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EL 4692, EL 4708 AND EL 4843

PANDURRA, KOOLCUTTA AND YUDNAPINNA

JOINT ANNUAL REPORTS TO LICENCES’ JOINT SURRENDER, FOR THE PERIOD 1/6/2012 TO 5/5/2014

Submitted by
Spencer Resources Limited and Minotaur Operations Pty Ltd
2014

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Government of South Australia
Department of State Development

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MINOTAUR

14 May 2012

Executive Director
DMITRE Mineral Resources Division
Mineral Tenements
GPO Box 1234
ADELAIDE, SA 5001

Attention: Rob Shaw – Company Exploration
Sent by email DMITRE.MRGrecordsofficer@sa.gov.au

Dear Rob,

RE: Annual Technical Report for EL 4708 – Koolcutta

I refer to the Annual Technical Report for Exploration Licence 4708 (Koolcutta) for the year ending 28th March 2012.

No field exploration activities were conducted by Minotaur Operations Pty Ltd (Minotaur) on this tenement during the reporting period; hence this letter represents the Annual Technical Report for EL 4708.

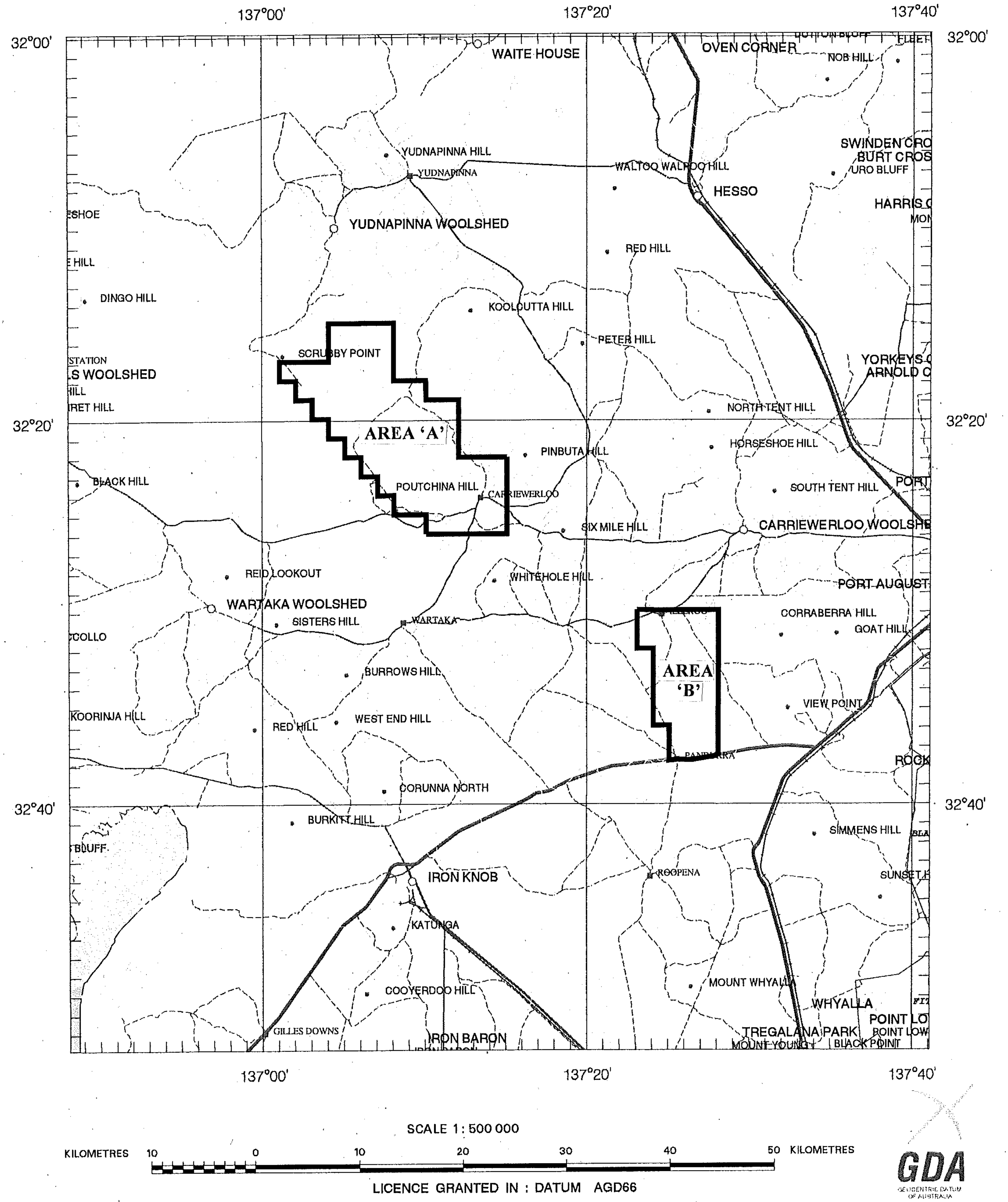
Activities undertaken by Minotaur included;

- No new technical investigations were undertaken on the two tenements during the past 12 months,
- Spencer Resources entered into a Tenement Purchase Agreement with Minotaur Operations for EL 4708 whereby Spencer Resources would potentially issue an IPO and list on the Australian Stock Exchange. Spencer Resources finally successfully listed and traded on the Australian Stock Exchange on 29th March 2012.
- Under the terms of the Tenement Purchase Agreement, Spencer Resources will now fund and manage exploration for sediment-hosted uranium mineralisation and IOCG-style mineralisation on Exploration Licence 4708 for the next 2 years.

Yours sincerely

Phil Cronin
Tenement Manager
Minotaur Operations Pty Ltd

SCHEDULE A



APPLICANT : **MINOTAUR OPERATIONS PTY LTD**

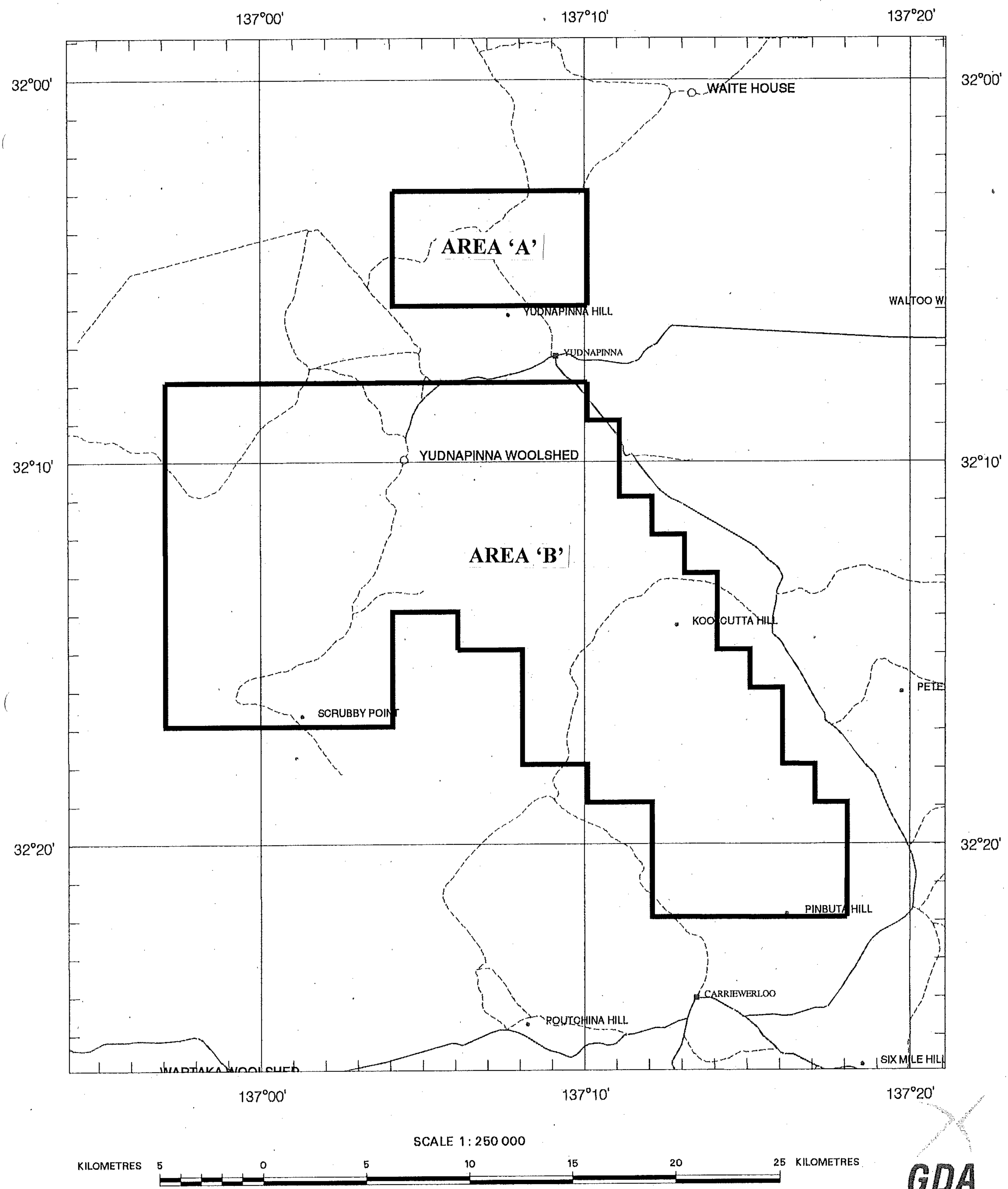
FILE REF : **228/10** TYPE : **MINERAL ONLY** AREA : **311** km² (approx.)

1:250000 MAPSHEETS : **PORT AUGUSTA**

LOCALITY : **PANDURRA AREA - Approximately 50 km west of Port Augusta**

DATE GRANTED : **24-Feb-2011** DATE EXPIRED : **23-Feb-2013** EL NO : **4692**

SCHEDULE A



LICENCE GRANTED IN : DATUM AGD66

APPLICANT : **MINOTAUR OPERATIONS PTY LTD**

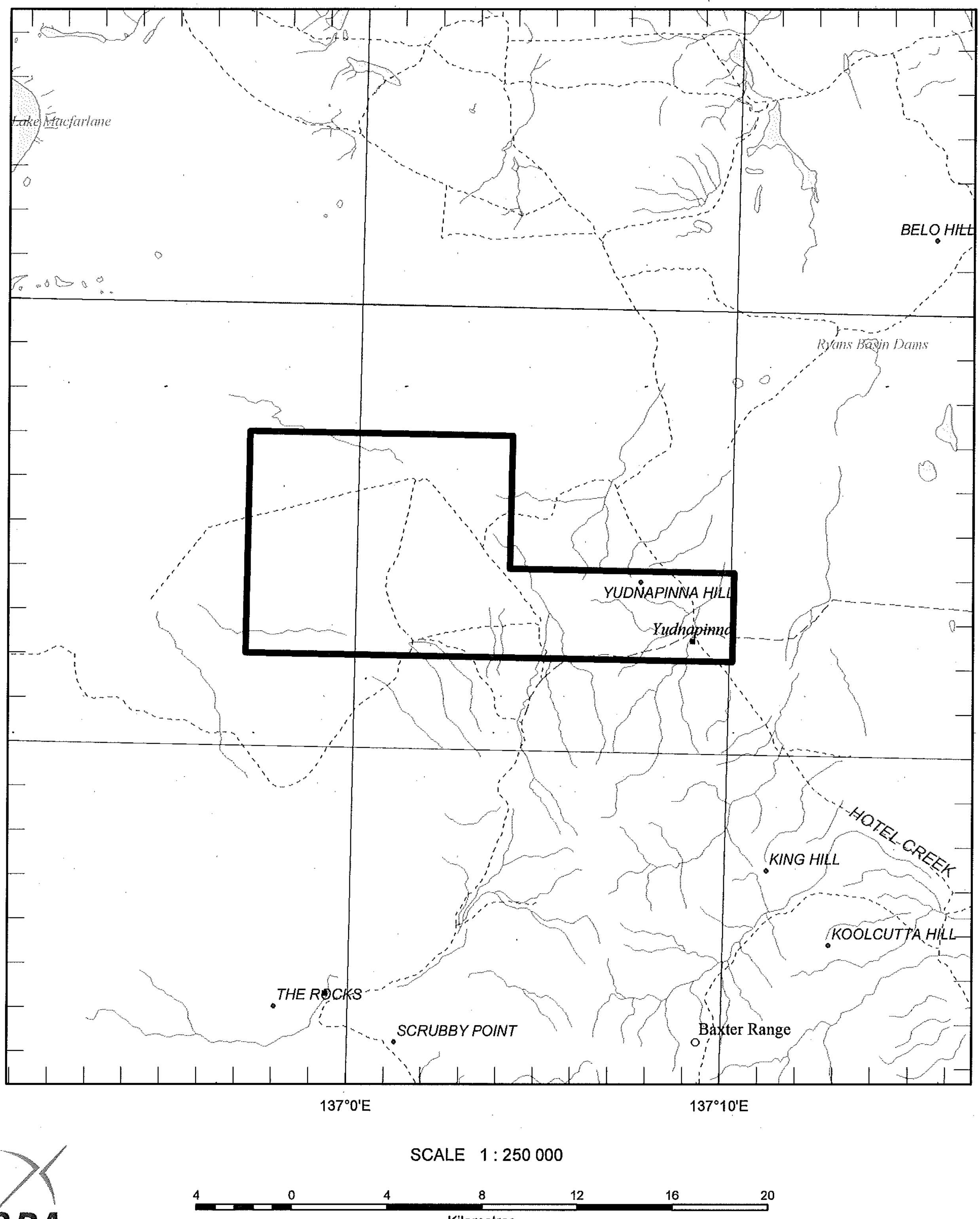
FILE REF : **314/10** TYPE : **MINERAL ONLY** AREA : **534** km² (approx.)

1:250000 MAPSHEETS : **PORT AUGUSTA**

LOCALITY : **KOOLCUTTA AREA - Approximately 60 km northwest of Port Augusta**

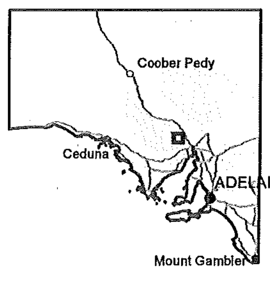
DATE GRANTED : **29-Mar-2011** DATE EXPIRED : **28-Mar-2013** EL NO : **4708**

SCHEDULE A



LICENCE BOUNDARIES IN : DATUM AGD66

LOCALITY



APPLICANT : **MINOTAUR OPERATIONS PTY LTD**

FILE REF : **2011/00095** TYPE : **MINERAL ONLY**

AREA : **137** sq km (approx)

1 : 250 000 MAPSHEETS : **PORT AUGUSTA**

LOCALITY : **YUDNAPINNA AREA - Approximately 90 km WNW of Port Augusta**

DATE GRANTED: **04-Apr-2012** DATE EXPIRED: **03-Apr-2014** EL NO: **4843**

COMBINED ANNUAL TECHNICAL REPORT

For the Period

Ending 31 May 2013

EL4692 PANDURRA
EL4708 KOOLCUTTA
EL4843 YUDNAPINNA

Author: Baheta M. Enday
Date: 27 June 2013
Report No: 9

Distribution:
DMITRE - 1 digital copy
Spencer Resources - 1 hard and 1 digital copy

SUMMARY

Unconformity-associated uranium mineralisation at the base of the Mesoproterozoic Pandurra Formation in the northern Eyre Peninsula was the focus of Spencer Resources Ltd (Spencer) exploration. Spencer applied several exploration techniques during its current search for economic uranium mineralisation. These included reviewing data and historic drill hole evaluation; analysis of geophysical geological, spectral and alteration (Aster and Google map) data; field mapping of Pandura Formation outcrops; an airborne electromagnetic survey (Geothec VTEM) on three east-west lines to map faults, alteration and potentially reducing units such as graphite and interpretation of this VTEM data.

The desk-top data review addressed the prospectivity of the Pandurra Project for Athabasca-style unconformity-related uranium mineralisation.

During the field work, the alteration features derived from Aster and Google map was difficult to interpret on the ground as there was a predominant alluvial covered. Faults and dyke intersections were also covered by colluvial or alluvial regolith. Approximately 60% of mapped Pandurra Formation outcrops were covered by these materials.

Assay results for the ground water samples collected during the reconnaissance field work returned 28.9 µg/L U and 76.5 µg/L V for sample number SP0012 and up to 1040 µg/L of Zn, 60.2 µg/L of Cu and 4090 µg/L Sr.

The VTEM interpretation identifies “High” priority conductive anomalies which potentially represent palaeochannels.

KEYWORDS

Uranium/ Thorium/ Spencer Resources Ltd/ Pandurra Formation/ GRV/ Unconformity-related uranium/ EL4692/ EL4708/ EL4843/ Pandurra/ Koolcotta/ Yudnapinna

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ATTACHMENTS

1. INTRODUCTION

The Pandurra Project, which includes Pandurra (EL4692), Koolcotta (EL4708) and Yudnapinna (EL4843), is located about 60km west of Port Augusta (Figure 1). The Mesoproterozoic Pandurra Formation, a thick, monotonous unit of unmetamorphosed, flat-laying arenaceous sediments, deposited on the central-eastern segment of the Gawler Craton (Cowley, 1991), constitutes the main geology of the area.

The tenements are characterised by outcropping to near-outcropping Pandurra Formation on the top of the Gawler Range Volcanics (GRV dated at ~1590Ma) which in turn overlie the crystalline basement as it deepens to the northeast. The sediment package, with some of the clast material being sourced from the GRV and Olympic Dam crystalline basement, deposited in the intra-cratonic Cariewerloo Basin which was created during crustal extension (~1500-1400Ma).

Northwest-trending dykes of the Neoproterozoic Gairdner Dyke Swarm were emplaced during a period of further crustal extension (~800Ma). The intrusion of these dykes created compartmentalised fluid-flow within the sediment. The Pandurra Formation was succeeded by blanket cover of Neoproterozoic Tapley Hill Formation (~750-500Ma), comprising reduced sediment of carbonaceous shale.

Toro Energy (Flint et al., 2007) reported copper mineralization in the Tapley Hill Formation rocks from a sample collected near Pandurra Copper Prospect located a few km east of the tenements (730300E and 6386000N).

The Cariewerloo Basin has potential for hybrid uranium mineralisation targets containing high-grade uranium at several levels and depositional environments such as:

- associated with mafic dykes,
- at the unconformity between Pandurra Formation and the overlying reduced Tapley Hill Formation,
- at the unconformity between Pandurra Formation and the basement rocks or
- perched within Pandurra Formation over unconformity-associated mineralization.

This report presents Spencer's exploration activities in search of the above mentioned uranium mineralisation.

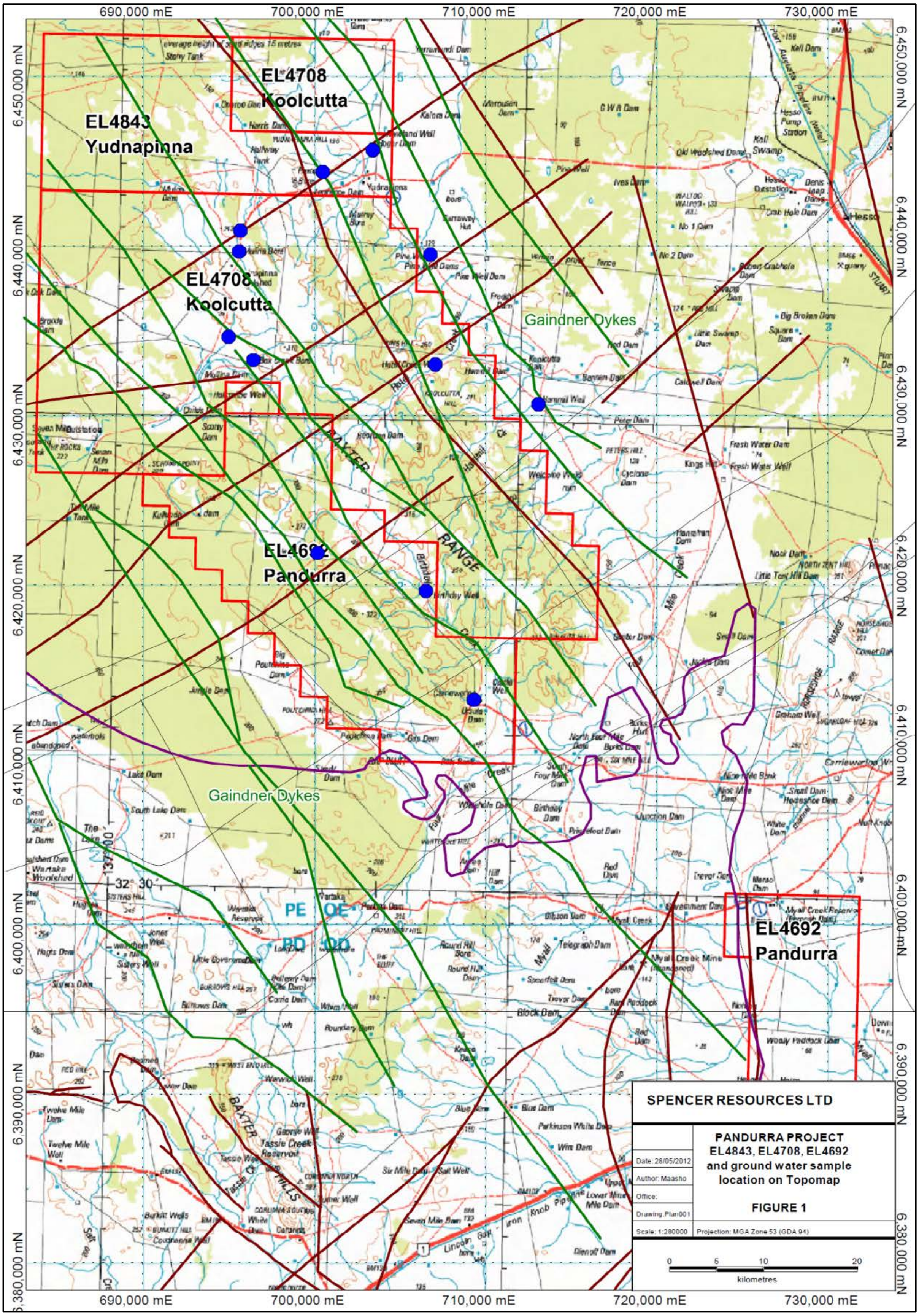


Figure 1: Location Map

2. TENURE

The Pandurra Projects comprises three exploration licences covering 982 sq km (Table 1). All of the tenements were registered with Minotaur Operations Pty Ltd. Spencer obtained an 80% interest in the Pandurra Block upon completion of the tenement purchase agreement with Minotaur. On 27 July an exploration licence title transfer saw ownership move to Spencer 80% and Minotaur Operations Ltd 20%.

Table 1: Tenement holder information

EL Number	Tenement Name	Registered Titleholder	Ownership	Area (sq km)	Grant Date	Expiry Date
4692	Pandurra	Spencer	80%	311	24/02/2011	23/02/2013
		Minotaur	20%			
4708	Koolcutta	Spencer	80%	534	29/03/2011	28/03/2013
		Minotaur	20%			
4843	Yudnapinna	Spencer	80%	137	04/04/2012	04/04/2014
		Minotaur	20%			

3. REGIONAL AND LOCAL GEOLOGY

The area covered by the EL is within the Gawler Craton which comprises rocks of the Archaean (Sleaford and Mulgathing Complex), Paleoproterozoic (meta-igneous Miltalie Gneiss and meta-sedimentary Hutchison Group) and Mesoproterozoic (Corunna Conglomerate, Pandurra Formation and Gawler Range Volcanics) which are distributed throughout much of South Australia. The Gawler Craton is bounded to the east by the Adelaideian fold belt (Fanning *et al*. 2007) and the Musgrave orogenic belt to the north. For the most part, the Gawler Craton has remained a stable continental block since the Mesoproterozoic (~1450 Ma); however, there are some Neoproterozoic magmatic rocks (Fanning *et al*. 2007).

During the Mesoproterozoic, widespread anorogenic magmatism across the central and eastern portions of the Gawler Craton resulted in voluminous outpourings of the Gawler Range Volcanics, intrusion of Hiltaba Suite granite, emplacement of minor gabbroic plugs and development of Cu-Au +/- U mineralisation at Olympic Dam and Prominent Hill and Au-only mineralisation at Tunkillia and Tarcoola (Blissett et al, 1993).

The three tenements are situated east of the Gawler Ranges and last known exposures of the Mesoproterozoic Gawler Range Volcanics. Forming a series of hills across the tenements is the Mesoproterozoic Pandurra Formation, a stratigraphically younger formation than the Gawler Range Volcanics.

The Pandurra Formation is a thick, monotonous sequence of flat-lying, arenaceous red-beds. It is typically a medium- to coarse-grained, poorly sorted, subangular quartz and lithic sandstone but also includes shale, well-sorted medium-grained sandstone and pebble conglomerate. Deep weathering of these sediments is ubiquitous with widespread development of silicification and characteristic redistribution of Fe into curvilinear liesegang bands (Cowley, 1993).

Intruding the Pandurra Formation is a series of thin NW-trending dolerite dykes of the Neoproterozoic Gairdner Dyke Swarm, emplaced during a major phase of crustal extension and initiation of rifts within the Adelaide Geosyncline (Cowley and Flint, 1993). The nature of crystalline basement below the Pandurra Formation within the tenement areas is poorly known due to very limited deep drilling through the Pandurra Formation. Potential host rocks for IOCGU-style mineralisation might exist within the tenement areas at a reasonable depth.

4. PREVIOUS EXPLORATION

Historic exploration work within and proximal to the Pandurra Block has been primarily focussed on uranium, diamonds, base metals and lesser gold with drilling programmes directed at IOCGU and basemetal mineralisation. Details of historic exploration work are presented in the Spencer Prospectus on page 62-66.

In 2010 and 2011 a government funded program was completed over the Cariewerloo Basin to study the potential for unconformity related U deposits. PIRSA (now DMITRE) in collaboration with the Saskatchewan Ministry of Energy and Resources (Canada), was actively comparing the Cariewerloo Basin to the Athabasca Basin in Saskatchewan, Canada (Jefferson et al, 2007)

This work has entailed lithostratigraphic logging of thirteen drillholes, handheld XRF analysis of each drillhole, modelling of the internal stratigraphy of the Pandurra Formation, HyLogger diagrams and downhole mineralogy plots, basement modelling from historic magnetics data and acquisition and interpretation of new airborne EM data over the Cariewerloo Basin. This work is ongoing but the participant’s early conclusions suggest a strong potential for the Cariewerloo Basin to host unconformity-related deposits.

5. WORK COMPLETED

Spencer applied several exploration techniques during its current search for economic uranium mineralisation. These included: desk-top review of data and historic drill-hole evaluation; reconnaissance field mapping of Pandura Formation outcrops, an airborne electromagnetic survey (VTEM) on three east-west lines to

map faults, alteration and potentially reducing units such as graphite and interpretation of this VTEM data.
(VTEM data - see Government of South Australia Mineral Resources Website)

5.1 Desk-top data review

The desk-top review of data involved: historic drill hole evaluation; analysis of geophysical geological, spectral and alterations (Aster and Google map); assessment of the recently acquired data by PIRSA, (now DMITRE) in collaboration with the Saskatchewan Ministry of Energy and Resources to examine the potential for unconformity-associated uranium in the Pandurra Formation (Jefferson et al, 2007).

The full report of the desk-top review data of is attached as Appendix 1.

5.2 Reconnaissance field work

A 9 day reconnaissance field evaluation was carried out by Spencer Resources contracted consultancy firm Petra Search between 24 August and 3 September 2012. The purpose of this work was to examine those areas of interest identified on the desk-top study.

An Aster and Google interpreted alteration map was difficult to distinguish on the ground because they were predominantly covered by alluvial sediments. Faults and dyke intersections were also covered by colluvial or alluvial regolith. Consequently, there would appear to be potential for employing various geochemical sampling techniques as an efficient way of exploring much of the Pandurra Project. The Field evaluation indicated that approximately 60% of the area previously mapped as Pandurra Formation outcrop, actually comprises depositional (colluvial / alluvial) regolith material.

The full detail of the Reconnaissance field work report is attached as Appendix 2.

5.2 Ground water geochemistry

As part of the reconnaissance field work, a total of 12 water samples were collected from the existing water wells (Figure 2).

Although the government record (SARIG) shows 34 wells in the licence area, there were only 12 found to be open and functional and one, located a few meters east of Yudinapinna homestead was sealed. Among the 12 wells, three of them are not on the SARIG website. The rest could not be found at the designated location.

The location of the wells on SARIG website indicated as GDA94 Projection Datum but they were found in the field using a Garmin GPS set on WGS84 Projection Datum. For comparison see Table 2

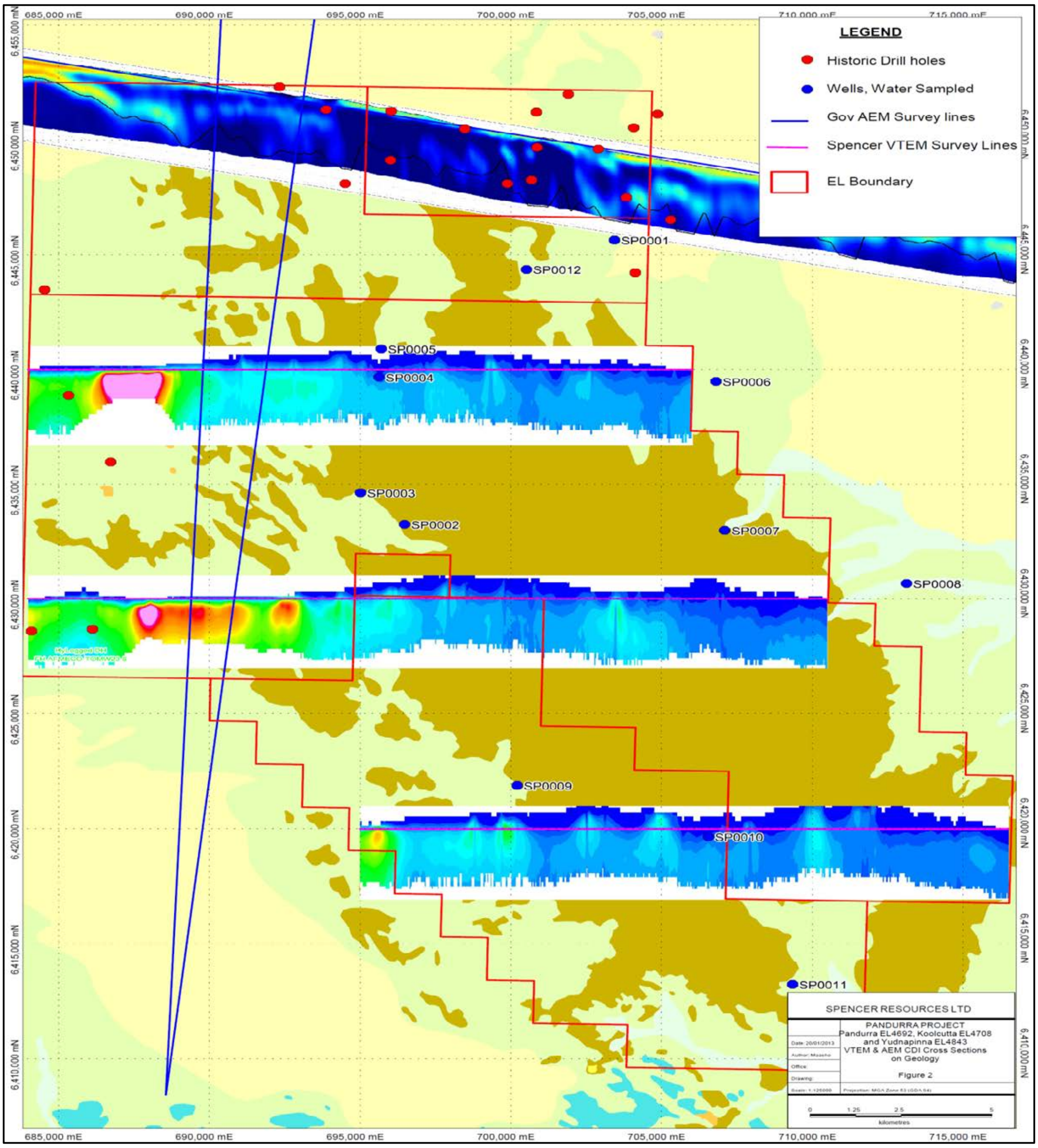


Figure 2. Ground water location and VTEM CDI image cross section on Geology.
Note: the northern part of CDI image is part of the Government AEM survey.

Table 2. Ground water sample locations

Unit_No	Well_No	Drillhole_name	Drill_Date	Max_depth	SARIG_E	SARIG_N	WGS_ E	WGS_N
	SP0001	Newland Well		51			703443	6445636
633300018	SP0002	Box Creek well	15/05/1925	49.07	696990.96	6433332.58	696473	6433256
633300021	SP0003	-	22/01/1966	43.59	695050.02	6434603.45	695019	6434637
633300041	SP0004	Mulina Bore	25/01/1924	54.86	695972.12	6439744.41	695630	6439670
633300142	SP0005	Dept. of Mines	13/09/1988	49	696046.03	6441036.41	695706	6440899
	SP0006	Pine Well		50			706805	6439483
633300011	SP0007	Hotel Creek Well		29.2	707391.11	6433013.37	707099	6433000
	SP0008						713127	6430665
633300005	SP0009	-	1/01/1928	53.1	700308.13	6422095.55	700213	6421875
633300285	SP0010	-	10/07/2007	23	706528.34	6419668.09	706549	6419661
633300001	SP0011	Cariewerloo Hs.		42	709627.9	6413203	709347	6413228
633300038	SP0012	Paxton Bore	30/09/1925	37.49	699619.99	6444261.38	700515	6444360

Assay result for the ground water sample returns 28.9 μg/L U and 76.5 μg/L V for sample number SP0012; And up to 1040 μg/L of Zn, 60.2 μg/L of Cu and 4090 μg/L Sr (see assay summary table for selected elements). Other anomalous elements are 20 μg/L Al, 2630 μg/L B, 11000 μg/L Br, 22.5 μg/L Li, 21.9 μg/L Rb and 35.6 μg/L Se. The association of B, U and V is strong indicator of uranium mineralisation in the Athabasca Basin (Jefferson et al, 2007).

