

# SOUTHERN GEOSCIENCE CONSULTANTS

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## Memo

**To: David Wise,**

**From: Bruce Craven**

**Company: Maiden Meadows Pastoral Pty. Ltd.**

**Date: October 24<sup>th</sup>, 2005**

**Project: Langdon's Hill, Cygnet EL34/2001**

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David,

The following comments summarize my evaluation of the Cygnet area magnetics and I.P. data requested by Maiden Meadow Pastoral. This follows on from my preliminary review (memo, August 19<sup>th</sup>, 2005).

The material I have used in the evaluation includes:

- A geological review of the Cygnet property, with recommendations for further exploration. Compiled by Luke Vanzino and Larry Gibson. August 30<sup>th</sup>, 2002.
- Third Annual Exploration Report for the Year Ending 25<sup>th</sup> October, 2004. Compiled by Luke Vanzino.
- A report on the Langdon's Hill Magnetics compiled by Nigel Hungerford in December, 2002.
- A report on the Langdon's Hill Induced Polarization surveys by Nigel Hungerford. March, 2004.
- Data from the 1998 detailed aeromagnetics flown by Pacific Nevada. S.G.C. downloaded this data from the MRT geophysics website and reprocessed the section surrounding the Langdon's Hill prospect.
- Data from Maiden Meadows' 2004 I.P.-Resistivity survey. S.G.C. has reprocessed this, using data from the original data CDs supplied by the contractor (Zonge Engineering). These CDs were included in the data package sent by Luke Vanzino.

The objective of the reprocessing of the I.P. and aeromagnetics was to provide a clearer understanding of the fundamental geophysical data, particularly the actual magnitudes of the responses and how they related to the known geology. The images in the various reports and presentations provided by Maiden Meadows do not, in my opinion, clearly convey this information. The styles of imaging used by Nigel Hungerford clearly show the fine detail in the magnetics and the major anomalous zones in the I.P., but most of the relativities and absolute magnitude information is lost or distorted. For the magnetics, S.G.C. has processed an area significantly larger than the Langdon's Hill prospect in order to get a better perspective on both the structural setting and the position of the prospect relative to the main intrusive complex. Contours of the magnetics and I.P have also generated to provide additional control on patterns, trends and the magnitudes of the various responses.

Digital copies of the images and contours generated by S.G.C. will be forwarded to Maiden Meadows for future reference.

Apart from correlations with the geophysical interpretation, no further evaluation of the Langdon's Hill geology or geochemistry has been undertaken as part of this review. The comments made in my August, 2005 review remain pertinent.

## **Aeromagnetics:**

A set of 1:10,000 scale image contour maps has been generated from the magnetics and the digital terrain information. The image maps generated include:

- Second vertical derivative of the TMI magnetics, with TMI contours (greyscale).
- TMI, shaded with north AGC gradient, with TMI contours. Linear colour range.
- First vertical derivative of TMI, shaded with north FVD gradient, with FVD contours. Non linear colour range.
- Digital Terrain, illuminated from the north, with elevation contours.

These images/enhancements have similarities to those produced by Nigel Hungerford and used in the existing Maiden Meadows reports and presentations. Most of these earlier enhancements are derivatives rather than direct TMI images (e.g. first derivative, second derivative, Analytic Signal). These are all good for displaying the fine detail and subtle variations in the magnetics, but distort the relative amplitudes in the original data significantly. Most of Nigel's images also employ non-linear colour ranging, which further distorts the relativities. The existing images are fine for interpreting structure and mapping magnetic units and contacts, but not for linking the magnetics to the magnetite contents of the various lithologies. The TMI North AGC gradient image produced by S.G.C. displays the original magnetic intensity information, using a linear colour range. This style of image is a much simpler representation of the bedrock magnetite distribution than the stronger, derivative enhancements employed previously. It is also less affected by the significant level of high frequency noise in the magnetics. This noise is quite obvious on the derivative images, as would be expected. It appears to be a low magnitude instrument or system effect, which is not significant in the overall scheme of things, but can distort some of the stronger enhancements.

A quick, 1:10,000 scale structural-lithological interpretation of the Cygnet magnetics has been completed, based on the image-contour maps generated by S.G.C. The main features of this interpretation are:

- The moderately to strongly magnetic complex located immediately north of the Langdon's Hill prospect. This is interpreted as the magnetic phase of the Cretaceous syenitic intrusive complex, ± altered sedimentary country rocks. It is elongate in a west-north-west direction, with the most magnetic section (1500->2000nT) at the eastern end. This strongly magnetic section appears to be mostly, but not entirely below sea level. However, sections of it should be present on or below the western slope of the bay, with less magnetic and or smaller parts of the complex extending further west. I have not attempted to model the depth to top of the magnetic core of the intrusive complex.

The magnetic intrusive complex tends to become less magnetic to the south and west. This may indicate a compositional change, alteration or a higher proportion of country rock. In the south-western part of the complex in particular, the magnetic responses tend to have curvilinear rather than ovoid patterns. This may indicate that these magnetic bodies are xenoliths or fragmented sediments around the edge of the intrusives, with a degree of magnetite alteration.

There appears to be another moderately magnetic block of the intrusive complex about two kilometres to the north east of the magnetic core of the main complex.

- The Palaeozoic sediments are typically very weakly to non magnetic, containing occasional weakly to moderately magnetic (100-300nT), linear to curvilinear magnetic units. These could be either magnetic sediments (primary pyrrhotite or magnetite?) or magnetic sills (possibly related to the Jurassic dolerites).

The overall impression from the data is that the southern half of the Langdon's Hill prospect is underlain by sediments. The southern boundary of the syenitic complex seems to be marked by the distinct, west-north-west structural corridor shown on the interpretation. If intrusives are present to the south of this corridor, they are weakly or non magnetic.

- A number of faults or joints have been interpreted. The most prominent of these strike west-north-west and north-north-east, similar to the main regional structural trends noted in the August, 2002 geological review. These faults influence the distribution of the syenitic

complex and the sills-magnetic horizons within the Palaeozoic sedimentary sequence. The Langdon's Hill prospect is located about the junction of major NNE and WNW fault zones, with the WNW zone possibly marking the southern extent of the intrusive complex, as noted above. This structural intersection and the proximity of the magnetic intrusive complex provide a conceptually good setting for intrusive related, epigenetic mineralization in the Langdon's Hill area.

Overall, as would be expected, the structural-lithological interpretation confirms the general setting for the Langdon's Hill prospect as outlined in the 2002 geological review. It indicates that the postulated alteration-mineralization systems along the southern edge of the intrusive complex may extend well to the west (3-4km?) from Langdon's Hill.

The interpretation also supports Nigel Hungerford's conclusion that the bullseye magnetic anomaly in the north-eastern quadrant of the Langdon's Hill grid is a small, sub-cropping apophysis of magnetic syenite, near the southern edge of the complex. A small pipe of magnetite alteration is also possible. In this case, it probably should have produced a significant geochemical anomaly if there is significant associated mineralization. There are several similar pipe-like anomalies in the magnetic data; e.g. the anomaly at ~5219200N 504500E. These tend to be less obvious because they are within more magnetically active areas.

Based on the magnetics, it should be possible to explain the source of the strong magnetic anomaly centred under Cygnet Bay by examining the western continuation of the interpreted intrusive complex to the west of the bay. Drill testing will be necessary unless the magnetic lithologies are well exposed. Quantitative modelling of the magnetics could provide approximate depths to the top of the magnetic lithologies.

