-11.680	-23.004	104.381
725190.3	6540801.5	4080	2520	+0.051	3655.474	979381.204	-41.342	29.512	-10.701	-22.531	95.632
725619.1	6540821.4	4080	2560	+0.052	3655.457	979381.187	-41.338	30.220	-10.958	-22.076	97.926
726000.7	6540801.6	4080	2600	+0.053	3656.238	979381.968	-40.566	30.122	-10.922	-21.366	97.607
726411.1	6540790.7	4080	2640	+0.054	3657.212	979382.942	-39.593	29.198	-10.587	-20.982	94.614
726810.3	6540803.0	4080	2680	+0.055	3659.827	979385.557	-36.963	25.510	-9.250	-20.703	82.665
726824.2	6541187.3	4120	2680	+0.057	3660.402	979386.132	-36.110	24.320	-8.818	-20.609	78.807
726798.5	6541607.2	4160	2680	+0.059	3659.076	979384.806	-37.133	25.854	-9.375	-20.654	83.779
726805.7	6542010.1	4200	2680	+0.060	3653.193	979378.923	-42.725	33.357	-12.095	-21.464	108.091
726798.5	6542390.0	4240	2680	+0.061	3654.195	979379.925	-41.449	31.071	-11.266	-21.645	100.683
D84											
724615.6	6543124.1	0	1003	+0.000	3623.879	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3623.879	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.134	3623.879	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3623.745	979348.497	7.000	-72.381	74.405	-26.980	-24.955
719200.7	6540803.7	4080	1920	+0.105	3653.805	979378.423	-44.213	34.936	-12.668	-21.945	113.209
719627.2	6541207.8	4120	1960	+0.100	3650.895	979375.513	-46.825	37.725	-13.679	-22.779	122.246
719993.0	6541208.2	4120	2000	+0.098	3651.196	979375.814	-46.518	37.149	-13.470	-22.839	120.380
720401.9	6541198.8	4120	2040	+0.095	3650.282	979374.900	-47.433	37.744	-13.686	-23.375	122.307
720785.4	6541180.3	4120	2080	+0.092	3652.434	979377.052	-45.288	34.227	-12.411	-23.472	110.912
721196.5	6541195.8	4120	2120	+0.090	3650.443	979375.061	-47.262	37.255	-13.509	-23.516	120.721
721589.2	6541192.7	4120	2160	+0.088	3651.781	979376.399	-45.920	35.720	-12.952	-23.152	115.750
721989.0	6541211.5	4120	2200	+0.086	3650.089	979374.707	-47.592	38.431	-13.935	-23.097	124.533
722400.6	6541196.7	4120	2240	+0.084	3648.337	979372.955	-49.349	40.471	-14.675	-23.553	131.143
722792.1	6541197.3	4120	2280	+0.082	3648.562	979373.180	-49.117	40.056	-14.525	-23.586	129.800
723191.4	6541203.7	4120	2320	+0.079	3648.244	979372.862	-49.425	41.239	-14.953	-23.139	133.631
723603.5	6541206.3	4120	2360	+0.076	3646.622	979371.240	-51.038	43.622	-15.818	-23.234	141.356
723990.9	6541201.3	4120	2400	+0.074	3649.681	979374.299	-47.977	38.228	-13.862	-23.611	123.876
724389.9	6541195.0	4120	2440	+0.071	3648.707	979373.325	-48.949	39.089	-14.174	-24.035	126.664
724789.3	6541205.4	4120	2480	+0.028	3650.803	979375.421	-46.840	36.342	-13.178	-23.676	117.764
725191.8	6541201.6	4120	2520	+0.025	3653.259	979377.877	-44.380	33.292	-12.072	-23.160	107.881
725583.1	6541217.5	4120	2560	+0.022	3651.482	979376.100	-46.140	36.367	-13.187	-22.959	117.845
725978.6	6541202.4	4120	2600	+0.020	3656.659	979381.277	-40.968	30.337	-11.000	-21.631	98.306
726398.1	6541197.8	4120	2640	+0.018	3659.854	979384.472	-37.769	26.907	-9.757	-20.619	87.191
726824.2	6541187.2	4120	2680	+0.016	3661.519	979386.137	-36.105	24.293	-8.809	-20.621	78.719
719604.5	6541728.1	4160	1960	+0.113	3631.697	979356.315	-65.647	65.873	-23.886	-23.660	213.457
719595.2	6542018.2	4200	1960	+0.116	3630.556	979355.174	-66.579	67.920	-24.628	-23.287	220.091
719594.3	6542401.0	4240	1960	+0.118	3631.007	979355.625	-65.852	66.938	-24.272	-23.186	216.908
719601.7	6542795.8	4280	1960	+0.120	3631.017	979355.635	-65.556	66.232	-24.016	-23.340	214.622
719964.5	6542793.8	4280	2000	+0.122	3633.935	979358.553	-62.634	61.814	-22.414	-23.235	200.304
720419.8	6542794.0	4280	2040	+0.125	3634.213	979358.831	-62.349	61.164	-22.178	-23.364	198.198
726858.4	6541215.7	9000	0024	+0.013	3661.709	979386.327	7.000	-35.894	23.977	-8.694	-20.611
D85											
724615.6	6543124.1	0	1003	+0.000	3624.424	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3624.424	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.043	3624.424	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3624.381	979348.497	7.000	-72.381	74.405	-26.980	-24.955

720035.1	6541598.6	4160	2000	+0.018	3648.987	979373.060	-48.989	41.018	-14.873	-22.845	132.917
720431.4	6541601.1	4160	2040	+0.017	3649.413	979373.486	-48.556	39.213	-14.219	-23.561	127.069
720792.9	6541603.4	4160	2080	+0.016	3648.669	979372.742	-49.292	40.141	-14.555	-23.707	130.074
721219.2	6541580.1	4160	2120	+0.016	3649.017	979373.090	-48.955	39.532	-14.334	-23.757	128.101
721593.9	6541597.5	4160	2160	+0.015	3647.893	979371.966	-50.061	41.387	-15.007	-23.681	134.112
722006.9	6541591.5	4160	2200	+0.014	3645.932	979370.005	-52.020	44.601	-16.173	-23.591	144.527
722398.4	6541600.6	4160	2240	+0.013	3645.582	979369.655	-52.357	44.982	-16.311	-23.686	145.762
722792.9	6541595.1	4160	2280	+0.012	3644.671	979368.744	-53.266	46.120	-16.723	-23.870	149.448
723204.1	6541705.0	4160	2320	+0.011	3638.303	979362.376	-59.548	55.584	-20.155	-24.119	180.116
723591.2	6541603.2	4160	2360	+0.010	3639.098	979363.171	-58.821	54.520	-19.769	-24.070	176.669
723987.1	6541609.3	4160	2400	+0.009	3646.515	979370.588	-51.393	42.288	-15.334	-24.439	137.031
724399.7	6541603.1	4160	2440	+0.008	3646.832	979370.905	-51.074	41.798	-15.156	-24.433	135.443
724800.1	6541610.6	4160	2480	+0.007	3649.132	979373.205	-48.763	39.246	-14.231	-23.748	127.174
725187.9	6541597.9	4160	2520	+0.007	3652.482	979376.555	-45.416	34.420	-12.481	-23.477	111.537
725603.1	6541599.3	4160	2560	+0.005	3652.318	979376.391	-45.573	34.995	-12.689	-23.267	113.399
725995.0	6541590.3	4160	2600	+0.005	3657.157	979381.230	-40.734	29.515	-10.702	-21.922	95.640
726393.3	6541589.0	4160	2640	+0.004	3659.876	979383.949	-38.010	27.022	-9.798	-20.786	87.564
726798.4	6541607.2	4160	2680	+0.003	3660.761	979384.834	-37.105	25.826	-9.365	-20.644	83.689
720074.7	6541842.6	4200	2000	+0.019	3644.979	979369.052	-52.821	46.571	-16.887	-23.137	150.909
720375.1	6541883.3	4200	2040	+0.020	3644.342	979368.415	-53.424	46.671	-16.923	-23.676	151.233
720805.5	6542105.5	4200	2080	+0.021	3633.053	979357.126	-64.546	63.570	-23.051	-24.026	205.995
721176.2	6542159.2	4200	2120	+0.023	3632.890	979356.963	-64.664	63.644	-23.078	-24.098	206.234
721572.8	6542022.5	4200	2160	+0.024	3641.002	979365.075	-56.645	51.519	-18.681	-23.807	166.945
721838.6	6542032.7	4200	2200	+0.025	3636.450	979360.523	-61.185	58.009	-21.034	-24.211	187.976
722381.4	6541984.3	4200	2240	+0.027	3637.928	979362.001	-59.734	55.904	-20.271	-24.101	181.155
722814.9	6542001.4	4200	2280	+0.029	3638.935	979363.008	-58.708	54.243	-19.669	-24.134	175.771
723216.8	6542004.7	4200	2320	+0.030	3630.885	979354.958	-66.750	66.275	-24.032	-24.506	214.760
723592.6	6541998.5	4200	2360	+0.031	3637.089	979361.162	-60.544	56.728	-20.570	-24.386	183.825
724012.1	6542007.2	4200	2400	+0.032	3642.399	979366.472	-55.222	47.517	-17.230	-24.934	153.977
724404.2	6542001.0	4200	2440	+0.033	3644.485	979368.558	-53.134	44.776	-16.236	-24.594	145.093
724809.0	6542018.4	4200	2480	+0.035	3641.860	979365.933	-55.740	48.881	-17.725	-24.584	158.397
724762.9	6542422.4	4240	2480	+0.036	3635.363	979359.436	-61.946	58.618	-21.255	-24.583	189.949
724403.4	6542857.3	4280	2440	+0.042	3627.651	979351.724	-69.350	69.720	-25.281	-24.910	225.925
724805.4	6542846.8	4280	2480	+0.038	3628.231	979352.304	-68.771	68.892	-24.980	-24.860	223.239
725211.8	6542797.8	4280	2520	+0.039	3628.465	979352.538	-68.566	68.559	-24.860	-24.867	222.162
724386.7	6543175.1	4320	2440	+0.041	3624.444	979348.517	-72.328	74.314	-26.947	-24.960	240.810
724793.9	6543203.1	4320	2480	+0.041	3625.266	979349.339	-71.479	73.222	-26.550	-24.808	237.270
725200.3	6543201.4	4320	2520	+0.040	3627.450	979351.523	-69.290	70.228	-25.465	-24.527	227.569
D86											
724615.6	6543124.1	0	1003	+0.000	3626.057	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3626.057	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.076	3626.057	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3625.981	979348.497	7.000	-72.381	74.405	-26.980	-24.955
725174.4	6541995.7	4200	2520	+0.023	3647.080	979369.520	-52.164	43.745	-15.862	-24.281	141.752
725636.3	6541981.3	4200	2560	+0.021	3653.364	979375.804	-45.883	35.000	-12.691	-23.575	113.415
726403.4	6542005.7	4200	2640	+0.018	3654.109	979376.549	-45.109	36.640	-13.286	-21.755	118.730
719991.2	6542398.0	4240	2000	+0.049	3631.744	979354.184	-67.289	68.759	-24.932	-23.462	222.810
720398.1	6542397.2	4240	2040	+0.048	3631.664	979354.104	-67.363	68.702	-24.912	-23.573	222.626
720792.4	6542388.0	4240	2080	+0.047	3630.745	979353.185	-68.283	69.697	-25.273	-23.858	225.850
721187.3	6542398.2	4240	2120	+0.046	3630.446	979352.886	-68.569	69.692	-25.271	-24.147	225.832
721595.4	6542388.4	4240	2160	+0.043	3630.751	979353.191	-68.264	68.937	-24.997	-24.324	223.386
721981.6	6542395.2	4240	2200	+0.042	3631.847	979354.287	-67.158	67.117	-24.337	-24.378	217.489
722392.4	6542391.2	4240	2240	+0.040	3635.233	979357.673	-63.768	61.950	-22.463	-24.282	200.745
722805.7	6542577.0	4240	2280	+0.039	3633.820	979356.260	-65.041	63.755	-23.118	-24.404	206.593
723190.2	6542385.7	4240	2320	+0.037	3631.349	979353.789	-67.644	67.561	-24.498	-24.581	218.928
723592.9	6542399.4	4240	2360	+0.036	3632.486	979354.926	-66.491	65.622	-23.795	-24.664	212.643
724021.8	6542366.2	4240	2400	+0.028	3643.052	979365.492	-55.942	49.343	-17.892	-24.491	159.892
724267.8	6542400.9	4240	2440	+0.027	3639.675	979362.115	-59.291	54.372	-19.716	-24.634	176.190
725300.2	6542490.9	4240	2520	+0.005	3640.571	979363.011	-58.314	53.279	-19.319	-24.354	172.646
725661.7	6542397.4	4240	2560	+0.007	3645.867	979368.307	-53.080	45.691	-16.568	-23.956	148.060
725964.1	6542350.3	4240	2600	+0.008	3650.249	979372.689	-48.727	40.192	-14.574	-23.108	130.241
726384.1	6542339.4	4240	2640	+0.010	3654.768	979377.208	-44.209	35.168	-12.752	-21.793	113.959
720790.9	6542790.1	4280	2080	+0.060	3635.449	979357.889	-63.289	62.328	-22.600	-23.561	201.969
721186.4	6542795.9	4280	2120	+0.059	3634.511	979356.951	-64.216	63.340	-22.967	-23.844	205.250
721589.2	6542796.7	4280	2160	+0.058	3632.666	979355.106	-66.055	65.713	-23.828	-24.169	212.940
721985.3	6542801.0	4280	2200	+0.052	3628.522	979350.962	-70.190	71.648	-25.980	-24.522	232.171
722397.5	6542797.5	4280	2240	+0.053	3630.884	979353.324	-67.824	68.101	-24.694	-24.417	220.676
722797.5	6542792.1	4280	2280	+0.054	3631.764	979354.204	-66.942	66.610	-24.153	-24.484	215.847
723203.8	6542797.2	4280	2320	+0.034	3630.131	979352.571	-68.565	68.879	-24.976	-24.661	223.199
723744.4	6542842.3	4280	2360	+0.033	3632.320	979354.760	-66.335	65.083	-23.599	-24.851	210.897
724072.3	6542652.9	4280	2400	+0.031	3633.745	979356.185	-65.041	63.108	-22.883	-24.817	204.498
725212.2	6542797.7	4280	2520	+0.003	3630.115	979352.555	-68.549	68.543	-24.854	-24.860	222.110
726516.8	6542729.3	4280	2640	+0.014	3652.507	979374.947	-46.187	37.059	-13.438	-22.566	120.087
726784.9	6542791.8	4280	2680	+0.013	3655.609	979378.049	-43.035	32.430	-11.759	-22.365	105.087
720390.5	6543223.8	4320	2040	+0.061	3639.173	979361.613	-59.258	55.888	-20.265	-23.635	181.101
720823.8	6543211.2	4320	2080	+0.063	3636.406	979358.846	-62.027	60.026	-21.766	-23.766	194.512
721197.8	6543195.1	4320	2120	+0.064	3632.625	979355.065	-65.814	65.431	-23.725	-24.109	212.024
721602.9	6543200.1	4320	2160	+0.065	3630.118	979352.558	-68.311	68.906	-24.986	-24.390	223.287
722001.7	6543205.1	4320	2200	+0.066	3629.729	979352.169	-68.691	69.246	-25.109	-24.553	224.388
722402.0	6543196.5	4320	2240	+0.067	3633.541	979355.981	-64.879	63.478	-23.017	-24.418	205.696
722802.9	6543204.4	4320	2280	+0.068	3632.892	979355.332	-65.516	64.232	-23.291	-24.574	208.141
723213.5	6543202.9	4320	2320	+0.069	3630.382	979352.822	-68.021	67.815	-24.590	-24.796	219.749
723600.4	6543205.6	4320	2360	+0.069	3630.911	979353.351	-67.484	66.954	-24.278	-24.808	216.960

724008.6	6543211.5	4320	2400	+0.070	3627.405	979349.845	-70.979	72.161	-26.166	-24.984	233.835
724793.9	6543203.4	4320	2480	+0.072	3626.891	979349.331	-71.487	73.205	-26.544	-24.827	237.215
725952.7	6541986.5	9000	0276	+0.020	3654.978	979377.418	8.000	-44.261	33.617	-12.190	-22.833
D87											
724615.6	6543124.1	0	1003	+0.000	3627.135	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3627.135	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.044	3627.135	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3627.091	979348.497	7.000	-72.381	74.405	-26.980	-24.955
725587.4	6542872.3	4280	2560	+0.003	3633.734	979355.096	-65.949	64.552	-23.407	-24.803	209.177
726010.1	6542813.9	4280	2600	+0.012	3634.241	979355.603	-65.477	64.286	-23.310	-24.502	208.315
724793.9	6543203.3	4320	2480	+0.043	3627.987	979349.349	-71.469	73.194	-26.541	-24.815	237.182
725200.1	6543201.2	4320	2520	+0.002	3630.210	979351.572	-69.241	70.228	-25.465	-24.478	227.569
725618.7	6543207.8	4320	2560	+0.005	3634.307	979355.669	-65.133	64.169	-23.268	-24.232	207.935
725990.8	6543184.5	4320	2600	+0.011	3633.908	979355.270	-65.543	64.724	-23.469	-24.289	209.733
726444.8	6543244.9	4320	2640	+0.008	3640.973	979362.335	-58.427	54.254	-19.673	-23.846	175.807
726809.2	6543204.2	4320	2680	+0.008	3650.055	979371.417	-49.369	41.053	-14.886	-23.202	133.030
724789.3	6543600.3	4360	2480	+0.015	3627.503	979348.865	-71.666	73.610	-26.691	-24.748	238.528
725179.0	6543598.3	4360	2520	+0.014	3628.925	979350.287	-70.240	71.686	-25.994	-24.547	232.295
725585.2	6543603.4	4360	2560	+0.013	3631.031	979352.393	-68.124	68.658	-24.896	-24.362	222.482
725987.9	6543596.0	4360	2600	+0.006	3634.838	979356.200	-64.316	62.925	-22.817	-24.208	203.905
726187.2	6543597.1	4360	2640	+0.006	3635.441	979356.803	-63.709	61.901	-22.446	-24.254	200.586
726755.7	6543437.9	4360	2680	+0.009	3652.122	979373.484	-47.134	38.090	-13.811	-22.856	123.427
724819.8	6544009.2	4400	2480	+0.015	3630.098	979351.460	-68.776	69.173	-25.082	-24.685	224.150
725211.2	6544003.0	4400	2520	+0.016	3630.136	979351.498	-68.736	69.336	-25.141	-24.542	224.678
725599.6	6544004.6	4400	2560	+0.016	3631.969	979353.331	-66.896	66.830	-24.233	-24.299	216.560
726022.4	6543996.9	4400	2600	+0.017	3633.003	979354.365	-65.861	65.377	-23.706	-24.190	211.849
726425.1	6544001.5	4400	2640	+0.018	3633.085	979354.447	-65.770	65.209	-23.645	-24.206	211.306
726814.2	6544002.8	4400	2680	+0.019	3639.173	979360.535	-59.675	56.306	-20.417	-23.785	182.457
725196.9	6544414.7	4440	2520	+0.024	3630.838	979352.200	-67.737	67.783	-24.579	-24.533	219.648
725589.6	6544415.1	4440	2560	+0.022	3632.676	979354.038	-65.893	65.370	-23.703	-24.226	211.828
725996.9	6544410.3	4440	2600	+0.021	3632.257	979353.619	-66.309	66.153	-23.987	-24.143	214.366
726393.2	6544409.3	4440	2640	+0.020	3632.442	979353.804	-66.119	66.061	-23.954	-24.011	214.068
726790.9	6544417.1	4440	2680	+0.019	3637.397	979358.759	-61.152	58.671	-21.274	-23.755	190.121
725217.4	6544801.5	4480	2520	+0.025	3631.601	979352.963	-66.695	66.192	-24.002	-24.504	214.492
725609.5	6544801.9	4480	2560	+0.026	3632.549	979353.911	-65.741	65.082	-23.599	-24.258	210.893
726007.6	6544806.7	4480	2600	+0.026	3634.021	979355.383	-64.259	63.228	-22.927	-23.958	204.886
726412.7	6544811.8	4480	2640	+0.027	3634.375	979355.737	-63.895	62.863	-22.794	-23.826	203.704
726804.6	6544797.5	4480	2680	+0.028	3638.407	979359.769	-59.867	56.884	-20.626	-23.610	184.329
727211.6	6544791.7	4480	2720	+0.029	3642.011	979363.373	-56.261	51.485	-18.669	-23.445	166.833
725195.8	6545200.4	4520	2520	+0.034	3634.648	979356.010	-63.360	61.171	-22.181	-24.370	198.220
725600.1	6545199.7	4520	2560	+0.033	3634.659	979356.021	-63.344	61.552	-22.319	-24.111	199.455
726001.2	6545197.7	4520	2600	+0.032	3635.319	979356.681	-62.679	60.930	-22.093	-23.842	197.440
726397.9	6545203.3	4520	2640	+0.032	3636.954	979358.316	-61.034	58.791	-21.318	-23.560	190.509
726799.1	6545183.6	4520	2680	+0.031	3640.236	979361.598	-57.760	53.942	-19.560	-23.377	174.795
727193.4	6545182.9	4520	2720	+0.029	3643.028	979364.390	-54.962	49.640	-18.000	-23.321	160.857
725192.3	6545613.1	4560	2520	+0.034	3635.355	979356.717	-62.356	59.570	-21.600	-24.386	193.033
725602.1	6545610.6	4560	2560	+0.035	3635.225	979356.587	-62.481	60.277	-21.857	-24.060	195.325
726013.3	6545607.5	4560	2600	+0.036	3633.715	979355.077	-63.987	62.886	-22.803	-23.903	203.779
726411.8	6545595.5	4560	2640	+0.036	3632.467	979353.829	-65.237	64.774	-23.487	-23.951	209.896
726808.4	6545606.9	4560	2680	+0.037	3635.772	979357.134	-61.918	59.908	-21.723	-23.733	194.129
727209.1	6545604.8	4560	2720	+0.038	3642.174	979363.536	-55.511	50.484	-18.306	-23.333	163.592
725185.2	6546003.1	4600	2520	+0.042	3636.474	979357.836	-60.955	57.537	-20.863	-24.281	186.446
725600.1	6545995.1	4600	2560	+0.041	3635.307	979356.669	-62.122	59.715	-21.653	-24.060	193.502
725993.4	6545999.0	4600	2600	+0.041	3632.860	979354.222	-64.560	63.585	-23.056	-24.031	206.043
726391.5	6545997.2	4600	2640	+0.040	3633.249	979354.611	-64.166	63.361	-22.975	-23.780	205.317
726804.1	6545992.0	4600	2680	+0.039	3636.724	979358.086	-60.688	58.261	-21.126	-23.553	188.790
727204.7	6546001.5	4600	2720	+0.039	3641.597	979362.959	-55.802	50.900	-18.457	-23.358	164.940
D88											
724615.6	6543124.1	0	1003	+0.000	3628.241	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3628.241	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.046	3628.241	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.000	3628.195	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724820.0	6544009.2	4400	2480	+0.001	3631.213	979351.469	-68.767	69.202	-25.093	-24.658	224.244
727211.9	6545994.7	4600	2720	+0.008	3642.816	979363.072	-55.694	50.799	-18.420	-23.315	164.611
727968.9	6546014.9	4600	2800	+0.010	3647.883	979368.139	-50.600	42.905	-15.557	-23.253	139.030
725209.9	6546396.6	4640	2520	+0.003	3638.141	979358.397	-60.110	56.211	-20.383	-24.281	182.150
725625.2	6546400.3	4640	2560	+0.004	3637.614	979357.870	-60.628	57.473	-20.840	-23.995	186.237
726006.5	6546400.9	4640	2600	+0.004	3635.899	979356.155	-62.336	60.320	-21.872	-23.889	195.462
726389.0	6546402.5	4640	2640	+0.005	3637.019	979357.275	-61.209	58.961	-21.380	-23.628	191.061
726820.9	6546395.9	4640	2680	+0.006	3641.253	979361.509	-56.973	52.718	-19.116	-23.371	170.828
727200.9	6546398.4	4640	2720	+0.007	3642.939	979363.195	-55.280	50.197	-18.201	-23.285	162.659
725186.4	6546782.6	4680	2520	+0.015	3637.981	979358.237	-59.992	55.971	-20.295	-24.316	181.370
725594.9	6546781.2	4680	2560	+0.014	3638.455	979358.711	-59.512	55.762	-20.219	-23.970	180.693
725992.6	6546814.1	4680	2600	+0.014	3635.573	979355.829	-62.364	60.383	-21.895	-23.877	195.666
726400.0	6546791.0	4680	2640	+0.013	3637.026	979357.282	-60.922	58.613	-21.253	-23.562	189.932
726787.1	6546791.0	4680	2680	+0.012	3641.885	979362.141	-56.057	51.448	-18.655	-23.264	166.713
727194.2	6546820.9	4680	2720	+0.012	3643.779	979364.035	-54.135	48.476	-17.578	-23.237	157.084
725207.6	6547194.4	4720	2520	+0.016	3639.468	979359.724	-58.207	53.274	-19.317	-24.251	172.631
725618.4	6547194.7	4720	2560	+0.017	3638.745	979359.001	-58.924	54.826	-19.880	-23.978	177.659
726016.6	6547194.8	4720	2600	+0.017	3633.942	979354.198	-63.720	62.361	-22.612	-23.972	202.077
726409.0	6547197.9	4720	2640	+0.018	3640.781	979361.037	-56.873	52.735	-19.122	-23.260	170.884
726802.9	6547220.3	4720	2680	+0.019	3644.231	979364.487	-53.401	47.682	-17.290	-23.008	154.511
727194.9	6547336.8	4720	2720	+0.020	3645.135	979365.391	-52.407	46.226	-16.762	-22.943	149.791

725212.2	6547589.6	4760	2520	+0.024	3639.839	979360.095	-57.551	52.156	-18.912	-24.307	169.010
725591.6	6547594.4	4760	2560	+0.023	3639.862	979360.118	-57.519	52.686	-19.104	-23.937	170.727
725990.8	6547589.0	4760	2600	+0.023	3636.350	979356.606	-61.029	58.474	-21.203	-23.758	189.480
726385.0	6547590.1	4760	2640	+0.022	3638.394	979358.650	-58.978	55.999	-20.306	-23.284	181.462
726797.2	6547600.9	4760	2680	+0.022	3642.045	979362.301	-55.312	50.867	-18.445	-22.890	164.833
727206.8	6547598.5	4760	2720	+0.021	3645.324	979365.580	-52.029	45.757	-16.592	-22.864	148.272
725624.1	6548004.2	4800	2560	+0.027	3640.638	979360.894	-56.447	51.142	-18.544	-23.849	165.724
726006.9	6547997.5	4800	2600	+0.027	3637.698	979357.954	-59.385	56.099	-20.342	-23.629	181.784
726410.9	6547986.6	4800	2640	+0.028	3638.853	979359.109	-58.232	55.102	-19.980	-23.110	178.556
726828.9	6548038.1	4800	2680	+0.029	3642.964	979363.220	-54.078	49.139	-17.818	-22.757	159.231
727206.9	6548001.6	4800	2720	+0.030	3642.446	979362.702	-54.616	49.822	-18.066	-22.860	161.446
725592.8	6548390.3	4840	2560	+0.034	3640.835	979361.091	-55.972	50.475	-18.303	-23.799	163.562
725989.0	6548396.1	4840	2600	+0.034	3640.011	979360.267	-56.785	52.382	-18.994	-23.397	169.742
726386.2	6548387.4	4840	2640	+0.033	3639.633	979359.889	-57.163	53.464	-19.386	-23.086	173.246
726793.4	6548394.7	4840	2680	+0.032	3640.219	979360.475	-56.566	52.718	-19.116	-22.964	170.830
727203.3	6548405.4	4840	2720	+0.032	3642.511	979362.767	-54.260	49.711	-18.025	-22.574	161.086
725617.4	6548805.6	4880	2560	+0.035	3641.292	979361.548	-55.215	49.443	-17.928	-23.700	160.218
726007.9	6548798.5	4880	2600	+0.036	3639.955	979360.211	-56.551	52.173	-18.918	-23.296	169.064
726409.1	6548805.4	4880	2640	+0.036	3639.007	979359.263	-57.488	53.587	-19.431	-23.332	173.645
726811.6	6548792.9	4880	2680	+0.037	3637.122	979357.378	-59.375	57.155	-20.725	-22.945	185.207
727203.2	6548787.8	4880	2720	+0.038	3639.128	979359.384	-57.367	54.833	-19.883	-22.417	177.683
728021.0	6549005.1	4900	2800	+0.039	3647.022	979367.278	-49.303	43.664	-15.833	-21.472	141.490
725596.6	6549206.6	4920	2560	+0.043	3642.294	979362.550	-53.924	47.665	-17.284	-23.542	154.456
726008.4	6549187.8	4920	2600	+0.042	3640.780	979361.036	-55.445	50.261	-18.225	-23.409	162.868
726407.2	6549209.0	4920	2640	+0.042	3638.003	979358.259	-58.201	55.140	-19.994	-23.054	178.679
726829.5	6549201.3	4920	2680	+0.041	3638.257	979358.513	-57.945	55.560	-20.146	-22.532	180.038
727204.8	6549201.5	4920	2720	+0.041	3636.755	979357.011	-59.442	58.174	-21.094	-22.362	188.509
D89											
724615.6	6543124.1	0	1003	+0.000	3629.377	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	-0.020	3629.377	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	+0.100	3629.397	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724615.6	6543124.1	0	1003	-0.006	3629.297	979348.497	7.000	-72.381	74.405	-26.980	-24.955
724008.4	6543211.5	4320	2400	+0.098	3630.744	979349.844	-70.980	72.136	-26.157	-25.001	233.754
724386.6	6543174.9	4320	2440	+0.004	3629.411	979348.511	-72.334	74.311	-26.945	-24.968	240.799
724798.1	6544397.7	4440	2480	+0.007	3634.514	979353.614	-66.342	65.440	-23.729	-24.630	212.056
724790.7	6544820.1	4480	2480	+0.008	3635.638	979354.738	-64.913	63.146	-22.897	-24.664	204.621
724806.9	6545213.2	4520	2480	+0.010	3635.216	979354.316	-65.051	63.335	-22.966	-24.681	205.234
724798.8	6545607.0	4560	2480	+0.011	3635.016	979354.116	-64.967	63.279	-22.945	-24.633	205.051
724805.7	6546014.4	4600	2480	+0.013	3637.167	979356.267	-62.522	59.627	-21.621	-24.516	193.219
724801.1	6546399.5	4640	2480	+0.014	3635.824	979354.924	-63.587	61.263	-22.214	-24.538	198.519
724806.2	6546808.2	4680	2480	+0.016	3636.579	979355.679	-62.537	59.435	-21.551	-24.654	192.594
724802.9	6547210.8	4720	2480	+0.017	3636.601	979355.701	-62.225	58.848	-21.338	-24.715	190.693
724796.0	6547612.3	4760	2480	+0.019	3637.387	979356.487	-61.149	57.183	-20.735	-24.701	185.297
724786.2	6548019.2	4800	2480	+0.020	3639.719	979358.819	-58.524	53.253	-19.310	-24.580	172.564
725208.5	6547996.7	4800	2520	+0.022	3641.827	979360.927	-56.425	50.480	-18.304	-24.249	163.579
724791.5	6548396.1	4840	2480	+0.025	3640.153	979359.253	-57.818	52.305	-18.966	-24.479	169.490
725195.2	6548408.4	4840	2520	+0.023	3642.301	979361.401	-55.655	49.467	-17.937	-24.125	160.294
724798.3	6548813.2	4880	2480	+0.028	3640.555	979359.655	-57.115	51.294	-18.599	-24.420	166.215
725214.1	6548804.4	4880	2520	+0.029	3642.276	979361.376	-55.394	49.207	-17.843	-24.030	159.451
724796.3	6549194.0	4920	2480	+0.032	3640.398	979359.498	-56.997	51.255	-18.585	-24.328	166.088
725190.9	6549206.9	4920	2520	+0.031	3642.664	979361.764	-54.716	48.294	-17.512	-23.934	156.493
724786.5	6549594.9	4960	2480	+0.071	3640.839	979359.939	-56.267	50.404	-18.277	-24.140	163.332
725206.8	6549607.1	4960	2520	+0.073	3643.236	979362.336	-53.855	47.267	-17.139	-23.727	153.167
725619.5	6549606.4	4960	2560	+0.075	3642.924	979362.024	-54.161	47.975	-17.396	-23.582	155.460
726009.9	6549600.2	4960	2600	+0.076	3642.411	979361.511	-54.673	49.536	-17.962	-23.098	160.520
726415.4	6549604.0	4960	2640	+0.077	3641.310	979360.410	-55.765	51.940	-18.834	-22.659	168.307
726795.5	6549602.2	4960	2680	+0.078	3640.705	979359.805	-56.365	53.490	-19.396	-22.271	173.330
727206.8	6549601.9	4960	2720	+0.080	3636.984	979356.084	-60.080	59.393	-21.536	-22.223	192.459
724782.8	6550000.5	5000	2480	+0.091	3638.886	979357.986	-57.928	53.149	-19.272	-24.051	172.227
725198.1	6549997.5	5000	2520	+0.090	3642.944	979362.044	-53.866	47.497	-17.223	-23.591	153.911
725603.1	6550002.1	5000	2560	+0.088	3643.883	979362.983	-52.917	46.421	-16.832	-23.329	150.424
725979.3	6550004.3	5000	2600	+0.087	3643.522	979362.622	-53.271	47.728	-17.307	-22.849	154.661
726392.6	6549998.5	5000	2640	+0.086	3643.375	979362.475	-53.415	48.800	-17.695	-22.310	158.133
726791.3	6549996.9	5000	2680	+0.085	3640.694	979359.794	-56.091	53.478	-19.391	-22.005	173.291
727188.2	6549995.0	5000	2720	+0.084	3637.903	979357.003	-58.878	57.907	-20.997	-21.968	187.645
727995.3	6549999.4	5000	2800	+0.082	3641.208	979360.308	-55.557	53.591	-19.433	-21.398	173.660
724817.4	6548355.8	9000	1004	+0.023	3640.253	979359.360	-57.739	52.242	-18.943	-24.440	169.288
D90											
720451.5	6558554.2	0	1004	+0.000	3623.775	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	+0.014	3623.775	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	+0.059	3623.761	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	+0.009	3623.702	979341.796	6.000	-68.019	61.895	-22.443	-28.568
724796.1	6547611.9	4760	2480	+0.009	3638.468	979356.503	-61.133	57.203	-20.742	-24.673	185.362
724785.9	6548018.4	4800	2480	+0.009	3640.774	979358.809	-58.534	53.259	-19.312	-24.587	172.584
724787.5	6548406.9	4840	2480	+0.011	3641.183	979359.218	-57.845	52.323	-18.973	-24.494	169.551
724798.0	6548813.3	4880	2480	+0.012	3641.635	979359.670	-57.100	51.291	-18.598	-24.407	166.206
725198.4	6549997.5	5000	2520	+0.034	3644.024	979362.059	-53.851	47.476	-17.215	-23.590	153.843
720413.8	6550407.0	5040	2040	+0.023	3632.220	979350.255	-65.432	61.360	-22.249	-26.322	198.832
720792.7	6550401.4	5040	2080	+0.023	3632.180	979350.215	-65.470	61.854	-22.429	-26.045	200.435
721190.4	6550381.2	5040	2120	+0.022	3632.837	979350.872	-64.822	61.105	-22.157	-25.874	198.007
721594.0	6550400.3	5040	2160	+0.021	3634.512	979352.547	-63.127	58.627	-21.258	-25.759	189.976
721999.4	6550391.2	5040	2200	+0.021	3635.426	979353.461	-62.214	57.420	-20.821	-25.614	186.067
722380.3	6550393.3	5040	2240	+0.020	3636.959	979354.994	-60.673	55.103	-19.981	-25.551	178.559

722782.1	6550398.6	5040	2280	+0.019	3636.863	979354.898	-60.759	55.433	-20.100	-25.426	179.627
723202.3	6550397.4	5040	2320	+0.018	3640.088	979358.123	-57.529	50.887	-18.452	-25.094	164.895
723618.7	6550403.2	5040	2360	+0.017	3641.593	979359.628	-56.013	48.805	-17.697	-24.905	158.151
723974.5	6550398.3	5040	2400	+0.016	3640.317	979358.352	-57.287	51.379	-18.630	-24.538	166.492
724384.0	6550392.7	5040	2440	+0.016	3638.085	979356.120	-59.517	55.376	-20.080	-24.220	179.444
724794.9	6550398.3	5040	2480	+0.015	3642.939	979360.974	-54.653	48.718	-17.665	-23.600	157.869
725183.4	6550402.7	5040	2520	+0.014	3643.784	979361.819	-53.799	47.418	-17.194	-23.575	153.654
720397.2	6550796.2	5080	2040	+0.024	3630.397	979348.432	-66.975	63.519	-23.032	-26.488	205.830
720818.7	6550796.6	5080	2080	+0.025	3634.640	979352.675	-62.725	57.703	-20.923	-25.946	186.982
721207.8	6550803.6	5080	2120	+0.026	3635.503	979353.538	-61.851	56.580	-20.516	-25.787	183.344
721608.5	6550802.7	5080	2160	+0.026	3636.545	979354.580	-60.804	55.099	-19.979	-25.684	178.545
722005.1	6550805.0	5080	2200	+0.027	3636.433	979354.468	-60.908	55.361	-20.074	-25.621	179.393
722405.5	6550796.1	5080	2240	+0.028	3636.476	979354.511	-60.865	55.471	-20.114	-25.508	179.752
722815.0	6550794.1	5080	2280	+0.028	3637.136	979355.171	-60.201	54.702	-19.835	-25.334	177.258
723210.2	6550805.1	5080	2320	+0.029	3641.058	979359.093	-56.265	48.927	-17.741	-25.078	158.546
723618.6	6550785.1	5080	2360	+0.030	3642.898	979360.933	-54.433	46.530	-16.872	-24.774	150.779
724006.1	6550809.4	5080	2400	+0.031	3641.618	979359.653	-55.689	49.251	-17.859	-24.297	159.594
724406.4	6550807.1	5080	2440	+0.031	3641.842	979359.877	-55.461	49.758	-18.043	-23.745	161.239
724811.6	6550786.2	5080	2480	+0.032	3643.720	979361.755	-53.592	47.216	-17.121	-23.496	153.002
725200.4	6550805.6	5080	2520	+0.033	3645.462	979363.497	-51.830	44.929	-16.291	-23.192	145.589
720391.6	6551189.3	5120	2040	+0.048	3633.953	979351.988	-63.135	57.599	-20.886	-26.422	186.646
720800.6	6551198.9	5120	2080	+0.047	3636.158	979354.193	-60.917	54.897	-19.906	-25.926	177.889
721184.4	6551195.7	5120	2120	+0.046	3636.739	979354.774	-60.333	54.302	-19.690	-25.721	175.962
721599.1	6551191.6	5120	2160	+0.046	3636.309	979354.344	-60.759	55.039	-19.958	-25.678	178.352
721997.2	6551190.4	5120	2200	+0.045	3634.637	979352.672	-62.426	57.644	-20.902	-25.684	186.793
722402.2	6551200.6	5120	2240	+0.044	3632.860	979350.895	-64.190	60.425	-21.910	-25.675	195.804
722804.3	6551200.3	5120	2280	+0.043	3636.094	979354.129	-60.950	55.890	-20.266	-25.326	181.109
723191.4	6551185.0	5120	2320	+0.042	3641.698	979359.733	-55.351	47.611	-17.264	-25.004	154.281
723604.9	6551191.8	5120	2360	+0.042	3643.984	979362.019	-53.054	44.470	-16.125	-24.708	144.104
723997.1	6551198.4	5120	2400	+0.041	3642.979	979361.014	-54.048	46.766	-16.958	-24.239	151.543
724380.8	6551191.3	5120	2440	+0.040	3642.674	979360.709	-54.352	48.334	-17.526	-23.545	156.623
724789.4	6551191.5	5120	2480	+0.038	3644.069	979362.104	-52.951	46.402	-16.825	-23.375	150.362
725192.0	6551212.1	5120	2520	+0.037	3646.933	979364.968	-50.066	42.787	-15.515	-22.793	138.650
725593.9	6551205.2	5120	2560	+0.036	3647.238	979365.273	-49.759	43.300	-15.701	-22.160	140.310
720406.9	6551607.6	5160	2040	+0.049	3636.032	979354.067	-60.755	53.800	-19.508	-26.462	174.337
720405.0	6551983.3	5200	2040	+0.050	3640.084	979358.119	-56.432	46.992	-17.039	-26.479	152.274
720803.8	6552399.9	5240	2080	+0.051	3637.575	979355.610	-58.634	50.457	-18.296	-26.473	163.502
720805.7	6552803.5	5280	2080	+0.052	3636.684	979354.719	-59.234	50.782	-18.414	-26.866	164.555
720793.0	6553202.2	5320	2080	+0.053	3640.135	979358.170	-55.496	44.910	-16.284	-26.871	145.527
D91											
720451.5	6558554.2	0	1004	+0.000	3624.840	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	-0.004	3624.840	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	+0.090	3624.844	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720451.5	6558554.2	0	1004	+0.000	3624.754	979341.796	6.000	-68.019	61.895	-22.443	-28.568
720406.8	6551607.7	5160	2040	+0.011	3637.118	979354.070	-60.751	53.809	-19.511	-26.454	174.364
720810.3	6551595.5	5160	2080	+0.012	3639.490	979356.442	-58.382	50.792	-18.417	-26.008	164.587
721209.5	6551606.2	5160	2120	+0.013	3638.896	979355.848	-58.962	51.959	-18.841	-25.844	168.370
721614.5	6551592.9	5160	2160	+0.015	3637.301	979354.253	-60.561	54.508	-19.765	-25.818	176.629
721998.0	6551600.0	5160	2200	+0.016	3636.542	979353.494	-61.309	55.947	-20.287	-25.649	181.292
722403.0	6551603.4	5160	2240	+0.017	3635.442	979352.394	-62.400	57.929	-21.005	-25.476	187.716
722812.1	6551596.9	5160	2280	+0.018	3634.330	979351.282	-63.511	59.572	-21.601	-25.540	193.038
723208.3	6551605.2	5160	2320	+0.019	3641.866	979358.818	-55.963	48.571	-17.612	-25.003	157.393
723613.9	6551607.6	5160	2360	+0.020	3645.448	979362.400	-52.373	43.404	-15.738	-24.708	140.647
724009.4	6551591.4	5160	2400	+0.022	3644.796	979361.748	-53.031	45.173	-16.380	-24.237	146.382
724406.8	6551601.8	5160	2440	+0.023	3644.747	979361.699	-53.066	46.579	-16.890	-23.377	150.935
720797.5	6551998.0	5200	2080	+0.036	3639.896	979356.848	-57.686	49.335	-17.889	-26.240	159.867
721230.8	6552008.2	5200	2120	+0.034	3640.021	979356.973	-57.547	49.484	-17.943	-26.006	160.351
721599.9	6551998.0	5200	2160	+0.033	3638.136	979355.088	-59.434	52.567	-19.061	-25.928	170.341
721992.6	6551999.9	5200	2200	+0.032	3637.093	979354.045	-60.470	54.507	-19.765	-25.727	176.627
722390.1	6552003.9	5200	2240	+0.031	3634.944	979351.896	-62.610	58.083	-21.061	-25.588	188.214
722794.3	6551994.1	5200	2280	+0.030	3636.560	979353.512	-60.995	55.929	-20.280	-25.346	181.235
723204.3	6551996.9	5200	2320	+0.029	3641.382	979358.334	-56.164	49.016	-17.774	-24.922	158.835
723608.0	6551998.1	5200	2360	+0.027	3644.658	979361.610	-52.881	44.292	-16.061	-24.650	143.526
723992.4	6551999.6	5200	2400	+0.026	3646.426	979363.378	-51.106	42.286	-15.333	-24.154	137.024
724399.4	6552003.4	5200	2440	+0.024	3645.164	979362.116	-52.359	45.295	-16.424	-23.488	146.777
721204.4	6552406.6	5240	2120	+0.038	3636.284	979353.236	-60.997	54.375	-19.717	-26.339	176.198
721605.7	6552403.5	5240	2160	+0.039	3638.476	979355.428	-58.802	51.415	-18.643	-26.030	166.608
722000.6	6552402.0	5240	2200	+0.040	3635.614	979352.566	-61.659	56.068	-20.330	-25.921	181.685
722394.5	6552402.5	5240	2240	+0.041	3633.482	979350.434	-63.784	59.567	-21.599	-25.817	193.023
722796.9	6552402.1	5240	2280	+0.042	3639.011	979355.963	-58.250	51.842	-18.798	-25.206	167.992
723189.8	6552388.9	5240	2320	+0.043	3642.555	979359.507	-54.709	46.964	-17.029	-24.775	152.183
723612.5	6552405.7	5240	2360	+0.044	3645.051	979362.003	-52.194	43.231	-15.676	-24.639	140.088
723997.1	6552415.0	5240	2400	+0.046	3647.524	979364.476	-49.709	40.429	-14.660	-23.940	131.007
724409.3	6552395.8	5240	2440	+0.047	3648.024	979364.976	-49.216	40.691	-14.755	-23.280	131.856
720805.5	6552803.8	5280	2080	+0.064	3637.805	979354.757	-59.196	50.755	-18.404	-26.845	164.468
721187.9	6552794.7	5280	2120	+0.062	3637.522	979354.474	-59.480	51.621	-18.718	-26.577	167.276
721602.5	6552795.3	5280	2160	+0.061	3639.594	979356.546	-57.401	49.046	-17.784	-26.139	158.932
721990.2	6552799.3	5280	2200	+0.059	3636.378	979353.330	-60.608	54.369	-19.715	-25.954	176.181
722410.0	6552788.9	5280	2240	+0.054	3636.378	979353.330	-60.610	54.875	-19.898	-25.632	177.820
722800.6	6552784.6	5280	2280	+0.053	3640.043	979356.995	-56.942	49.884	-18.088	-25.146	161.647
723196.0	6552795.9	5280	2320	+0.052	3641.699	979358.651	-55.272	47.829	-17.343	-24.786	154.986
723595.5	6552798.2	5280	2360	+0.051	3643.891	979360.843	-53.072	44.985	-16.312	-24.399	145.771
724001.3	6552800.9	5280	2400	+0.050	3647.902	979364.854	-49.053	39.701	-14.396	-23.747	128.649

724408.0	6552813.3	5280	2440	+0.048	3648.951	979365.903	-47.988	39.113	-14.183	-23.058	126.743
720810.8	6553603.6	5360	2080	+0.066	3640.466	979357.418	-55.959	45.144	-16.369	-27.184	146.287
720795.3	6554005.0	5400	2080	+0.068	3641.570	979358.522	-54.565	42.595	-15.445	-27.415	138.028
720800.9	6554398.6	5440	2080	+0.069	3642.025	979358.977	-53.827	41.260	-14.961	-27.528	133.699
720797.4	6554803.9	5480	2080	+0.071	3642.278	979359.230	-53.282	40.124	-14.549	-27.707	130.020
720794.6	6555215.4	5520	2080	+0.072	3647.788	979364.740	-47.475	31.622	-11.466	-27.319	102.470
720802.7	6555606.4	5560	2080	+0.074	3647.410	979364.362	-47.571	31.729	-11.505	-27.347	102.817
720802.6	6555991.6	5600	2080	+0.076	3643.868	979360.820	-50.836	36.125	-13.099	-27.810	117.060
720802.4	6556417.0	5640	2080	+0.077	3640.462	979357.414	-53.935	41.151	-14.921	-27.706	133.347
D92											
720451.5	6558554.2	0	1004	+0.000	3625.936	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3625.936	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.084	3625.936	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3625.852	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720793.2	6553202.7	5320	2080	+0.010	3642.357	979358.217	-55.449	44.909	-16.284	-26.824	145.524
721202.7	6553206.3	5320	2120	+0.012	3640.522	979356.382	-57.275	48.217	-17.484	-26.542	156.244
721597.4	6553208.6	5320	2160	+0.015	3642.326	979358.186	-55.463	46.042	-16.695	-26.116	149.196
721597.4	6553208.6	5320	2160	+0.016	3642.327	979358.187	-55.462	46.042	-16.695	-26.115	149.196
722018.2	6553188.8	5320	2200	+0.017	3640.193	979356.053	-57.604	49.916	-18.100	-25.788	161.751
722401.9	6553203.9	5320	2240	+0.018	3639.337	979355.197	-58.444	51.636	-18.723	-25.531	167.323
722809.7	6553207.2	5320	2280	+0.019	3643.151	979359.011	-54.621	46.565	-16.885	-24.941	150.891
723198.6	6553200.3	5320	2320	+0.020	3643.813	979359.673	-53.958	45.983	-16.674	-24.648	149.006
723598.1	6553206.0	5320	2360	+0.021	3644.823	979360.683	-52.938	45.006	-16.319	-24.251	145.838
724003.9	6553206.9	5320	2400	+0.022	3648.693	979364.553	-49.061	39.978	-14.496	-23.579	129.545
724401.5	6553182.9	5320	2440	+0.023	3650.897	979366.757	-46.868	37.659	-13.655	-22.865	122.031
721190.8	6553598.9	5360	2120	+0.033	3641.046	979356.906	-56.468	46.800	-16.970	-26.638	151.653
721587.0	6553599.9	5360	2160	+0.032	3643.679	979359.539	-53.829	43.521	-15.781	-26.089	141.027
721996.7	6553592.2	5360	2200	+0.031	3640.151	979356.011	-57.356	49.403	-17.914	-25.867	160.088
722399.0	6553594.1	5360	2240	+0.030	3641.846	979357.706	-55.653	47.507	-17.226	-25.373	153.943
722805.3	6553598.1	5360	2280	+0.029	3642.718	979358.578	-54.772	46.695	-16.932	-25.009	151.311
723186.8	6553603.2	5360	2320	+0.028	3644.429	979360.289	-53.052	44.689	-16.204	-24.567	144.812
723596.7	6553590.7	5360	2360	+0.027	3646.939	979362.799	-50.545	41.470	-15.037	-24.112	134.380
723988.6	6553599.9	5360	2400	+0.026	3648.808	979364.668	-48.663	39.501	-14.323	-23.485	128.000
724403.7	6553611.2	5360	2440	+0.024	3650.695	979366.555	-46.761	37.683	-13.664	-22.742	122.110
721197.5	6554005.0	5400	2120	+0.034	3641.603	979357.463	-55.618	45.190	-16.386	-26.814	146.437
721598.6	6554015.1	5400	2160	+0.035	3645.379	979361.239	-51.829	40.038	-14.518	-26.309	129.740
722001.6	6554001.1	5400	2200	+0.036	3642.651	979358.511	-54.561	45.144	-16.369	-25.787	146.286
722398.5	6554005.7	5400	2240	+0.037	3643.572	979359.432	-53.631	44.462	-16.122	-25.291	144.076
722803.6	6553999.7	5400	2280	+0.038	3644.278	979360.138	-52.923	44.088	-15.986	-24.822	142.864
723203.6	6553996.8	5400	2320	+0.039	3644.229	979360.089	-52.968	44.630	-16.183	-24.521	144.620
723598.8	6554003.2	5400	2360	+0.040	3647.563	979363.423	-49.623	40.240	-14.591	-23.975	130.395
724006.4	6554001.6	5400	2400	+0.041	3649.674	979365.534	-47.507	37.860	-13.728	-23.375	122.683
724413.3	6554000.7	5400	2440	+0.043	3649.317	979365.177	-47.859	39.627	-14.369	-22.600	128.409
720800.8	6554398.0	5440	2080	+0.060	3643.094	979358.954	-53.850	41.253	-14.958	-27.556	133.677
721198.6	6554400.9	5440	2120	+0.058	3641.929	979357.789	-55.007	44.047	-15.972	-26.932	142.731
721580.3	6554380.5	5440	2160	+0.057	3644.475	979360.335	-52.470	40.381	-14.642	-26.731	130.852
722000.6	6554404.5	5440	2200	+0.056	3643.940	979359.800	-52.981	42.451	-15.393	-25.923	137.560
722402.3	6554403.1	5440	2240	+0.055	3645.227	979361.087	-51.689	41.292	-14.973	-25.370	133.803
722800.3	6554417.9	5440	2280	+0.053	3645.296	979361.156	-51.604	41.853	-15.176	-24.927	135.621
723195.5	6554401.9	5440	2320	+0.052	3646.704	979362.564	-50.201	40.342	-14.628	-24.487	130.727
723584.2	6554402.2	5440	2360	+0.051	3647.753	979363.613	-49.146	39.644	-14.375	-23.877	128.464
723989.1	6554407.4	5440	2400	+0.045	3650.216	979366.076	-46.673	36.871	-13.370	-23.172	119.478
724391.8	6554415.1	5440	2440	+0.044	3650.680	979366.540	-46.197	37.341	-13.540	-22.396	121.002
721199.1	6554804.4	5480	2120	+0.061	3646.814	979362.674	-49.831	36.077	-13.082	-26.836	116.906
721611.3	6554808.4	5480	2160	+0.063	3648.256	979364.116	-48.380	34.298	-12.437	-26.519	111.141
722014.3	6554795.2	5480	2200	+0.064	3645.526	979361.386	-51.114	39.122	-14.186	-26.178	126.771
722403.8	6554805.5	5480	2240	+0.066	3647.118	979362.978	-49.508	37.525	-13.607	-25.590	121.598
722799.9	6554804.0	5480	2280	+0.067	3648.661	979364.521	-47.960	36.344	-13.178	-24.795	117.769
723205.5	6554802.9	5480	2320	+0.068	3648.954	979364.814	-47.662	36.755	-13.328	-24.234	119.103
723613.4	6554808.8	5480	2360	+0.069	3649.035	979364.895	-47.571	37.401	-13.562	-23.731	121.195
723992.2	6554798.8	5480	2400	+0.070	3651.014	979366.874	-45.593	35.688	-12.941	-22.846	115.644
724412.2	6554803.6	5480	2440	+0.072	3651.879	979367.739	-44.718	35.467	-12.861	-22.111	114.930
724397.0	6555195.9	5520	2440	+0.073	3650.234	979366.094	-46.081	37.388	-13.557	-22.250	121.154
D93											
720451.5	6558554.2	0	1004	+0.000	3626.991	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3626.991	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.093	3626.991	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3626.898	979341.796	-68.019	61.895	-22.443	-28.568	200.567
721194.1	6555188.0	5520	2120	+0.032	3650.146	979364.951	-47.278	32.072	-11.629	-26.835	103.927
721575.7	6555214.9	5520	2160	+0.026	3649.845	979364.650	-47.554	33.014	-11.971	-26.511	106.981
721997.3	6555196.3	5520	2200	+0.024	3648.560	979363.365	-48.846	35.608	-12.912	-26.149	115.386
722397.2	6555203.0	5520	2240	+0.018	3650.090	979364.895	-47.305	34.326	-12.447	-25.426	111.231
722791.3	6555191.0	5520	2280	+0.016	3649.979	979364.784	-47.419	35.357	-12.820	-24.882	114.571
723198.2	6555205.5	5520	2320	+0.015	3651.961	979366.766	-45.420	33.681	-12.213	-23.952	109.141
723597.9	6555203.6	5520	2360	+0.014	3652.190	979366.995	-45.186	34.193	-12.398	-23.392	110.799
723999.9	6555193.9	5520	2400	+0.013	3652.515	979367.320	-44.862	34.853	-12.638	-22.647	112.938
724397.0	6555196.1	5520	2440	+0.011	3651.283	979366.088	-46.087	37.392	-13.558	-22.253	121.166
721201.3	6555616.2	5560	2120	+0.038	3650.208	979365.013	-46.907	31.270	-11.339	-26.976	101.330
721606.4	6555603.5	5560	2160	+0.039	3650.077	979364.882	-47.041	32.100	-11.640	-26.581	104.018
722002.2	6555601.8	5560	2200	+0.041	3650.491	979365.296	-46.623	32.451	-11.767	-25.939	105.155
722406.5	6555601.3	5560	2240	+0.042	3650.707	979365.512	-46.401	33.057	-11.987	-25.330	107.120
722815.2	6555661.7	5560	2280	+0.044	3650.990	979365.795	-46.068	33.508	-12.150	-24.710	108.582
723203.9	6555596.3	5560	2320	+0.045	3649.909	979364.714	-47.190	36.042	-13.069	-24.217	116.793