Table 3. Ground water sample assay summary

IDENT	Al	B	Br	Cu	Li	Rb	Se	Sr	U	V	Zn
UNITS	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
SCHEME	W100M	W100M	W100M	W100M	W100M	W100M	W100M	W100M	W100M	W100M	W100M
SP0001	1.2	218	105	2.04	2	0.84	0.4	237	0.741	7.25	47.8
SP0002	20	2270	11000	2.82	42	21.9	35.6	4090	7.4	<1	1040
SP0003	8.2	2200	9910	14	37	18.2	12.4	3870	14.1	2.45	86.3
SP0004	7.5	1530	5360	2.05	22.5	11	5.4	2400	4.74	7.5	392
SP0005	7	810	1540	0.42	10.5	3.52	2.2	708	3.44	43	51.9
SP0006	3.6	1160	1720	13.9	4.5	3.28	3.8	608	5.64	25	198
SP0007	0.2	468	1200	4.1	7	1.33	1.6	843	1.71	43	10.7
SP0008	2.8	948	2340	28.5	2.5	3.12	5.6	1380	3.84	27.5	53.2
SP0009	4.4	1380	6440	17.7	7	9.19	5.8	2370	4.01	10.5	69.1
SP0010	4.4	1700	6890	1.83	39	15.3	12.6	2610	10.4	1.55	38.5
SP0011	4.8	2630	7530	60.2	7	16.7	3.2	2260	5.37	15	29.3
SP0012	4	1980	5650	6.07	19.5	7.41	2.2	2070	28.9	76.5	87

5.3 VTEM Survey

As part of the survey being flown by Geotech Airborne Pty Ltd over a portion of Spencer's Mt Double Project (EL 4776), a test survey was flown over the Pandurra Project area. It comprised 3 lines (approx 70 km) oriented west-east and was completed on 31 July 2012.

The VTEM survey was primarily aimed at mapping the unconformities at the top and bottom of Pandurra Formation and GRV, similarly to the work conducted by Geoscience Australia as part of the PIRSA (now DMITRE) Cariewerloo Basin Study (Wilson et al, 2011). It was hoped that the VTEM signal would penetrate to the Hutchison group

The full logistics report is attached as Appendix 3.

The VTEM interpretation by Thompson identified “High” priority conductive anomalies which may represent palaeochannels.

The VTEM interpretation report is attached as Appendix 4.
(VTEM data - see Government of South Australia Mineral Resources Website)

6. DISCUSSION OF RESULTS

- The ground water assay results showed anomalous U and V in one well and B in three other wells; together with dickite in another historical drill-hole, these pathfinder elements indicate the corresponding environments for U mineralisation.
- The prominent VTEM anomalies could represent a palaeochannel or multi-element alteration zone of Mesoproterozoic or Tertiary age. No drill-hole tested these features.
- They could also represent multiple or single palaeochannel / alteration systems.
- The channel systems may be within one or several stratigraphic environments of the area cut into the Tapley Hill Formation, Pandurra Formation or the GRV. Tapley Hill Formation was logged in the historical drill hole “PDH 14” (E684,529 and N6,443,471) drilled in the south-west corner of Yudnapinna EL4843. Dickite alteration provides encouragement for unconformity-style uranium mineralisation.
- The existing VTEM survey data was not effective in unravelling the geological system whether it is a palaeochannel or alteration zone.
- A magneto telluric (CSAMT) survey combined with the VTEM data could unravel the nature and geometry of the anomaly system (Crowe et al, 2012).
- It may be also possible to “see” unconformities below the intense VTEM anomalies with the CSAMT using Crowe et al. methodology.
- Once the nature of the anomaly system is identified, the outline and extent of the system would be mapped with tan extended AEM survey.
- Then, soil sampling would test for uranium mineralisation within the identified palaeochannel or pathfinder element, if it is found to be alteration zone.

7. CONCLUSIONS

- Elements found with unconformity-associated U deposit were found to be anomalous in water samples from historical drill-holes (wells)
- The presence of dickite in a historical drill hole indicates the Pandurra Formation to have undergone diagenetic alteration similar to that at Athabasca Basin.
- The reconnaissance VTEM survey identified two anomalies with highly conductive sources; however, they did not produce information on the depth extent.
- Multi-facetted exploration approach is required to test the potential for mineralisation in the project area

8. RECOMMENDATIONS

- Reconnaissance field check of the VTEM anomalies and collect trial soil samples.
- Identify the nature, structure and depth extent of the VTEM anomalies using a magneto telluric (CSAMT) survey or drilling.
- An AEM survey to define outlines of the palaeochannel / alteration zone should be considered.
- Soil sampling over the outlined palaeochannels / alteration zones.

9. EXPENDITURE

Table 4: Expenditure for the period ending 31 May 2013

Activity	**EL4692 Pandurra**	**EL4708 Koolcutta**	**EL 4843 Yudnapinna**	**Combined totals $**
Professional Geology	20,658	13,463	15,608	49,729
Geochemical assays	456	456	456	1,368
Airborne Geophysics	19,953	21,637	0	41,590
Drafting	1,068	1,068	1,068	3,203
Field camp costs	771	771	771	2,314
Tenement managements & related	9,146	3,026	9,146	21,318
Overheads	**5,205**	**4,042**	**2,705**	**11,952**
Total this period	**57,256**	**44,463**	**29,754**	**131,474**
Total since grant	**76,675**	**64,054**	**30,594**	**171,323**

10. REFERENCES

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Crowe M., Dhu T., Wilson T., & Graham Heinson G., 2012. Magnetotellurics & Airborne Electromagnetics to assess basin structure and geometry. University of Adelaide, Student Posters, 9th SA Exploration and Mining Conference, 7 December 2012.

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Jefferson C.W. and Delaney D., 2007. *Geology and Uranium EXploration and TECHnology of the Proterozoic Athabasca Basin, Saskatchewan and Alberta*, Bulletin 588. Geological Survey of Canada, pp. 229.

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APPENDIX 1

Pandurra Data Review Memo

DATA REVIEW

EL4692 PANDURRA
EL4708 KOOLCUTTA
EL4843 YUDNAPINNA

PANDURRA PROJECT

Author:	**B Enday**
Date:	**8 June 2012**
Spencer Report No:	**4**

CONTENTS

Attachments:

DH LOGS: Stratigraphic log for drillhole FH AFMECO-TW MW23 5
HyLogger Log for drillhole FH AFMECO-TW MW23 5

1. INTRODUCTION

The Pandurra Project, which includes Pandurra EL4692, Koolcotta EL4708 and Yudnapinna EL4843, is located about 60km west of Port Augusta. The Mesoproterozoic Pandurra Formation, a thick, monotonous unit of unmetamorphosed, flat-laying arenaceous sediments, deposited on the central-eastern segment of the Gawler Craton (Cowley, 1991), constitutes the main geology of the area.

The tenements are characterised by outcropping to near-outcropping Pandurra Formation on the top of the edge of Gawler Range Volcanics (GRV), dated at ~1590Ma, which in turn overlie the crystalline basement as it deepens to the northeast. The sediment package, with some of the clast material being sourced from the GRV and Olympic Dam crystalline basement, deposited in the intracratonic Cariewerloo Basin which was created during crustal extension (~1500-1400Ma).

Northwest-trending dykes of the Neoproterozoic Gairdner Dyke Swarm were emplaced during a period of further crustal extension (~800Ma). The intrusion of these dykes created compartmentalised fluid-flow within the sediment. The Pandurra Formation was succeeded by blanket cover of Neoproterozoic Tapley Hill Formation (~750-500Ma), comprising reduced sediment of carbonaceous shale.

Toro Energy (Flint et al., 2007) reported copper mineralization in the Tapley Hill Formation rocks from sample collected near Pandurra Copper Prospect located a few km east of the tenements (730300E and 6386000N).

The Cariewerloo Basin has potential for hybrid uranium mineralisation targets containing high-grade uranium at several levels and depositional environments such as:

- associated with mafic dykes,
- at the unconformity between Pandurra Formation and the overlying reduced Tapley Hill Formation,
- at the unconformity between Pandurra Formation and the basement rocks or
- perched within Pandurra Formation over unconformity-associated mineralization.

Recently, a detailed multidisciplinary investigation was undertaken by PIRSA in collaboration with the Saskatchewan Ministry of Energy and Resources to assess the potential for unconformity-associated uranium in the Pandurra Formation. The summary report by Wilson et al, 2011, entitled “Cariewerloo Basin Unconformity-Related Uranium Project Data Release April 2011, Data Release Outline” was presented on a disc which contains the written report and map and incorporates a digital GIS of all available data suitable for the purpose of this review.

The investigation encompasses lithostratigraphic techniques and sedimentological, geochemical, geophysical and 3D modelling methodologies. Among these, the TMI survey, an AEM survey and spectral geology on historical diamond drillholes are discussed in the following section.

2. CARIEWERLOO BASIN UNCONFORMITY PROJECT

2.1 Interpretation of TMI Survey

Modeling the geophysical domain underlying the Pandurra Formation was performed using modelVision pro 9.0 (Wilson et al., 2011). The modeling shows:

- The geology underlying the GRV was interpreted from geophysical TMI data and is hence labelled as Geophysical Domains, rather than as geological units (Wilson et al., 2011).
- The use of magnetics and multi-scale edge (worms or gradient strings) has brought to light three new, previously undefined geophysical domains (Wilson et al., 2011), reflecting significant change in basement lithology.
- Two of the geophysical domains exist within the Pandurra Project area, and could correspond to units of Archaean Metamorphics or Hutchinson Group or may represent new geological units (Wilson et al., 2011).

2.2 Interpretation of AEM Survey

In 2010 the South Australian Government contracted two regional airborne electromagnetic (AEM) lines which over-fly Spencer’s tenements. The AEM compare the Cariewerloo Basin and the uranium-rich Athabasca Basin in Canada by mapping lithostratigraphy of the basin sediments and petrophysical variations within the basement below the GRV and faults as follows:

- The airborne EM penetrated through to the basement (GRV) rocks and generated several EM anomalies on the Pandurra Project (L’Heureux, 2011).
- The EM anomalies are coincident with apparent sub GRV basement structures revealed by gravity and magnetic surveys. Several faults were interpreted from the magnetic worms (Wilson et al., 2011) as basement structures which may offer critical path-ways for uranium of unconformity-associated deposits.
- The GRV layer of constant thickness (about 150m) was interpreted underlying the Pandurra Formation.
- Four units of GRV were identified along the EM sections: Yardea Dacite and equivalents, Eucarro Dacite and equivalents, Nonning Rhyodacite, Bunburn Dacite and equivalents, as well as the Roopena Volcanics and equivalents.
- The Yardea Dacite is the GRV unit that immediately underlies the Pandara Formation within the Project area.

2.3 Hyperspectral Logging

- The AuScope National Virtual Core Library (NVCL) HyLogger-2^{TM} automated spectroscopic core scanner was used to analyse drillholes throughout the Cariewerloo Basin (Wilson et al., 2010) in order to understand the diagenetic alteration conditions.
- Sixty one diamond drillholes were analysed with approximately half these drillholes intersecting the basal Pandurra Formation. The key minerals identified in the scans included dickite, kaolinite, muscovite, phengite, paragonite, illite, pyrophyllite, Fe-chlorite, Mg-chlorite, dolomite, siderite, ankerite, hematite and goethite.
- A typical sequence observed from the top of the Pandurra to the bottom was: muscovite, dickite, crystalline kaolinite, dickite, muscovite, illite, phengite. Some holes display a development of either paragonite or pyrophyllite below the lower dickite-muscovite boundary.
- Underlying the Pandurra Formation in the upper GRV, Fe- and Mg-chlorite and siderite/ankerite tend to dominate then make way for phengite then muscovite at greater depths (Mauger et al. 2010, Wilson et al 2010), possibly representing unconformity-associated alteraction.
- Hylogger data in the drillhole FH AFMECO-TO MW23 5, which was drilled in the southwest corner of the Pandurra licenses, contained Fe- and Mg-chlorite alteration in the GRV further below the unconformity (see attached stratigraphic log and HyLogger data)
- Montmorillonite was often present at the unconformity surface and was interpreted by Mauger et al. (2010) as part of a palaeo-weathering surface, with preserved regolith potentially being an important parameter for unconformity uranium mineralisation.
- Mauger et al. (2010) pointed out that the observed mineralogy could be the result of interplay between burial diagenesis and late stage structurally controlled hydrothermal alteration. This late stage fluid movement may well have been carrying basement-sourced metals.
- Apart from unconformity-associated uranium targets, where these fluids interact with the Tapley Hill Formation there is an available reductant to precipitate base metals and uranium (Mauger et al. 2010).

1. Fluid-Flow Modelling

The Minerals Down Under (MDU) research program within CSIRO designed numerical deformation fluid-flow modelling to facilitate more cost-effective and efficient exploration targeting and mineral discoveries. A Joint Surveys Uranium project (JSU) was set-up within MDU as collaboration between CSIRO, the NTGS and PIRSA and industry to improve understanding of uranium mineral systems and enhance exploration targeting.

The JSU undertook the following research projects within the Gawler Craton: Tarcoola Modelling for Stellar Resources Ltd; Punt Hill Deformation-Fluid-Flow modelling for Monax; Tunkillia Deposit Scale Modelling for Minotaur and Corunna and Uno Projects for Mega Hindmarsh.

The results show that in stress fields associated with 1600 to 1500Ma mineralisation in the Gawler Craton (based on observations and interpretation from worm data) strain is localised on the northeast trending faults producing sinistral strike slip. Dilation is localised in the northwest-trending faults.

In the Corunna Project, which is located about 30 km southwest of the tenement area, modelling results indicated the potential for mixing of the following three fluids (Fisher et al., 2010):

- Basement-derived fluids coming up NW trending faults. Fluid in all models moved upwards from the basement along lower strain faults and downwards in high shear strain, high dilation faults.
- Fluids from within the conglomerate or other sedimentary units in the basin. Within the conglomerate, fluid moved upwards towards the low strain, high dilation NW-trending structures and towards intersections particularly towards the focus of dilation at the intersection of the two fault sets. These may thus deposit minerals near the surface.
- Fluid moves down the active, high strain northeast-trending fault.
- Surface-derived fluid or fluid from overlying sequences that moved down into the conglomerate or down along the active NE trending fault.

2. Mapping of clay alteration using ASTER data

Localised clay alteration minerals were long ago recognised in association with unconformity-associated uranium deposits potentially providing locations for prospect scale investigations. For instance, on the Colorado Plateau (Kerr and Jacobs, 1963), East Alligator River (Beaufort et al. 2005), Athabasca Basin (Quirt, 2002; Kupsch and Catuneanu, 2007), Kintyre Uranium Deposit (Jackson and Andrew, 1990) and Westmoreland uranium Deposits (Hills and Thakur, 1975).

- Argillic and advanced argillic alteration was the most common clay alteration on the outer zone of the alteration halos above the deposit.
- The minerals of the halos included: kaolinite, dickite, illite, smectite, halloysite, alunite and pyrophyllite.
- The observation of wide-spread dickite within the Pandurra Formation was an indication of the temperature, pressure, maturity and preparedness of the diagenetic development of the basin. The alteration minerals observed in the Cariewerloo basin were a product of large-scale fluid movement and were an indication of the level of oxidation, leaching and acidity of the alteration fluid.

- Thus, the Cariewerlloo Basin appears to be well-prepared for localised uranium accumulation, vectors towards which may be seen in drillhole spectral observations. Mapping of these alteration patterns would provide prospect scale targets:
  - Figure 6 shows alteration interpreted on a Google Earth map, yellow elliptical outlines are for field visit and sampling.
  - Figure 7 shows ASTER map of kaolin group content. Red elliptical outlines are interpreted for field investigation.
  - Figure 8 shows ASTER map of MgOH group content. Green elliptical outlines are interpreted for field investigation.
  - Figure 9 shows ASTER map of AlOH group content. Purple elliptical outlines are interpreted for field investigation.
  - Figure 10 shows interpreted alteration outlines plotted all together.

3. DISCUSSIONS

Skirrow et al. (2009) summarised the criteria considered to be critical parameters or desirable for the deposition and preservation of unconformity–associated uranium mineralization, which are: fluid source, metal source, fluid flow drivers, fluid volume, fluid pathway and depositional environments.

The Cariewerloo Basin displays many of these key ingredients, including that the Pandurra Formation formed a favorable environment with lateral permeability conducive to the mobilization and transport of uranium within oxidized basinal fluids.

The geological, geochemical and hydrological components that are considered to be critical in the formation of basin-related uranium mineralisation are examined here, highlighting structural architecture, spatial variations in the oxidation-reduction potential of the sedimentary rocks and basinal fluid-flow.

Cariewerloo and Athabasca Basins show some of the definitive characteristics thought essential for unconformity-associated uranium deposit and presents many similar features such as:

- deep oxidised sandstone basin in extensional tectonic region,
- dickite diagenetic alteration of sediment recently recognized and mapped in historical drillholes,
- Mg-chlorite near basal unconformity in both basins,
- palaeo-regolith development and
- age.

However, the unconformity-associated model which works well at Athabasca Basin (and Australia's Alligator River) cannot be applied directly.

The main differences are:

- in the general stratigraphy of the Basins where, in the Cariewerloo, the blanket of acid volcanics (~150m thick) between Pandurra Formation and any underlying graphite schist, contrasts with the Athabasca Basin, where graphite schist directly underlies the sediments.
- dickite is not pervasively developed in the Cariewerloo but occurs in sub horizontal layers in two stratigraphic positions. In fact, the basal coarse grained conglomerate horizon was found to be dickite–altered in the drillholes tested, as was observed by Kupsch et .al, 2007 at the Athabasca Basins.
- The Mg-chlorite does not strongly alter the Pandurra-GRV unconformity but occurs in drillhole 17981 (FH AFMECO-TO MW23 5) lower down, possibly in cracks and fractures.
- The palaeo-regolith at Athabasca Basin varies from 0 to 30m thick whereas at Cariewerloo Basin it was observed to be only a meter thick where examined – greater thickness are thought likely.

Thus, a prospective variation on the Athabasca Basin model at Cariewerloo Basin is encouraged by the current knowledge but the following additional ingredients are necessary:

- A means to deposit economic uranium in a perched scenario as observed within the Pandurra Formation by Minotaur Exploration Limited in the drillhole AS07D01 in their The Westopolis Prospect and Uranium Exploration Australia Ltd in the drill hole SH 7.
- As the GRV blanket precluded graphite of the Hutchinson Group providing reducing a agent, another agent is required e.g. Gairdner basic dykes,
- Suitable fault plumbing architecture to provide fluid-flow pathways, to concentrate U-rich fluids and to transport them to accessible sites.
- These fluids may originate at the Pandurra Formation-GRV unconformity or the GRV- Hutchinson Group/ Archaean unconformity and be transported along the fluid-flow pathways.

4. CONCLUSIONS

Uranium targets can be delineated by mapping:

- faults using TMI (AEM) survey data,
- alteration at fault intersection using ASTER and Landsat data (Figure 5,6,7 and 8),
- Hutchinson Group with potential graphitic reductants under GRV blanket using previously undefined geophysical domains on AEM survey data and
- basic (reducing) dykes of the Gaindner Dyke Swarm.

5. RECOMMENDATIONS

- The ASTER data indicated the usefulness of spectral mapping and recommends the use of low level hyperspectral mineral mapping (eg. HyMapper by HyVista Corporation.)
- A field visit with rock chip, soil and bore water sampling.
- AEM target selection on the release of the latest data from DMITRE
- Additional AEM or deep electrical MT (Magnetotelluric) survey

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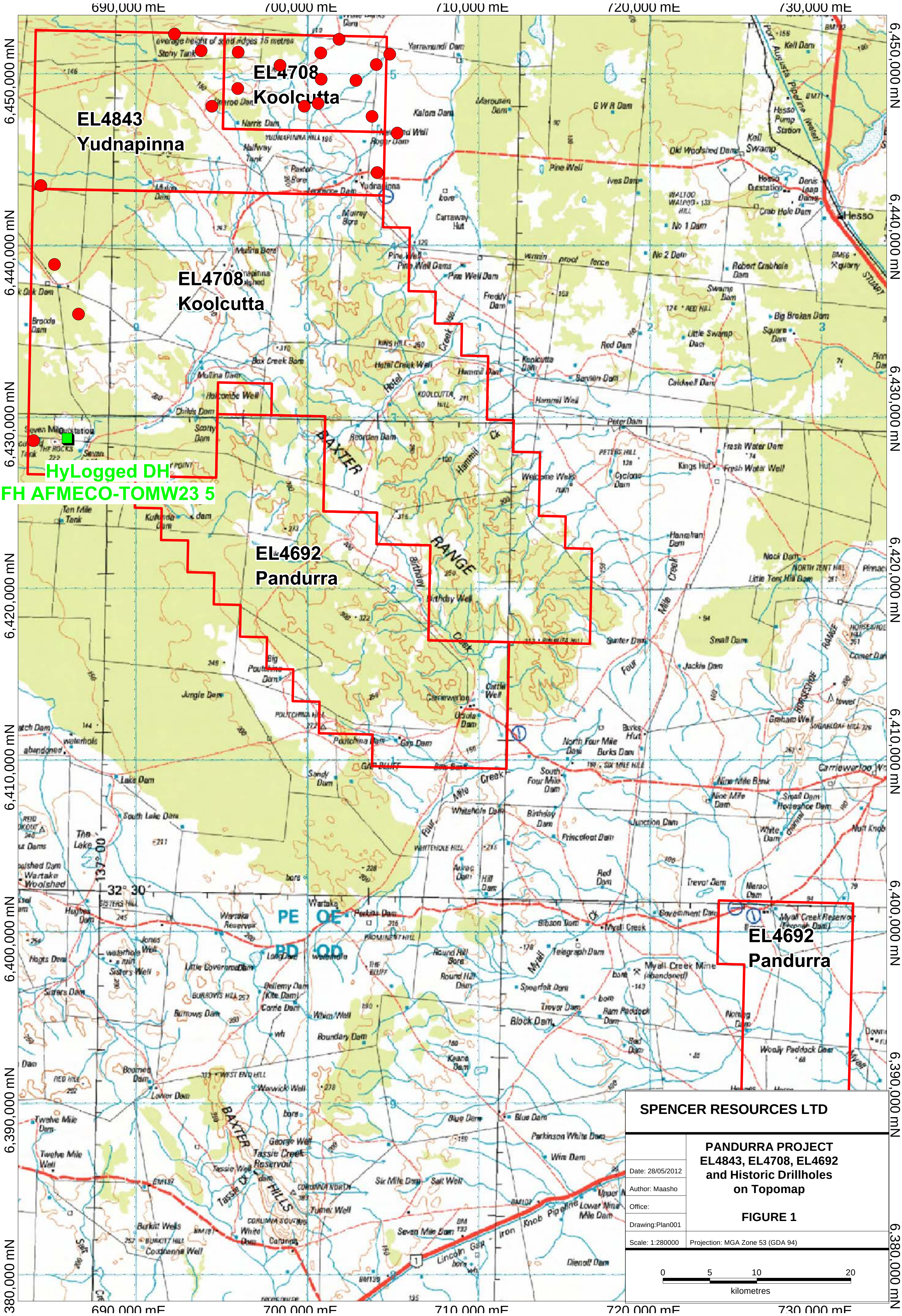

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EL4843, EL4708, EL4692
and Historic Drillholes
on Topomap
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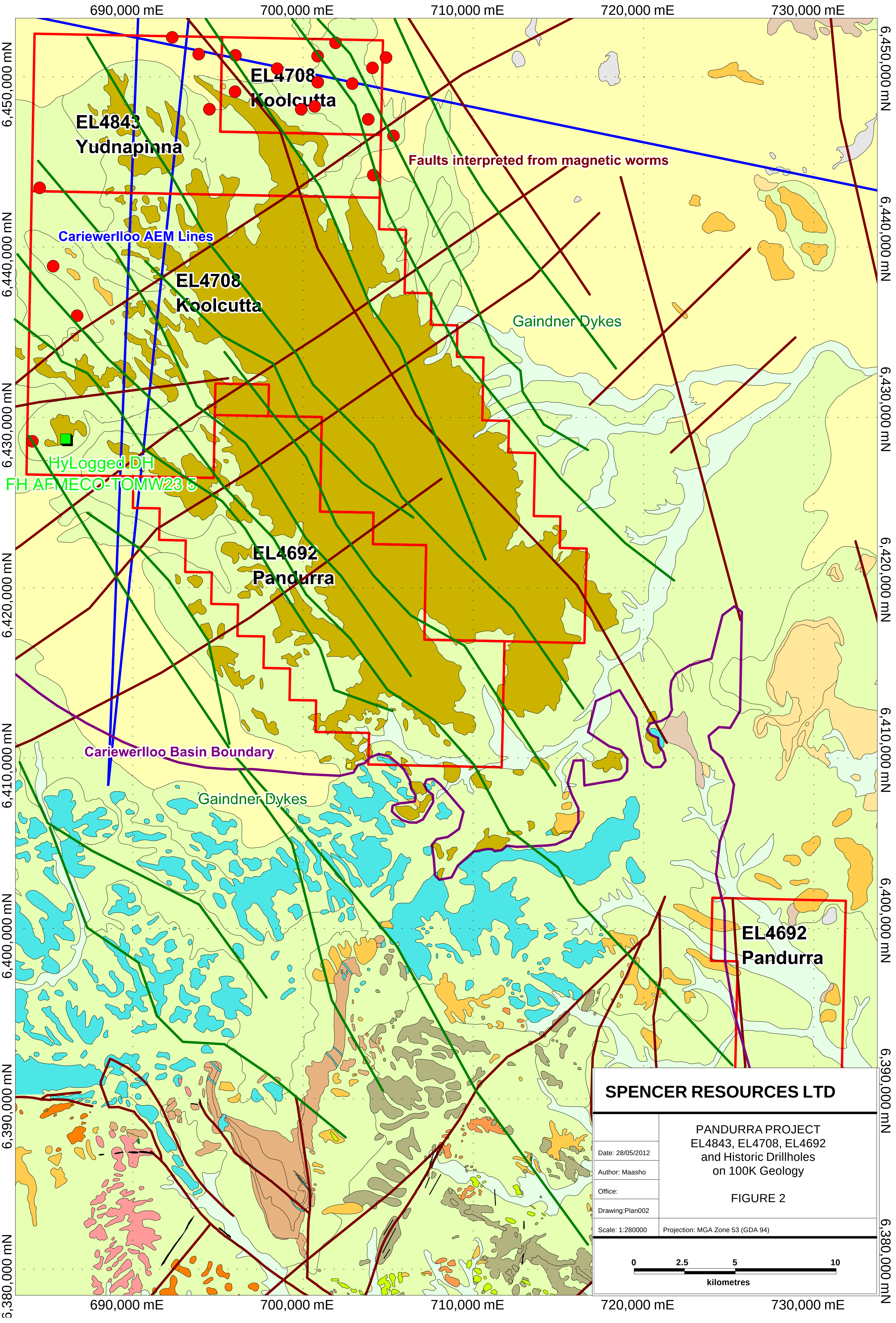
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Pandurra
Cariewerlloo Basin Boundary
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Pandurra
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Author: Maasho
Office:
Drawing:Plan002
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PANDURRA PROJECT
EL4843, EL4708, EL4692
and Historic Drillholes
on 100K Geology
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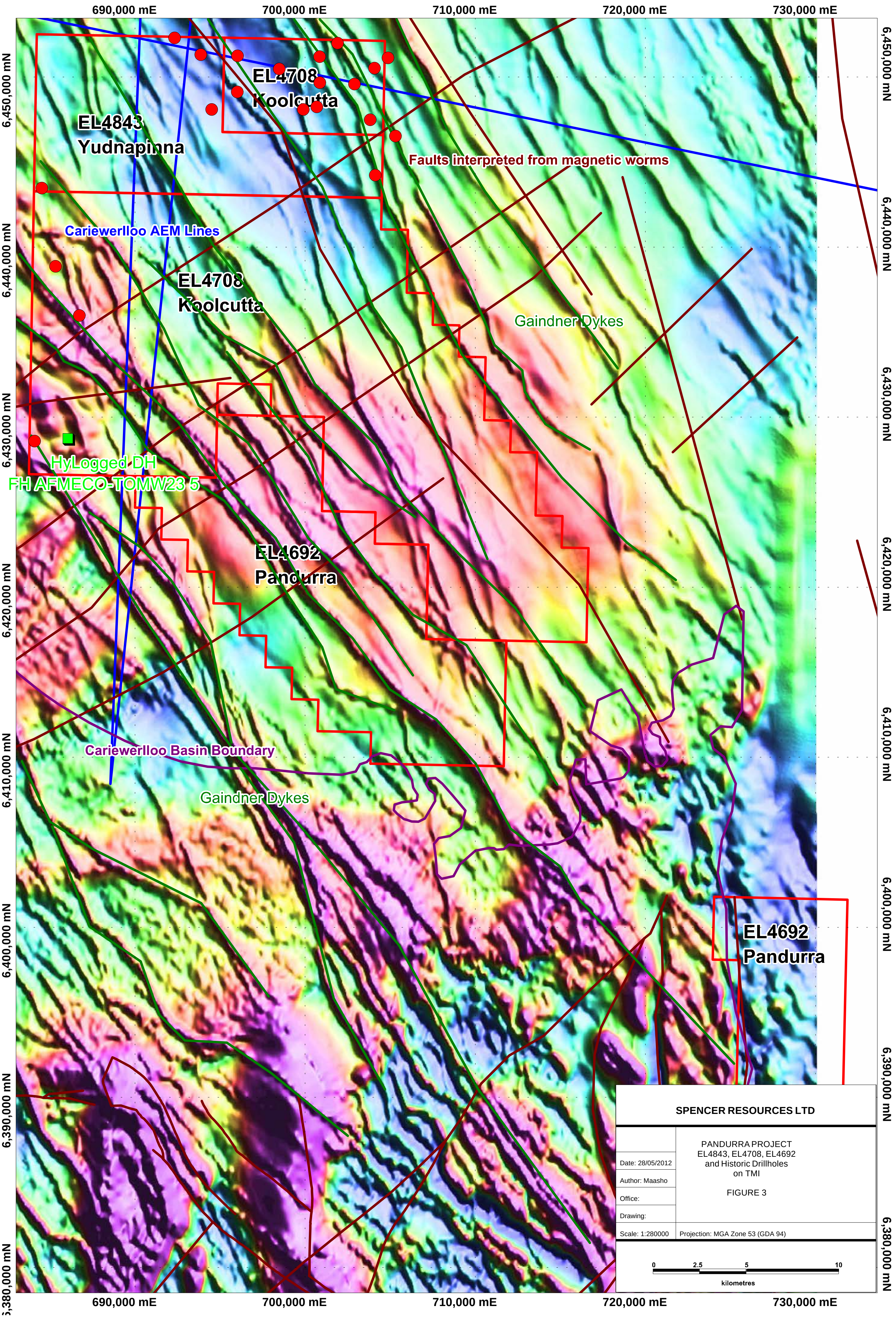
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Cariewerlloo Basin Boundary
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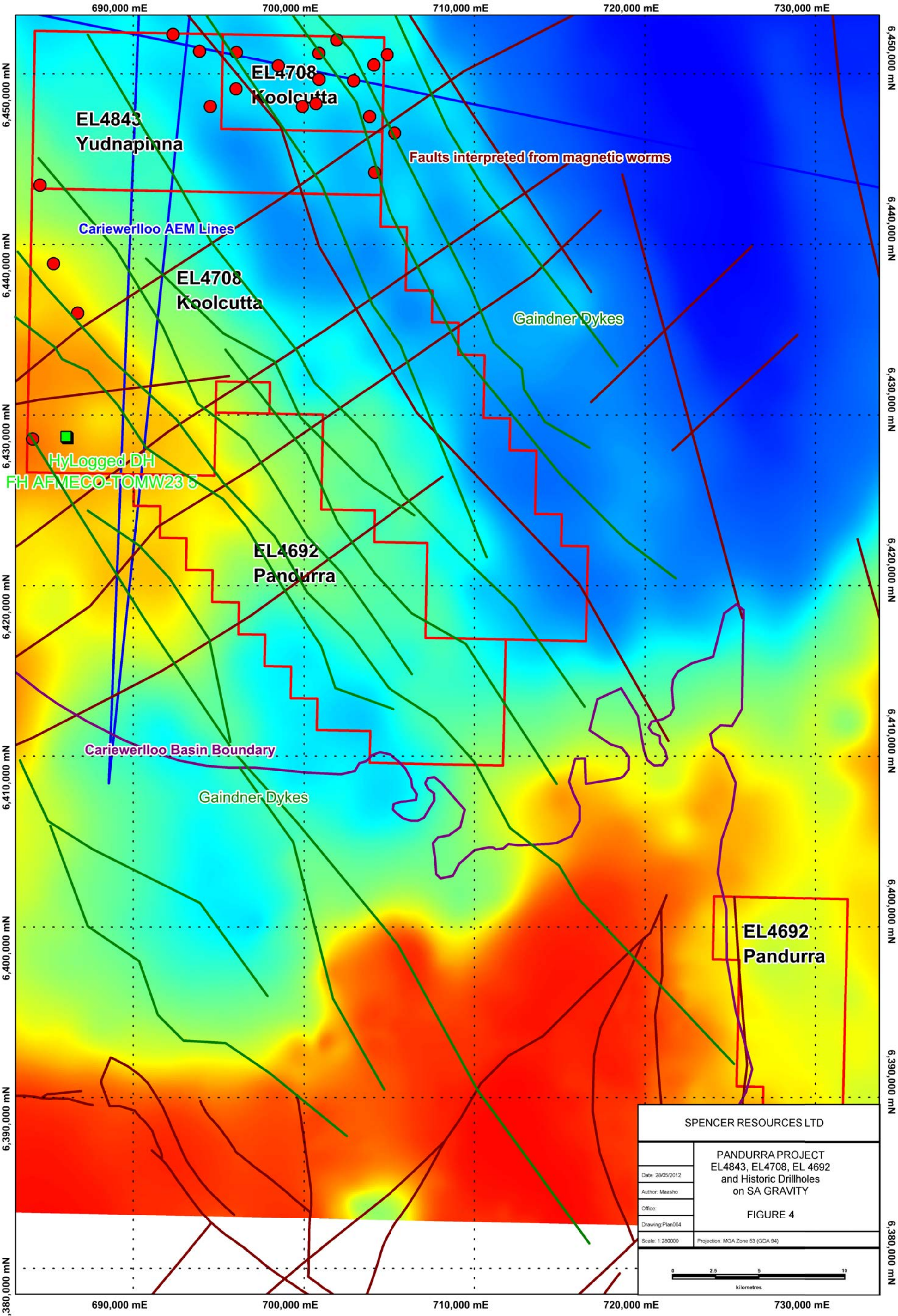