### **Induced Polarization:**

The Gradient Array and Dipole-Dipole array I.P. data has been reprocessed, using the data from the CDs supplied by the contractor (Zonge Engineering). This data has not been edited prior to processing. The processing involved routine gridding and contouring of the chargeability and apparent resistivity gradient array readings, generation of pseudosections of the dipole-dipole data and inversion modelling of the dipole-dipole data. The S.G.C. processing is similar to that undertaken by Nigel Hungerford, with the main differences being the use of contours and linear colour scales in the gradient array processing. The rationale for this is similar to that discussed for the aeromagnetic processing; i.e. a clearer representation of the relative magnitudes within the data sets. The chargeability inversion model produced by Nigel used an edited data set, with some dubious readings removed. S.G.C.'s inversion was run on the unedited data.

Overall, the output from the S.G.C. processing is similar to that produced previously, with some subtle but possibly significant differences.

On close inspection, there are some issues with the overall data quality in the I.P. surveys. There are a number of dubious data points in both the gradient array and dipole-dipole data. The most obvious of these appear as local extreme highs and lows in both the chargeability data. One or two of these have been attributed to cultural interference (fences). However, there could be a more fundamental, instrumental or survey procedure problem. In particular, dubious or unusually high readings in the dipole-dipole data are mostly in the larger (deeper) n-spacing data, mostly n=4 and n=5. This could be related to low signal strengths, but could also indicate faulty electrodes or receiver channels. Close analysis of the decays for the individual readings may indicate that dubious readings are more widespread is immediately apparent.

The current electrode set up used for the gradient array surveys was not ideal. Readings on the ends of most of the lines have been taken outside of the normally accepted central portion of the array; i.e. they are too close to the current electrodes. In these cases, the more or less uniform primary field assumption no longer holds. This can result in decreased depth penetration and geometric distortion of chargeability anomalies. The obvious solution to this would have been to shift the current electrodes further out. Considering the topographic restrictions, this was not really an option.

It is difficult to gauge the overall influence of the noise in the data. For the gradient array, it is probably not that significant. Most of the strongly anomalous zones are reasonably extensive and are not severely affected by one or two dubious readings. The exception to this is Nigel Hungerford's trend/anomaly **C**. This is a localized very high chargeability response that could well be spurious. The influence of the possibly dubious data on the dipole-dipole array data appears to be more significant. It strongly influences the inversion modelling and the interpretation of the blind, flat-lying sulphidic body that has put forward as a drilling target within Nigel's trend **A**. Nigel's interpretation relies heavily on the inversion model of the dipole-dipole chargeability data, which is picking up on the strong, sub-horizontal pattern in the  $n=4$  and 5 data within the overall trend **A** anomalous response. If this sub-horizontal pattern is spurious or influenced by material either to the (grid) east or west of the line, the inversion model will not be a reliable guide.

Nigel has assumed that the chargeability-depth section produced by the inversion model is a reasonable representation of the sub-surface chargeability distribution because of the 'fairly good comparison between the recalculated model chargeabilities and the field data. This comparison is not really a test of the validity of the model, since the process is designed to come up with a good mathematical fit to the data and the final result is one of numerous possible solutions. In my opinion, the pattern match is not that great, with the modelled data tending to smooth out the strong contrasts seen in the field data. The anomalous zone targeted by Nigel is also at a depth approaching the effective exploration limit achievable with a 50m a spacing dipole-dipole array configuration. This is a dangerous or grey area for reliable inversion modelling, particularly if the field data is unstable.

The inversion run by S.G.C., using different software and an unedited version of the same data comes up with a chargeability distribution with some similarities and some marked differences to the inversion run by Zonge for Nigel Hungerford. I think this illustrates that a number of equally acceptable (mathematically) solutions are possible via the inversion modelling approach. For the anomaly being put forward by Nigel as a blind, sub-horizontal sulphide concentration, both inversions seem to be doing a reasonable job in defining a chargeability distribution to satisfy the anomalous pattern. The question is whether the anomalous pattern in the field data prior to being run through the inversion.

Nigel noted the 'the lack of a direct correspondence between gradient IP trend **A** and dipole anomalies Z and Y is a little disconcerting.....', but managed to rationalize this. The results of a routine, visual interpretation of the actual dipole-dipole pseudosection data are shown on the modified I.P. interpretation plan accompanying this memo. This interpretation does not use the results of the inversion and probably emphasizes the near surface anomalism relative to the stronger, deeper, unusual response patterns that the inversion and Nigel have concentrated on. Using the traditional, visual interpretation approach, the correspondence between the chargeable zones in the dipole-dipole and corresponding gradient array data is quite good for trends **A**, **B** and **D**.

In summary, in my opinion the strong, sub-horizontal chargeability values in the deeper levels of the central-southern part of the dipole-dipole I.P. pseudosection 5800N are at least partially spurious. If this is the case, targeting the deep, sub-horizontal sulphide zone interpreted by Nigel Hungerford is of questionable validity; i.e. the inferred sulphide concentration may not exist or may not be in the position indicated by the inversion model.

A basic re-interpretation of the Langdon's Hill I.P. data has been compiled as part of this evaluation. This is based on the chargeability data (gradient and dipole-dipole). No attempt has been made to incorporate the apparent resistivity data, which is likely to be strongly distorted by topographic effects. With the likely exception of trend **C**, the other trends/anomalies outlined in the 2004 interpretation report are valid. As discussed above and in the 2004 interpretation, there is a strong chance that trend **C** is either cultural or noise rather than bedrock related. Boundaries of the anomalous zones have been sketched using the gradient array magnitude information. This should provide a better guide to the lateral extents of the chargeable lithological units or alteration zones. Several additional zones of elevated chargeabilities have been outlined on the interpretation. These are mostly in the south-eastern section of the grid, within the interpreted major, north-westerly striking structural corridor that passes through the prospect. These new anomalous zones are lower magnitude than the trends/anomalies identified in the 2004

interpretation, but are sufficiently strong to be derived from significant sulphide ± graphitic material in the bedrock. These elongate zones could be similar to the trend **B** anomalous zone, but narrower and or less sulphidic.

Reprocessing of the I.P. data has highlighted some important factors that were not discussed in the 2004 interpretation. These concern the magnitudes of the observed chargeabilities and the related geological implications. High background chargeabilities (>10mV) are evident throughout most of the area. These appear to be mostly reflecting the Palaeozoic sediments, with areas of sub-cropping syenite generating normal, low background chargeabilities, consistent with low average sulphide contents.

The high background chargeabilities indicate widespread polarisable material in the bedrock. This could be either sulphides or active carbonaceous material. From the descriptions of the sediments in the 2002 geological summary, carbonaceous material ± fine sulphides seems the most likely source. From Luke Vanzino's comments, graphite has not been recognized in the sediments. However, fine, recrystallized carbonaceous material (effectively with the crystal structure of graphite) is commonly quite polarisable. Recrystallization can occur at low metamorphic grades. Any carbonaceous material in the sediments in the vicinity of the syenitic intrusives is likely to have been recrystallized and therefore polarisable.

The elongate nature of the main chargeability anomalies, combined with their strength (commonly 25->40mV), is also consistent with the presence of polarisable sediments within the Palaeozoic sequence. These chargeability levels suggest moderate to strong sulphide contents (5-10%?) if no graphitic material is present. To my knowledge, sulphide concentration of this level have not been observed in the Langdon's Hill geological mapping so far. This could be explained by the poor exposure, or by the chargeabilities being predominantly related to carbonaceous material rather than sulphide.