723587.4	6555621.4	5560	2360	+0.046	3651.079	979365.884	-45.996	35.388	-12.832	-23.440	114.674
724000.8	6555602.6	5560	2400	+0.048	3651.541	979366.346	-45.542	35.986	-13.049	-22.604	116.611
724406.1	6555597.3	5560	2440	+0.049	3650.790	979365.595	-46.290	38.240	-13.866	-21.916	123.915
720802.6	6555991.6	5600	2080	+0.067	3646.067	979360.872	-50.784	36.123	-13.098	-27.759	117.054
721189.7	6555980.7	5600	2120	+0.066	3646.886	979361.691	-49.967	35.656	-12.929	-27.240	115.542
721598.4	6556006.5	5600	2160	+0.064	3648.573	979363.378	-48.255	33.862	-12.279	-26.672	109.728
721989.7	6555999.2	5600	2200	+0.063	3647.905	979362.710	-48.923	35.475	-12.863	-26.311	114.954
722398.4	6556007.4	5600	2240	+0.062	3647.998	979362.803	-48.817	36.379	-13.191	-25.629	117.885
722798.7	6555996.7	5600	2280	+0.061	3646.306	979361.111	-50.511	40.077	-14.532	-24.966	129.868
723197.7	6556003.7	5600	2320	+0.059	3647.030	979361.835	-49.776	40.092	-14.537	-24.222	129.915
723572.7	6556011.9	5600	2360	+0.058	3649.049	979363.854	-47.745	37.890	-13.739	-23.594	122.780
723991.5	6556001.5	5600	2400	+0.056	3647.859	979362.664	-48.936	41.041	-14.882	-22.777	132.990
724396.7	6555997.7	5600	2440	+0.055	3648.237	979363.042	-48.555	41.879	-15.185	-21.862	135.706
721176.3	6556412.9	5640	2120	+0.069	3644.158	979358.963	-52.384	39.462	-14.309	-27.231	127.874
721602.3	6556404.6	5640	2160	+0.071	3643.839	979358.644	-52.702	40.534	-14.698	-26.866	131.349
721971.9	6556401.9	5640	2200	+0.072	3644.696	979359.501	-51.842	39.912	-14.472	-26.402	129.331
722406.5	6556404.9	5640	2240	+0.074	3645.180	979359.985	-51.349	40.445	-14.666	-25.569	131.061
722803.5	6556398.7	5640	2280	+0.076	3642.838	979357.643	-53.689	45.165	-16.377	-24.902	146.353
723215.7	6556412.1	5640	2320	+0.077	3644.936	979359.741	-51.575	42.992	-15.589	-24.172	139.314
723590.5	6556403.9	5640	2360	+0.078	3649.124	979363.929	-47.388	37.566	-13.622	-23.443	121.731
723997.4	6556401.9	5640	2400	+0.081	3647.016	979361.821	-49.491	42.145	-15.282	-22.628	136.567
724406.0	6556398.5	5640	2440	+0.082	3644.556	979359.361	-51.947	46.758	-16.955	-22.144	151.517
722390.6	6556792.3	5680	2240	+0.090	3639.352	979354.157	-56.898	49.084	-17.798	-25.612	159.054
722803.1	6556794.7	5680	2280	+0.088	3639.039	979353.844	-57.203	50.565	-18.335	-24.973	163.852
723197.7	6556783.7	5680	2320	+0.087	3644.739	979359.544	-51.505	42.992	-15.589	-24.102	139.313
723623.4	6556784.2	5680	2360	+0.086	3648.003	979362.808	-48.234	39.034	-14.154	-23.354	126.487
723987.8	6556805.1	5680	2400	+0.085	3643.873	979358.678	-52.344	46.506	-16.863	-22.701	150.699
724387.1	6556804.9	5680	2440	+0.084	3641.824	979356.629	-54.387	50.677	-18.376	-22.085	164.216
D94											
720451.5	6558554.2	0	1004	+0.000	3628.084	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3628.084	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.059	3628.084	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3628.025	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720796.3	6556801.6	5680	2080	+0.014	3638.450	979352.162	-58.910	48.941	-17.746	-27.715	158.591
721238.3	6556765.4	5680	2120	+0.012	3642.864	979356.576	-54.516	43.030	-15.603	-27.089	139.437
721593.2	6556799.3	5680	2160	+0.010	3640.039	979353.751	-57.311	48.022	-17.413	-26.702	155.612
721997.6	6556796.7	5680	2200	+0.009	3642.150	979355.862	-55.196	45.523	-16.507	-26.180	147.514
722391.2	6556792.2	5680	2240	+0.008	3640.459	979354.171	-56.884	49.079	-17.796	-25.601	159.037
722391.2	6556792.2	5680	2240	+0.008	3640.461	979354.173	-56.882	49.079	-17.796	-25.599	159.037
723198.2	6556783.6	5680	2320	+0.056	3645.789	979359.501	-51.548	42.991	-15.589	-24.146	139.311
720797.1	6557201.1	5720	2080	+0.015	3637.794	979351.506	-59.279	49.383	-17.907	-27.802	160.023
721201.5	6557200.7	5720	2120	+0.015	3638.106	979351.818	-58.961	49.910	-18.098	-27.148	161.732
721602.4	6557201.0	5720	2160	+0.016	3638.923	979352.635	-58.138	49.364	-17.900	-26.673	159.961
722001.8	6557199.5	5720	2200	+0.017	3637.356	979351.068	-59.700	52.626	-19.083	-26.156	170.533
722403.8	6557200.0	5720	2240	+0.018	3636.210	979349.922	-60.839	54.920	-19.914	-25.833	177.965
722798.7	6557200.5	5720	2280	+0.019	3640.911	979354.623	-56.132	48.959	-17.753	-24.926	158.648
723200.9	6557199.6	5720	2320	+0.020	3646.525	979360.237	-50.512	41.584	-15.079	-24.007	134.752
723601.7	6557196.3	5720	2360	+0.021	3647.402	979361.114	-49.632	41.301	-14.976	-23.306	133.834
724012.3	6557199.4	5720	2400	+0.022	3644.044	979357.756	-52.981	47.720	-17.303	-22.565	154.633
724401.7	6557201.4	5720	2440	+0.023	3641.860	979355.572	-55.158	52.001	-18.856	-22.013	168.505
718001.1	6557604.2	5760	1800	+0.041	3636.780	979350.492	-60.044	46.506	-16.863	-30.401	150.701
718398.7	6557603.0	5760	1840	+0.040	3639.196	979352.908	-57.623	43.876	-15.909	-29.657	142.176
718783.0	6557598.2	5760	1880	+0.039	3641.555	979355.267	-55.262	40.628	-14.732	-29.365	131.653
719197.5	6557606.4	5760	1920	+0.038	3641.852	979355.564	-54.953	40.581	-14.715	-29.087	131.500
719597.2	6557598.1	5760	1960	+0.037	3640.439	979354.151	-56.366	43.088	-15.624	-28.902	139.623
719995.6	6557603.1	5760	2000	+0.036	3638.998	979352.710	-57.797	46.093	-16.714	-28.418	149.362
720395.0	6557604.7	5760	2040	+0.035	3637.505	979351.217	-59.283	48.991	-17.765	-28.056	158.754
720799.5	6557594.9	5760	2080	+0.034	3637.953	979351.665	-58.836	48.936	-17.744	-27.644	158.574
721196.2	6557599.3	5760	2120	+0.034	3638.373	979352.085	-58.407	49.016	-17.773	-27.164	158.833
721597.1	6557600.4	5760	2160	+0.033	3638.729	979352.441	-58.044	49.262	-17.862	-26.645	159.629
722003.4	6557595.8	5760	2200	+0.032	3639.313	979353.025	-57.457	49.067	-17.792	-26.182	158.999
722398.9	6557598.9	5760	2240	+0.031	3639.732	979353.444	-57.030	49.105	-17.806	-25.731	159.122
722799.9	6557594.8	5760	2280	+0.030	3644.161	979357.873	-52.598	43.562	-15.796	-24.832	141.160
723191.2	6557601.2	5760	2320	+0.026	3645.739	979359.451	-51.009	42.106	-15.268	-24.171	136.443
723600.6	6557596.4	5760	2360	+0.025	3645.824	979359.536	-50.922	43.356	-15.721	-23.287	140.493
723993.4	6557599.7	5760	2400	+0.024	3640.726	979354.438	-56.011	52.172	-18.918	-22.757	169.061
724401.1	6557605.6	5760	2440	+0.024	3642.410	979356.122	-54.317	50.913	-18.461	-21.865	164.982
718002.3	6558005.7	5800	1800	+0.042	3631.888	979345.600	-64.647	54.153	-19.636	-30.130	175.481
718403.9	6558001.5	5800	1840	+0.043	3633.362	979347.074	-63.170	52.378	-18.992	-29.784	169.727
718806.1	6558000.4	5800	1880	+0.044	3637.358	979351.070	-59.169	46.471	-16.850	-29.549	150.585
719201.6	6558000.7	5800	1920	+0.045	3637.950	979351.662	-58.571	46.148	-16.733	-29.156	149.539
719603.6	6557995.5	5800	1960	+0.046	3638.037	979351.749	-58.481	46.371	-16.814	-28.925	150.261
720002.9	6557997.3	5800	2000	+0.047	3635.688	979349.400	-60.823	50.746	-18.401	-28.478	164.440
720402.9	6558000.6	5800	2040	+0.048	3633.199	979346.911	-63.304	54.961	-19.929	-28.271	178.099
720805.7	6558003.3	5800	2080	+0.049	3634.783	979348.495	-61.712	53.290	-19.323	-27.745	172.682
721208.1	6557995.0	5800	2120	+0.049	3633.973	979347.685	-62.522	55.172	-20.006	-27.355	178.783
721603.3	6558002.0	5800	2160	+0.050	3636.079	979349.791	-60.405	52.444	-19.016	-26.977	169.941
722001.8	6558006.7	5800	2200	+0.051	3639.047	979352.759	-57.427	48.950	-17.750	-26.226	158.621
722398.5	6557997.6	5800	2240	+0.052	3641.664	979355.376	-54.811	46.007	-16.682	-25.486	149.084
D105											
720451.5	6558554.2	0	1004	+0.000	3639.950	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3639.950	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.060	3639.950	979341.796	-68.019	61.895	-22.443	-28.568	200.567

720451.5	6558554.2	0	1004	+0.010	3639.890	979341.796	-68.019	61.895	-22.443	-28.568	200.567
724796.8	6554801.6	5480	2480	+0.051	3666.393	979368.239	-44.214	35.516	-12.878	-21.576	115.087
725198.8	6554802.6	5480	2520	+0.052	3665.252	979367.098	-45.348	37.851	-13.725	-21.222	122.653
725606.4	6554801.7	5480	2560	+0.052	3665.448	979367.294	-45.146	38.628	-14.007	-20.525	125.172
725989.4	6554808.2	5480	2600	+0.053	3663.469	979365.315	-47.114	42.517	-15.417	-20.015	137.773
724798.6	6555203.9	5520	2480	+0.050	3665.290	979367.136	-45.027	36.865	-13.367	-21.529	119.459
725198.3	6555198.8	5520	2520	+0.049	3664.866	979366.712	-45.448	38.495	-13.958	-20.912	124.741
725596.4	6555201.5	5520	2560	+0.049	3665.234	979367.080	-45.072	38.723	-14.041	-20.391	125.478
726005.4	6555196.9	5520	2600	+0.048	3663.463	979365.309	-46.840	42.343	-15.354	-19.851	137.210
724789.6	6555593.4	5560	2480	+0.045	3664.705	979366.551	-45.331	37.601	-13.634	-21.364	121.845
725205.5	6555591.9	5560	2520	+0.046	3665.386	979367.232	-44.645	37.727	-13.680	-20.598	122.251
725604.0	6555597.2	5560	2560	+0.047	3665.412	979367.258	-44.609	38.327	-13.897	-20.180	124.195
726001.8	6555599.2	5560	2600	+0.047	3664.805	979366.651	-45.208	39.739	-14.410	-19.879	128.773
723991.5	6556001.5	5600	2400	+0.056	3660.813	979362.659	-48.941	41.049	-14.885	-22.777	133.017
724801.3	6555994.8	5600	2480	+0.044	3663.740	979365.586	-46.007	39.075	-14.169	-21.101	126.621
725195.5	6555998.6	5600	2520	+0.044	3663.045	979364.891	-46.693	40.994	-14.865	-20.563	132.840
725596.7	6555994.8	5600	2560	+0.043	3663.366	979365.212	-46.369	41.295	-14.974	-20.048	133.813
725995.3	6556002.0	5600	2600	+0.042	3663.888	979365.734	-45.835	41.047	-14.884	-19.672	133.011
724804.2	6556389.1	5640	2480	+0.039	3662.245	979364.091	-47.218	40.922	-14.839	-21.134	132.606
725194.8	6556404.7	5640	2520	+0.040	3663.602	979365.448	-45.844	39.847	-14.449	-20.445	129.123
725606.2	6556399.1	5640	2560	+0.041	3658.187	979360.033	-51.256	48.506	-17.589	-20.339	157.181
725999.4	6556398.6	5640	2600	+0.042	3660.960	979362.806	-48.477	45.141	-16.368	-19.705	146.277
724800.9	6556798.0	5680	2480	+0.038	3660.570	979362.416	-48.598	43.007	-15.595	-21.186	139.362
725197.1	6556795.0	5680	2520	+0.038	3662.420	979364.266	-46.744	41.174	-14.930	-20.500	133.422
725599.7	6556800.6	5680	2560	+0.037	3657.222	979359.068	-51.932	49.683	-18.015	-20.264	160.996
725998.3	6556798.7	5680	2600	+0.036	3657.785	979359.631	-51.364	49.593	-17.983	-19.754	160.702
724798.3	6557199.6	5720	2480	+0.029	3659.051	979360.897	-49.828	45.042	-16.332	-21.118	145.956
725203.8	6557199.0	5720	2520	+0.030	3660.156	979362.002	-48.717	44.116	-15.997	-20.598	142.956
725604.4	6557199.2	5720	2560	+0.034	3660.072	979361.918	-48.795	45.065	-16.341	-20.071	146.029
725997.3	6557202.5	5720	2600	+0.035	3654.768	979356.614	-54.091	53.628	-19.446	-19.909	173.777
724796.7	6557598.4	5760	2480	+0.028	3655.606	979357.452	-52.986	49.793	-18.055	-21.248	161.352
725198.3	6557598.1	5760	2520	+0.027	3655.627	979357.473	-52.959	50.443	-18.291	-20.807	163.456
725599.7	6557608.6	5760	2560	+0.026	3659.730	979361.576	-48.842	45.056	-16.338	-20.124	146.002
725997.7	6557596.0	5760	2600	+0.025	3653.969	979355.815	-54.606	54.205	-19.655	-20.056	175.649
722001.7	6558006.7	5800	2200	+0.012	3650.921	979352.767	-57.419	48.936	-17.744	-26.228	158.574
722798.7	6558003.0	5800	2280	+0.015	3654.899	979356.745	-53.432	44.929	-16.292	-24.794	145.591
723203.0	6558007.8	5800	2320	+0.016	3656.310	979358.156	-52.011	43.890	-15.915	-24.036	142.222
723598.0	6557999.1	5800	2360	+0.017	3655.806	979357.652	-52.516	45.935	-16.656	-23.237	148.851
723996.0	6558013.0	5800	2400	+0.018	3652.812	979354.658	-55.493	51.503	-18.675	-22.666	166.892
724398.8	6557999.7	5800	2440	+0.019	3650.665	979352.511	-57.644	55.818	-20.240	-22.066	180.875
724801.8	6558000.9	5800	2480	+0.020	3651.508	979353.354	-56.794	55.509	-20.128	-21.412	179.874
725201.9	6557998.1	5800	2520	+0.021	3653.531	979355.377	-54.767	53.128	-19.264	-20.903	172.158
725602.9	6557998.4	5800	2560	+0.022	3657.955	979359.801	-50.336	47.173	-17.105	-20.269	152.860
726004.3	6557994.1	5800	2600	+0.023	3656.466	979358.312	-51.822	50.115	-18.172	-19.879	162.396
D106											
720451.5	6558554.2	0	1004	+0.000	3641.021	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3641.021	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.089	3641.021	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3640.932	979341.796	-68.019	61.895	-22.443	-28.568	200.567
725610.9	6550382.3	5040	2560	+0.066	3663.431	979364.206	-51.420	44.258	-16.048	-23.210	143.415
726014.9	6550408.6	5040	2600	+0.067	3663.458	979364.233	-51.367	45.408	-16.465	-22.425	147.142
726408.3	6550397.6	5040	2640	+0.068	3661.331	979362.106	-53.496	49.412	-17.917	-22.001	160.116
726811.1	6550403.0	5040	2680	+0.069	3657.592	979358.367	-57.225	55.413	-20.093	-21.905	179.563
727202.7	6550400.0	5040	2720	+0.070	3658.212	979358.987	-56.601	54.801	-19.871	-21.671	177.581
725602.1	6550799.1	5080	2560	+0.062	3664.185	979364.960	-50.365	43.623	-15.818	-22.560	141.357
725990.1	6550804.5	5080	2600	+0.075	3662.025	979362.800	-52.515	47.574	-17.250	-22.192	154.160
726394.9	6550809.6	5080	2640	+0.074	3659.547	979360.322	-54.983	52.047	-18.872	-21.809	168.654
726791.3	6550805.4	5080	2680	+0.073	3661.467	979362.242	-53.060	49.644	-18.001	-21.418	160.868
727201.4	6550801.9	5080	2720	+0.072	3659.713	979360.488	-54.811	52.526	-19.046	-21.331	170.207
725996.4	6551197.6	5120	2600	+0.059	3660.695	979361.470	-53.562	49.644	-18.001	-21.919	160.869
726397.1	6551203.4	5120	2640	+0.058	3660.294	979361.069	-53.952	50.806	-18.422	-21.569	164.634
726801.2	6551201.6	5120	2680	+0.056	3664.193	979364.968	-50.049	45.519	-16.505	-21.035	147.500
727199.9	6551191.3	5120	2720	+0.055	3662.121	979362.896	-52.122	48.946	-17.748	-20.924	158.606
724801.1	6551602.4	5160	2480	+0.038	3661.730	979362.505	-52.253	45.733	-16.583	-23.103	148.195
725197.9	6551606.3	5160	2520	+0.040	3665.492	979366.267	-48.483	41.122	-14.911	-22.272	133.252
725606.9	6551595.9	5160	2560	+0.041	3663.391	979364.166	-50.585	45.033	-16.329	-21.881	145.927
726000.9	6551602.7	5160	2600	+0.049	3659.939	979360.714	-54.026	50.687	-18.379	-21.718	164.247
726400.8	6551600.2	5160	2640	+0.050	3661.124	979361.899	-52.836	49.482	-17.942	-21.297	160.344
726797.4	6551596.5	5160	2680	+0.051	3665.940	979366.715	-48.017	42.513	-15.415	-20.919	137.761
727207.3	6551609.5	5160	2720	+0.053	3664.701	979365.476	-49.240	44.842	-16.260	-20.658	145.309
724798.7	6552005.5	5200	2480	+0.037	3663.706	979364.481	-49.987	42.623	-15.455	-22.819	138.118
725196.2	6551995.9	5200	2520	+0.036	3665.032	979365.807	-48.662	41.729	-15.131	-22.064	135.220
725606.5	6551994.0	5200	2560	+0.035	3661.000	979361.775	-52.689	48.729	-17.669	-21.629	157.904
724808.0	6552388.8	5240	2480	+0.031	3665.962	979366.737	-47.454	39.132	-14.189	-22.512	126.804
725208.7	6552398.7	5240	2520	+0.032	3661.952	979362.727	-51.451	46.080	-16.709	-22.080	149.319
725601.0	6552400.8	5240	2560	+0.033	3659.687	979360.462	-53.709	50.448	-18.293	-21.553	163.473
724799.5	6552796.8	5280	2480	+0.029	3665.023	979365.798	-48.099	40.192	-14.574	-22.481	130.239
725199.3	6552800.2	5280	2520	+0.028	3659.925	979360.700	-53.189	48.916	-17.737	-22.010	158.509
725593.4	6552797.8	5280	2560	+0.027	3659.470	979360.245	-53.639	50.644	-18.364	-21.359	164.109
724799.6	6553205.0	5320	2480	+0.023	3662.763	979363.538	-50.065	43.379	-15.730	-22.415	140.568
725198.9	6553204.7	5320	2520	+0.024	3661.559	979362.334	-51.263	46.467	-16.849	-21.645	150.574
725598.6	6553204.2	5320	2560	+0.025	3660.943	979361.718	-51.874	48.359	-17.535	-21.050	156.704
724804.8	6553600.6	5360	2480	+0.022	3662.811	979363.586	-49.732	43.406	-15.739	-22.065	140.653

725200.2	6553595.7	5360	2520	+0.021	3663.495	979364.270	-49.046	43.468	-15.762	-21.339	140.856
725599.8	6553600.6	5360	2560	+0.020	3664.286	979365.061	-48.245	43.067	-15.616	-20.794	139.556
724798.6	6553994.7	5400	2480	+0.016	3663.517	979364.292	-48.742	42.032	-15.241	-21.951	136.201
725206.0	6554006.9	5400	2520	+0.017	3664.432	979365.207	-47.812	41.501	-15.048	-21.360	134.480
725608.0	6553996.0	5400	2560	+0.019	3666.010	979366.785	-46.236	39.954	-14.487	-20.769	129.468
724788.5	6554400.3	5440	2480	+0.015	3666.571	979367.346	-45.396	37.037	-13.430	-21.789	120.015
725198.1	6554398.3	5440	2520	+0.014	3667.185	979367.960	-44.777	36.891	-13.377	-21.263	119.543
725594.6	6554391.4	5440	2560	+0.013	3667.333	979368.108	-44.628	37.257	-13.510	-20.880	120.730
725989.3	6554808.5	5480	2600	+0.011	3664.535	979365.310	-47.119	42.505	-15.412	-20.027	137.734
723597.3	6555203.2	5520	2360	+0.083	3666.221	979366.996	-45.186	34.184	-12.395	-23.397	110.772
D107											
720451.5	6558554.2	0	1004	+0.000	3642.058	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3642.058	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.034	3642.058	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3642.024	979341.796	-68.019	61.895	-22.443	-28.568	200.567
725606.2	6551993.8	5200	2560	+0.005	3662.016	979361.754	-52.710	48.705	-17.661	-21.665	157.827
726004.4	6551997.5	5200	2600	+0.007	3662.298	979362.036	-52.419	48.814	-17.700	-21.305	158.178
726403.7	6552001.2	5200	2640	+0.007	3665.143	979364.881	-49.565	44.804	-16.246	-21.007	145.184
726811.2	6551999.7	5200	2680	+0.008	3670.280	979370.018	-44.423	37.474	-13.588	-20.537	121.433
727201.4	6551998.2	5200	2720	+0.009	3670.977	979370.715	-43.721	36.419	-13.206	-20.507	118.015
725996.0	6552401.7	5240	2600	+0.011	3663.236	979362.974	-51.190	47.190	-17.111	-21.111	152.918
726398.3	6552401.8	5240	2640	+0.010	3668.411	979368.149	-46.008	39.624	-14.368	-20.752	128.400
726798.8	6552402.0	5240	2680	+0.010	3671.621	979371.359	-42.792	34.871	-12.644	-20.565	112.998
727202.5	6552393.1	5240	2720	+0.009	3672.847	979372.585	-41.566	33.249	-12.056	-20.373	107.743
726004.3	6552813.0	5280	2600	+0.012	3662.972	979362.710	-51.157	47.526	-17.233	-20.864	154.006
726404.2	6552800.4	5280	2640	+0.013	3669.515	979369.253	-44.617	37.310	-13.529	-20.836	120.902
726807.4	6552801.4	5280	2680	+0.013	3672.308	979372.046	-41.817	33.626	-12.193	-20.384	108.964
727208.5	6552800.9	5280	2720	+0.014	3671.423	979371.161	-42.696	34.956	-12.675	-20.416	113.273
726000.1	6553192.0	5320	2600	+0.016	3664.237	979363.975	-49.619	45.494	-16.496	-20.622	147.419
726398.7	6553200.1	5320	2640	+0.015	3670.327	979370.065	-43.517	36.094	-13.088	-20.511	116.961
726800.9	6553209.3	5320	2680	+0.015	3671.810	979371.548	-42.021	34.212	-12.405	-20.215	110.861
727202.6	6553204.0	5320	2720	+0.014	3666.642	979366.380	-47.187	42.591	-15.444	-20.039	138.014
726001.1	6553603.2	5360	2600	+0.016	3665.761	979365.499	-47.799	43.050	-15.610	-20.359	139.500
726404.2	6553605.6	5360	2640	+0.017	3670.791	979370.529	-42.761	35.410	-12.840	-20.190	114.745
726804.9	6553603.1	5360	2680	+0.017	3671.324	979371.062	-42.223	34.643	-12.562	-20.142	112.257
727202.3	6553602.1	5360	2720	+0.018	3667.543	979367.281	-45.999	41.277	-14.967	-19.689	133.756
725991.4	6554004.1	5400	2600	+0.021	3669.190	979368.928	-44.081	37.280	-13.518	-20.319	120.804
726396.3	6554002.4	5400	2640	+0.021	3670.353	979370.091	-42.913	35.961	-13.040	-19.991	116.530
726795.2	6554000.3	5400	2680	+0.020	3669.794	979369.532	-43.467	36.546	-13.252	-20.173	118.424
727199.9	6554003.4	5400	2720	+0.020	3665.546	979365.284	-47.707	43.857	-15.903	-19.752	142.117
726002.5	6554410.2	5440	2600	+0.021	3668.220	979367.958	-44.758	38.124	-13.824	-20.458	123.538
726405.1	6554396.8	5440	2640	+0.022	3667.970	979367.708	-45.012	38.901	-14.106	-20.216	126.058
726793.7	6554383.6	5440	2680	+0.022	3668.112	979367.850	-44.873	39.622	-14.367	-19.618	128.394
727203.2	6554408.1	5440	2720	+0.023	3664.318	979364.056	-48.643	45.551	-16.517	-19.609	147.605
726405.1	6554799.5	5480	2640	+0.024	3664.773	979364.511	-47.918	44.229	-16.038	-19.727	143.321
726800.6	6554798.7	5480	2680	+0.024	3664.026	979363.764	-48.660	45.564	-16.522	-19.617	147.648
727202.2	6554799.2	5480	2720	+0.025	3662.153	979361.891	-50.526	48.571	-17.612	-19.567	157.391
725596.2	6555201.6	5520	2560	+0.030	3667.334	979367.072	-45.080	38.716	-14.039	-20.403	125.458
726384.8	6555198.5	5520	2640	+0.026	3662.936	979362.674	-49.468	46.554	-16.881	-19.795	150.857
726797.1	6555199.5	5520	2680	+0.026	3660.944	979360.682	-51.453	49.870	-18.083	-19.666	161.600
727200.6	6555196.7	5520	2720	+0.025	3659.565	979359.303	-52.828	52.163	-18.914	-19.580	169.030
726399.4	6555592.8	5560	2640	+0.027	3665.188	979364.926	-46.932	42.895	-15.554	-19.591	139.000
726802.1	6555603.6	5560	2680	+0.027	3664.180	979363.918	-47.926	44.610	-16.176	-19.492	144.555
727202.5	6555603.0	5560	2720	+0.027	3663.486	979363.224	-48.614	45.925	-16.653	-19.342	148.817
726396.7	6556005.2	5600	2640	+0.029	3664.632	979364.370	-47.191	43.493	-15.771	-19.468	140.937
726791.1	6556005.5	5600	2680	+0.028	3665.683	979365.421	-46.133	42.074	-15.256	-19.316	136.339
727206.8	6556001.9	5600	2720	+0.028	3663.534	979363.272	-48.279	45.530	-16.509	-19.258	147.538
D108											
720451.5	6558554.2	0	1004	+0.000	3643.140	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3643.140	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.036	3643.140	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3643.104	979341.796	-68.019	61.895	-22.443	-28.568	200.567
724798.7	6555203.8	5520	2480	+0.033	3668.453	979367.109	-45.054	36.851	-13.362	-21.565	119.414
726396.7	6556005.4	5600	2640	+0.004	3665.677	979364.333	-47.228	43.490	-15.770	-19.507	140.928
726402.0	6556409.2	5640	2640	+0.005	3664.564	979363.220	-48.050	44.911	-16.285	-19.423	145.533
726791.2	6556403.4	5640	2680	+0.005	3663.064	979361.720	-49.548	47.336	-17.164	-19.376	153.389
727203.2	6556393.9	5640	2720	+0.005	3664.755	979363.411	-47.857	44.931	-16.292	-19.219	145.595
726404.1	6556791.3	5680	2640	+0.007	3662.783	979361.439	-49.555	47.170	-17.104	-19.489	152.852
726799.7	6556799.1	5680	2680	+0.006	3658.868	979357.524	-53.459	53.394	-19.361	-19.426	173.019
727205.9	6556805.9	5680	2720	+0.006	3661.204	979359.860	-51.112	49.976	-18.121	-19.257	161.943
726399.2	6557200.3	5720	2640	+0.007	3661.808	979360.464	-50.236	48.365	-17.537	-19.408	156.724
726805.5	6557196.0	5720	2680	+0.007	3658.499	979357.155	-53.542	53.691	-19.468	-19.320	173.981
727201.0	6557199.5	5720	2720	+0.008	3658.314	979356.970	-53.718	53.970	-19.570	-19.318	174.888
726392.7	6557596.3	5760	2640	+0.009	3658.676	979357.332	-53.083	52.619	-19.080	-19.543	170.510
726793.4	6557598.0	5760	2680	+0.009	3656.646	979355.302	-55.105	56.109	-20.345	-19.342	181.817
727193.9	6557598.8	5760	2720	+0.008	3655.760	979354.416	-55.985	57.430	-20.824	-19.379	186.097
726418.0	6558005.4	5800	2640	+0.010	3657.228	979355.884	-54.236	54.321	-19.697	-19.612	176.024
726805.5	6557994.5	5800	2680	+0.010	3655.865	979354.521	-55.601	56.968	-20.657	-19.289	184.603
727198.9	6557999.4	5800	2720	+0.010	3654.903	979353.559	-56.553	58.584	-21.243	-19.212	189.839
726397.5	6558402.6	5840	2640	+0.012	3655.848	979354.504	-55.330	55.895	-20.268	-19.702	181.126
726782.4	6558405.4	5840	2680	+0.011	3655.184	979353.840	-55.986	57.304	-20.779	-19.461	185.689
727199.7	6558406.3	5840	2720	+0.011	3655.111	979353.767	-56.052	57.831	-20.970	-19.191	187.399
726430.1	6558802.9	5880	2640	+0.012	3653.531	979352.187	-57.358	58.840	-21.336	-19.854	190.667

726803.1	6558799.2	5880	2680	+0.012	3653.692	979352.348	-57.194	59.120	-21.437	-19.512	191.574
727205.3	6558803.9	5880	2720	+0.013	3654.769	979353.425	-56.108	57.668	-20.911	-19.350	186.870
726793.3	6559199.4	5920	2680	+0.014	3653.063	979351.719	-57.535	59.366	-21.526	-19.695	192.373
727168.4	6559201.6	5920	2720	+0.013	3655.579	979354.235	-55.012	55.800	-20.233	-19.445	180.817
726806.5	6559599.9	5960	2680	+0.015	3653.109	979351.765	-57.201	58.591	-21.245	-19.855	189.860
727204.8	6559604.2	5960	2720	+0.015	3654.334	979352.990	-55.966	57.235	-20.754	-19.485	185.468
726787.9	6560002.0	6000	2680	+0.016	3654.335	979352.991	-55.685	56.500	-20.487	-19.672	183.086
727202.3	6560004.1	6000	2720	+0.016	3655.405	979354.061	-54.608	55.160	-20.001	-19.449	178.743
726799.4	6560408.7	6040	2680	+0.017	3655.150	979353.806	-54.577	54.668	-19.823	-19.732	177.148
727209.0	6560391.1	6040	2720	+0.018	3659.007	979357.663	-50.727	49.162	-17.826	-19.391	159.306
726801.5	6560795.8	6080	2680	+0.021	3655.692	979354.348	-53.757	53.189	-19.287	-19.854	172.356
727201.9	6560801.2	6080	2720	+0.018	3657.904	979356.560	-51.535	50.024	-18.139	-19.649	162.100
726802.1	6561199.2	6120	2680	+0.022	3656.870	979355.526	-52.288	50.746	-18.401	-19.943	164.439
727202.7	6561199.4	6120	2720	+0.022	3655.468	979354.124	-53.684	53.051	-19.236	-19.870	171.907
726784.6	6561595.9	6160	2680	+0.023	3658.682	979357.338	-50.191	47.471	-17.213	-19.933	153.827
727196.3	6561604.5	6160	2720	+0.023	3655.571	979354.227	-53.290	52.253	-18.947	-19.984	169.323
726800.9	6561999.3	6200	2680	+0.024	3659.647	979358.303	-48.936	45.235	-16.402	-20.103	146.582
727203.9	6562003.4	6200	2720	+0.024	3658.532	979357.188	-50.041	47.073	-17.069	-20.037	152.536
726824.3	6562403.5	6240	2680	+0.025	3660.310	979358.966	-47.981	43.363	-15.724	-20.342	140.516
727196.7	6562395.4	6240	2720	+0.025	3660.871	979359.527	-47.420	42.816	-15.525	-20.129	138.744
727200.2	6562798.6	6280	2720	+0.026	3658.466	979357.122	-49.535	45.839	-16.622	-20.317	148.540
727196.9	6563201.7	6320	2720	+0.026	3658.564	979357.220	-49.147	45.106	-16.355	-20.397	146.162
727194.1	6563603.7	6360	2720	+0.027	3660.572	979359.228	-46.850	41.408	-15.015	-20.457	134.179
727195.9	6563995.5	6400	2720	+0.027	3662.306	979360.962	-44.834	38.046	-13.796	-20.583	123.287
727202.8	6564399.6	6440	2720	+0.028	3662.908	979361.564	-43.941	36.348	-13.180	-20.773	117.782
D109											
720451.5	6558554.2	0	1004	+0.000	3643.471	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3643.471	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.036	3643.471	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	3643.435	979341.796	-68.019	61.895	-22.443	-28.568	200.567
727563.7	6551956.4	5195	2757	+0.019	3672.574	979370.899	-43.561	36.446	-13.215	-20.331	118.100
727572.9	6552454.4	5245	2757	+0.019	3675.488	979373.813	-40.288	31.764	-11.518	-20.042	102.929
727568.0	6553954.1	5395	2757	+0.017	3665.764	979364.089	-48.932	45.565	-16.522	-19.889	147.650
727998.3	6555000.1	5500	2800	+0.009	3664.681	979363.006	-49.254	46.600	-16.898	-19.551	151.006
724396.8	6555196.2	5520	2440	+0.007	3667.786	979366.111	-46.063	37.369	-13.550	-22.245	121.091
727996.4	6557005.5	5700	2800	+0.011	3666.558	979364.883	-45.932	42.183	-15.296	-19.045	136.693
718403.2	6558001.5	5800	1840	+0.034	3648.727	979347.052	-63.192	52.371	-18.990	-29.811	169.706
718001.5	6558395.7	5840	1800	+0.033	3645.383	979343.708	-66.258	56.774	-20.586	-30.071	183.972
718396.4	6558412.4	5840	1840	+0.033	3645.867	979344.192	-65.756	56.375	-20.442	-29.823	182.680
718796.2	6558405.9	5840	1880	+0.032	3644.784	979343.109	-66.838	58.224	-21.112	-29.726	188.670
719195.5	6558396.8	5840	1920	+0.032	3647.442	979345.767	-64.180	54.639	-19.812	-29.354	177.054
719598.5	6558400.9	5840	1960	+0.032	3647.265	979345.590	-64.349	55.597	-20.160	-28.911	180.159
719996.0	6558406.7	5840	2000	+0.031	3646.933	979345.258	-64.670	56.601	-20.524	-28.593	183.412
720396.1	6558401.7	5840	2040	+0.031	3644.387	979342.712	-67.214	60.726	-22.020	-28.507	196.779
720792.3	6558397.2	5840	2080	+0.030	3645.506	979343.831	-66.092	59.492	-21.572	-28.172	192.780
721202.5	6558396.0	5840	2120	+0.030	3648.179	979346.504	-63.414	56.318	-20.421	-27.517	182.496
721604.8	6558396.5	5840	2160	+0.030	3651.435	979349.760	-60.151	52.110	-18.895	-26.937	168.859
722000.7	6558400.7	5840	2200	+0.029	3653.611	979351.936	-57.966	49.636	-17.998	-26.329	160.841
722403.6	6558402.3	5840	2240	+0.029	3655.119	979353.444	-56.451	48.553	-17.606	-25.504	157.333
722788.4	6558396.7	5840	2280	+0.028	3655.301	979353.626	-56.267	49.129	-17.815	-24.953	159.201
723199.8	6558400.9	5840	2320	+0.028	3658.009	979356.334	-53.550	46.080	-16.709	-24.179	149.319
723599.0	6558392.9	5840	2360	+0.028	3656.593	979354.918	-54.966	49.636	-17.998	-23.328	160.841
724011.8	6558402.3	5840	2400	+0.027	3655.834	979354.159	-55.712	52.144	-18.907	-22.476	168.968
724398.0	6558400.6	5840	2440	+0.027	3652.299	979350.624	-59.242	58.256	-21.124	-22.110	188.775
724802.3	6558398.6	5840	2480	+0.026	3652.315	979350.640	-59.221	58.938	-21.371	-21.655	190.985
725197.5	6558400.2	5840	2520	+0.026	3654.906	979353.231	-56.623	55.757	-20.218	-21.084	180.677
725614.6	6558438.6	5840	2560	+0.026	3658.508	979356.833	-52.987	51.104	-18.530	-20.414	165.599
726000.3	6558391.9	5840	2600	+0.025	3656.209	979354.534	-55.314	55.317	-20.058	-20.055	179.251
726384.6	6558380.6	9000	271	+0.014	3656.416	979354.741	-55.109	55.515	-20.130	-19.724	179.893
727160.8	6555209.1	9000	347	+0.008	3661.135	979359.460	-52.663	51.877	-18.811	-19.596	168.104
720778.6	6556406.6	9000	519	+0.003	3659.095	979357.420	-53.937	41.091	-14.900	-27.746	133.153
D110											
720451.5	6558554.2	0	1004	+0.000	4208.275	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.275	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	-0.045	4208.275	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.320	979341.796	-68.019	61.895	-22.443	-28.568	200.567
718396.3	6558412.7	5840	1840	-0.006	4210.654	979344.175	-65.773	56.384	-20.445	-29.834	182.709
720396.0	6558401.7	5840	2040	-0.044	4209.171	979342.692	-67.234	60.725	-22.019	-28.528	196.775
718001.3	6558803.2	5880	1800	-0.007	4215.793	979349.314	-60.359	47.831	-17.344	-29.871	154.993
718399.2	6558804.0	5880	1840	-0.008	4214.872	979348.393	-61.273	49.492	-17.946	-29.727	160.377
718803.7	6558804.1	5880	1880	-0.009	4212.626	979346.147	-63.513	53.144	-19.270	-29.639	172.210
719203.4	6558806.9	5880	1920	-0.009	4209.911	979343.432	-66.220	57.692	-20.919	-29.448	186.946
719604.8	6558802.0	5880	1960	-0.010	4209.525	979343.046	-66.604	58.739	-21.299	-29.164	190.340
720003.6	6558801.5	5880	2000	-0.011	4208.499	979342.020	-67.624	60.775	-22.037	-28.886	196.939
720407.9	6558792.7	5880	2040	-0.011	4208.634	979342.155	-67.489	61.123	-22.163	-28.530	198.064
720802.3	6558803.6	5880	2080	-0.012	4209.233	979342.754	-66.876	60.423	-21.910	-28.363	195.796
721201.4	6558793.3	5880	2120	-0.013	4212.102	979345.623	-64.009	56.833	-20.608	-27.784	184.165
721599.8	6558798.9	5880	2160	-0.014	4214.481	979348.002	-61.620	53.969	-19.569	-27.220	174.882
721999.1	6558800.4	5880	2200	-0.015	4214.905	979348.426	-61.189	54.061	-19.603	-26.730	175.183
722401.2	6558800.1	5880	2240	-0.015	4215.810	979349.331	-60.278	54.072	-19.607	-25.813	175.217
722803.3	6558797.3	5880	2280	-0.016	4217.394	979350.915	-58.690	52.661	-19.095	-25.124	170.646
723203.8	6558805.3	5880	2320	-0.017	4219.888	979353.409	-56.184	49.980	-18.123	-24.327	161.958
723600.7	6558799.5	5880	2360	-0.017	4219.193	979352.714	-56.877	52.492	-19.034	-23.419	170.098

724005.4	6558799.6	5880	2400	-0.018	4217.362	979350.883	-58.702	56.386	-20.446	-22.762	182.715
724406.9	6558795.5	5880	2440	-0.019	4215.716	979349.237	-60.345	59.693	-21.645	-22.296	193.433
724805.5	6558801.9	5880	2480	-0.019	4215.671	979349.192	-60.379	60.445	-21.918	-21.851	195.870
725201.6	6558801.4	5880	2520	-0.020	4218.145	979351.666	-57.899	57.492	-20.847	-21.254	186.300
725607.1	6558798.7	5880	2560	-0.021	4219.634	979353.155	-56.406	56.030	-20.317	-20.693	181.561
726009.4	6558806.1	5880	2600	-0.022	4218.568	979352.089	-57.460	58.306	-21.142	-20.297	188.936
717999.5	6559199.7	5920	1800	-0.041	4217.499	979351.020	-58.367	44.862	-16.267	-29.772	145.372
718394.5	6559198.6	5920	1840	-0.040	4216.280	979349.801	-59.581	46.924	-17.015	-29.672	152.055
718798.9	6559196.2	5920	1880	-0.040	4213.460	979346.981	-62.397	51.384	-18.632	-29.645	166.506
719201.0	6559199.4	5920	1920	-0.038	4212.182	979345.703	-63.666	53.794	-19.506	-29.379	174.315
719600.2	6559198.5	5920	1960	-0.037	4210.828	979344.349	-65.015	56.348	-20.432	-29.099	182.593
720002.0	6559192.2	5920	2000	-0.036	4209.629	979343.150	-66.213	58.503	-21.213	-28.923	189.575
720395.7	6559197.0	5920	2040	-0.036	4208.784	979342.305	-67.048	60.135	-21.805	-28.718	194.865
720802.4	6559201.5	5920	2080	-0.035	4209.985	979343.506	-65.838	58.629	-21.259	-28.468	189.985
721203.4	6559204.9	5920	2120	-0.034	4210.801	979344.322	-65.013	57.966	-21.019	-28.066	187.837
721595.2	6559201.8	5920	2160	-0.034	4213.121	979346.642	-62.690	55.267	-20.040	-27.463	179.088
721994.9	6559195.7	5920	2200	-0.033	4212.782	979346.303	-63.027	56.898	-20.631	-26.761	184.373
722386.4	6559202.8	5920	2240	-0.033	4212.967	979346.488	-62.831	57.492	-20.847	-26.186	186.299
722791.9	6559199.1	5920	2280	-0.032	4215.473	979348.994	-60.322	54.833	-19.883	-25.371	177.683
723192.9	6559199.2	5920	2320	-0.031	4217.139	979350.660	-58.649	53.534	-19.412	-24.527	173.475
723596.5	6559204.1	5920	2360	-0.030	4215.635	979349.156	-60.144	57.134	-20.717	-23.727	185.139
724000.1	6559197.5	5920	2400	-0.030	4215.530	979349.051	-60.247	58.511	-21.216	-22.953	189.602
724394.5	6559208.0	5920	2440	-0.029	4214.866	979348.387	-60.898	60.308	-21.868	-22.458	195.423
724793.6	6559197.0	5920	2480	-0.028	4215.377	979348.898	-60.389	60.283	-21.859	-21.965	195.342
725194.6	6559205.6	5920	2520	-0.028	4216.517	979350.038	-59.236	59.227	-21.476	-21.486	191.920
725591.5	6559196.4	5920	2560	-0.027	4217.423	979350.944	-58.331	58.781	-21.314	-20.864	190.477
725997.7	6559198.1	5920	2600	-0.027	4217.688	979351.209	-58.058	59.094	-21.428	-20.392	191.489
726397.8	6559201.8	5920	2640	-0.024	4217.756	979351.277	-57.981	59.542	-21.590	-20.030	192.941
D111											
720451.5	6558554.2	0	1004	+0.000	4208.315	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.315	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	-0.015	4208.315	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.330	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720003.3	6558801.8	5880	2000	-0.015	4208.550	979342.031	-67.613	60.761	-22.032	-28.884	196.893
717999.3	6559200.1	5920	1800	-0.003	4217.552	979351.033	-58.354	44.854	-16.264	-29.764	145.348
718000.3	6559604.1	5960	1800	-0.004	4211.761	979345.242	-63.854	53.315	-19.332	-29.871	172.765
718400.0	6559601.3	5960	1840	-0.004	4211.071	979344.552	-64.540	54.594	-19.796	-29.742	176.909
718804.4	6559604.9	5960	1880	-0.004	4210.471	979343.952	-65.131	55.669	-20.186	-29.648	180.392
719202.8	6559597.0	5960	1920	-0.004	4209.661	979343.142	-65.941	57.175	-20.732	-29.498	185.271
719600.8	6559604.0	5960	1960	-0.004	4208.996	979342.477	-66.595	58.561	-21.234	-29.269	189.762
720004.5	6559600.5	5960	2000	-0.005	4209.390	979342.871	-66.198	58.337	-21.153	-29.014	189.039
720407.7	6559602.4	5960	2040	-0.005	4210.595	979344.076	-64.985	56.785	-20.591	-28.790	184.010
720803.4	6559607.0	5960	2080	-0.005	4211.640	979345.121	-63.931	55.572	-20.151	-28.510	180.077
721205.6	6559598.2	5960	2120	-0.005	4212.360	979345.841	-63.211	55.023	-19.951	-28.140	178.298
721596.4	6559608.9	5960	2160	-0.005	4213.185	979346.666	-62.373	54.390	-19.722	-27.705	176.246
722007.8	6559591.4	5960	2200	-0.006	4213.669	979347.150	-61.895	54.701	-19.835	-27.029	177.255
722411.6	6559591.6	5960	2240	-0.006	4213.649	979347.130	-61.909	55.735	-20.210	-26.383	180.606
722803.3	6559599.5	5960	2280	-0.006	4214.609	979348.090	-60.937	55.817	-20.240	-25.359	180.873
723203.3	6559597.5	5960	2320	-0.006	4217.329	979350.810	-58.213	52.914	-19.187	-24.485	171.466
723601.7	6559604.9	5960	2360	-0.007	4216.648	979350.129	-58.882	55.083	-19.973	-23.772	178.493
724000.6	6559593.0	5960	2400	-0.007	4216.608	979350.089	-58.925	56.474	-20.478	-22.928	183.001
724404.1	6559607.9	5960	2440	-0.007	4216.133	979349.614	-59.383	58.017	-21.037	-22.403	188.002
724805.5	6559601.8	5960	2480	-0.007	4216.288	979349.769	-59.226	58.395	-21.174	-22.005	189.226
725205.2	6559602.9	5960	2520	-0.008	4218.147	979351.628	-57.360	56.370	-20.440	-21.430	182.664
725607.0	6559613.0	5960	2560	-0.008	4220.112	979353.593	-55.382	54.267	-19.678	-20.792	175.850
726006.2	6559605.7	5960	2600	-0.008	4219.192	979352.673	-56.301	56.472	-20.477	-20.306	182.994
726400.7	6559601.0	5960	2640	-0.008	4218.697	979352.178	-56.793	57.690	-20.919	-20.022	186.941
717997.8	6559994.1	6000	1800	-0.014	4210.506	979343.987	-64.828	55.109	-19.983	-29.702	178.577
718396.1	6559999.4	6000	1840	-0.014	4211.076	979344.557	-64.248	54.290	-19.686	-29.644	175.924
718805.3	6560003.0	6000	1880	-0.013	4207.797	979341.278	-67.519	59.322	-21.511	-29.707	192.231
719190.0	6560006.0	6000	1920	-0.013	4208.632	979342.113	-66.676	58.328	-21.150	-29.497	189.010
719600.5	6559997.2	6000	1960	-0.013	4209.857	979343.338	-65.451	56.838	-20.610	-29.223	184.179
719998.8	6559999.4	6000	2000	-0.013	4211.242	979344.723	-64.058	55.012	-19.948	-28.994	178.264
720395.3	6560000.7	6000	2040	-0.013	4212.157	979345.638	-63.137	53.878	-19.536	-28.795	174.589
720800.6	6560004.0	6000	2080	-0.012	4212.313	979345.794	-62.972	54.028	-19.591	-28.535	175.075
721197.1	6559993.5	6000	2120	-0.012	4212.433	979345.914	-62.854	54.494	-19.760	-28.120	176.583
721595.4	6559996.1	6000	2160	-0.012	4213.253	979346.734	-62.026	53.817	-19.514	-27.723	174.391
722004.0	6560003.4	6000	2200	-0.012	4213.903	979347.384	-61.364	53.722	-19.480	-27.122	174.083
722397.9	6559998.8	6000	2240	-0.011	4214.274	979347.755	-60.991	54.463	-19.749	-26.276	176.485
722795.1	6559999.8	6000	2280	-0.011	4215.554	979349.035	-59.704	54.060	-19.602	-25.247	175.177
723198.2	6560010.3	6000	2320	-0.011	4218.059	979351.540	-57.185	51.146	-18.546	-24.585	165.736
723598.7	6560005.3	6000	2360	-0.011	4218.064	979351.545	-57.178	52.443	-19.016	-23.751	169.937
723993.0	6560000.2	6000	2400	-0.011	4216.739	979350.220	-58.501	55.505	-20.126	-23.122	179.860
724400.7	6559994.9	6000	2440	-0.010	4216.500	979349.981	-58.737	56.866	-20.620	-22.491	184.272
724791.5	6559998.8	6000	2480	-0.010	4218.110	979351.591	-57.118	55.155	-19.999	-21.963	178.725
725207.6	6560015.8	6000	2520	-0.010	4220.280	979353.761	-54.930	52.702	-19.110	-21.338	170.777
725596.8	6560000.2	6000	2560	-0.010	4221.910	979355.391	-53.305	51.141	-18.544	-20.708	165.720
725992.8	6559997.7	6000	2600	-0.010	4221.485	979354.966	-53.726	52.526	-19.046	-20.246	170.208
726408.2	6560013.0	6000	2640	-0.009	4220.036	979353.517	-55.157	55.198	-20.015	-19.974	178.865
717912.9	6557559.7	9000	69	-0.002	4218.343	979351.824	-58.746	44.240	-16.042	-30.547	143.358
720778.9	6556407.5	9000	519	-0.001	4223.934	979357.415	-53.942	41.118	-14.910	-27.733	133.241
D112											
720451.5	6558554.2	0	1004	+0.000	4208.287	979341.796	-68.019	61.895	-22.443	-28.568	200.567