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Pandurra
Cariewerlloo Basin Boundary
Gaindner Dykes
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PANDURRA PROJECT
EL4843, EL4708, EL 4692
and Historic Drillholes
on SA GRAVITY
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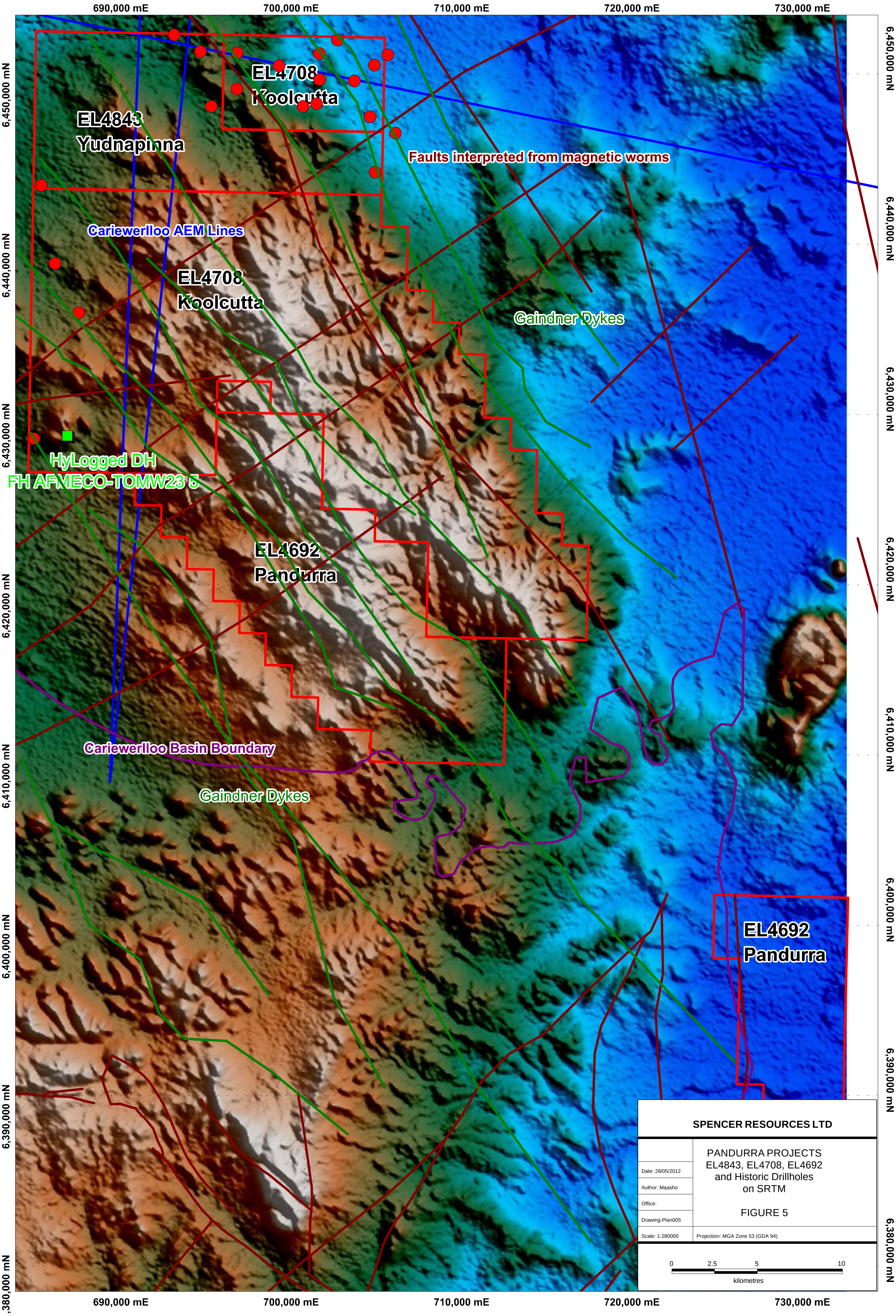

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Gaindner Dykes
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Cariewerlloo Basin Boundary
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EL4843, EL4708, EL4692
and Historic Drillholes
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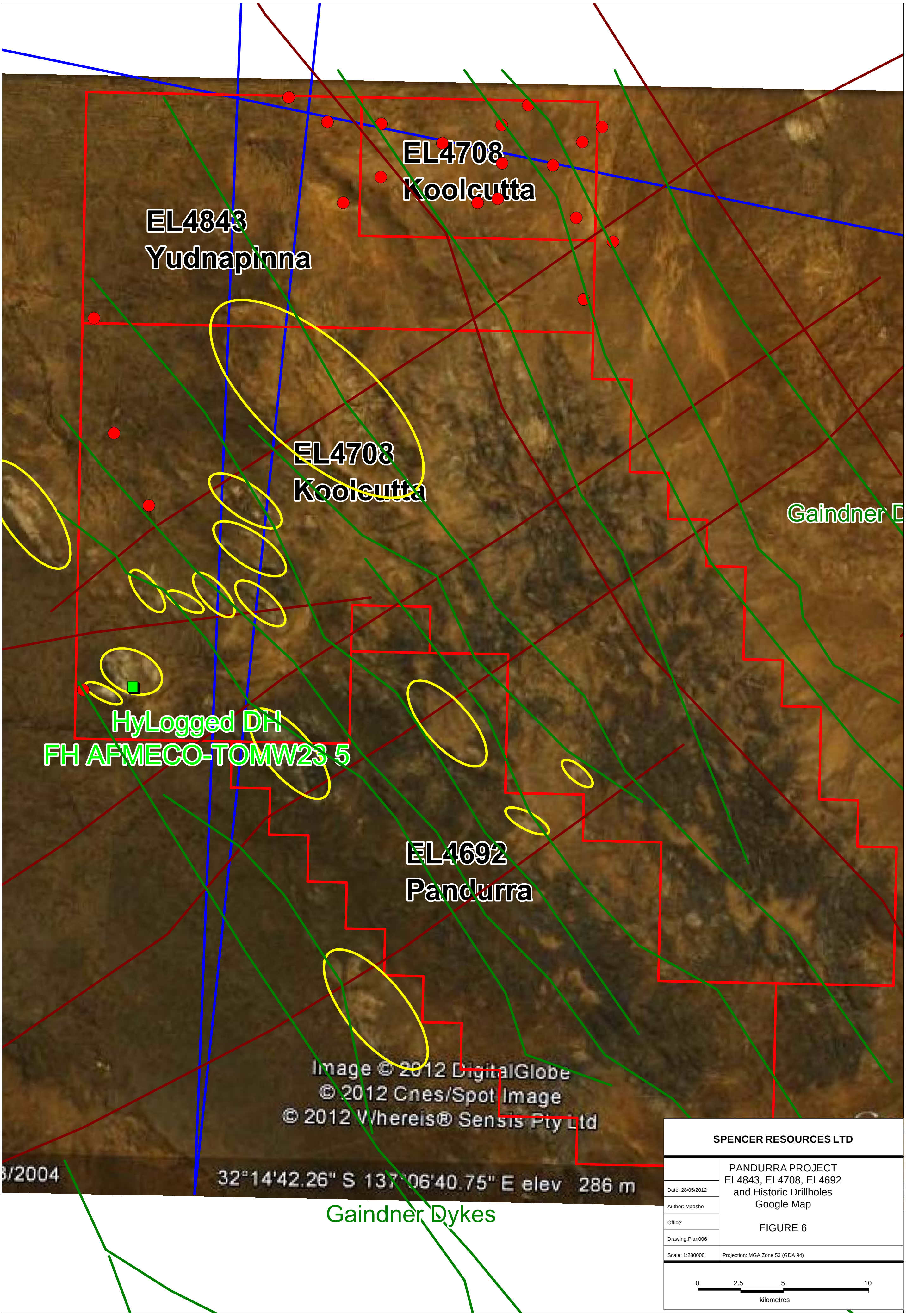
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Image © 2012 DigitalGlobe
© 2012 Cnes/Spot Image
© 2012 Whereis® Sensis Pty Ltd
32°14'42.26" S 137°06'40.75" E elev 286 m
Gaindner Dykes
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EL4843, EL4708, EL4692
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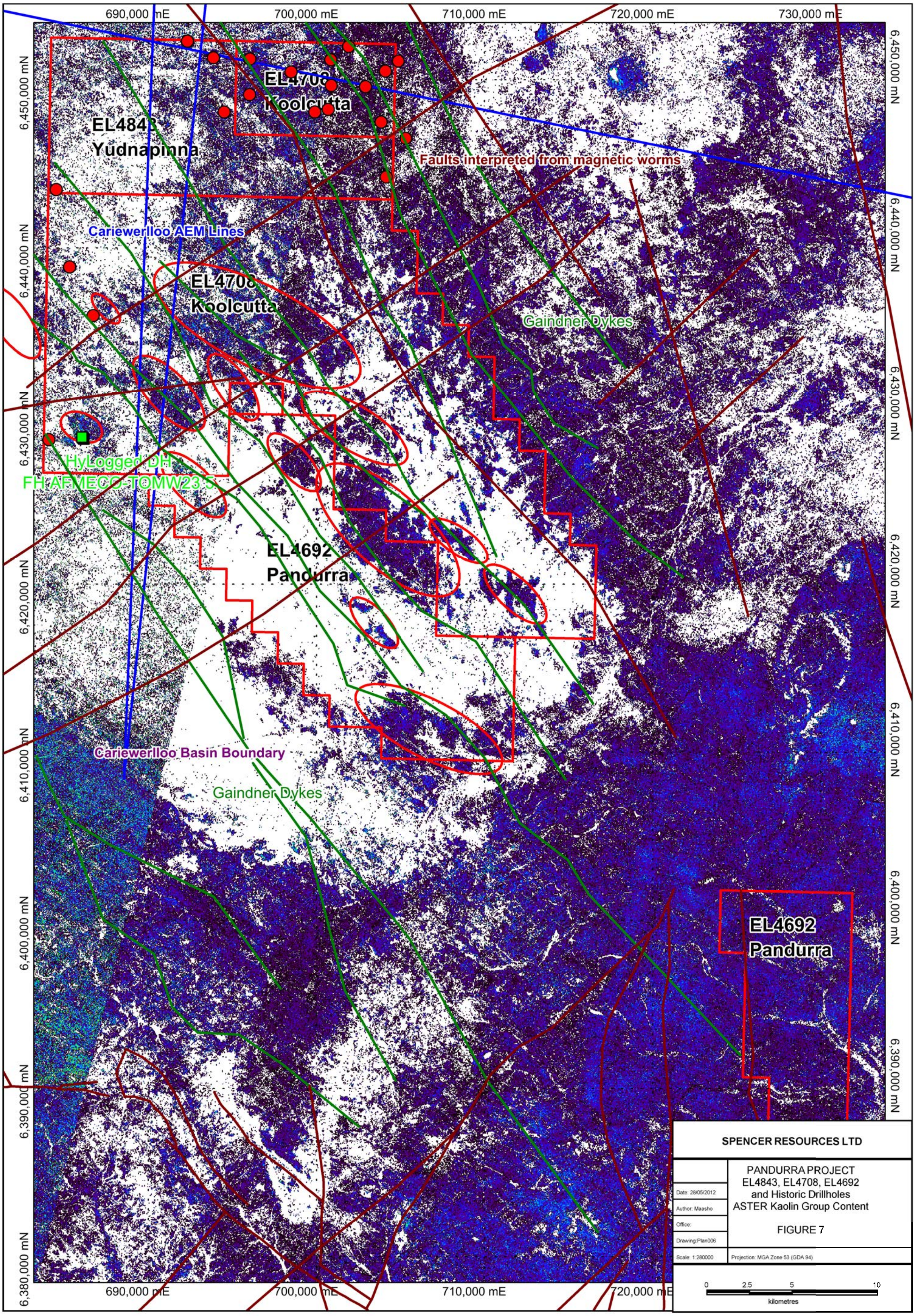
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Koolcutta
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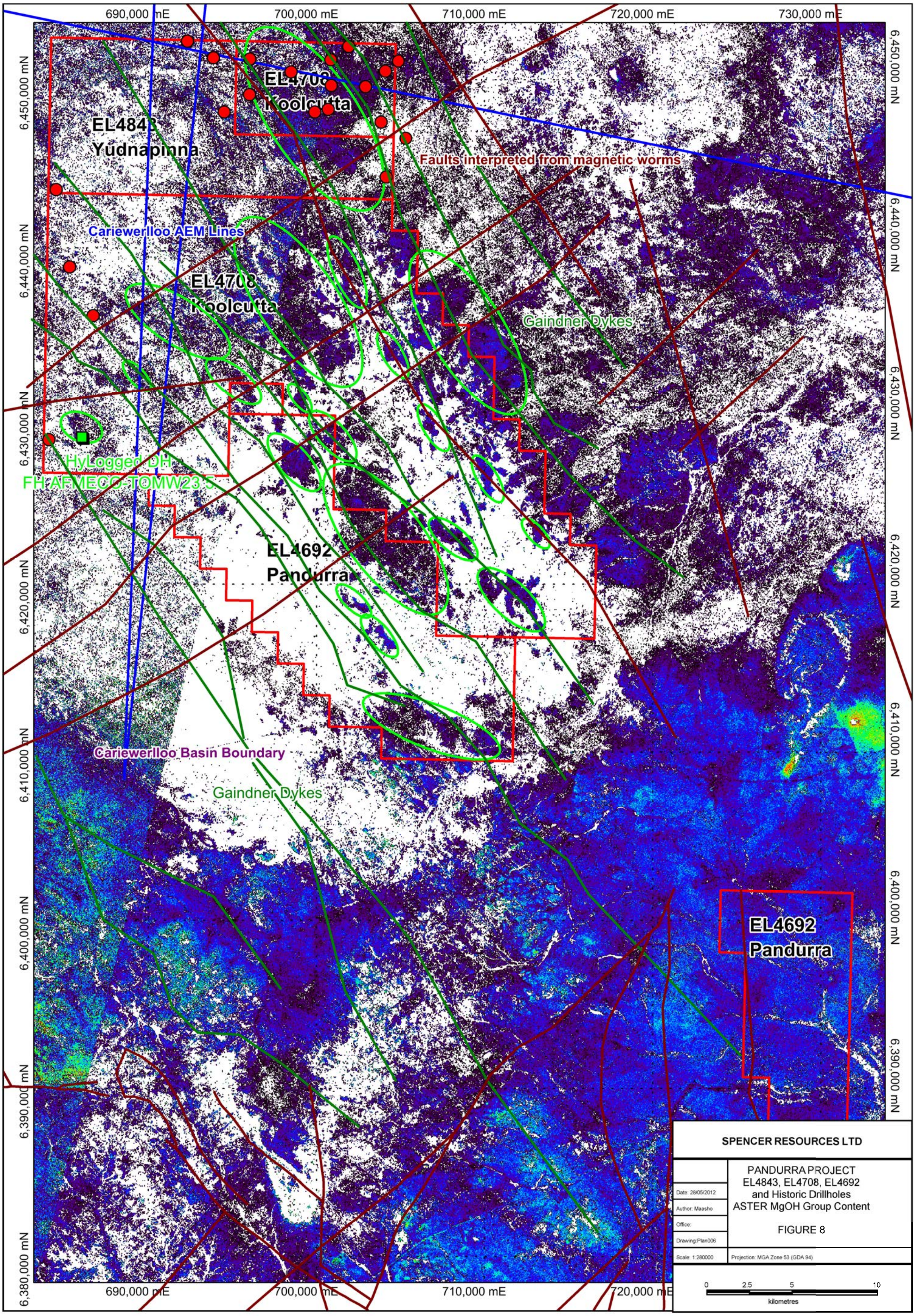

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PANDURRA PROJECT
EL4843, EL4708, EL4692
and Historic Drillholes
ASTER MgOH Group Content

FIGURE 8

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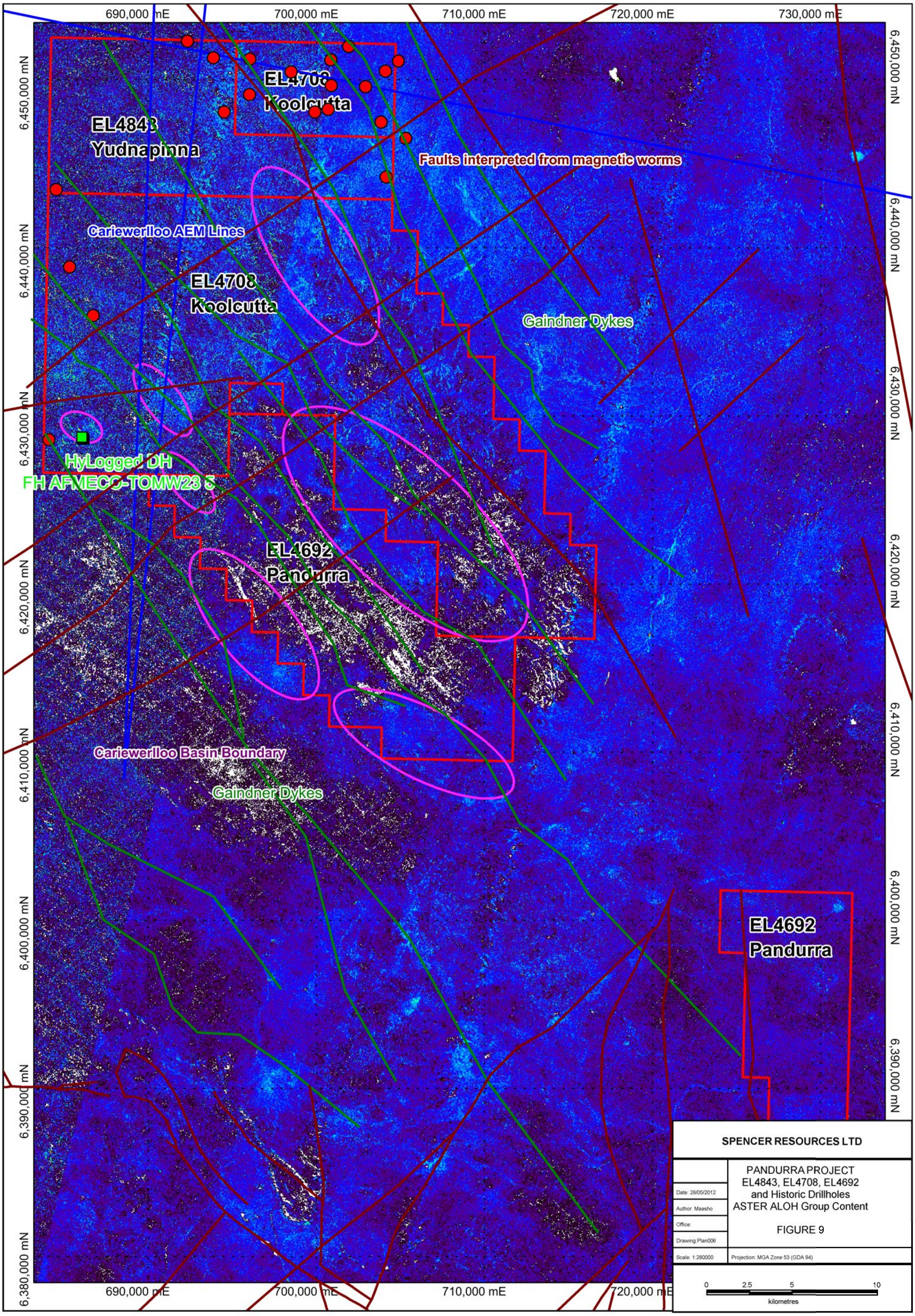

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Date: 28/05/2012 Author: Maasho Office: Drawing: Plan006	PANDURRA PROJECT EL4843, EL4708, EL4692 and Historic Drillholes ASTER ALOH Group Content FIGURE 9
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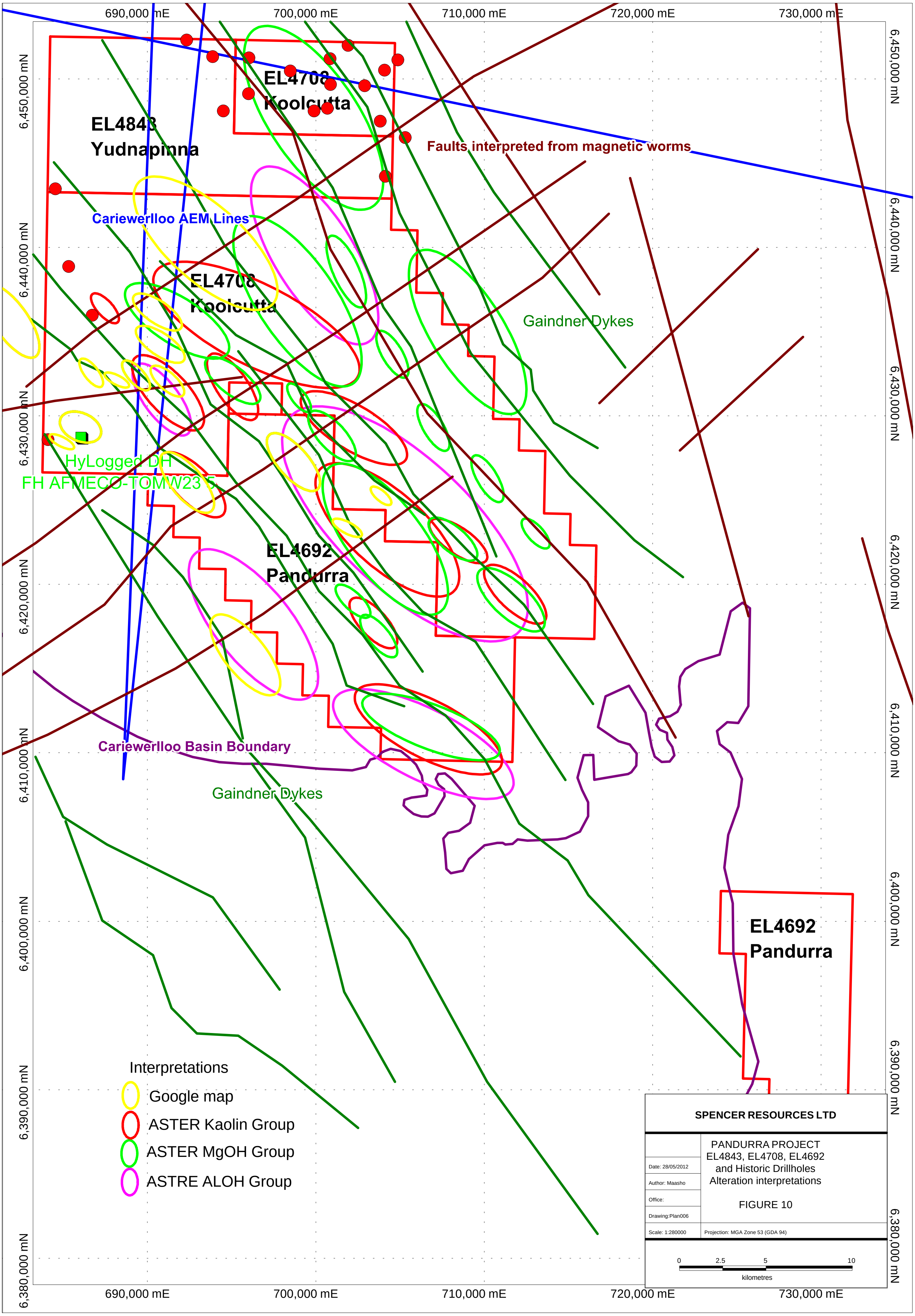
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EL4843
Yudnapinna
Faults interpreted from magnetic worms
Cariewerlloo AEM Lines
EL4708
Koolcutta
Gaindner Dykes
HyLogged DH
FH AFMECO-TOMW23 5
EL4692
Pandurra
Cariewerlloo Basin Boundary
Gaindner Dykes
EL4692
Pandurra
Interpretations
Google map
ASTER Kaolin Group
ASTER MgOH Group
ASTRE ALOH Group
SPENCER RESOURCES LTD
PANDURRA PROJECT
EL4843, EL4708, EL4692
and Historic Drillholes
Alteration interpretations
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APPENDIX 2

Pandurra Reconnaissance Field Evaluation

SPENCER RESOURCES LIMITED

RECONNAISSANCE FIELD EVALUATION

EL4692 PANDURRA
EL4708 KOOLCUTTA
EL4843 YUDNAPINNA

PANDURRA PROJECT

Author:	**B Enday**
Date:	**30 September 2012**
Spencer Report No:	**2**

CONTENTS

Figures

Plates

1. INTRODUCTION

1.1 The Brief

In August 2012, a geological inspection was made of the Spencer Resources Limited Pandurra Project tenements in the Port Augusta area, South Australia. The Project, which includes Pandurra EL4692, Koolcotta EL4708 and Yudnapinna EL4843, is located about 60km west of Port Augusta. The tenement encompasses portions of Yudnapinna, Cariewerloo, and Pandurra pastoral properties that are used primarily for sheep grazing.

The intention of the present work programme was to examine in the field those areas delineated in the report entitled “Pandurra Project Data Review” by Baheta Enday, 2012 for Spencer Resources (Report No.4):

- fault and fault-dyke intersections,
- alteration zones and alteration-fault intersections,
- a few ground water, soil and rock samples, and
- the geology (and constructing a reconnaissance regolith map).

1.2 Technique

The field evaluation of the Pandurra Project was carried out over the whole of the three tenements. Most of the area could be approached by vehicle to within a few km on station tracks. The rest of the distance was covered by Quad Bikes. Twelve ground water samples were taken from wells and boreholes (Figure 1). These samples were submitted for analysis at Genlysis Intertek laboratory.

1.3 Data

1.3.1 Remote sensing imagery

The field evaluations were based on Google and ASTER mineral maps prepared by the writer. Hard copy of this imagery was used at a scale of 1:50,000.
The regional magnetics and gravity were also available for the Project areas and used in the field.

1.3.2 Maps

The topographic map of the project area was also used during the fieldwork. The map was useful in locating tracks, features for navigation, water wells and bore holes. However, many of the water holes in the department’s records were found to be non-existent on the map and on the ground.

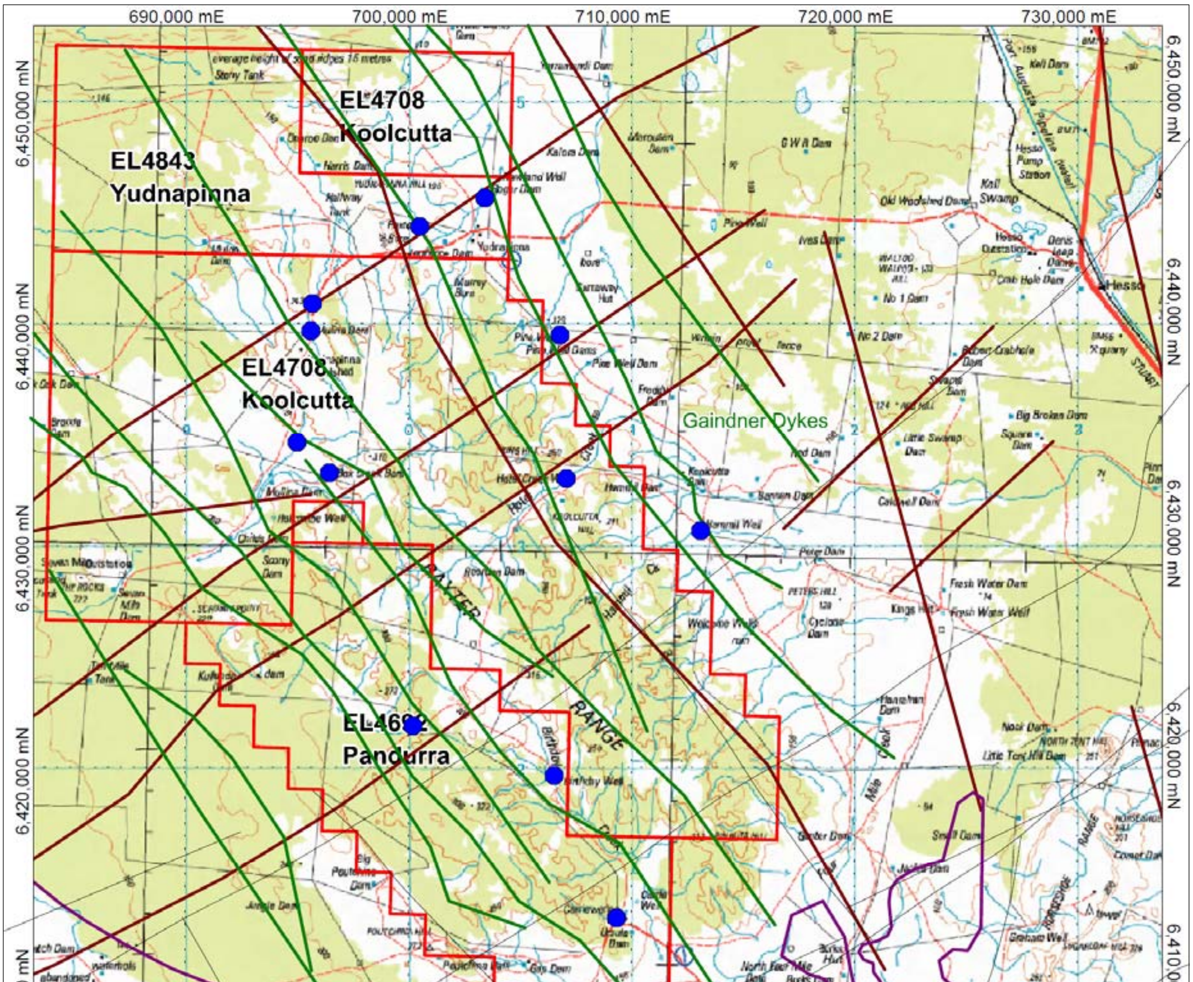

Figure 1: Location map

2. BACKGROUND GEOLOGY

The tenements are characterised by outcropping to near-outcropping Pandurra Formation over the edge of Gawler Range Volcanics (GRV) which were dated at ~1590Ma, which in turn overlie the crystalline basement as it deepens to the northeast. The sediment package, with some of the clast material being sourced from the GRV and Olympic Dam crystalline basement, deposited in the intracratonic Cariewerloo Basin created during crustal extension (~1500-1400Ma).

The Mesoproterozoic Pandurra Formation, a thick, monotonous unit of unmetamorphosed, flat-laying arenaceous sediments, deposited on the central-eastern segment of the Gawler Craton (Cowley, 1991), constitutes the main geology of the area (Figure 2).

Northwest-trending dykes of the Neoproterozoic Gairdner Dyke Swarm were emplaced during a period of further crustal extension (~800Ma). The intrusion of these dykes probably created compartmentalised fluid-flow within the sediment. The Pandurra Formation was succeeded by blanket cover of Neoproterozoic Tapley Hill Formation (~750-500Ma), comprising in part, reduced sediment of carbonaceous shale.

The Pandurra Formation is typically a medium to coarse-grained, poorly sorted, sub-angular quartz and lithic sandstone but also includes interval of moderately well sorted, very fine to medium-grained sandstone, granule and pebble conglomerates, mudstones and siltstones. The red, red-brown or purple kaolinite/sericite matrix, ochreous hematite and minor illite have typically undergone some reduction, displaying spotting or mottling in grey or white. Deep weathering of these sediments is ubiquitous with widespread development of silicification and characteristic redistribution of Fe into curvilinear liesegang bands (Cowley, 1993).

Mason (1978) has recognised four informal members within the Pandurra Formation in drill-holes. These are:

- The basal Member 1 consists of very poorly sorted, fine to medium grained, gritty, lithic sandstone, granular or pebbly sandstone and interbeds of mudstone and siltstone.
- Member 2 is a distinctive, widespread mudstone, micaceous sandy mudstone and micaceous siltstone, with interbeds of fine to medium grained sandstone with mudstone intraclasts common.
- Member 3 is typically a very fine to medium-grained sandstone, interbeded with variable amounts of mudstone and siltstone. Moderate to good sorting, sub-rounded to sub-angular quartz sand, heavy mineral layering and cross-bedding are characteristic of this member.
- Member 4 is a poorly sorted, cross bedded, medium-grained to angular sandstone and pebbly sandstone. Thin interbeds of pebble conglomerate,

mudstone, siltstone, and fine-grained sandstone occur throughout the member

3. LOCAL GEOLOGY

The Pandurra Formation (Member 4) and Quaternary sediments are the major geological units which characterise the project area as shown on Figure 2. This map shows the distribution of erosial and depositional regolith.

3.1. Pandurra Formation

Member 4 Pandurra Formation commonly outcrops and sub-outcrops throughout the project area. To the south and southeast of the tenements it outcrops as a series of bold hills (Plates 1 and 2). Several small outcrops also occur around Yudinapinna Hill and west of Seven Mile Dam (Figure 2).