The high background chargeabilities and the elongate nature of the majority of the chargeability anomalies also raise the possibility that much of the polarisable material is originally syngenetic rather than epigenetic (alteration derived). In the previous work and discussion on the Langdon's Hill I.P., the assumption seems to have been that the chargeability anomalies are predominantly reflecting sulphidic alteration patterns. This assumption is questionable if there are widespread, primary carbonaceous ± fine sulphides within the Palaeozoic sediments. This does not eliminate the option that some or all of the I.P. anomalies are mapping alteration, but it does lessen the chances significantly.

For exploration purposes, the simplest means of determining if the I.P. anomalies are reflecting barren, stratigraphic or lithological features or alteration is via their geochemical signature. Virtually all the Langdon's Hill I.P. anomalies appear to be quite shallow, so the surface geochemistry should be reasonably effective as a means of determining if they are barren or geochemically interesting. Drilling would be needed to determine if any blind chargeable zones are mineralized.

### **Induced Polarization Targets:**

Of the various I.P. anomalies identified, those within the north-westerly fault corridor (trend **B** and the new, lower order anomalies in the south-eastern part of the corridor seem to offer the most geological potential. This assumes that this corridor will be the focus for any significant gold mineralization in the area. Comments made about the trend B anomaly remain valid; i.e. there is some weak associated geochemistry, the zone is more likely to be steeply dipping than flat lying and it has significant strike length. All these characteristics are consistent with a structurally controlled sulphidic alteration or vein system. They would also fit a stratigraphic source model. Similar comments apply to the narrower, elongate, lower amplitude chargeability anomalies further to the south-east.

Nigel Hungerford's trends **D**, **E** and **F** could be related to alteration and or fragmented stratigraphy around the margin of the intrusive complex.

Trend **A** looks stratigraphic. Identification of specific targets along this long zone will rely on a significant local change in the geophysical character, geological complications (localized alteration and or faulting) or identification of a significant geochemical anomaly. The possible, deep anomaly identified by Nigel Hungerford in the dipole-dipole I.P. provides a local focus if it is real. This anomaly coincides with some geological apparent complications, including faulting, which adds further interest and potential.

Trend **C** looks like a spurious anomaly that does not warrant testing unless there are good geological reasons for doing so.

### **Conclusions and Recommendations:**

The overall intrusive-structural setting inferred from the magnetics is consistent with the general setting for the Langdon's Hill prospect outlined in Luke Vanzino's 2002 geological review, which formed the basis for the subsequent exploration programme. The interpretation indicates that the postulated alteration-mineralization systems along the southern edge of the intrusive complex are likely to extend well to the west (3-4km?) from Langdon's Hill. Depending on previous exploration activities, this western extension of the system should offer similar exploration potential to the Langdon's Hill prospect.

No specific new targets are being recommended from the magnetics within the grid/prospect area. The near surface mineralization potential associated with small, bullseye anomaly modelled by Nigel Hungerford has probably been effectively explained and geochemically downgraded. Other bullseye anomalies observed in the magnetics (e.g. ~5219200N 504500E) may warrant checking out. However, these are mostly related to small, localized geological entities, decreasing their chances of being economically significant unless they are associated with very high grade mineralization.

Testing the larger, strongly magnetic parts of the syenitic complex should be considered. These could simply be barren, magnetic phases of the intrusive complex. They could also indicate sizeable zones of strong, magnetite alteration,  $\pm$  mineralization. Though the core of the main magnetic intrusive is under water, the western flanks and other strongly magnetic sections of the complex should be accessible.

Possible dilational structures interpreted from the magnetics could provide a focus for testing. This approach would be worth pursuing, assuming the north-westerly structural corridor provides the primary control. I don't have a good understanding of the regional fault patterns, so I have not attempted to identify specific targets via this approach at this time.

The elongate chargeability anomalies in the interpreted north-westerly structural corridor passing through the Langdon's Hill grid (trend **B** and the new, lower magnitude anomalies) are considered the higher priority targets from the I.P.-Resistivity survey. Initial evaluation of these should involve a thorough appraisal of the surface geochemistry, followed by fences(?) of relatively shallow drilling to determine if these anomalies have any significant associated geochemistry. No quantitative modelling of these anomalous zones has been attempted. The magnetic response is too weak to be reliably modelled and the I.P. is unlikely to be definitive.

The validity of the deep, shallow dipping sulphide zone interpreted on line 5800N by Nigel Hungerford is, in my opinion, suspect. Confirmation of the anomaly is recommended prior to drill testing it. This could be achieved by repeating part of the existing dipole-dipole I.P. coverage. Additional dipole-dipole I.P. lines along strike should also be considered to confirm that the anomaly has some strike extent. If this anomaly is mapping a substantial sulphide concentration at depth, it will need to have a reasonable strike extent to be economically significant.

The moderate to strong possibility that some and perhaps all of the obvious I.P. anomalies are related to syngenetic carbonaceous  $\pm$  sulphide material in the Palaeozoic sediments should be carefully considered. If correct, this could impact significantly on the exploration approach; i.e. the assumption that the I.P. anomalism at Langdon's Hill is mostly alteration related becomes tenuous. The significance of the I.P. anomalies would then be tied into their geochemical character to help separate barren and mineralized zones. This approach should work adequately for sub-cropping

zones, but not for blind zones, which seems to be where the main potential is likely to be in the Langdon's Hill prospect, if the surface geochemistry is a reliable indication of the sub-cropping mineralization potential.

Please contact me if you have any questions on the above comments.

Regards,

Bruce Craven

Attachments:

*Cygnets area aeromagnetic image contour map (TMI North AGC shade, TMI contours). 1:10000 scale.*