720451.5	6558554.2	0	1004	+0.000	4208.287	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	-0.051	4208.287	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.338	979341.796	-68.019	61.895	-22.443	-28.568	200.567
717997.7	6559994.1	6000	1800	-0.049	4210.471	979343.980	-64.835	55.114	-19.985	-29.706	178.593
720395.3	6560000.7	6000	2040	-0.003	4212.147	979345.656	-63.119	53.870	-19.534	-28.782	174.563
717995.3	6560400.1	6040	1800	-0.048	4210.247	979343.756	-64.767	55.217	-20.022	-29.572	178.928
718391.6	6560395.5	6040	1840	-0.047	4211.663	979345.172	-63.348	52.980	-19.211	-29.579	171.678
718791.5	6560405.5	6040	1880	-0.046	4210.254	979343.763	-64.744	55.182	-20.009	-29.571	178.814
719193.7	6560394.5	6040	1920	-0.046	4210.699	979344.208	-64.301	54.696	-19.833	-29.438	177.240
719593.4	6560401.4	6040	1960	-0.045	4210.325	979343.834	-64.664	55.637	-20.174	-29.201	180.288
720006.6	6560397.6	6040	2000	-0.044	4212.591	979346.100	-62.395	52.537	-19.050	-28.908	170.244
720396.0	6560396.3	6040	2040	-0.004	4213.481	979346.990	-61.500	51.270	-18.591	-28.820	166.139
720801.1	6560404.4	6040	2080	-0.005	4212.920	979346.429	-62.049	52.587	-19.068	-28.530	170.405
721199.1	6560406.7	6040	2120	-0.005	4212.970	979346.479	-61.991	53.012	-19.222	-28.202	171.783
721600.6	6560397.8	6040	2160	-0.006	4213.349	979346.858	-61.613	53.088	-19.250	-27.775	172.027
721997.3	6560399.1	6040	2200	-0.007	4213.983	979347.492	-60.972	52.907	-19.184	-27.249	171.443
722404.1	6560404.9	6040	2240	-0.007	4213.948	979347.457	-60.996	54.590	-19.795	-26.201	176.896
722809.2	6560402.0	6040	2280	-0.008	4215.937	979349.446	-59.003	52.767	-19.134	-25.370	170.988
723202.7	6560401.2	6040	2320	-0.008	4218.247	979351.756	-56.688	50.167	-18.191	-24.712	162.563
723617.8	6560400.0	6040	2360	-0.009	4218.066	979351.575	-56.863	51.669	-18.735	-23.930	167.431
724000.2	6560397.2	6040	2400	-0.010	4217.710	979351.219	-57.216	53.430	-19.374	-23.160	173.136
724407.2	6560407.2	6040	2440	-0.010	4217.465	979350.974	-57.447	54.733	-19.846	-22.561	177.358
724804.2	6560403.2	6040	2480	-0.011	4220.814	979354.323	-54.095	50.420	-18.283	-21.957	163.383
725207.5	6560401.9	6040	2520	-0.012	4221.873	979355.382	-53.031	49.850	-18.076	-21.257	161.535
725607.5	6560399.9	6040	2560	-0.012	4222.643	979356.152	-52.256	49.460	-17.935	-20.730	160.273
725997.9	6560404.5	6040	2600	-0.013	4220.932	979354.441	-53.958	52.673	-19.099	-20.384	170.683
726402.0	6560394.1	6040	2640	-0.014	4220.171	979353.680	-54.720	54.263	-19.676	-20.133	175.835
718002.8	6560792.4	6080	1800	-0.037	4211.978	979345.487	-62.753	52.323	-18.972	-29.403	169.548
718400.8	6560800.2	6080	1840	-0.036	4212.364	979345.873	-62.356	51.406	-18.640	-29.590	166.578
718799.2	6560797.8	6080	1880	-0.035	4212.040	979345.549	-62.676	52.001	-18.856	-29.530	168.507
719198.7	6560795.0	6080	1920	-0.035	4210.480	979343.989	-64.232	54.613	-19.803	-29.422	176.970
719600.9	6560794.5	6080	1960	-0.034	4210.216	979343.725	-64.490	55.243	-20.031	-29.278	179.011
720006.3	6560810.2	6080	2000	-0.033	4212.682	979346.191	-62.007	51.720	-18.754	-29.040	167.596
720397.5	6560809.7	6080	2040	-0.032	4213.863	979347.372	-60.820	50.232	-18.214	-28.802	162.775
720797.2	6560798.7	6080	2080	-0.032	4213.773	979347.282	-60.912	50.758	-18.405	-28.559	164.479
721206.5	6560790.6	6080	2120	-0.029	4213.201	979346.710	-61.484	52.185	-18.922	-28.221	169.101
721592.6	6560800.1	6080	2160	-0.028	4212.877	979346.386	-61.795	53.069	-19.243	-27.969	171.967
722001.3	6560800.5	6080	2200	-0.027	4213.698	979347.207	-60.968	53.186	-19.285	-27.067	172.346
722403.5	6560796.1	6080	2240	-0.027	4215.023	979348.532	-59.640	52.387	-18.996	-26.249	169.756
722786.4	6560794.1	6080	2280	-0.026	4217.094	979350.603	-57.564	50.281	-18.232	-25.515	162.934
723192.4	6560807.5	6080	2320	-0.021	4218.764	979352.273	-55.878	48.686	-17.654	-24.846	157.765
723599.1	6560798.5	6080	2360	-0.020	4218.735	979352.244	-55.908	50.015	-18.136	-24.029	162.070
724003.9	6560805.1	6080	2400	-0.020	4218.060	979351.569	-56.572	52.174	-18.918	-23.317	169.066
724399.1	6560795.8	6080	2440	-0.019	4217.536	979351.045	-57.097	53.887	-19.540	-22.749	174.619
724794.7	6560791.0	6080	2480	-0.018	4221.392	979354.901	-53.238	48.925	-17.740	-22.053	158.539
725199.1	6560804.3	6080	2520	-0.017	4223.493	979357.002	-51.121	46.845	-16.986	-21.262	151.799
725585.3	6560793.0	6080	2560	-0.016	4221.884	979355.393	-52.733	49.929	-18.104	-20.908	161.792
725995.1	6560800.1	6080	2600	-0.016	4220.064	979353.573	-54.541	53.304	-19.328	-20.565	172.728
726398.0	6560799.8	6080	2640	-0.015	4221.140	979354.649	-53.459	52.158	-18.913	-20.214	169.015
718010.7	6561204.3	6120	1800	-0.038	4212.807	979346.316	-61.628	50.517	-18.318	-29.428	163.698
718398.3	6561198.2	6120	1840	-0.039	4212.261	979345.770	-62.172	51.146	-18.546	-29.572	165.736
718795.0	6561199.7	6120	1880	-0.039	4210.221	979343.730	-64.205	54.250	-19.671	-29.626	175.794
719196.7	6561197.2	6120	1920	-0.040	4212.030	979345.539	-62.392	51.558	-18.695	-29.529	167.072
719602.0	6561194.9	6120	1960	-0.041	4212.704	979346.213	-61.714	50.888	-18.452	-29.278	164.898
719994.5	6561202.1	6120	2000	-0.042	4213.453	979346.962	-60.954	49.940	-18.108	-29.122	161.826
720396.9	6561201.5	6120	2040	-0.042	4213.963	979347.472	-60.438	49.556	-17.969	-28.852	160.582
D113											
720451.5	6558554.2	0	1004	+0.000	4208.333	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.333	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	-0.027	4208.333	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.360	979341.796	-68.019	61.895	-22.443	-28.568	200.567
723599.2	6560798.5	6080	2360	-0.025	4218.765	979352.228	-55.924	50.010	-18.134	-24.047	162.056
726398.1	6560799.9	6080	2640	-0.004	4221.206	979354.669	-53.439	52.148	-18.909	-20.200	168.984
723596.3	6561203.9	6120	2360	-0.007	4218.413	979351.876	-55.984	49.630	-17.996	-24.350	160.822
723996.7	6561211.3	6120	2400	-0.007	4218.453	979351.916	-55.933	50.856	-18.441	-23.517	164.796
724395.6	6561199.1	6120	2440	-0.006	4218.939	979352.402	-55.449	51.266	-18.589	-22.773	166.124
724811.0	6561201.9	6120	2480	-0.006	4221.204	979354.667	-53.176	48.725	-17.668	-22.119	157.890
725203.4	6561192.5	6120	2520	-0.006	4224.129	979357.592	-50.252	45.351	-16.444	-21.346	146.956
725590.5	6561201.0	6120	2560	-0.005	4222.495	979355.958	-51.874	48.465	-17.574	-20.982	157.048
726001.2	6561198.6	6120	2600	-0.005	4220.670	979354.133	-53.694	51.811	-18.787	-20.670	167.890
726408.3	6561203.8	6120	2640	-0.005	4223.240	979356.703	-51.114	48.481	-17.579	-20.213	157.099
723599.0	6561612.7	6160	2360	-0.009	4217.736	979351.199	-56.367	49.840	-18.072	-24.599	161.502
723993.7	6561599.1	6160	2400	-0.009	4217.106	979350.569	-57.001	52.139	-18.906	-23.767	168.954
724401.9	6561600.2	6160	2440	-0.010	4220.035	979353.498	-54.065	48.875	-17.722	-22.912	158.375
724799.6	6561609.5	6160	2480	-0.010	4223.035	979356.498	-51.052	45.491	-16.495	-22.056	147.412
725200.5	6561600.0	6160	2520	-0.010	4223.600	979357.063	-50.488	45.433	-16.474	-21.529	147.222
725593.6	6561600.5	6160	2560	-0.011	4220.844	979354.307	-53.237	50.353	-18.258	-21.143	163.165
725998.9	6561601.8	6160	2600	-0.011	4220.234	979353.697	-53.840	51.823	-18.791	-20.808	167.928
726390.2	6561588.8	6160	2640	-0.012	4223.958	979357.421	-50.119	46.803	-16.971	-20.287	151.663
723597.3	6561998.1	6200	2360	-0.015	4214.485	979347.948	-59.340	53.924	-19.553	-24.970	174.736
724001.1	6562003.3	6200	2400	-0.014	4216.751	979350.214	-57.065	51.923	-18.828	-23.969	168.255
724396.3	6561999.6	6200	2440	-0.014	4220.601	979354.064	-53.211	47.490	-17.220	-22.941	153.889
724772.3	6561985.2	6200	2480	-0.014	4223.446	979356.909	-50.371	44.110	-15.994	-22.255	142.936

725197.5	6561995.0	6200	2520	-0.013	4223.057	979356.520	-50.746	45.573	-16.525	-21.698	147.678
725584.4	6561997.2	6200	2560	-0.013	4220.497	979353.960	-53.299	50.024	-18.139	-21.413	162.100
725997.5	6562000.8	6200	2600	-0.013	4222.192	979355.655	-51.595	48.180	-17.470	-20.885	156.125
726402.0	6562014.5	6200	2640	-0.012	4224.248	979357.711	-49.523	45.658	-16.556	-20.420	147.953
723605.1	6562399.0	6240	2360	-0.017	4217.293	979350.756	-56.244	48.974	-17.758	-25.028	158.696
724016.1	6562400.2	6240	2400	-0.017	4220.298	979353.761	-53.232	45.913	-16.648	-23.967	148.778
724409.0	6562398.5	6240	2440	-0.018	4219.537	979353.000	-53.988	48.318	-17.520	-23.190	156.573
724803.5	6562398.0	6240	2480	-0.018	4223.027	979356.490	-50.492	43.982	-15.948	-22.458	142.520
725201.6	6562400.5	6240	2520	-0.018	4224.052	979357.515	-49.459	43.261	-15.687	-21.885	140.185
725605.2	6562399.3	6240	2560	-0.019	4221.371	979354.834	-52.135	47.960	-17.391	-21.565	155.413
726008.6	6562393.8	6240	2600	-0.019	4223.906	979357.369	-49.598	44.905	-16.283	-20.976	145.511
726416.3	6562410.9	6240	2640	-0.020	4225.645	979359.108	-47.840	42.735	-15.496	-20.601	138.481
723599.9	6562800.1	6280	2360	-0.024	4216.891	979350.354	-56.357	48.738	-17.673	-25.292	157.932
724001.9	6562808.8	6280	2400	-0.023	4221.682	979355.145	-51.554	43.019	-15.599	-24.134	139.401
724398.9	6562793.4	6280	2440	-0.023	4220.987	979354.450	-52.254	45.322	-16.434	-23.366	146.864
724798.3	6562809.2	6280	2480	-0.023	4223.292	979356.755	-49.931	42.722	-15.491	-22.701	138.437
725197.6	6562803.6	6280	2520	-0.022	4224.258	979357.721	-48.963	42.128	-15.276	-22.111	136.514
725596.0	6562801.4	6280	2560	-0.022	4223.928	979357.391	-49.289	43.220	-15.672	-21.740	140.053
725991.1	6562793.7	6280	2600	-0.021	4224.869	979358.332	-48.347	42.403	-15.375	-21.320	137.403
726405.3	6562796.3	6280	2640	-0.021	4227.049	979360.512	-46.159	39.672	-14.385	-20.872	128.556
726791.9	6562810.7	6280	2680	-0.020	4225.635	979359.098	-47.557	42.295	-15.336	-20.598	137.055
723163.0	6561066.7	9000	51	-0.008	4219.327	979352.790	-55.175	47.321	-17.159	-25.013	153.341
D114											
720451.5	6558554.2	0	1004	+0.000	4208.362	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.362	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	-0.026	4208.362	979341.796	-68.019	61.895	-22.443	-28.568	200.567
720451.5	6558554.2	0	1004	+0.000	4208.388	979341.796	-68.019	61.895	-22.443	-28.568	200.567
723600.2	6562800.0	6280	2360	-0.022	4216.913	979350.347	-56.364	48.729	-17.669	-25.305	157.902
725990.9	6562793.7	6280	2600	-0.004	4224.911	979358.345	-48.334	42.411	-15.378	-21.302	137.430
723598.7	6563199.7	6320	2360	-0.020	4219.185	979352.619	-53.805	44.587	-16.168	-25.385	144.483
724000.6	6563202.4	6320	2400	-0.020	4221.950	979355.384	-51.032	41.747	-15.138	-24.422	135.278
724390.1	6563181.9	6320	2440	-0.019	4222.921	979356.355	-50.069	41.452	-15.031	-23.648	134.322
724815.7	6563182.2	6320	2480	-0.018	4223.787	979357.221	-49.197	41.200	-14.939	-22.936	133.507
725195.5	6563196.0	6320	2520	-0.018	4223.962	979357.396	-49.006	41.631	-15.096	-22.470	134.904
725600.8	6563203.5	6320	2560	-0.007	4225.223	979358.657	-47.733	40.481	-14.679	-21.931	131.176
725979.4	6563200.3	6320	2600	-0.007	4226.413	979359.847	-46.540	39.220	-14.221	-21.541	127.090
726423.3	6563195.2	6320	2640	-0.006	4227.269	979360.703	-45.681	38.641	-14.011	-21.051	125.213
726808.2	6563198.9	6320	2680	-0.005	4226.055	979359.489	-46.886	41.134	-14.915	-20.668	133.291
725956.8	6563605.9	6360	2600	-0.008	4227.772	979361.206	-44.889	36.505	-13.237	-21.621	118.291
726424.4	6563617.1	6360	2640	-0.009	4229.331	979362.765	-43.315	34.935	-12.668	-21.048	113.205
726800.4	6563607.9	6360	2680	-0.010	4228.255	979361.689	-44.392	37.194	-13.487	-20.685	120.526
726001.2	6564000.4	6400	2600	-0.012	4227.193	979360.627	-45.184	36.599	-13.271	-21.856	118.597
726406.3	6563994.1	6400	2640	-0.011	4231.134	979364.568	-41.241	31.453	-11.405	-21.193	101.922
726799.5	6564001.5	6400	2680	-0.011	4228.724	979362.158	-43.640	35.753	-12.964	-20.851	115.855
726002.8	6564391.0	6440	2600	-0.013	4228.562	979361.996	-43.534	33.651	-12.202	-22.085	109.043
726364.1	6564373.7	6440	2640	-0.016	4230.269	979363.703	-41.834	31.863	-11.554	-21.524	103.250
726798.1	6564398.3	6440	2680	-0.014	4230.151	979363.585	-41.927	32.802	-11.894	-21.020	106.292
723531.7	6563338.3	9000	174	-0.021	4218.899	979352.333	-53.992	44.319	-16.070	-25.743	143.612

Yeltacowie North

MGA94 E	ZONE 53 N	GRID Line	Stn	drift	corr'd meter	obs mgal	anom	freeair corrn	bouguer corrn (2.67)	bouguer anom	height (AHD)
D95											
683716.6	6580829.3	0	1005	+0.000	3635.906	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3635.906	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.156	3635.906	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3635.750	979348.455	-45.848	35.459	-12.858	-23.246	114.904
682583.5	6579975.4	8000	8259	+0.037	3635.958	979348.507	-46.423	36.249	-13.144	-23.318	117.463
683390.0	6580001.2	8000	8339	+0.044	3639.002	979351.551	-43.350	31.502	-11.423	-23.271	102.081
684200.0	6580003.6	8000	8419	+0.051	3635.785	979348.334	-46.556	36.184	-13.121	-23.492	117.253
684987.8	6579998.9	8000	8499	+0.058	3635.776	979348.325	-46.558	36.269	-13.151	-23.441	117.526
685790.6	6580005.2	8000	8579	+0.065	3636.331	979348.880	-45.989	35.676	-12.936	-23.249	115.606
686578.7	6580005.2	8000	8659	+0.072	3637.471	979350.020	-44.839	34.082	-12.358	-23.115	110.442
687389.3	6579996.3	8000	8739	+0.080	3638.515	979351.064	-43.791	32.853	-11.913	-22.851	106.458
688187.0	6579999.1	8000	8819	+0.087	3637.766	979350.315	-44.528	33.554	-12.167	-23.141	108.731
688987.4	6580001.2	8000	8899	+0.093	3636.479	979349.028	-45.803	35.190	-12.760	-23.373	114.031
682584.4	6580802.2	8080	8259	+0.028	3636.381	979348.930	-45.406	34.744	-12.598	-23.261	112.586
683390.1	6580797.1	8080	8339	+0.017	3639.762	979352.311	-42.019	29.744	-10.785	-23.060	96.385
684185.5	6580797.1	8080	8419	+0.143	3635.695	979348.244	-46.076	35.711	-12.949	-23.314	115.720
684980.1	6580801.4	8080	8499	+0.137	3635.405	979347.954	-46.353	36.030	-13.065	-23.388	116.754
685781.4	6580799.7	8080	8579	+0.131	3635.458	979348.007	-46.292	35.711	-12.949	-23.530	115.719
686587.9	6580802.7	8080	8659	+0.123	3635.663	979348.212	-46.074	35.106	-12.729	-23.698	113.758
687386.6	6580804.6	8080	8739	+0.112	3636.265	979348.814	-45.461	34.196	-12.400	-23.664	110.810
688185.1	6580803.2	8080	8819	+0.106	3638.684	979351.233	-43.033	30.380	-11.016	-23.668	98.446
688982.1	6580802.4	8080	8899	+0.099	3637.287	979349.836	-44.420	32.208	-11.679	-23.891	104.368
D96											

683716.6	6580829.3	0	1005	+0.033	3637.005	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3636.972	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.117	3636.972	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3636.855	979348.455	-45.848	35.459	-12.858	-23.246	114.904
682592.5	6578406.3	7840	8259	+0.067	3637.545	979349.028	-47.028	37.266	-13.513	-23.275	120.757
683391.0	6578400.2	7840	8339	+0.065	3637.739	979349.222	-46.829	37.097	-13.451	-23.184	120.210
684156.0	6578460.2	7840	8419	+0.062	3640.363	979351.846	-44.152	33.373	-12.101	-22.881	108.143
686600.0	6578407.4	7840	8659	+0.051	3640.942	979352.425	-43.581	33.880	-12.285	-21.986	109.786
687388.9	6578400.7	7840	8739	+0.049	3637.817	979349.300	-46.701	38.545	-13.976	-22.132	124.902
688189.9	6578403.4	7840	8819	+0.046	3636.157	979347.640	-48.348	40.975	-14.858	-22.231	132.777
688980.5	6578391.5	7840	8899	+0.043	3639.688	979351.171	-44.816	36.168	-13.115	-21.763	117.200
682586.5	6579198.4	7920	8259	+0.016	3637.676	979349.159	-46.329	35.952	-13.036	-23.413	116.501
683387.8	6579203.0	7920	8339	+0.019	3638.182	979349.665	-45.810	35.016	-12.697	-23.490	113.468
684186.2	6579204.4	7920	8419	+0.023	3638.088	979349.571	-45.893	35.455	-12.856	-23.294	114.891
684990.2	6579195.3	7920	8499	+0.025	3637.915	979349.398	-46.062	36.200	-13.126	-22.988	117.304
685792.1	6579197.6	7920	8579	+0.027	3638.389	979349.872	-45.576	35.880	-13.010	-22.707	116.266
686583.6	6579193.6	7920	8659	+0.030	3639.409	979350.892	-44.549	34.608	-12.549	-22.491	112.145
687391.1	6579195.2	7920	8739	+0.035	3639.153	979350.636	-44.794	35.103	-12.729	-22.419	113.750
688189.7	6579195.8	7920	8819	+0.037	3636.639	979348.122	-47.298	38.638	-14.010	-22.670	125.203
688985.8	6579207.9	7920	8899	+0.039	3638.648	979350.131	-45.270	35.693	-12.943	-22.519	115.662
683389.8	6580796.8	8080	8339	+0.010	3640.861	979352.344	-41.986	29.759	-10.791	-23.018	96.431
688981.5	6580802.5	8080	8899	+0.107	3638.383	979349.866	-44.390	32.209	-11.679	-23.860	104.371
689780.0	6580799.8	8080	8979	+0.105	3638.052	979349.535	-44.713	32.665	-11.844	-23.893	105.848
690581.7	6580801.5	8080	9059	+0.102	3638.378	979349.861	-44.375	31.793	-11.528	-24.111	103.023
682585.8	6581595.3	8160	8259	+0.076	3636.603	979348.086	-45.681	35.532	-12.884	-23.033	115.138
683381.3	6581602.5	8160	8339	+0.078	3641.265	979352.748	-41.004	28.442	-10.313	-22.875	92.166
684190.7	6581599.4	8160	8419	+0.080	3637.094	979348.577	-45.168	34.695	-12.581	-23.053	112.428
684981.8	6581593.2	8160	8499	+0.082	3636.582	979348.065	-45.674	35.211	-12.768	-23.231	114.098
685784.4	6581599.3	8160	8579	+0.084	3635.908	979347.391	-46.334	35.713	-12.950	-23.571	115.725
686610.7	6581602.9	8160	8659	+0.086	3636.025	979347.508	-46.204	35.182	-12.757	-23.779	114.004
687391.8	6581602.3	8160	8739	+0.088	3636.311	979347.794	-45.908	34.123	-12.373	-24.158	110.574
688184.6	6581604.6	8160	8819	+0.092	3637.124	979348.607	-45.084	32.298	-11.711	-24.497	104.659
688986.0	6581603.6	8160	8899	+0.094	3639.292	979350.775	-42.906	29.004	-10.517	-24.419	93.985
689793.0	6581608.0	8160	8979	+0.098	3639.494	979350.977	-42.691	28.519	-10.341	-24.513	92.415
690591.9	6581598.1	8160	9059	+0.100	3638.987	979350.470	-43.195	28.975	-10.506	-24.726	93.892
D97											
683716.6	6580829.3	0	1005	+0.054	3638.022	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3637.968	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.130	3637.968	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3637.838	979348.455	-45.848	35.459	-12.858	-23.246	114.904
690581.4	6580801.3	8080	9059	+0.013	3639.370	979349.857	-44.380	31.781	-11.524	-24.122	102.986
691390.0	6580799.5	8080	9139	+0.016	3639.725	979350.212	-44.016	30.540	-11.074	-24.549	98.963
692186.6	6580805.7	8080	9219	+0.018	3636.803	979347.290	-46.923	33.827	-12.266	-25.362	109.613
692987.3	6580801.0	8080	9299	+0.020	3635.834	979346.321	-47.885	34.467	-12.498	-25.916	111.687
693790.8	6580806.1	8080	9379	+0.022	3635.683	979346.170	-48.022	33.723	-12.228	-26.527	109.276
694591.5	6580803.0	8080	9459	+0.023	3634.955	979345.442	-48.741	34.289	-12.434	-26.885	111.113
695384.4	6580805.0	8080	9539	+0.025	3635.284	979345.771	-48.401	33.568	-12.172	-27.005	108.775
696222.7	6580802.2	8080	9619	+0.027	3637.475	979347.962	-46.201	30.577	-11.087	-26.711	99.084
690592.3	6581598.0	8160	9059	+0.119	3640.034	979350.521	-43.144	28.994	-10.513	-24.663	93.952
691393.1	6581599.2	8160	9139	+0.041	3636.837	979347.324	-46.330	32.647	-11.838	-25.521	105.791
692180.6	6581592.0	8160	9219	+0.039	3634.286	979344.773	-48.876	35.219	-12.770	-26.427	114.124
692984.0	6581595.1	8160	9299	+0.037	3634.550	979345.037	-48.599	34.018	-12.335	-26.916	110.233
693781.2	6581607.9	8160	9379	+0.035	3634.661	979345.148	-48.468	33.007	-11.968	-27.430	106.956
694578.1	6581601.2	8160	9459	+0.034	3634.458	979344.945	-48.666	32.865	-11.917	-27.718	106.496
695379.2	6581597.5	8160	9539	+0.032	3634.944	979345.431	-48.172	32.196	-11.674	-27.650	104.330
696187.6	6581600.0	8160	9619	+0.030	3635.004	979345.491	-48.099	32.445	-11.765	-27.419	105.135
688186.4	6582399.8	8240	8819	+0.052	3640.051	979350.538	-42.582	27.476	-9.963	-25.069	89.035
688994.1	6582399.2	8240	8899	+0.050	3637.868	979348.355	-44.755	30.460	-11.045	-25.340	98.703
689795.6	6582402.0	8240	8979	+0.048	3638.515	979349.002	-44.096	29.222	-10.596	-25.470	94.693
690588.0	6582398.3	8240	9059	+0.046	3638.690	979349.177	-43.914	28.689	-10.403	-25.627	92.964
691384.6	6582403.4	8240	9139	+0.044	3635.992	979346.479	-46.598	31.666	-11.482	-26.414	102.611
692189.7	6582401.2	8240	9219	+0.078	3634.262	979344.749	-48.319	33.274	-12.065	-27.110	107.823
692987.3	6582400.0	8240	9299	+0.081	3635.128	979345.615	-47.443	31.298	-11.349	-27.494	101.419
693799.5	6582402.2	8240	9379	+0.085	3634.544	979345.031	-48.015	31.543	-11.438	-27.910	102.214
694591.2	6582405.8	8240	9459	+0.088	3635.612	979346.099	-46.934	29.499	-10.696	-28.132	95.590
695380.1	6582397.3	8240	9539	+0.090	3635.692	979346.179	-46.850	29.313	-10.629	-28.166	94.988
696194.2	6582407.1	8240	9619	+0.093	3633.865	979344.352	-48.659	32.368	-11.737	-28.028	104.888
688189.7	6583206.0	8320	8819	+0.055	3639.156	979349.643	-42.899	28.157	-10.210	-24.951	91.242
688989.3	6583198.5	8320	8899	+0.057	3637.011	979347.498	-45.039	29.986	-10.873	-25.926	97.168
689791.6	6583197.5	8320	8979	+0.059	3635.531	979346.018	-46.509	31.492	-11.419	-26.436	102.049
690588.4	6583292.7	8320	9059	+0.061	3638.481	979348.968	-43.481	26.793	-9.715	-26.403	86.820
691389.6	6583203.0	8320	9139	+0.062	3636.043	979346.530	-45.973	30.178	-10.943	-26.738	97.790
692989.6	6583213.1	8320	9299	+0.109	3634.792	979345.279	-47.196	30.496	-11.058	-27.758	98.822
693798.1	6583201.0	8320	9379	+0.105	3633.220	979343.707	-48.766	31.875	-11.558	-28.449	103.290
694609.2	6583169.9	8320	9459	+0.103	3633.084	979343.571	-48.914	31.829	-11.541	-28.626	103.141
695380.2	6583198.2	8320	9539	+0.100	3632.861	979343.348	-49.106	32.114	-11.645	-28.637	104.064
696188.9	6583205.4	8320	9619	+0.098	3634.206	979344.693	-47.746	30.864	-11.192	-28.073	100.014
D98											
683716.6	6580829.3	0	1005	+0.000	3639.150	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3639.150	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.148	3639.150	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3639.002	979348.455	-45.848	35.459	-12.858	-23.246	114.904
689791.6	6583197.4	8320	8979	+0.135	3636.666	979345.971	-46.556	31.492	-11.419	-26.484	102.047

691390.0	6583203.7	8320	9139	+0.024	3637.243	979346.548	-45.954	30.169	-10.939	-26.725	97.760
692178.9	6583184.7	8320	9219	+0.027	3636.842	979346.147	-46.359	29.984	-10.872	-27.247	97.160
688192.1	6584032.9	8400	8819	+0.043	3637.436	979346.741	-45.207	31.432	-11.397	-25.173	101.854
688986.3	6583982.8	8400	8899	+0.041	3636.677	979345.982	-45.992	31.392	-11.383	-25.983	101.723
689777.1	6583962.0	8400	8979	+0.039	3637.022	979346.327	-45.652	30.212	-10.955	-26.395	97.901
690581.1	6584000.6	8400	9059	+0.036	3635.577	979344.882	-47.059	31.575	-11.449	-26.933	102.317
691379.9	6583998.0	8400	9139	+0.034	3636.187	979345.492	-46.441	30.438	-11.037	-27.039	98.634
692180.5	6583999.8	8400	9219	+0.032	3636.253	979345.558	-46.363	29.665	-10.757	-27.455	96.128
692982.6	6583998.9	8400	9299	+0.095	3636.193	979345.498	-46.413	29.152	-10.570	-27.832	94.464
693779.7	6583996.7	8400	9379	+0.092	3633.134	979342.439	-49.464	32.670	-11.846	-28.640	105.865
694581.7	6583981.7	8400	9459	+0.090	3629.965	979339.270	-52.633	36.927	-13.390	-29.096	119.660
695380.1	6583992.2	8400	9539	+0.087	3631.841	979341.146	-50.739	34.286	-12.432	-28.885	111.103
696195.0	6583997.5	8400	9619	+0.085	3631.521	979340.826	-51.044	34.931	-12.666	-28.779	113.193
688190.4	6584801.3	8480	8819	+0.047	3635.359	979344.664	-46.733	34.078	-12.357	-25.012	110.429
689011.3	6584782.5	8480	8899	+0.050	3634.664	979343.969	-47.431	33.972	-12.318	-25.778	110.085
689790.5	6584801.9	8480	8979	+0.052	3636.880	979346.185	-45.191	30.126	-10.924	-25.989	97.623
690583.1	6584803.1	8480	9059	+0.054	3635.927	979345.232	-46.134	30.556	-11.080	-26.657	99.016
691392.3	6584792.9	8480	9139	+0.057	3635.609	979344.914	-46.448	30.434	-11.035	-27.050	98.618
692191.0	6584809.9	8480	9219	+0.059	3635.897	979345.202	-46.138	29.144	-10.568	-27.561	94.441
692997.6	6584795.4	8480	9299	+0.062	3633.482	979342.787	-48.553	31.819	-11.538	-28.272	103.107
693806.3	6584802.3	8480	9379	+0.065	3632.119	979341.424	-49.900	33.188	-12.034	-28.747	107.543
694589.6	6584806.7	8480	9459	+0.069	3628.314	979337.619	-53.692	38.209	-13.855	-29.338	123.815
695404.0	6584809.2	8480	9539	+0.079	3629.067	979338.372	-52.927	37.522	-13.606	-29.010	121.589
696194.4	6584801.0	8480	9619	+0.081	3630.046	979339.351	-51.943	36.231	-13.138	-28.850	117.405
688980.9	6585604.5	8560	8899	+0.105	3633.742	979343.047	-47.764	34.974	-12.682	-25.472	113.330
689786.5	6585605.9	8560	8979	+0.107	3634.954	979344.259	-46.541	32.427	-11.758	-25.872	105.077
690596.5	6585601.1	8560	9059	+0.108	3635.880	979345.185	-45.608	30.227	-10.960	-26.342	97.948
691390.7	6585602.8	8560	9139	+0.110	3636.392	979345.697	-45.085	28.853	-10.462	-26.693	93.498
692195.2	6585610.6	8560	9219	+0.112	3635.402	979344.707	-46.059	28.806	-10.445	-27.698	93.344
692992.1	6585603.8	8560	9299	+0.113	3633.151	979342.456	-48.304	31.579	-11.451	-28.176	102.330
693784.0	6585600.6	8560	9379	+0.115	3630.136	979339.441	-51.311	34.842	-12.634	-29.103	112.904
694589.2	6585601.7	8560	9459	+0.117	3629.652	979338.957	-51.784	36.029	-13.064	-28.819	116.749
695389.5	6585606.0	8560	9539	+0.119	3628.148	979337.453	-53.274	38.111	-13.819	-28.982	123.498
696187.3	6585604.4	8560	9619	+0.120	3628.258	979337.563	-53.155	38.135	-13.828	-28.848	123.574
692982.4	6586396.8	8640	9299	+0.129	3632.027	979341.332	-48.860	31.868	-11.555	-28.547	103.265
693781.6	6586400.0	8640	9379	+0.127	3630.617	979339.922	-50.257	33.240	-12.053	-29.070	107.712
694585.2	6586397.7	8640	9459	+0.125	3629.706	979339.011	-51.159	34.690	-12.579	-29.048	112.411
695384.9	6586399.5	8640	9539	+0.124	3628.279	979337.584	-52.575	37.229	-13.499	-28.845	120.639
696188.0	6586405.0	8640	9619	+0.122	3627.692	979336.997	-53.147	38.370	-13.913	-28.690	124.337
D99											
683716.6	6580829.3	0	1005	+0.000	3640.242	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3640.242	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.152	3640.242	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3640.090	979348.455	-45.848	35.459	-12.858	-23.246	114.904
697004.9	6582414.7	8240	9699	+0.116	3638.211	979346.424	-46.571	29.960	-10.864	-27.474	97.085
697786.7	6582425.3	8240	9779	+0.118	3635.294	979343.507	-49.470	34.249	-12.419	-27.640	110.982
698590.7	6582416.4	8240	9859	+0.120	3638.208	979346.421	-46.552	30.573	-11.086	-27.065	99.070
696986.7	6583199.3	8320	9699	+0.113	3636.232	979344.445	-47.988	31.469	-11.411	-27.930	101.972
697790.0	6583219.0	8320	9779	+0.111	3636.776	979344.989	-47.419	31.309	-11.353	-27.462	101.456
698606.5	6583183.0	8320	9859	+0.109	3636.863	979345.076	-47.347	31.352	-11.368	-27.363	101.595
696987.0	6584002.0	8400	9699	+0.101	3633.902	979342.115	-49.742	33.520	-12.155	-28.376	108.620
697790.3	6583998.8	8400	9779	+0.103	3634.323	979342.536	-49.312	33.257	-12.059	-28.114	107.767
698574.1	6584011.6	8400	9859	+0.105	3634.895	979343.108	-48.721	32.802	-11.894	-27.813	106.293
696994.3	6584801.9	8480	9699	+0.099	3630.574	979338.787	-52.496	37.342	-13.540	-28.695	121.003
697779.5	6584807.7	8480	9779	+0.097	3630.680	979338.893	-52.375	37.499	-13.597	-28.474	121.512
698578.3	6584794.8	8480	9859	+0.095	3631.599	979339.812	-51.455	36.389	-13.195	-28.260	117.918
696987.6	6585602.9	8560	9699	+0.089	3629.611	979337.824	-52.885	38.099	-13.815	-28.601	123.457
697787.5	6585605.7	8560	9779	+0.091	3629.507	979337.720	-52.976	38.132	-13.827	-28.671	123.565
698587.4	6585601.6	8560	9859	+0.093	3629.897	979338.110	-52.578	37.866	-13.730	-28.443	122.701
688983.3	6586401.7	8640	8899	+0.033	3632.574	979340.787	-49.453	37.667	-13.658	-25.444	122.059
689788.0	6586408.8	8640	8979	+0.031	3634.467	979342.680	-47.544	33.902	-12.293	-25.936	109.856
690579.1	6586398.3	8640	9059	+0.029	3636.773	979344.986	-45.236	29.818	-10.812	-26.230	96.622
691391.5	6586408.3	8640	9139	+0.026	3637.560	979345.773	-44.431	28.213	-10.230	-26.448	91.422
692184.1	6586399.7	8640	9219	+0.025	3635.459	979343.672	-46.528	29.852	-10.824	-27.501	96.733
692982.3	6586397.0	8640	9299	+0.022	3633.152	979341.365	-48.827	31.878	-11.559	-28.508	103.299
696188.0	6586405.0	8640	9619	+0.130	3628.791	979337.004	-53.140	38.380	-13.917	-28.677	124.369
696971.6	6586387.1	8640	9699	+0.087	3628.669	979336.882	-53.265	38.783	-14.063	-28.544	125.675
697790.3	6586399.9	8640	9779	+0.085	3629.142	979337.355	-52.772	38.326	-13.897	-28.343	124.192
698585.1	6586406.2	8640	9859	+0.084	3629.015	979337.228	-52.883	38.354	-13.907	-28.437	124.283
699398.6	6586394.5	8640	9939	+0.082	3629.313	979337.526	-52.583	37.663	-13.657	-28.577	122.045
688988.4	6587198.3	8720	8899	+0.035	3633.582	979341.795	-47.873	35.538	-12.886	-25.221	115.160
689786.1	6587202.3	8720	8979	+0.037	3634.817	979343.030	-46.625	33.297	-12.074	-25.402	107.896
690585.1	6587205.6	8720	9059	+0.038	3636.223	979344.436	-45.207	30.408	-11.026	-25.825	98.535
691387.2	6587199.8	8720	9139	+0.040	3637.042	979345.255	-44.382	28.484	-10.329	-26.226	92.302
692192.6	6587210.8	8720	9219	+0.042	3635.962	979344.175	-45.443	29.049	-10.533	-26.928	94.130
692986.7	6587206.9	8720	9299	+0.045	3633.639	979341.852	-47.759	31.607	-11.461	-27.613	102.421
693790.6	6587200.4	8720	9379	+0.046	3631.992	979340.205	-49.400	32.585	-11.815	-28.630	105.590
694587.9	6587203.7	8720	9459	+0.049	3630.662	979338.875	-50.717	34.123	-12.373	-28.968	110.572
695385.5	6587202.0	8720	9539	+0.050	3631.216	979339.429	-50.154	33.843	-12.271	-28.583	109.665
696193.9	6587201.1	8720	9619	+0.053	3630.435	979338.648	-50.925	35.325	-12.809	-28.409	114.468
696986.3	6587198.0	8720	9699	+0.055	3629.897	979338.110	-51.455	36.454	-13.218	-28.219	118.128
697782.7	6587203.9	8720	9779	+0.057	3628.281	979336.494	-53.056	38.816	-14.075	-28.315	125.782
698589.4	6587201.6	8720	9859	+0.077	3628.789	979337.002	-52.539	38.250	-13.870	-28.159	123.946

699393.2	6587200.3	8720	9939	+0.079	3628.466	979336.679	-52.852	38.497	-13.959	-28.314	124.748
697780.4	6587992.4	8800	9779	+0.069	3628.894	979337.107	-51.878	37.732	-13.682	-27.828	122.269
698589.6	6588004.5	8800	9859	+0.070	3628.519	979336.732	-52.234	38.352	-13.907	-27.788	124.279
699383.8	6587995.2	8800	9939	+0.072	3628.165	979336.378	-52.584	38.804	-14.070	-27.850	125.741
D100											
683716.6	6580829.3	0	1005	+0.000	3641.304	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3641.304	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.163	3641.304	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3641.141	979348.455	-45.848	35.459	-12.858	-23.246	114.904
692193.9	6587209.3	8720	9219	+0.138	3637.063	979344.214	-45.405	29.012	-10.520	-26.913	94.011
696194.1	6587201.3	8720	9619	+0.035	3631.530	979338.681	-50.892	35.301	-12.800	-28.391	114.392
688984.6	6587994.5	8800	8899	+0.069	3634.981	979342.132	-46.966	34.449	-12.491	-25.008	111.630
689784.4	6587993.7	8800	8979	+0.066	3635.737	979342.888	-46.200	33.183	-12.032	-25.049	107.529
690596.1	6587996.5	8800	9059	+0.064	3638.020	979345.171	-43.905	29.414	-10.666	-25.156	95.315
691378.3	6588012.4	8800	9139	+0.057	3638.386	979345.537	-43.517	27.892	-10.114	-25.739	90.383
692179.5	6588010.5	8800	9219	+0.054	3636.582	979343.733	-45.312	29.700	-10.769	-26.382	96.240
693000.1	6587988.3	8800	9299	+0.051	3634.717	979341.868	-47.183	31.400	-11.386	-27.168	101.750
693785.9	6588008.4	8800	9379	+0.048	3631.769	979338.920	-50.106	34.361	-12.460	-28.204	111.346
694584.9	6588002.1	8800	9459	+0.046	3630.650	979337.801	-51.219	35.718	-12.951	-28.453	115.742
695383.5	6587996.4	8800	9539	+0.044	3630.308	979337.459	-51.555	36.441	-13.214	-28.328	118.084
696192.7	6587998.5	8800	9619	+0.041	3630.056	979337.207	-51.795	36.906	-13.382	-28.271	119.592
696995.0	6588001.4	8800	9699	+0.037	3630.038	979337.189	-51.800	37.345	-13.541	-27.996	121.014
689000.3	6588805.4	8880	8899	+0.071	3636.954	979344.105	-44.411	30.427	-11.033	-25.017	98.597
689790.8	6588810.0	8880	8979	+0.074	3637.959	979345.110	-43.393	29.510	-10.700	-24.583	95.625
690602.6	6588790.2	8880	9059	+0.076	3638.063	979345.214	-43.293	29.046	-10.532	-24.779	94.121
691381.5	6588792.8	8880	9139	+0.084	3637.637	979344.788	-43.707	28.877	-10.471	-25.301	93.575
692189.8	6588806.6	8880	9219	+0.086	3636.491	979343.642	-44.832	29.786	-10.801	-25.847	96.521
692980.3	6588798.2	8880	9299	+0.089	3633.739	979340.890	-47.580	32.504	-11.786	-26.862	105.327
693786.3	6588812.4	8880	9379	+0.091	3631.430	979338.581	-49.869	34.667	-12.570	-27.772	112.337
694618.3	6588782.8	8880	9459	+0.094	3630.668	979337.819	-50.641	35.647	-12.926	-27.920	115.512
695383.6	6588815.3	8880	9539	+0.096	3628.993	979336.144	-52.283	38.027	-13.789	-28.045	123.224
696195.2	6588807.8	8880	9619	+0.099	3630.412	979337.563	-50.858	36.299	-13.162	-27.721	117.626
696998.3	6588797.5	8880	9699	+0.101	3629.819	979336.970	-51.448	37.213	-13.494	-27.729	120.588
697798.0	6588789.4	8880	9779	+0.104	3629.558	979336.709	-51.705	37.850	-13.724	-27.579	122.650
698590.5	6588810.3	8880	9859	+0.106	3629.825	979336.976	-51.412	37.677	-13.662	-27.397	122.091
699375.2	6588781.8	8880	9939	+0.109	3629.157	979336.308	-52.090	38.711	-14.037	-27.415	125.442
692178.7	6589588.9	8960	9219	+0.133	3636.126	979343.277	-44.637	30.073	-10.905	-25.468	97.451
692991.8	6589601.0	8960	9299	+0.131	3632.957	979340.108	-47.787	33.133	-12.014	-26.668	107.367
693781.3	6589596.0	8960	9379	+0.128	3630.902	979338.053	-49.835	34.880	-12.647	-27.603	113.025
694570.0	6589594.0	8960	9459	+0.127	3630.469	979337.620	-50.259	35.274	-12.790	-27.776	114.302
695377.8	6589568.9	8960	9539	+0.124	3630.011	979337.162	-50.725	36.336	-13.176	-27.564	117.745
696171.5	6589589.2	8960	9619	+0.122	3630.844	979337.995	-49.867	35.269	-12.789	-27.386	114.288
696983.1	6589592.7	8960	9699	+0.120	3630.862	979338.013	-49.836	35.282	-12.793	-27.347	114.329
697793.8	6589600.7	8960	9779	+0.118	3630.579	979337.730	-50.102	35.912	-13.022	-27.212	116.370
698583.2	6589600.7	8960	9859	+0.115	3630.430	979337.581	-50.241	36.315	-13.168	-27.093	117.678
699387.2	6589609.3	8960	9939	+0.112	3630.322	979337.473	-50.332	36.756	-13.328	-26.903	119.107
D101											
683716.6	6580829.3	0	1005	+0.000	3642.175	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3642.175	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.083	3642.175	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3642.092	979348.455	-45.848	35.459	-12.858	-23.246	114.904
692193.4	6587209.9	8720	9219	+0.013	3637.927	979344.207	-45.412	29.034	-10.528	-26.906	94.084
688978.7	6589593.2	8960	8899	+0.020	3638.583	979344.863	-43.089	28.804	-10.445	-24.729	93.339
689781.0	6589604.5	8960	8979	+0.019	3638.102	979344.382	-43.552	28.739	-10.421	-25.234	93.126
690587.3	6589601.2	8960	9059	+0.018	3639.409	979345.689	-42.237	27.157	-9.847	-24.927	88.001
691380.0	6589608.4	8960	9139	+0.017	3639.029	979345.309	-42.601	27.581	-10.001	-25.021	89.374
692178.6	6589588.8	8960	9219	+0.016	3636.956	979343.236	-44.678	30.071	-10.904	-25.511	97.443
688985.3	6590392.8	9040	8899	+0.021	3640.303	979346.583	-40.796	26.282	-9.530	-24.044	85.164
689782.1	6590443.2	9040	8979	+0.022	3639.362	979345.642	-41.691	26.957	-9.775	-24.508	87.354
690600.7	6590436.2	9040	9059	+0.023	3638.272	979344.552	-42.775	28.470	-10.323	-24.629	92.254
691393.3	6590402.1	9040	9139	+0.024	3637.865	979344.145	-43.196	28.749	-10.425	-24.872	93.160
692186.0	6590394.2	9040	9219	+0.025	3636.763	979343.043	-44.294	29.941	-10.857	-25.209	97.023
692989.2	6590405.6	9040	9299	+0.026	3634.237	979340.517	-46.801	32.488	-11.780	-26.094	105.275
693792.0	6590400.9	9040	9379	+0.027	3632.795	979339.075	-48.236	33.885	-12.287	-26.638	109.802
694582.8	6590405.7	9040	9459	+0.028	3630.966	979337.246	-50.052	35.619	-12.915	-27.348	115.420
695392.5	6590402.8	9040	9539	+0.029	3631.518	979337.798	-49.491	35.246	-12.780	-27.026	114.211
696188.9	6590403.6	9040	9619	+0.030	3631.551	979337.831	-49.447	35.341	-12.815	-26.921	114.519
696990.4	6590404.8	9040	9699	+0.031	3631.721	979338.001	-49.266	35.027	-12.701	-26.940	113.502
697788.5	6590404.3	9040	9779	+0.032	3631.953	979338.233	-49.023	34.664	-12.569	-26.929	112.328
698587.3	6590396.7	9040	9859	+0.033	3632.627	979338.907	-48.344	33.852	-12.275	-26.767	109.697
699419.3	6590402.6	9040	9939	+0.034	3632.017	979338.297	-48.939	34.799	-12.618	-26.758	112.763
690515.4	6591261.4	9120	9059	+0.061	3637.712	979343.992	-42.745	29.668	-10.758	-23.834	96.138
691330.8	6591206.5	9120	9139	+0.062	3635.740	979342.020	-44.746	31.654	-11.478	-24.570	102.573
692187.3	6591140.2	9120	9219	+0.063	3633.949	979340.229	-46.573	33.831	-12.267	-25.010	109.626
692995.1	6591186.5	9120	9299	+0.063	3632.765	979339.045	-47.714	35.176	-12.755	-25.293	113.985
693796.9	6591158.7	9120	9379	+0.065	3632.243	979338.523	-48.245	35.316	-12.806	-25.735	114.440
694583.6	6591182.4	9120	9459	+0.066	3631.419	979337.699	-49.042	35.955	-13.038	-26.124	116.511
695381.8	6591176.8	9120	9539	+0.067	3630.883	979337.163	-49.572	35.943	-13.033	-26.661	116.472
696170.5	6591165.9	9120	9619	+0.068	3631.537	979337.817	-48.915	35.298	-12.799	-26.416	114.382
696945.0	6591158.0	9120	9699	+0.069	3630.045	979336.325	-50.403	37.072	-13.442	-26.773	120.129
697765.5	6591206.4	9120	9779	+0.037	3632.292	979338.572	-48.110	34.148	-12.382	-26.344	110.656
698587.9	6591193.3	9120	9859	+0.036	3632.197	979338.477	-48.204	34.264	-12.424	-26.364	111.029
699388.3	6591201.8	9120	9939	+0.036	3632.375	979338.655	-48.009	33.931	-12.303	-26.381	109.951