This Member 4 sandstone is poorly sorted, cross-bedded, medium-grained to granular, purple, red-brown and grey sandstone with mottled bleaching (Plates 3, 4, 5, 8 and 9). It contains angular to sub-rounded grains of quartz and locally common feldspar, and granules and small pebbles of quartz, chert, jasper and acid volcanics, in a haematite-sericite/kaolinite matrix. It also contains scattered muscovite, ironstone, banded iron formation, metaquartzite, gneiss and granite granules. Scattered thin interbeds of pebble conglomerate and red to green shale, siltstone and fine-grained sandstone are present. Sorting is generally better in the finer-grained sandstone. The top of this member probably is not preserved, and a large thickness of Pandurra Formation could have been removed by erosion. Erosion (and perhaps on-going isostatic and structural movements) have resulted in considerable topography on the upper surface of the Pandurra Formation.

Alteration sites evident on Google and ASTER maps were visited in the west, central and southern parts of the tenements around Seven Mile Dam and west and north of Careiwerloo Homestead, The outcrops are deeply weathered and fragile with mottled bleaching and a kaolinised matrix (Plates 7, 8 and 9). Whereas on the plain where outcrop is scarce, it was impossible to detect the alteration zone that was indicated on the Google and ASTER maps, probably due to thick development of soil and intermixing.

3.2 Quaternary sediments

The majority of the project area, however, is occupied by colluvial sediments and a broad flat valley with sand plain and alluvium (Figure 2, Plates 5, 6 and 10)

3.2.1 Colluvial sediments

Colluvial sediments are usually developed and accumulate at the side and foot of slopes sometimes on the top of the hills (Plates 5, 7, 10 and 11). The colluvial deposit also includes areas of talus deposits that occur locally on steep topographic slopes.

They are predominantly reddish brown, gravelly and gritty clayey sand, sandy clay and silty sand. They usually form a thin blanket up to 3m thick, but thicker sections (>5 m) are likely to occur in valleys between bedrock hills and ridges. The colluvial deposits contain abundant gravel-sized angular clasts that reflect the lithology of Pandurra Formation.

3.2.2 Alluvium

Most of the low profiles in the project area are covered by mobile sand dunes and aeolian, alluvial–fluvial and lacustrine sediments (Figure 2).

These alluvial sediments comprise deposits of the modern drainage channels, with a colluvial component. Although undifferentiated, the sediments comprise reddish and orange gravel, sand, silt and clay with a large proportion of the stream bedload being reddish sand eroded from bordering aeolian deposits (Plate 12).

4. DISCUSSION

Approximately 60% of the project area is covered by colluvial and alluvial sediments. Features of exploration focus such as: fault intersections and fault-dyke intersections are mostly obscured by these sediments, and alteration zones and alteration at fault intersections which were defined on remote sensing images, were difficult to interpret on the ground.

A surface geochemical method to test for buried mineralisation related to these structural features and EM anomalies beneath these sediments should therefore, be considered.

Several laboratories offer partial digests on soil media to detect buried ore bodies in areas where conventional geochemistry may not work. Buried ore bodies may release trace levels of metals through physical and electrochemical processes which are inferred to travel vertically and accumulate within the top portion of the soil profile. The medium is normally fine grained and typically samples are not pulverised. Targeted metal ions generally reside on the surfaces of soil particles requiring only weak leaches to remove them thus producing superior anomaly contrasts. This differentiates partial digests from stronger leaches which extract occluded metal ions that contribute to background levels of metal, resulting in inferior anomaly contrast. Partial digests tend to be efficient for certain element suites and specific element species. Soil type and digestion method must therefore be matched to recover targeted elements. Detection limits may vary as a consequence of the sample media.

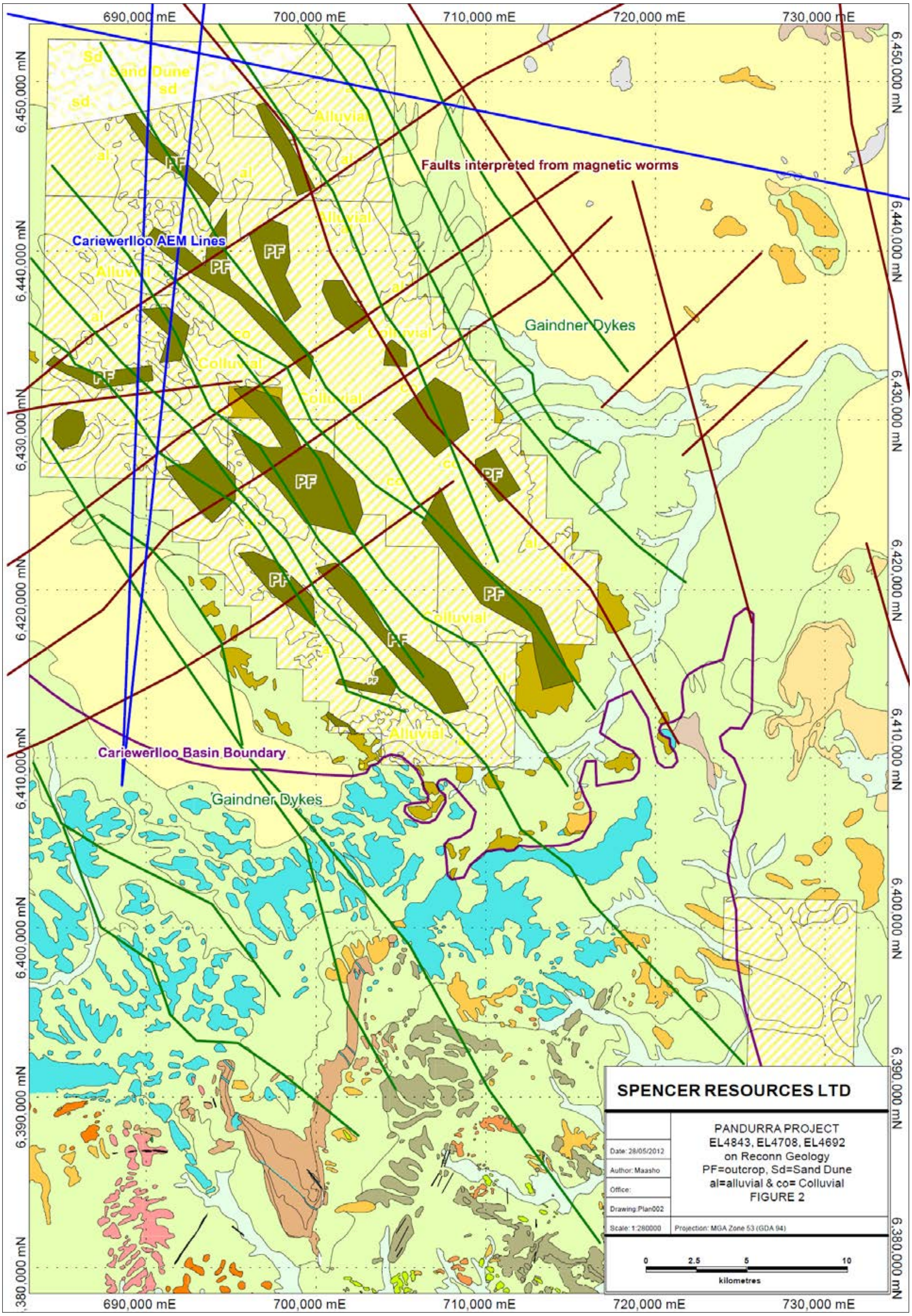

Figure 2: Regolith geological map

This method was employed by Investigator Resources to define silver prospects, such as Paris, on their Peterlumbo Exploration Licence near Kimba. Uranium anomalism was also detected using this partial digest method. The technique is thought likely to be effective through both colluvial and alluvial regolith independent of its age.

5. CONCLUSIONS

- These large ELs which total 1034 sq km are 60% covered with depositional (colluvial and alluvial) regolith.
- This sample medium is thought to be suitable for partial digest geochemical analysis for the detection of buried mineralisation.
- Some target area selection is required in order to achieve effective coverage at an acceptable cost.
- Interpretation of regional AEM lines may lead to mapping underlying pre GRV, (pre-Mesoproterozoic) basement and, therefore, to the selection of areas for soil geochemical investigation.

6. RECOMMENDATIONS

The potential for uranium accumulation should be tested by:

1. Interpreting the recently acquired Spencer AEM data to outline underlying Hutchison Group, Archaean, Lincoln Complex domains, to reduce the target area.
2. Regional geochemical sampling using different mediums such as soil, vegetation or scats, should be considered.
3. Surface geochemical sampling using partial digest assays on soils at semi-regional and prospect scale over selected areas.

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PHOTOS

Plate 1. Pandurra Formation outcrop on the top of a hill.

Plate 2. Thick Colluvial sediment developed on the slopes of hills.

Plate 3. Pandurra Formation outcrop west of Seven Mile Dam

Plate 4. Fractured and jointed blocks of Pandurra Formation mottled, fragile and deeply weathered.

Plate 5. Pandara Formation weathering and recent development of colluvial sediments, West of Seven mile Dam.

Plate 6. Colluvial sediment extended to the alluvial plain. Photo taken from the foot of plate 5 outcrops facing north.

Plate 7. Alteration Google and ASTER mapped west of Seven Mile Dam (west corner of the tenement). The altered Pandurra Formation weathered and form white soil. Photo taken south of Plate 8 on the foot of the hill.

Plate 8. Pandura Formation with light brown superficial color when broken the inside part is altered with sericite and kaolin matrix. Photo taken north Plate 7 On the top of the hill

Plate 9. Alteration Google and ASTER mapped west of Careiwerloo Homestead. Deeply weathered, friable kaolinsed and sericitised Pandurra Formation outcrops

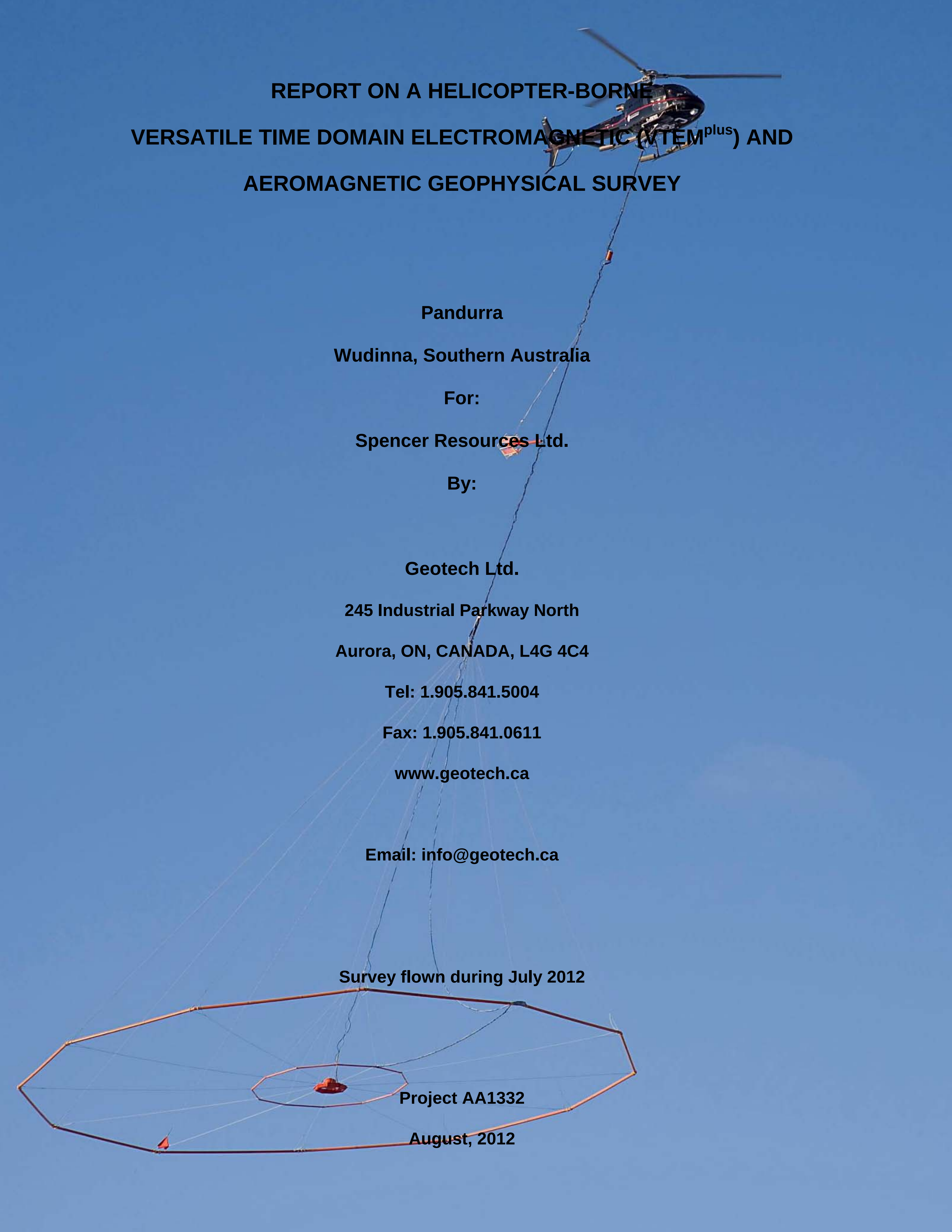
Plate 10. Surficial gravel armour of quartzite and silcreted sandstone gibbers on alluvial puffy musaceous soil.

Plate 11. Colluvial sediment developed on the top of Pandurra Formation.

Plate 12. Alluvial thick soil profile deposited along a creek.

APPENDIX 3

Pandurra VTEM Survey Logistics Report



REPORT ON A HELICOPTER-BORNE

VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM^{plus}) AND

AEROMAGNETIC GEOPHYSICAL SURVEY

Pandurra

Wudinna, Southern Australia

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Survey flown during July 2012

Project AA1332

August, 2012

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

REPORT ON A HELICOPTER-BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM^{plus}) and AEROMAGNETIC SURVEY

Pandurra
Wudinna, Southern Australia

EXECUTIVE SUMMARY

During July 31st, 2012 Geotech Airbrone Pty Ltd. carried out a helicopter-borne geophysical survey over the Pandurra area situated approximately 170 kilometres northeast of Wudinna, Southern Australia.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEM^{plus}) system, and a caesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 70.5 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked profiles of the B-field Z Component,
- Electromagnetic stacked profiles of dB/dt Z Components,
- Calculated Vertical Gradient Profiles with dB/dt Calculated Time Constant Profiles,
- Reduced to Pole Profiles

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set.

1. INTRODUCTION

1.1 General Considerations

Geotech Airborne Pty Ltd. performed a helicopter-borne geophysical survey over the Pandurra area situated approximately 170 kilometres northeast of Wudinna, Southern Australia (Figure 1 & Figure 2).

Damien Bachmann represented Spencer Resources Ltd. during the data acquisition and data processing phases of this project.

The geophysical surveys consisted of helicopter borne EM using the versatile time-domain electromagnetic (VTEM plus) system with Z component measurements and aeromagnetics using a caesium magnetometer. A total of 70.5 line-km of geophysical data were acquired during the survey.

The crew was based out of Wudinna (Figure 2) in Southern Australia for the acquisition phase of the survey. Survey flying started and completed July 31st 2012.

Data quality control and quality assurance, and preliminary data processing were carried out on a daily basis during the acquisition phase of the project. Final data processing followed immediately after the end of the survey. Final reporting, data presentation and archiving were completed from the Aurora office of Geotech Ltd. in August, 2012.

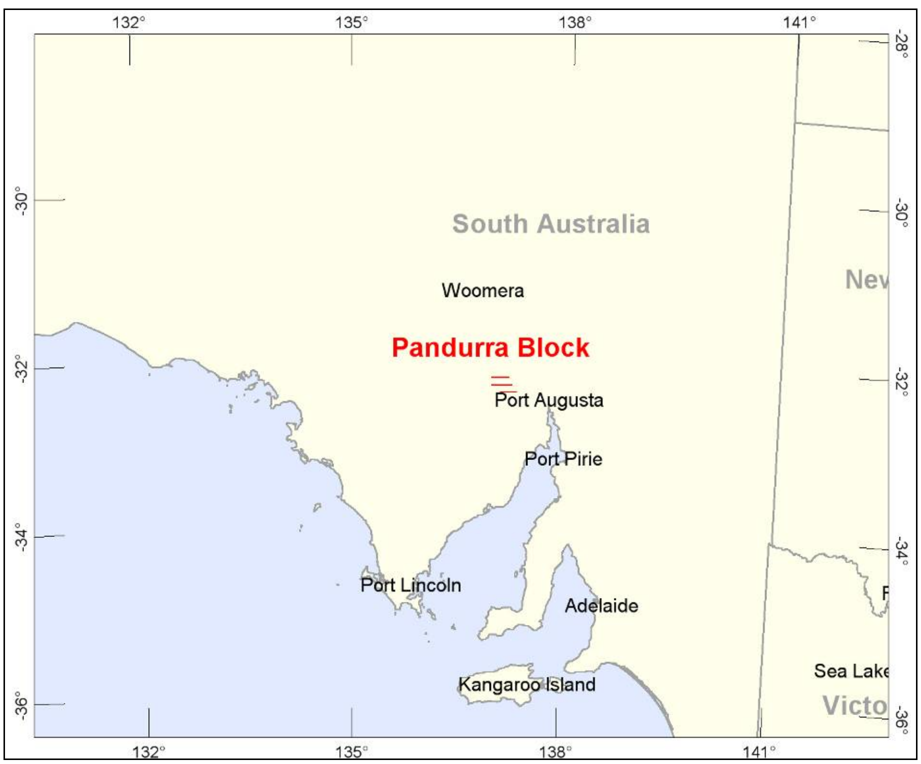

Figure 1: Property Location.

1.2 Survey and System Specifications

The Pandurra Area is situated approximately 170 kilometres northeast of Wudinna, Southern Australia respectively (Figure 2).

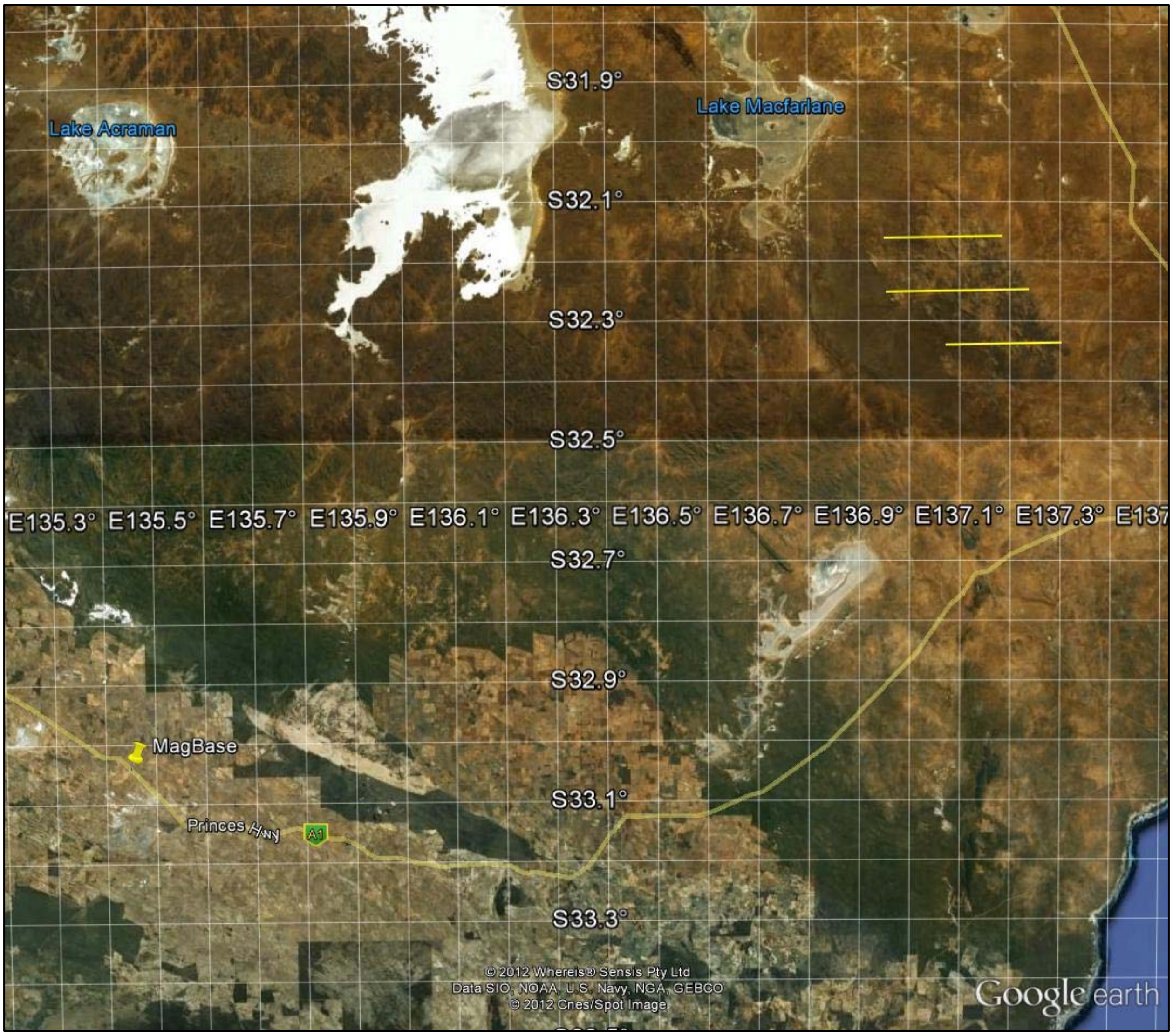

Figure 2: Survey areas location on Google Earth.

The survey block was flown in an east to west (N 90° E azimuth) direction, with traverse line spacing of 10000 metres as depicted in Figure 3. For more detailed information on the flight spacing and direction see Table 1.

1.3 Topographic Relief and Cultural Features

Topographically, the Pandurra block exhibits a moderate relief with an elevation ranging from 145 to 298 metres above mean sea level over an area of 487 square kilometres (Figure 3).

The survey block has various rivers and streams running through the survey area. There are visible signs of culture such as roads and buildings located along the survey area. Special care is recommended in identifying these features along with any other potential cultural features from other sources that might be recorded in the data.

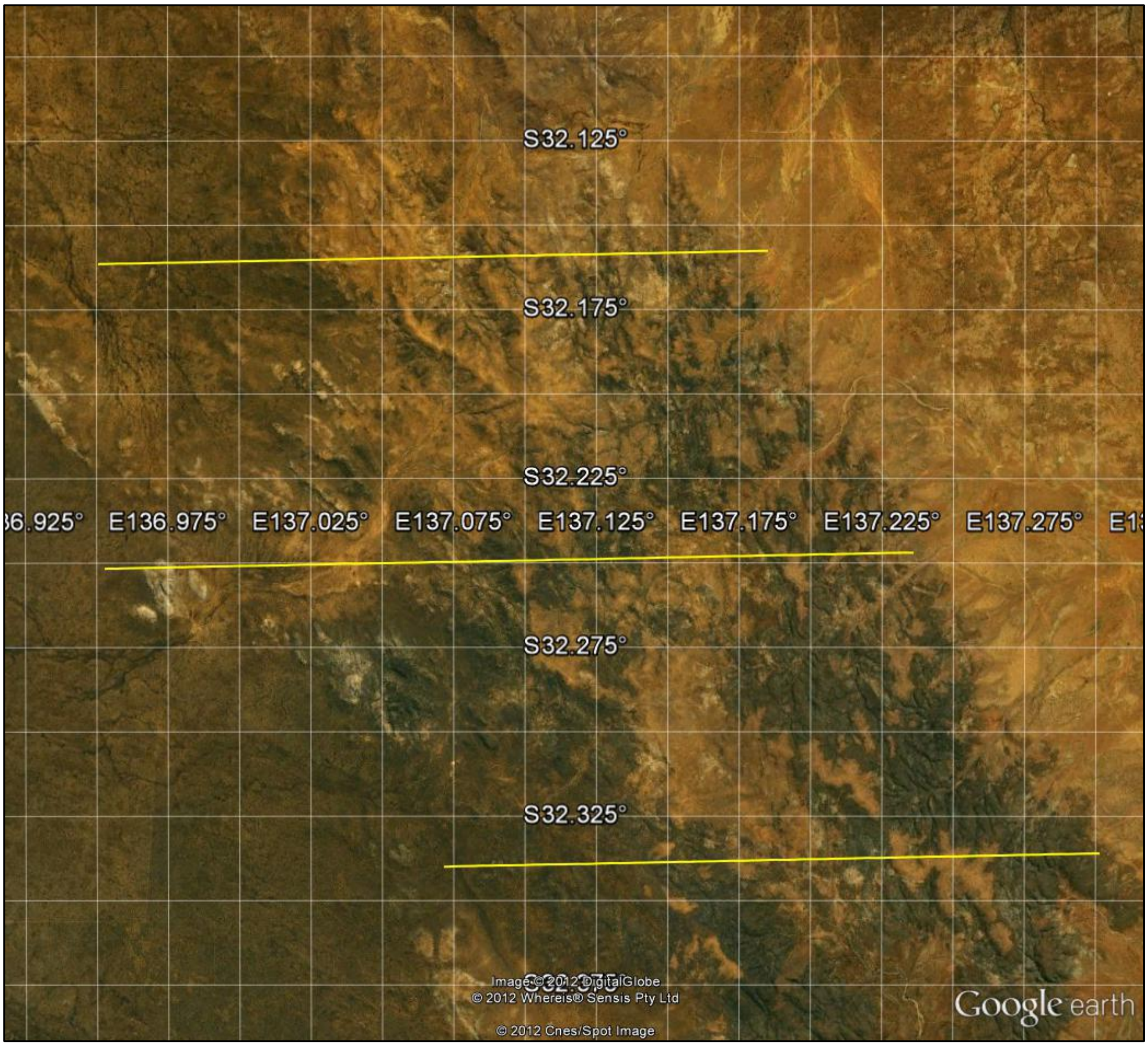

Figure 3: Flight path over a Google Earth Image – Pandurra Block

2. DATA ACQUISITION

2.1 Survey Area

The survey block (see Figure 3, Table 1and Appendix A) and general flight specifications are as follows:

Table 1: Survey Specifications

Survey block	Traverse Line spacing (m)	Area (Km^2)	Planned[1] Line-km	Actual Line-km	Flight direction	Line numbers
Pandurra	Traverse: 10,000	487	70	70.5	N 90° E / N 270° E	L20010 – L20030
TOTAL		487	70	70.5		

Survey block boundaries co-ordinates are provided in Appendix B.

2.2 Survey Operations

Survey operations were based out of Wudinna, Southern Australia on July 31st 2012. The following table shows the timing of the flying.

Table 2: Survey schedule

Date	Flight #	Flown km	Crew location	Comments
31-July-2012	10,11	70.5	Wudinna,Australia	Production

[1] Note: Actual Line kilometres represent the total line kilometres in the final database. These line-km normally exceed the Planned line-km, as indicated in the survey NAV files.

2.3 Flight Specifications

During the survey the helicopter was maintained at a mean altitude of 72 metres above the ground with an average survey speed of 80 km/hour. This allowed for an actual average EM bird terrain clearance of 33 metres and a magnetic sensor clearance of 59 metres.

The on board operator was responsible for monitoring the system integrity. He also maintained a detailed flight log during the survey, tracking the times of the flight as well as any unusual geophysical or topographic features.

On return of the aircrew to the base camp the survey data was transferred from a compact flash card (PCMCIA) to the data processing computer. The data were then uploaded via ftp to the Geotech office in Aurora for daily quality assurance and quality control by qualified personnel.

2.4 Aircraft and Equipment

2.4.1 Survey Aircraft

The survey was flown using a Eurocopter Aerospatiale (Astar) 350 B3 helicopter, registration VH-VTN. The helicopter is owned and operated by United Aero Helicopters. Installation of the geophysical and ancillary equipment was carried out by a Geotech Ltd crew.

2.4.2 Electromagnetic System

The electromagnetic system was a Geotech Time Domain EM (VTEM^{plus}) system. VTEM, with the serial number 12 had been used for the survey. The configuration is as indicated in Figure 5.

The VTEM^{plus} Receiver and transmitter coils were in concentric-coplanar and Z-direction oriented configuration. The EM bird was towed at a mean distance of 35 metres below the aircraft as shown in Figure 5 and Figure 6. The receiver decay recording scheme is shown in Figure 4.

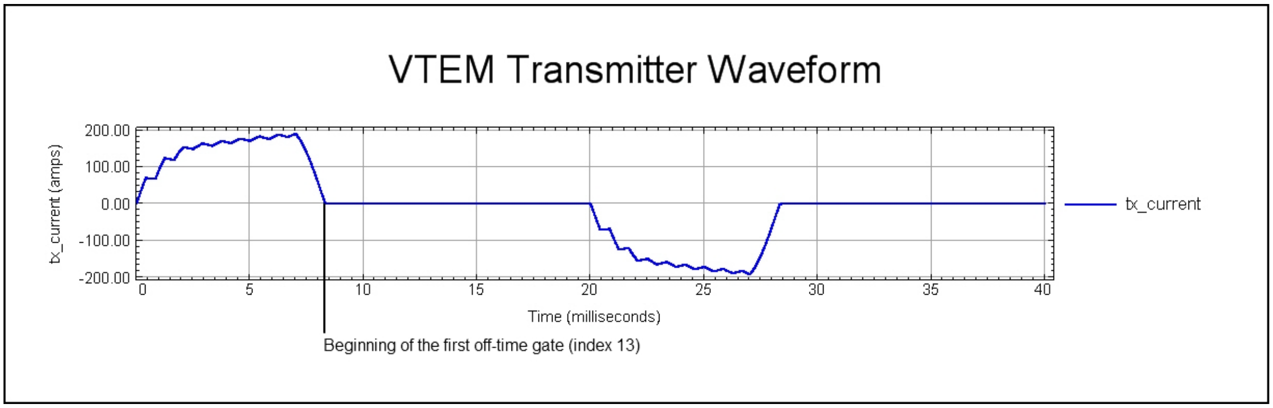

Figure 4: VTEM Waveform & Sample Times.

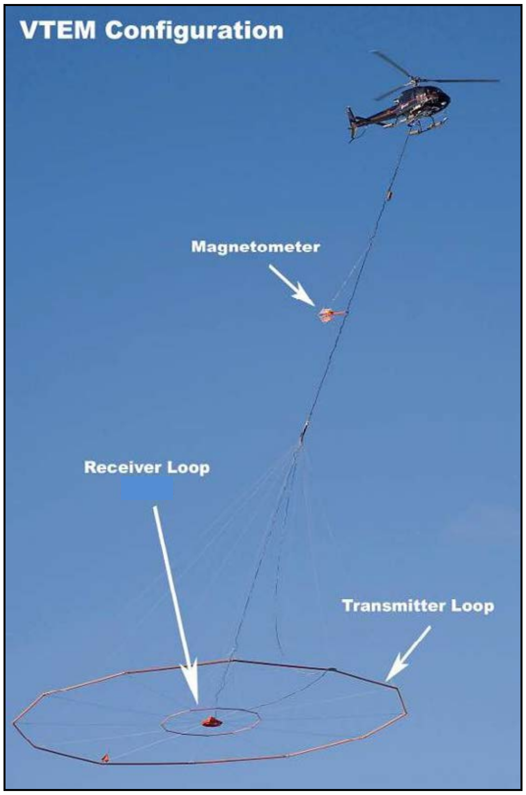

Figure 5: VTEM^{plus} Configuration, with magnetometer.

The VTEM decay sampling scheme is shown in Table 3 below. Thirty-five time measurement gates were used for the final data processing in the range from 0.083 to 9.286 msec.

Table 3: Off-Time Decay Sampling Scheme

VTEM Decay Sampling Scheme			
Index	Middle	Start	End
Milliseconds			
13	0.083	0.078	0.090
14	0.096	0.090	0.103
15	0.110	0.103	0.118
16	0.126	0.118	0.136
17	0.145	0.136	0.156
18	0.167	0.156	0.179
19	0.192	0.179	0.206
20	0.220	0.206	0.236
21	0.253	0.236	0.271
22	0.290	0.271	0.312
23	0.333	0.312	0.358
24	0.383	0.358	0.411
25	0.440	0.411	0.472
26	0.505	0.472	0.543
27	0.580	0.543	0.623
28	0.667	0.623	0.716
29	0.766	0.716	0.823
30	0.880	0.823	0.945
31	1.010	0.945	1.086
32	1.161	1.086	1.247
33	1.333	1.247	1.432
34	1.531	1.432	1.646
35	1.760	1.646	1.891
36	2.021	1.891	2.172
37	2.323	2.172	2.495
38	2.667	2.495	2.865
39	3.063	2.865	3.292
40	3.521	3.292	3.781
41	4.042	3.781	4.341
42	4.641	4.341	4.987
43	5.333	4.987	5.729
44	6.125	5.729	6.581
45	7.036	6.581	7.560
46	8.083	7.560	8.685
47	9.286	8.685	9.977

Z Component: 13-47 time gates

VTEM^{plus} system specification:

Transmitter

- Transmitter loop diameter: 26 m
- Effective Transmitter coil area: 2123 m^2
- Number of turns: 4
- Transmitter base frequency: 25 Hz
- Peak current: 190 A
- Pulse width: 7.35 ms
- Wave form shape: trapezoid
- Peak dipole moment: 403,506 nIA
- Actual average EM Bird terrain clearance: 33 metres above the ground

Receiver

- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m^2

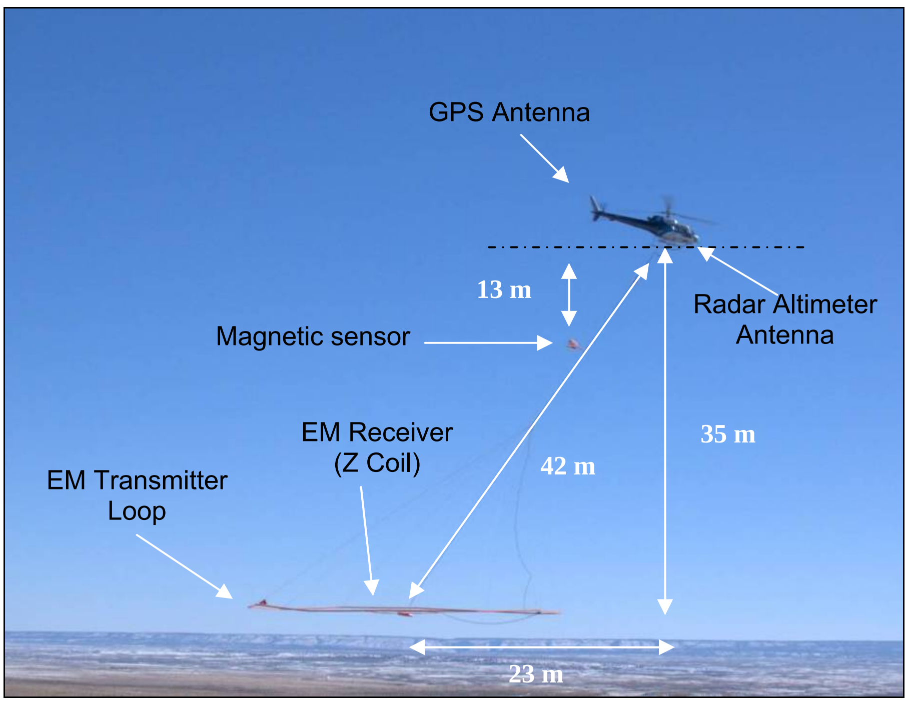

Figure 6: VTEM^{plus} System Configuration.