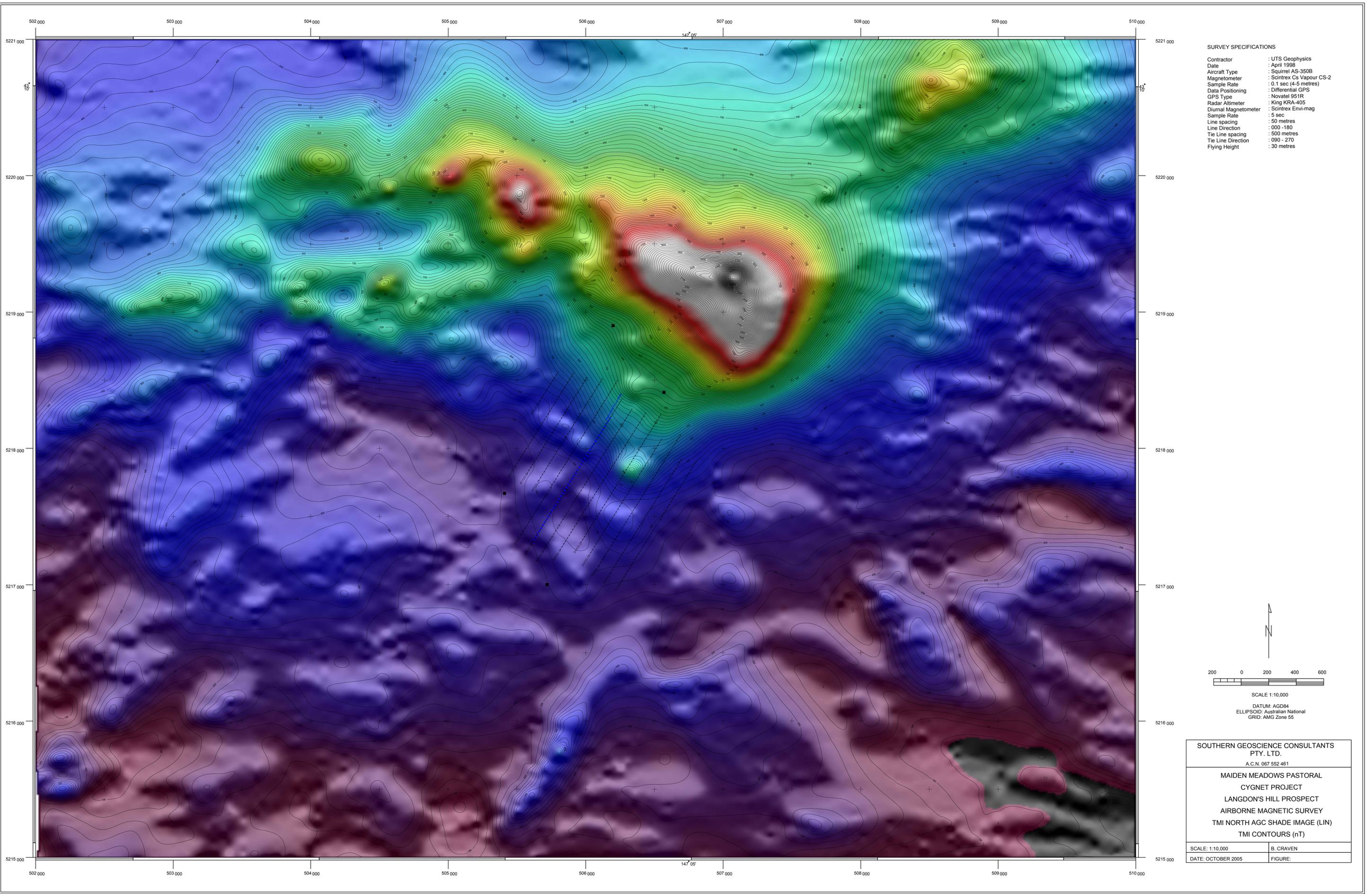
*Cygnets area aeromagnetic interpretation. 1:10000 scale.*

*Langdon's Hill gradient array I.P.; chargeability image-contour map. 1:5000 scale.*

*Langdon's Hill gradient array I.P.; apparent resistivity image-contour map. 1:5000 scale.*

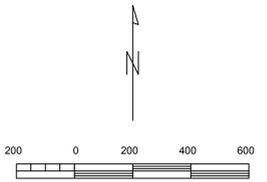
*Langdon's Hill dipole-dipole I.P. Line 5800N chargeability-resistivity pseudosection. 1:5000 scale.*

*Langdon's Hill gradient array I.P. summary interpretation plan. 1:5000 scale.*



**SURVEY SPECIFICATIONS**

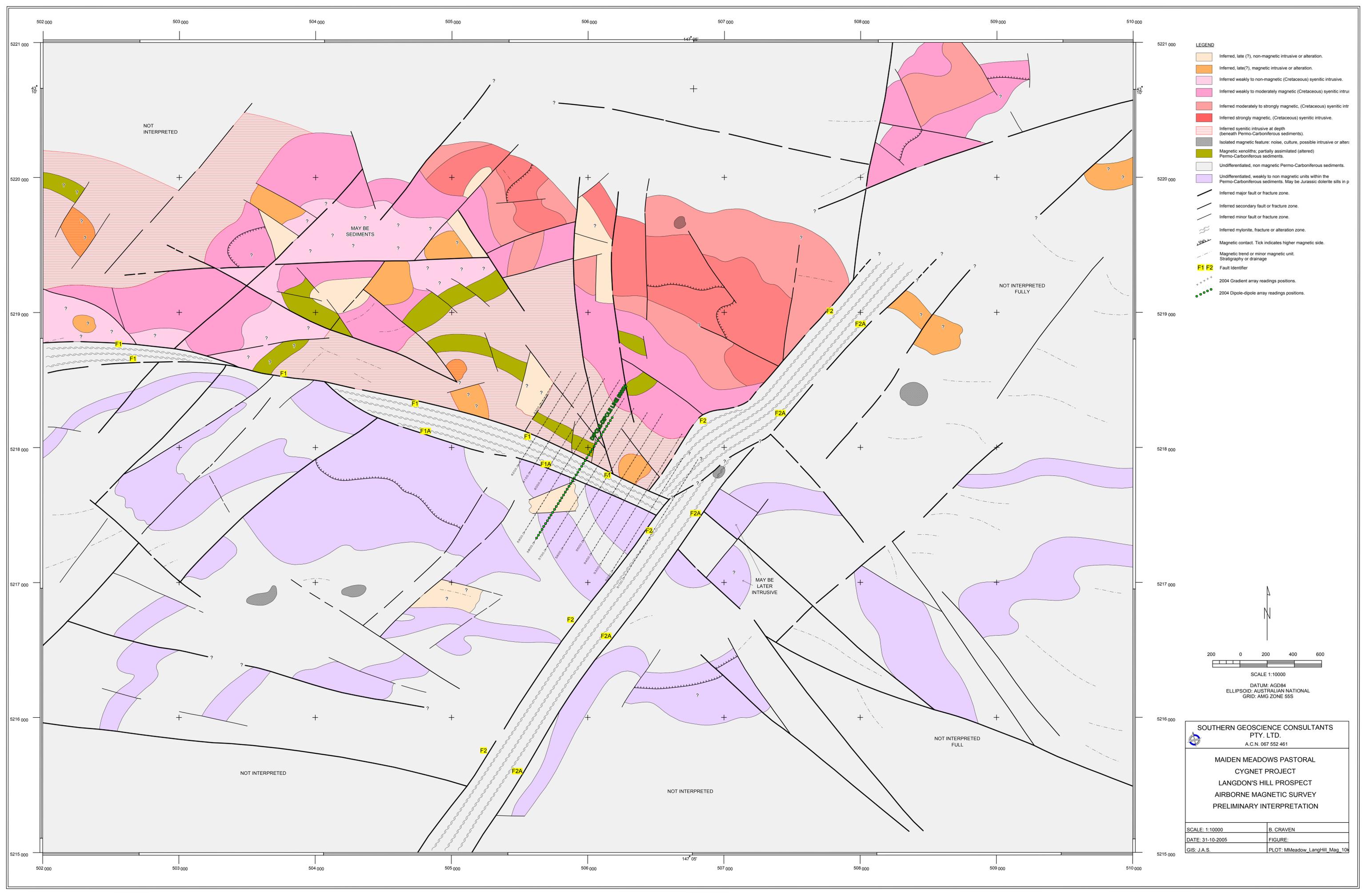
Contractor	: UTS Geophysics
Date	: April 1998
Aircraft Type	: Squirrel AS-350B
Magnetometer	: Scintrex Cs Vapour CS-2
Sample Rate	: 0.1 sec (4-5 metres)
Data Positioning	: Differential GPS
GPS Type	: Novatel 951R
Radar Altimeter	: King KRA-405
Diurnal Magnetometer	: Scintrex Envi-mag
Sample Rate	: 5 sec
Line spacing	: 50 metres
Line Direction	: 000 -180
Tie Line spacing	: 500 metres
Tie Line Direction	: 090 - 270
Flying Height	: 30 metres