690554.9	6591933.0	9200	9059	+0.059	3637.866	979344.146	-42.109	30.364	-11.010	-22.756	98.392
691381.2	6592012.8	9200	9139	+0.058	3636.302	979342.582	-43.605	31.462	-11.408	-23.551	101.952
692180.4	6591959.9	9200	9219	+0.057	3634.390	979340.670	-45.545	33.387	-12.106	-24.264	108.190
692966.8	6591937.3	9200	9299	+0.056	3634.180	979340.460	-45.761	33.741	-12.235	-24.255	109.337
693752.1	6591943.9	9200	9379	+0.055	3633.848	979340.128	-46.078	33.599	-12.183	-24.662	108.877
694579.6	6591988.5	9200	9459	+0.054	3632.563	979338.843	-47.321	34.673	-12.572	-25.220	112.355
695368.2	6592027.0	9200	9539	+0.053	3631.421	979337.701	-48.425	35.469	-12.861	-25.817	114.936
696193.6	6591997.2	9200	9619	+0.051	3631.935	979338.215	-47.921	35.020	-12.698	-25.600	113.480
696993.9	6592005.5	9200	9699	+0.039	3632.214	979338.494	-47.626	34.378	-12.466	-25.713	111.400
697770.7	6592039.1	9200	9779	+0.040	3632.267	979338.547	-47.538	33.977	-12.320	-25.882	110.099
698229.1	6592004.3	9200	9859	+0.044	3632.948	979339.228	-46.876	33.132	-12.014	-25.759	107.361
699519.6	6591989.8	9200	9939	+0.046	3633.052	979339.332	-46.766	32.518	-11.791	-26.039	105.374
D102											
683716.6	6580829.3	0	1005	+0.000	3643.322	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3643.322	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.073	3643.322	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3643.249	979348.455	-45.848	35.459	-12.858	-23.246	114.904
679385.9	6578396.1	7840	7939	+0.067	3647.947	979353.080	-43.023	31.118	-11.283	-23.188	100.835
680186.1	6578398.4	7840	8019	+0.066	3644.000	979349.133	-46.958	37.411	-13.565	-23.113	121.228
680981.6	6578407.4	7840	8099	+0.065	3642.879	979348.012	-48.063	38.897	-14.104	-23.271	126.043
681794.2	6578402.8	7840	8179	+0.063	3643.091	979348.224	-47.845	38.550	-13.978	-23.273	124.918
682583.3	6579975.4	8000	8259	+0.071	3643.409	979348.542	-46.388	36.252	-13.145	-23.281	117.474
690603.3	6588790.3	8880	9059	+0.015	3640.059	979345.192	-43.314	29.036	-10.529	-24.807	94.091
690587.1	6589601.5	8960	9059	+0.017	3640.574	979345.707	-42.218	27.149	-9.844	-24.913	87.976
696189.0	6590403.5	9040	9619	+0.042	3632.701	979337.834	-49.444	35.329	-12.811	-26.925	114.483
696193.4	6591997.2	9200	9619	+0.031	3633.061	979338.194	-47.942	35.010	-12.695	-25.627	113.449
690579.3	6592815.2	9280	9059	+0.021	3639.524	979344.657	-40.966	29.816	-10.811	-21.962	96.616
691391.7	6592817.2	9280	9139	+0.022	3638.762	979343.895	-41.716	30.295	-10.985	-22.407	98.168
692194.6	6592814.3	9280	9219	+0.023	3638.520	979343.653	-41.950	30.389	-11.019	-22.580	98.473
693007.9	6592807.9	9280	9299	+0.024	3638.448	979343.581	-42.016	29.864	-10.829	-22.981	96.774
693778.8	6592805.3	9280	9379	+0.025	3637.636	979342.769	-42.820	30.639	-11.110	-23.291	99.285
694600.3	6592800.5	9280	9459	+0.026	3637.115	979342.248	-43.334	30.627	-11.106	-23.812	99.246
695382.2	6592803.0	9280	9539	+0.033	3634.705	979339.838	-45.732	32.972	-11.956	-24.716	106.844
696193.9	6592817.3	9280	9619	+0.035	3635.548	979340.681	-44.868	31.149	-11.295	-25.014	100.937
697037.2	6592789.3	9280	9699	+0.037	3635.897	979341.030	-44.528	30.606	-11.098	-25.020	99.178
D103											
683716.6	6580829.3	0	1005	+0.000	3644.476	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3644.476	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.201	3644.476	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3644.275	979348.455	-45.848	35.459	-12.858	-23.246	114.904
675388.0	6578400.3	7840	7539	+0.036	3648.711	979352.690	-43.458	33.457	-12.132	-22.132	108.415
676179.3	6578405.1	7840	7619	+0.033	3650.938	979354.917	-41.218	30.103	-10.915	-22.030	97.547
676977.3	6578397.8	7840	7699	+0.030	3647.578	979351.557	-44.573	35.037	-12.705	-22.241	113.536
677794.9	6578409.1	7840	7779	+0.027	3649.921	979353.900	-42.213	30.973	-11.231	-22.471	100.366
678590.7	6578391.8	7840	7859	+0.024	3650.179	979354.158	-41.957	30.573	-11.086	-22.470	99.071
679386.0	6578396.1	7840	7939	+0.021	3649.092	979353.071	-43.032	31.128	-11.287	-23.191	100.867
675384.1	6579197.6	7920	7539	+0.039	3648.591	979352.570	-43.005	32.637	-11.834	-22.203	105.757
676185.3	6579205.5	7920	7619	+0.042	3646.933	979350.912	-44.648	34.758	-12.603	-22.494	112.630
676990.1	6579394.6	7920	7699	+0.046	3650.260	979354.239	-41.176	29.617	-10.739	-22.298	95.971
677805.0	6579198.7	7920	7779	+0.049	3647.371	979351.350	-44.195	33.562	-12.170	-22.803	108.755
678589.7	6579197.8	7920	7859	+0.051	3646.294	979350.273	-45.264	34.902	-12.656	-23.017	113.099
679394.6	6579214.8	7920	7939	+0.053	3646.626	979350.605	-44.910	33.789	-12.252	-23.373	109.491
680174.8	6579204.6	7920	8019	+0.056	3646.295	979350.274	-45.239	34.045	-12.345	-23.538	110.322
680985.1	6579203.5	7920	8099	+0.058	3645.356	979349.335	-46.169	35.705	-12.947	-23.410	115.701
681786.4	6579201.7	7920	8179	+0.061	3644.627	979348.606	-46.889	36.858	-13.365	-23.396	119.436
675385.9	6580000.7	8000	7539	+0.083	3644.755	979348.734	-46.265	36.762	-13.330	-22.833	119.125
676187.6	6579994.2	8000	7619	+0.081	3645.139	979349.118	-45.876	35.955	-13.038	-22.958	116.511
676986.1	6579996.3	8000	7699	+0.079	3645.415	979349.394	-45.589	35.688	-12.941	-22.841	115.644
677780.2	6579991.0	8000	7779	+0.076	3647.626	979351.605	-43.372	32.593	-11.818	-22.597	105.616
678569.6	6579985.1	8000	7859	+0.073	3645.269	979349.248	-45.724	35.794	-12.979	-22.909	115.988
679383.0	6580011.2	8000	7939	+0.070	3645.287	979349.266	-45.677	35.376	-12.828	-23.129	114.634
680181.9	6579996.0	8000	8019	+0.068	3645.063	979349.042	-45.903	34.941	-12.670	-23.632	113.223
680982.4	6580002.2	8000	8099	+0.066	3644.417	979348.396	-46.534	35.823	-12.990	-23.701	116.082
681786.9	6580004.2	8000	8179	+0.063	3644.580	979348.559	-46.360	36.217	-13.133	-23.275	117.360
675387.7	6580815.0	8080	7539	+0.086	3647.561	979351.540	-42.874	32.249	-11.694	-22.319	104.500
676195.8	6580801.1	8080	7619	+0.088	3646.831	979350.810	-43.604	33.060	-11.988	-22.532	107.130
676995.5	6580793.0	8080	7699	+0.091	3647.473	979351.452	-42.959	32.110	-11.643	-22.492	104.051
677779.5	6580804.9	8080	7779	+0.093	3645.653	979349.632	-44.761	34.702	-12.583	-22.642	112.450
678587.8	6580803.2	8080	7859	+0.096	3646.077	979350.056	-44.328	34.141	-12.380	-22.567	110.633
679383.0	6580807.4	8080	7939	+0.098	3645.753	979349.732	-44.640	34.437	-12.487	-22.690	111.591
680186.5	6580809.0	8080	8019	+0.100	3644.839	979348.818	-45.543	35.210	-12.767	-23.100	114.096
680987.5	6580804.7	8080	8099	+0.103	3643.637	979347.616	-46.738	36.242	-13.141	-23.638	117.439
681784.0	6580799.3	8080	8179	+0.105	3644.968	979348.947	-45.401	34.665	-12.570	-23.306	112.330
683389.7	6580797.0	8080	8339	+0.199	3648.348	979352.327	-42.003	29.742	-10.785	-23.046	96.378
675386.8	6581606.1	8160	7539	+0.135	3647.003	979350.982	-42.864	32.046	-11.620	-22.438	103.844
676181.5	6581613.7	8160	7619	+0.132	3644.762	979348.741	-45.090	34.873	-12.645	-22.862	113.004
676983.3	6581588.8	8160	7699	+0.129	3647.353	979351.332	-42.508	31.345	-11.366	-22.528	101.572
677793.8	6581598.1	8160	7779	+0.126	3645.793	979349.772	-44.051	33.648	-12.201	-22.604	109.033
678583.0	6581589.4	8160	7859	+0.123	3645.140	979349.119	-44.701	34.656	-12.567	-22.611	112.302
679383.8	6581592.7	8160	7939	+0.120	3646.216	979350.195	-43.613	33.445	-12.127	-22.295	108.377
680200.5	6581584.5	8160	8019	+0.117	3645.010	979348.989	-44.815	34.872	-12.645	-22.588	113.000
680988.8	6581592.1	8160	8099	+0.115	3643.957	979347.936	-45.853	35.788	-12.977	-23.042	115.970
681793.9	6581595.4	8160	8179	+0.108	3644.525	979348.504	-45.273	34.564	-12.533	-23.242	112.003

675384.4	6582382.5	8240	7539	+0.138	3648.024	979352.003	-41.286	29.620	-10.740	-22.407	95.981
676177.2	6582402.6	8240	7619	+0.141	3647.247	979351.226	-42.039	30.567	-11.084	-22.556	99.052
676988.5	6582403.7	8240	7699	+0.144	3647.348	979351.327	-41.928	30.410	-11.027	-22.545	98.541
677784.9	6582402.3	8240	7779	+0.147	3646.443	979350.422	-42.824	31.711	-11.499	-22.612	102.759
678595.9	6582400.1	8240	7859	+0.150	3646.160	979350.139	-43.099	32.590	-11.817	-22.326	105.606
679380.6	6582411.2	8240	7939	+0.153	3644.994	979348.973	-44.248	34.482	-12.503	-22.269	111.738
680192.3	6582405.1	8240	8019	+0.156	3645.797	979349.776	-43.439	33.368	-12.099	-22.171	108.127
675383.1	6583197.5	8320	7539	+0.174	3647.322	979351.301	-41.403	29.121	-10.560	-22.841	94.366
676179.3	6583197.6	8320	7619	+0.172	3646.062	979350.041	-42.654	31.162	-11.299	-22.791	100.978
676976.3	6583195.0	8320	7699	+0.170	3647.562	979351.541	-41.146	29.602	-10.734	-22.278	95.922
677788.1	6583208.1	8320	7779	+0.167	3646.059	979350.038	-42.630	31.471	-11.412	-22.570	101.981
678590.8	6583194.0	8320	7859	+0.164	3645.454	979349.433	-43.236	32.280	-11.705	-22.661	104.600
679391.4	6583209.5	8320	7939	+0.162	3647.682	979351.661	-40.987	29.825	-10.815	-21.977	96.645
680181.3	6583202.3	8320	8019	+0.159	3649.075	979353.054	-39.589	28.217	-10.232	-21.604	91.437
D104											
683716.6	6580829.3	0	1005	+0.000	3645.530	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3645.530	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.058	3645.530	979348.455	-45.848	35.459	-12.858	-23.246	114.904
683716.6	6580829.3	0	1005	+0.000	3645.472	979348.455	-45.848	35.459	-12.858	-23.246	114.904
684983.3	6578480.5	7840	8499	+0.051	3652.151	979355.076	-40.897	29.289	-10.620	-22.229	94.909
685794.1	6578396.3	7840	8579	+0.049	3652.224	979355.149	-40.875	29.803	-10.807	-21.878	96.576
684186.1	6579204.4	7920	8419	+0.055	3646.668	979349.593	-45.871	35.448	-12.853	-23.277	114.866
696995.3	6580798.0	8080	9699	+0.023	3644.561	979347.486	-46.669	31.620	-11.465	-26.515	102.462
697794.1	6580799.2	8080	9779	+0.025	3643.981	979346.906	-47.238	32.734	-11.870	-26.373	106.074
698590.2	6580802.9	8080	9859	+0.027	3643.970	979346.895	-47.236	32.934	-11.942	-26.244	106.720
684190.7	6581599.1	8160	8419	+0.005	3645.661	979348.586	-45.159	34.693	-12.580	-23.045	112.421
696996.6	6581605.2	8160	9699	+0.034	3644.743	979347.668	-45.908	29.645	-10.750	-27.012	96.064
697802.8	6581574.2	8160	9779	+0.031	3641.822	979344.747	-48.841	34.056	-12.349	-27.134	110.355
698599.5	6581571.8	8160	9859	+0.029	3644.487	979347.412	-46.167	30.746	-11.148	-26.570	99.629

STUART SHELF PROJECT

SOUTH AUSTRALIA

COMBINED ANNUAL TECHNICAL REPORT

EL 3397 Yeltacowie, EL 3398 Hesso, EL 3399 Charlinga, EL 3400 Bowen Hill and EL 3415 Kangaroo Bluff

For the Period Ending 18 August 2008

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TABLE 4 **EXPENDITURE FOR THE THIRD YEAR OF TENURE FOR EL 3399 ENDING 18/08/2008** 15

TABLE 5 **EXPENDITURE FOR THE THIRD YEAR OF TENURE FOR EL 3400 ENDING 18/08/2008** 15

TABLE 6 **EXPENDITURE FOR THE THIRD YEAR OF TENURE FOR EL 3415 ENDING 15/09/2008** 15

APPENDICES

APPENDIX 1 **Drillhole lithological logs**

DIGITAL DATA FILES

2008_A_Daishsat Gravity_Final_Data

1. SUMMARY

This is a combined report synthesised from activities carried out on the company's Stuart Shelf Southern Project over the 12 months to 18 August 2008.

Activities conducted during the year on this group of exploration licences include:

- In August 2007, a helicopter supported gravity survey was undertaken by Daishsat Geodetic Surveyors at 1km station spacing, infilling the existing PACE 2km survey. Results of the survey were reported partially in the last technical reports for these tenements.
- A PACE 5 drilling subsidy was applied for but was unfortunately not successful.
- Native Title Part 9b negotiations, including the signing of a formal agreement with the Barngarla Group were completed.
- Cultural Heritage Site Clearance Surveys were run with both the Kokatha and Barngarla Native Title claimants in April of this period in preparation for drilling. A total of 11 sites were cleared for drilling across the four Stuart Shelf Southern Project tenements.
- Coughlan Drilling Pty Ltd was contracted to drill ~6000m of diamond drill core for the Sturt Shelf Project, commencing in late June 2008. A drilling program comprising seven diamond drill core holes over three of the southern Stuart Shelf tenements was completed. The drilled holes were targeted to intersect the unconformity between basement volcanics and the Pandurra Formation sandstone,with possible involvement of intrusive Gairdner Dykes, looking for unconformity-style mineralisation. However, no uranium mineralisation or associated alteration was detected.
- A total of 106 core samples for the Stuart Shelf Project have been submitted to AMDEL and are awaiting analysis for multi-element geochemistry along with selected duplicates. Results will be reported in the next period.

2. KEYWORDS

Uranium exploration, hydrothermal fluids, IOCGU deposits, magnetic anomalies, gravity anomalies, exploration model, basement, Mesoproterozoic, Paleoproterozoic, Neoproterozoic, Tapley Hill Formation, Pandurra Formation, Gawler Range Volcanics, Gairdner Dyke Swarm/Gairdner Dolerite, Whyalla Sandstone, Gawler Craton, Cariewerloo Basin, Stuart Shelf, diamond drilling.

3. INTRODUCTION

3.1 TENEMENT STATUS

ELs 3397-3400 were granted on 19 August 2005 initially for a period of one and were renewed annually to 18th August 2008. EL 3415 was granted on 16 September 2006 and was renewed for a period of 1 year to 15 September 2008.

3.2 LAND ACCESS AND NATIVE TITLE

Access from Adelaide and Pt Augusta is via the sealed Stuart Highway, then graded and un-graded station tracks. Four-wheel drive vehicles are able to easily access the area at most times. The land is used for sheep grazing, which is supported by dams, bores, mills, tanks and numerous tracks, grids and fences. The owners of the Mahanewo, Yudnapinna, Kootaberra and Hesso pastoral properties are kept well informed of the company's activities in the area.

There are two overlapping Native Title Claims that encompass areas of the 4 tenements. Native Title Part 9b negotiations, including the signing of a formal agreement with the Barngarla Group, were completed in this period. As well as general agreements, Cultural Heritage Site Clearance Surveys were run with both the Kokatha and Barngarla Native Title claimants in April 2008 in preparation for drilling. A total of 11 sites were cleared for drilling across all Stuart Shelf project except EL 3397 where no work had been planned.

4. GEOLOGY

4.1 REGIONAL SETTING

The oldest rocks in the area form part of the Gawler Craton, an Archaean-Paleoproterozoic crystalline basement that underlies a very large area from the southern Eyre Peninsula coast to the Torrens Hinge Zone, more than 500km to the north east. This basement is represented by the highly deformed and metamorphosed marine shelf sediments of the Paleoproterozoic Hutchison Group and the Lincoln Complex metagranitoids. These units are in the order of 1950Ma to 1685Ma years old. Except for minor outliers, the northern and eastern part of the Craton lies under later Mesoproterozoic and Neoproterozoic sedimentary and felsic volcanic cover that is thick and relatively undeformed. The eastern margin of the Gawler Craton is defined by the Torrens Hinge Zone, a graben like fault system that controlled deposition during the development of the Adelaide Geosyncline (800Ma - 500Ma).

A widely distributed but poorly understood sequence of hematitic siltstone, the Wandearah Siltstone, occurs in the central eastern part of the Gawler Craton. It is only known from drilling and is a weakly metamorphosed succession of hematitic siltstone, dolomite and calcsilicates considered to be the youngest element of the Craton.

Voluminous felsic dominated volcanics, the Gawler Range Volcanics (GRV) formed at around 1600Ma and were accompanied by large anorogenic granite plutons soon after (1585Ma). These are collectively known as the Hiltaba Suite and overly and intrude the older units. The Mesoproterozoic felsic magma subaerially erupted over the Paleoproterozoic basement in a mid-continental tectonic setting (intracratonic rifting of the Gawler Craton). The volcanics outcrop over a large area of the Eyre Peninsula but disappear under deep Mesoproterozoic and Neoproterozoic sediments in the northern and eastern part of the Craton. Limited drilling of the concealed parts of the Volcanics has demonstrated that they can be hydrothermally altered/metasomatised and host sulphide mineralisation. This contrasts with the Volcanics in the wide area, as they are exposed in the central part of the Gawler Craton where they are only rarely altered.

At around 1400Ma a 400km long, northwest trending, intracratonic trough, referred to as the Cariewerloo Basin, developed as a result of the uplift and erosion of the to the south east. It is filled with a monotonous sequence of unmetamorphosed flat lying arenaceous red bed sediments (Pandurra Formation) derived at least in part from the that underlie a substantial part of the basin. There is evidence that a large thickness of Pandurra Formation has been removed by erosion during the Neoproterozoic/Adelaidean. Deep drilling on the Stuart Shelf has demonstrated that the Pandurra Formation is present beneath the Adelaidean as far east as the Torrens Hinge Zone, except for small areas of tectonic uplift, where it was eroded prior to Adelaidean sedimentation.

The Neoproterozoic Stuart Shelf is located on the eastern margin of the Gawler Craton and comprises flat lying shallow water sediments disconformably overlying the Pandurra and ranging in thickness from around 300m to over a kilometre. The western margin of the Shelf is denoted by the disappearance of the sediments through stratigraphic thinning. The Torrens Hinge Zone is interpreted as being the eastern margin of the Stuart Shelf.

The other significant element of the geology of the region is a very large swarm of mafic dykes known as the Gairdner Dyke Swarm. Individual dykes are greater than 50m in thickness, over 30km long, trend north west and are vertical. The dykes anastomose frequently and have a density of up to one per kilometre measured across strike. Unknown in outcrop, the dykes have only been identified by limited drilling, where they have exhibited chilled margins and caused

sandstone metasomatism in the Pandurra Formation. Their emplacement date seems to be post Pandurra and pre-Adelaidean during a period of SW-NE basin extension when they may have intruded faults developed during this period. Their distribution is principally limited to a NW-SE area bounded by the Neoproterozoic and Mesoproterozoic sedimentary basins.

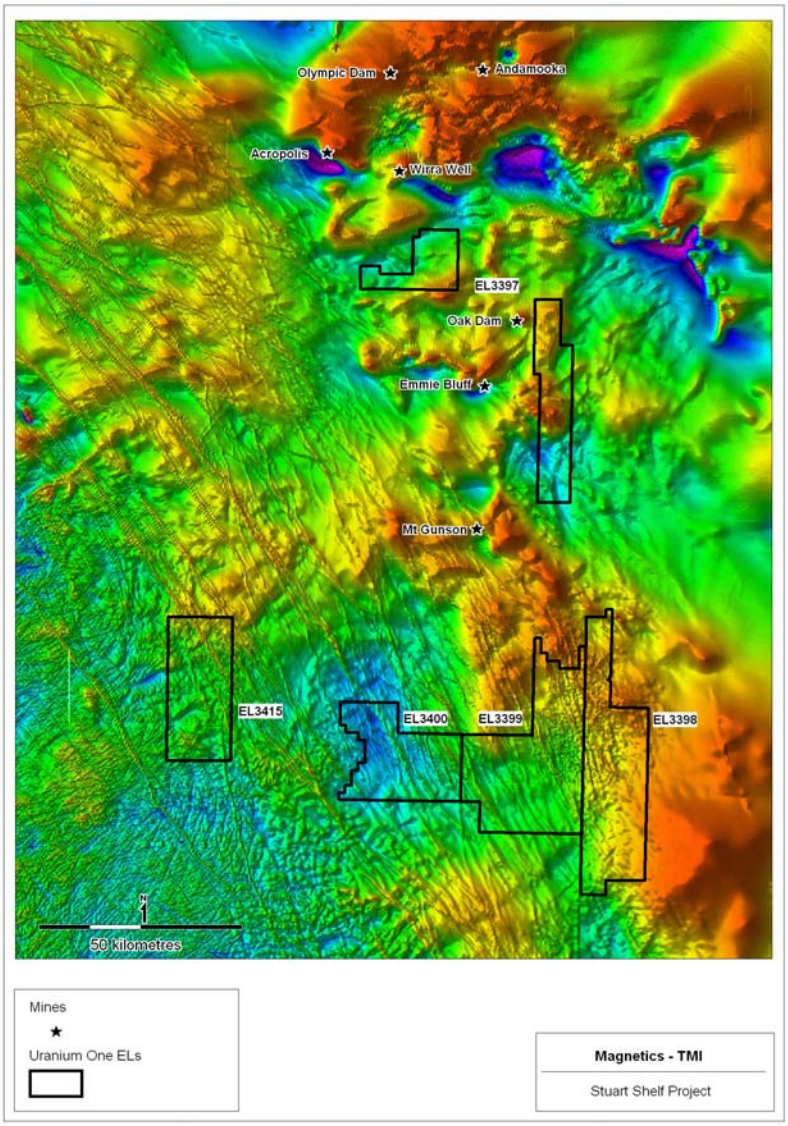

Figure 1: Uranium One Stuart Shelf ELs over a Magnetics – TMI image.

Syn-depositional faulting during the Neoproterozoic created an uplifted area/horst at Pernatty in the central part of the Stuart Shelf. As a consequence the overlying Adelaidean sediments have been removed by erosion exposing the underlying Pandurra Formation.

In the Olympic Dam area similar fault-bounded uplift has occurred. The uplift was post Mesoproterozoic and pre Neoproterozoic and was followed by the erosion of the Pandurra Formation (?Marinoan glaciation) before the emplacement and extrusion of the Olympic Dam deposit. The Adelaidean/Neoproterozoic sediments were then deposited on a Marinoan glaciated surface.

A similar uplift also occurred in the Oak Dam area about 70km SSE of Olympic Dam.

These three uplifted areas; Pernatty Culmination, Olympic Dam and Oak Dam manifest themselves as strong magnetic anomalies because of the reduced sedimentary cover and presence of Hiltaba Suite intrusive and extrusives.

4.2 LOCAL GEOLOGY AND EXPLORATION RATIONALE

Within the Stuart Shelf the pre-eminent target is an Olympic Dam analogue. The Shelf sediments are primarily considered a cover sequence and not a target in themselves. The targets are strongly iron metasomatised Hiltaba Suite intrusive/extrusive complexes that will have co-incident or near co-incident magnetic and gravity anomalies. Because the Carrapateena discovery was associated with relatively low order geophysical anomalism, some companies are pursuing a low order anomaly strategy.

Because depth of cover is a critical economic element to the development of any deposit, some companies are targeting the shallower and potentially uplifted areas to explore. These will hopefully have less than 500 metres of cover. Such areas are in the vicinity of Olympic Dam (i.e. Acropolis, Wirrda Well), Oak Dam and The Pernatty Uplift/Culmination at Mt Gunson. Regions where the cover is deeper than 400 metres will possibly make mining unprofitable because of the additional capital cost.

Depth to basement studies are based on the limited number of holes that have penetrated the cover (and are on open file) and geophysical interpretation. As such they are open to interpretation.

A few companies are starting to consider the uranium potential of the sediments of the Cariewerloo Basin and Stuart Shelf. However, very little drilling (and quite shallow at that) is known to have been directed at such targets. To that extent, the entire region is under-explored.

The Pandurra Formation, which constitutes the Cariewerloo Basin, has many stratigraphic similarities to the Athabasca Basin of Canada, where high grade uranium deposits have been discovered since the 1950s (see below).

The Basin is underlain by Gawler Range Volcanics which overlie the Gawler Craton suite of metamorphics. All three geological entities have been intruded by the Gairdner Dyke Swarm in the central eastern part of the Craton. (Figure 2)

The emplacement of dykes with a northwest trend has been linked to a major northeast–southwest-trending crustal extension event consistent with the onset of rifting, early graben development and basic volcanism during the early tectonic evolution of the Adelaide Geosyncline.

The dyke swarm is poorly understood, visible only from magnetic surveying and does not outcrop. Since the dykes are subvertical they are only rarely intersected. The dykes have a very widespread distribution within the Craton (in excess of 600km x 100km) and are individually of significant dimension (>30m x 10km). This suggests that they are fed by a large mafic source/batholith lying deep beneath the Craton that is quite unrelated spatially, to the acid igneous Hiltaba Suite batholiths.

The dykes have the potential to:

- Tap and remobilize metal sources from within the crystalline basement

- Facilitate the transport of hydrothermal fluids from a deep crustal/mantle mafic source utilizing the same Basin-creating structures

- Provide a heat source to move the fluids and metasomatise the intruded sedimentary packages where pore space and reactive material is encountered. This has been observed in past drilling in respect to the Pandurra Formation .

Dykes similar to those of the Gairdner Dyke Swarm play an integral role in the migration and emplacement of the ore at Valhalla/Westmoreland, NW Queensland.

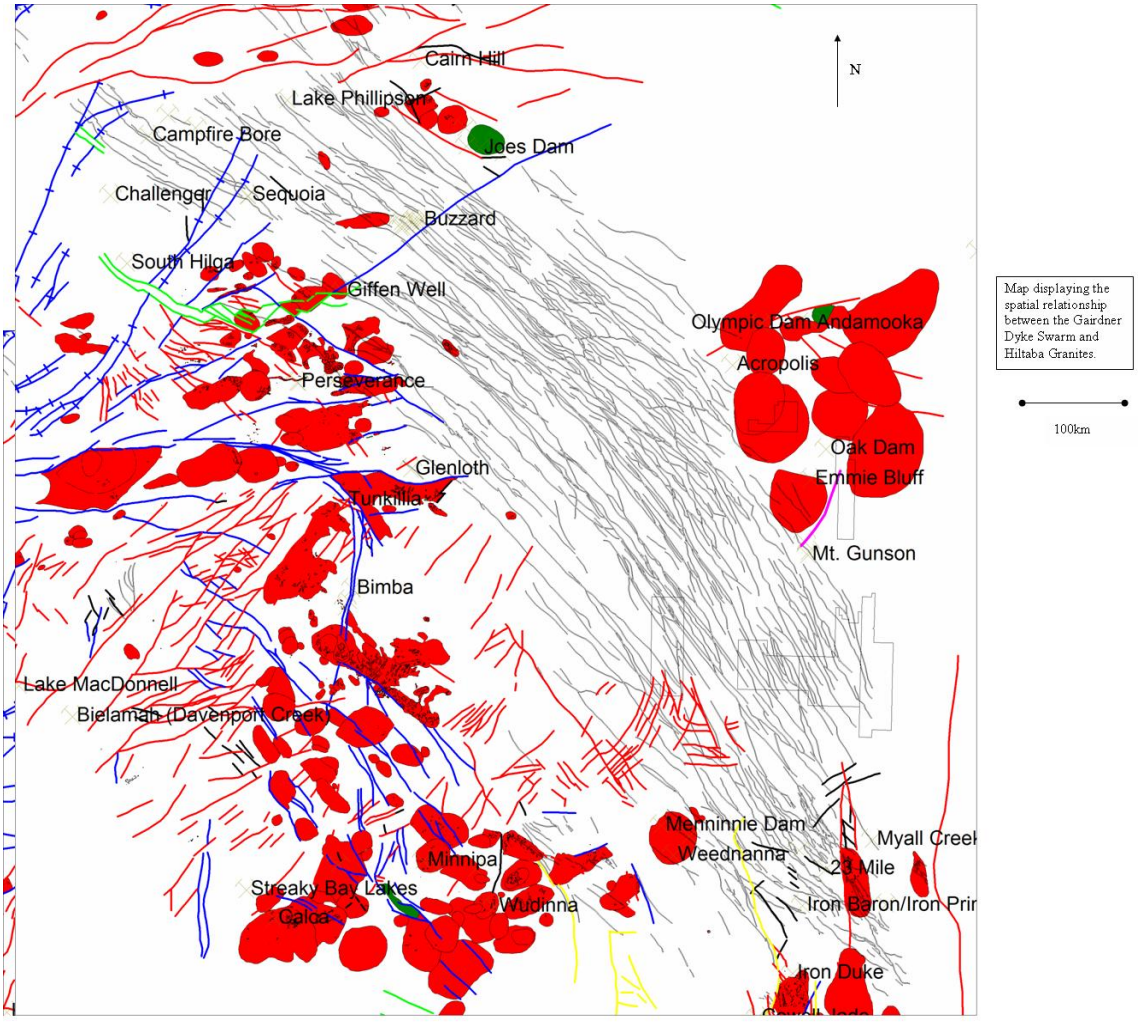

Figure 2: Gairdner Dyke swarm and Hiltaba Granites.

The combination of the following factors makes the Pandurra Formation a prime, yet poorly tested, uranium target.

- Geological, age and tectonic similarities between the Cariewerloo Basin and the Athabasca Basin
- Association of significant amounts of uranium and other heavy metals in pre Pandurra magmatic activity (Hiltaba Suite)

- Presence of uranium and carbonaceous units in the Gawler Craton Basement (Hutchison Group of Eyre Peninsula)
- Reasonable target depths (<500m)
- Potential for oxidising environment of the Pandurra Formation interfacing with a reducing fluids emanating from deep in the basement or mantle
- Both early and late deep structures to plumb as far as the lower crust and upper mantle and all that lies between
- Large number of mafic dyke intersections with the potential to remobilize uranium rich fluids
- The fine grained and reactive Tapley Hill Formation (Adelaidean) that occupies a position above the Pandurra has the capacity to both physically and chemically trap migrating ore fluids at the upper disconformity
- Drilling has intersected some Gairdner dykes that have metasomatised the surrounding sediment, demonstrating their capacity to be involved in ore forming processes

5. PREVIOUS EXPLORATION

In 1968-1970 Noranda carried out percussion drilling to seek shallow Pb-Zn mineralisation SE of Lake Dutton in the Woocalla Dolomite. A large sub-economic resource was delineated.

A number of companies have unsuccessfully explored for diamonds and kimberlites since the 1970s.

In the early 1970s Pacminex carried out rotary drilling in the search for copper in the Lake McFarlane area. Results were negative.

Shallow hammer drilling was completed in the 1970s by Abminco in a search for Mt Gunson style copper mineralisation at the base of the Whyalla and the top of the Pandurra Formation in the Yudnapinna area.

In 1977 Dampier Mining drilled one diamond drill hole to 154m (on EL 322) near a pair of Gawler Range Volcanics (GRV) outliers, to investigate stratiform base metal potential of the Adelaidean sediments. The drilling demonstrated that there was no Adelaidean and that the G.R.V.'s were overlain by Pandurra Formation. No mineralisation was intersected.

In the late 1970s Australian Selection explored within EL 301, where they sought stratiform copper mineralisation in the basal Neoproterozoic Tapley Hill Formation (THF). This comprised percussion drilling of aeromagnetic anomalies. No THF was found west of Lake McFarlane (the whole of EL 3415 is west of the Lake). All holes were radiometrically logged, revealing that the Pandurra Formation was found to be lithologically consistent throughout the area drilled.

In the early 1980s Afmeco explored EL 708 for IOCG style mineralisation by shallow drilling aeromagnetic and gravity anomalies on the eastern side of Lake Gairdner. None was discovered. There was no shallow pre GRV basement and the Pandurra Formation only contained background base metal and uranium values. In this time PNC held EL 1245 in the Kangaroo Bluff area of EL 3415. Ground follow up of airborne radiometric anomalies confirmed them as salt lake related and the results of drilling uraniferous (?) dacite, a magnetic anomaly and a buried fault were negative.

6. EXPLORATION POTENTIAL AND TARGETING

Most of Uranium One's Gawler Craton tenement holding consists of a large block of four tenements that cover the shallower parts of the Cariewerloo Basin - ELs 3398, 3399, 3400 and 3415.

There has previously been no drilling deeper than 300m over these tenements. All holes terminated in Pandurra Formation and there is no known mineralisation within or anywhere near them.

The known geology of the tenements comprises Gawler Range Volcanics overlying a crystalline Paleoproterozoic basement. The Pandurra Formation overlies the eroded Gawler Range Volcanics, followed by the basal units of the Adelaidean (mostly Tapley Hill Formation) in a disconformable relationship in the north eastern part of the block. The Gairdner Dyke Swarm intrudes the Pandurra in all the licence areas.

Only Pandurra Formation lies within Kangaroo Bluff EL3415 (no Adelaidean overlying it).

The other significant element of the geology is the Mesoproterozoic Gairdner Dyke Swarm which, according to the magnetic imagery, intrudes the Pandurra Formation in all the Cariewerloo Basin tenements. The Swarm seems to be composed of two sets of dykes with a difference in strike of about 20-25deg. The sets intersect in an anastamosing complex. The most northerly striking set seems to be emplaced (intruded??) later than the other and in places causes small displacements on the earlier set. This situation may have been the result of a changing tectonic environment during the Basin rifting.

The northern parts of ELs 3398 and 3399 cover:

- a basement high which has the potential to be fault bounded
- the flanks of a prominent gravity Bouger gravity anomaly
- a high density of Gairdner dykes
- The western most licence (EL 3415) is located over the southern margins of the Pandurra Formation where it onlaps the Gawler Range Volcanics
- a network of intersecting mafic dykes
- the margins of a very large Bouger gravity anomaly

7. GEOPHYSICS

In August 2007, a helicopter supported gravity survey was completed by Daishsat Geodetic Surveyors at 1km station spacings, infilling the existing PACE 2km survey. Results of the survey were reported partially in the last technical report for these tenements.

8. DRILLING

A PACE 5 drilling subsidy was applied for but was unfortunately not successful.

Coughlan Drilling Pty Ltd was contracted to drill ~6,000m of diamond drill for the Stuart Shelf Project, commencing in late June 2008. A program comprising seven diamond drill holes over three of the southern Stuart Shelf tenements was completed.

At least two holes were planned on EL 3398 but none was drilled during this program due to either access difficulties or geological information gleaned from the following drilled holes. Note that at the time of reporting, the most accurate GPS coordinates of each collar were not available.

Three diamond drill holes (CHR001-003) were completed on EL 3399 with a combined total depth of 1,582.6 meters. These holes (Figure 3) are located at

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
CHR001	730132	6468028	38	80	540.3
CHR002	724619	6460058	53	80	531.7
CHR003	707248	6466856	38	80	510.6

Three diamond drill holes (KBF001-003) were completed on this tenement with a combined total depth of 963 meters. These holes (Figure 3) are located at approximately:

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
KBF001	636501	6491891	83	60	342.3
KBF002	631423	6485134	353	60	222.3
KBF003	642722	6484623	218	60	398.6

One diamond drill hole (BHL001) was completed on this tenement with a total depth of 633.3 meters. The hole (Figure 3) is located at

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
BHL001	680175	6472102	53	60	633.3

The drill chips and core of all drill-holes were logged and geologically described See Appendix 1). The geological logs will be used to guide lithological characterisation and interpretation of the down hole geophysical data. Down-hole geophysical logging of each drill hole was carried

out utilising a gamma tool (to pick up anomalous radioactivity), a resistivity tool and a dual induction tool (for lithological characterisation).

The holes were targeted to intersect the unconformity between basement volcanics and the Pandurra Formation sandstone with possible involvement of intrusive Gairdner Dykes, looking for unconformity-style mineralisation. However, no uranium mineralisation or associated alteration was detected.

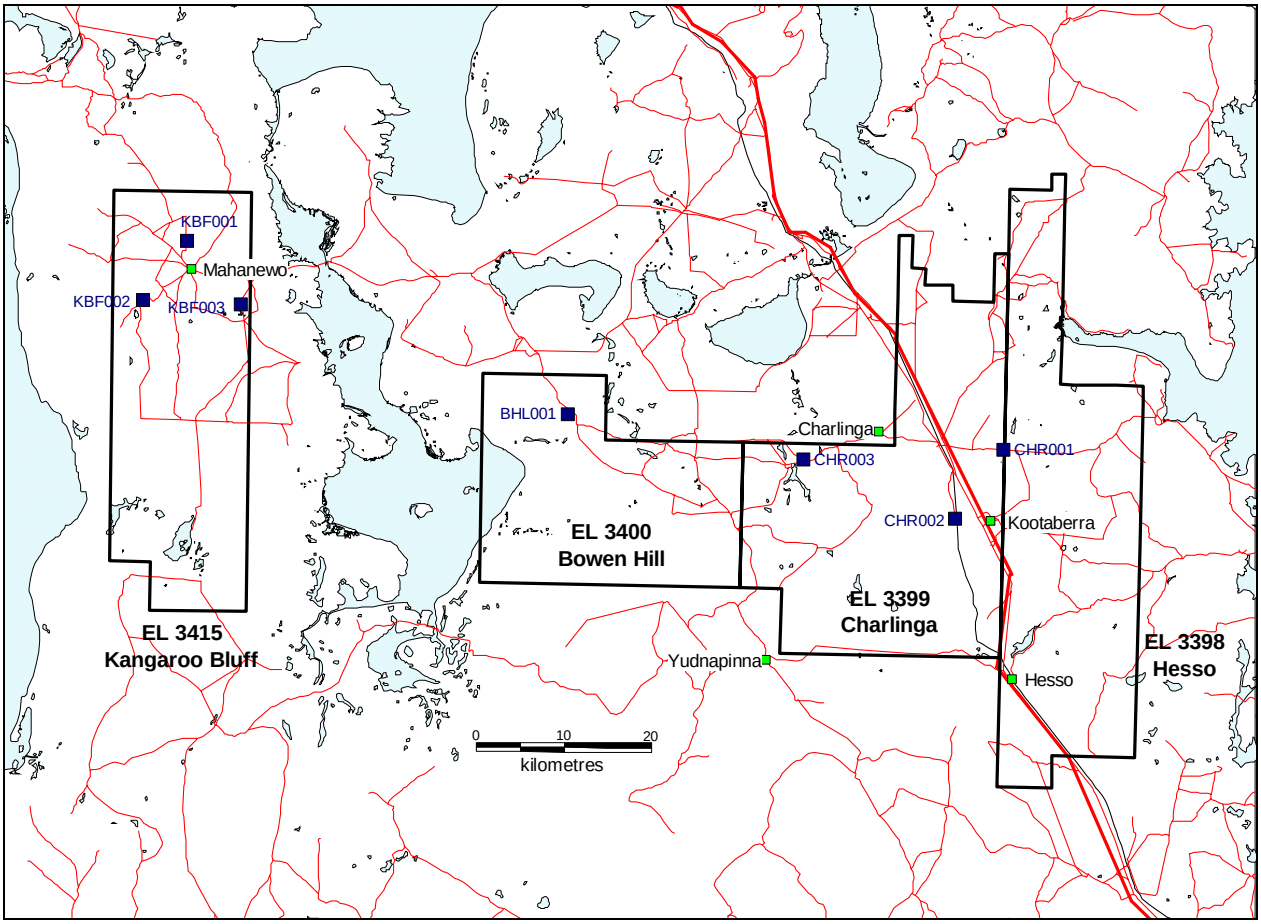

Figure 3: Uranium One Stuart Shelf ELs showing 2008 drilling program collars.

9. GEOCHEMISTRY

A total of 106 core samples from the Stuart Shelf Southern Diamond Drilling Project have been submitted to AMDEL and are awaiting analysis for multi-element geochemistry along with selected duplicates. The results from these tests will be reported in the next reporting period once they have been received and assessed.

10. PROJECT EXPENDITURE

Table 1: Summary expenditures for previous years of tenure for all tenements

EL 3397	Expenditure for first year of tenure ending 18/08/06	$17,000
	Expenditure for second year tenure ending 18/08/07	$5,000
	TOTAL	**$22,000**
EL 3398	Expenditure for first year of tenure ending 18/08/06	$17,000
	Expenditure for second year tenure ending 18/08/07	$5,000
	TOTAL	**$22,000**
EL 3399	Expenditure for first year of tenure ending 18/08/06	$17,500
	Expenditure for second year tenure ending 18/08/07	$5,500
	TOTAL	**$23,000**
EL 3400	Expenditure for first year of tenure ending 18/08/06	$16,000
	Expenditure for second year tenure ending 18/08/07	$5,500
	TOTAL	**$21,500**
EL 3417	Expenditure for first year of tenure ending 15/09/06	$16,500
	Expenditure for second year tenure ending 15/09/07	$5,500
	TOTAL	**$22,000**

Table 2: Expenditure for the third year of tenure for EL 3397 ending 18/08/2008

Drilling	3,790
Geophysics	77,220
Geochemistry and Petrology	nil
Surveying	17,590
Salaries	40,500
Office and Computing	6,000
Travel and Accommodation	4,000
Administration and Management	7,000
TOTAL	**$156,100**

Table 3: Expenditure for the third year of tenure for EL 3398 ending 18/08/2008

Drilling	3,790
Geophysics	77,220
Geochemistry and Petrology	nil
Surveying	17,590
Salaries	40,500
Office and Computing	6,000
Travel and Accommodation	4,000
Administration and Management	7,000
TOTAL	**$156,100**

Table 4: Expenditure for the third year of tenure for EL 3399 ending 18/08/2008

Drilling	417,020
Geophysics	98,120
Geochemistry and Petrology	nil
Surveying	13,190
Salaries	40,500
Office and Computing	6,000
Travel and Accommodation	4,000
Administration and Management	7,000
TOTAL	**$585,830**

Table 5: Expenditure for the third year of tenure for EL 3400 ending 18/08/2008

Drilling	179,790
Geophysics	52,360
Geochemistry and Petrology	nil
Surveying	8,790
Salaries	40,500
Office and Computing	6,000
Travel and Accommodation	4,000
Administration and Management	7,000
TOTAL	**$298,440**

Table 6: Expenditure for the second year of tenure for EL 3415 ending 15/09/2008

Drilling	287,030
Geophysics	67,870
Geochemistry and Petrology	nil
Surveying	17,590
Salaries	40,500
Office and Computing	6,000
Travel and Accommodation	4,000
Administration and Management	7,000
TOTAL	**$429,990**

11. RECOMMENDATIONS

During the next year of tenure Uranium One plans to undertake the following work:

- Review the geophysics over the tenements in conjunction with geological information from the 2008 drilling\
- Coordinate a second round drilling program to map further geological features and test prioritised targets
- Review tenure holdings

12. REFERENCES

Drexel, J.F., Preiss, W.V., 1993 and Parker, A.J., *The Geology of South Australia Volume 1 The Precambrian Bulletin 54.* Department of Mines and Energy South Australia

Parker, A.J., 1987 *Archaean to Middle Proterozoic Mineralization of the Gawler Craton (including the Stuart Shelf region) SA. REPT.BK.NO 87/84.* Department of Mines and Energy South Australia.

APPENDIX 1

Lithological Logs

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL001 | CORE TYPE: Diamond | PAGE NO.: 1

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES						
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				C		Unconsolidated silty sands	Orange/red											
				C-VC		Silicified slightly carb sandstone nodules	Cream/ greyish white											
		interbedded SSst		C-VC		into more poorly consolidated sandstone, poorly sorted, clayey matrix. Grains sub-rounded/rounded		9.5m	47									
10																		
						12-14 m as above, yellowed zone	Yellow											
				F-C		Poorly sorted sands mostly fine-med into coarse layers Soft white clayey matrix	Greyish white	14	50			18-21m dark min bands in fine sands						
20								19	50									
								28.5	55									
30																		
				VF-F		As above, less coarse grains, more silty sands	Grey	34.7	65									
40				Silt-VF		39.9m occ into darker finer beds with thin coarse layers + dark bands	Greyish Brown	43.5	58									

Coarser layers with some lithics (silts etc) massive, uniform, well sorted.

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL001 | CORE TYPE: Diamond | PAGE NO.: 2

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				Slt-VF														
								49	65°									
								57	59°									
		Pebbly		Slt VF		Brown VF silty sandstone above, monotonous, slight bedding with coarser beds						Vein Zone of slight matrix bleaching with patches of dark min						
								66.1	62	–								
								72.2	60	–								
								85.5	45	–								

50 60 70 80

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL 001 | CORE TYPE: Diamond | PAGE NO.: 3

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
90																		
				F-C		92.4m greener, more sands becoming F-C		92.6	50	–								
						(coarse grains incl. some red volc./silts, majority just Qtz)		96.5	59	–								
100								102.5	66	–								
				VF-C		106.5m into grey-green lam silty sands, very poorly sorted on large scale dark 1cm thin & cross-bedded		107.8	55	–		Some zones here, with micro-faulted bedding / lam.						
110						Coarse lithics strewn for 30cm before contact		112.5	53	–								
		Shale (carb!)		Silt		112.7m into Black Silt/Shale (THF) Slightly carb, white lams, white carb zones with some lithic sp→G's	Dark Grey/ Black	114.4	48	–								
116.3m HQ→NQ						As above (less, pale chunky dike bands)												
120						Some minor white bands (7 over 30cm) in grey/black shale Diffuse bands ~ 3–10cm wide		120.2	65°	–								
								124.6	57°	–								

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL 001 | CORE TYPE: Diamond | PAGE NO.: 4

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
130						As above.		130	59°									
								134.7	62°	115 (off by 90°?)								
140								140.7	60°	110								
								145	62°									
						149.7m white/pale carb bands becoming more common. (2-20mm wide every 2-30cm. Wider bands occ. with dark laminations every 2-3mm possibly cyclic banding?		149.8	63°									
150																		
								156	63°	185								
								158.7	64°	190								
160								165	61°			166-169m white lam bedding broken and distributed as lam. clasts.						
								169.6	64°									
170						172m ↓												

CORE LOGGING SHEET

START DATE: 20/6 | HOLE ID: BHL001 | CORE TYPE: Diamond | uraniumone

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | PAGE NO.: 5 | GEOLOGIST: AM/AP

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						from 172m, lam becoming thinner and more frequent (0.5-3mm, every 1-20mm)			174	63°		172.7-172.8 band of thick white carb.						
180									180	64°		180.2-180.8m again white lam broken into fragments depos as clasts in dark matrix						
									183.2	64°								
AP↓						Silt 6cm VF lam carbonaceous siltstone v.dk grey interlaminated with v.dk grey dolomitic laminations			187.7	63°								
190						sulphides - minor // to So.			192	63°	FR	192.2 x cutting fracture ~4mm displacement of laminations some carbonate infill.						
						195.05-197.8 - dolomitic lam become thicker or more frequent (2-8mm every 1-2cm)												
200						pale lam frequent ↓ found to 200.8 (frequency ↓ thickness varies) ↓			201.9	64°								
						204.8-207.2 - no pale lam dark												
210						210.1-210.7 - no pale lam dark			209.3	64°								
						211.2 — pale lam. v.fine - 1.5mm			213	63	150							

↓ = very frequent

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL 001 | CORE TYPE: Diamond | PAGE NO.: 6

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AP

LITHOLOGY | DISCONTINUITIES

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
								216	62	180								
220								221	65	160								
						222.87-222.91 - massive dolomitic/pale grey		224	66	175		Contact 226.05 (66/175)						
						223.25-224 - carb beds non dominant												
						224-225.5 - interbedded carbonaceous & dolomitic dominant beds with increase in sulphides towards the contact.												
	226.05					225.5 - contact pale beds v/c MP carbonate cmnt or coarser grained up to 0.5 mm												
				upto c with occasional MP_LP		Polarly-zoned cs - MP dissolution matrix & sulphides. Flash fg, 1 spar & fractures.												
						low colour with more nodules horizons of dark (carbonaceous/hematitic) cream.		228.6	65	180								
230						subrounded.												
	232.3							232.1	56	195								
	234.2	Sandstone:		MS														
				MS-c with occasional cs + MP			pump. rock	235	47	190								
240	240.3																	
						interbedded MS-c & MS-SP with occasional MP	pump. rock	240.6	60	—								
						246.9-247.25 - MS-c no larger grains		247	58	185								
						- heavy mineral bands in thin more fine beds.												
250						- Obedin in bands												
	251																	
						MS - cs fragment c and occasional SP + MP. rounded grains.		251	60	200								
								254.5	61	200								
	256.1																	

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL 001 | CORE TYPE: Diamond | PAGE NO.: 7

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AP/AM

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				MS–CS		258.7 – occasional VCS + Gr clasts. Mt grd, siltstone – heavy mud bonding, variable												
	260			CS–G		occasional SP, & MP Poorly sorted qtz sands, some dark mottling (Fe) in matrix		258.1	55	190		262.4m LP Layer (1 pebble thick)						
				VC–G		As above with less coarse sands, more VC with SP–MP occasionally Mottled matrix Very few fractures / soft sedms		269.5	59	–								
	270																	
								277.8	62	175								
	280																	
								284	59	–								
	290																	
								290	58	180								
								295.9	58	186								
				G–SP		297m grading into coarser (SP) sand, still with occ (large) & other small c–VC grains												
	300							300.1	50	175								

CORE LOGGING SHEET

uraniumone

START DATE: 20/6 | HOLE ID: BHL001 | CORE TYPE: Diamond | PAGE NO.: 8

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM/AP

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						... Some strong patchy Fe mottling. Very minor silt beds, more Fe reddened, slight chlor.		305.3	62	180								
								309.7	61	195								
310																		
								316	55	185	→	angle on facies change, silty → coarser sands.						
320								322.8	60	210								
								328	55	150								
330																		
								336.2	52	–								
340								341.6	63	290								

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond PAGE NO.: 9

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				G-SP		→ + MP & C-VC sections. As above, v.poorly sorted sands, mottled matrix	Redinan/ Pale cream											
350								351.4	62	—								
								357.4	59	—								
360						Bleach section (no Fe in slightly powdery matrix) 360–361.2m													
						Back into mottled poorly sorted unit above		366.2	55	—								
						Some LP clasts towards 380m						369.2 few grey heavy min bands.						
370								369.2	56	190	—	heavy min bands.						
								372.2	53	180	VEIN	vein or fracture zone @ 373.2 with powdery infill + orange crystalline mass	30mm	White/ orange	?	15°	350°	X
								376.4	60	180		↓ bright orange soft (gypsum?)						
								379.6	61	200								
380								383.4	57	180	FR	@ 374m thin, powdery infill + orange thin.	/	Purplish white + orange	?	30	355	
						Mottles in lines, beginning to form bands @ bedding in sections		387	56	175								
						Some												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond PAGE NO.: 10

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
390				G-S		+ VFSand + silty sections (usually >20cm). Strong mottled, silty sections (high mic/ser. Subangular granules. /Some scattered more minor SP–MP clasts.		392.2	60	270								
								393.3	60	275		393m another set of grey heavy min banding.						
								398.2	62	265	—	silty contact.						
400								402.9	63	265	—	as above						
								406.6	64	270								
											FR	409.6m bleached white clayey infill. Bleach zone surrounds		white		47	070	
410								412.7	66	—	FR	413.5m Soft orange frac. Infill - Cly stalline	24mm	Orange	Crystalline	32	—	
								419.4	52	—								
420								424.5	56	—								
								427.8	55	190								
430																		

top of stick

TL 363

SW

542m top of stick

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL601 CORE TYPE: Diamond PAGE NO.: 11

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				F-M	vc-G occ. cP	433.7–434.5m fine sands (dark red, higher mic content?)	Red/brown	434.4	61	180	—	silt contact.						
						Back to before (slightly less coarse)												
440								443.8	59	210								
								448.4	55	260								
				F-M	vc-G occ. cP	As @ 433m, fine sands (448.9–449.5m)		452.6	60	185								
450						Back to before												
								456.3	58	185								
460								459.5	54	—								
470												470–474m slightly less wavy in C–vc sand.						