2.4.3 Airborne magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped caesium vapour magnetic field sensor mounted 13 metres below the helicopter, as shown in Figure 6. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds.

2.4.4 Radar Altimeter

A Terra TRA 3000/TRI 40 radar altimeter was used to record terrain clearance. The antenna was mounted beneath the bubble of the helicopter cockpit (Figure 6).

2.4.5 GPS Navigation System

The navigation system used was a Geotech PC104 based navigation system utilizing a NovAtel's WAAS (Wide Area Augmentation System) enabled GPS receiver, Geotech navigate software, a full screen display with controls in front of the pilot to direct the flight and a NovAtel GPS antenna mounted on the helicopter tail (Figure 6). As many as 11 GPS and two WAAS satellites may be monitored at any one time. The positional accuracy or circular error probability (CEP) is 1.8 m, with WAAS active, it is 1.0 m. The co-ordinates of the block were set-up prior to the survey and the information was fed into the airborne navigation system.

2.4.6 Digital Acquisition System

A Geotech data acquisition system recorded the digital survey data on an internal compact flash card. Data is displayed on an LCD screen as traces to allow the operator to monitor the integrity of the system. The data type and sampling interval as provided in Table 4.

Table 4: Acquisition Sampling Rates

Data Type	Sampling
TDEM	0.1 sec
Magnetometer	0.1 sec
GPS Position	0.2 sec
Radar Altimeter	0.2 sec

2.5 Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of 0.001 nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed (135°26'9895"E, 33° 02'4942"S); away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

3. PERSONNEL

The following Geotech Ltd. personnel were involved in the project.

Field:

Project Manager:	Les Moschuk (Office)
Data QC:	Peter Holbrook (Office)
Crew chief:	Victor Wijaya
Operator:	Jon Hilton

The survey pilot and the mechanical engineer were employed directly by the helicopter operator – United Aero Helicopters.

Pilot:	Colby Tyrrell
Mechanical Engineer:	n/a

Office:

Preliminary Data Processing:	Peter Holbrook
Final Data Processing:	Deepak Kumar
Final Data QA/QC:	Alexander Prikhodko
Reporting/Mapping:	Corrie Laver

Data acquisition phase was carried out under the supervision of Andrei Bagrianski, P. Geo, Chief Operating Officer. The processing and interpretation phase was under the supervision of Alexander Prikhodko, P. Geo. The customer relations were looked after by Keith Fisk.

4. DATA PROCESSING AND PRESENTATION

Data compilation and processing were carried out by the application of Geosoft OASIS Montaj and programs proprietary to Geotech Ltd.

4.1 Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the GDA94 Datum, Map Grid of Australia zone 56 coordinate system in Oasis Montaj.

The flight path was drawn using linear interpolation between x, y positions from the navigation system. Positions are updated every second and expressed as UTM easting's (x) and UTM northing's (y).

4.2 Electromagnetic Data

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than about 1 second or 15 metres. This filter is a symmetrical 1 sec linear filter.

The results are presented as stacked profiles of EM voltages for the time gates, in linear - logarithmic scale for the B-field Z component and dB/dt responses in the Z component. Resistivity Depth Image (RDI) is also presented in Appendix C and F.

VTEM receiver coil orientation Z-axis coil is oriented parallel to the transmitter coil axis and both are horizontal to the ground. Generalized modeling results of VTEM plus data are shown in Appendix D.

In general X-component data produce cross-over type anomalies: from "+ to – "in flight direction of flight for "thin" sub vertical targets and from "- to +" in direction of flight for "thick" targets. Z component data produce double peak type anomalies for "thin" sub vertical targets and single peak for "thick" targets.
The limits and change-over of "thin-thick" depends on dimensions of a TEM system.

4.3 Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

Tie line levelling was carried out by adjusting intersection points along traverse lines. A micro-levelling procedure was applied to remove persistent low-amplitude components of flight-line noise remaining in the data.

5. DELIVERABLES

5.1 Survey Report

The survey report describes the data acquisition, processing, and final presentation of the survey results. The survey report is provided in two paper copies and digitally in PDF format.

5.2 Maps

Final maps were produced at a scale of 1:50,000 for best representation of the survey size and line spacing. The coordinate/projection system used was GDA94 Datum, Map Grid of Australia zone 53. All maps show the mining claims, flight path trace and topographic data; latitude and longitude are also noted on maps.

The preliminary and final results of the survey are presented as EM profiles, a late-time gate gridded EM channel, and a color magnetic TMI contour map. The following maps are presented on paper;

- VTEM dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- VTEM B-Field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
- Calculated Vertical Gradient Profiles with dB/dt Calculated Time Constant Profiles
- Reduced to Pole of TMI profile

5.3 Digital Data

- Two copies of the data and maps on DVD were prepared to accompany the report. Each DVD contains a digital file of the line data in GDB Geosoft Montaj and ASEG-GDF format as well as the maps in Geosoft Montaj Map and PDF format.

- DVD structure.

Data	contains databases, and maps, as described below.
Report	contains a copy of the report and appendices in PDF format.

Databases in Geosoft GDB format, containing the channels listed in Table 5.

Table 5: Geosoft GDB Data Format

Channel name	Units	Description
X_MGA:	metres	Map Grid of Australia zone 53 - GDA94
Y_MGA:	metres	Map Grid of Australia zone 53 - GDA94
Z:	metres	GPS antenna elevation (above Geoid)
Longitude:	Decimal Degrees	WGS 84 Longitude data
Latitude:	Decimal Degrees	WGS 84 Latitude data
Radar:	metres	helicopter terrain clearance from radar altimeter
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
DEM:	metres	Digital Elevation Model
Gtime:	Seconds of the day	GPS time
Mag1:	nT	Raw Total Magnetic field data
Basemag:	nT	Magnetic diurnal variation data
Mag2:	nT	Diurnal corrected Total Magnetic field data
Mag3:	nT	Levelled Total Magnetic field data
CVG	nT/m	Calculated Vertical Derivative of TMI
RTP	nT	Reduced To Pole of TMI
RTP_CVG	nT/m	Calculated Vertical Derivative of Reduced To Pole of TMI
SFz[13]:	$pV/(A*m^4)$	Z dB/dt 0.083 millisecond time channel
SFz[14]:	$pV/(A*m^4)$	Z dB/dt 0.096 millisecond time channel
SFz[15]:	$pV/(A*m^4)$	Z dB/dt 0.110 millisecond time channel
SFz[16]:	$pV/(A*m^4)$	Z dB/dt 0.126 millisecond time channel
SFz[17]:	$pV/(A*m^4)$	Z dB/dt 0.145 millisecond time channel
SFz[18]:	$pV/(A*m^4)$	Z dB/dt 0.167 millisecond time channel
SFz[19]:	$pV/(A*m^4)$	Z dB/dt 0.192 millisecond time channel
SFz[20]:	$pV/(A*m^4)$	Z dB/dt 0.220 millisecond time channel
SFz[21]:	$pV/(A*m^4)$	Z dB/dt 0.253 millisecond time channel
SFz[22]:	$pV/(A*m^4)$	Z dB/dt 0.290 millisecond time channel
SFz[23]:	$pV/(A*m^4)$	Z dB/dt 0.333 millisecond time channel
SFz[24]:	$pV/(A*m^4)$	Z dB/dt 0.383 millisecond time channel
SFz[25]:	$pV/(A*m^4)$	Z dB/dt 0.440 millisecond time channel
SFz[26]:	$pV/(A*m^4)$	Z dB/dt 0.505 millisecond time channel
SFz[27]:	$pV/(A*m^4)$	Z dB/dt 0.580 millisecond time channel
SFz[28]:	$pV/(A*m^4)$	Z dB/dt 0.667 millisecond time channel
SFz[29]:	$pV/(A*m^4)$	Z dB/dt 0.766 millisecond time channel
SFz[30]:	$pV/(A*m^4)$	Z dB/dt 0.880 millisecond time channel
SFz[31]:	$pV/(A*m^4)$	Z dB/dt 1.010 millisecond time channel
SFz[32]:	$pV/(A*m^4)$	Z dB/dt 1.161 millisecond time channel
SFz[33]:	$pV/(A*m^4)$	Z dB/dt 1.333 millisecond time channel
SFz[34]:	$pV/(A*m^4)$	Z dB/dt 1.531 millisecond time channel
SFz[35]:	$pV/(A*m^4)$	Z dB/dt 1.760 millisecond time channel
SFz[36]:	$pV/(A*m^4)$	Z dB/dt 2.021 millisecond time channel
SFz[37]:	$pV/(A*m^4)$	Z dB/dt 2.323 millisecond time channel
SFz[38]:	$pV/(A*m^4)$	Z dB/dt 2.667 millisecond time channel
SFz[39]:	$pV/(A*m^4)$	Z dB/dt 3.063 millisecond time channel
SFz[40]:	$pV/(A*m^4)$	Z dB/dt 3.521 millisecond time channel
SFz[41]:	$pV/(A*m^4)$	Z dB/dt 4.042 millisecond time channel
SFz[42]:	$pV/(A*m^4)$	Z dB/dt 4.641 millisecond time channel
SFz[43]:	$pV/(A*m^4)$	Z dB/dt 5.333 millisecond time channel
SFz[44]:	$pV/(A*m^4)$	Z dB/dt 6.125 millisecond time channel
SFz[45]:	$pV/(A*m^4)$	Z dB/dt 7.036 millisecond time channel
SFz[46]:	$pV/(A*m^4)$	Z dB/dt 8.083 millisecond time channel

Channel name	Units	Description
SFz[47]:	pV/(A*m^4)	Z dB/dt 9.286 millisecond time channel
BFz	(pV*ms)/(A*m4)	Z B-Field data for time channels 14 to 47
NchanBF		Latest time channels of TAU calculation
NchanSF		Latest time channels of TAU calculation
TauBF	milliseconds	Time constant B-Field
TauSF	milliseconds	Time constant dB/dt
PLM		60 Hz power line monitor

Electromagnetic B-field and dB/dt Z component data is found in array channel format between indexes 13 – 47 as described above.

- Database of the Resistivity Depth Images in Geosoft GDB format, containing the following channels:

Table 6: Geosoft Resistivity Depth Image GDB Data Format

Channel name	Units	Description
Xg:	metres	UTM Easting Map grid of Australia zone 53 – GDA94
Yg:	metres	UTM Northing Map grid of Australia zone 53 – GDA94
Dist:	meters	Distance from the beginning of the line
Depth:	meters	array channel, depth from the surface
Z:	meters	array channel, depth from sea level
AppRes:	Ohm-m	array channel, Apparent Resistivity
TR:	meters	EM system hight from sea level
Topo:	meters	digital elevation model
Radarb:	metres	Calculated EM bird terrain clearance from radar altimeter
Mag:	nT or nT/m	Total Magnetic field or CVG data
SF:	pV/(A*m^4)	array channel, dB/dT

- Database of the VTEM Waveform "AA1332_waveform_final.gdb" in Geosoft GDB format, containing the following channels:
  Time: Sampling rate interval, 5.2083 microseconds
  Rx_Volt: Output voltage of the receiver coil (Volt)
  Tx_Current: Output current of the transmitter (Amp)

- Maps at 1:50,000 in Geosoft MAP format, as follows:
  AA1332_50k_bb_dBdtz: dB/dt profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale.
  AA1332_50k _bb_Bfield: B-field profiles Z Component, Time Gates 0.220 – 7.036 ms in linear – logarithmic scale over total magnetic intensity.
  AA1332_50k _bb_CVG-RTP_TaudBdt: Calculated Vertical Gradient Profiles with dB/dt Calculated Time Constant Profiles

  AA1332_50k _bb_RTP_profiles: Reduced to Pole of TMI profile

  where bb represents the block name

  Maps are also presented in PDF format.

The topographic vectors were taken from Australian Government - Geoscience Australia at 1:250,000 scale
https://www.ga.gov.au

- A Google Earth file *AA1332_bb_FP.kml* showing the flight path of the block is included. Free versions of Google Earth software from: http://earth.google.com/download-earth.html

  where bb represents the block name

6. CONCLUSIONS AND RECOMMENDATIONS

A helicopter-borne versatile time domain electromagnetic (VTEM plus) geophysical survey has been completed over the Pandurra Area situated approximately 170 kilometres northeast of Wudinna, Southern Australia.

The total area coverage for all properties is 487 km^2. Total survey line coverage is 70.5 line kilometres. The principal sensors included a Time Domain EM system and a magnetometer. Results have been presented as stacked profiles, and contour color images at a scale of 1:50,000.

Only three lines have been flown in Pandurra block. The line separation between these lines are approximately 10 km.

This area is estimated more conductive than Duble block. There are many double peak & single peak anomalies are crossed by the lines. A type of the conductors, geometry and depth can be estimated based on resistivity depth sections (Appendix C: L20010, 20020; L20030 RDIs).

For the Pandurra block additional flying at close line spacing is recommended.
Respectfully submitted[2],

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Geotech Ltd.

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ALEXANDER PRIKHODKO
PRACTISING MEMBER
1638
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Alexander Prikhodko, P.Geo.
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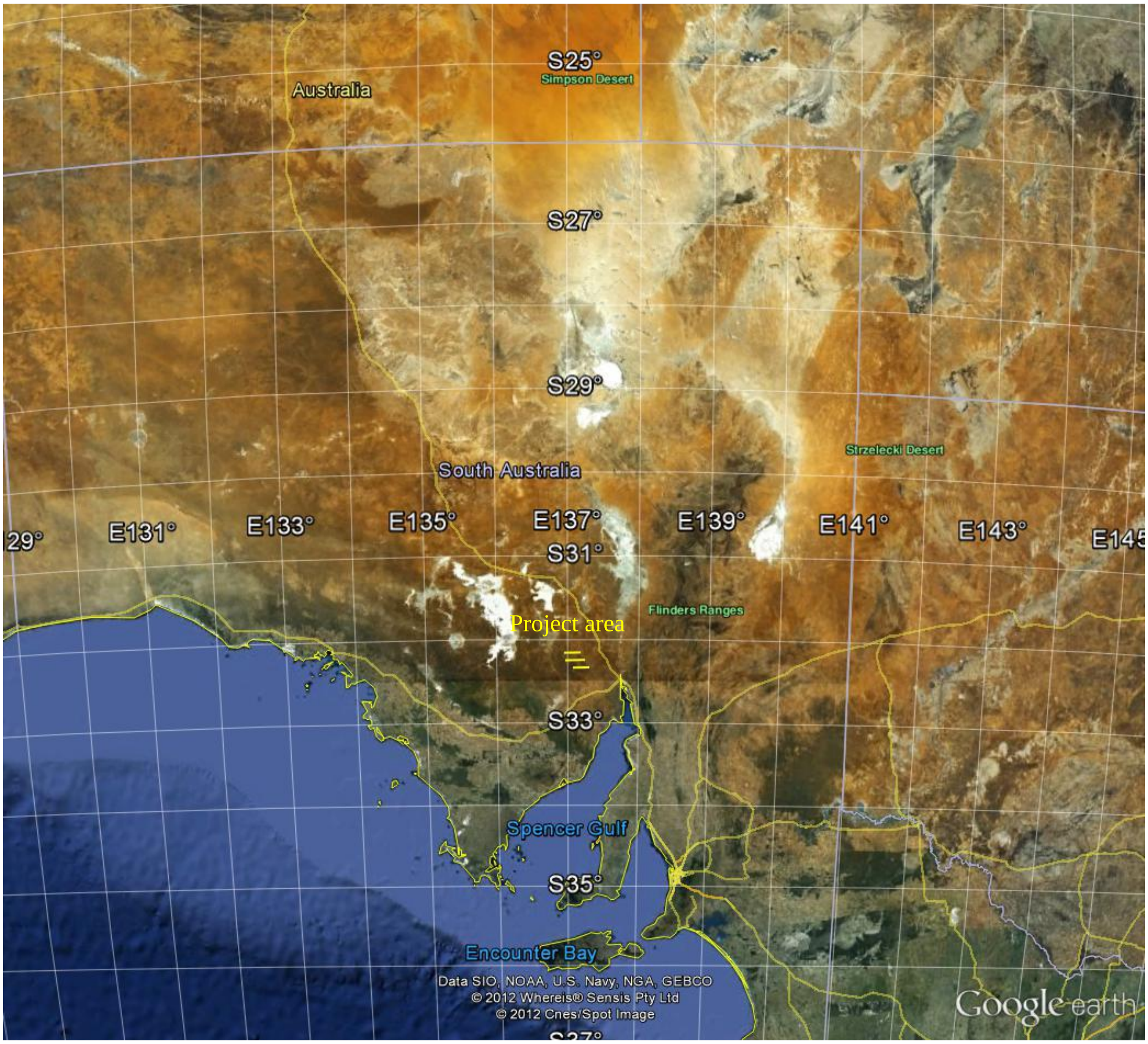
August 2012

[2] Final data processing of the EM and magnetic data were carried out by Peter Holbrook and Deepak Kumar, from the office of Geotech Ltd. in Aurora, Ontario, under the supervision of Alexander Prikhodko, P.Geo., PhD, Senior Geophysicist, VTEM Interpretation Supervisor.

APPENDIX A

SURVEY BLOCK LOCATION MAP

Survey Overview of the Blocks



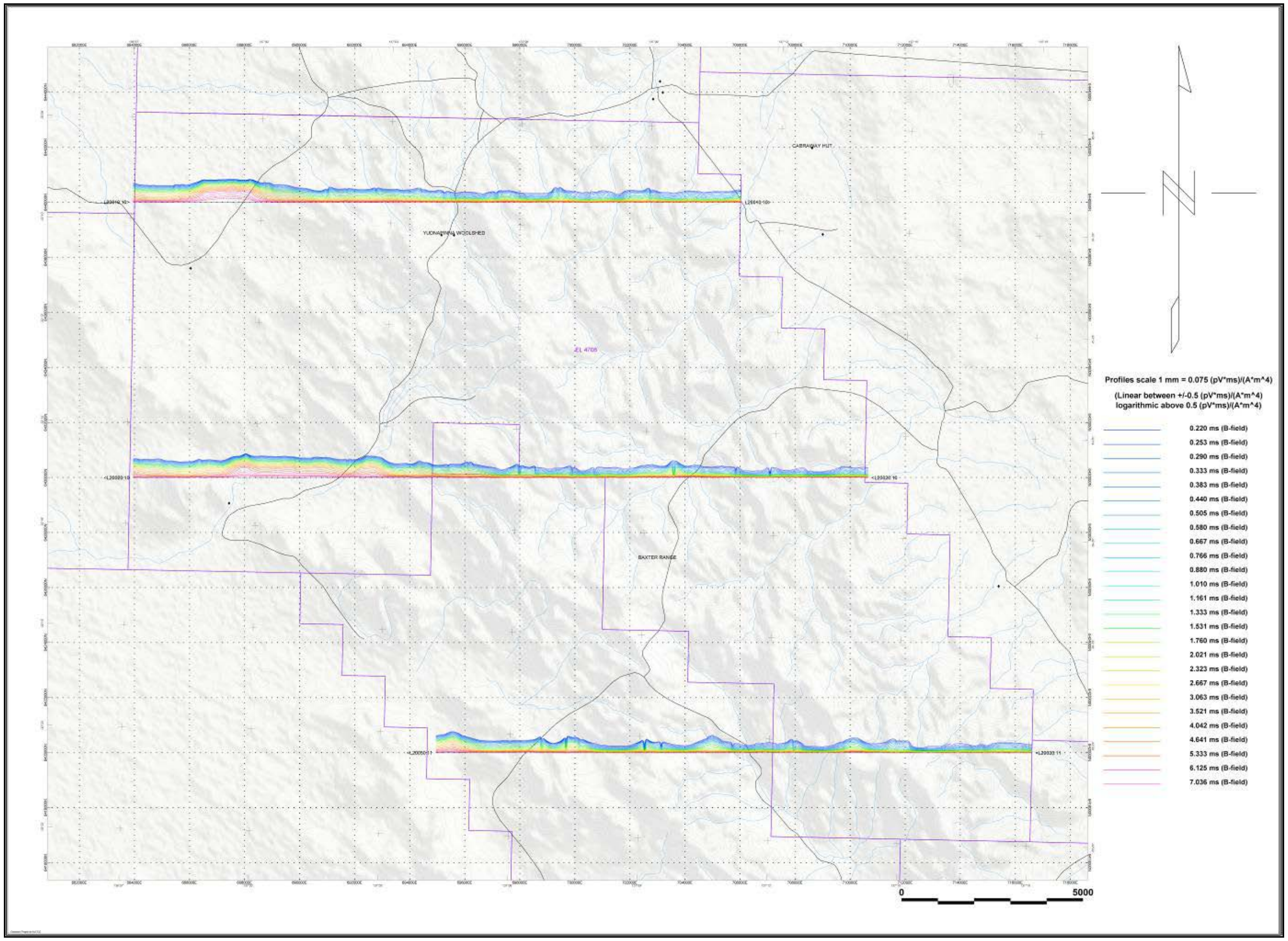
APPENDIX B

SURVEY BLOCK COORDINATES
(WGS 84, UTM Zone 53 South)

WGS84 UTM Zone 53S	
X	**Y**
554503.5	6380150.8
554580	6383097
558940.8	6385306.5
563269	6387516
565880.9	6387454.8
565166.8	6381861.5
574208.8	6381411.3
573248.8	6370896.4
569588.7	6372016.4
569105.2	6372651
566768.7	6372667.1
566773.1	6374391.3
564130.5	6374398.5
564167.1	6380075.1

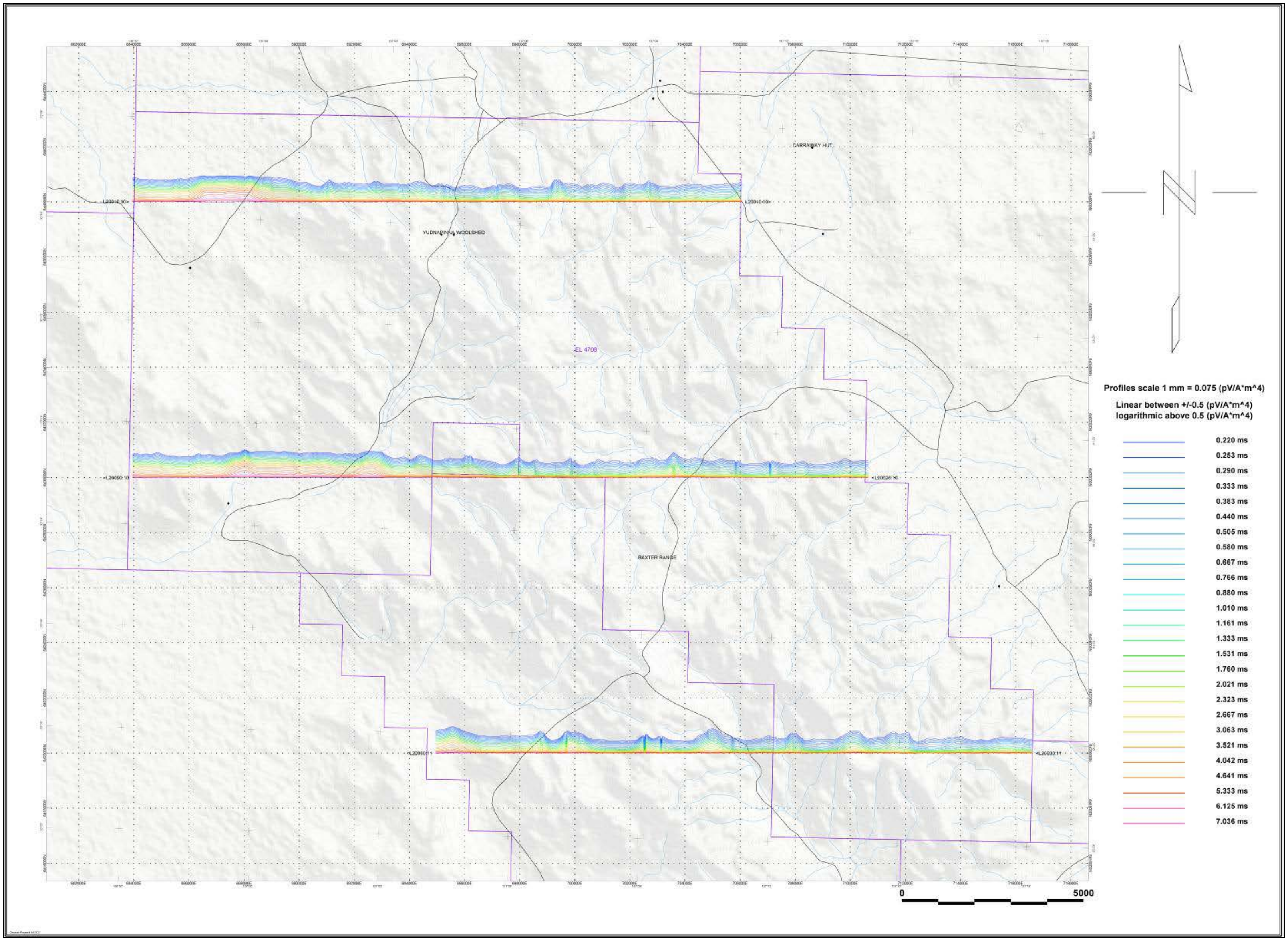
APPENDIX C

GEOPHYSICAL MAPS[1]

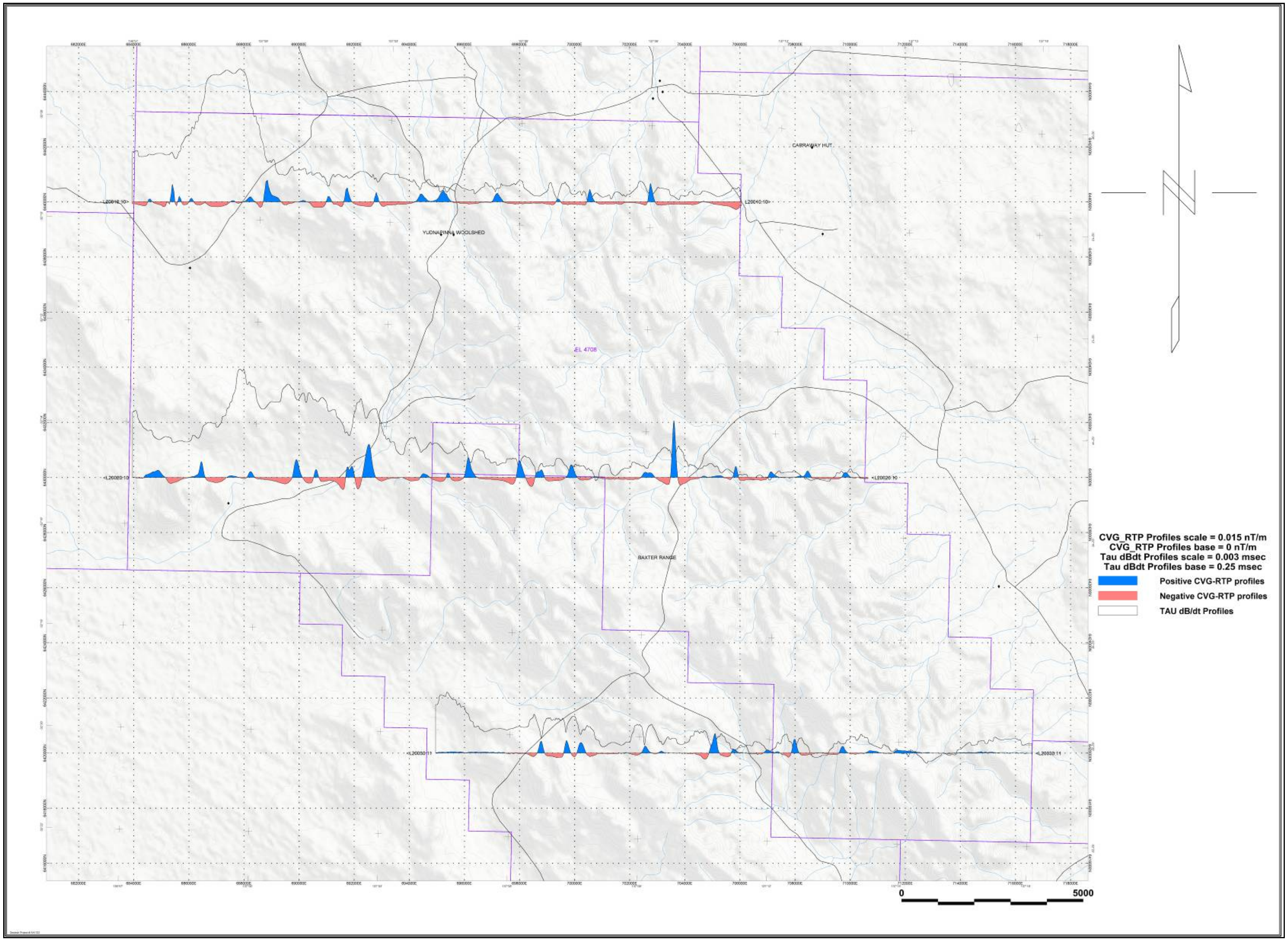


VTEM B-Field Z Component Profiles, Time Gates 0.220 to 7.036 ms

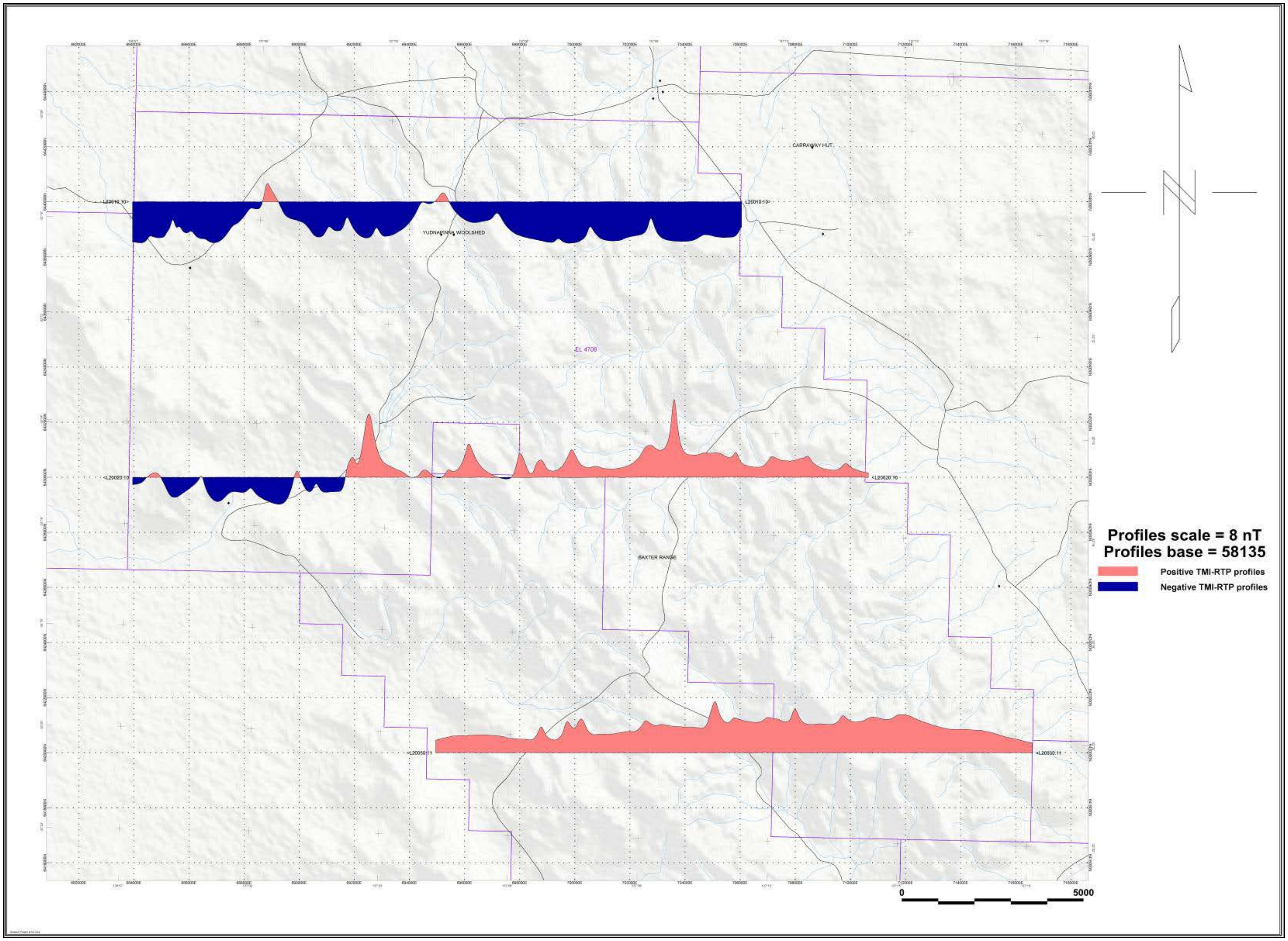
[1] Full size geophysical maps are also available in PDF format on the final DVD



VTEM dB/dt Z Component Profiles, Time Gates 0.220 to 7.036 ms



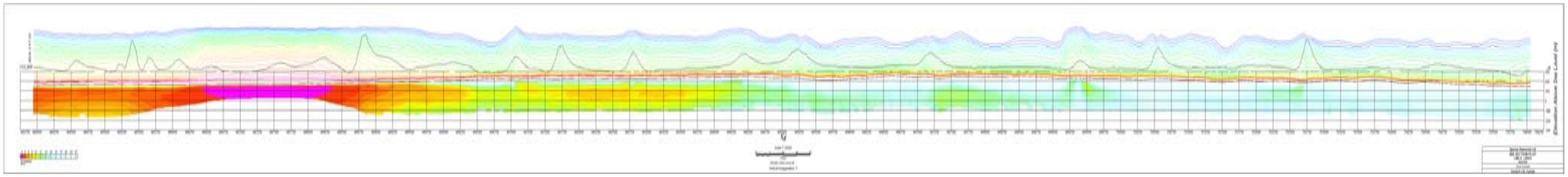
Calculated Vertical Gradient Profiles with dB/dt Calculated Time Constant Profiles



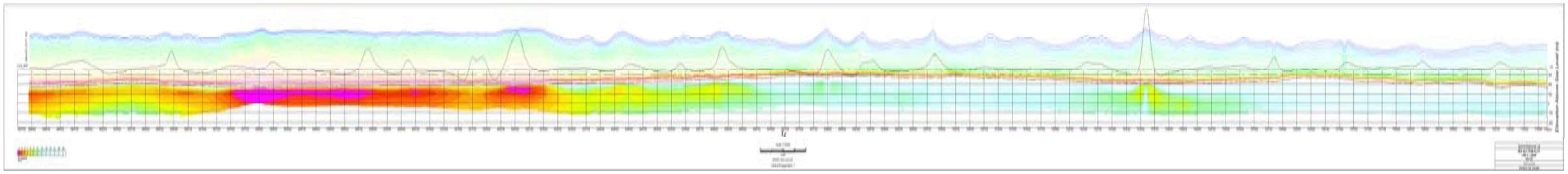
Reduced to Pole of TMI profiles

RESISTIVITY DEPTH IMAGE (RDI) MAPS

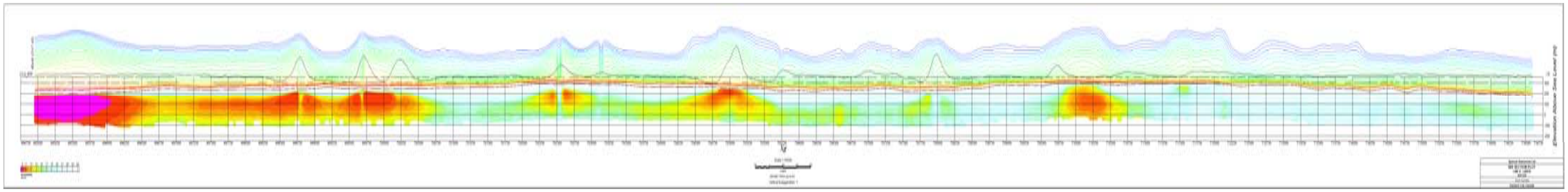
3D Resistivity Depth Images (RDI)



RDI Sections - Line 20010



RDI Sections - Line 20020



RDI Sections - Line 20030

APPENDIX D

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM

Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a transmitter loop that produces a primary field. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

A set of models has been produced for the Geotech VTEM® system dB/dT Z and X components (see models D1 to D15). The Maxwell TM modeling program (EMIT Technology Pty. Ltd. Midland, WA, AU) used to generate the following responses assumes a resistive half-space. The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

As the plate dips and departs from the vertical position, the peaks become asymmetrical.