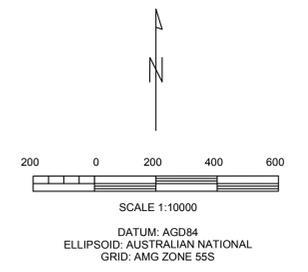
SCALE 1:10,000

DATUM: AGD84  
 ELLIPSOID: Australian National  
 GRID: AMG Zone 55

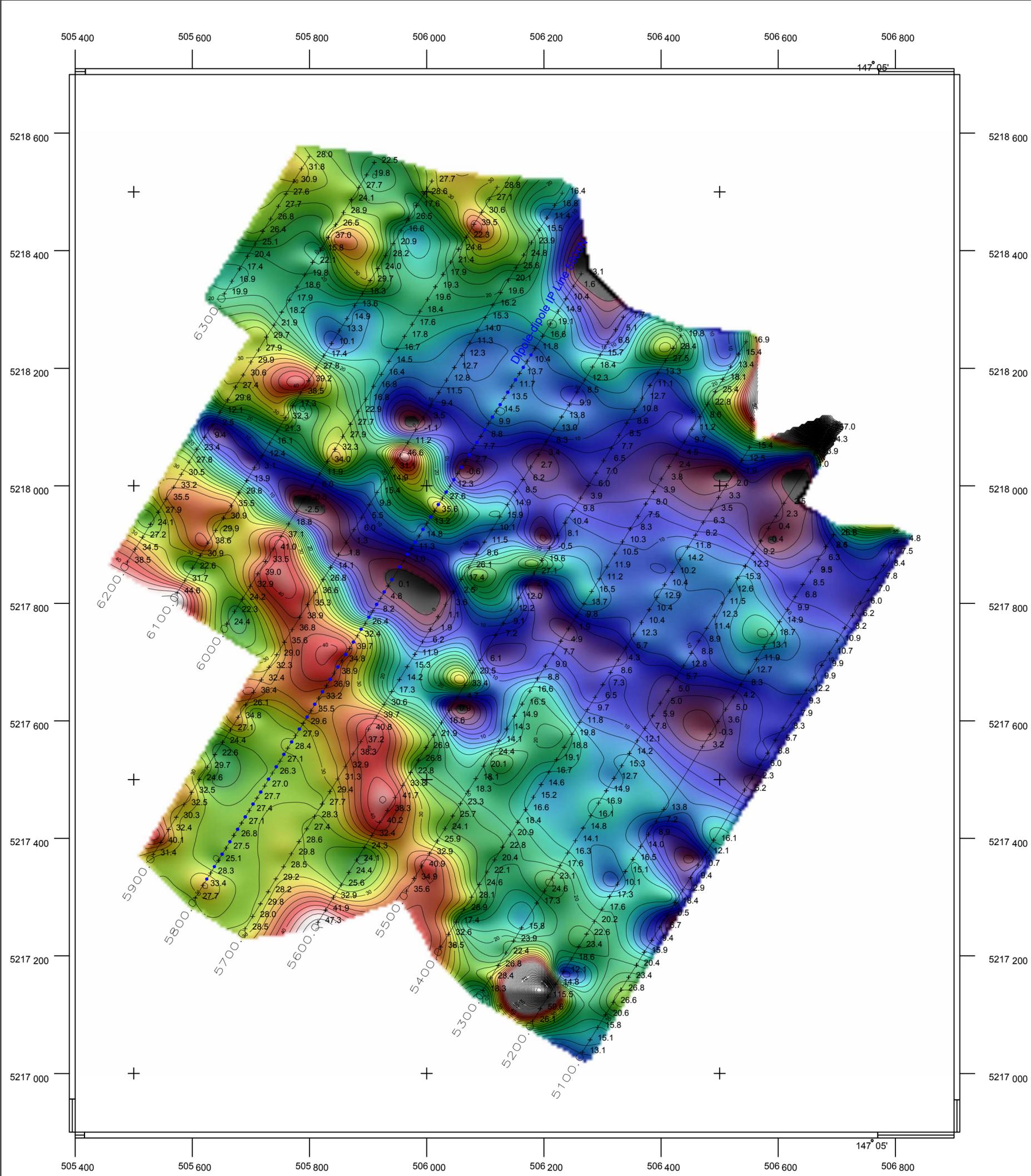
<b>SOUTHERN GEOSCIENCE CONSULTANTS PTY. LTD.</b>	
A.C.N. 067 552 461	
MAIDEN MEADOWS PASTORAL CYGNET PROJECT LANGDON'S HILL PROSPECT AIRBORNE MAGNETIC SURVEY TMI NORTH AGC SHADE IMAGE (LIN) TMI CONTOURS (nT)	
SCALE: 1:10,000	B. CRAVEN
DATE: OCTOBER 2005	FIGURE:



- LEGEND**
- Inferred, late (?), non-magnetic intrusive or alteration.
  - Inferred, late(?), magnetic intrusive or alteration.
  - Inferred weakly to non-magnetic (Cretaceous) syenitic intrusive.
  - Inferred weakly to moderately magnetic (Cretaceous) syenitic intru
  - Inferred moderately to strongly magnetic, (Cretaceous) syenitic intr
  - Inferred strongly magnetic, (Cretaceous) syenitic intrusive.
  - Inferred syenitic intrusive at depth (beneath Permo-Carboniferous sediments).
  - Isolated magnetic feature: noise, culture, possible intrusive or alter
  - Magnetic xenoliths; partially assimilated (altered) Permo-Carboniferous sediments.
  - Undifferentiated, non magnetic Permo-Carboniferous sediments.
  - Undifferentiated, weakly to non magnetic units within the Permo-Carboniferous sediments. May be Jurassic dolerite sills in p
  - Inferred major fault or fracture zone.
  - Inferred secondary fault or fracture zone.
  - Inferred minor fault or fracture zone.
  - Inferred mylonite, fracture or alteration zone.
  - Magnetic contact. Tick indicates higher magnetic side.
  - Magnetic trend or minor magnetic unit.
  - Stratigraphy or drainage
  - F1 F2 Fault Identifier
  - 2004 Gradient array readings positions.
  - 2004 Dipole-dipole array readings positions.



<p><b>SOUTHERN GEOSCIENCE CONSULTANTS</b>  <b>PTY. LTD.</b>  A.C.N. 067 552 461</p>	
<p><b>MAIDEN MEADOWS PASTORAL</b>  <b>CYGNET PROJECT</b>  <b>LANGDON'S HILL PROSPECT</b>  <b>AIRBORNE MAGNETIC SURVEY</b>  <b>PRELIMINARY INTERPRETATION</b></p>	
SCALE: 1:10000	B. CRAVEN
DATE: 31-10-2005	FIGURE:
GIS: J.A.S.	PLOT: MMeadow_LangHill_Mag_108



**SURVEY SPECIFICATIONS**

Contractor : Zonge  
 Date : February 2004  
 Configuration : Gradient Array  
 Receiver : Zonge GDP-32  
 Tx Frequency : 0.125 Hz  
 Station spacing : 25 metres  
 Line spacing : 100 metres  
 Dipole spacing : 50 metres  
 Integration time : Newmont Standard  
 (450 - 1100 msec)  
 Apparent resistivity units : Ohm.m  
 Chargeability units : mV/V  
 Survey control : Local grid

**CURRENT ELECTRODES**

Grid #1 : 505720E, 5217000N  
 (Lines 5100N-5900N) : 506570E, 5218410N  
 Grid #2 : 505410E, 5217670N  
 (Lines 6000N-6300N) : 506200E, 5218900N