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond PAGE NO.: 12

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
480				C-VC		Less granules from here still mottled (iron?) fill occ. silty fine sand sections.						481.6–483m bleached section (no red matrix) with some fractures through-						
490																		
500						506.5 mottles turned into bleach spots 1–40mm												
510						514.3–514.5 darker silty layer.												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond PAGE NO.: 13

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY					DISCONTINUITIES										
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						* fractured zone 515.8 – 516.												
520				VC-G		As above, with more coarse grains as scoured bedding (darker red-brown matrix where mottles permit.												
530								533.9	60	185								
540								540	61	185		541.4 – silty layer for 25cm						
								544	48	–								
								548.8	66	–								
550				Silt		549.5m into silt section, redder, some sand		552	63	–								
				M-C		into sand @ 553.1m, harder quite well sorted		554	59	–								
				Silt/ Sand		back into sandy silts. Bedding along more frequent fractures												

CORE LOGGING SHEET

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2

uraniumone

PAGE NO.: 14

GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
560								562	56									
			C (acc VC)			567.5m sands with some redbrown silt bands						568.9 – 569.1 redbrown silt						
570												574 – 575 silt lenses in sand						
						576.1m fractured, hardened (glassy) silts & sands (poor grainsize det, metasomat)												
580						581.3m into highly fractured zone, both thin bleach fractures													
						584.8m Contact Dyke highly brecciated red/blk fine grained intrusive Carb infill, chlor altered Alteration zones around vein						vein @ fracture						
590						Fine-grained crystalline intrusive. Inc in crystalline grainsize to M-C filamentous with occasional carb/chlor fractures (possibly felds also?) + dark shiny black infill (amphibole?)													
600																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: BHL001 CORE TYPE: Diamond PAGE NO.: 15

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						As above, cryptalline basalt slightly altered chlor/hem plagioclase (felsic)						604.3m 10cm of vesicles filled with white (3-6mm)						
											vein	607.2 carb vein	11mm	White	-	54	-	
610												609.3 carb vein						
	FR zone										FR	½ 1m fractures in 2 zone.						
												617.7 vesicles as @ 60cm						
620											vein	621.6 qtz/hbde vein	8mm			45	-	
												622.3 qtz carb (hbde)	20mm			42	-	
630											FR	631-632 long fracture, some cal fill						
EOH 633.5m																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 1

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

		LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	10																	
	20																	
RM – HQ changeover @ 28.4m																		
	30	Silty Sand		M-C		Yellowish silty M-C grey, sand + occasional bands of VC grained lithics (20%) (qtzite, silts etc). Soft matrix	Yellow/ Grey							Grey/ green				
	40																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 2

FINISH DATE: _____ PROJECT: Shurr Shelf CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
		Silt		Silt		43.6m into grey-green silt, soft & light grey, occ pale carb bands, broken in depos/brecciated silt clasts with silt matrix	Lt Grey											
Broken Section	50					50.6m broken zone, core crumbly & fractured. Some core loss.												
				Silt		57.6m bedding not brecciated any more, becoming laminated, more white beds. Some carb, clast, lots carb bedding.	Dark Grey (mod pale carb)					57.6–60.1m, lots white bedding/carb.						Some disseminated throughout, associated with some veins.
	60											60.1 carb less white laminations.						
	70					Some veinlets of carb/minor pyrite (meandering veins).						69.8–71m fractured section containing discrete fractures infilled with crystalline white carb + fine detrital pyrite.						
						76m carb white laminations becoming frequent 2–10mm wide every 0.10–20mm. Minor fine detrital pyrites.						74.3m another vein, 10mm wide crystalline opaque white carb infill. + minor pyrite						Pyrite in lam.
	80					laminations becoming thinner, more frequent with depth						81.1m large carb vein minor pyrite. Vein zone 40mm.						

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 3

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
90				Shale (silty)		Laminations in shale becoming frequent, grouped, >50% white layered beds in places. Hard grey shale (some zones without white layers too).	Gy	90	80	–								
						white lams grouped in >70% composition.												
100								99.6	79	–	FR	98m, ~ vertical fracture (no infill)						
107.3m HQ→NQ																		
110				carb silts		107m white lams becoming more common (>50% total) then white lams becoming more common than dark shale. Very highly carb/fine grained		110.3	78	–								
						114m near total loss of core (carb)												
				Volc		115.1m contact carb/shale with volcanic unit below. Contact slightly oblique/conchoidal in dark silty highly carb. Volc matrix 0.5–1mm crystals – felds + carb + chlor alt + blebs minor (altered). Volcanic below, carb common vesicles & carb infill + minor alt mins (chlor/haem) Volc weakly mag? Variable vesicle size/texture and matrix grainsize possibly indicative of flow banding.	Reddish brown → Grey					@ contact, in volc, for 50cm minor disseminated pyrites (<1%) in volc matrix.						←
120												118–120m brecciated Volc, red haem matrix, alt chlor section.						
											Vein	125–126m Subvertical Vein Red infill + carb, zoned infill (phases?)						

CORE LOGGING SHEET

uraniumone

START DATE: | HOLE ID: CHR001 | CORE TYPE: Diamond | PAGE NO.: 4

FINISH DATE: | PROJECT: SS | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
130												132-134m more subvertical veins (as @ 125m)						
											Vein	134.1m vein with fibrous elongate crystalline infill.	2mm	clear	tremolite?	75	190	
												136m carb vein intersecting & offsetting a sub horizontal tremolite vein as @ 134m		white	carb	10	275	
140											Vein	141m white carb vein with surrounding red haem zone (abt 20mm)	4mm	White	carb	60	—	
												142-144m some thin wandering carb veins followed by 1½ gen vesicles (3-5mm) infilled with chlor/carb						
150																		
A0		Beda Volcs	clean	Fg	Amygdaloidal	Amygdaloidal, hem. stained Volcs - Amygdales to 1cm, chlorite filled, some vuggy, open - carbonate fill rarer,	Red/Brown											
160	16140																	
		Beda Volcs	clean V.f ew bks			Marked decr. in pale-mid green chlorite filled amygdales. Chlorite now dark green-black, av. size 1-1.5mm. X-cutting carb Vns are v. high α. Chlorite 'grains' decr. in size to base-this subunit. Rock distinctly more f. grained.					Vn	~15880/ red haem. rich vein carb. walls/ brecciation(?) of country rock.	5mm	5YR 3/4	haem	10	300	/
	16880										Vn	16880-	5mm	White	haem / Calc. / haem	08	052	/
	16950-16970											← Intercalated sediment band, showing signs of foreset bedding (?), grain size gradation. Hard, indurated. V.f.g. sandstone originally.						
170		Beda Volcs				From 16880, more amygdales. Carb filled at top → mid green chlorite filled deeper. Open vugs below 171 ~ chlor rims/carb fill.												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHE001 CORE TYPE: Diamond PAGE NO.: 5

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
		Beda				Vesicle rich												
175		Volcs				Vesicle poor, finer grained												
											Vn	17880 - Complex Vn - earthy haem. stained carb core, carb walls, showing multiple phases of filling.	15 mm	White 5YR 4/4		12	270	✓
180											Vn	▷18030 - miniature of above!	3mm	white some		12	270	✓
						Bottom of flow unit												
		Beda Volcs				Top of flow unit, Open Vesicles ± pale green chlorite walls, some also carbonate. Carb filled > chlorite filled. F.gr. around mass haemalteration.												
185		Beda Volcs				18560 - 18600 ~ evidence of brecciation (?) ~ welded Tuff (?) V.f.g to 18670	5YR 5/2				Vn	18893 - Calcite -	20 mm			75		✓
190						Flow sub-unit												
		Beda Volcs				Flow sub-unit characterised by complex, multi-stage veining ~ sub ∥ to core axis Coarser grain size. Chlorite vesicles av 5mm, rarely to 10mm.												
200						Series of shallow flow units ~ exhibiting varying degrees of vesicle development + evidence of rapid chillings in non-vesicle sub-units of < 1m. Most commonly chlorite fill, minor carb. Grain size variable ~ rel to rapidity of cooling. Thicker sub units tend to coarser grain.	Var. from grey-green to darker red-grey											
210																		
	21330																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 6

FINISH DATE: _____ PROJECT: SB CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	LITHOLOGY: α / β depth	LITHOLOGY: α	LITHOLOGY: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
						f.g. chlorite filled vesicles												
	21648 – 21660 ~			Coarser	chlorite filled vesicles													
220						Fine grained, uniform texture, grey green. Chlorite fill uniformly <0.5mm & becoming smaller & depth. This unit very uniform appearance. Few irrior calcite vns at ca 15° Bs vary by ca 90°					Vn	21750 ~ :	2 mm	Red/Green/Red	Fe Carb/Chlor.	14	–	–
	22210 – 22240					distinctive vesicle rich band, chlorite fill, 5mm to (rare) 10 mm												
T18		Beds/Volcs									Vn	22600 ~ multiphase/chlor. margins/carb centre/	5mm	White/Green		7	–	–
						Uniform f.g. volcanics – no vesicles, Haematite/chlorite alteration.	dk grey				Vn	22660 ~ multiphase/Fe stn Carb margin/green-white core	1mm	Red/G-W/Red		10	–	–
230						Coarser grained unit. Minor carbonate inclusions, Chlorite blebs dark green/black												
						Distinctly finer grain than unit above. Becoming more f.g. to base – chilled margin(?) @ 26300. Becomes more Fe rich to base. (26200 – 26300) High degree of haematitic alteration.	Mid-dk grey				Vn	24000 ~ Complex, multiphase Carb walls/haem stained Carb & chlorite core.	5mm	White/Red/Green/White	Fe carb/chlor	13	–	–
240						Strong Development of Carbonate alteration trend												
250						25000 Carbonate veins to 25200 ~ sub // to core axis ~												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 7

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	260	Beda Volcs				Chilled margin @ base of flow. Aphanitic texture.	Dk grey ↓ 5YR 2/2				Vn	~26150 ~ distinctive red Fe stained carbonate ± narrow white carb margins, wandering ~ sub ∥ to coreaxis	4mm	Red	Fe carb			
						Flow banding ~ sub ∥ alignment of amygdales which have carb rims / chlorite cores. Haem alteration evident in whole rock.	5YR 4/4											
						Broken Zone												
CO_3 core Chlor. rim & CO_3 core Fe rim	270					Elongate carbonaceous laths ~ alteration of ? xtals												
						Fe altered, aligned, elongated cracks (?) sub ∥ to preferred plane of fracturing												
						Broken Zone												
						Breccia Zone ~ Mosaic breccia to Transported texture. Carbonate matrix.												
	280																	
		Beda Volcs				Semi-aligned amygdales ⊥ to base of unit.												
						Strongly brecciated zone. Transported to milled tex. Fe rich (non CO_3) aphanitic matrix.												
	290					Large elongated calcareous amygdales Up to 10-15mm x 3-5mm. Show Pref. alignment direction (flow)						10cm breccia zone @ contact						
						Markedly finer grained / fewer amygdales ~ some amygdaloidal clasts. 29450 ~ 29700 Zone of dispersed / semi-aligned amygdales CO_3 fill.												
	300					30040 ~ 30150 BROKEN ZONE												

CORE LOGGING SHEET

uraniumone

START DATE: | HOLE ID: CHR001 | CORE TYPE: Diamond | PAGE NO.: 8

FINISH DATE: | PROJECT: SS | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						← BROKEN ZONE / calcite clev on fractures.												
						Distinctive anastamosing Ferich veinlets /	Grey ± Earthy Veins				Vn Vn	30250 ± Fe Carb fill 30350 J	4 mm 3mm	Earth Red "	Fe Carb "	18 5	80 310	✓ ✓
						Coarser grained ± abundant sub-spherical amygdales + no preferred orientation Carbonate fill ± chlorite occurs in much smaller 'grains', occ. as rims / fill in CO_3 amygdales.				Vn	30970 –	10mm	Earth Red	Fe non $CO_3^=$	30	350	
310		Beda Volcs.				Unit shows extensive brecciation, random alignment of amygdales, contains clasts ± distinctly different alteration to matrix – e.g. clasts ± green chlor filled amygdales where matrix ± $CO_3^=$ filled.												
320																		
		Beda Volcs				Fine grained / much less brecciated sub-unit some Fe filled fractures, – no amygdales												
330						Fine grained / mid-grey / unfractured / non amygdaloidal.												
T73																		
		Beda Volcs				Chilled margin @ base of flow Well developed amygdales, incr in size over ca. 1 metre Chlorite cores / carbonate rims.												
340						Unit is coarser grained in centre of flow → tending to finer grain – chilled margin @ 35150.					Vn – 33880 – Earth haem *VERY SOFT * (clay like) Fill.		40 mm	Earthy Red	?	45	080	✓

Finer

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 9

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	LITHOLOGY: α / β depth	LITHOLOGY: α	LITHOLOGY: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
												Vn 34500 – composition same as Vn @ 33880.	15–20mm	Earth Red	>	30	90	—
350		Beda Volcs				Chilled margin e base of flow: Abundant large amygdales with no preferred orientation. Carbonate fill within first 2m then chlorite fill, minor carbonate rims.												
		Amygdales $CO_3^=$ ↓ incr Chlorite fill				Possibly a series of semi-contemporaneous flows, that cooled as a single unit, hence coarser grain size & no definite chilled margins as shown by flows higher in sequence.												
360		Amygdales $CO_3^=$ ↓ incr chlorite fill, dark green-fresh app.				These units show stronger haem alteration @ top of each.						Vn ~ 36720 ~ carb. walls/earthy Fe^{3+} rich fill.	2mm			25	110	—
		Beda Volcs				Chilled margin ~ (not as f.g. as higher margins) $CO_3^=$ Amygdales – sub ll alignment (poor) – some open vesicles												
370						Unit is coarse grained ~ porphyritic(?) texture Very highly altered ~ carbonate, chlorite Locally adjacent to veins substantial haem alteration. (@ 37350 – excellent example)												
380						Finer grained Chilled margin $CO_3^=$ amygdales ~ chlorite fill lower												
											VN	38620 ~ Complex structure, poss. country rock inclusions	20 mm	Grey Red	Fe^{3+} $CO_3^=$	15	280	—

388 (end 786)

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 10

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
390						Chlorite filled amygdales												
						Progressively finer grained to												
	393.50	Beda				Chilled margin												
		Volcs				Top of flow ~ amygdaloidal text.												
						Strongly brecciated zone.												
						Strong haem alteration. Amygdaloidal clasts in v.f.g. matrix												
						Amyg. fill ~ 70% Calcite, 30% Chlorite.												
400						Series of shallow flows, showing amygdale dev.												
						& poorly chilled margins												
						Porphyritic texture, phenocrysts are dark, irregular												
						shape, chlorite altered, in finer grained grey/g mass.												
410						Grades to much finer grained at lower					Vn	41115	5mm	'white' glassy red brown + white	Carb Fe Silic. Carb	25	-	-
						contact												
		Beda				V.f.g. chilled margin												
420		Volcs				Amygdaloidal texture well Dev.												
						Dom CO_3^{2-} fill, but local chlorite v fresh.												
						Pale green x-talline fill ~ harder ~ actinolite.												
						(lamellar x-tals, hardness 5-6,)												
						Softer Chlorite fill ~ dk. green.												
		Beda				Chilled margin												
430		Volcs				Amygdaloidal Text.												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CR001 CORE TYPE: Diamond PAGE NO.: 11

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	43600					Porphyritic texture ↓ grading to Chilled margin Amygdaloidal texture, frequent actinolite ? infill (See prev. page)												
440																		
	44350					Chilled margin Amygdales - dominantly CO_3^{2-} filled.												
						V. Dark green chlorite filled amyg.												
450																		
	45250					Chilled margin												
	45310					Zone of strong haem. alteration - flow structures - NOT breccia perse.												
	45410																	
T101	45640					Series of shallow units showing gradation from large amygdales to significantly smaller with possible flow alignment.												
	45920					Minor open vesicles												
460																		
											Vn	46495 - Planar, rough	2mm	Earth Red Brown	Haem non CO_3^{2-}	20	125	/
	46560					Chilled margin Amygdaloidal texture, moderate haem. alteration throuout f.g. ground mass.												
	46780					Zone of V. strong haem alteration / ? Flow structs rather than breccia.						V. high density of CO_3^{2-} amygdales						
470																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 12

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	LITHOLOGY: α / β depth	LITHOLOGY: α	LITHOLOGY: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIES: DISCONTINUITY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
480	48130	Beda Volcs	Competent	fg.	Porphyritic	Chilled margin - v.fgr. Very abundant CO_3^{2-} amygdales. V. minor chlorite. Highly Fe altered. @ 48160 - Well developed xtals of TREMOLITE. Structure at top this unit - broken flows not breccia. @ 48550 many amygdales are hard (5-6) ? massive tremolite? - Alteration of pyroxene													
490																		
500	50050	Beda Volc				Chilled margin. Amygdaloidal texture - sparse amyg. CO_3^{2-} comp. Rare chlorite.					Vn	49390 - Complex, CO_3^{2-} walls Fe-rich centre.	15 mm	STR 3/4		23	320	✓
510						Haem. alteration bands resemble flow structures. Highly chloritised below to 51400, where abrupt change to haem alteration in flow-banded & brecciated zone to 51730													

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR001 CORE TYPE: Diamond PAGE NO.: 19

FINISH DATE: _____ PROJECT: SS CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
520						Porphyritic texture Pyroxene alt to chlorite Locally some development of actinolite												
	526.30					Chilled margin - base of flow. Strongly amygdaloidal. Fine grained (chilled) ground mass extensively haem. altered to 526.30.												
530						Porphyritic texture. Base of this unit not seen before EOH Carbonate & haem filled Vns @ ~ α/c @ ca. 30°												
540																		
EOH 540.3m																		
550																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 1

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: HQ3 / NQ2 GEOLOGIST: AO

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	300					MUD												
						← Broken, Haem. Stained Coarse grained Quart Sandstone												
						↓ Broken Section												
10		Wyaaba Sandstone																
	1450	C.g Sand stone				Some weak foreset bedding defined by haem alteration bands.												
20	1900					Coarser grained.												
	2300																	
30																		
40		Broken Section																

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 2

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AO

				LITHOLOGY							DISCONTINUITIES						
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						becoming finer grained. Rock is soft & friable.												
	50																	
			Broken Sections															
			0.15m core loss															
	60					Distinctive coarse grained section ± gradeol bedding @ 30° to core axis. Individual graded units @ ca. 10 mm intervals. Coarse grains at base of each are dark, subrounded up as mm diam.												
						Whyalla Sandstone												
	68.00																	
			broken sections reduced to cons. mud.			Tarkey Hill Formation v.f.g. shale/mudstone very soft, uniform grey colour												
	70																	
			Extensively broken along ~~faces~~ joints showing development of secondary mica.			Broken zone ± blocky core pieces broken												
	80																	
			First appearance of paler sands which are marginally less f.g. Some are v f.g. Sands intercalated ± darker grey shales															

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 3

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: HQ3/NQ2 GEOLOGIST: AO

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	DISCONTINUITIES: α / β depth	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIES: DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
	90																	
	≈9360 ≈9480					2 bands of markedly higher conc of sandy interbeds, which may be porous. Lighter bands >50%												
	100																	
						Overall, rock is easily fractured along bedding planes												
						Lighter bands make up >70% of rock. Dark bands uniformly dk. grey shale, light bands marginally coarser grained. Interbeds are dominantly planar. Rare lenticular features occur as well.												
	110																	
	11330					End HQ3												
	120																	
						← Lighter bands predominate ~ ≈ 95% of total												
	12560					Tapley Hill Formation												
						Beda Volcanics Welded breccia, Fine grained Volcs chlorite filled amygdales (12780 – 12840 Breccia Zone) Strong haem. alteration 12650–b 13850 ↑ Carbonate veins & minor brecciation												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 4

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AO

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	LITHOLOGY: α / β depth	LITHOLOGY: α	LITHOLOGY: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
130						Fine grained, Fe stained volcanics, extensive development of carbonate veins at high α's to core axis. Some minor brecciation associated with veins.												
140						Below 13900 haem alteration decreases markedly, with chloritic alteration predominant. Frequency of chlorite veins also much less. Rock texture is porphyritic with chlorite replacing pyroxene phenocrysts.												
150																		
160																		
	16420					Top of V.f.g section c. minor brecciation & greater degree of haem. alteration.												
	16610	V f g / haem																
						Increasing degree of chloritic alteration. Becoming coarser grained, then v.f.g below 17100 to top of brecciated section @ 17150												
170						Brecciated c. carbonate vns.												

CORE LOGGING SHEET

uraniumone

START DATE: | HOLE ID: CHR002 | CORE TYPE: Diamond | PAGE NO.: 5

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AO

						LITHOLOGY					DISCONTINUITIES						
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	17430					Increasing frequency of round, discrete chlorite filled amygdales. Also elongated amygdales ± hard (5-6) Fe stained light fill (Tremolite?)												
180	17950					Coarser grained rock, ± amygdales filled ± earthy haematite. Some with chlorite rims & haem. fill.												
	18350					Brecciated, veined zone Fe alteration												
	18450					Chlorite alteration - increasing grain size.					Vn	19550 - Complex Carbonate Chlorite Bands	15 mm	White Green		65	130	—
						Breccia					Vn	19570 - Carbonate Vn	3mm	White		20	010	—
190						Breccia												
						Breccia. Haem Alteration.												
200						Beda Volcanics 200.8m contact												
						Pandurra Sandstone. ← Brecciated zone - Sandstone clasts in f.g volc. matrix. Haem alt. = strong.												
						Interbedded c.g. sandstone & conglomerate.												
210						Greyish Red m.g. ± c.g. bands Sandstone to 22600												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 6

FINISH DATE: _____ PROJECT: Stuart Shelf. CORE SIZE: NQ2 GEOLOGIST: AO

				LITHOLOGY							DISCONTINUITIES						
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	220					Monotonous sequence of m.g. to c.g. sandstone c.g. sections sub-rounded to sub-angular Qtz grains.												
						Decrease in Haem alt below 22600												
	230					Weakly defined bedding at high angles to core axis (70-80°) i.e. sub-horizontal at depth.												
	240																	
			Broken Zone															
			f.g. ± haem alteration															
			Broken Zone															
	250																	
			← 10cm f.g. band ± strong haem alt'n															
						Haem alt'n appears to define bedding features ~ these are at ca 70-80° to core axis so essentially sub-horizontal at depth												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 7

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AO

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
260						Fine grain to medium grained sandstone ± minor v.f.g. bands Fe stained. Graded bedding at high α's to core axis. 5-10 fractures per metre.													
270																		
280						Finer grained unit ± more intense Fe stain/alteration.													
290						Light anastamosing veins ± altered margins ± Carbonate fill. Fe stain.													
300						Cross bedding ± coarser grained bands.													

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 8

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AO

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
300						Coarse grained sections alterade ± V.f.g. Fe stained												
						High variability in grain size dominantly coarse												
310						Network of light colored divergent veins _ Not carbonate ? bleaching of Fe staining?												
						Coarse grained, poorly sorted												
					V.f.g	> Fe staining very marked.												
320																		
						Strongly developed light coloured vein network in Fe stained med gr. sandstone												
						Coarse grained, mottled appearance ← "Conglomerate" - coarse grained ± some lithic frags Fe stained throughout.												
330						Finer grain, banded Coarse.												
						Fe stained f.g. section.												
340																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 9

FINISH DATE: _____ PROJECT: Stuart Shelf. CORE SIZE: NQ2 GEOLOGIST: AO

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						Medium to coarse grained sandstone with some coarser-poorly sorted bands of f-2 frags												
	350	//////	– broken zone f.g. M.g. C.g. sands.			"Uniformly" fe stained.												
	360					Alternating coarse grained units & Fe stained f.g. units. extend broadly from 345m to 375												
	370																	
		//////	Broken Zone - medium grained sand.															
	380																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 10

FINISH DATE: _____ PROJECT: Stuart Shelf. CORE SIZE: NQ2 GEOLOGIST: AO

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	LITHOLOGY: α / β depth	LITHOLOGY: α	LITHOLOGY: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
	390					Monotonous sequence of medium grained fe stained S stone.												
	T96 400																	
		BROKEN ZONE																
	410					Brecciated zone, lithic fragments f.g. sandstone in f.g. haem rich matrix. (matrix supported)												
		Broken ~ lithic frags in contact ~ marginally brecciated.																
	420																	
		Matrix supported breccia - lithic frags not in contact.																

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 10 /

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AO

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	430					Increasing grain size, intercalated bands of minor brecciation Increasing degree of Fe alteration.												
						C.g.+ poorly sorted brecciated band												
	440					C.g. ē breccia e base.												
						Strong Fe altn, C.gr.												
						breccia.												
	450																	
						Zone of alternating bands of coarse to very coarse grained beds alternating with med. to f. grained. Fe altn strong. Beds are poorly sorted with high variation in grain size. Lithic fragments to 15cms - 3:1 aspect ratio Mostly sub-rounded.												
	460																	
	470																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 11

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: A.O.

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	480					Alternating bands of fine & coarse to very coarse sediments. Appear to be high energy events that deposit coarse material followed by quiescent periods when finer material deposited ~ Bandwidth averages 15cms													
						In this interval, coarse bands are essentially 'sub-conglomerate' again alternating with much finer bands. Strong Fe alteration. Lithic frags are light coloured & Fe altn'd only on rims													
	490					Less variability in grain size, resembles unit above 480.00													
						Greater degree of Fe altn / Finer grained beds predominate Bandwidth averages <10 cms.													
	500					Greater variability - Coarse grained & fine grained beds alternate. Strong Fe altn													
	510					Marked decrease in grain size variability & decrease in degree of Fe altn													

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR002 CORE TYPE: Diamond PAGE NO.: 12

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: A.Q.

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						} Conglomerate bands / fine grained / Fe altn in cong. fines.												
	520					Poorly sorted sandstone ; some coarser bands but less variability than in conglomerates previously.												
	530					} Greater degree of Fe altn												
	EOH 531.70																	
	540																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR 003 CORE TYPE: Diamond PAGE NO.: 1

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AG.

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES

10

20

30

40

ROTARY MUD - HQ BLADE
2m COMPOSITE SAMPLES - CHIPS.

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond SAMPLED INTERVALS PAGE NO.: 2

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: HQ3 NQ2 GEOLOGIST: AC

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	1464					Mud chips												
						Fine grained, soft, pale brown to off white WHYALLA Sandstone. Essentially featureless. Minor coarser sands												
	50																	
	60																	
																		[T6] 6300
																		Litho Sample 6400
	70																	[T8] 7100
	7260																	
						Broken Zone @ Contact.												Contact Samples
	7340					Tapley Hill Formation ~ broken microfaulted shale - with increasing depth below contact becoming underbeds of												
	7630					Very dark beds with much lighter units. Lighter bands are harder (? more siliceous) & marginally coarser grained. Minor folds possibly slumping before consolidation. Minor microfaulting ≤ ca 10 mm displacement - evident in lighter bands. Displacement 'absorbed' in darker bands & not persistent. Very dark, f.gr. shale. Lighter bands < 5%												
	80																	[T10] 8000
																		[T11] 8400
																		Litho Sample 8600
																		[T12]

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 3

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AQ/AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	PYRITES
						Local clear calcite bands												
90						Dark/light bands 80/20												
						Lighter bands >50% of rock.												
						9600 Lighter bands dominant above contact (100% of rock 1m above) Hard, siliceous(?)											[T15]	9800
100	9920					CONTACT Tapley Hill Formation												
						Sandurra Sandstone						Contact Samples					[T16]	10100
				M-C (occ. VC bands)		Medium to coarse grained, with Fe staining												
T16 →	10040					Calcite deposits in irregular veinlets (large, chunky crystalline calcite)												
						Veinlets less common. Sandstone C with occ beds of VC grains.												
10040 HQ→NQ	110					70cm core loss												
						Some silty layers, some heavy min bands, Quite haem rich red-brown matrix / silts lots haem mottling (as pseudo-layering)												
				C-VC		bedding subhorizontal, some finer & more compact layers, haem/mott matrix												
	120																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 4

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: A.Q

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
130																		
				VC-G (minor SP clasts)		from here, grain size coarser, still slightly poorly sorted.												
140						][fractured zone in centre of broken section.												
150																		
						1530 – 1545 small bed mixed seds, slightly bleached some pebbly conglom clasts, some darker silty sections.												
160						in coarse sections, rock sometimes friable due to soft musc matrix						10 cm MP conglomeratic layer @ 161.7m							
170				C-VC (occ G)		171m less coarse again.												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 5

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: A.Q

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				C-VC		As above, C-VC sands in Fe mic matrix with (very reddened) minor pale beds.												
	180					occasional Fe banding zones running oblique to bedding in ripple & bullseye structures. Deflected around clasts in grainsize occasionally. (deflected ripples)						181.5 m small carbon band (qtz clasts)						
	190					Also occasional compact silty/ VFG sections												
						Zone with regular compact silt section (as described for 191 m →) for 50cm every 50-100cm.						191.5 - 192.8 compact silt section (not finable, VF qtz?)						
	200					] Zone of intense ripple/bullseye Fe oxid (red/cream layers in matrix) as desc @ 180												
	210					] 208-211 as @ 203 m, intense Fe wash												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 6

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	DISCONTINUITIES: α / β depth	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIES: DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
		Padim		C-VC		As before												
220																		
						229m numerous very fine wandering fractures. Some with calc infill Some with crystalline calcite Some bleached zones/powdery musc in AV												
230																		
240						241m less red silts (greyer matrix) slightly bleached/washed. Some red zones still. Still with some fine fades √ Still with strong Fe lam washes. Porosity fine (with dec in fine matrix?) to a slightly vuggy texture												
250						256m fracturing as @ 229m fractures have bleached selvedges (alt musc) infill (soft greenish-yellow)												

elev Gamma? ↓

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 7

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
260						↑ less fracturing from here.						bedding from here often warped/slumped in places.						
						262 – 263.4 fractured silty section, Fe + waxy chlor/ser alt @ fractures & spots.												
				a-vc (occ F-M zone)		Smaller silty zones as @ 262 continue on ↓												
270						From here, inc. in darker heavy min laminations (in core) (So). (frequent to ~290m)		270.4	66	185		(sand/silt boundary).						
280						~ FR zone												
						288.5 – 293m fractured section of core. thin sec/Fe filled wandering fractures												
elev gamma ↑ 290												294.3 – 295.3 brecciated & fractured zone.						
Gamma High 291–292.				vc–G		Conglomerate inc. porous, muggy matrix evident												
300						→ 299m (0.3m core loss)												

CORE LOGGING SHEET

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START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 8

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
310.4 clay gamma	310					↓ less fracturing (more solid sands) from here.						311m 20cm of silty (waxy (Fe + Sil) zone/layer. fractured & mic						
	320											319.8m SP layer 5cm pisoc with patchy reddened silts in matrix.						
				less well defined grains		321.8 rock becoming silicified paler (highly compact/dense qtz). Silt sections hardened. Sand sections pale (bleached?)						323.6 - 324m silt (redbrown)						
332 clay gamma	330					333.2 highly bleached section (white sands, occ hem min bands).		335	53	—		332.4 - 333.2 VF - silt section.						
	340			VC-G (occ SP)		Back into reddened (Fe rich) sands. less hardened. More Fe veins again.												

CORE LOGGING SHEET

uraniumone

START DATE: | HOLE ID: CHR003 | CORE TYPE: Diamond | PAGE NO.: 9

FINISH DATE: | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

		LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	350																	
						353.6m Fe weaker in sections. Some patches of bleached & slightly silicified grains. Minor fracture zone						353.6-356.1 run of more broken sandstone/clay.						
	360																	
361 elev gamma																		
366.5 elev. gamma						366-369m some VF→Silt layers (compact), ~20-50cm wide.												
368 elev gamma																		
	370																	
	380																	

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 10

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: _____

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						As above - still occ silic/bleach zones.												
						389 - zones of strong clay Fe weakness as @ 203m. (lateritic alt)												
						392-393 as above.												
390																		
						401.3 - 405.3 very broken core.												
						405.3 - 410 m jointed section, joints every 5-10cm.												
						Also reddish section (more Fe in matrix)												
410																		
								419.5 65 220										
420																		
						424-427.5 very broken core, some subvertical fractures involved (thin recrystallising fractures)												
						More bleached (less Fe rich) slightly qtz rich												
430																		

CORE LOGGING SHEET

uraniumone

START DATE: | HOLE ID: CHR003 | CORE TYPE: Diamond | PAGE NO.: 11

FINISH DATE: | PROJECT: Stuart Sheff | CORE SIZE: NQ2 | GEOLOGIST:

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
				VC-G		Back into slightly redder core (less bleached) + silts (very red) – (3–10cm beds) silts redbrown + pale green soapy ser. Occasional weathering fractures in poorly sorted sands. Core more consolidated/less jointing												
440																		
445.7 Mark elev gamma																		
449–450 elev gamma																		
450						▼												
				VC-G – fine layers		More highly mottled/bleached again from here. Poorly sorted, lots silt beds & fine layers interbedded with coarser majority. Fe patchy, lots reduced zone around fractures and silt sections. Sands indurated in sections. Minor fractures, little infill, mostly assoc bleach halos.						Silt @ 463.7–463.95 green sericite (majority) instead of reddened						
460																		
462 elev gamma																		
464.1 elev gamma																		
						▼												
470																		

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: CHR003 CORE TYPE: Diamond PAGE NO.: 12

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: _____

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
							White / grey/pink											
480																		
484.9 more elev gamma																		
490						492-499 more fractured zone, slightly more Fe still some silicified zones in whiter zones.													
495 elev? (EOH)																		
500				VCG + minor Fines.		499 - EOH redder matrix, more Fe in silts.	Red											
510.6m EOH 510																		

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 | HOLE ID: KBF 001 | CORE TYPE: Diamond | PAGE NO.: 1

FINISH DATE: 7-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: KK

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
Weathered Sst?	17.9m	SAN	MBR MWE	vf-g gra	Coarsely Bedded	fine - cg Sandstone w broad interbeds of fg - cg Sandstone + minor Siltstone & heavy mineral interbeds 5-10 cm.	lt grey											
	36.7m	Sand Silt	MWE	vfg-mg	Coarsely bedded	med grey - lt grey Sandstone w minor heavy min + interbeds of shale (med grey)												
Pandurra Sst	40.7m	grtz Sand		fg-mg	mod-good sorting	grtz sandstone interbedded w variable amounts of purple to red to laminated mic Siltst. sub angular grtz	red-brown to purp					Sandstone ~~Mottled~~ mottled white/green on fine PR & silt lams. Bleach haloes around PR (Fe poor green zones especially prominent in silt sections)		tan → lt green				
	56.0m	HQ-NB as above																
	60																	

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 | HOLE ID: KBF 001 | CORE TYPE: Diamond | PAGE NO.: 2

FINISH DATE: 7-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: KATH / ANNA

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
60				FG-MG	Bed	as above interval w bedding grading upwards, sometimes abruptly → silt or shale. Fining cycles of 1-4m * Increase in mic		61m	52°			Sandstone matrix - bleached/white (Hem + Ser.)						
70								71m	47°									
75m →				occ silt.		1am * Increase in siltstone bedding + more fissile + 1am inter iclasts of * occassional sandstone lenses in sandstone.						→ w bleached spots + occasional bands		grey green				
80								81m	58°		FR	@ 79m veining with sericite infill.						
						82-88m FG sands, well sorted	red-grey											
90				occ silt		Siltier sections (with ripples texture in some areas) As above, less well sorted (slightly coarser) some silt lenses in coarser sections		88m	50°									
								95m	53°									
				silts	1am	94-97m redder silts						→ bleached zones in Fg matrix often associ with fine fractures. Some zones with softer clayey fractures		green				
				M-C	Bed	Sands again, grading down into coarser sand												
100				C-VC				102m	40°			@ 102-9m 40cm red-green silt						

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 | HOLE ID: KBF 001 | CORE TYPE: Diamond | PAGE NO.: 3.

FINISH DATE: 7-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
NQ				C-VC	bed	Sands with occasional silt sections, occ. coarser beds, some x-bedding, some friable broken zones		106	52°			@ 104.1m 90cm silts with occasional soft sections + bleach fractures.						
HQ core												@ 105m Bleach fracture						
NQ	110							109m	45		FR	@ 109m larger fracture, bleach zone.	3mm	Pale tan	Ser infill	150		
								111m	50°									
116-116.6m highly fractured																		
	120							120m	50°			118.9-119.3m Silt section (reddish) + soft fractured zone.						
						Sands as before, plus lots of wide (>20cm) bleach bands	bleach tan.					120.2-120.5m bleach zone in sand.		tan				
												120.8-121.5m red silt + grey zones.						
				VF-Silt		Silty sands + musc layers, friable fracture zone), bleaching + ser		129m	45°									
	130																	
		Sand		C-VC		Sandstone with steeper bedding + frequent fracturing and minor bleaching		132m	25°									
						134-136.8m wandering fracturing with infill of hard Tqtz? mix in rounded structures. + pyrite		136	30°									+ pyrite in fracture infill.
				M		finer sands, more well sorted.		139	28°									
	140			C-VC		back to poorly sorted sands + minor silts. Some Jointed zones + minor fracturing (no infill)					bed	141.7m 4cm red silt band.						
								146	35°			145.5-145.6 minor vuggy section with qtz crystalline infill.		Pale	Qtz			

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 HOLE ID: KBF 001 CORE TYPE: Diamond PAGE NO.: 4

FINISH DATE: 7-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	DISCONTINUITIES: α / β depth	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
								148	32°									
150				Sandy silts (S-F)		148.8m Sand ends into reddened sandy silts with minor heavy mineral layers in silts.		149	45°									
				C-VC		+ some sandy layers (to 30cm) + bleached zones (green silts, tan sands)		153	42°									
				S-F		153.2m back into C-VC purplish sands, poorly sorted scoured bedding.	Minor bleach fractures											
160						156.2m interbedded silts & sands. Minor bleaching (green + cream) Minor fracturing	red-brown	162	30	180	Bands	161.5-167 heavy min. banding to 10mm wide						
						Sands purplish with some heavy min. lam (patchy) occasional fissile zones (lots bleached green in these)		167.7	58									
170				C-VC		169.9m back into C-VC grey-purplish sands & minor red silts plus flakes of silt clasts in coarser sand sections (rings where silt leached)						→ As before, bleach zones/strings/fractures strong.						
						175.2m		174.2m qtz vein, ~3mm wide										
				Silt/C		interbedded silts & sands (majority silts). Thin lam sands high in mic. silts. As before, occ bleach/sericite zones + minor fractures.	red/br (more than above)	177.7	53	→		→ parallel bleaching → 150° bleach fracture intersecting						
												FR 178.6m 30° clay infill.						
180						187-190m patchy mottled bleach zones.						& 185.2m 15cm brecciated silts						
190																		

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 | HOLE ID: KBF 001 | CORE TYPE: Diamond | PAGE NO.: 5

FINISH DATE: 7-6-80 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	DISCONTINUITIES: α / β depth	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
190								190.9	58°									
								192.8	57°			— bleached bedding with 15° associated sericitic fracture set						
				VC		197m transition zone, into sands with inc. bleaching. VC sands plus very minor fine sand→silt layers. Speckled mottle effect of bleaching. Occ highly mottled, fissile sections (e.g. 201m, muggy) — some sulphides in muggy sections. Sub-rounded grains.												
200																		
210						211.2m – 212.6 brecciated section weathered/more oxidised with soft mic. matrix. back to above.												
						215.6m												
				VC-G		Coarsening to Granules. Sst more coarse with less mic matrix												
				G		LOSS OF FR / SERICITE ↓												
220				G (occ SP)		222m coarser sands. still bleach of matrix → cream Granules Qtz, Qtzite, some silts.												
						226.4 – 227.8m Zone of bleached matrix (Fe-poor) with SP grains.												
230												231.2 – 231.8 SP + MP (occ)						
				G-SP		232m G-SP sands with white weathered feldspathic matrix cement. Some minor silts + VF→F red sections.												

CORE LOGGING SHEET

uraniumone

START DATE: 1-6-08 | HOLE ID: KBF 001 | CORE TYPE: Diamond | PAGE NO.: 6

FINISH DATE: 7-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	PYRITES
												235-237.3m bleached matrix (white core)						
				G-SP		237.3 onwards, as before mottled core, occ. silts/lam, Same heavy min banding, mod-poorly sorted subround-subangular Qtz + silts.												
240																		
250						252.5 some sericite layers + matrix bleaching (ser/mic + min bands)													
						259.5m soft matrix clayey section for 10cm.												
260						261.6 VFG red sand band 10cm.												
270				G-SP (+MP)		271m few more MP's in some layers. Still some heavy min. lam + bleaching												

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: KBF001 CORE TYPE: Diamond PAGE NO.: 7

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

LITHOLOGY | DISCONTINUITIES

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	280	Conglom		SP-LP		278.9m SP → LP (mostly MP) clasts of Qtz, silts, some volc? (reside textures) Heavy min 1cm to 279.6m. Then 279.6 onwards, bands of (~50cm better sorted Gr sands interbedded with coarser SP-LP sands.						276-276.4 SP-MP, greener silt clasts + bleaching						
	290					Back into nodular matrix.						289-289.9 bleach zone with MP layer (single) @ 289.5m						
				G-SP		291.7m Granules → SP as well occasional clasts of L → VLP of Qtz, Qtzite, silicified (chertly) clasts, vole texture (light Fe) ~20% silts/red seds/volc. occ SC @ 298.4m for 60cm, lots clasts with vole texture. (altered phenocrysts can be seen).						(Some V → VLP @ 291.7, 292.15, 292.5, 292.65, 292.8, 293 to 293.5, 293.8, 294.4, 294.6, 295.5, 295.7, 296.9) 296.6 - 295.8m MP-LP (G-SP background)						
				Plus MP-VLP layers		299.55-301.5m G-SP dithrenite (lots lithic clasts)												
	300	Pandurra sst				301.25m contact Sand/Volc. @ contact, bleach zone 301.2-301.4m In volcanic bleach zone, altered phenocrysts (ser/Fe-mgn-ised) + possible qtz grains (volcanic tuff?) Phenocrysts/volcanic texture 1-2mm. Some patchy zones of more ser. altered phenocrysts												
	310	Volc				303-310 volc as above, slightly less weathered/alt. Phenocrysts 1-5mm. Some lge angular/square. Some thin Fe fractures. 310, volc, occ fractures, some Fe infill some thicker carb infill.						304-306m bleaching/chlor alt Some phenocrysts with alt zones. 307.5-308m patchy tan volc + chlor alt specks + large white phenocrysts (to 8mm)						

Phenocrysts 2-5mm tan-pink felds + dark min (chlor alt?) Possibly Pyroxene (alt) (twinning?)

CORE LOGGING SHEET

uraniumone

START DATE: _____ HOLE ID: KBF001 CORE TYPE: Diamond PAGE NO.: 8

FINISH DATE: _____ PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
320																		
						328.6 – 330 m fractured zone (highly broken volc) clots green chlor infill. Some carbonates. Fissile/crumbly in sections.												
330						330 – EOH less alt volc. Phenocrysts better defined/angular. Small black phenocrysts still present. Matrix VFG orange-pink (redder in some sections, greenish-yellow in others). FR as before, more thicker (1–5mm) carb/Qtz/Feld's infill. Minor chlor.												
340																		
342.03m EOH																		

CORE LOGGING SHEET

uraniumone

START DATE: 9-6-08 HOLE ID: KBF002 CORE TYPE: Diamond PAGE NO.: 1

FINISH DATE: 12-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
10																		
16.4m RM→HQ DIA changeover		SST		F-M	bed	Pandurra SST F-M sands with occasional silts (red-green) Some bleaching/alt to pale/green in Fe matrix in patches and around fractures	red-brown	17.5	60°			18.9 - 21.1m Silt section bleached fracture zones.		red grn				
20						25.1→ 25.8 Sandstone + silt clasts → 29.7m Silty sandstone		21	60°			23.2 - 25.1m Silt + bleach coating.						
								24.5	64°									
30				Silt		Sandy siltstone (beds of fine sands + silt)		30	63°									
				F-M		33.05m Sandstone + silt clasts												
								35.5	64°		Bed	35.65 - 36.1m Silt band						
											FR	36.45 - 38.9 - long fracture	thin					
				Silt-F		37.4m Silty section (fe)												
40				Sand (F-M) Silt		38.8m Spotted SST + crossbedding FR + some bleaching 40.5m		40	53°		Bed	15cm red silt band to 40m						

CORE LOGGING SHEET

uraniumone

START DATE: 9-6-08 | HOLE ID: KBF002 | CORE TYPE: Diamond | PAGE NO.: 2

FINISH DATE: 12-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
		Silt		Silt	1cm	Silt section red/green alt												
						41.85m												
		Sand		F-M		Sstone + minor silty + spotted bleaching.	Grey red	46	58°		FR	Oblique to bedding, bleached clayey infill				45		
						47m												
		Sand		F-M		Friable darker fractured zone	red-brown - black											
						48m												
50		Sand		F-M-C		Sandstone, some x bedding, silt interclast, silt beds.												
								53	68°									
						52.6m												
		Silt		Silt → F		Silt, grading into sands												
						54.2												
		Sand		M-C +Silts		Poorly sorted sand, occasional minor silt beds, silt clasts, some large bleach blobs,												
60								60	66°			60.7 - 60.9 friable sand (very crumbly matrix). Subrounded.						
								69	56									
70																		
						Bedding here, crossbedded in heavy mm + fe + bleaching.		77m	60/55									
80		Sand		M-C		78.9m Sands (no silts)					FR's	assoc. bleaching in some fractures. (81.6m, 80.7m)				80°		
																80		
						82.3m As before, interbedded silts & sands.												
		Sand		M-C +Silts														

CORE LOGGING SHEET

uraniumone

START DATE: 9-6-08 HOLE ID: KBF002 CORE TYPE: Diamond PAGE NO.: 3

FINISH DATE: 13-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	PYRITES
	90					As above												
				VF Silt		91.5m into siltier sands minor coarser (F) sand beds lots dark heavy min bands	dark red-black	96.25m	60									
											FR	97.9m fractures with bleaching				22°		
	100			S-F		99.3m loss of heavy minerals into F sand + silt interbeds! lots small bleach spots. Chlor alt. Variable alt		103.85	57°									
								108	64									
	110							1106	60									
											FR	114.5-116.2m fracture in bleached matrix along core				0°		
				S-VF		116.6m into more silty bgm. (more red) with some bands as @ 91m												
	120																	
				VC-G		123.8m into coarse sands. scoured bedding, strongly mottled bleaching in matrix ↳ some silty bands <10cm (red/green)		127	30		Bed FR	Silt bed @ 126.9-127.05m		Red brown	Silt	110	FR	

CORE LOGGING SHEET

uraniumone

START DATE: 9-6-08 HOLE ID: KBF002 CORE TYPE: Diamond PAGE NO.: 4

FINISH DATE: 12-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
	130			VC-G														
				G-SP		Slightly coarser grains, as above. More lithics (silts, qtzite etc) less silty layers.												
	140																	
	150																	
				G-SP		Occasional MP, poorly sorted sands (+ minor lithics).												
	160																	
				G-SP		Loss of MP, grainsize reduction. As above otherwise.												
	170																	

CORE LOGGING SHEET

uraniumone

START DATE: 9-6-08 HOLE ID: KBF 002 CORE TYPE: Diamond PAGE NO.: 5

FINISH DATE: 12-6-08 PROJECT: Stuart shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	DISCONTINUITIES: α	DISCONTINUITIES: β	DISCONTINUITIES: PYRITES
180				G-SP		As before												
190				SP+MP		As above, plus MP grains occasionally.												
				G-SP		As before.												
				G-SP +silt		196.6m increase in silty layers in matrix. Red-brown + grey-green. Silt inc. with depth ↓ reddish pink						greygreen silty sands for 20cm before contact						
200		Volc		Volc		Contact Sand/Volcanics @ 199.3m contact red/blended green & slightly clayey						203.4 - start of finer crystalline						
						Intb felsic, volcanic, redbrown, phenocrysts 1-3mm, black brown, sometimes chloritized, in a VFG matrix rock carbonate in flecks within some fine altered phenocrysts. ~~50~~ larger clasts often volc (1-30cm)						206m Joint Section.						
210						@ 204.7m phenocrysts in rock below less than 1%, better structure, slight carb alt in patches in phenocryst crystal structure.												