As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º.

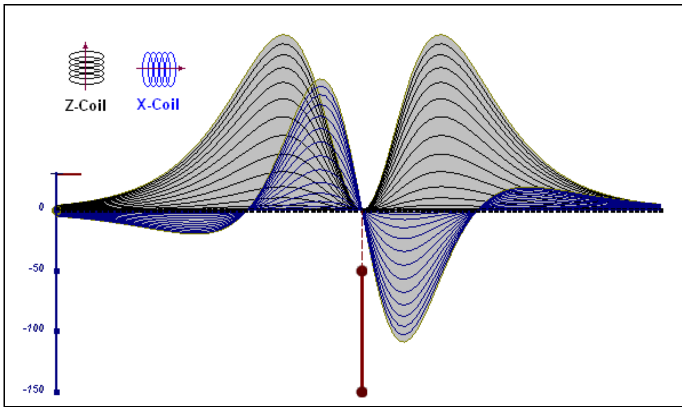


Figure D-1: vertical thin plate

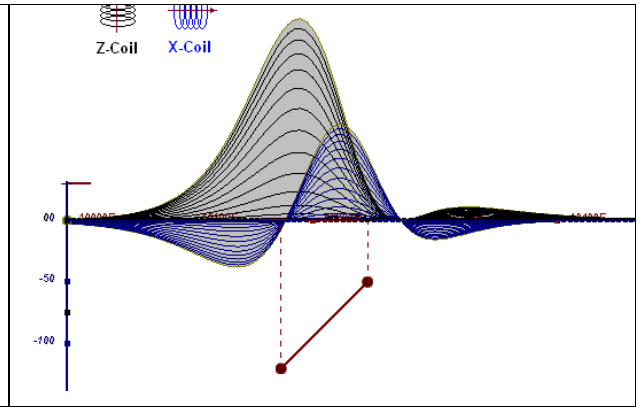


Figure D-2: inclined thin plate

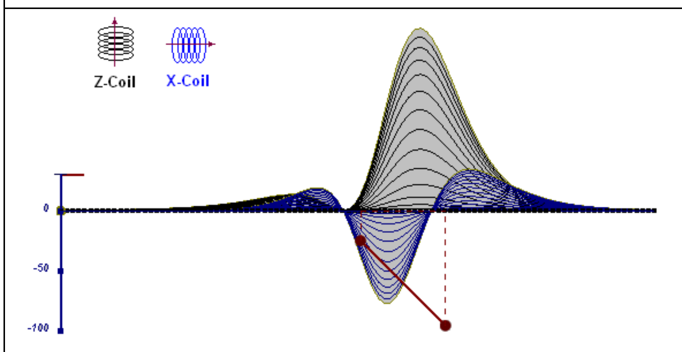


Figure D-3: inclined thin plate

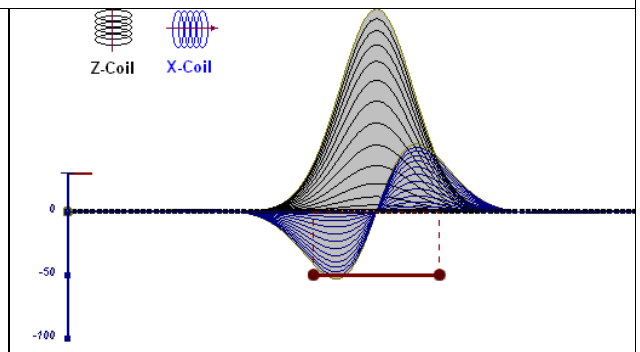


Figure D-4: horizontal thin plate

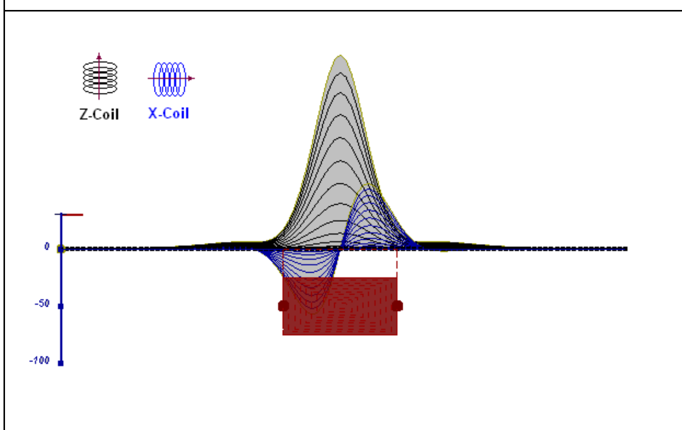


Figure D-5: horizontal thick plate (linear scale of the response)

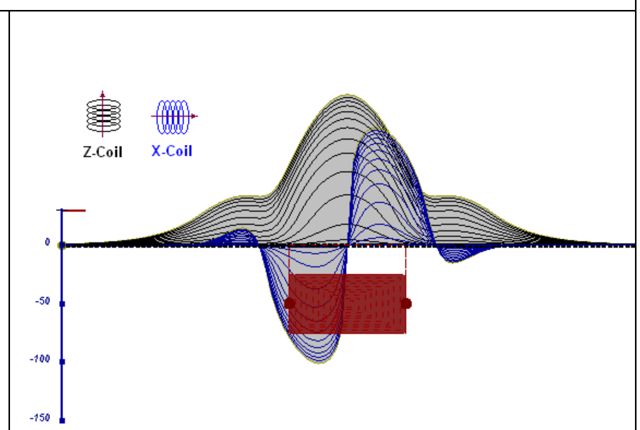


Figure D-6: horizontal thick plate (log scale of the response)

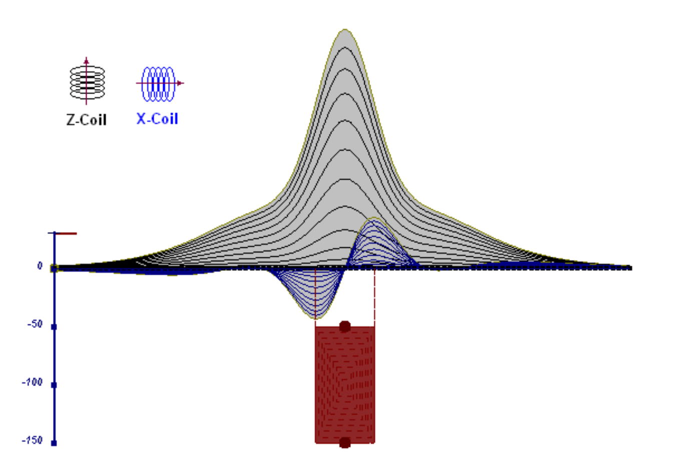


Figure D-7: vertical thick plate (linear scale of the response). 50 m depth

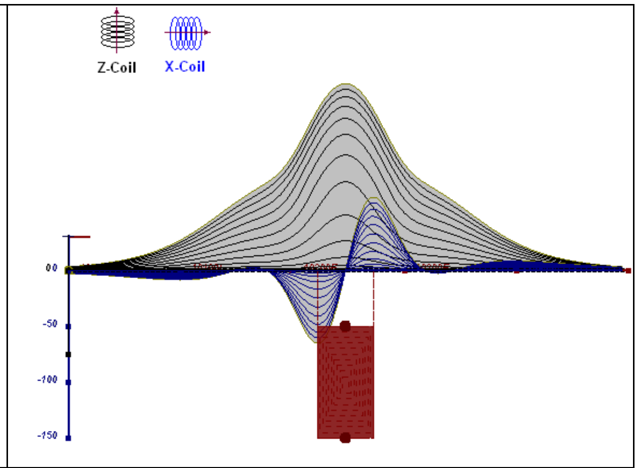


Figure D-8: vertical thick plate (log scale of the response). 50 m depth

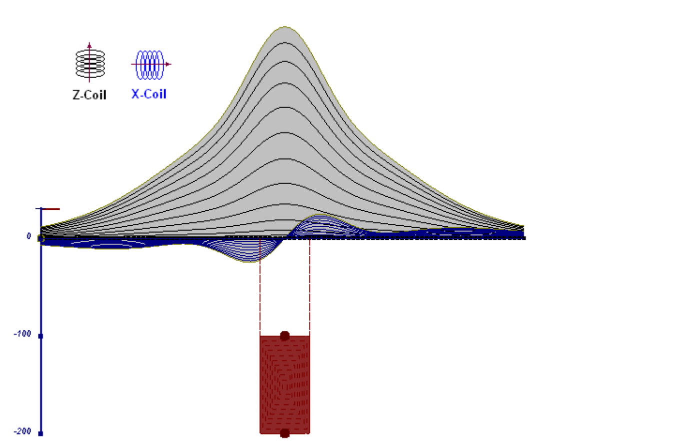


Figure D-9: vertical thick plate (linear scale of the response). 100 m depth

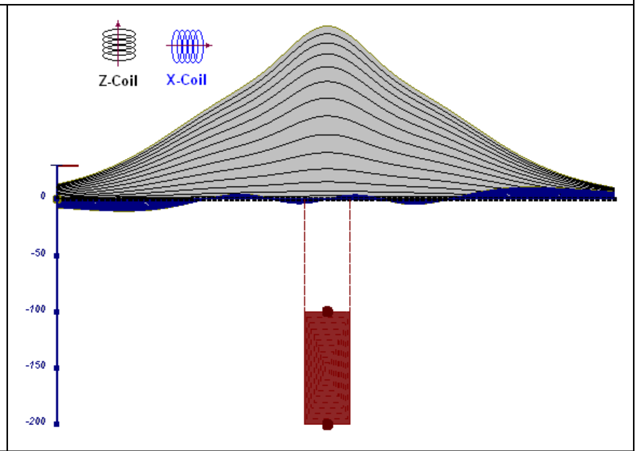


Figure D-10: vertical thick plate (linear scale of the response). Depth/hor.thickness=2.5

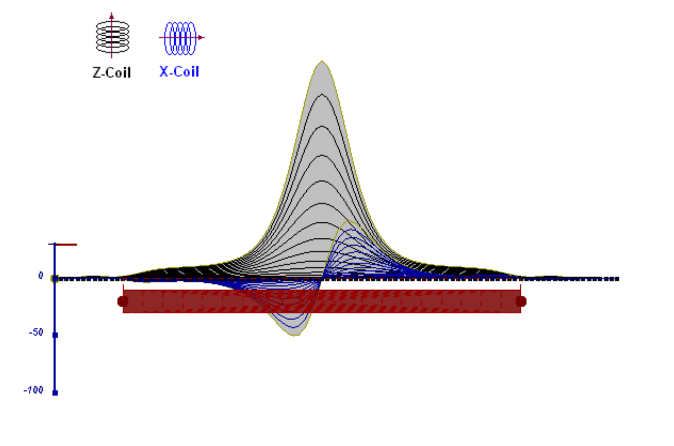


Figure D-10: horizontal thick plate (linear scale of the response)

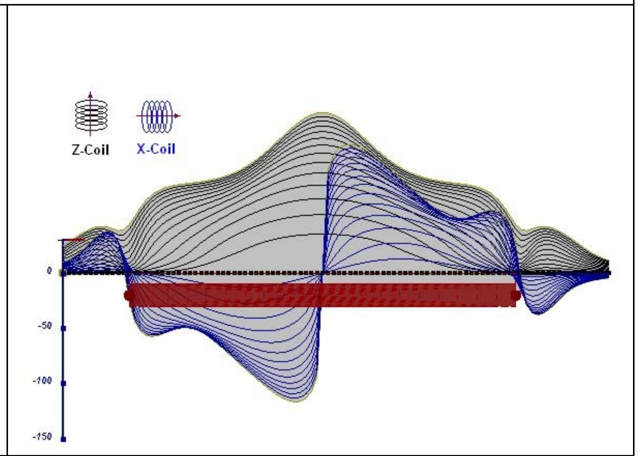


Figure D-11: horizontal thick plate (log scale of the response)

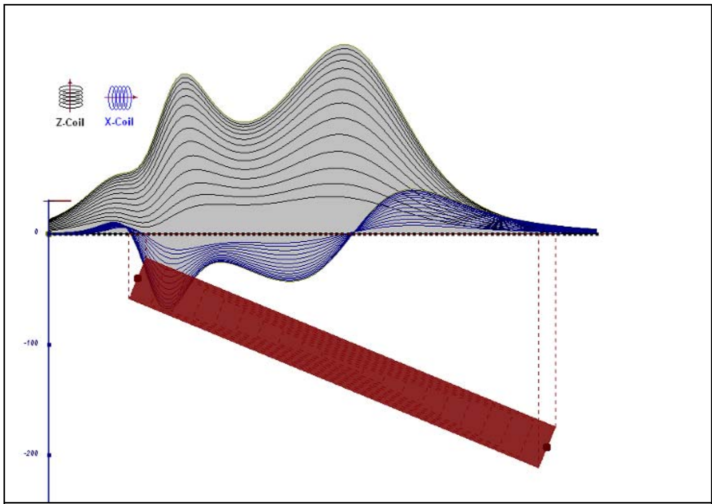


Figure D-12: inclined long thick plate

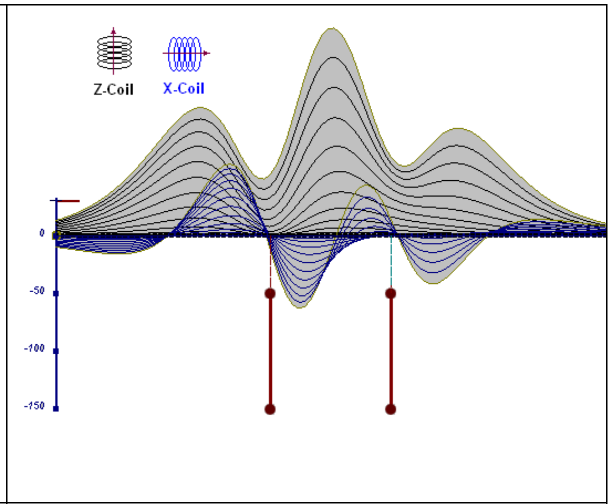


Figure D-13: two vertical thin plates

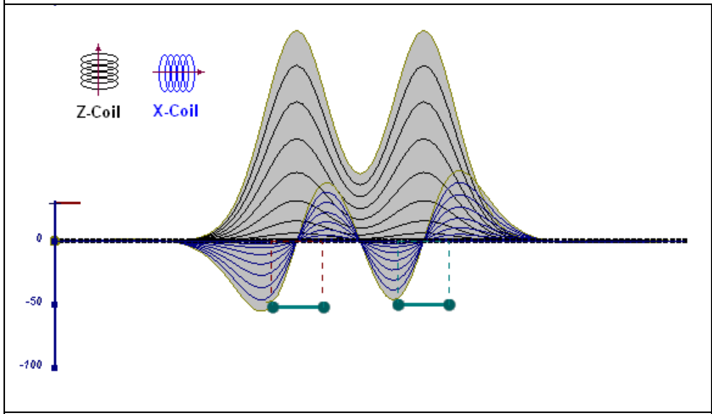


Figure D-14: two horizontal thin plates

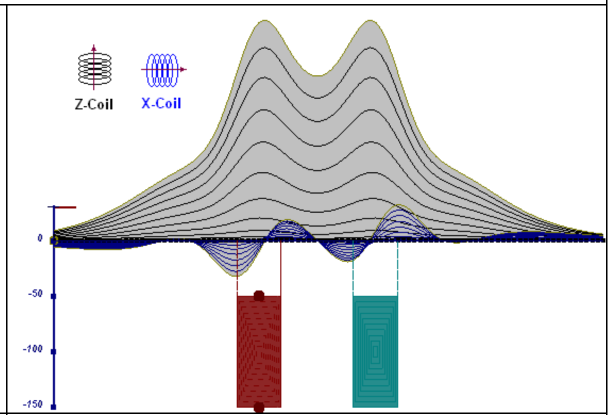


Figure D-15: two vertical thick plates

The same type of target but with different thickness, for example, creates different form of the response:

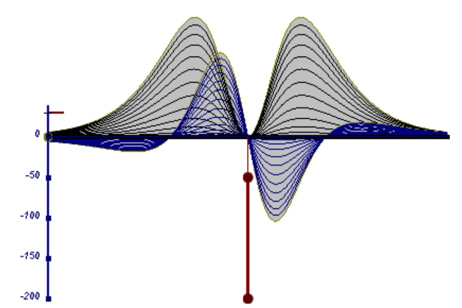
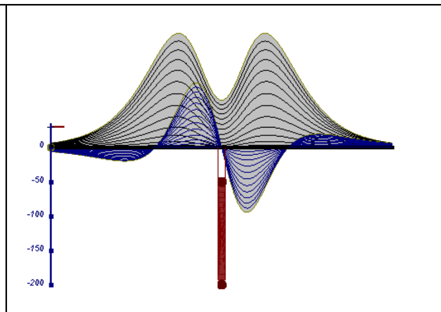
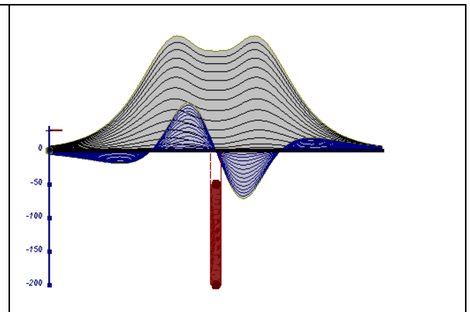
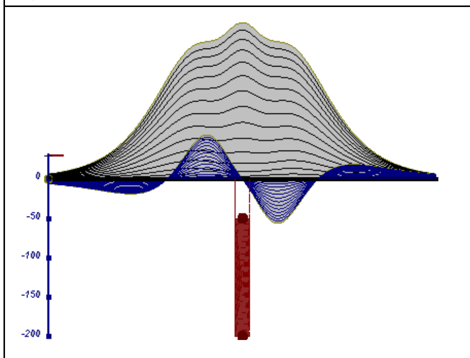
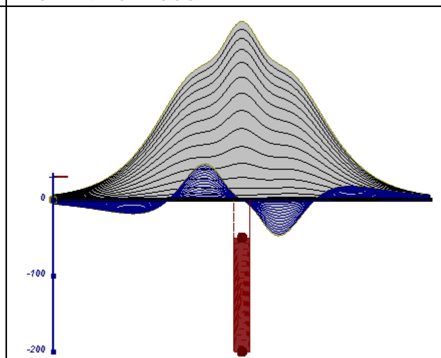
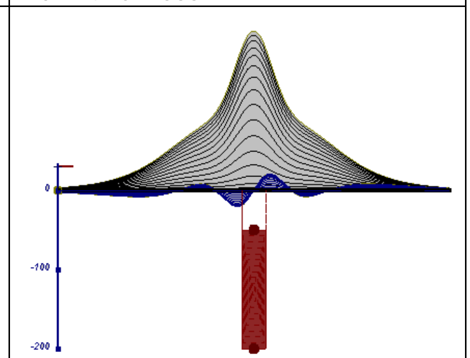
		
“thin”	10 m thickness	15 m thickness
		
18 m thickness	20 m thickness	30 m thickness

Figure D-16: Conductive vertical plate, depth 50 m, strike length 200 m, depth extend 150 m.

Alexander Prikhodko, PhD, P.Geo
Geotech Ltd.

September 2010

APPENDIX E

EM TIME CONSTANT (TAU) ANALYSIS

Estimation of time constant parameter[1] in transient electromagnetic method is one of the steps toward the extraction of the information about conductance's beneath the surface from TEM measurements.

The most reliable method to discriminate or rank conductors from overburden, background or one and other is by calculating the EM field decay time constant (TAU parameter), which directly depends on conductance despite their depth and accordingly amplitude of the response.

Theory

As established in electromagnetic theory, the magnitude of the electro-motive force (emf) induced is proportional to the time rate of change of primary magnetic field at the conductor. This emf causes eddy currents to flow in the conductor with a characteristic transient decay, whose Time Constant (Tau) is a function of the conductance of the survey target or conductivity and geometry (including dimensions) of the target. The decaying currents generate a proportional secondary magnetic field, the time rate of change of which is measured by the receiver coil as induced voltage during the Off time.

The receiver coil output voltage (**e_0**) is proportional to the time rate of change of the secondary magnetic field and has the form,

$$e_0 \propto (1 / \tau)\, e^{-(t/\tau)}$$

Where,
$\tau = L/R$ is the characteristic time constant of the target (TAU)
R = resistance
L = inductance

From the expression, conductive targets that have small value of resistance and hence large value of τ yield signals with small initial amplitude that decays relatively slowly with progress of time. Conversely, signals from poorly conducting targets that have large resistance value and small τ, have high initial amplitude but decay rapidly with time[1] (Figure E-1).

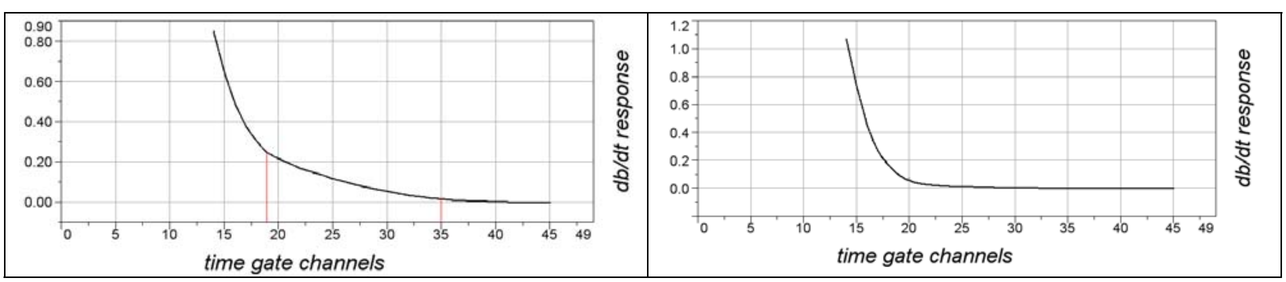


Figure E-1: Left – presence of good conductor, right – poor conductor.

[1] McNeill, JD, 1980, "Applications of Transient Electromagnetic Techniques", Technical Note TN-7 page 5, Geonics Limited, Mississauga, Ontario.

EM Time Constant (Tau) Calculation

The EM Time-Constant (TAU) is a general measure of the speed of decay of the electromagnetic response and indicates the presence of eddy currents in conductive sources as well as reflecting the “conductance quality” of a source. Although TAU can be calculated using either the measured dB/dt decay or the calculated B-field decay, dB/dt is commonly preferred due to better stability (S/N) relating to signal noise. Generally, TAU calculated on base of early time response reflects both near surface overburden and poor conductors whereas, in the late ranges of time, deep and more conductive sources, respectively. For example early time TAU distribution in an area that indicates conductive overburden is shown in Figure 2.

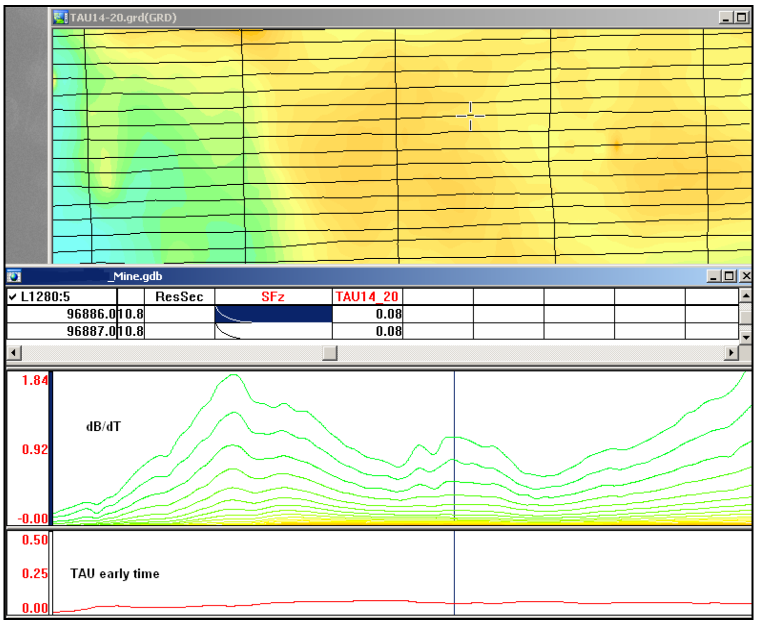


Figure E-2: Map of early time TAU. Area with overburden conductive layer and local sources.

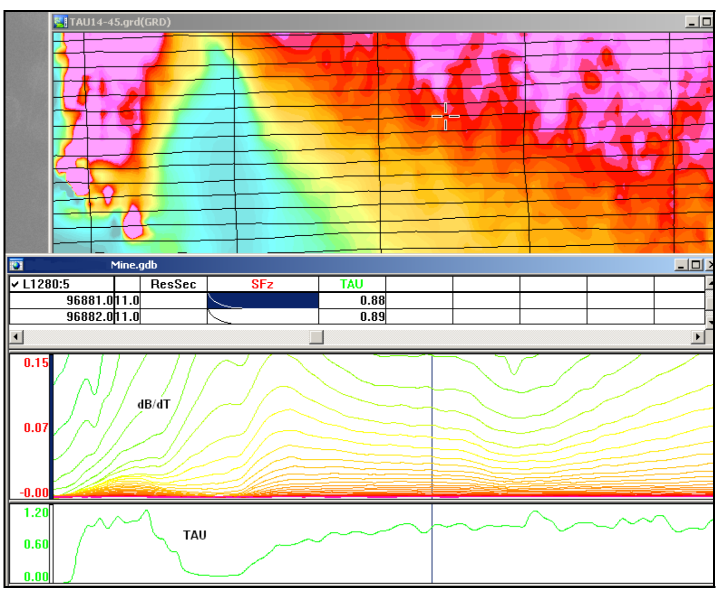


Figure E-3: Map of full time range TAU with EM anomaly due to deep highly conductive target.

There are many advantages of TAU maps:

- TAU depends only on one parameter (conductance) in contrast to response magnitude;
- TAU is integral parameter, which covers time range and all conductive zones and targets are displayed independently of their depth and conductivity on a single map.
- Very good differential resolution in complex conductive places with many sources with different conductivity.
- Signs of the presence of good conductive targets are amplified and emphasized independently of their depth and level of response accordingly.

In the example shown in Figure 4 and 5, three local targets are defined, each of them with a different depth of burial, as indicated on the resistivity depth image (RDI). All are very good conductors but the deeper target (number 2) has a relatively weak dB/dt signal yet also features the strongest total TAU (Figure 4). This example highlights the benefit of TAU analysis in terms of an additional target discrimination tool.

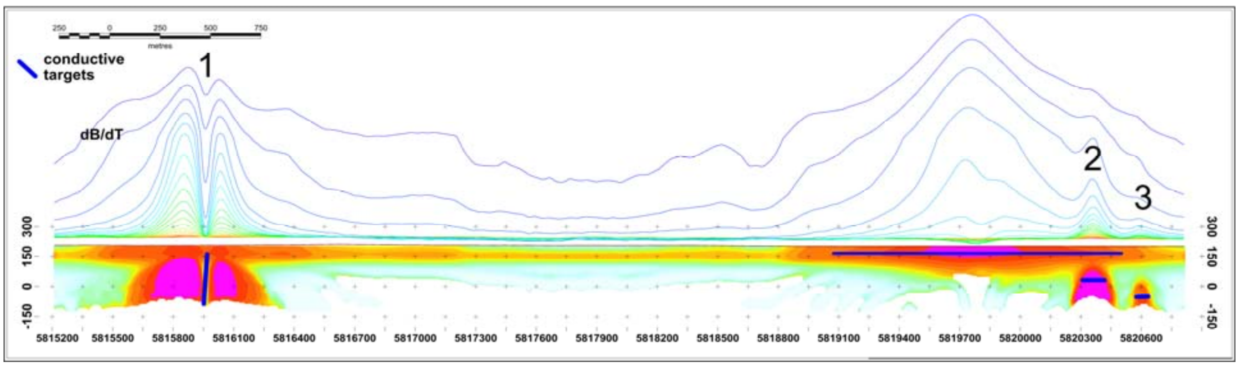


Figure E-4: dB/dt profile and RDI with different depths of targets.

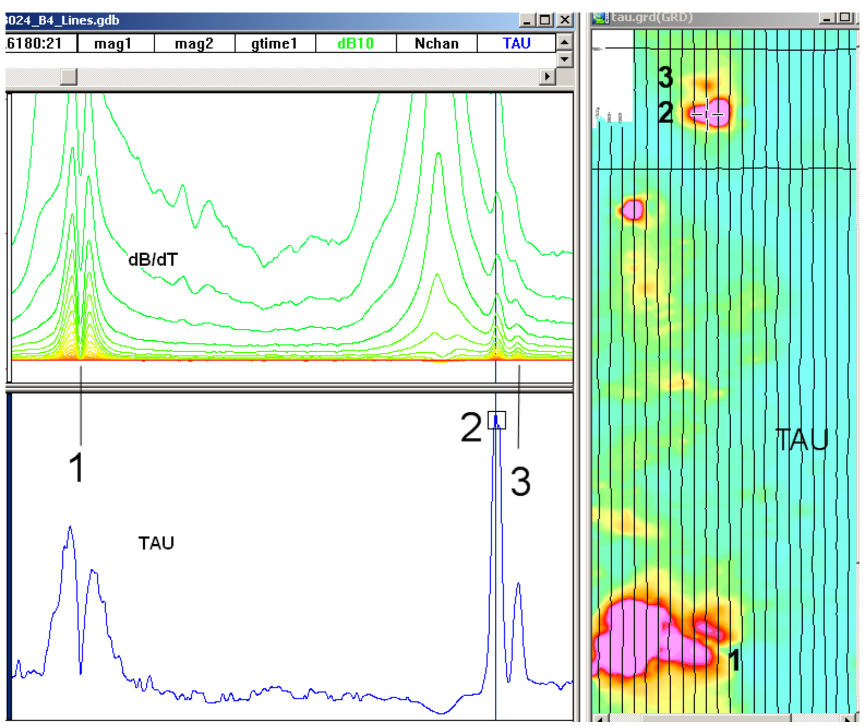


Figure E-5: Map of total TAU and dB/dt profile.