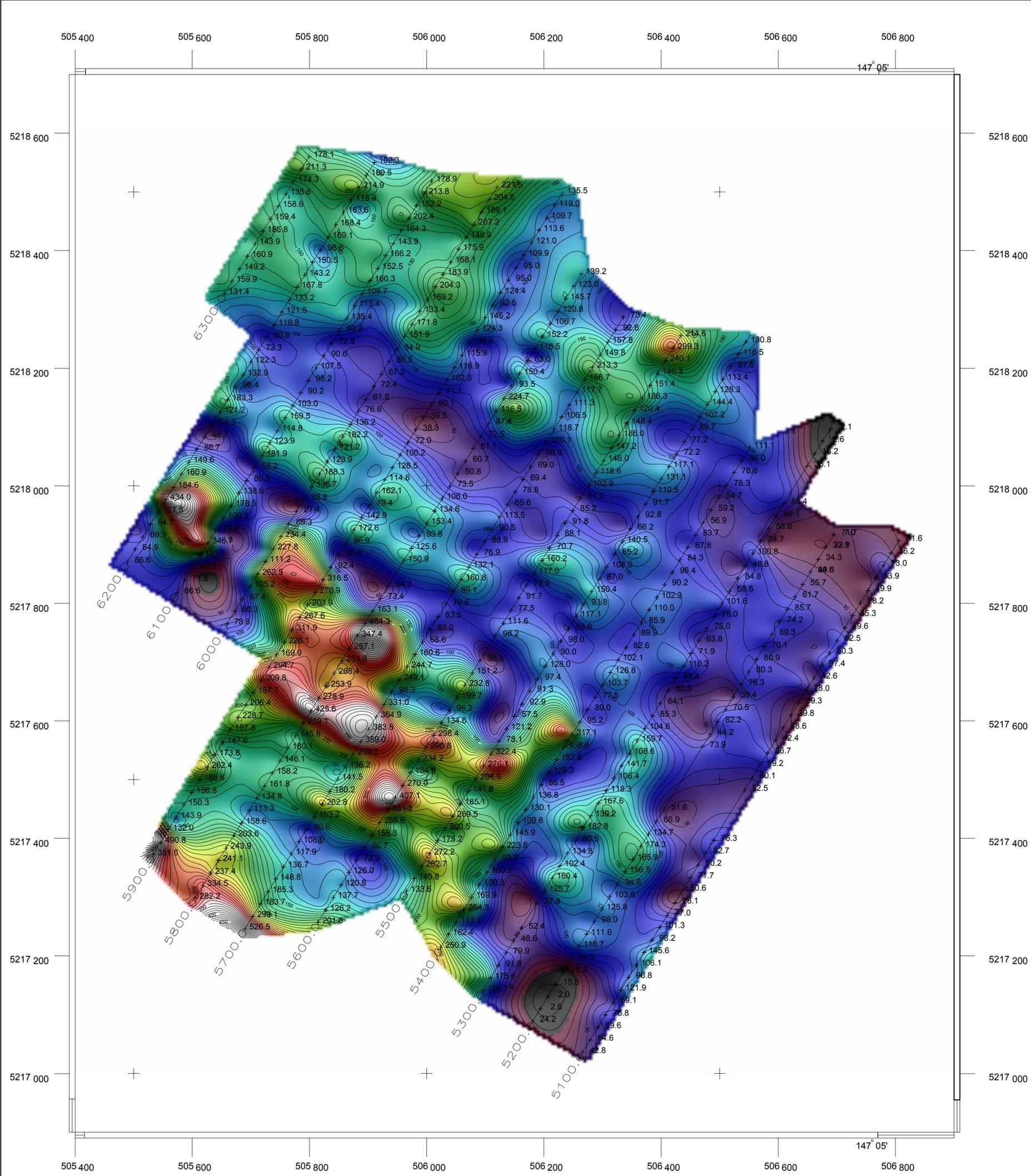
SCALE 1:5,000

Datum: AGD84  
 Ellipsoid: Australian National  
 Grid: AMG Zone 55 S

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**MAIDEN MEADOWS PASTORAL  
 CYGNET PROJECT  
 LANGDON'S HILL PROJECT  
 GRADIENT ARRAY IP SURVEY  
 CHARGEABILITY CONTOURS  
 NORTH SHADE (LIN) IMAGE**

SCALE: 1:5,000	B. CRAVEN
DATE: OCTOBER 2005	FIGURE:

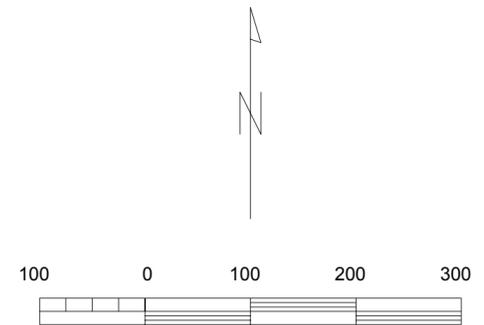


**SURVEY SPECIFICATIONS**

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**CURRENT ELECTRODES**

Grid #1 : 505720E, 521700N  
 (Lines 6100N-6300N) : 506570E, 5218410N  
 Grid #2 : 505410E, 5217670N  
 (Lines 5100N-5900N) : 506200E, 5218900N



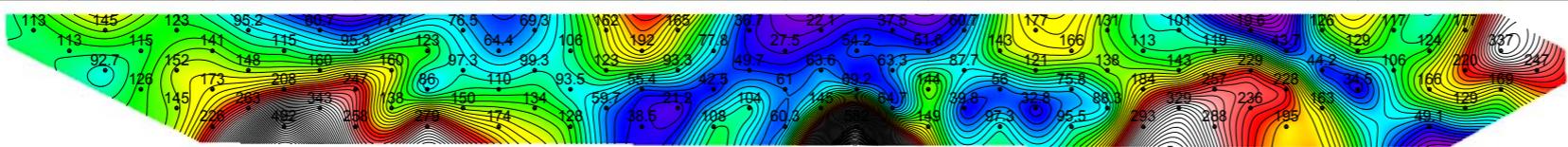
SCALE 1:5,000  
 Datum: AGD84  
 Ellipsoid: Australian National  
 Grid: AMG Zone 55 S

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<b>MAIDEN MEADOWS PASTORAL          CYGNET PROJECT          LANGDON'S HILL PROJECT          GRADIENT ARRAY IP SURVEY          APPARENT RESISTIVITY CONTOURS          NORTH SHADE (LIN) IMAGE</b>	
SCALE: 1:5,000	B. CRAVEN
DATE: OCTOBER 2005	FIGURE:

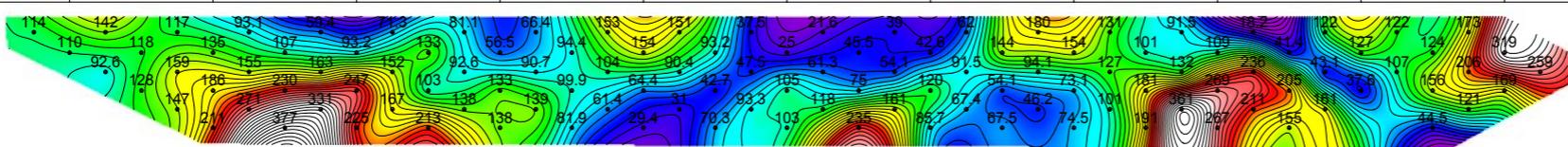
# RESISTIVITY (Ohm.m)