CORE LOGGING SHEET

START DATE: 9-6-08 HOLE ID: KBF002 CORE TYPE: Diamond

FINISH DATE: 12-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2

PAGE NO.: 6 GEOLOGIST: AM

				LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
	220					As above, little patchy alt of phenocrysts, same sizes of grains. Some thin calc veining						216·2m 25mm dia clast (dark, fiver material, slight alt halo) 218m as before, dark clast. 35mm dia							
EOH 222·79m																			

CORE LOGGING SHEET

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START DATE: 13-6-08 | HOLE ID: KBF 003 | CORE TYPE: Diamond | PAGE NO.: 1

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
10																		
20																		
30																		
RM - Ha @ 32.3m				C-vc		Very poorly sorted sands, muddied matrix Fe, some coarser grains (Qz) some silty bands		34	86°			33-35m some occ large clasts (10mm across)						
						minimal fine, silter zones		41m	48°									
40																		

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 | HOLE ID: KBF003 | CORE TYPE: Diamond | PAGE NO.: 2

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	DISCONTINUITIES: SIZE	DISCONTINUITIES: COLOUR	DISCONTINUITIES: COMPOSITION	α	β	PYRITES
								48	55									
50								50	48°									
								55.5	57°		FR	Series of fractures, with bleached zones around them for 5mm.				43		
						56-58m Bleach Zone. Some heavy min left. Matrix slightly crumbly												
						As before, mottled sands												
60				C-VC		@ 60m, mottles decrease now just large bands bleaching around fractures (50-100mm zones) Fe inc (more dark red-grey) some heavy min bands						→ FR ~ following bedding						
								63	64°									
						Very minor (<10mm) silty sand bands												
70								73	53°		FR	crosscutting bedding, large bleach zone > 20mm (50cm long) 73-75m large bleached zones (>15cm)				15		
80								80	55°									
								85	62°									

CORE LOGGING SHEET

START DATE: 13-6-08 | HOLE ID: KEF003 | CORE TYPE: Diamond | uraniumone

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | PAGE NO.: 3 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	DISCONTINUITIES: α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
90				VC → Gran		Dark red/brown silt / occ sitten sections (VF-F). laminations prominent in sections.		91	47°									
						More large bleach sections (cream).												
100						As above.		99	62		FR	Angled fracture 2cm bleach zone				22		
				C-VC		Less Granules than above slightly compact pale grey/brown sands	Grey-Brown											
110																		
											FR	114-114.6 vuggy fracture, high bleaching.						
											FR	118-119m shearing fracture, bleached sand.						~0° (along core).
120				Silt / F-Silt		Red silty section, lots fractured, some green silt along edges of fractures. Then @ 120.9m into silty sands with occasional 5cm coarse sand sections. Some red silt beds + clasts.	Red Brown					→ darker matrix with obvious bleaching @ fractures.						

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 | HOLE ID: KBF 003 | CORE TYPE: Diamond | PAGE NO.: 4

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	LITHOLOGY: ROCK Type	LITHOLOGY: CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGY: LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
130			Rubbly F-C			As before, wasser sands, more silicified/metasomat rock, darker matrix	Grey brown					Fractures have black-dk green infill (some clear silica crystalline minerals)						
											FR	138.1m Carb/Haem/Qtz vein 3mm				28°		
		basalt				?137.5m Silicified/metasomat/sst becomes a VFG crystalline intrusive (basalt dyke?). Unsure of contact due to fractured zone. Rock slightly carb MAG.	Green Grey (dark)			No So								
140												- 141.6-141.8m finer section (darker grey)						
											FR	141.7m 4mm vein with zoned carb, qtz, pink				35°		
											FR	142m to 142.6m carb infill larg fracture.		white		0	130	
											VEIN	143.4m Qtz, Haem, Carb.	10mm	Wht/Red		132	40	
											FR	143.3m fractures with black/green sooty infill		Blk/Grn		155	35	
150											VEINset	Qtz, Haem, carb infill	2mm	White		143	65	
						@ 142m into C-VC grained/ crystalline basalt. Feldspars, (grey) Magnetite.					Vein	148.6m layered Qtz/Carb, Haem + dark sooty lam. & edges.	10mm	White Pink/Black.		110	85	
											Vein	150.4 as above	4mm			23°	290	
											Vein	157m as above	5mm			130	130	
160											LGeVein	159.6m large vein system, bolh alt (hydrothermal?) for a zone of 20cm either side of vein.	15cm	White, Black	Qtz, Mag minor Haem/Carb	ho	ori (thick vein)	
												165-166m large smoking vein, 5mm Red/Wht high Haem in vein + alt in core crystals (wide zone > 20m)						
170																		

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 | HOLE ID: KBF003 | CORE TYPE: Diamond | PAGE NO.: 5

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
												175-177.6m fine wandering fractures	<1mm	white				
	180		Broken to 180.3			177.65m contact dyke and sandstone. Dyke fractured → brecciated @ contact Qtz carb infill + some hem alt of rock.			45° on contact			after contact, rock highly broken 177.7-180.3m						
				F-M	Sand	Sand highly metasom/hardened fine-med grained with occasional silt clasts along bedding plane Some thin white veins as in dyke (as above) Fe/chlor alt in broken/fractured zones	Grey/ Red brown (silty zones)	182	57°			]183-185.1m Second broken set. (as above)						
	190										Bed	191.8-192.2 Silt bed, 193.5-194.2 Silt.						
											→	196.8-197.25 Silty section						
	200					199.1m Silty section as smaller bedding above												
				M-VC		201.1m Poorly sorted sands Grading gradually into coarser section. Lots alt (cream) in red-grey matrix, bedding, matrix, fracture zones.												
	210																	

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 HOLE ID: KBF003 CORE TYPE: Diamond PAGE NO.: 6

FINISH DATE: 19-6-08 PROJECT: Stuart shelf CORE SIZE: NQ2 GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	LITHOLOGY: TEXTURE	LITHOLOGICAL DESC.	LITHOLOGY: COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
						215.8 – 217.3m Silty Section	Red/ Green											
				VC-G		Back into sands @ 217.3m Mottled/bleached matrix Some minor silt clasts and bands												
220												223.45 – 225.5 Silt Section (as @ 216). + green alt spots						
												228.2 – 230.9 Silty Section + green alt streaks.						
230												233.1 – 234.4 Silty section.						
						234.4 as @ 217m + very poorly sorted grains, some minor silt layers + clasts. lots scoured bedding.												
240				Silt-VF		238.7 – 245m very silty section dark red/grey, heavy mm beds (lots) fluted bedding (messy) some sands, lots mica Some green chlor alt.												
				Silt-F		245m still a bit silty, flatter lying beds, lots green alt bands + cream alt spots					FR	248.4m					7°	
250																		

CORE LOGGING SHEET

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START DATE: 13-6-8 | HOLE ID: KEF003 | CORE TYPE: Diamond | PAGE NO.: 7

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	LITHOLOGY: GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	DISCONTINUITIES: STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
260																		
270																		
				VC-g		277.05 into coarse sands, poorly sorted, sub rnd-subang grains, matrix supp, matrix (mostly clay, mottled white (kaolinitic white)						275-277m Some coarser sand layers in silty						
280						Occasional siltier bands (some erosional surfaces, CG → silt)													
290												288-2 to 294 MG sands + minor silts						
300						@ 299m, grainsize slowly inc.													

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 HOLE ID: KBF003 CORE TYPE: Diamond PAGE NO.: 8

FINISH DATE: 19-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2 GEOLOGIST: AM

				LITHOLOGY							DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
310																		
320				VC-SP		Grainsize increased to SP occasionally												
								328	53	—								
330																		
								334.8	52	—								
340								340.7	61	—								

CORE LOGGING SHEET

uraniumone

START DATE: 13-6-08 | HOLE ID: KBF003 | CORE TYPE: Diamond | PAGE NO.: 9

FINISH DATE: 19-6-08 | PROJECT: Stuart Shelf | CORE SIZE: NQ2 | GEOLOGIST: AM

LITHOLOGY									DISCONTINUITIES								
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
								349.7	63	—								
350				C-VC		350.8 – 353.4 reddish seds. more silt matrix	Red/ orange	352.4	57	—								
				VC-SP		353.4 – 357.3 back into mottled sands (bleached matrix)		353.4	62	—	→ red silt/sand contact (offset ore?)							
								354.4	60	300								
								355.5	59	305								
								356.2	55	320								
						357.3m highly reddened seds (highvolc, volcaniclastic?) with some lam + sz-ls.												
						357.5 into weathered/altered		357.3	55	315								
360						dacite crystalline volc as in KBF001		358.5	58	315	→ Sand/basement contact							
						Pinkish-red/brown fine matrix												
						Phenocrysts 1-4mm, darkened (chlor/haem altered)					FR 358.5					156	120	
						Few fractures, with chlor infill					FR zone @ 371.8					52	286	
370						371m Phenocrysts in dacite less altered. Orange-pink felds in a brownish red matrix (matrix patchy/paler in places).												
						Phenocrysts 2-5mm with occ ≥5mm (to 10 mm) Matrix supported. Felds slightly fe feld/altered but not much.												
380						Minor fractures in rock, no veins, very little broken core												
						Massive, hard volc.												

CORE LOGGING SHEET

START DATE: 13-6-08 HOLE ID: KBF003 CORE TYPE: Diamond

FINISH DATE: 19-6-08 PROJECT: Stuart Shelf CORE SIZE: NQ2

PAGE NO.: 10 GEOLOGIST: AM

		LITHOLOGY								DISCONTINUITIES							
GRAPHIC LOG	TO DEPTH	ROCK Type	CORE STATE	GRAIN SIZE	TEXTURE	LITHOLOGICAL DESC.	COLOUR	α / β depth	α	β	STRUCTURE	DISCONTINUITIY DESC.	SIZE	COLOUR	COMPOSITION	α	β	PYRITES
390																		
EOH 398.6m?																		
400																		

URANIUM ONE
CARIEWERLOO BASIN GRAVITY SURVEY

PROJECT 07044

August - September 2007

Report Number 07044
JR Wood

CLIENT
URANIUM ONE

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1. INTRODUCTION

A precision GPS-Gravity survey was carried out between the 23rd of August and the 9th of September 2007 for Uranium One. A total of 2,436 new gravity stations were surveyed in Central South Australia.

Gravity data were acquired using a Scintrex CG3M automated gravity meter. Position and level data were obtained using Ashtech Z12 geodetic grade GPS receivers operating in post-processed kinematic mode. Data were acquired using Daishsat helicopter-borne methods.

Gravity data were reduced using standard reductions on the ISOGAL84 gravity network. GPS data were reduced to MGA coordinates with levels expressed as metres above the Australian Height Datum.

Photo 1: Typical terrain within the survey area.

2. SURVEY OVERVIEW

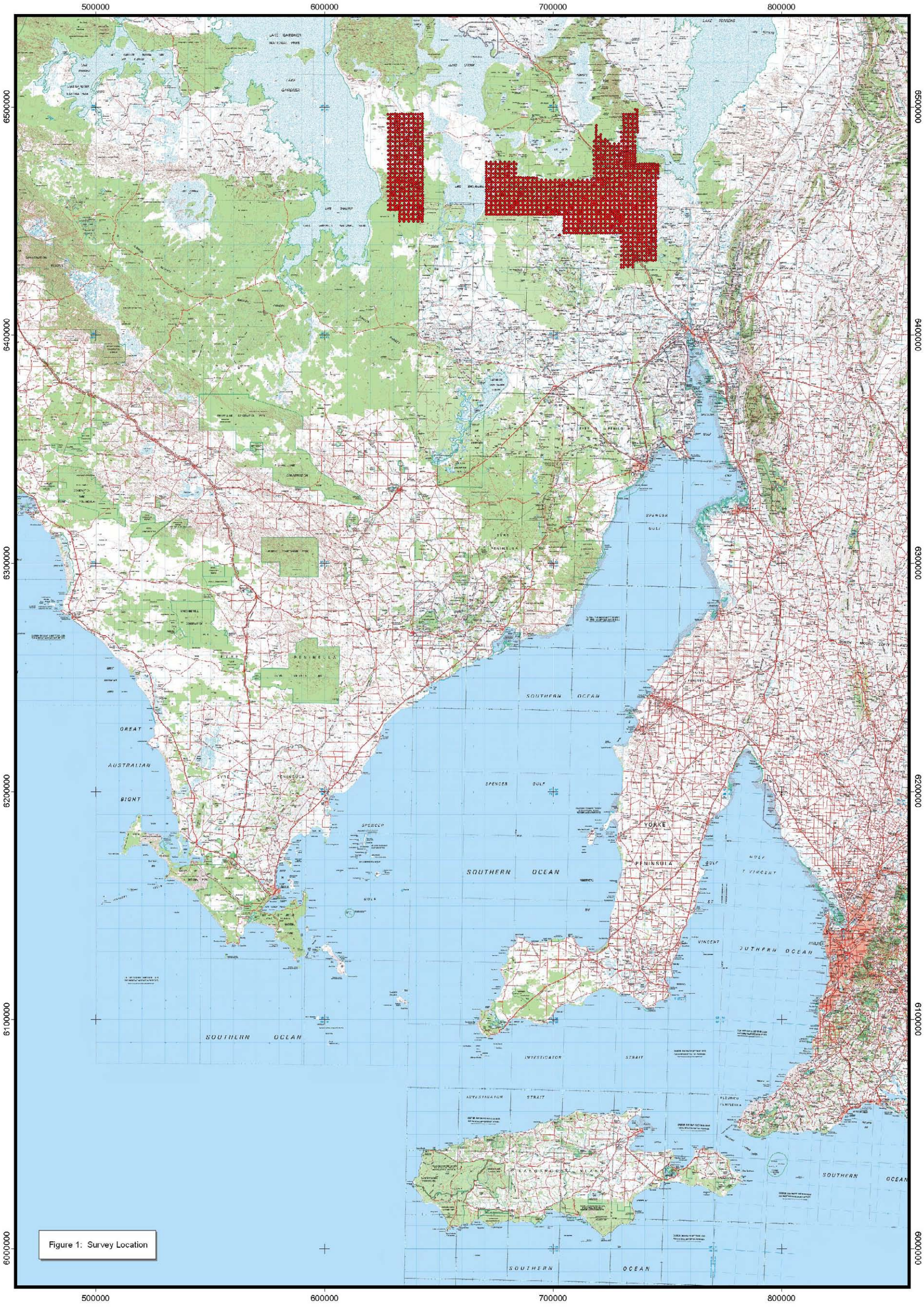
The regional gravity survey covered a large area between the Southern tip of Lake Torrens and the Eastern edge of Lake Gardiner. It was based out of Yudnapinna Station approximately 80 km North West of Port Augusta. The location of the survey is shown in Figure 1.

The survey area covered approximately 3000 square kilometers with station roads providing vehicle access to helicopter refueling locations.

The terrain encountered during the survey was varied, ranging from relatively flat rangeland to steeper rocky outcrops. Some areas of the survey were thickly vegetated requiring the offset of some points.

Gravity surveying was conducted on a grid with station and line spacing being 1 or 2 km depending on the detail required. Appendix A contains a plot of the final station locations.

Photo 2: Yudnapinna station.


500000
600000
700000
800000
6500000
6400000
6300000
6200000
6100000
6000000
LAKE GARDNER
NATIONAL PARK
LAKE GARDNER
LAKE TORRENS
GREAT
AUSTRALIAN
BIGHT
EYRE
PENINSULA
SPENCER
GULF
YORKE
PENINSULA
SOUTHERN
OCEAN
INVESTIGATOR
STRAIT
KANGAROO
ISLAND
Figure 1: Survey Location

3. PERSONNEL AND EQUIPMENT

3.1 Personnel

The supervisor in charge of the project was David Daish. David was responsible for daily management of the job and for nightly data processing to ensure quality and integrity. Gravity and GPS measurements were carried out by:

David Daish, Senior Surveyor
Andrew McCarthy, Surveyor
Gavin McPherson, Surveyor

Four helicopter pilots were used for the helicopter surveying:

Rick Keece
Andrew Catt
Peter McDonald
John Warr

Final data reduction and inspection were performed by the company Geophysicist, Grant Coopes.

Photo 3: Dense vegetation necessitated offsetting some points.

3.2 Survey equipment

The following survey equipment was utilised on the gravity survey:

- Scintrex CG-3M digital gravity meter (S) SN: 711 410
- Two Leica System 1200 GPS receivers
- Notebooks for data processing and backup
- Magellan FX324 GPS receivers for helicopter navigation
- Garmin Handheld GPS receivers for vehicle navigation
- Notebook computers for data processing and backup
- Various chargers, solar cells and batteries

3.3 Vehicles

Due to the type of terrain to be encountered, 4WD Landcruiser vehicles were used for the duration of the job. To maintain the high Daishsat safety record, vehicles were fitted with a range of safety equipment including:

- One 20l jerry can of water
- Dual fuel tanks
- Two spare tyres
- HF radio and satellite phone with car kit
- Self-recovery equipment including a hand winch, snatch straps and rope
- Tyre pliers to effect tyre repairs in the field
- Tools and spares to enable field repairs as necessary
- Survival kit with EPIRB emergency locator beacon

3.4 Helicopter

Ferry between the gravity stations was necessitated by a Robinson R-44 Helicopter – call sign VH-HZH. This particular helicopter was well suited to the project as changeable air filters allowed for dusty landings.

3.5 Accommodation

The helicopter crew camped in buildings located at the Yudnapinna Homestead. The station was well serviced with electricity and water available on site.

3.6 Communications

All survey crews and support vehicles were equipped with hand-held Globalstar satellite phones as well as UHF and VHF transceivers. "Omnitrack" satellite based tracking was used on all vehicles (including helicopters) to enable asset monitoring via a web interface.

Scheduled communications were made by all crews to the communications centre at the base camp at hourly intervals. Communication with the Perth and Murray Bridge offices was ongoing for the duration of the job.

Photo 4: Robbinson R-44 Helicopter with surveyor making a gravity measurement.

4. GPS SURVEYING AND PROCESSING

4.1 Set out of the grid

This was done concurrently with the gravity data acquisition using navigation grade receivers operating in autonomous mode. Where possible, the readings were taken as close to the ideal coordinates as possible. As the receivers were operating in autonomous mode, set out accuracy was usually better than 10m.

Raw kinematic GPS data were logged by a dual-frequency Leica 1200 receiver inside the helicopter cabin, with the GPS antenna mounted on the rear tail shaft boom. Static GPS data were logged at each of the base stations using a Leica 1200 GPS receiver for later post-processing.

At the repeat stations, a washer tied with flagging and marked with the station number was used for identification. At each station, the station number, position and RL were recorded digitally by the crew.

4.2 Survey datum and control

The gravity surveying, and hence any gravity reductions, used the Australian Height Datum (AHD) as the reference datum. A new GPS/Gravity base station was established using at least two days worth of static data and connections to ITRF stations using Geoscience Australia's online GPS processing system, AUSPOS. For more information on this system, please visit the Geoscience Australia website at http://www.ga.gov.au/geodesy/sgc/wwwgps/. Final deviations of better than 5mm were obtained for x, y and z, for all occupations. Appendix D contains the GPS base station information.

4.3 Processing of the position and level data

The raw GPS data were recorded onto the internal RAM of the GPS receivers. The data were downloaded nightly onto laptop computer for post processing using Waypoint Grafnav v7.00.

Waypoint combines the processing components, GrafNav and GrafNet, in a complete package.
GrafNav processes data for one baseline (e.g. one base and one remote). GrafNav is normally used for kinematic data which it is extremely well suited for. It can also process single static baselines. Receiver types can be mixed and matched via the use of a common format. This component of Waypoint was used for processing the kinematic data acquired each day.

GrafNav and GrafNet share the same processing engine that has been under continuous development since its original inception by Waypoint in 1992. The core of this robust engine is its carrier phase kinematic (CPK) Kalman filter. Some of the major advantages of Waypoint's kernel are:

Fast processing - The GrafNav kernel is one of the fastest on the market. It will process ~0.8 epochs per MHz per second on a Pentium II.
Robust Kalman filter - From experience with processing GPS data from fast jets and NASA sounding rockets, the processing kernel has become extremely robust. Efforts have been made to account for all of the various data error possibilities given the different types of GPS receivers that GrafNav/GrafNet can handle.
Reliable OTF - Waypoint's on-the-fly (OTF) algorithm, called Kinematic Ambiguity Resolution (KAR), has had years of development and stresses reliability. Variations are implemented for both single and dual frequencies, and numerous options are available to control this powerful feature
Accurate Static Processing - Three modes of static processing are implemented in the processing kernel. Fixed static is the most accurate. A quick static solution is also available as an alternative, while the float and iono-free float solution is useful for long baselines.
Dual Frequency - Full dual frequency support comes with GrafNav/GrafNet. For ambiguity resolution, this entails wide/narrow lane solutions for KAR, fixed static and quick static. Ionospheric processing is very important with the peak of the ionosphere's cycle occurring in 2000. The GrafNav kernel implements two ionospheric processing modes including the iono-free and relative models. The relative model is especially useful for airborne applications where initialization is near the base station, and this method is much less susceptible to L2 phase cycle slips.
Forward and Reverse - Processing can be performed in both the forward and reverse directions. Both GrafNav and GrafNet also have the ability to combine these two solutions to obtain a globally optimum one.
Velocity Determination - Since the GrafNav kernel includes the L1 Doppler measurement in its Kalman filter, velocity determination is very accurate. In addition to this, a considerable about of code has been added specifically for the detection and removal of Doppler errors.
Long Baseline - Because precise ephemeris and dual frequency processing is supported, long baselines accuracies can be as good as 0.1 PPM.

For more information about Waypoint processing software, and in particular, Grafnav, please visit the Waypoint http://www.waypnt.com/grafnav_d.html.

Simple transformations to MGA and AHD were done using the GPS derived WGS84 positions.

MGA94 coordinates were obtained by simply projecting the GPS-derived WGS84 coordinates using a UTM projection with zone 53S. For all practicable purposes, the WGS84 geodetic coordinates are equivalent to GDA94 geodetic coordinates, so no transformation is necessary. For more information about GDA94 and MGA94, please visit http://www.ga.gov.au/geodesy/datums/gda.jsp.

AHD heights were calculated via Waypoint software using the latest geoid model for Australia, AUSGEOID98. Information about the geoid and the modeling process used to extract separations (N values) can be found at http://www.ga.gov.au/geodesy/ausgeoid/. To obtain AHD heights, the modeled N value is subtracted from the GPS derived WGS84 ellipsoidal height (Figure 2).

$$H_{AHD}=h_{WGS84}-N$$

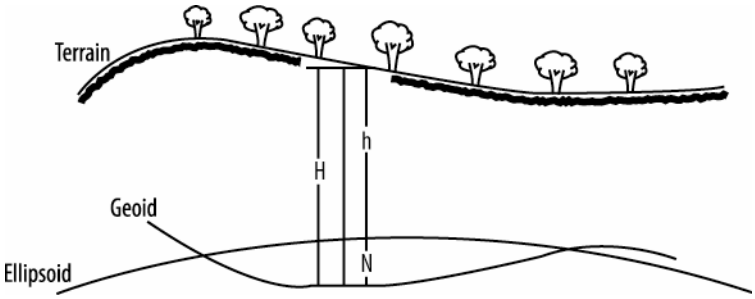


Figure: 2: Geoid-Ellipsoid separation

4.4 GPS Performance

Performance from the Leica receivers was excellent. There were no stations that required repeating due to GPS failure or poor coordinate quality.

5. GRAVITY SURVEYING AND PROCESSING

5.1 Gravity data acquisition

Gravity observations were made concurrently with the GPS measurements (Photo 6). Two observations were made for each station, with each observation consisting of a 20-second or greater stacking time. Multiple observations were made at each station so that any seismic or instrumental noise could be immediately detected. The tolerance between readings was set at 0.03 of a dial reading (0.03 mGals). Vertical and horizontal levels were restricted to 5 arc seconds at all times. At each station, the station number, time and two gravity readings (in dial units) were recorded in DAISHSAT carbon-copy gravity field books. The Scintrex meters also automatically record the station, time and readings digitally to allow for downloading to computer.

5.2 Gravity base station

A gravity base station was used for calculation of absolute gravity and drift determination. Details of the gravity base are contained in Appendix D. When in the field, a base station reading was taken in the morning before observing and at evening after the last observation. When taking a base station reading, the observed gravity values were stacked over 60 seconds to ensure accuracy. Observations were repeated until the readings repeated to 0.010 of a dial reading or less.

The gravity base station was set up at Yudnapinna Station proximal to the homestead buildings as well as the helicopter pad. The station was established via ABA ties with an existing Daishsat gravity base in the area.

5.4 Gravity data processing

Raw gravity data were processed on a daily basis to check for quality and integrity. This interim process produced a set of Bouguer Anomaly values which were contoured and imaged to provide a check for any anomalous readings that would need repeating. Geosoft GRAVRED software was used for the gravity reduction in the field. Upon conclusion of the job, the data were reprocessed using the contract specified GA formulae with Daishsat proprietary software. Other software used on this project includes Arcview, ChrisDBF, RasterTC, Waypoint and ERMapper. The formulae used for final processing are listed below:

Instrument scale factor: This correction was used to correct a gravity reading (in dial units) to a relative gravity unit value based on the meter calibration.

Tidal correction: This correction was used to correct for background variations due to changes in the relative position of the moon and sun. The Scintrex calculated ETC was removed and a new ETC calculated using Geosoft Formulae and the surveyed GPS latitude. The formulae used are contained in Appendix G.

Instrument Drift: Since gravity meters are mechanical, they are prone to drift (extension of the spring with heat, obeying Hooke's law). If two base readings are taken one can assume that the drift between the two readings is linear and can therefore be calculated. The drift and tidal corrected value is referred to as the *observed gravity*.

Normal Gravity: The theoretical value of gravity was calculated using the 1967 variant of the International Gravity Formula and used to latitude correct the observed gravity.

$$Gn=9,780,318.456*(1+0.005\ 278\ 895*\sin^2\phi+0.000\ 023\ 462*\sin^4\phi)$$

where ϕ represents degrees of latitude;

Free-Air Correction: Since gravity varies inversely with the square of distance, it is necessary to correct for changes in elevation between stations to reduce field readings to a datum surface (in this case, AHD).

$$(3.08768 - 0.00440\ \sin^2\phi)*h - 0.000001442*h^2\ \mu ms^{-2}\text{ per metre}$$

Bouguer Correction: This correction accounts for the attraction of material between the station and datum plane that is ignored in the free-air calculation. A value of 2.67 tm^3 was used in the correction.

$$0.4191*\rho\ \mu ms^{-2}\text{ per metre}$$

where ρ = density 2.67 tm^3

Free Air Anomaly: This is obtained by applying the free air correction (FAC) to the observed gravity reading.

$$FAA=G_{OBSG84}-Gn+FAC$$

Bouguer Anomaly: This is obtained when all the preceding reductions or corrections have been applied to the observed gravity reading.

$$BA267=G_{OBSG84}-Gn+FAC-BC$$

5.5 Gravity meter drift calibration

While the survey was in progress, the Scintrex meter was cycled overnight as a check on instrument drift. Changes were made to the drift constant where appropriate.

5.6 Terrain Corrections

Terrain corrections were rigorously applied to the final data in an effort to minimize the effect of terrain encountered near areas of moderate to high relief. Digital elevation data of the area were used by the program RASTERTC to perform near zone to far zone corrections. The software utilised was coded by Geophysical Software and is ideally suited to this project. For more details regarding the method and a more in depth discussion of the algorithm used, please visit http://geopotential.com.

The terrain correction procedure corrects gravity measurements for the effect of terrain from a distance Rmin to a distance Rmax. Each gravity station is processed independently, and therefore corrections calculated for a particular station do not depend upon possible location errors of other stations.
The correction procedure divides the circular area enclosed by Rmax into an inner zone and an outer zone; the radius separating the inner and outer zones is denoted Rmed. A surface is fit to the elevations between Rmin and Rmed; this surface is numerically integrated to calculate that portion of the terrain correction that is due to the terrain located in the interval Rmin <= R <= Rmed. The figure below illustrates the subdivision of areas used in the calculation.

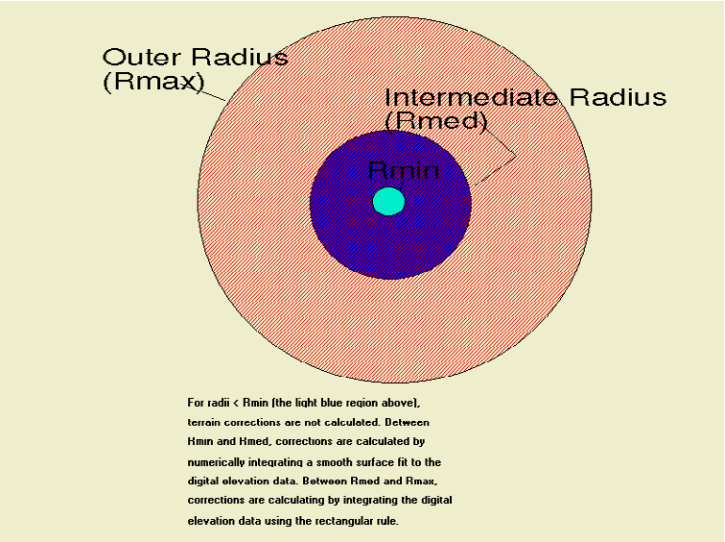


Figure 3: Calculation areas used by RASTERTC

The program uses triangulation and interpolation procedures to interpolate elevations between Rmin and Rmed. Between Rmed and Rmax, the terrain effect is calculated by assuming that each elevation sample represents the elevation of a rectangular compartment; a line element formula is used to calculate the effect of each such compartment. Terrain compartments lying between Rmed and Rmax that partially intersect the circular radius Rmed are treated in such a way that only the effect of that portion lying outside Rmed is added to the overall terrain effect. A similar procedure is applied to those compartments that partially intersect the outer radius Rmax

Note that the numerical integration procedure used to calculate the effect of terrain lying between Rmin and Rmed essentially integrates the effect of a line element between the two radii. This integration is repeated every 8° to obtain the effect of all the terrain lying within the circular region. The radial portion of the integration is performed using an adaptive technique called QUAN8.

A terrain surface is used close to the station location because the elevations provided by the DTM are samples and do not actually represent mean elevations of rectangular compartments. The use of a surface provides a terrain representation that should be much closer to reality than the use of compartments of constant mean elevation. At a certain distance from the station, the procedure of considering the elevation samples as representing the mean elevation of a rectangular compartment should yield numerical results than are not distinguishable from the results that would be obtained by actually using mean elevations of compartments whose size would necessarily be larger than 30 m on a side. In fact, the method used is equivalent to numerically integrating the terrain effect (at distances greater than Rmed) using a rectangular rule. Because the compartment size is relatively small, use of the rectangular rule should be rather accurate.

The elevation of the gravity station is not directly used during the computation of the effect of terrain effects. Instead, the elevation at the horizontal location of the gravity station is calculated from the multiquadric representation of the terrain surface, and this calculated elevation is used in the computation of the effect of terrain. The actual elevation of the gravity station is not used at all.

Numerically, the procedures used for the calculation of the terrain effect are extremely accurate, especially when compared to terrain corrections calculated using template methods. However, the corrections calculated are no better than the terrain data that are used to represent the terrain about each gravity station.

Various parameters were experimented with to obtain the optimum result for this particular survey. A brief discussion of the process and trials used to obtain the final result follows. All output files from the correction procedure have been included on the DATA CD to make follow-up interpretations easier. Note that all terrain corrections used a rock density of 2.67 tm^3.

5.6.1 DEM Preparation

Before attempting terrain corrections, an accurate DEM was sourced from an SRTM (Shuttle Radar Topography Mission) excerpt. The Shuttle Radar Topography Mission obtained elevation data on a near-global scale to generate the most complete high-resolution digital topographic database of Earth. SRTM consisted of a specially modified radar system that flew onboard the Space Shuttle Endeavour during an 11-day mission in February of 2000. For more information regarding the mission and the resultant elevation dataset, please visit http://www2.jpl.nasa.gov/srtm/

This data is provided at ~90m centres, but was re-gridded to a 25m cell size to enhance resolution. Terrain over the area varied from 0m to 1000m above sea level, with some severe terrain proximal to some of the stations on the eastern side of the grid. The DEM is shown in Figure 4.

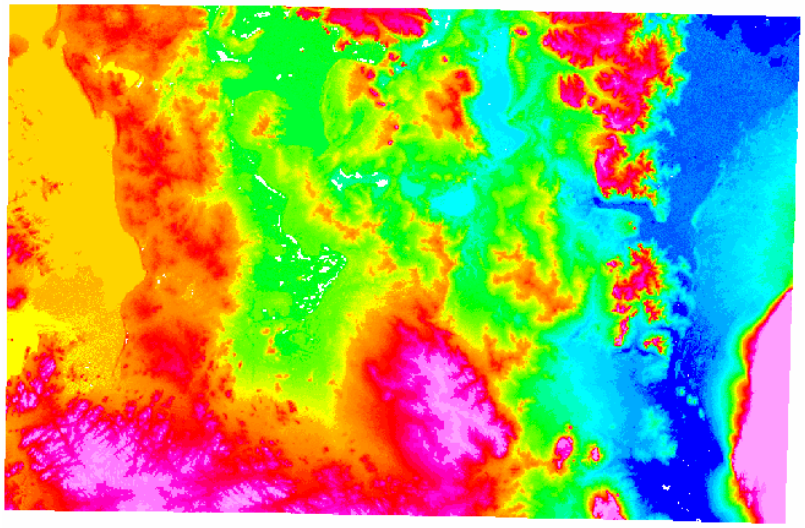


Figure 4: Digital Elevation Model for the Cariewerloo Basin and Surrounds

5.6.2 RASTERTC Correction

A terrain correction from 25m to 30000m from the gravity station was conducted using RASTERTC, with the following radius parameters:

Rmin = 25m
Rmed = 250m
Rmax = 30000m
Azimuthal Integration Angle = 6 degrees

Rmin was selected to correct for all terrain in the immediate vicinity of the station and coincided with the cell size of the SRTM grid. Rmax was specified to allow correction for the extreme terrain at large distances from the station (outer zone). Rmed of 250m was chosen so that the terrain would be “sampled” at an interval close to that of the grid cell size when using an integration angle of 6 degrees. During the radial integration, near the maximum radial portion of the integration (250m), the terrain surface is being sampled at approximately Rmed(sin(angle)), where "angle" is the azimuthal integration angle selected and R is the maximum radius chosen for the surface integration.

When calculating the RASTERTC correction, the station GPS elevations were not used. Instead, the elevation at the horizontal location of the gravity station was calculated from the multiquadric representation of the terrain surface, and this calculated elevation was used in the computation of the effect of terrain. The actual elevation of the gravity station is not used at all. The use of the actual elevation, rather than one consistent with the DTM terrain, effectively leads to gravity stations being located in deep holes or on very steep hills, whereas in fact such terrain features probably do not exist in the immediate vicinity of the gravity station.

5.6.3 Accuracy of the corrections

The terrain correction procedure produced highly accurate corrections for the most part. As with any terrain correction procedure, the accuracy of the final correction is dependant on the accuracy of the DEM used.

RASTERTC outputs a difference variable (GPS height – Interpolated DEM height) for each survey station and it is found that for most of the survey, these differences are less than 5m, which is insignificant when dealing with terrain corrections on a regional scale. The average difference is -3.4m, with a standard deviation of 1.3m. Figure 5 shows the distribution of these differences.

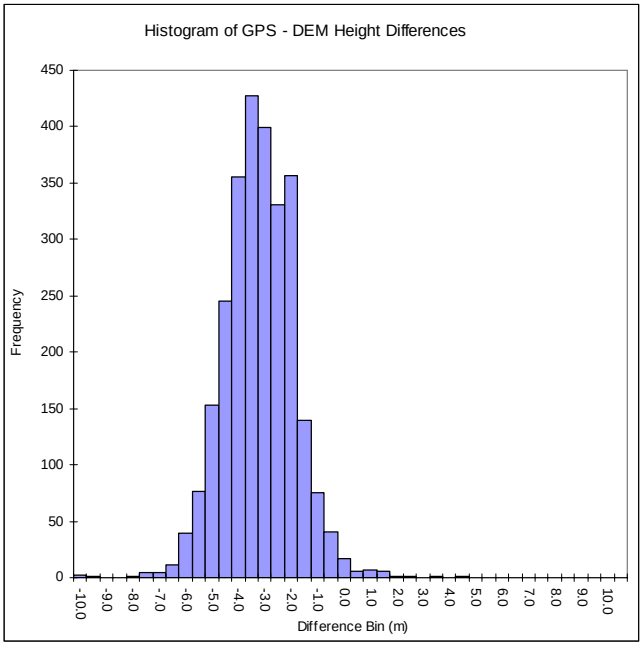


Figure 5: Difference between interpolated DEM elevation and station GPS elevation

Since the DEM has been confirmed as being accurate, one can rely on the corresponding terrain corrections as being also highly accurate. Indicators of quality are provided for both the innermost terrain correction and the outer terrain correction. On the listing and the output files, such indicators are listed under the column headings "QF-Inner" and "QF-Outer", respectively. If the TC calculation is OK, the quality factors should be 0 for both the inner- and the outer-zone portion of the calculation. Otherwise, the quality factors provide an indication of what might be wrong.

Additionally, a rough indicator of how well the terrain in the immediate vicinity of a gravity station is represented by the available elevation samples is obtained by examining the spatial distribution of the elevation samples. In the radial interval Rmin to Rmed, RasterTC counts the number of samples falling within the 8 octants surrounding the station. If any of these octants are missing elevation samples, that fact is noted, and the tabulated quality factor simply notes how many of octants are missing samples (see Table 4).

The QF-Outer codes are simple to interpret. A result of 0 means that the outer-zone calculation proceeded successfully. If a portion of the outer-zone terrain is missing from the elevation grids supplied, the value of QF-Outer will reflect the per cent of terrain that was available (rounded to the nearest per cent). For example, if QF-Outer is 91, the implication is that 9% of the terrain in the outer zones was missing for some reason, and that the terrain correction calculated for that particular station is too small by some amount.

QF-Inner	Meaning of Error Code
0	Inner-zone terrain calculation OK
1	No elevation samples occur in 1 octant surrounding the gravity station
2	No elevation samples occur in 2 octants surrounding the gravity station
3	No elevation samples occur in 3 octants surrounding the gravity station
4	No elevation samples occur in 4 octants surrounding the gravity station
5	No elevation samples occur in 5 octants surrounding the gravity station
6	No elevation samples occur in 6 octants surrounding the gravity station
7	No elevation samples occur in 7 octants surrounding the gravity station
22	Duplicate elevation nodes encountered while calculating terrain gradients
23	All elevation nodes collinear or triangulation structure corrupted
24	Invalid parameters passed to gradient calculation routine
26	Convergence not attained in calculation of terrain gradients
48	Internal logic error while attempting to delete duplicate nodes
49	Unable to allocate memory while deleting duplicate nodes
96	Internal error occurs while attempting to triangulate nodes near station
99	Less than 3 elevation samples are available near station
101	Duplicate nodes occur in elevation samples near station
-99	Unable to allocate sufficient memory for inner-zone TC calculation

Table 4: QF-Inner Error Codes

Raw and processed GPS and gravity data are contained on CDROM as Appendix H. Hardcopy plots of station location and coloured images are contained in Appendix A.

6. RESULTS

Raw and processed GPS and gravity data are contained on CDROM as Appendix E. Hardcopy plots of station location and coloured images are contained in Appendix A.

6.1 Stations Surveyed and Survey Progress

In total, 2,436 new stations were acquired during the survey. A brief production summary for the survey is show in Table 2 below.

Generally, production was varied with the crew achieving over 170 stations per day when they could work unhindered. Production was hampered by dense bush making safe landings difficult. Helicopter maintenance and poor weather also resulted in loss of production in some instances. The crew used this downtime to conduct the gravity control survey. There was no downtime due to geophysical/GPS equipment failure.

Cariewerloo Basin Gravity Survey		
Gravity stations acquired (including repeats)	2612	stations
Gravity station repeats	176	7.2%
New gravity stations acquired	2436	stations
Total accidents	0	accidents
Total hours lost from accidents	0	hours

Table 2: Gravity Production Summary

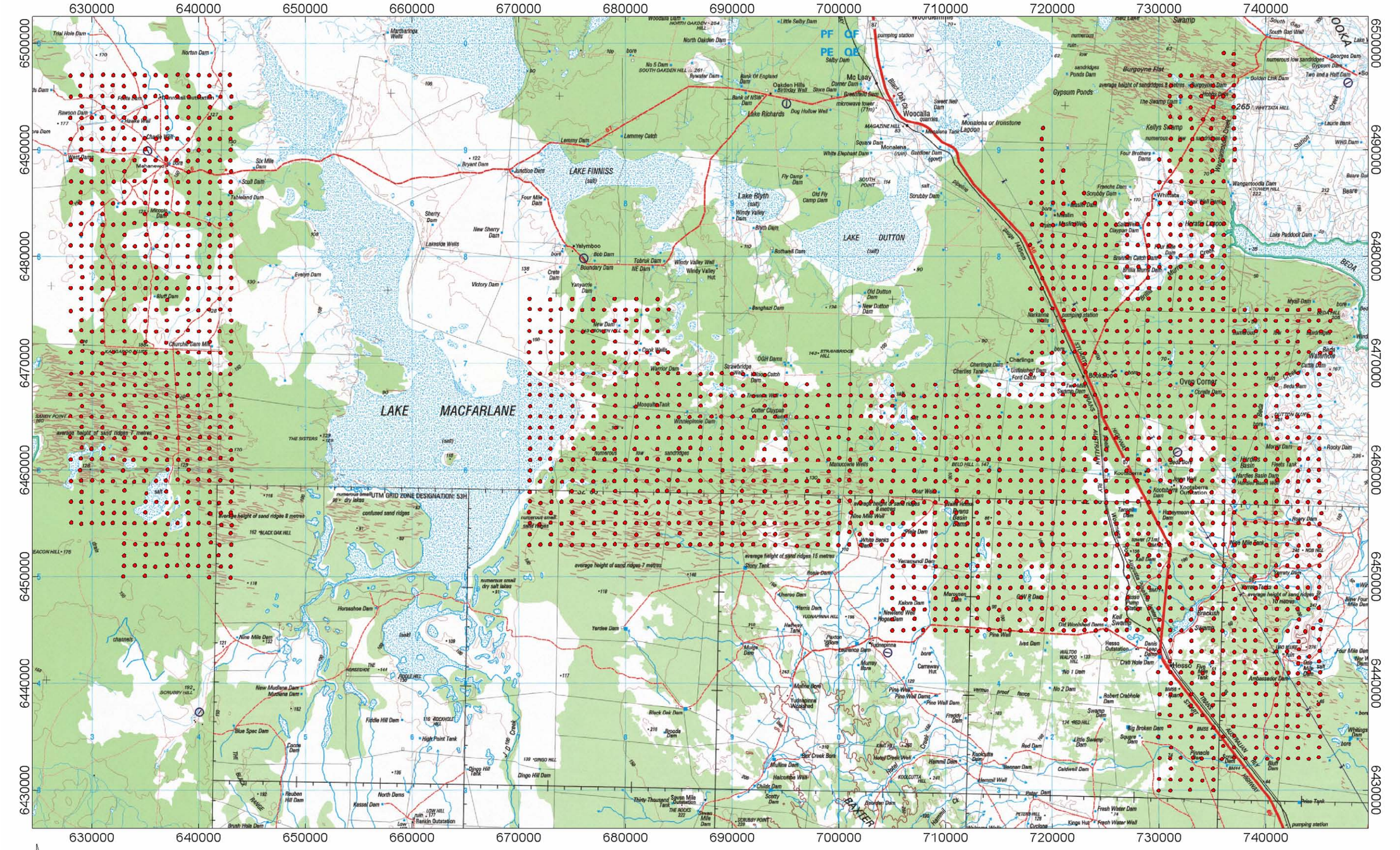
6.2 Data Repeatability

Analysis of the repeat data shows that measurement repeatability is excellent for both GPS and gravity observations. Appendix B contains histograms and summary statistics from the analysis. Based on the repeat data, one can assume the following typical accuracies for the observables:

Z position observation: < 0.062m
Gravity observation: < 0.028mGals

APPENDIX A

Plots of station location / Images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Gypsum Ponds
Burgoyne Flat
Kellys Swamp
Swamp
Ovag Corner
Bookabie
Charlinga
Hesso
Whittata
Herrits Lookout
Yelymboo
Boundary Dam
Bob Dam
Windy Valley Hut
Windy Valley Well
Junction Dam
Lemmy Dam
Lemmy Catch
Bryant Dam
Four Mile Dam
Sherry Dam
New Sherry Dam
Lakeside Wells
Victory Dam
Evelyn Dam
Yanyarrie Dam
Crete Dam
Tobruk Dam
NE Dam
Benghazi Dam
New Dam
Cook Wells
Warrior Dam
Mosquito Tank
Winnepinnie Dam
Strawbridge Dam
Kaloso Catch Dam
OGH Dams
Old Dutton Dam
New Dutton Dam
Bothamill Dam
Blyth Dam
Windy Valley Dam
Old Fly Camp Dam
Fly Camp Dam
Scrubby Dam
Monalena (ruin)
Gardiner Dam (govt)
Monalena Tank
Square Dam
White Elephant Dam
Sweet Nell Dam
Woocalla Dam
Mc Leay Dam
Bank Of England Dam
Bank of NSW Dam
Oakden Hills Birthday Well
Sloxe Dam
Breakfield Dam
Dog Hollow Well
Rywater Dam
No 5 Dam SOUTH OAKDEN HILL
North Oakden Dam
Little Salby Dam
Salby Dam
Woodsmiths
pumping station
Black Oak Ck
Trial Hole Dam
Norton Dam
Rawson Dam
Hawke Well
Charlie Well
Mackenevoo Dam
West Dams
Six Mile Dam
Scull Dam
Tableland Dam
Moppa Dam
Bluff Dam
Churchill Dam Mill
Nine Mile Dam
Horseshoe Dam
Fiddle Hill Dam
Blue Spec Dam
Cocks Dam
Reuben Hill Dam
Brush Hole Dam
Kessel Dam
North Dams
Rankin Outstation
New Mudlana Dam
Mudlana Dam
Yeroo Dam
Yardea Dam
Mulga Dam
Herris Dam
Yudnapinna Dam
Yudnapinna Wellshed
Black Oak Dam
Broods Dam
Mullina Dam
Halcombe Weir
Childs Dam
Scotty Dam
Boorden Dam
Seven Mile Outstation
Thirty Thousand Tank
High Point Tank
Dingo Hill Tank
Dingo Hill Dam
Kaloka Dam
Newland Well
Rogers Dam
Yerramundi Dam
Stony Tank
Rosie Dam
Marooden Dam
Carraway Hut
Murray Bore
Pine Wall Dams
Pine Wall
Ivec Dam
Creb Hole Dam
Robert Crabhole Dam
Swamp Dam
Big Broken Dam
Square Dam
Little Swamp Dam
Red Dam
Caldwell Dam
Koolcutta Dam
Hammil Dam
Hammil Well
Peter Dam
Fresh Water Dam
Fresh Water Well
Kings Hut
Cyclone
Brackish Swamp
Kail Swamp
Old Woolshed Dams
Four Brothers Dams
Frenchs Dam
Scrubby Dam
Claypan Dam
Brown Hill Catch Dam
Brown Hill Dam
Lake Paddock Dam
Wangamoodla Dam
Tower Hill
Myall Dam
Sunflower Dam
Wallaroo
Beda Dam
Beda
Rocky Dam
Morey Dam
Harolds Basin
Harolds Tank
Hesso Tank
Hesso Five Tank
Whitings Dam
Price Tank
Pinnacle Dam
Bluff Dam
Ambassador Dam
Four Mile Dam
Wangamoodla Creek
Stanford Creek
Laurie Bank
WHG Dam
Golden Link Dam
Two and a Half Dam
Georges Dam
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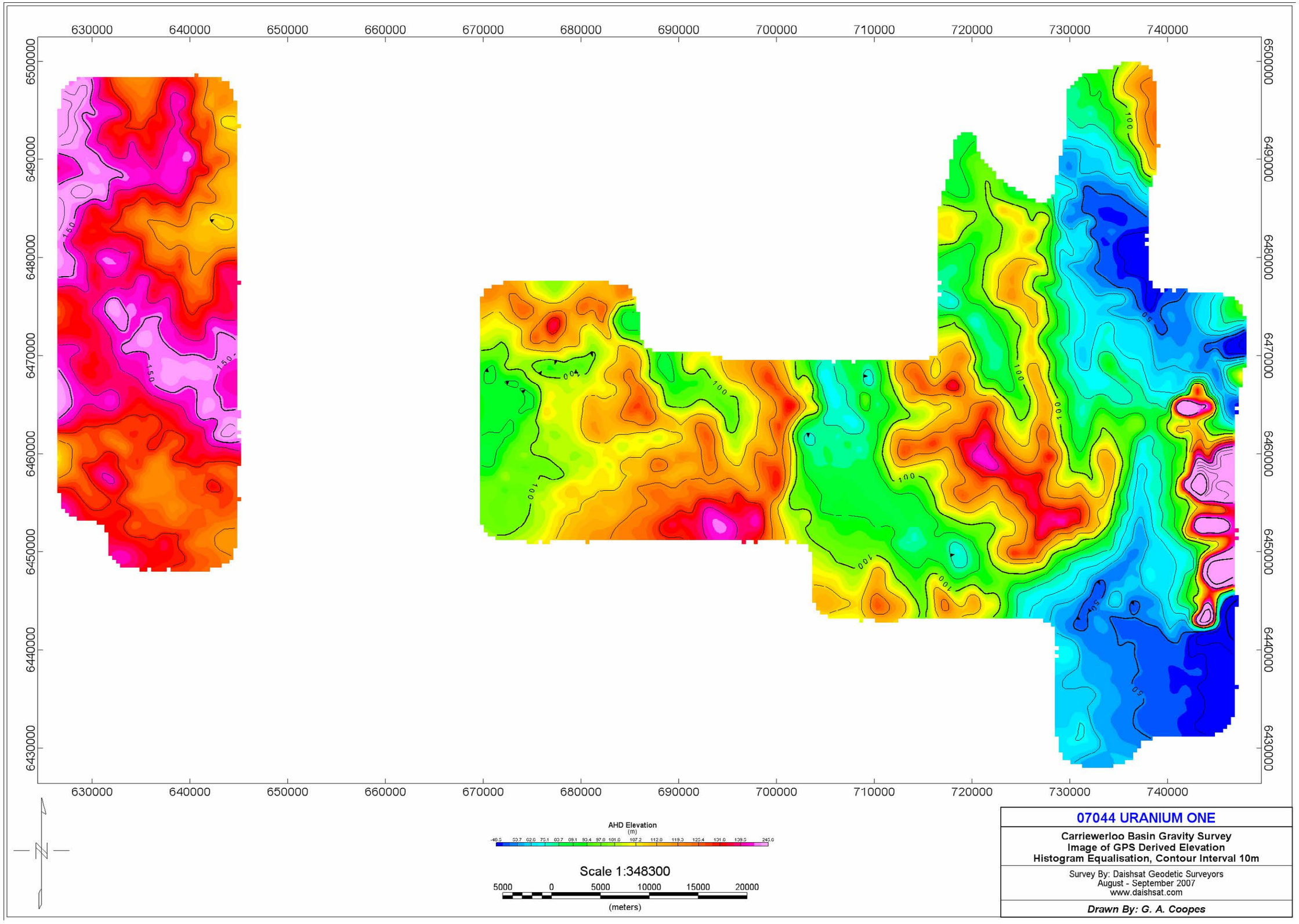
Beare
Beare Bank
Beda
Wallaroo
Darrie Dam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(meters)
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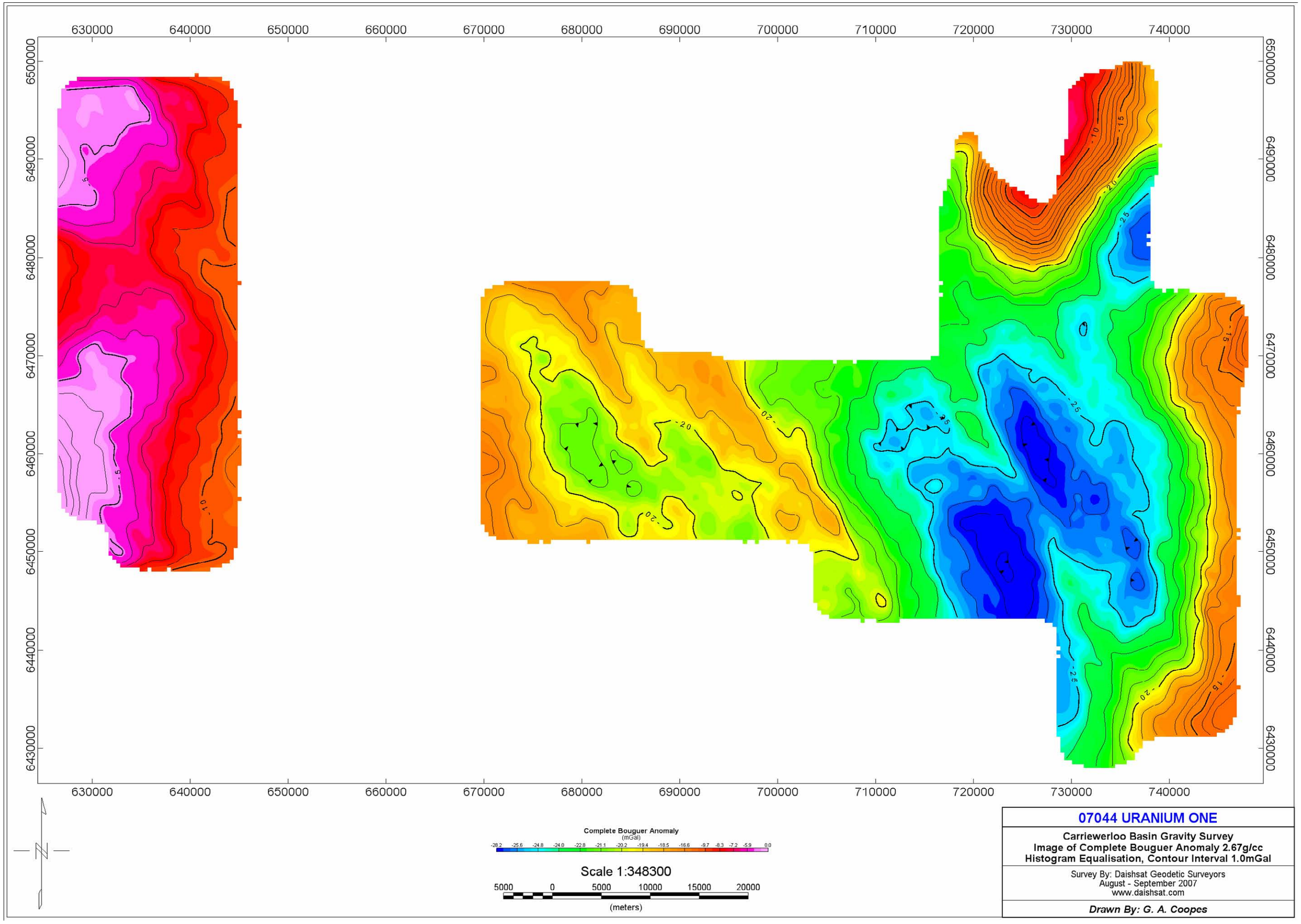
Carriewerloo Basin Gravity Survey
Image of GPS Derived Elevation
Histogram Equalisation, Contour Interval 10m
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes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Complete Bouguer Anomaly
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(meters)
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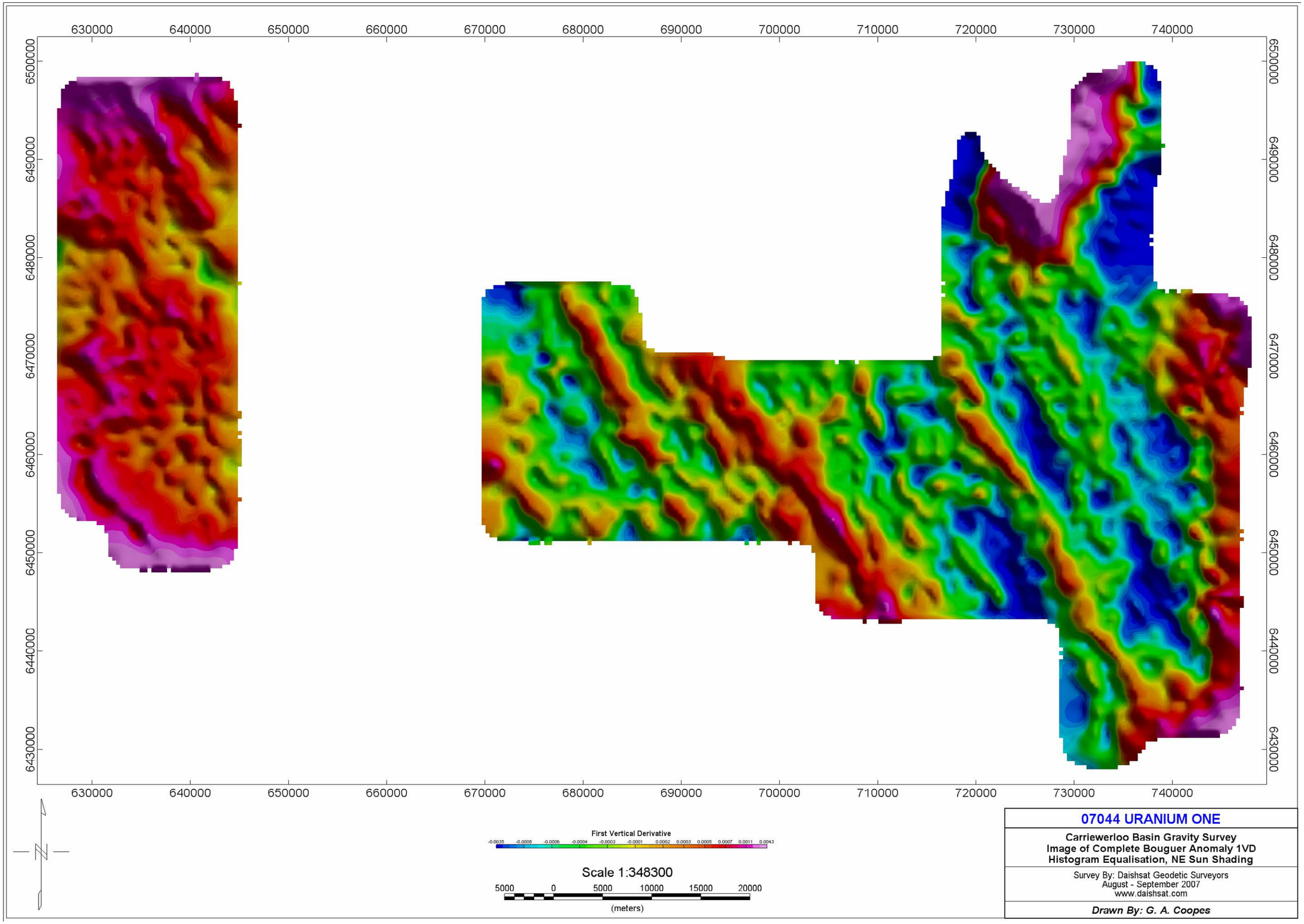
Carriewerloo Basin Gravity Survey
Image of Complete Bouguer Anomaly 2.67g/cc
Histogram Equalisation, Contour Interval 1.0mGal
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes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Scale 1:348300
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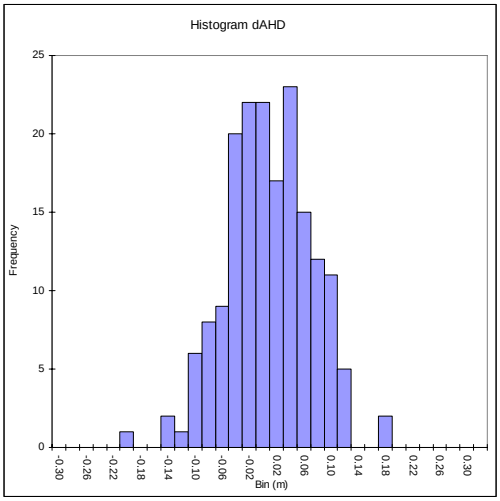
(meters)
07044 URANIUM ONE
Carriewerloo Basin Gravity Survey
Image of Complete Bouguer Anomaly 1VD
Histogram Equalisation, NE Sun Shading
Survey By: Daishsat Geodetic Surveyors
August - September 2007
www.daishsat.com
Drawn By: G. A. Coopes