The EM Time Constants for dB/dt and B-field were calculated using the “sliding Tau” in-house program developed at Geotech[2]. The principle of the calculation is based on using of time window (4 time channels) which is sliding along the curve decay and looking for latest time channels which have a response above the level of noise and decay. The EM decays are obtained from all available decay channels, starting at the latest channel. Time constants are taken from a least square fit of a straight-line (log/linear space) over the last 4 gates above a pre-set signal threshold level (Figure F6). Threshold settings are pointed in the “label” property of TAU database channels. The sliding Tau method determines that, as the amplitudes increase, the time-constant is taken at progressively later times in the EM decay. Conversely, as the amplitudes decrease, Tau is taken at progressively earlier times in the decay. If the maximum signal amplitude falls below the threshold, or becomes negative for any of the 4 time gates, then Tau is not calculated and is assigned a value of “dummy” by default.

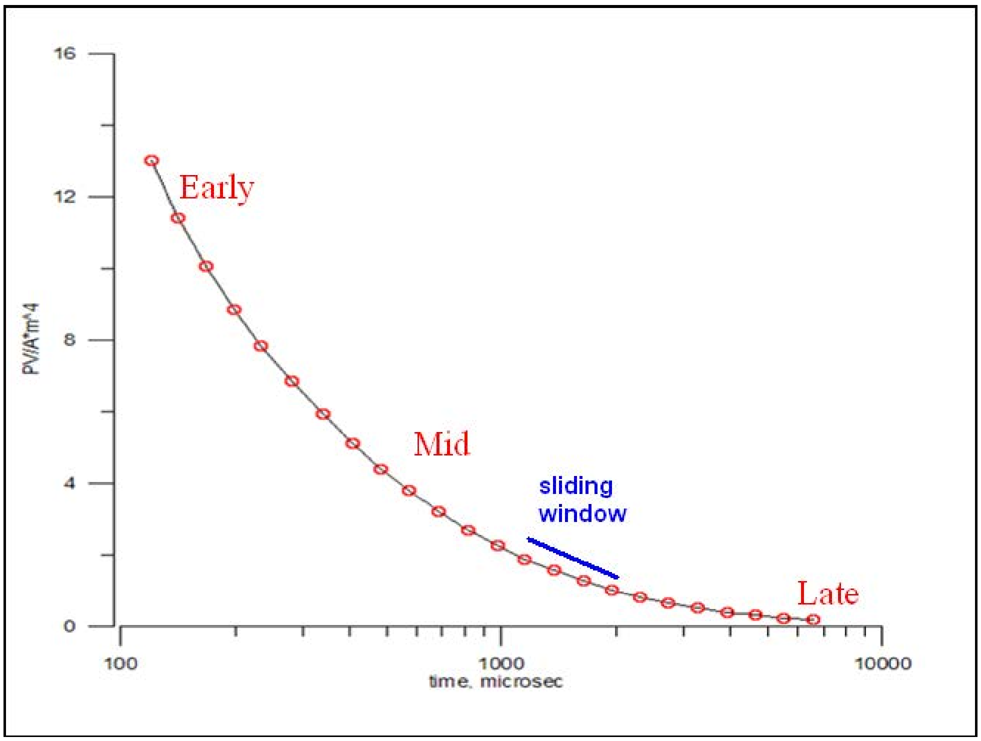


Figure E-6: Typical dB/dt decays of VTEM data

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September 2010

[2] by A.Prikhodko

APPENDIX F

TEM RESISTIVITY DEPTH IMAGING (RDI)

Resistivity depth imaging (RDI) is technique used to rapidly convert EM profile decay data into an equivalent resistivity versus depth cross-section, by deconvolving the measured TEM data. The used RDI algorithm of Resistivity-Depth transformation is based on scheme of the apparent resistivity transform of Maxwell A.Meju (1998)[1] and TEM response from conductive half-space. The program is developed by Alexander Prikhodko and depth calibrated based on forward plate modeling for VTEM system configuration (Fig. 1-10).

RDIs provide reasonable indications of conductor relative depth and vertical extent, as well as accurate 1D layered-earth apparent conductivity/resistivity structure across VTEM flight lines. Approximate depth of investigation of a TEM system, image of secondary field distribution in half space, effective resistivity, initial geometry and position of conductive targets is the information obtained on base of the RDIs.

Maxwell forward modeling with RDI sections from the synthetic responses (VTEM system)

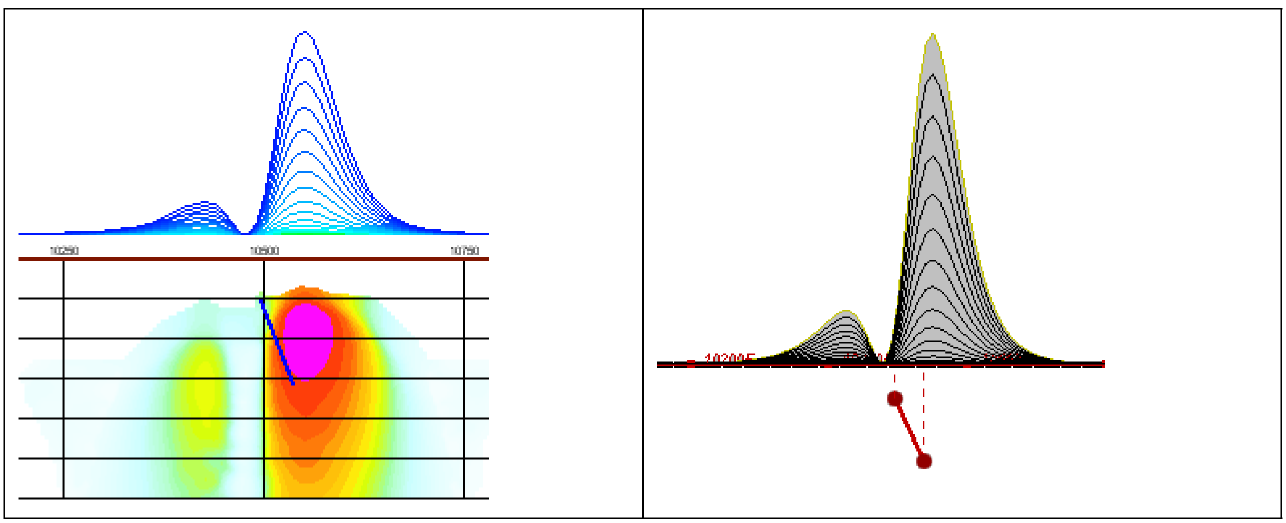


Figure F-1: Maxwell plate model and RDI from the calculated response for conductive "thin" plate (depth 50 m, dip 65 degree, depth extend 100 m).

[1] Maxwell A.Meju, 1998, Short Note: A simple method of transient electromagnetic data analysis, Geophysics, **63**, 405–410.

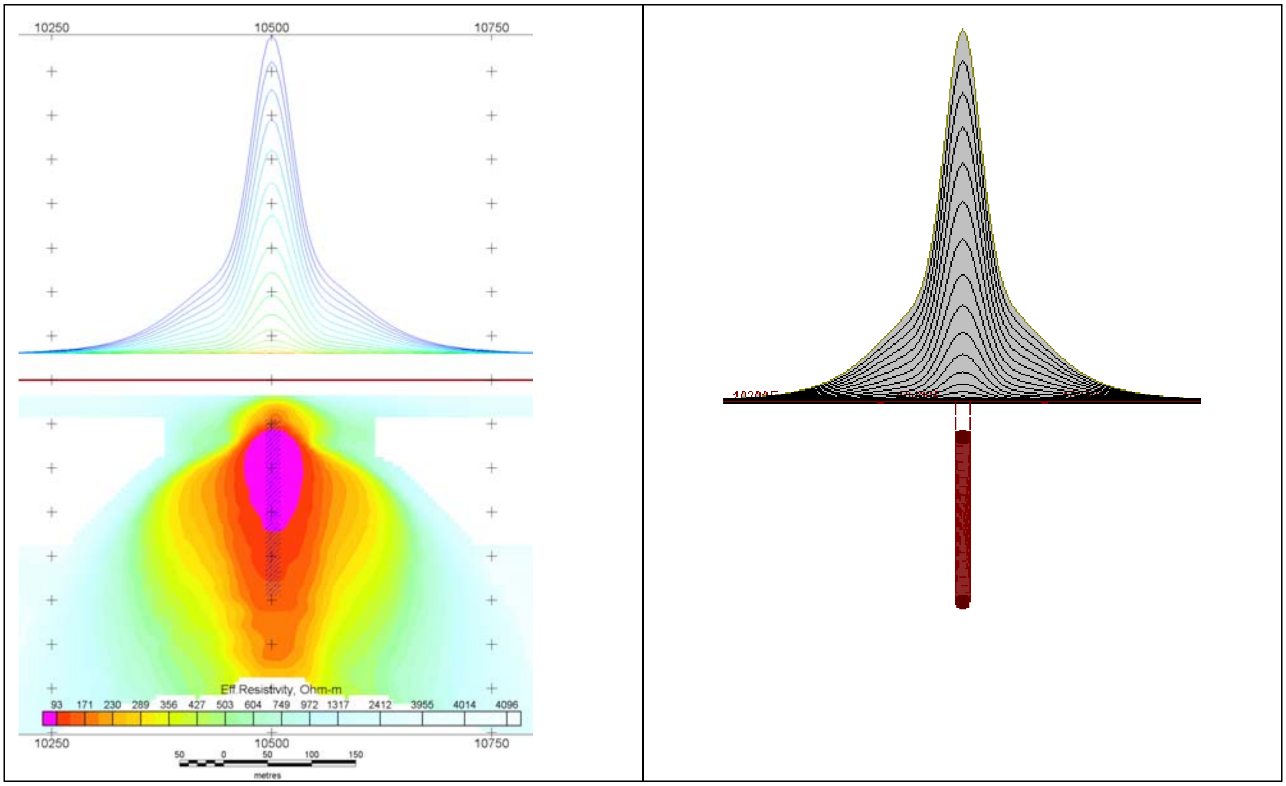


Figure F-2: Maxwell plate model and RDI from the calculated response for “thick” plate 18 m thickness, depth 50 m, depth extend 200 m).

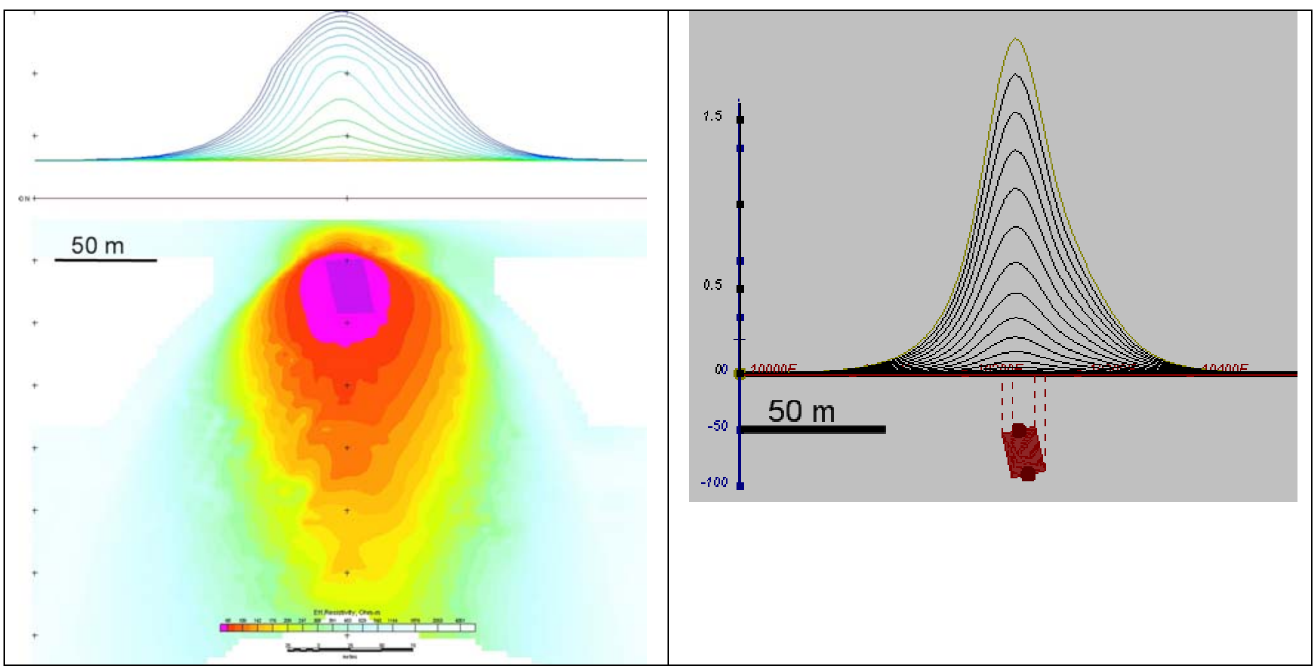


Figure F-3: Maxwell plate model and RDI from the calculated response for bulk (“thick”) 100 m length, 40 m depth extend, 30 m thickness

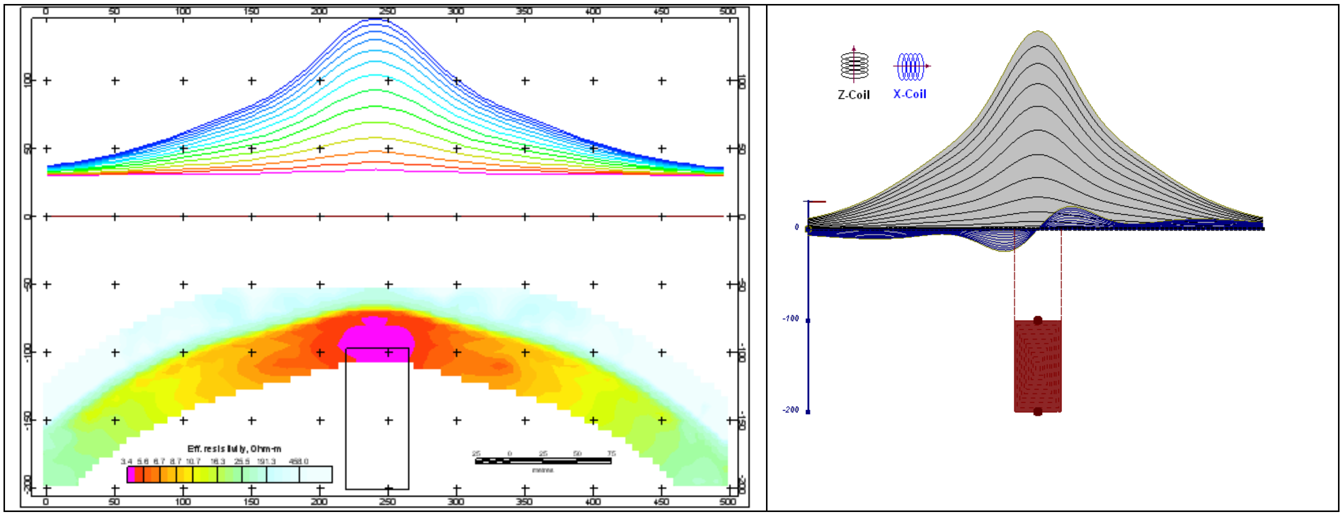


Figure F-4: Maxwell plate model and RDI from the calculated response for “thick” vertical target (depth 100 m, depth extend 100 m). 19-44 chan.

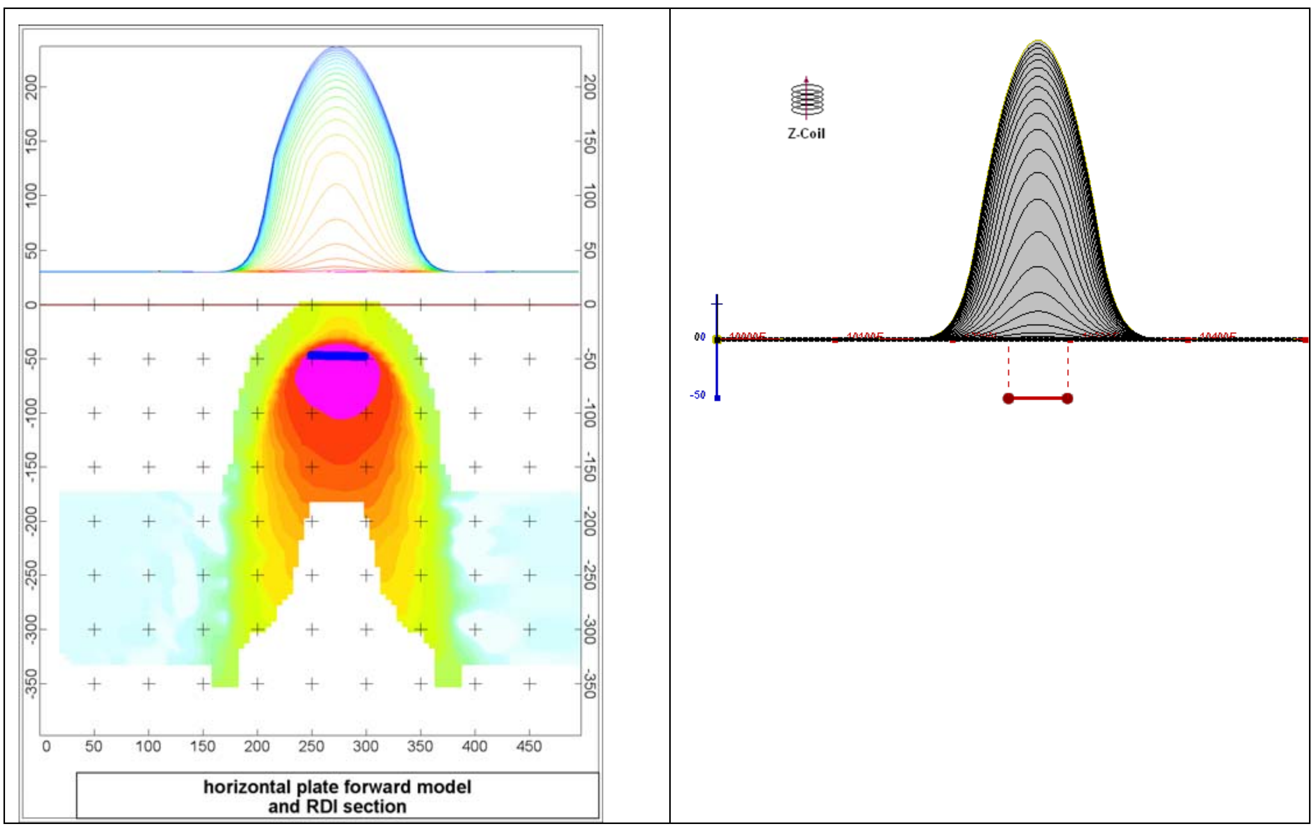


Figure F-5: Maxwell plate model and RDI from the calculated response for horizontal thin plate (depth 50 m, dim 50x100 m). 15-44 chan.

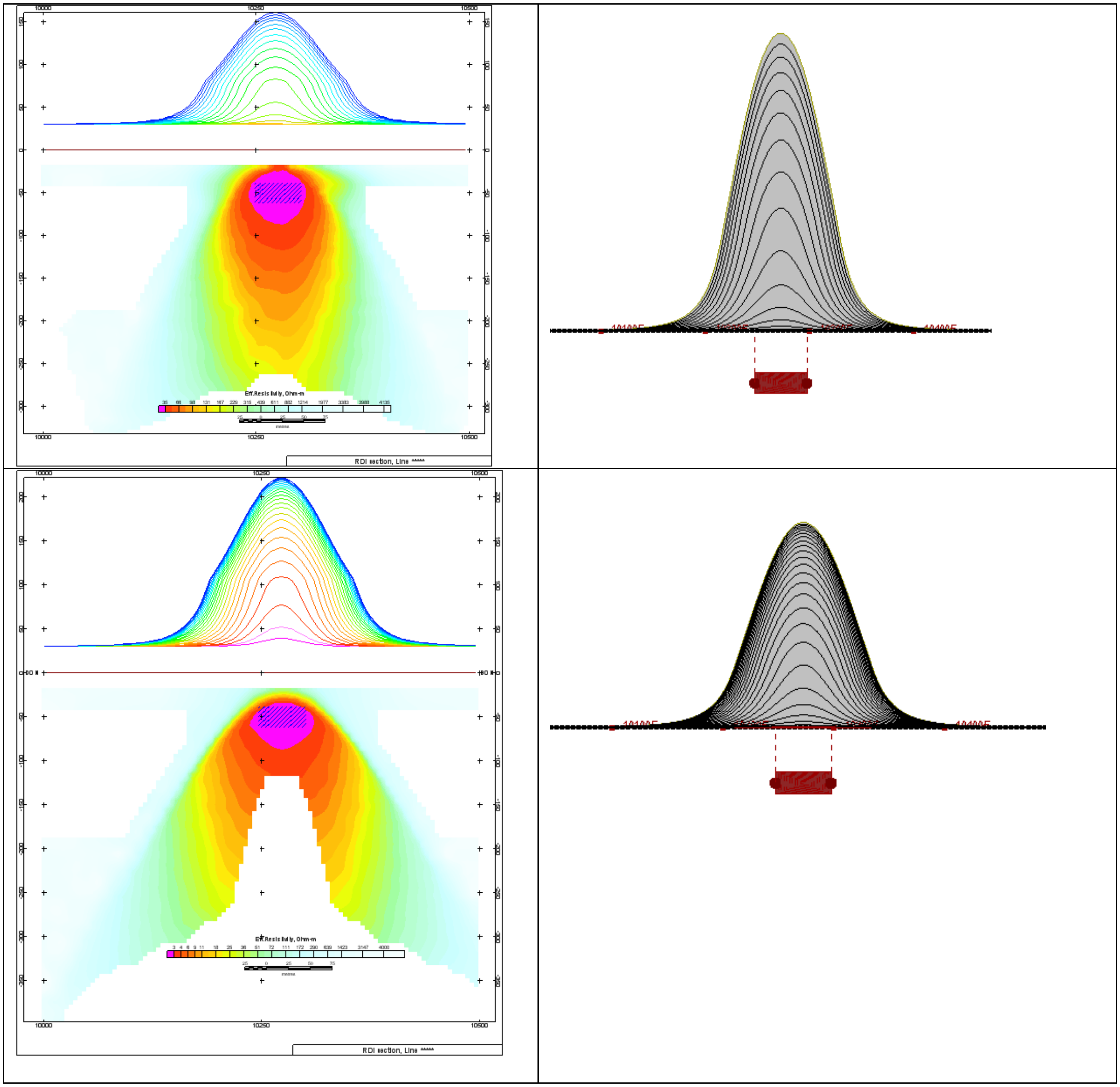


Figure F-6: Maxwell plate model and RDI from the calculated response for horizontal thick (20m) plate – less conductive (on the top), more conductive (below)

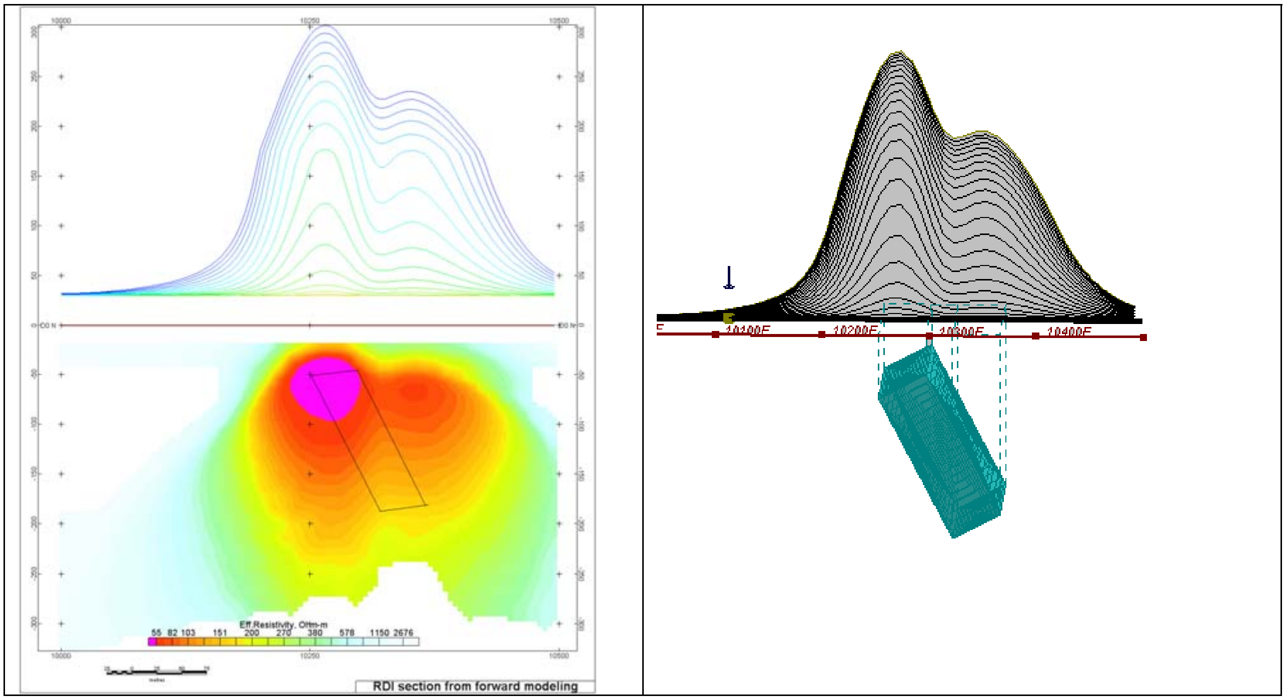


Figure F-7: Maxwell plate model and RDI from the calculated response for inclined thick (50m) plate. Depth extends 150 m, depth to the target 50 m.

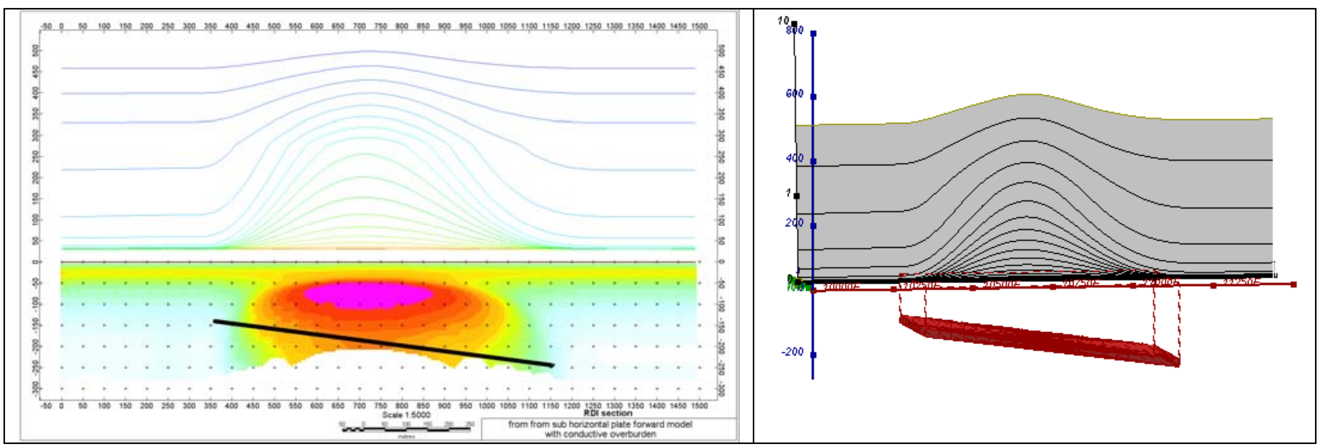


Figure F-8: Maxwell plate model and RDI from the calculated response for the long, wide and deep sub horizontal plate (depth 140 m, dim 25x500x800 m) with conductive overburden.

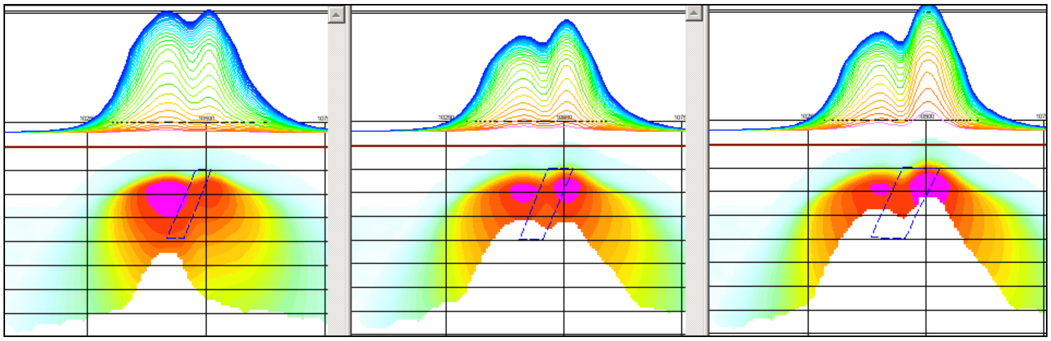


Figure F-9: Maxwell plate models and RDIs from the calculated response for “thick” dipping plates (35, 50, 75 m thickness), depth 50 m, conductivity 2.5 S/m.

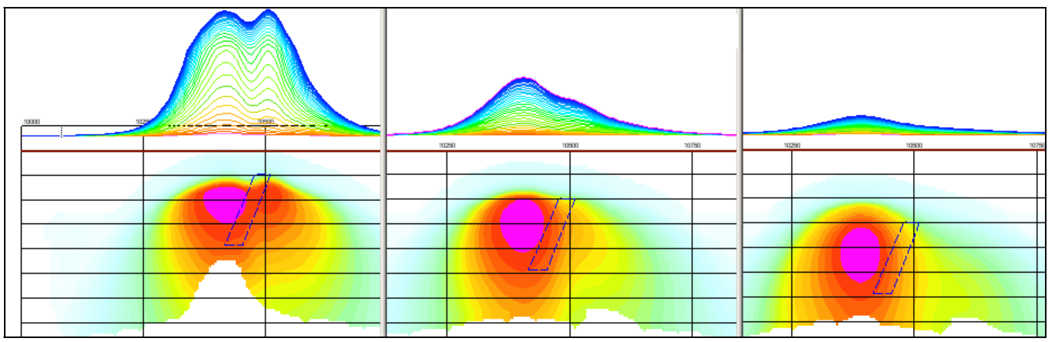


Figure F-10: Maxwell plate models and RDIs from the calculated response for “thick” (35 m thickness) dipping plate on different depth (50, 100, 150 m), conductivity 2.5 S/m.