4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200

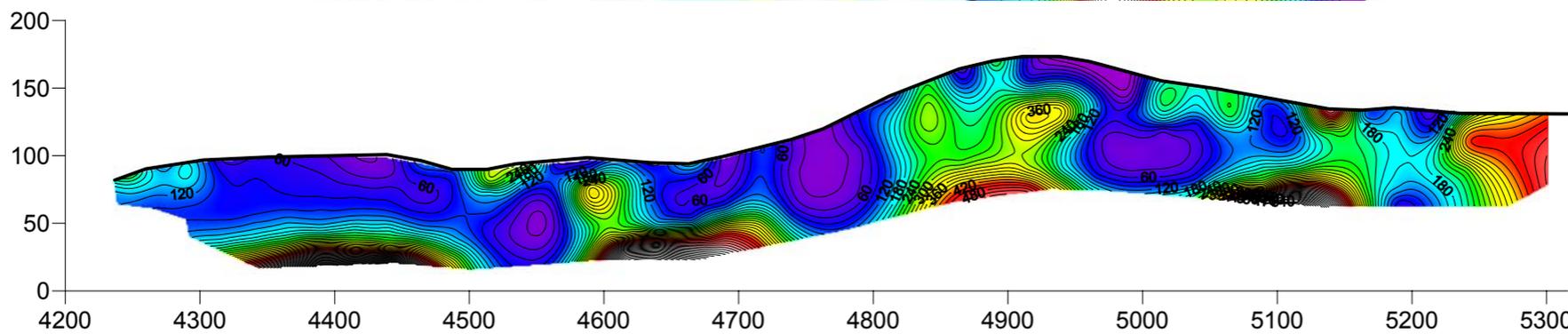
MEASURED



CALCULATED



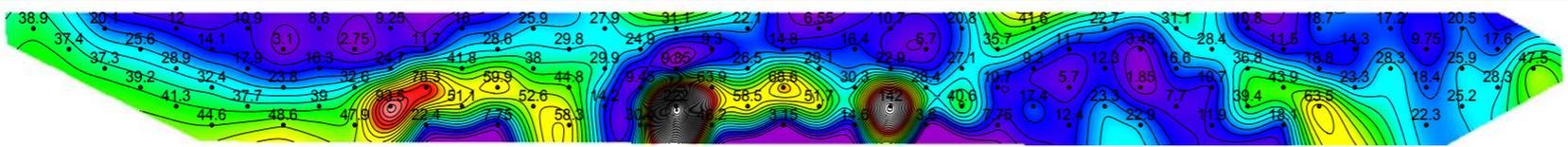
LOKE INVERSION MODEL



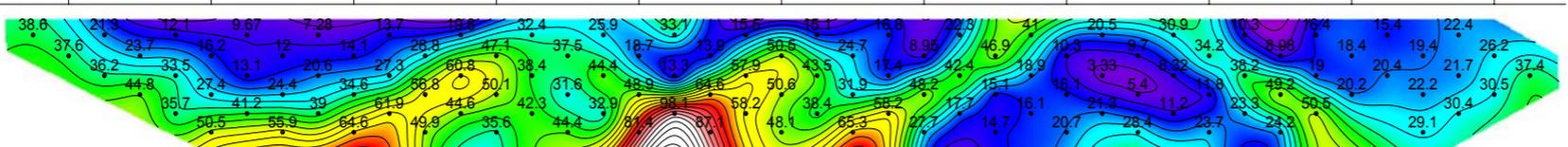
# IP - CHARGEABILITY (mV/V)

4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200

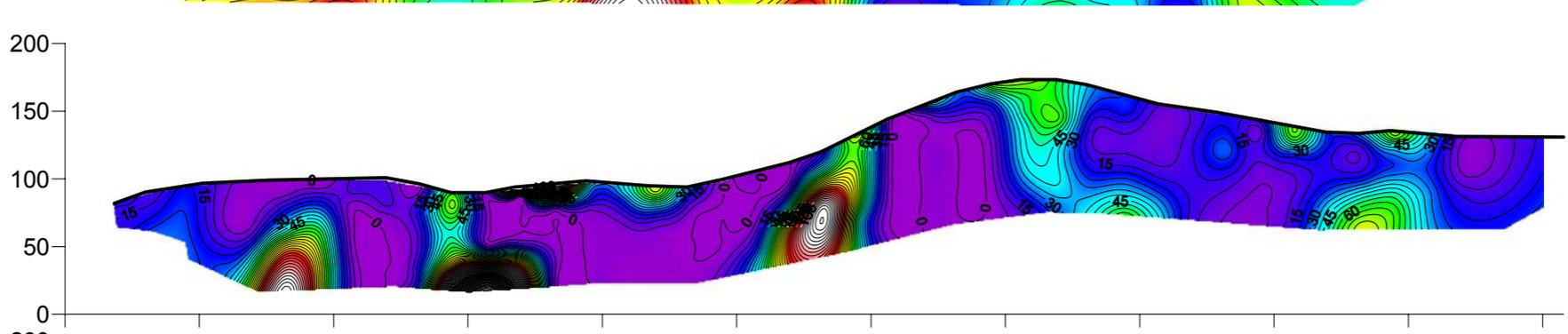
MEASURED



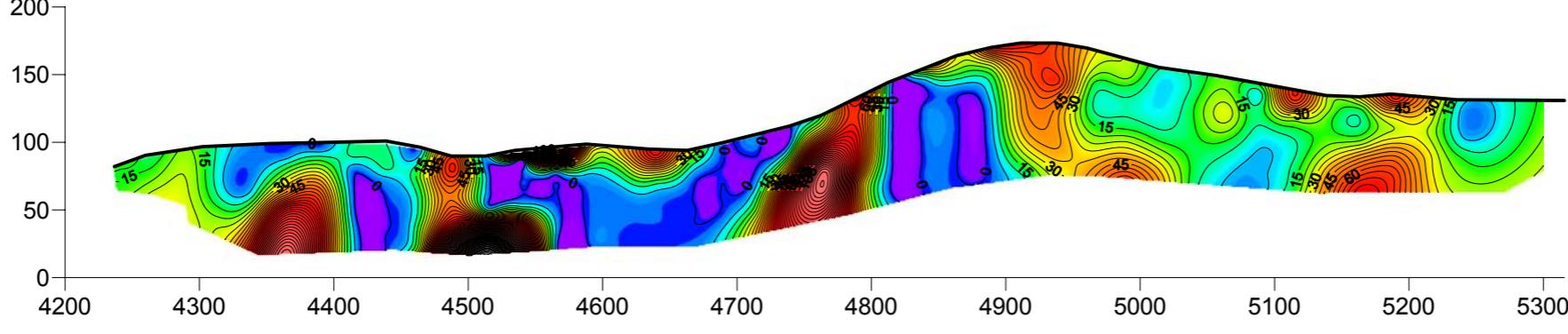
CALCULATED



LOKE INVERSION MODEL



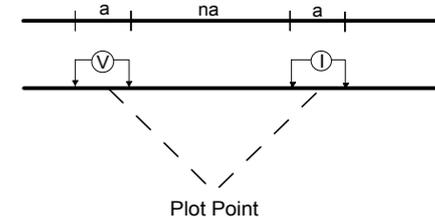
LOKE INVERSION MODEL  
(Non-Linear Colour Scale)



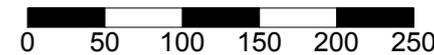
## Survey Specifications

Contractor : Zonge  
 Survey Date : February 2004  
 Configuration : Dipole-Dipole  
 Receiver : Zonge GDP-32  
 Tx Frequency : 0.125 Hz  
 Dipole Spacing : 50 metres  
 Integration Time : Newmont Standard  
 (450 - 1100 msec)  
 Maximum n-level : 6  
 Survey Control : Local Grid