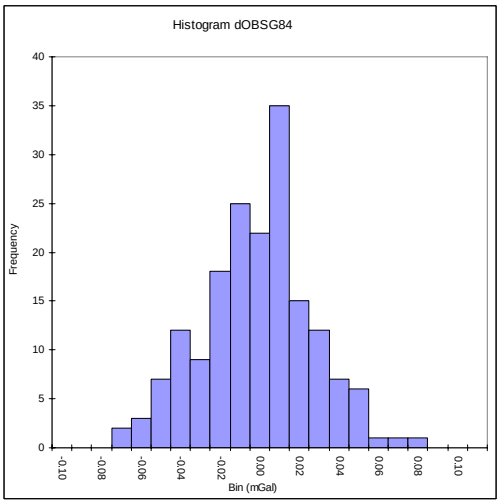
APPENDIX B

Repeat Tabulation and Analysis

Histogram dAHD



Histogram dOBSG84



Summary Statistics

Summary Table	*dAHD*	*dOBSG*
Mean	-0.001	-0.006
Standard Error	0.005	0.002
Median	-0.003	-0.004
Mode	-0.006	0.001
Standard Deviation	0.062	0.028
Sample Variance	0.004	0.001
Kurtosis	0.379	0.142
Skewness	-0.123	-0.055
Range	0.390	0.154
Minimum	-0.211	-0.079
Maximum	0.179	0.075
Sum	-0.137	-0.975
Count	**176**	**176**

APPENDIX C
Survey Specifications

Client	URANIUM ONE
Survey Name	Cariewerloo Basin
Operators	DD, AC, GM
Techniques Employed	GPS, Gravity
Station Spacing	1km, 2km
Line Spacing	1km, 2km
Gravity Meter	Scintrex CG-3M (S) 711410
GPS	Leica 1200
Number of Points Surveyed	2436
Gravity Base	Daishsat Base 0342
Date of Survey	23rd August to 9th September 2007

APPENDIX D
Base Station Information

GPS Gravity Base 0342 Yudnapinna Station

MGA94		GDA94	
EASTING (m)	702908.439	LATITUDE (DMS)	32 07 21.17813 S
NORTHING (m)	6443954.798	LONGITUDE (DMS)	137 09 03.02093 E
ZONE (UTM)	53S	GDAHT (m)	133.953
HEIGHT (AHD, m)	131.222	N (AUSGEOID98, m)	2.730
OBSERVED GRAVITY		**SURVEYED BY**	
979447.211 mGal		GPS - Daishsat using a multiple static sessions and the AUSPOS online GPS Processing system. Expected accuracy of station coordinates better than 0.005m. Gravity – Multiple loops to existing Daishsat Gravity base 341. Expected accuracy better than 0.01 mGals	

MISCELLANEOUS DETAILS

This station consists of a small star picket protruding 5cm out of the ground, and is witnessed by a larger stat picket positioned 30cm to the right. A circular concrete slab is also located beside these star pickets and is the gravity base.

The base is located in an open area bounded by the farm cottages to the east and west, a storage shed to the north and the main homestead so the south. The base is approximately 30m east of the veranda of the south western cottage.

The base may be accessed by entering Yudnapinna station from the access road and driving to the middle of the compound where the base is visible in an open area to the west of the road running between the farm sheds to the main homestead.

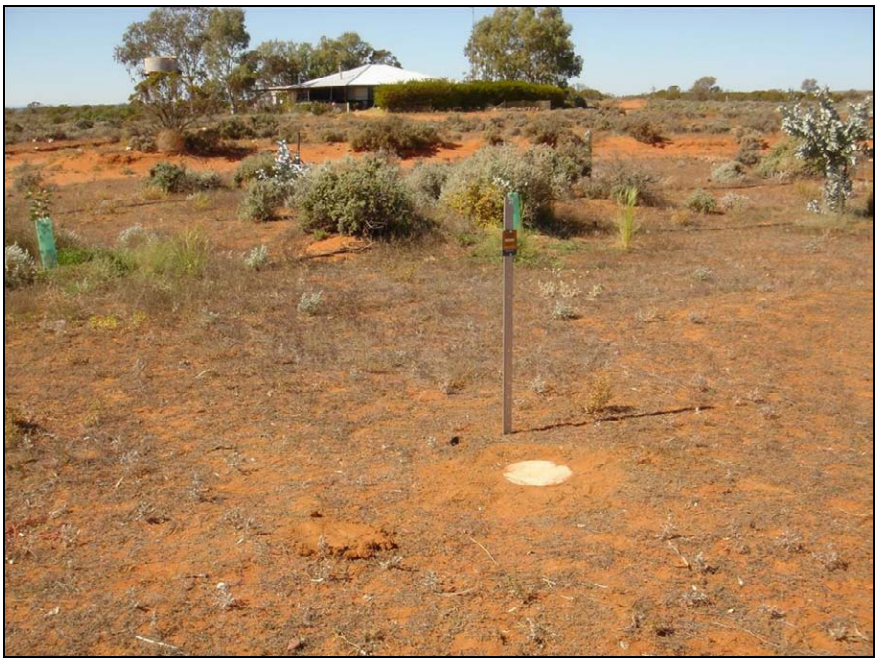


Photo of Daishsat Base 0342 showing distinguishing features

APPENDIX E

Data DVD

(Attached To Back Cover)

STUART SHELF PROJECT

SOUTH AUSTRALIA

COMBINED ANNUAL TECHNICAL REPORT

For the Period Ending 18 August 2009

EL 3397 Yeltacowie, EL 3398 Hesso, EL 3399 Charlinga,
EL 3400 Bowen Hill and EL 3415 Kangaroo Bluff

Prepared by:
Uranium One Australia Pty Ltd
Level 9, 11-19 Grenfell Street, ADELAIDE, SA 5000
PO Box 3644, Rundle Mall, SA 5000
Email: reception@uranium1.com
Tel: (08) 8112 2888

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DIGITAL DATA FILES

2009_A_01_REPORT BODY.PDF
2009_A_02_Drilling_ASSAYS.xls

2009_A_03_Drilling_COLLARS.xls

1. SUMMARY

This is a combined report for activities carried out on the company's Stuart Shelf Southern Project over the 12 months to 18 August 2009.

Assay results for 106 core samples for the Stuart Shelf Project were received from AMDEL and have been analysed and interpreted. No significant results were found and a recommendation for further geophysical investigations has been made.

2. KEYWORDS

Uranium exploration, hydrothermal fluids, IOCGU deposits, magnetic anomalies, gravity anomalies, exploration model, basement, Mesoproterozoic, Paleoproterozoic, Neoproterozoic, Tapley Hill Formation, Pandurra Formation, Gawler Range Volcanics, Gairdner Dyke Swarm/Gairdner Dolerite, Whyalla Sandstone, Gawler Craton, Cariewerloo Basin, Stuart Shelf, diamond drilling.

3. INTRODUCTION

3.1 TENEMENT STATUS

ELs 3397-3400 were granted on 19 August 2005 initially for a period of one year and were renewed annually to 18 August 2009. EL 3415 was granted on 16 September 2006 for a period of one year and was renewed to 15 September 2009.

3.2 LAND ACCESS AND NATIVE TITLE

Access from Adelaide and Port Augusta is via the sealed Stuart Highway, then graded and un-graded station tracks. Four-wheel drive vehicles are able to easily access the area at most times.

The land is used for sheep grazing, which is supported by dams, bores, mills, tanks and numerous tracks, grids and fences. The owners of the Mahanewo, Yudnapinna, Kootaberra and Hesso pastoral properties are kept well informed of the company's activities in the area.

There are two overlapping Native Title Claims that cover the five tenements. Part 9b negotiations, including the signing of a formal agreement with the Barngarla Group, were completed. As well as general exploration agreements, Cultural Heritage Site Clearance Surveys were carried out by both the Kokatha and Barngarla Native Title Claimant groups in April 2008, in preparation for drilling. A total of 11 sites were cleared for drilling across all of the Stuart Shelf project except EL 3397, where no work had been planned.

4. LOCAL GEOLOGY AND EXPLORATION RATIONALE

Within the Stuart Shelf the pre-eminent target is an Olympic Dam analogue. The Shelf sediments are primarily considered a cover sequence and not a target in themselves. The targets are strongly iron metasomatised Hiltaba Suite intrusive/extrusive complexes that will have co-incident or near co-incident magnetic and gravity anomalies. Because the Carrapateena discovery was associated with relatively low order geophysical anomalism, some companies are pursuing a low order anomaly strategy.

Because depth of cover is a critical economic element to the development of any deposit, some companies are targeting the shallower and potentially uplifted areas to explore. These will hopefully have less than 500 metres of cover. Such areas are in the vicinity of Olympic Dam (i.e. Acropolis, Wirrda Well), Oak Dam and the Pernatty Uplift/Culmination at Mt Gunson. Regions where the cover is deeper than 400 metres will possibly make mining unprofitable because of the additional capital cost.

Depth to basement studies are based on the limited number of holes that have penetrated the cover (and that are on open file) and geophysical interpretation. As such they are open to interpretation.

A few companies are starting to consider the uranium potential of the sediments of the Cariewerloo Basin and Stuart Shelf. However, very little drilling (and quite shallow at that) is known to have been directed at such targets. To that extent, the entire region is under-explored.

The Pandurra Formation, which constitutes the Cariewerloo Basin, has many stratigraphic similarities to the Athabasca Basin of Canada, where high grade uranium deposits have been discovered since the 1950s (see below).

The Basin is underlain by Gawler Range Volcanics which overlie the Gawler Craton suite of metamorphics. All three geological entities have been intruded by the Gairdner Dyke Swarm in the central eastern part of the Craton (Figure 1).

The emplacement of dykes with a northwest trend has been linked to a major northeast–southwest-trending crustal extension event consistent with the onset of rifting, early graben development and basic volcanism during the early tectonic evolution of the Adelaide Geosyncline.

The dyke swarm is poorly understood, visible only from magnetic surveying and does not outcrop. Since the dykes are subvertical they are only rarely intersected. The dykes have a very widespread distribution within the Craton (in excess of 600km x 100km) and are individually of significant dimension (>30m x 10km). This suggests that they are fed by a large mafic source/batholith lying deep beneath the Craton that is quite unrelated spatially, to the acid igneous Hiltaba Suite batholiths.

The dykes have the potential to:

- Tap and remobilise metal sources from within the crystalline basement
- Facilitate the transport of hydrothermal fluids from a deep crustal/mantle mafic source utilizing the same Basin-creating structures

- Provide a heat source to move the fluids and metasomatise the intruded sedimentary packages where pore space and reactive material is encountered. This has been observed in past drilling with respect to the Pandurra Formation.

Dykes similar to those of the Gairdner Dyke Swarm play an integral role in the migration and emplacement of the ore at Valhalla/Westmoreland, NW Queensland.

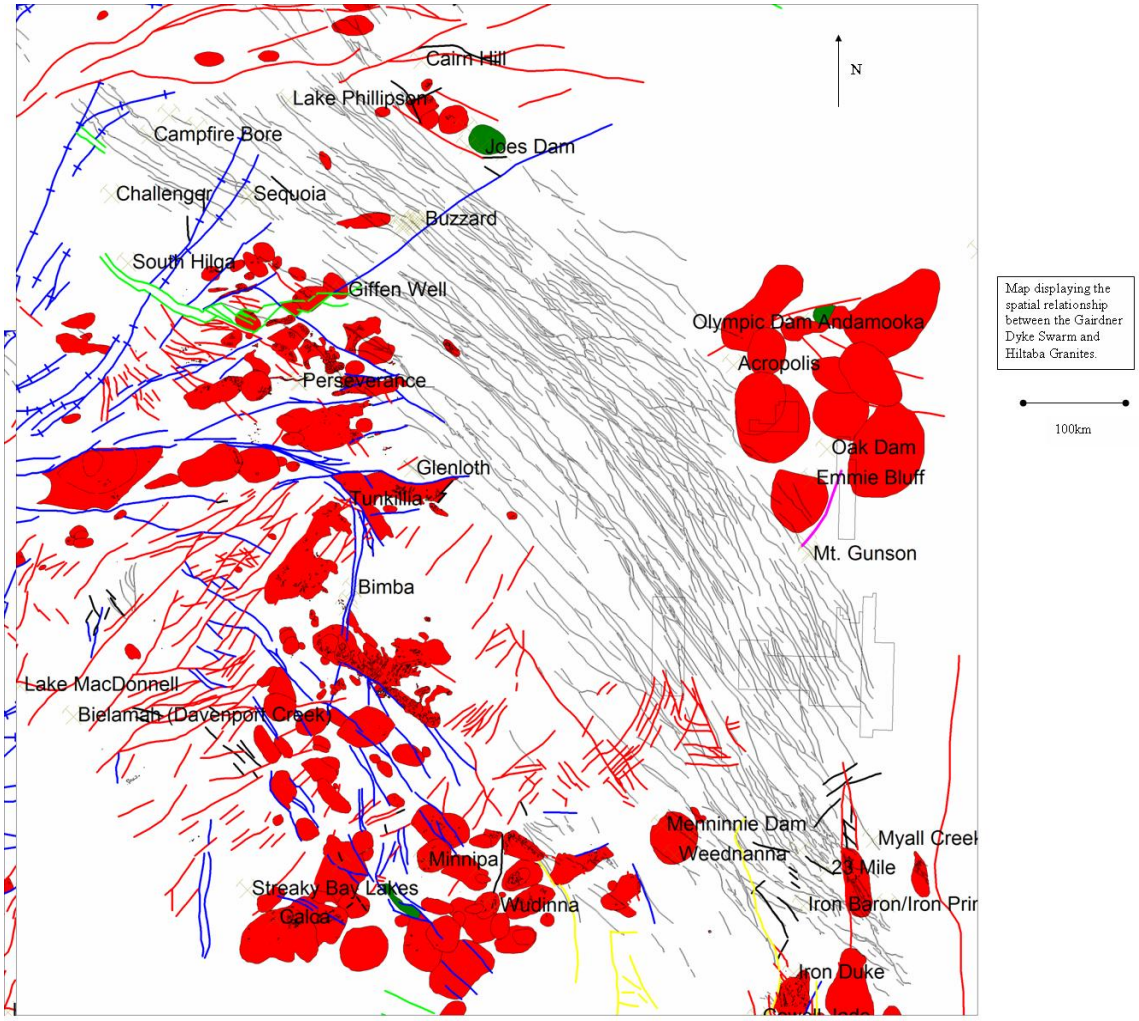

Figure 1: Gairdner Dyke swarm and Hiltaba Granites.

The combination of the following factors makes the Pandurra Formation a prime, but poorly tested, uranium target.

- Geological, age and tectonic similarities between the Cariewerloo Basin and the Athabasca Basin
- Association of significant amounts of uranium and other heavy metals in pre Pandurra magmatic activity (Hiltaba Suite)
- Presence of uranium and carbonaceous units in the Gawler Craton Basement (Hutchison Group of Eyre Peninsula)

- Reasonable target depths (<500m)
- Potential for oxidising environment of the Pandurra Formation interfacing with a reducing fluids emanating from deep in the basement or mantle
- Both early and late deep structures to plumb as far as the lower crust and upper mantle and all that lies between
- Large number of mafic dyke intersections with the potential to remobilize uranium rich fluids
- The fine grained and reactive Tapley Hill Formation (Adelaidean) that occupies a position above the Pandurra has the capacity to both physically and chemically trap migrating ore fluids at the upper disconformity
- Drilling has intersected some Gairdner dykes that have metasomatised the surrounding sediment, demonstrating their capacity to be involved in ore forming processes

5. PREVIOUS EXPLORATION

Previous exploration has been summarised in the Stuart Shelf Project Combined Annual Technical Report for 2008.

In August 2007, a helicopter supported gravity survey contracted by Uranium One was completed by Daishsat Geodetic Surveyors at 1 km station spacings, infilling the existing PACE 2km survey. Results of the survey were reported partially in the two previous technical reports for these tenements.

6. EXPLORATION POTENTIAL AND TARGETING

Most of Uranium One's Gawler Craton tenement holding consists of a large block of four tenements that cover the shallower parts of the Cariewerloo Basin - ELs 3398, 3399, 3400 and 3415.

There has previously been no drilling deeper than 300 m on these tenements. All holes terminated in Pandurra Formation and there is no known mineralisation within or anywhere near them.

The known geology of the tenements comprises Gawler Range Volcanics overlying a crystalline Paleoproterozoic basement. The Pandurra Formation overlies the eroded Gawler Range Volcanics, followed by the basal units of the Adelaidean (mostly Tapley Hill Formation) in a disconformable relationship in the north eastern part of the block.

The Mesoproterozoic Gairdner Dyke Swarm, according to the magnetic imagery, intrudes the Pandurra Formation in all the Cariewerloo Basin tenements. It seems to be composed of two sets of dykes with a difference in strike of about 20-25deg. The sets intersect in an anastamosing complex. The most northerly striking set seems to be emplaced (intruded??) later than the other and in places causes small displacements on the earlier set. This situation may have been the result of a changing tectonic environment during the Basin rifting.

The northern parts of ELs 3398 and 3399 cover:

- a basement high which has the potential to be fault bounded
- the flanks of a prominent gravity Bouguer gravity anomaly
- a high density of Gairdner dykes
- a network of intersecting mafic dykes
- the margins of a very large Bouguer gravity anomaly

The western most licence (EL 3415) is located over the southern margins of the Pandurra Formation where it onlaps the Gawler Range Volcanics

7. DRILLING

An application for a PACE 5 drilling subsidy was unsuccessful.

Coughlan Drilling Pty Ltd was contracted to carry out ~6,000m of diamond drilling for the Stuart Shelf Project, commencing in late June 2008. A program comprising seven diamond drill holes over three of the southern Stuart Shelf tenements was completed.

At least two holes were planned on EL 3398 but none was drilled during this program due to either access difficulties or geological information gleaned from other holes. Note that at the time of the previous reporting period, the most accurate GPS coordinates of each collar were not available.

Three diamond drill holes (CHR001-003) were completed on EL 3399 with a combined total depth of 1,582.6 meters. These holes (Figure 2) are located as shown in the table below.

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
CHR001	730132	6468028	38	80	540.3
CHR002	724619	6460058	53	80	531.7
CHR003	707248	6466856	38	80	510.6

Three diamond drill holes (KBF001-003) were completed on EL 3415 with a combined total depth of 963 meters. These holes (Figure 2) are located at approximately:

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
KBF001	636501	6491891	83	60	342.3
KBF002	631423	6485134	353	60	222.3
KBF003	642722	6484623	218	60	398.6

One diamond drill hole (BHL001) was completed on EL 3400 with a total depth of 633.3 meters. The hole (Figure 2) is located at:

Hole no	East	North	Azimuth (Mag)	Dip	Final depth
BHL001	680175	6472102	53	60	633.3

The drill chips and core of all drill-holes were logged and geologically described (See Appendix 1 – 2008 ATR). The geological logs have been used to guide lithological characterisation and interpretation of the down hole geophysical data. Down hole geophysical logging of each drill hole was carried out utilising a gamma tool (to pick up anomalous radioactivity), a resistivity tool and a dual induction tool (for lithological characterisation).

The holes were targeted to intersect the unconformity between basement volcanics and the Pandurra Formation sandstone with possible involvement of intrusive Gairdner Dykes, looking for unconformity-style mineralisation. However, no uranium mineralisation or associated alteration was detected.

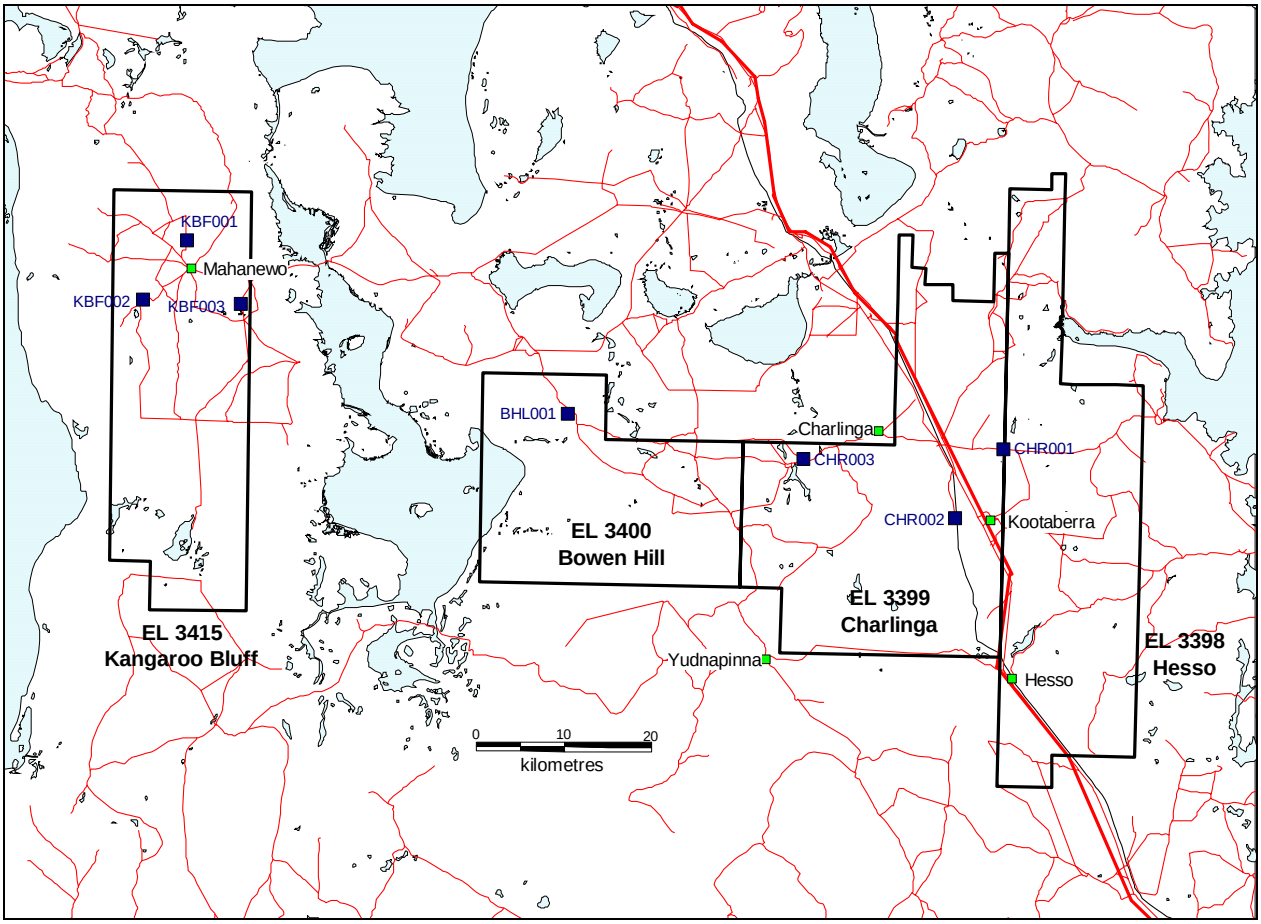

Figure 2: Uranium One Stuart Shelf ELs showing 2008 drilling program collars.

8. GEOCHEMISTRY

A total of 106 core samples, along with selected duplicates, from the Stuart Shelf Southern Diamond Drilling Project were submitted to AMDEL for analysis of multi-element geochemistry. The results from these tests are reported in Appendix 1.

9 PROJECT EXPENDITURE

Table 1: Summary expenditures for the three previous years of tenure for all tenements

EL 3397	$178,100
EL 3398	$178,100
EL 3399	$608,830
EL 3400	$319,940
EL 3415	$451,990

Table 2: Expenditure for the fourth year of tenure for EL 3397 ending 18/08/2009

Drilling	
Geophysics	
Geochemistry and Petrology	
Surveying	
Salaries	
Office and Computing	
Travel and Accommodation	
Administration and Management	
TOTAL	

Table 3: Expenditure for the fourth year of tenure for EL 3398 ending 18/08/2009

Drilling	
Geophysics	
Geochemistry and Petrology	
Surveying	
Salaries	
Office and Computing	
Travel and Accommodation	
Administration and Management	
TOTAL	

Table 4: Expenditure for the fourth year of tenure for EL 3399 ending 18/08/2009

Drilling	
Geophysics	
Geochemistry and Petrology	
Surveying	
Salaries	
Office and Computing	
Travel and Accommodation	
Administration and Management	
TOTAL	

Table 5: Expenditure for the fourth year of tenure for EL 3400 ending 18/08/2009

Drilling	
Geophysics	
Geochemistry and Petrology	
Surveying	
Salaries	
Office and Computing	
Travel and Accommodation	
Administration and Management	
TOTAL	

Table 6: Expenditure for the fourth year of tenure for EL 3415 ending 15/09/2009

Drilling	
Geophysics	
Geochemistry and Petrology	
Surveying	
Salaries	
Office and Computing	
Travel and Accommodation	
Administration and Management	
TOTAL	

10. RECOMMENDATIONS

During the next year of tenure Uranium One plans to undertake the following work:

11 REFERENCES

Drexel, J.F., Preiss, W.V., 1993 and Parker, A.J., *The Geology of South Australia Volume 1 The Precambrian Bulletin 54.* Department of Mines and Energy South Australia

Parker, A.J., 1987 *Archaean to Middle Proterozoic Mineralization of the Gawler Craton (including the Stuart Shelf region) SA. REPT.BK.NO 87/84.* Department of Mines and Energy South Australia.

teneman consulting

M I N E R A L T E N E M E N T S E R V I C E S

ABN 68 593 203 550

9 December 2010

Records Officer
Mineral Tenements
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Dear Sir/Madam

ELs 3398, 3399, 3400 and 3415 – Stuart Shelf Project
Combined Annual Technical Report for the period ending 17 August 2010

During the reporting period no field work was undertaken on the tenements.

As no new technical data were acquired during the period, a formal report will not be submitted.

Expenditure details have been provided in the relevant individual Summary Reports.

Please contact me on 08 8414 3352 or 0415 397 870 if you require additional information.

Yours sincerely

Teena Coppin
Tenement Manager
Uranium One Australia Pty Ltd

uraniumone™
investing in our energy

17 February 2012

Records Officer
Mineral Tenements
DMITRE
GPO Box 1264
ADELAIDE SA 5001

Dear Sir/Madam

ELs 4598, 4599, 4600 and 4651 – Stuart Shelf Project
Combined Annual Technical Report for the period ending 7 November 2011

ELs 4598-4600 were granted on 8 November 2010 and replace ELs 3398-3400 respectively, which expired after terms of five years on 18 August 2010. EL 4651 was granted on 25 January 2011 and replaces EL 3415. The new Combined Annual Reporting Period to 7 November was nominated following the granting of the subsequent ELs..

During the current reporting period no field work was undertaken on the tenements.

As no new technical data were acquired during the period, a formal report will not be submitted.

Expenditure details have been provided in the relevant individual Summary Reports.

Please contact me on 08 8342 4914 or 0415 397 870 if you require additional information.

Yours sincerely

Teena Coppin
Tenement Manager

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Directors: Greg Cochran • Rachel Rees • John Sibley

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investing in our energy

13 February 2013

EL Reporting Officer
Mineral Resources Division
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Dear Sir/Madam

ELs 4598, 4599, 4600 and 4651 – Stuart Shelf Project
Combined Annual Technical Report for the period ending 7 November 2012

ELs 4598-4600 were granted on 8 November 2010 and EL 4651 was granted on 25 January 2011.

During the current reporting period 8 November 2011 to 7 November 2012, no field work was undertaken on the tenements.

As no new technical data were acquired during the period, a formal report will not be submitted.

Expenditure details have been provided in the relevant individual Summary Reports.

Please contact me on 08 8342 4914 or 0415 397 870 if you require additional information.

Yours sincerely

Teena Coppin
Tenement Manager

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26 January 2014

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Dear Sir/Madam

ELs 4598, 4599, 4600 and 4651 – Stuart Shelf Project
Combined Annual Technical Report for the period ending 7 November 2013

ELs 4598-4600 were granted on 8 November 2010 and EL 4651 was granted on 25 January 2011. Renewals are pending for all four licences.

During the current reporting period 8 November 2012 to 7 November 2013, no field work was undertaken on the tenements.

As no new technical data were acquired during the period, a formal report will not be submitted.

Expenditure details have been provided in the relevant individual Summary Reports.

Please contact me on 08 8342 4914 or 0415 397 870 if you require additional information.

Yours sincerely

Teena Coppin
Tenement Manager

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Final Technical Report

EL4598, EL4599, EL4600 & EL4651

Author: U1A
Document ID: CORP_GEN_000_TP_010
Date Issued: 28/05/2014
Status: Final

Revision History			
Date	**Version**	**Summary of Change**	**Author**
28/05/14	1	Initial draft version.	U1A

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Bibliographic Data Sheet

Project Name:	Stuart Shelf Project.
Tenement Number:	EL4598 (Hesso), EL4599 (Charlinga), EL4600 (Bowen Hill) & EL4651 (Kangaroo Bluff)
Tenement Operator:	Uranium One Australia (U1A).
Report Type:	Final Technical Report.
Report Title:	Final Technical Report; EL4598, EL4599, EL4600 & EL4651.
Author:	U1A.
Date of Report:	3 June 2014.
1:250,000 map sheet:	TORRENS (SH53-16), PORT AUGUSTA (SI53-4).
Target Commodity:	Uranium.

Keywords: Uranium, hydrothermal fluids, IOCGU deposit, magnetic anomaly, gravity anomaly, Pandurra Formation, Tapley Hill Formation, Hiltaba Granite Suite, Gairdner Dyke Swarm, Cariewerloo Basin, Stuart Shelf

Executive Summary

This report is a summary of all exploration activities carried out on EL4598 “Hesso”, EL4599 “Charlinga”, EL4600 “Bowen Hill” and EL4651 “Kangaroo Bluff” by Uranium One Australia (U1A) since the beginning of tenure.

Uranium One Australia (U1A) acquired the Stuart Shelf Project tenements in 2005 with the aim of exploring for uranium mineralisation broadly analogous to deposits of the Athabasca Basin in Canada. The exploration model involved remobilisation of uranium from the Palaeoproterozoic basement rocks during the emplacement of the Neoproterozoic Gairdner Dyke Swarm, and re-deposition of uranium where reactive lithologies (such as the Tapley Hill Formation) are encountered.

Work completed on the three tenements in question included a regional infill gravity survey (total of 2,687 stations) and a diamond drilling program comprising seven holes for 3,179m which are summarized in the table below. Unfortunately no evidence of hydrothermal alteration was encountered during the drilling program, and therefore the prospectivity of the Stuart Shelf tenements for uranium mineralisation was downgraded.

Reporting period	Tenement			
	EL3398 / 4598 "Hesso"	**EL3399 / 4599 "Charlinga"**	**EL3400 / 4600 "Bowen Hill"**	**EL3415 / EL4651 "Kangaroo Bluff"**
2005 - 2006	Desktop study. No field work	Desktop study. No field work	Desktop study. No field work	Desktop study. No field work
2006 - 2007	Desktop study. No field work	Desktop study. No field work	Desktop study. No field work	Desktop study. No field work
2007 - 2008	Gravity survey (702 stations)	Gravity survey (892 stations)	Gravity survey (476 stations)	Gravity survey (617 stations)
		Three diamond drill holes:	One diamond drill hole:	Three diamond drill holes:
		* CHR001 (540m EOH)	* BHL001 (633m EOH)	* KBF001 (342m EOH)
		* CHR002 (532m EOH)		* KBF002 (222m EOH)
		* CHR003 (511m EOH)		* KBF003 (399m EOH)
2008 - 2009	No field work	No field work	No field work	No field work
2009 - 2010	No field work	No field work	No field work	No field work
2010 - 2011	No field work	Ground magnetic survey:	Ground magnetic survey:	Ground magnetic survey:
		* 2 areas, 43 lines.	* 1 area, 13 lines.	* 1 area, 13 lines.
2011 - 2012	No field work	No field work	No field work	No field work
2012 - 2013	No field work	No field work	No field work	No field work

Summary of work completed on the Stuart Shelf project by U1A during tenure.

1 Introduction

Three of the tenements in question (EL3398 “Hesso”, EL3399 “Charlinga” and EL3400 “Bowen Hill”) were granted to U1A on the 19th August 2005 initially for a period of one year and were renewed annually. The three tenements were then replaced by subsequent ELA’s EL4598, EL4599 and EL4600 in November 2010 for a period of two years and subsequently renewed for a further year in November 2012. The fourth tenement EL4651 (Kangaroo Bluff) was granted to U1A on 15th September 2005 initially for a period of one year and renewed annually. It was then replaced by subsequent ELA EL4651 in January 2011 for a period of two years and subsequently renewed for a further year in January 2013.

1.1 Location, Land Access & Native Title

Access from Adelaide and Port Augusta is via the sealed Stuart Highway, then graded and un-graded station tracks. Four-wheel drive vehicles are able to easily access the area at most times. The land is used for sheep grazing, which is supported by dams, bores, mills, tanks and numerous tracks, grids and fences. The owners of the Mahanewo, Yudnapinna, Kootaberra and Hesso pastoral properties were kept informed of the company’s activities.

There are two overlapping Native Title Claims that cover the five tenements. Part 9b negotiations, including the signing of a formal agreement with the Barngarla Group, were completed. As well as general exploration agreements, Cultural Heritage Site Clearance Surveys were carried out by both the Kokatha and Barngarla Native Title Claimant groups in April 2008, in preparation for drilling.

1.2 Previous Exploration

In 1968-1970 Noranda carried out percussion drilling to seek shallow Pb-Zn mineralisation SE of Lake Dutton in the Woocalla Dolomite. A large sub-economic resource was delineated. A number of companies have unsuccessfully explored for diamonds and kimberlites since the 1970s. In the early 1970s Pacminex carried out exploration work for copper in the Lake McFarlane area. Results were negative. Shallow hammer drilling was completed in the 1970s by Abminco in a search for Mt Gunson style copper mineralisation at the base of the Whyalla and the top of the Pandurra Formation in the Yudnapinna area.

In 1977 Dampier Mining drilled one diamond drill hole to 154m (on EL 322) near a pair of Gawler Range Volcanics (GRV) outliers, to investigate stratiform base metal potential of the Adelaidean sediments. The drilling demonstrated that there was no Adelaidean and that the G.R.V.'s were overlain by Pandurra Formation. No mineralisation was intersected. In the late 1970s Australian Selection explored within EL 301, where they sought stratiform copper mineralisation in the basal Neoproterozoic Tapley Hill Formation (THF). This comprised percussion drilling of aeromagnetic anomalies. No THF was found west of Lake McFarlane (the whole of EL 3415 is west of the Lake). All holes were radiometrically logged, revealing that the Pandurra Formation was found to be lithologically consistent throughout the area.

In the early 1980s Afmeco explored EL 708 for IOCG style mineralisation by shallow drilling aeromagnetic and gravity anomalies on the eastern side of Lake Gairdner. None was discovered. There was no shallow pre GRV basement and the Pandurra Formation only contained background base metal and uranium values. In this time PNC held EL 1245 in the Kangaroo Bluff area of EL3415. Ground follow up of airborne radiometric anomalies confirmed them as salt lake related and the results of drilling uraniferous (?) dacite, a magnetic anomaly and a buried fault were negative.

1.3 Geological Setting

The oldest rocks in the area form part of the Gawler Craton, an Archean-Paleoproterozoic crystalline basement that underlies a very large area from the southern Eyre Peninsula coast to the Torrens Hinge Zone, more than 500km to the north east. This basement is represented by the highly deformed and metamorphosed marine shelf sediments of the Paleoproterozoic Hutchison Group and the Lincoln Complex metagranitoids. These units are in the order of 1950Ma to 1685Ma years old. Except for minor outliers, the northern and eastern part of the Craton lies under later Mesoproterozoic and Neoproterozoic sedimentary and felsic volcanic cover that is thick and relatively undeformed. The eastern margin of the Gawler Craton is defined by the Torrens Hinge Zone, a graben like fault system that controlled deposition during the development of the Adelaide Geosyncline (800Ma - 500Ma). A widely distributed but poorly understood sequence of hematitic siltstone, the Wandearah Siltstone, occurs in the central eastern part of the Gawler Craton. It is only known from drilling and is a weakly metamorphosed succession of hematitic siltsone, dolomite and calcsilicates considered to be the youngest element of the Craton.

Voluminous felsic dominated volcanics, the Gawler Range Volcanics (GRV) formed at around 1600Ma and were accompanied by large anorogenic granite plutons soon after (1585Ma). These are collectively known as the Hiltaba Suite and overly and intrude the older units. The Mesoproterozoic felsic magma subaerially erupted over the Paleoproterozoic basement in a midcontinental tectonic setting (intracratonic rifting of the Gawler Craton). The volcanics outcrop over a large area of the Eyre Peninsula but disappear under deep Mesoproterozoic and Neoproterozoic sediments in the northern and eastern part of the Craton. Limited drilling of the concealed parts of the Volcanics has demonstrated that they can be hydrothermally altered/metasomatised and host sulphide mineralisation. This contrasts with the Volcanics in the wide area, as they are exposed in the central part of the Gawler Craton where they are only rarely altered.

At around 1400Ma a 400km long, northwest trending, intracratonic trough, referred to as the Cariewerloo Basin, developed as a result of the uplift and erosion of the to the south east. It is filled with a monotonous sequence of unmetamorphosed flat lying arenaceous red bed sediments (Pandurra Formation) derived at least in part from the that underlie a substantial part of the basin. There is evidence that a large thickness of Pandurra Formation has been removed by erosion during the Neoproterozoic/Adelaidean. Deep drilling on the Stuart Shelf has demonstrated that the Pandurra Formation is present beneath the Adelaidean as far east as the Torrens Hinge Zone, except for small areas of tectonic uplift, where it was eroded prior to Adelaidean sedimentation. The Neoproterozoic Stuart Shelf is located on the eastern margin of the Gawler Craton and comprises flat lying shallow water sediments disconformably overlying the Pandurra and ranging in thickness from around 300m to over a kilometre. The western margin of the Shelf is denoted by the disappearance of the sediments through stratigraphic thinning. The Torrens Hinge Zone is interpreted as being the eastern margin of the Stuart Shelf.

The other significant element of the geology of the region is a very large swarm of mafic dykes known as the Gairdner Dyke Swarm. Individual dykes are greater than 50m in thickness, over 30km long, trend northwest and are vertical. The dykes anastomose frequently and have a density of up to one per kilometre measured across strike. Unknown in outcrop, the dykes have only been identified by limited drilling, where they have exhibited chilled margins and caused sandstone metasomatism in the Pandurra Formation. Their emplacement date seems to be post Pandurra and pre-Adelaidean during a period of SW-NE basin extension when they may have intruded faults developed during this period. Their distribution is principally limited to a NW-SE area bounded by the Neoproterozoic and Mesoproterozoic sedimentary basins (Figure 1).

Syn-depositional faulting during the Neoproterozoic created an uplifted area/horst at Pernatty in the central part of the Stuart Shelf. As a consequence the overlying Adelaidean sediments have been removed by erosion exposing the underlying Pandurra Formation. In the Olympic Dam area similar fault-bounded uplift has occurred. The uplift was post Mesoproterozoic and pre Neoproterozoic and was followed by the erosion of the Pandurra Formation (?Marinoan glaciation) before the emplacement and extrusion of the Olympic Dam deposit. The Adelaidean/Neoproterozoic sediments were then deposited on a Marinoan glaciated surface. A similar uplift also occurred in the Oak Dam area about 70km SSE of Olympic Dam. These three uplifted areas; Pernatty Culmination, Olympic Dam and Oak Dam manifest themselves as strong magnetic anomalies because of the reduced sedimentary cover and presence of Hiltaba Suite intrusive and extrusives.

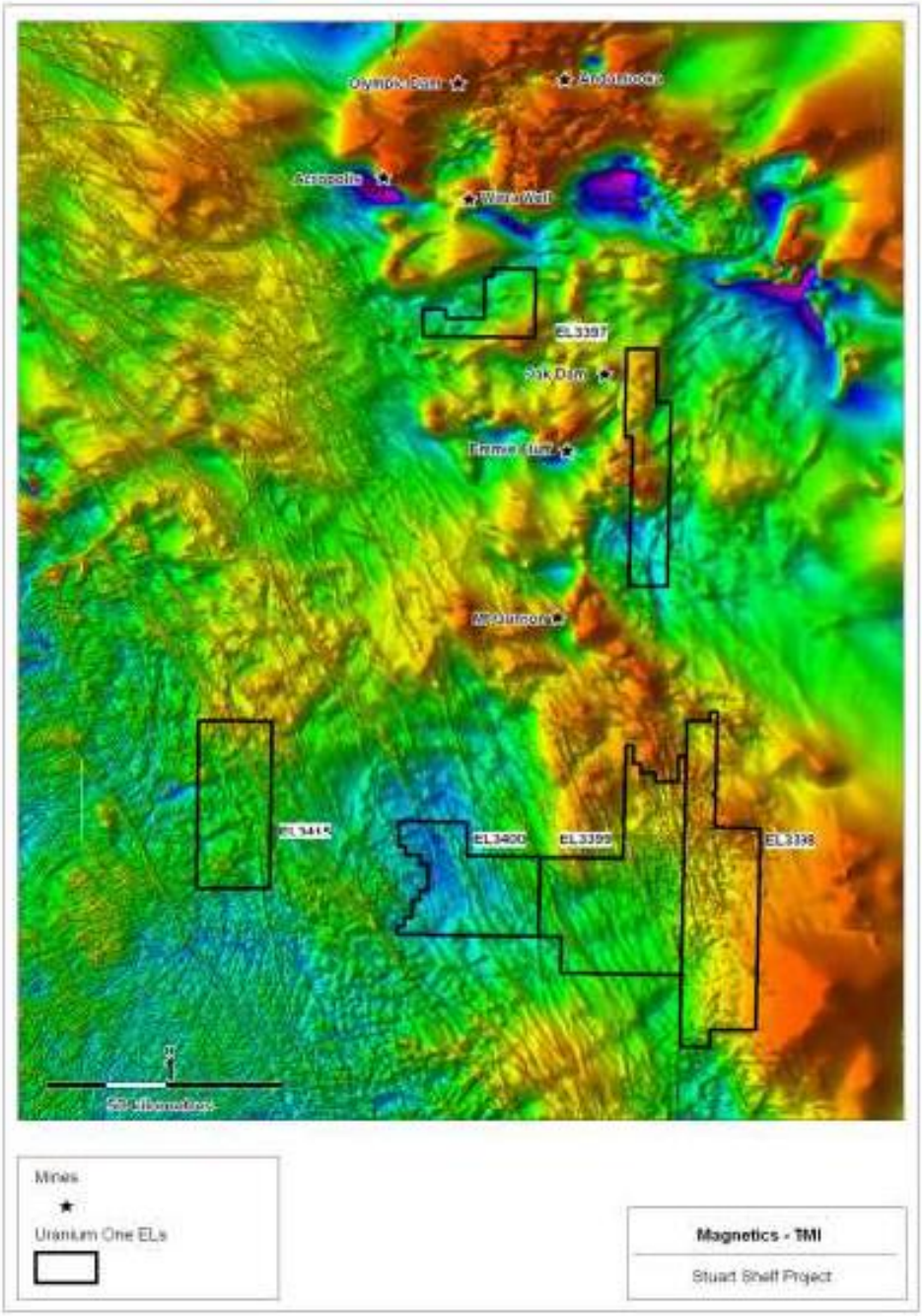


Figure 1. Uranium One Australia tenements over regional magnetics (TMI).

1.4 Exploration Rationale

Within the Stuart Shelf the pre-eminent target is an Olympic Dam analogue. The Shelf sediments are primarily considered a cover sequence and not a target in themselves. The targets are strongly iron metasomatised Hiltaba Suite intrusive/extrusive complexes that will have co-incident or near co-incident magnetic and gravity anomalies. Because the Carrapateena discovery was associated with relatively low order geophysical anomalism, some companies are pursuing a low order anomaly strategy.

Because depth of cover is a critical economic element to the development of any deposit, some companies are targeting the shallower and potentially uplifted areas to explore. These will hopefully have less than 500 metres of cover. Such areas are in the vicinity of Olympic Dam (i.e. Acropolis, Wirrda Well), Oak Dam and the Pernatty Uplift/Culmination at Mt Gunson. Regions where the cover is deeper than 400 metres will possibly make mining unprofitable because of the additional capital cost. Depth to basement studies are based on the limited number of holes that have penetrated the cover (and that are on open file) and geophysical interpretation. As such they are open to interpretation.

A few companies are starting to consider the uranium potential of the sediments of the Cariewerloo Basin and Stuart Shelf. However, very little drilling (and quite shallow at that) is known to have been directed at such targets. To that extent, the entire region is under-explored. The Pandurra Formation, which constitutes the Cariewerloo Basin, has many stratigraphic similarities to the Athabasca Basin of Canada, where high grade uranium deposits have been discovered since the 1950s. The Basin is underlain by Gawler Range Volcanics which overlie the Gawler Craton suite of metamorphics. All three geological entities have been intruded by the Gairdner Dyke Swarm in the central eastern part of the Craton (Figure 2).