Dipole-dipole Array



Datum: GDA  
 Ellipsoid: AMG84  
 Grid: Zone 55 S



SOUTHERN GEOSCIENCE CONSULTANTS  
 PTY LTD - ACN 067 552 461

**MAIDEN MEADOWS PASTORAL**  
 CYGNET PROJECT - LANGDON'S HILL PROSPECT

Dipole-Dipole IP Survey  
 Pseudosections & Model Sections  
 Line 5800N

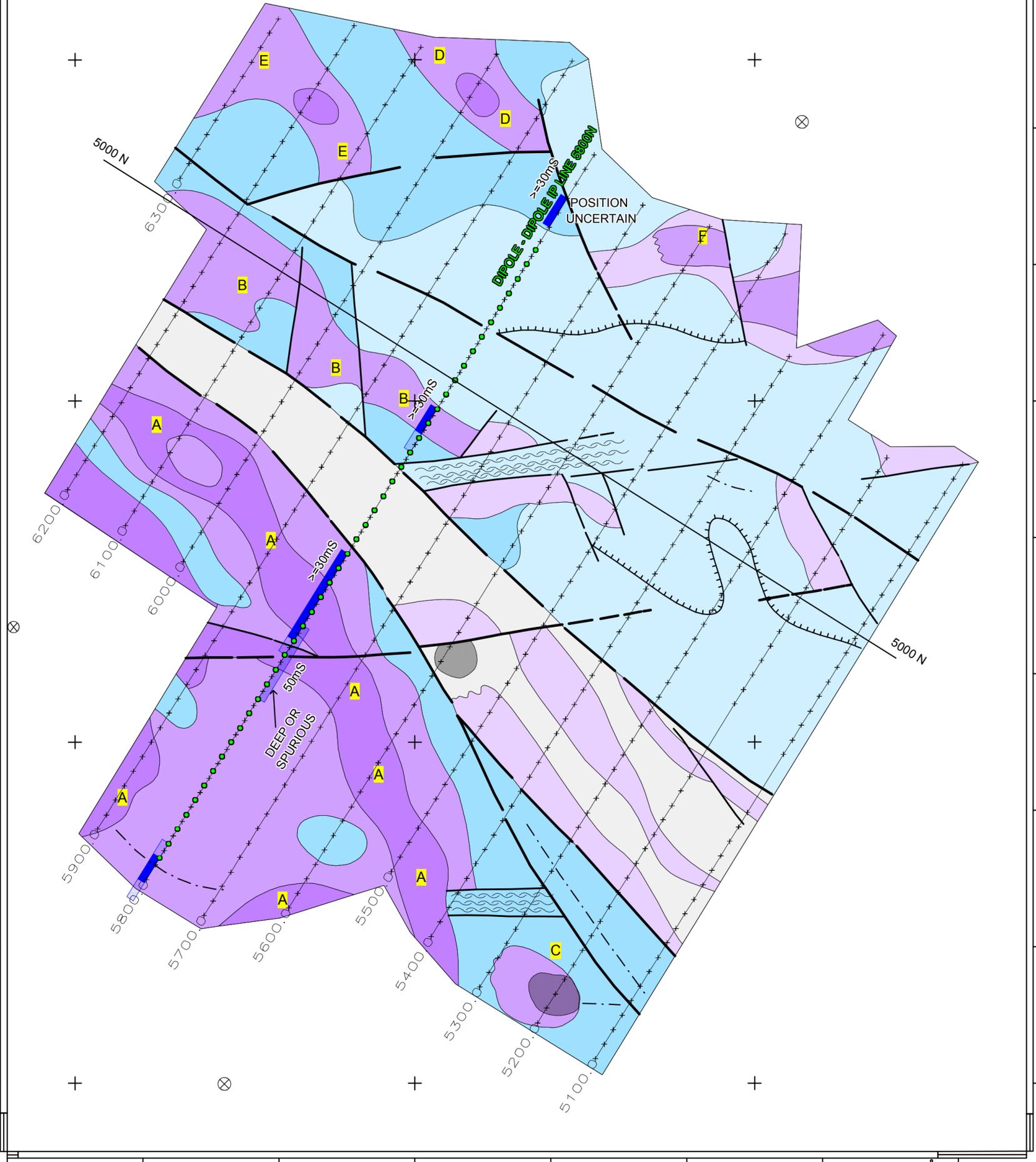
Scale: 1:5,000  
 Date: October 2005

B. Craven  
 Figure No.

505 400 505 600 505 800 506 000 506 200 506 400 506 600 506 800

147° 05'

↑  
CURRENT ELECTRODE  
~200M NORTH



**LEGEND**

- Strongly polarisable zone in gradient array survey: sulphidic-carbonaceous sediments ± sulphidic alteration.
- Moderately polarisable zone in gradient array survey: sulphidic-carbonaceous sediments ± sulphidic alteration.
- Weakly polarisable zone in gradient array survey: weakly sulphidic-carbonaceous sediments ± sulphidic alteration.
- High background polarization zone in gradient array survey: weakly sulphidic-carbonaceous sediments or syenite ± sulphidic alteration.
- Low background polarization zone in gradient array survey: predominantly syenite near surface?
- Localized, strongly anomalous (high or low) chargeabilities in gradient array data. Probably cultural response or dubious readings.
- Strong polarization/chargeability anomaly in dipole-dipole IP data. Interpreted sub-crop position. Numbers show chargeability strength.
- Moderate polarization/chargeability anomaly in dipole-dipole IP data. Interpreted sub-crop position. Numbers show chargeability strength.
- Dubious, deep(?) polarization/chargeability anomaly in dipole-dipole IP data.
- Major shear zone inferred from I.P. data.
- Inferred major fault.
- Inferred secondary fault.
- Contact inferred from IP data. Tick indicated higher chargeabilities.
- Possible localized zone of strong fracturing ± alteration.
- Gradient array readings positions.
- Dipole-dipole array readings positions.
- Trend
- Gradient array electrode positions. Approximate only.
- Identifiers for chargeability anomalies from Nigel Hungerford's 2004 interpretation.

5218 600

5218 400

5218 200

5218 000

5217 800

5217 600

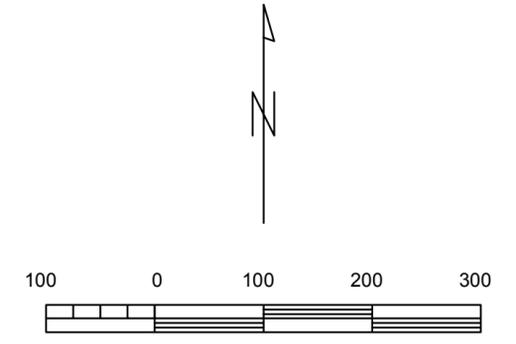
5217 400

5217 200

5217 000

147° 05'

505 400 505 600 505 800 506 000 506 200 506 400 506 600 506 800



DATUM: AGD84  
ELLIPSOID: AUSTRALIAN NATIONAL  
GRID: AMG ZONE 55S

 <b>SOUTHERN GEOSCIENCE CONSULTANTS PTY. LTD.</b> A.C.N. 067 552 461	
<b>MAIDEN MEADOWS PASTORAL PTY. LTD.</b> <b>CYGNET PROJECT</b> <b>LANGDON'S HILL PROSPECT</b> <b>GRADIENT ARRAY IP SURVEY</b> <b>INTERPRETATION PLAN</b>	
SCALE: 1:5000	B. CRAVEN
DATE: 28-10-2005	FIGURE:
GIS: J.A.S.	PLOT: LangdonsHill_IP_5k.plm