The emplacement of dykes with a northwest trend has been linked to a major northeast–southwest-trending crustal extension event consistent with the onset of rifting, early graben development and basic volcanism during the early tectonic evolution of the Adelaide Geosyncline.

The dyke swarm is poorly understood, visible only from magnetic surveying and does not outcrop. Since the dykes are subvertical they are only rarely intersected. The dykes have a very widespread distribution within the Craton (in excess of 600km x 100km) and are individually of significant dimension (>30m x 10km). This suggests that they are fed by a large mafic source/batholith lying deep beneath the Craton that is quite unrelated spatially, to the acid igneous Hiltaba Suite batholiths. The dykes have the potential to:

- Tap and remobilise metal sources from within the crystalline basement.
- Facilitate the transport of hydrothermal fluids from a deep crustal/mantle mafic source utilizing the same Basin-creating structures.
- Provide a heat source to move the fluids and metasomatise the intruded sedimentary packages where pore space and reactive material is encountered. This has been observed in past drilling with respect to the Pandurra Formation.

Dykes similar to those of the Gairdner Dyke Swarm play an integral role in the migration and emplacement of the ore at Valhalla/Westmoreland, NW Queensland.

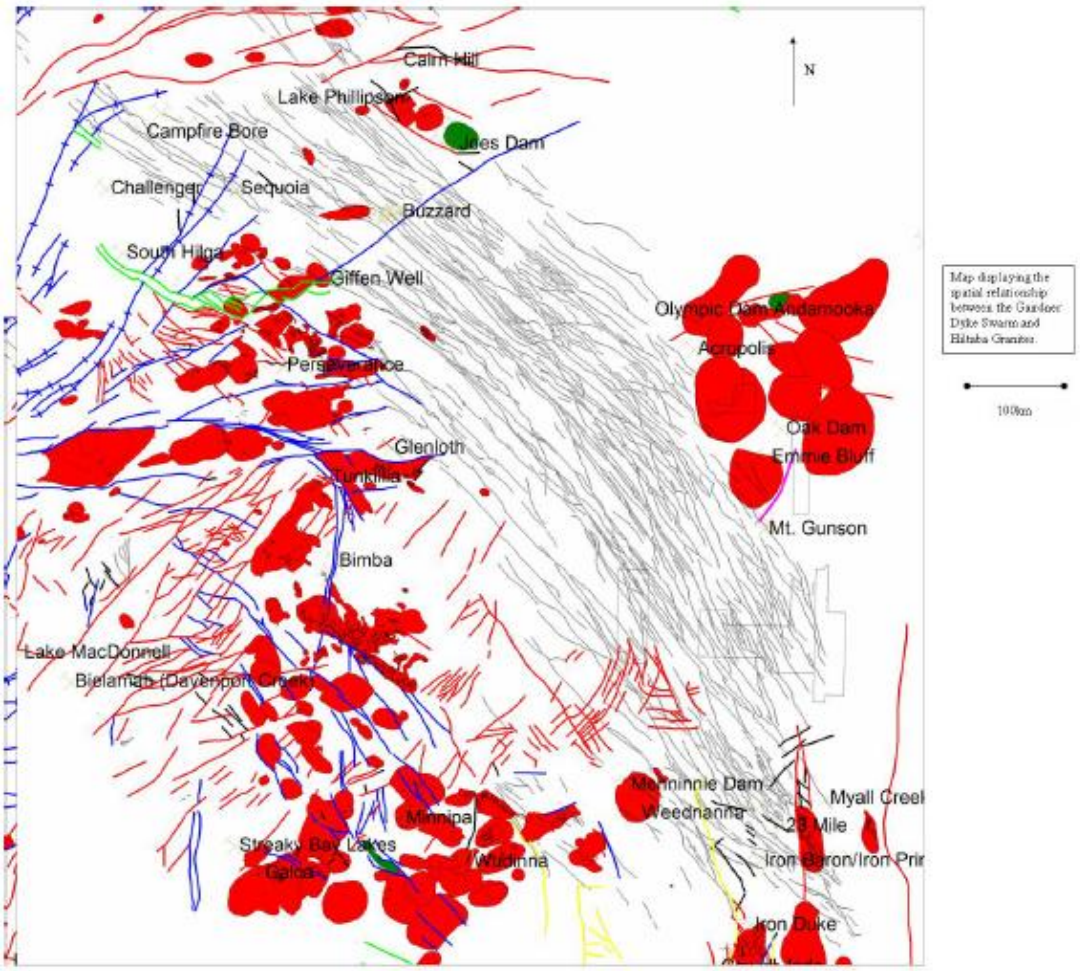


Figure 2. Gairdner dyke swarm and Hiltaba Granites.

The combination of the following factors makes the Pandurra Formation a prime, but poorly tested, uranium target:

- Geological, age and tectonic similarities between the Cariewerloo Basin and the Athabasca Basin.
- Association of significant amounts of uranium and other heavy metals in pre Pandurra magmatic activity (Hiltaba Suite).
- Presence of uranium and carbonaceous units in the Gawler Craton Basement (Hutchison Group of Eyre Peninsula).
- Reasonable target depths (<500m).
- Potential for oxidising environment of the Pandurra Formation interfacing with a reducing fluids emanating from deep in the basement or mantle.
- Both early and late deep structures to plumb as far as the lower crust and upper mantle and all that lies between.
- Large number of mafic dyke intersections with the potential to remobilize uranium rich fluids.
- The fine grained and reactive Tapley Hill Formation (Adelaidean) that occupies a position above the Pandurra has the capacity to both physically and chemically trap migrating ore fluids at the upper disconformity.
- Drilling has intersected some Gairdner dykes that have metasomatised the surrounding sediment, demonstrating their capacity to be involved in ore forming processes.

2 Exploration activities summary

The following is a summary of all exploration work carried out by Uranium One Australia on the Stuart Shelf project since the beginning of tenure for EL3398 (Hesso), EL3399 (Charlinga), EL3400 (Bowen Hill) and EL3451 (Kangaroo Bluff). These tenements were replaced by subsequent EL's in November 2010, being EL4598 (Hesso), EL4599 (Charlinga), EL4600 (Bowen Hill) and EL4651 (Kangaroo Bluff).

2.1 Year One (2005 - 2006)

No field work was undertaken during the first year of tenure. The main focus for this period was a desktop review of existing datasets along with re-processing and interpretation of regional geophysical data. The aim of this work was to develop targets for additional geophysical surveys and future drilling.

2.2 Year Two (2006 - 2007)

No field work was undertaken during the second year of tenure. Work for this period included a continuation of the desktop review and planning for an upcoming regional gravity survey planned for the third year of tenure.

2.3 Year Three (2007 - 2008)

Field work carried out during the third year of tenure included a regional gravity survey and a diamond drilling program.

2.3.1 Airborne Gravity Survey

In August 2007, DaishSat Geodetic Surveyors were commissioned to complete a helicopter supported gravity survey over the Stuart Shelf Project, with a total of 2,687 stations collected over the project area (1km x 1km infill grid for the existing PACE survey). The station breakdown is presented in Table 1 and station location maps are presented in Figure 3, Figure 4 and Figure 5 and Figure 6.

	EL3398 "Hesso"	**EL3399 "Charlinga"**	**EL3400 "Bowen Hill"**	**EL3415 "Kangaroo Bluff"**
Gravity stations	702	892	476	617

Table 1. Distribution of gravity stations from the 2007 survey.

The data acquired during this survey was processed in-house at Uranium One and used in conjunction with existing geophysical datasets to further refine the regional drill targets, with drilling scheduled to commence in May 2008.

Figure 3. Gravity station locations within EL3398 "Hesso".

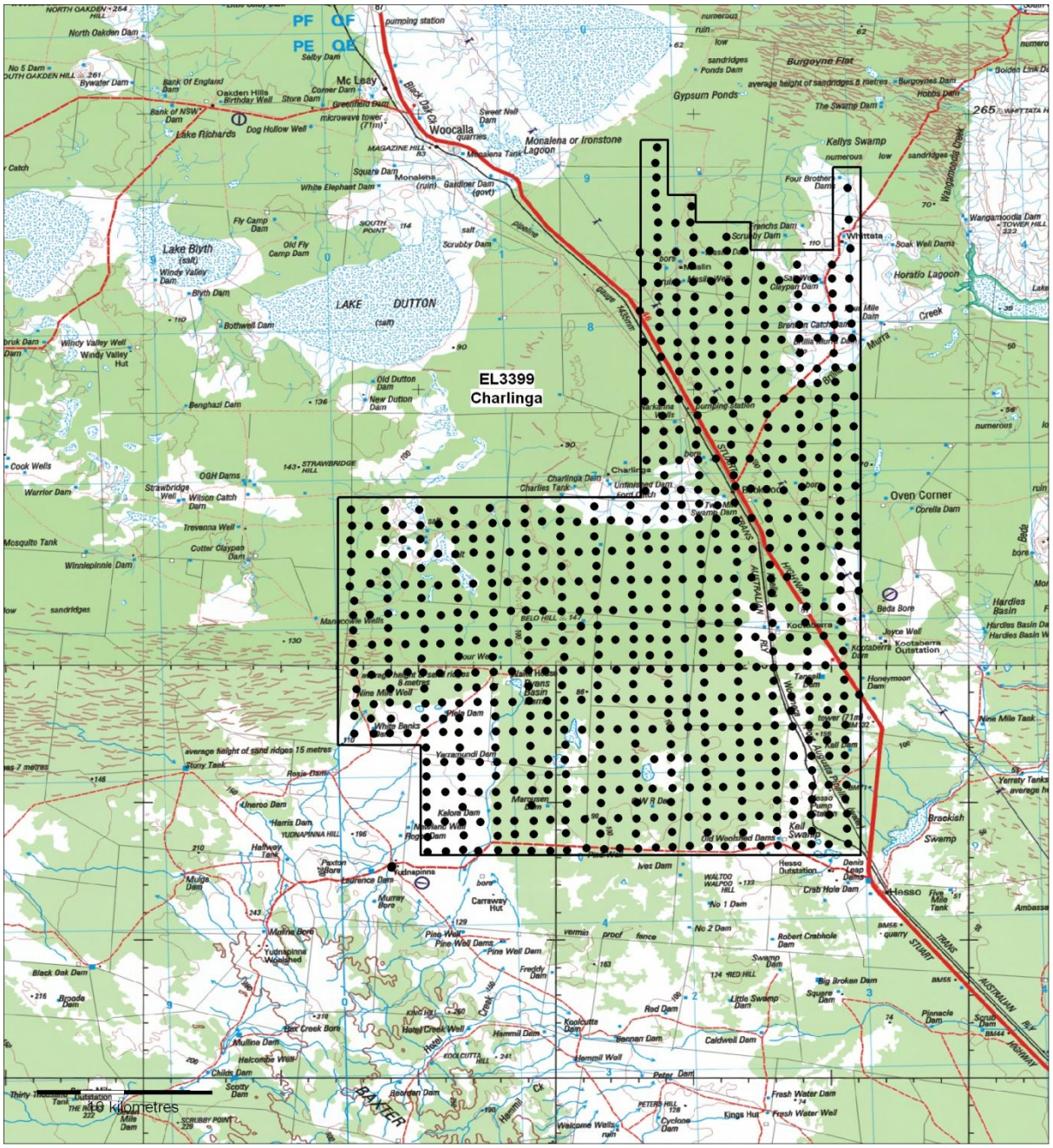


Figure 4. Gravity station locations within EL3399 "Charlinga".

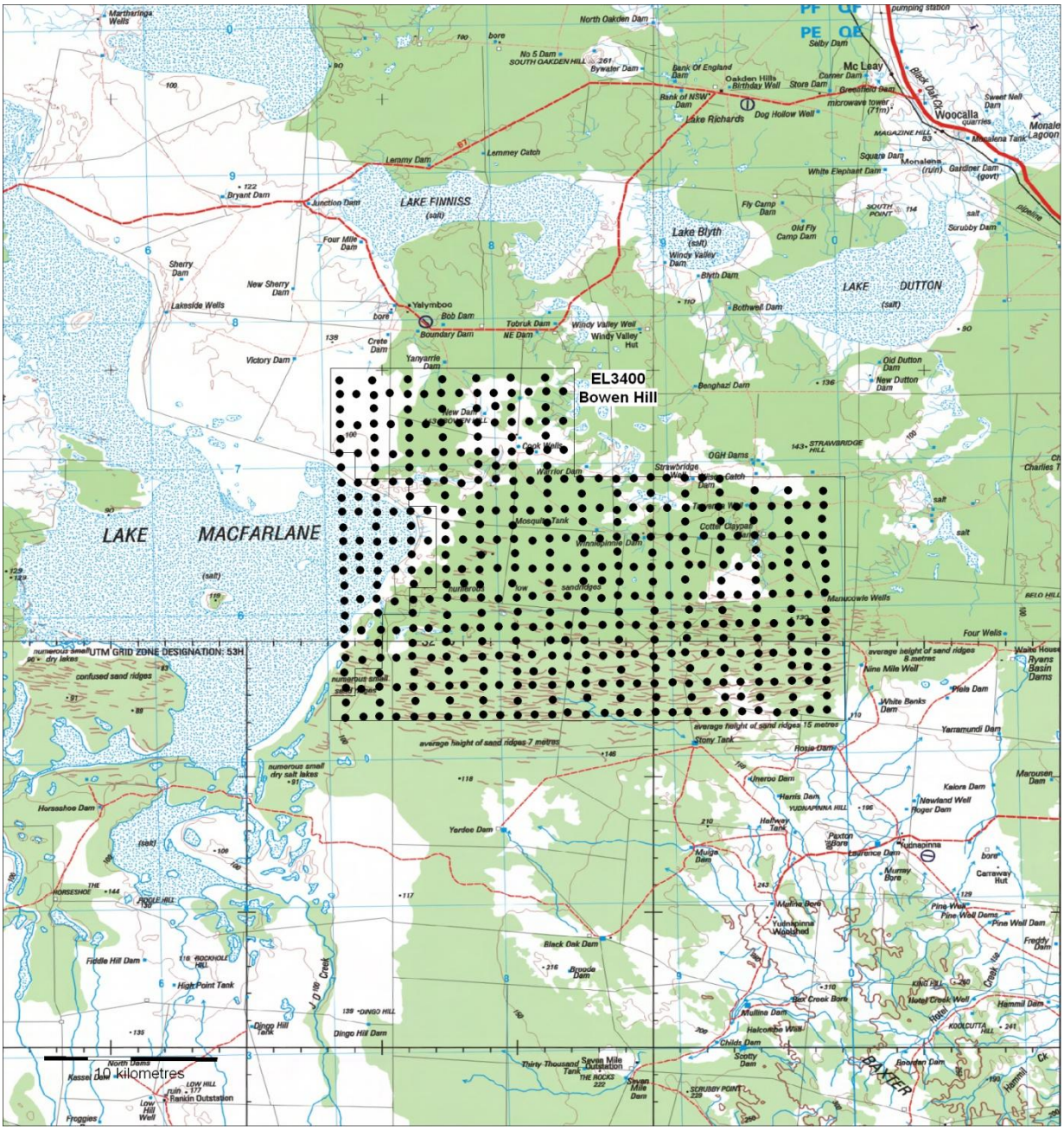


Figure 5. Gravity station locations within EL3400 "Bowen Hill".

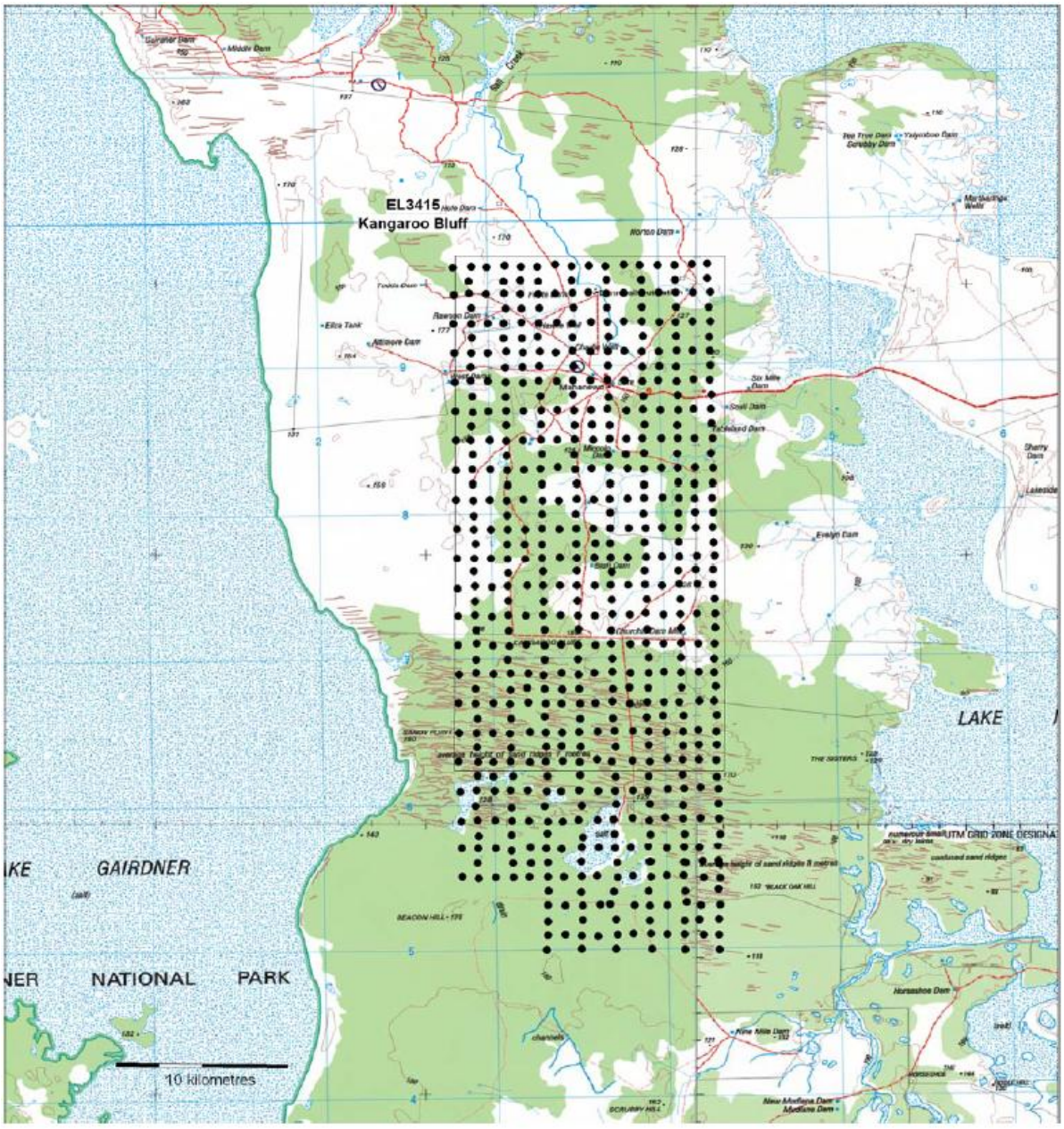


Figure 6. Gravity station locations within EL3451 "Kangaroo Bluff".

2.3.2 Diamond Drilling Program

Coughlan Drilling Pty Ltd was commissioned to conduct a regional diamond drilling program on the Stuart Shelf Project, commencing in late May 2008. Within the project area, three holes were drilled within EL3399 “Charlinga”, three holes on EL3415 “Kangaroo Bluff” and one hole within EL3400 “Bowen Hill”. Drill holes planned for EL3398 “Hesso” were postponed based on drilling results from the neighbouring tenements. Drill hole details are presented in Table 2 and an overview of hole locations is presented in Figure 7.

Hole ID	Tenement	Easting	Northing	Azimuth (Mag)	Dip (°)	Tot Depth (m)
		MGA94, Z53				
CHR001	EL3399	730132	6468028	038	80	540.3
CHR002	EL3399	724619	6460058	053	80	531.7
CHR003	EL3399	707248	6466856	038	80	510.6
BHL001	EL3400	680175	6472102	053	60	633.3
KBF001	EL3415	636501	6491891	083	60	342.3
KBF002	EL3415	631423	6485134	353	60	222.3
KBF003	EL3415	642722	6484623	218	60	398.6

Table 2. Drill hole details for the 2008 diamond drilling program.

The drill chips and core of all drill-holes were logged and geologically described. The geological logs were then used to guide lithological characterisation and interpretation of the down hole geophysical data. Down-hole geophysical logging of each drill hole was carried out utilising a gamma tool (to pick up anomalous radioactivity), a resistivity tool and a dual induction tool (for lithological characterisation).

The holes were targeted to intersect the unconformity between basement volcanics and the Pandurra Formation sandstone with possible involvement of intrusive Gairdner Dykes, looking for unconformity-style mineralisation. However, no uranium mineralisation or associated alteration was detected.

2.4 Year Four (2008 - 2009)

Field work for the fourth year of tenure was limited to minor geological mapping and reconnaissance activities following the 2008 drilling program. Other work included on-going interpretation of the 2007-2008 gravity survey and drilling program results.

2.5 Year Five (2009 - 2010)

No field work was carried out during this reporting period. Activities were limited to rehabilitation and desktop review work.

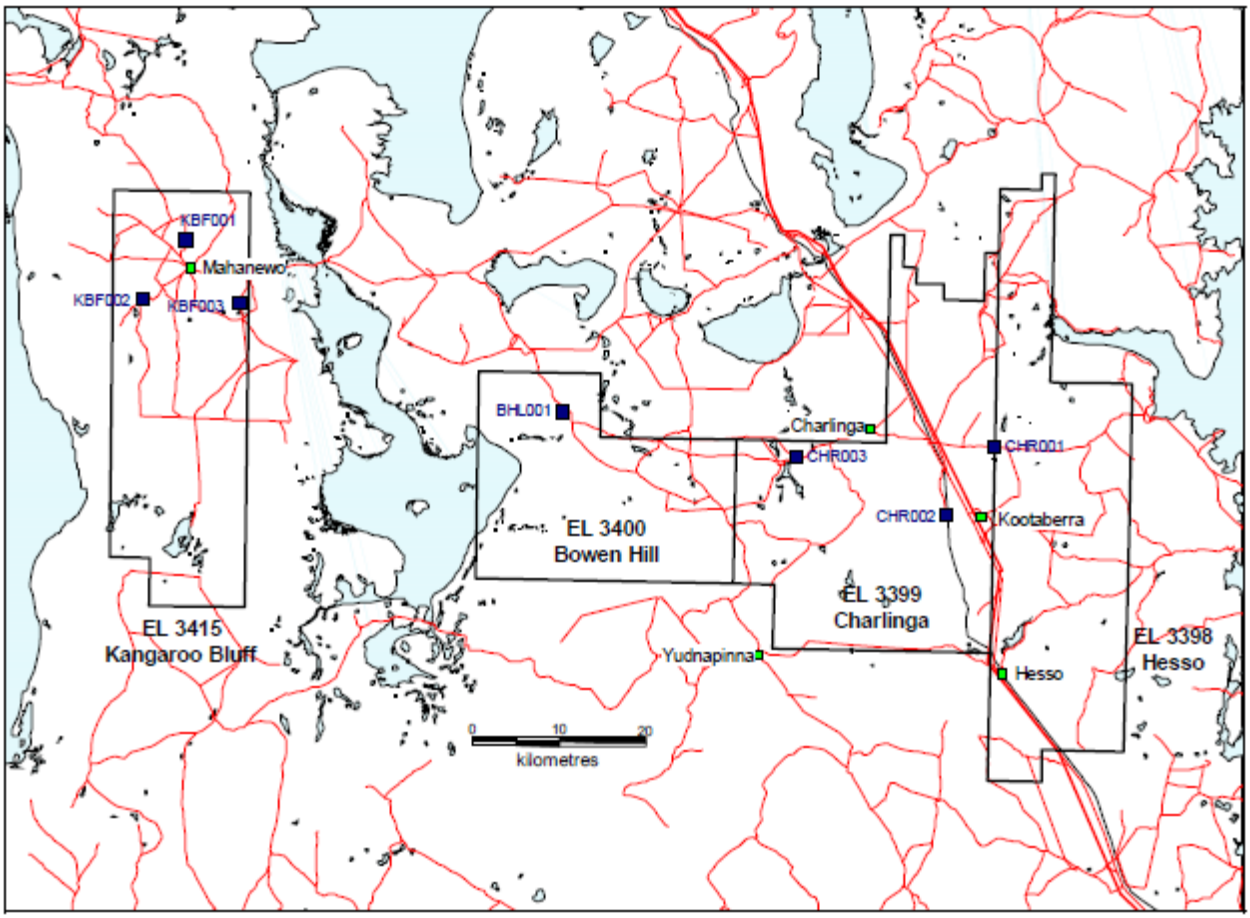


Figure 7. Location map of the 2008 Stuart Shelf Project diamond drill holes.

2.6 Year Six to Year Eight (2010 - 2013)

In March 2011, Euro Exploration Services Pty Ltd was commissioned to carry out a ground magnetic survey over several points of interest within EL4599 “Charlinga” and EL4600 “Bowen Hill” as shown in Figure 8. Two individual areas were surveyed within EL4599 (Figure 9 & Figure 10) for a total of 43 lines, while one area was surveyed within EL4600 (Figure 11) for a total of 13 lines. Magnetic grid images can be found in Appendix 1. The purpose of this work was to test potential zones of interest associated with the Neoproterozoic Gairdner Dyke Swarm, in particular zones of potential hydrothermal fluid activity and associated alteration. The survey did not produce any compelling drill targets, and no further work was carried out.

Data was not available, and there for not submitted to PIRSA.

No further work was carried out on the Stuart Shelf project during the period November 2011 – November 2013, as U1A shifted its focus to the Honeymoon Mine and Gould’s Dam Project and was seeking a joint venture partner to continue any exploration activities within the Stuart Shelf project area.

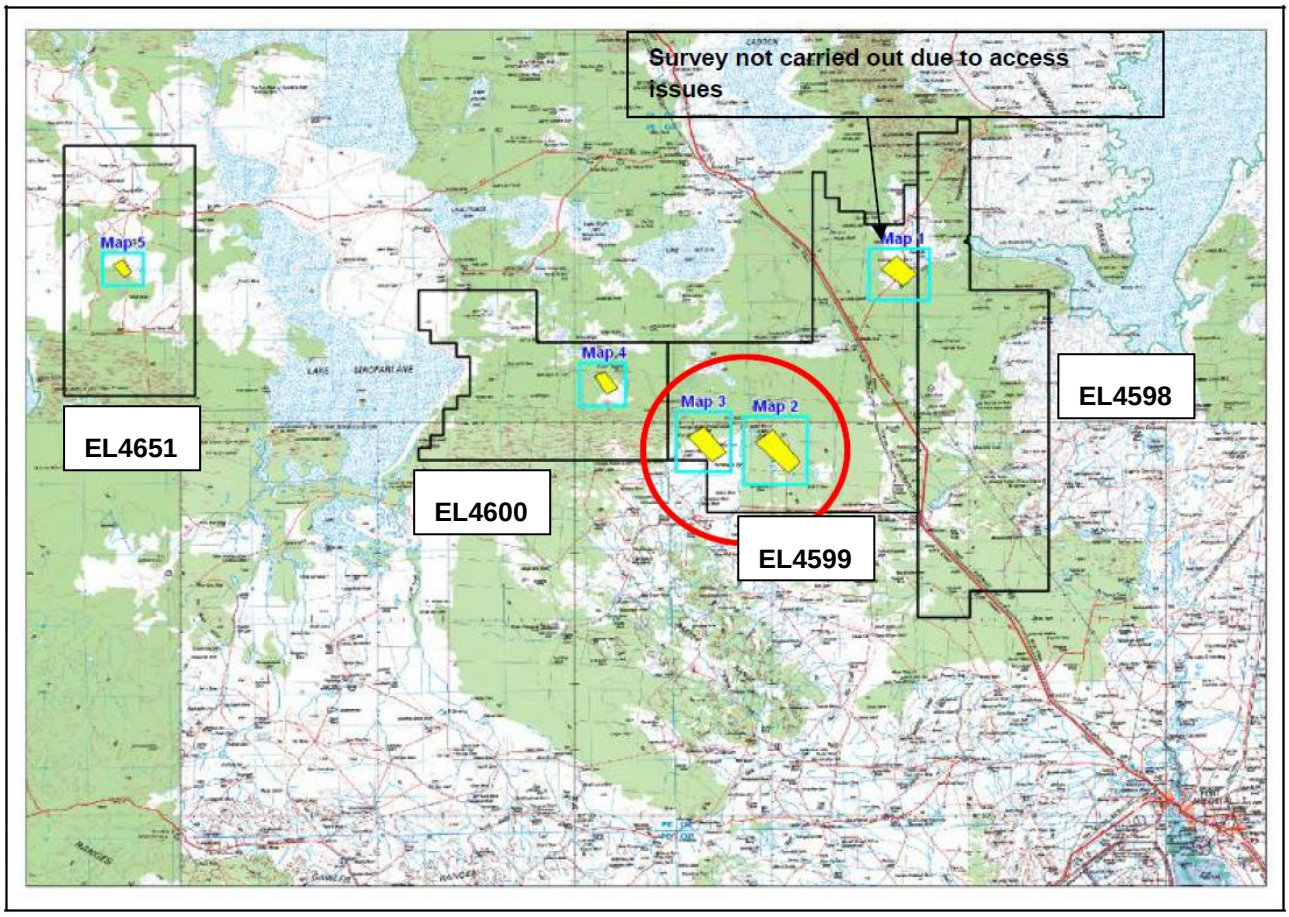


Figure 8. Location of 2011 ground magnetic surveys.

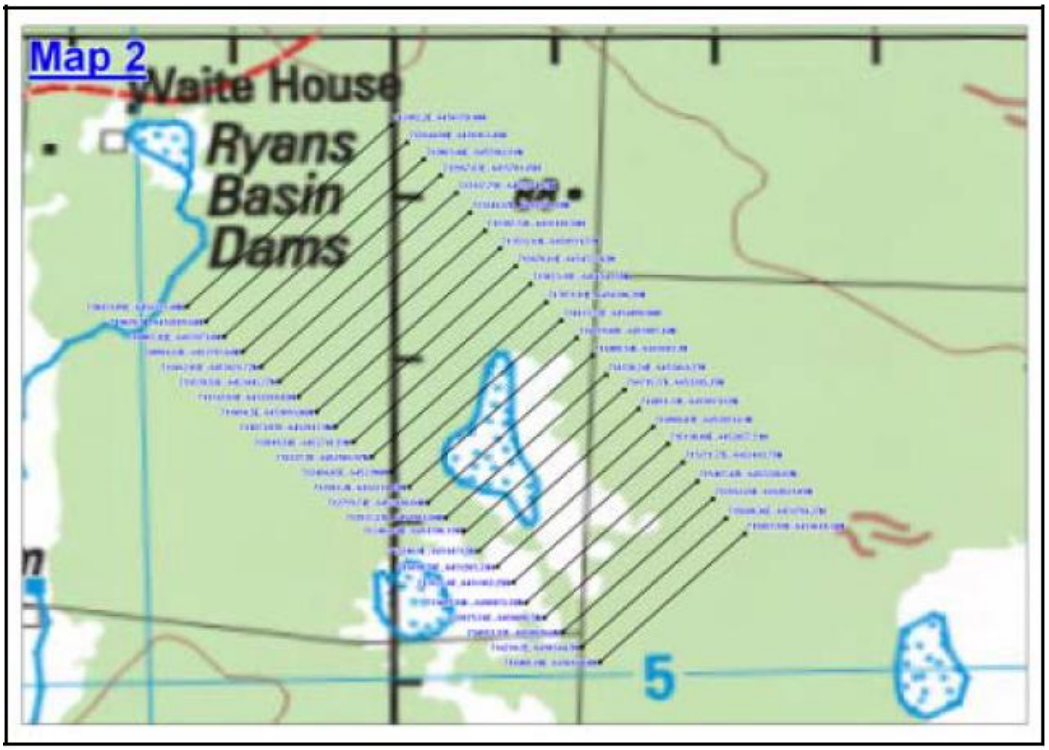


Figure 9. Survey lines from the map 2 area within EL4599.

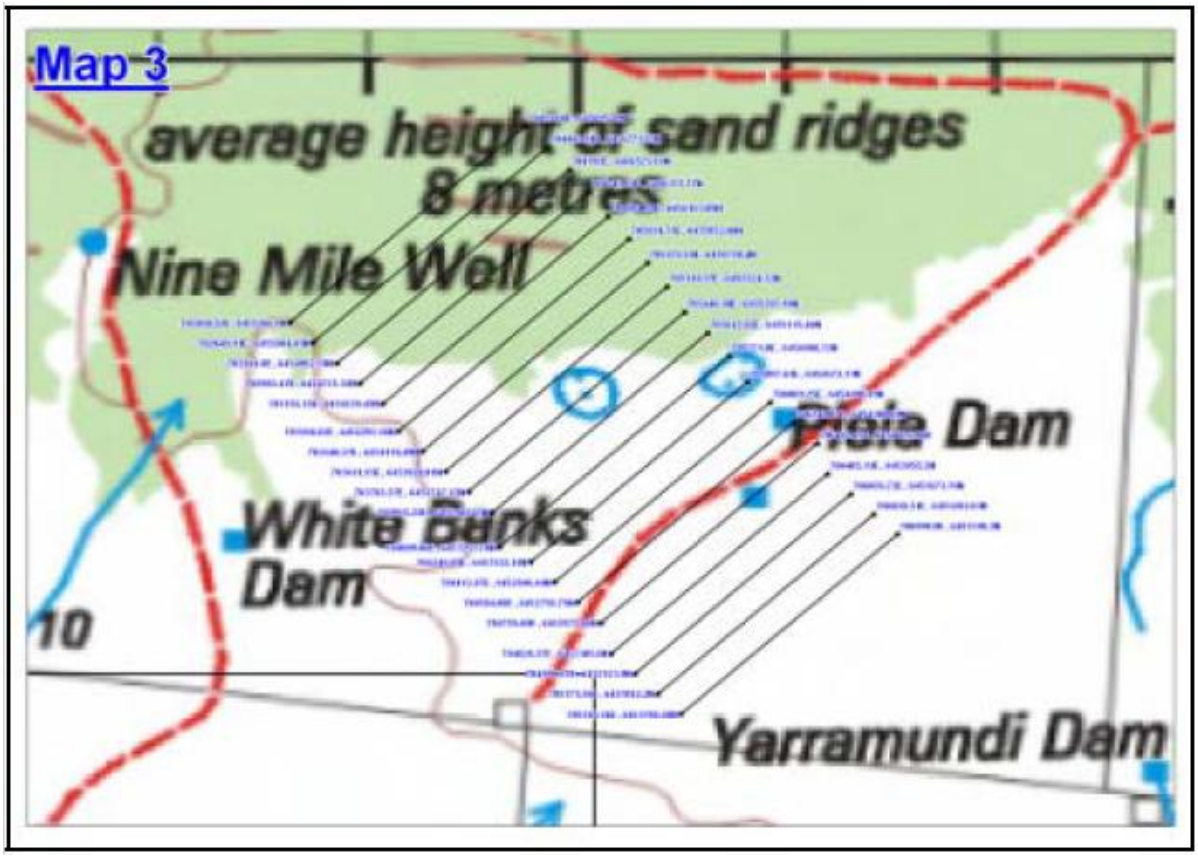


Figure 10. Survey lines from the map 3 area within EL4599.

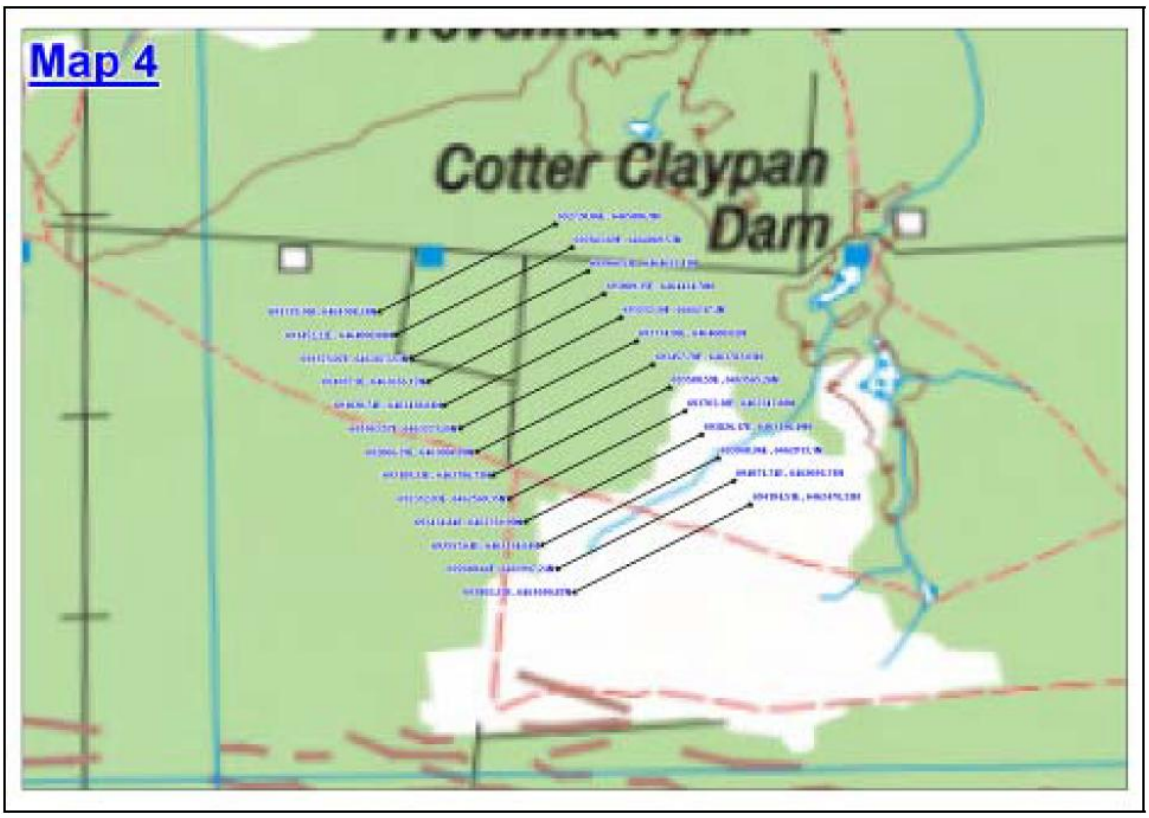


Figure 11. Survey lines from the map 4 area within EL4600.

3 Summary

Uranium One Australia (U1A) acquired the Stuart Shelf Project tenements in 2005 with the aim of exploring for uranium mineralisation broadly analogous to deposits of the Athabasca Basin in Canada. The exploration model involved remobilisation of uranium from the Palaeoproterozoic basement rocks during the emplacement of the Neoproterozoic Gairdner Dyke Swarm, and re-deposition of uranium where reactive lithologies (such as the Tapley Hill Formation) were encountered.

Following a regional infill gravity survey, U1A completed a diamond drilling program searching for evidence of hydrothermal alteration and potential uranium mineralisation associated with the Gairdner Dyke Swarm within its Stuart Shelf tenements. Unfortunately no evidence of hydrothermal alteration was encountered during the drilling program, and therefore the prospectivity of the Stuart Shelf tenements for uranium mineralisation was downgraded.

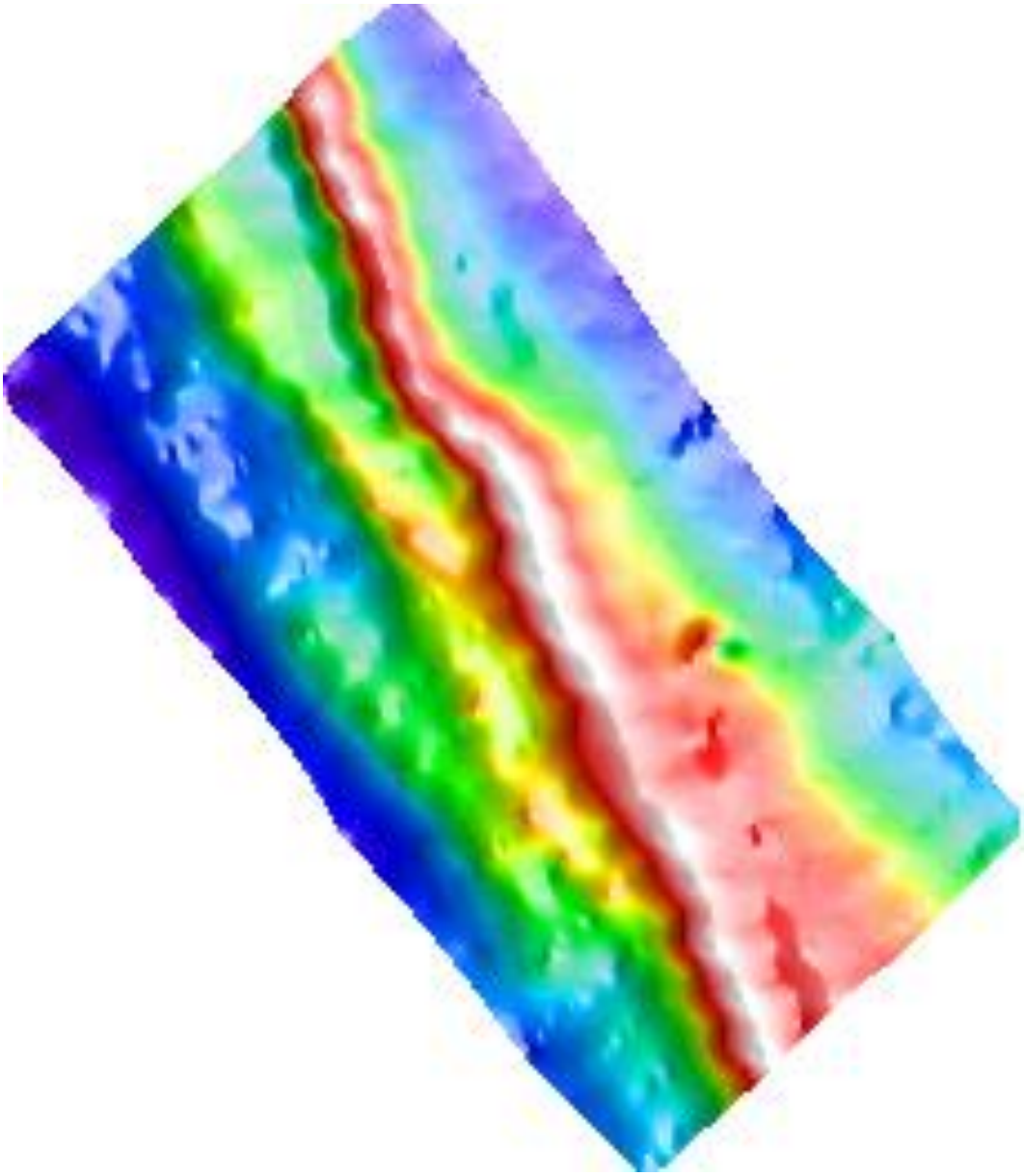
4 Expenditure

Total expenditure for the three tenements over the duration of tenure is presented below in Table 3. A detailed breakdown of expenditure for each reporting period can be found in the Annual Technical Reports submitted previously to DMITRE.

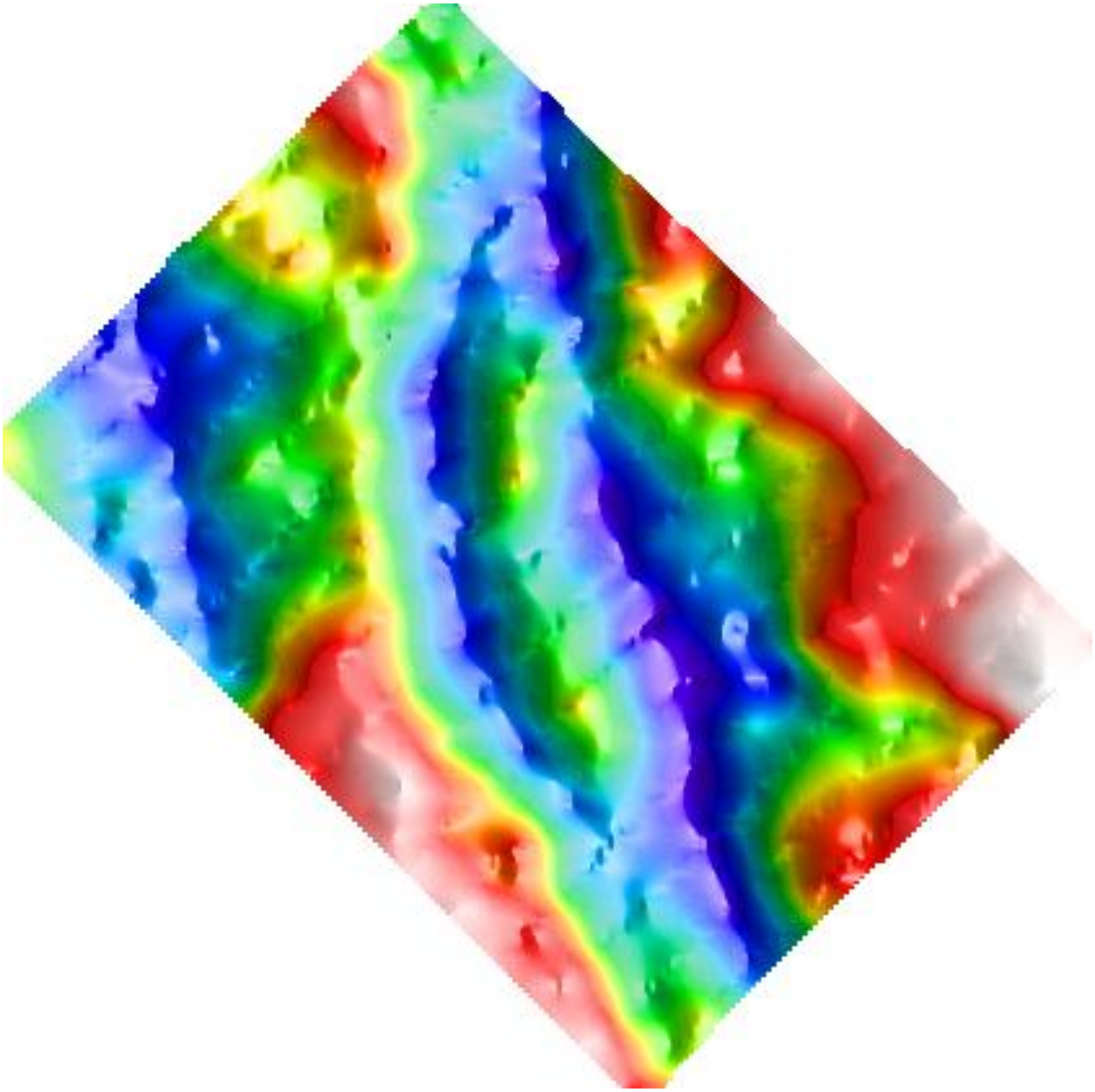
Reporting period	Tenement expenditure			
	EL3398 / 4598 "Hesso"	EL3399 / 4599 "Charlinga"	EL3400 / 4600 "Bowen Hill"	EL3415 / 4651 "Kangaroo Bluff"
2005 - 2006 (Year one)	$17,000	$17,500	$16,000	$16,500
2006 - 2007 (Year two)	$5,000	$5,500	$5,500	$5,500
2007 - 2008 (Year three)	$156,100	$585,830	$298,440	$429,990
2008 - 2009 (Year four)	$52,562	$274,200	$111,253	$244,790
2009 - 2010 (Year five)	$41,637	$42,260	$37,441	$49,222
2010 - 2011 (Year six)	$21,101	$35,353	$26,963	$20,634
2011 - 2012 (Year seven)	$3,745	$8,883	$2,972	$6,222
2012 - 2013 (Year eight)	$6,115	$6,748	$3,981	$5,040
TOTAL:	**$303,260**	**$976,274**	**$502,550**	**$777,898**

Table 3. Total expenditure for Stuart Shelf tenements over life of tenure.

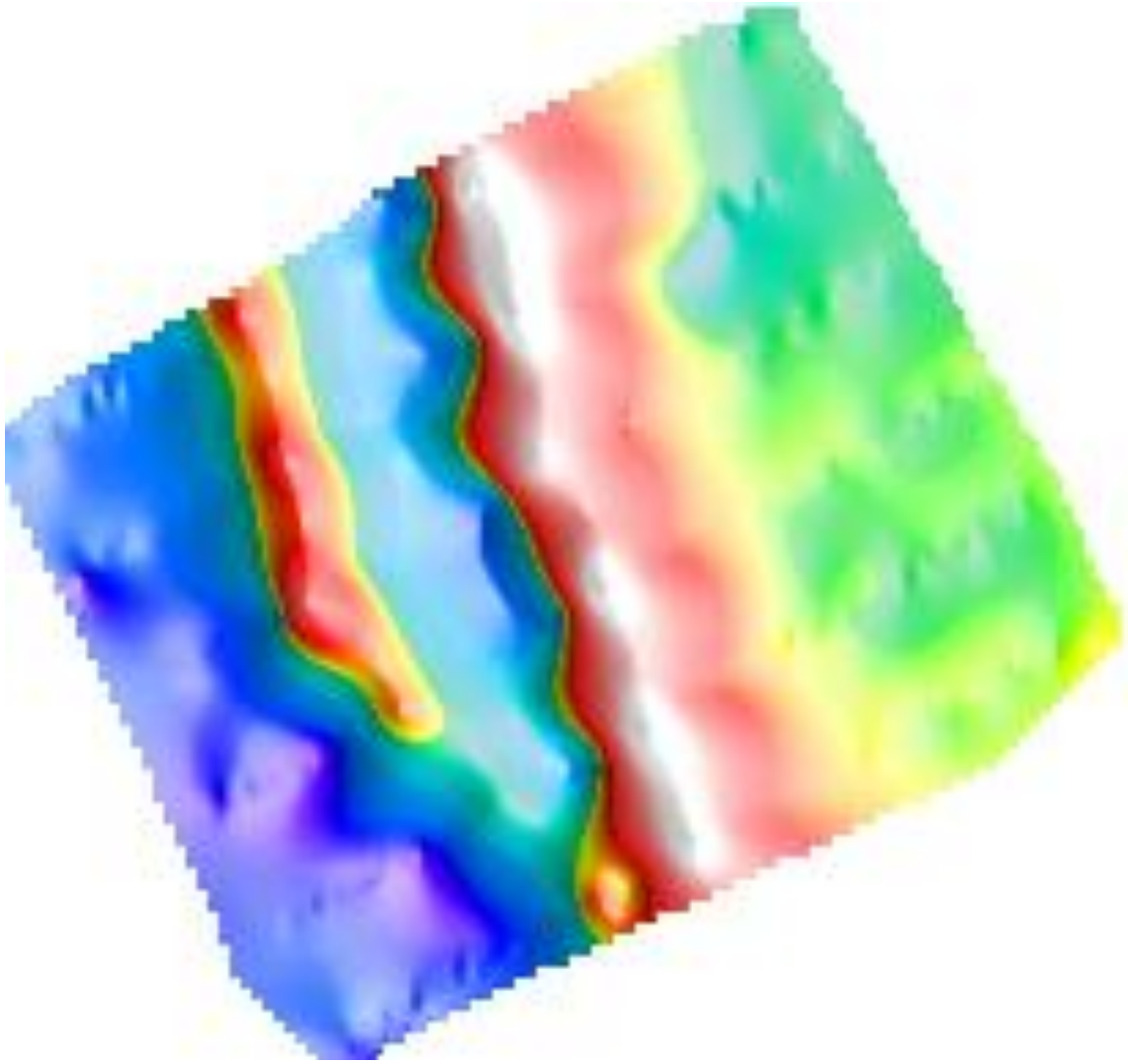
A. Appendix 1 – Ground Magnetic Grids



Magnetic grid image (TMI) of “Map 2” area within EL4599 “Charlinga”.



Magnetic grid image (TMI) of “Map 3” area within EL4599 “Charlinga”.



Magnetic grid image (TMI) of “Map 5” area within EL4600 “Bowen Hill”.