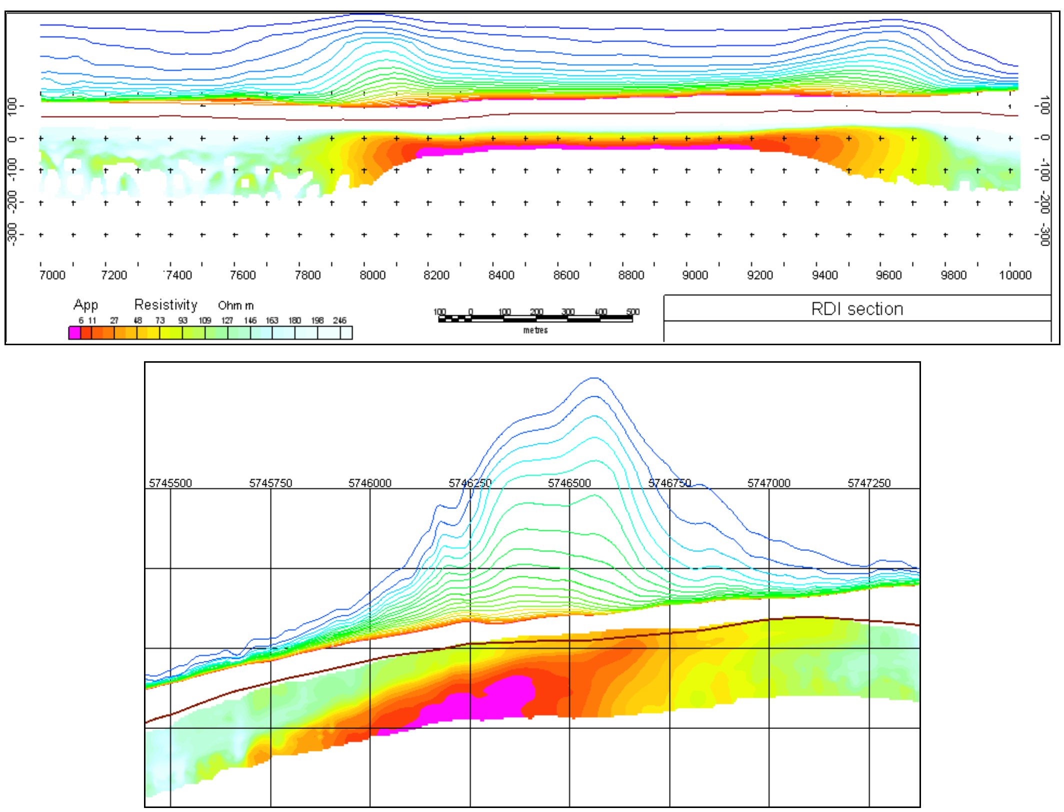
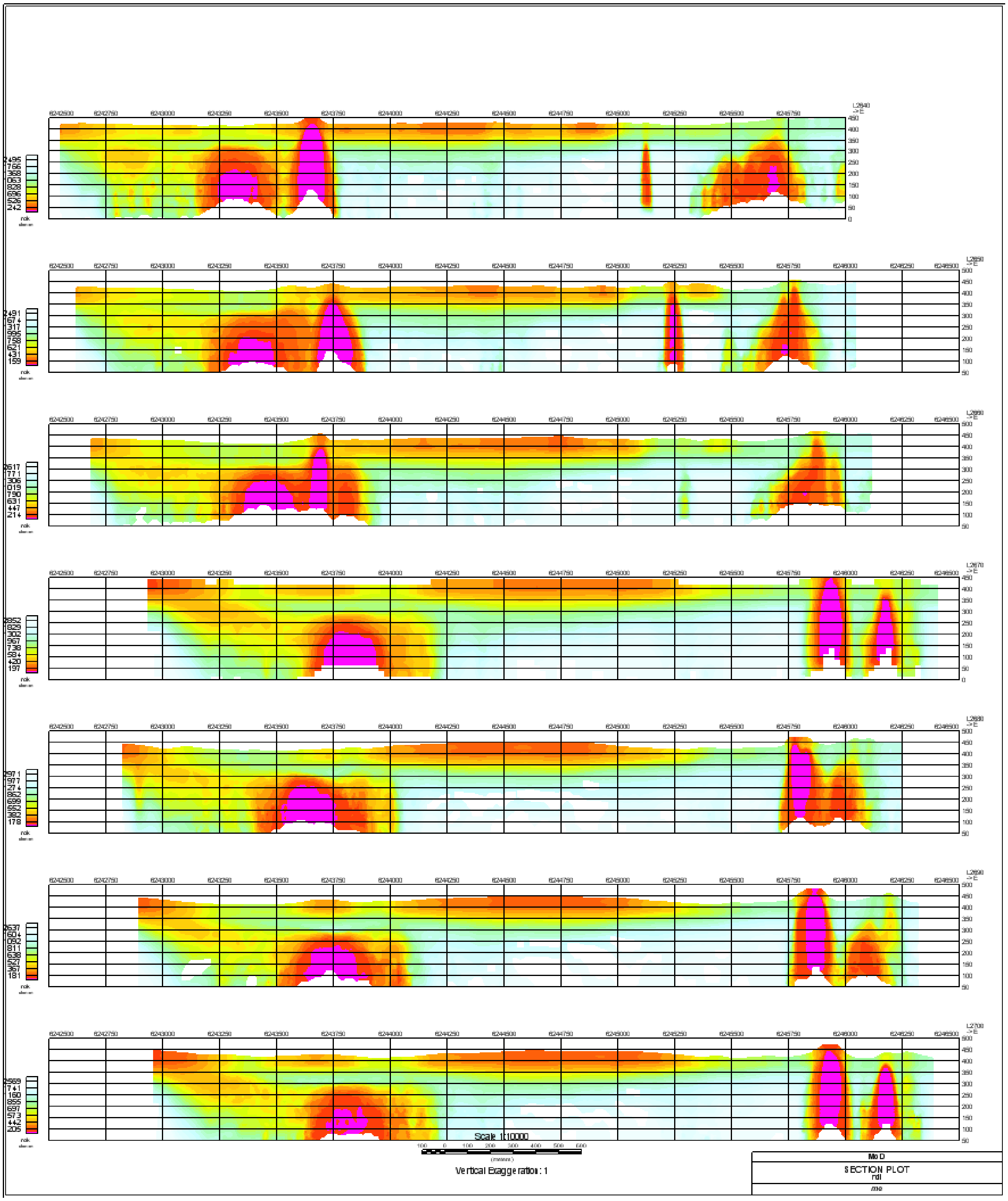


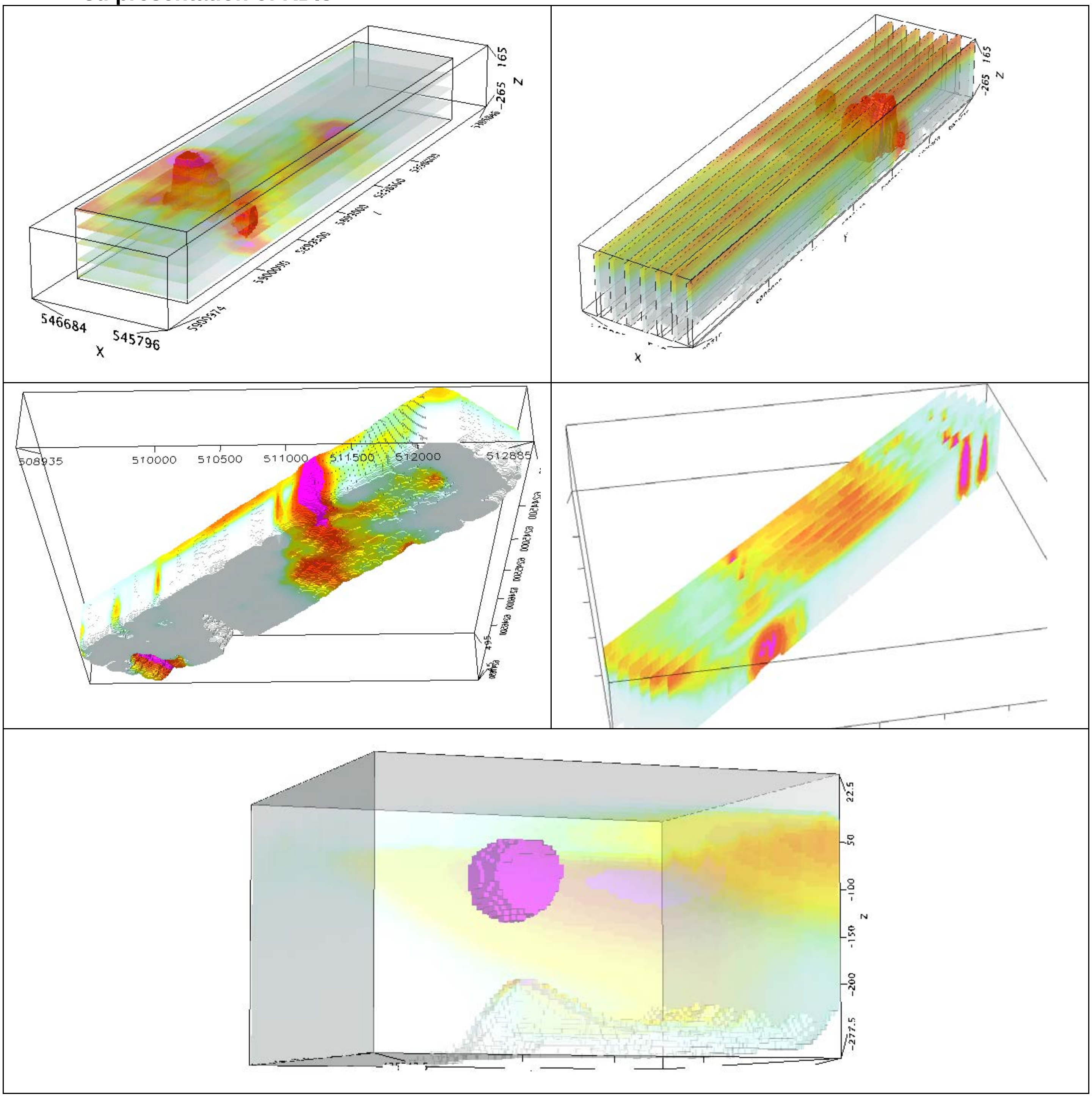
Figure F-11: RDI section for the real horizontal and slightly dipping conductive layers

FORMS OF RDI PRESENTATION

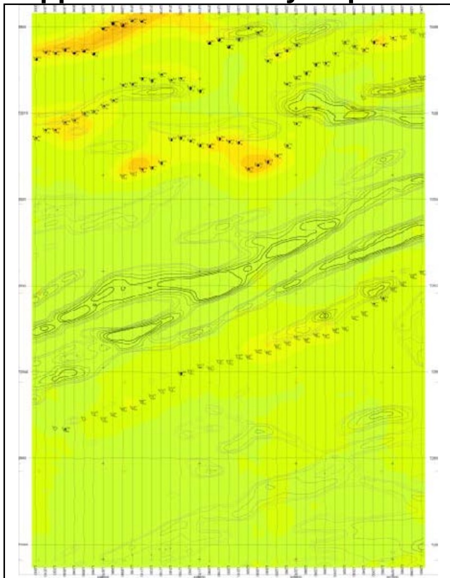
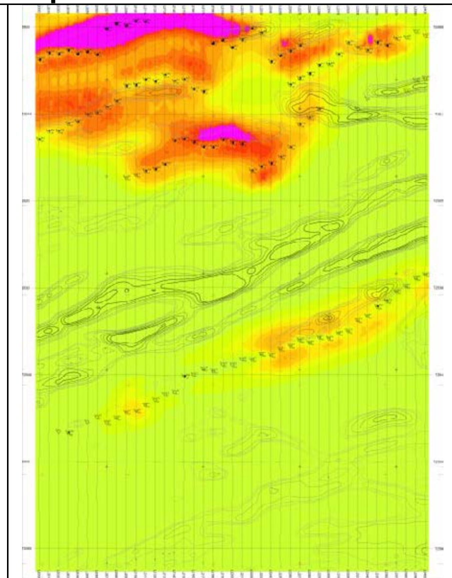
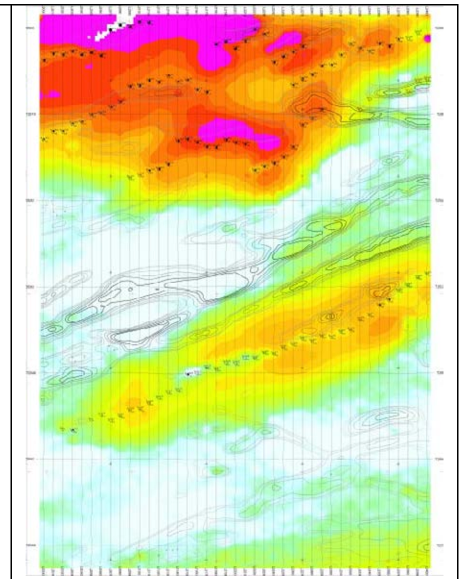
Presentation of series of lines



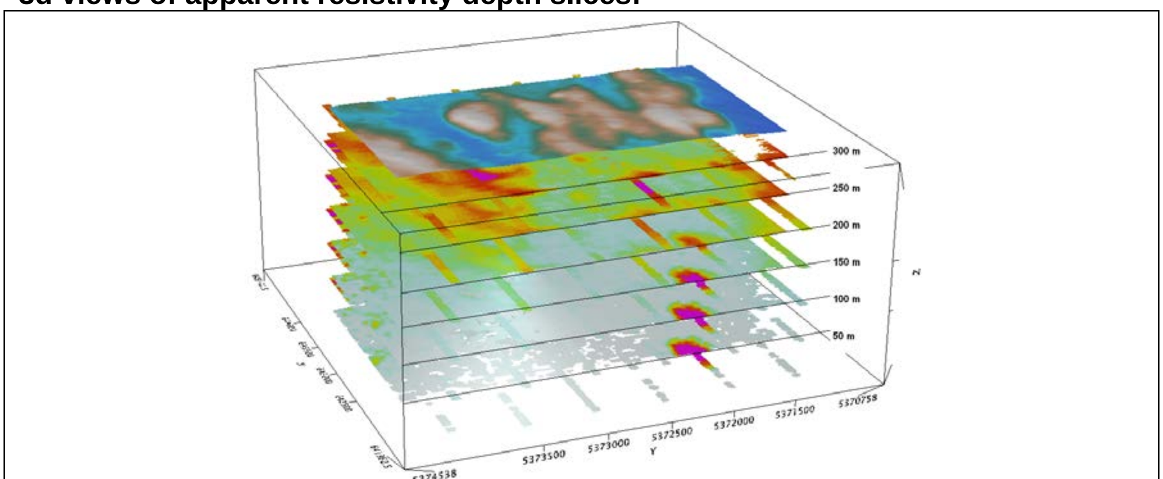
3d presentation of RDIs

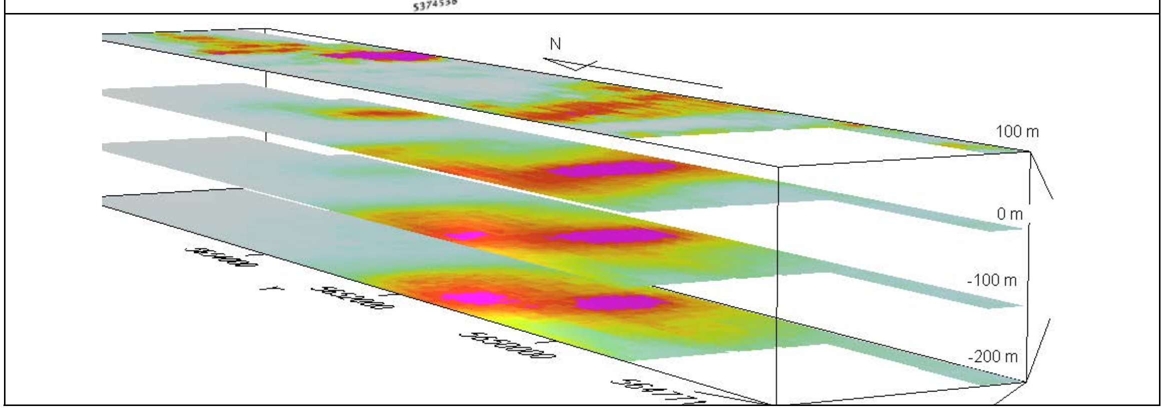


Apparent Resistivity Depth Slices plans:

		
0 m (surface)	-100 m	-200 m

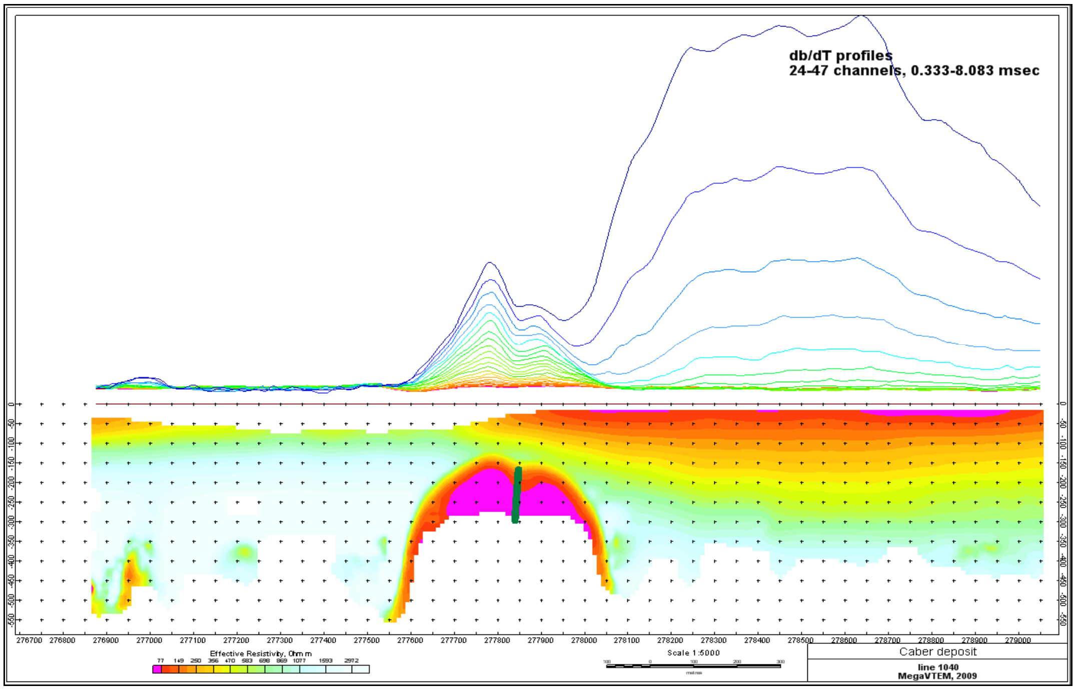
3d views of apparent resistivity depth slices:



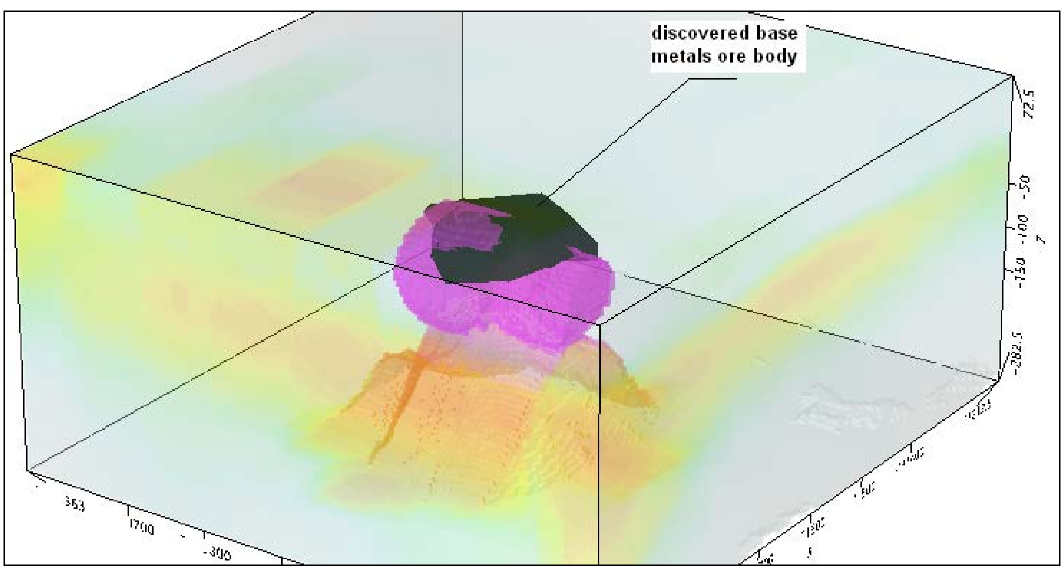


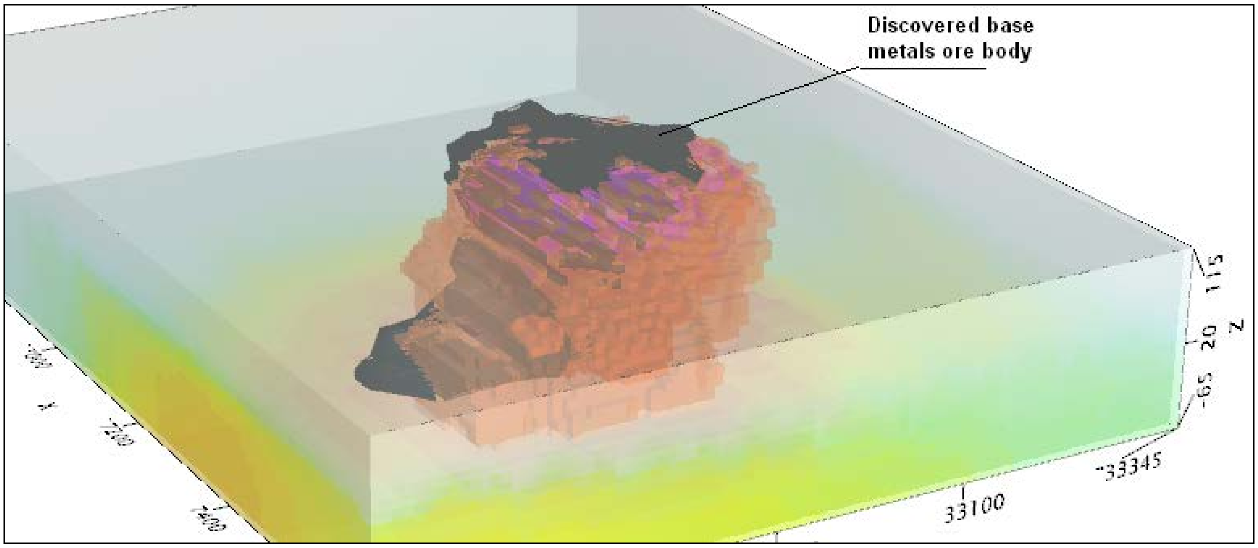
Real base metal targets in comparison with RDIs:

RDI section of the line over Caber deposit ("thin" sub vertical plate target and conductive overburden).



3d RDI voxels with base metals ore bodies (Middle East):





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April 2011

APPENDIX 4

Pandurra VTEM Survey Interpretation Report

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A.C.N. 108 483 601

Subject: Pandurra VTEM Interpretation Report for Spencer Resources
Author: A Thompson
Tenement: Pandurra
Date: 1st November 2012

Introduction

A VTEM survey was flown for Spencer Resources at their Pandurra tenement which is located in the Eyre Peninsula of South Australia approximately 65 km due west of Port Augusta (figure 1). The survey was flown from the 22nd to the 30th of July 2012 by Geotech Airborne for Spencer Resources. A total of 71 line km of airborne EM were surveyed along 3 east-west lines during this program (figure 2).

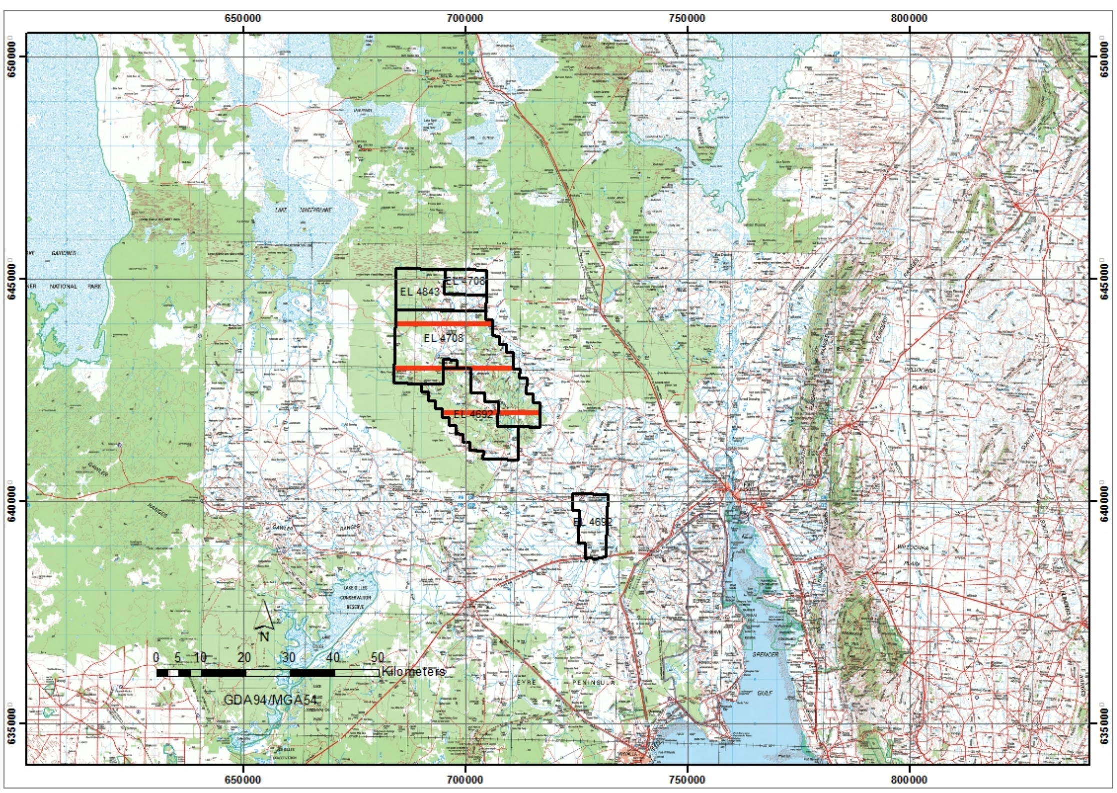

Figure 1. Location of Osborne Project.

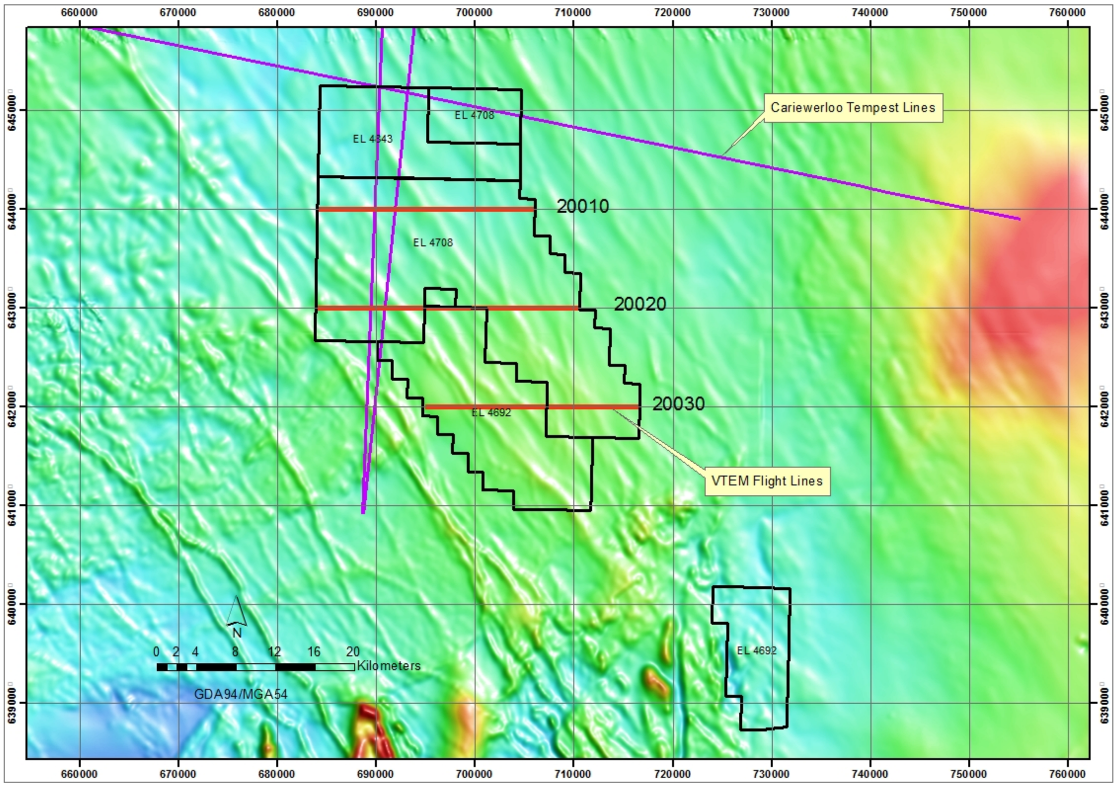

Figure 2. Plan map showing Pandurra VTEM Flight Lines.

Logistics

The VTEM survey is a heliborne airborne EM system. The following survey parameters and system specifications were used for this survey.

Survey Parameters

Flight Line spacing – 10km
Flight line Orientation – 90-270 degrees
Tie line spacing – NA
Tie line orientation – NA
Survey Height EM sensor – 33m
Survey Height Mag sensor – 59m

Transmitter

- Transmitter loop diameter: 26 m
- Effective Transmitter coil area: 2123 m^2
- Number of turns: 4
- Transmitter base frequency: 25 Hz

- Peak current: 190 A
- Pulse width: 7.35 ms
- Wave form shape: trapezoid
- Peak dipole moment: 403,506 nIA
- Actual average EM Bird terrain clearance: 33 metres above the ground

Receiver

- Z-Coil coil diameter: 1.2 m
- Number of turns: 100
- Effective coil area: 113.04 m^2

Figure 3: $VTEM_{plus}$ System Configuration.

Airborne Magnetometer

The magnetic sensor utilized for the survey was Geometrics optically pumped caesium vapour magnetic field sensor mounted 13 metres below the helicopter, as shown in Figure 6. The sensitivity of the magnetic sensor is 0.02 nanoTesla (nT) at a sampling interval of 0.1 seconds.

Base Station

A combined magnetometer/GPS base station was utilized on this project. A Geometrics Caesium vapour magnetometer was used as a magnetic sensor with a sensitivity of .001nT. The base station was recording the magnetic field together with the GPS time at 1 Hz on a base station computer.

The base station magnetometer sensor was installed (135°26'9895"E, 33° 02'4942"S); away from electric transmission lines and moving ferrous objects such as motor vehicles. The base station data were backed-up to the data processing computer at the end of each survey day.

Cariewerloo Tempest Survey

In 2010, Geoscience Australia (GA) contracted Fugro to fly their Tempest AEM survey over the Cariewerloo Basin as part of the Onshore Energy Security Program (OESP). This survey consisted of 4 widely spaced lines, three of which pass close to the Pandurra VTEM survey lines (figure 4).

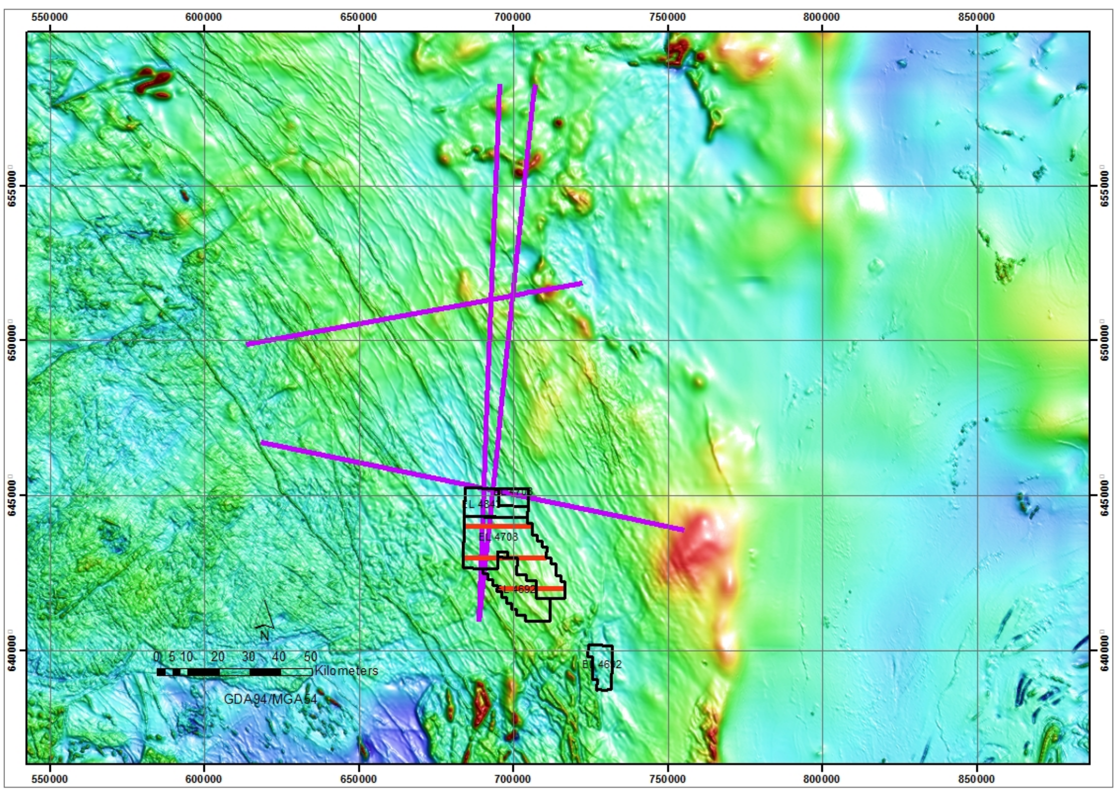

Figure 4. Location of Cariewerloo Tempest lines wrt the Pandurra VTEM survey over RTPTMI image.

Data

Products

As there were only three widely spaced lines surveyed it was difficult to produce cohesive products from line to line. Decay channels were gridded to produce images of early (figure 4a), mid (figure 4b) and late (figure 4c) time data. Tau (time constant) or conductivity maps were also produced from the EM data (figure 5).

The lines were also plotted over RTPTMI (figure 6) and the Bouguer Gravity (figure 7) images as well as the outcrop geology (figure 8). The RTP image is generally bland with NW striking dykes masking much of the deeper information. The gravity shows a deepening of the basement to the east

The environment is generally resistive over the outcropping Pandurra Formation and increases in conductivity to the west as the lines progress onto more conductive cover sequences.

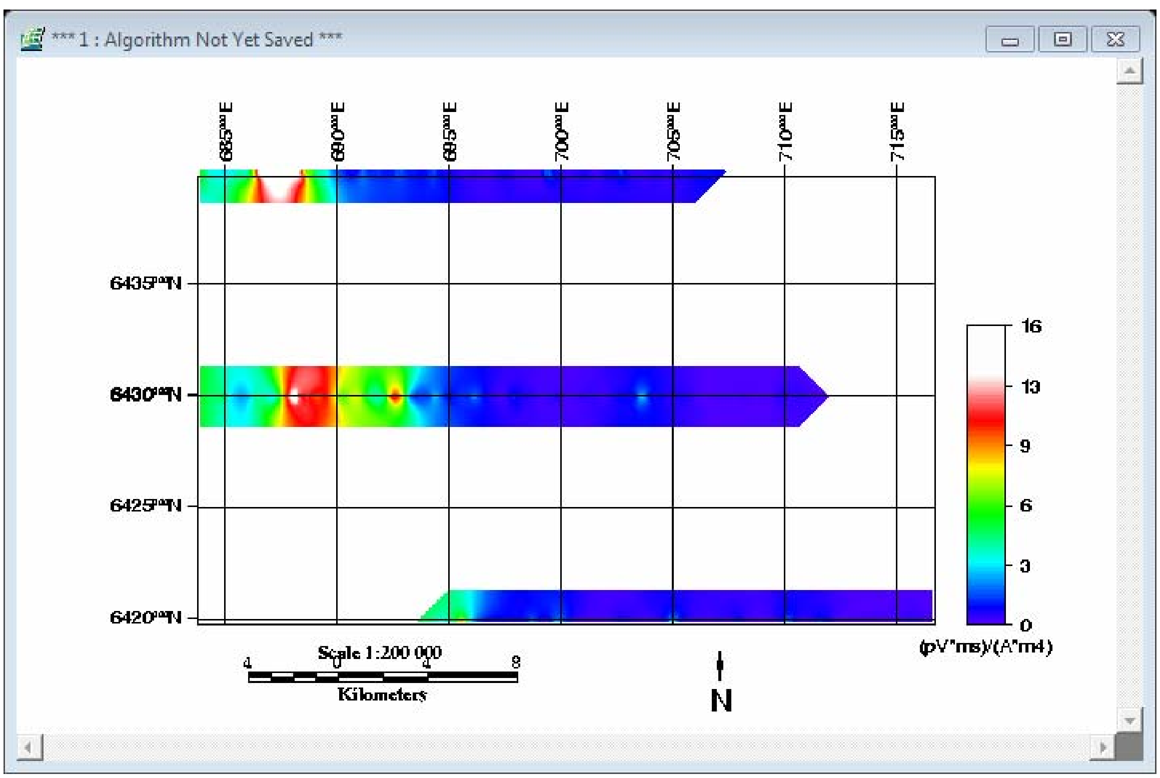

Figure 4a. Plan map of Pandurra early time (ch 20) VTEM image.

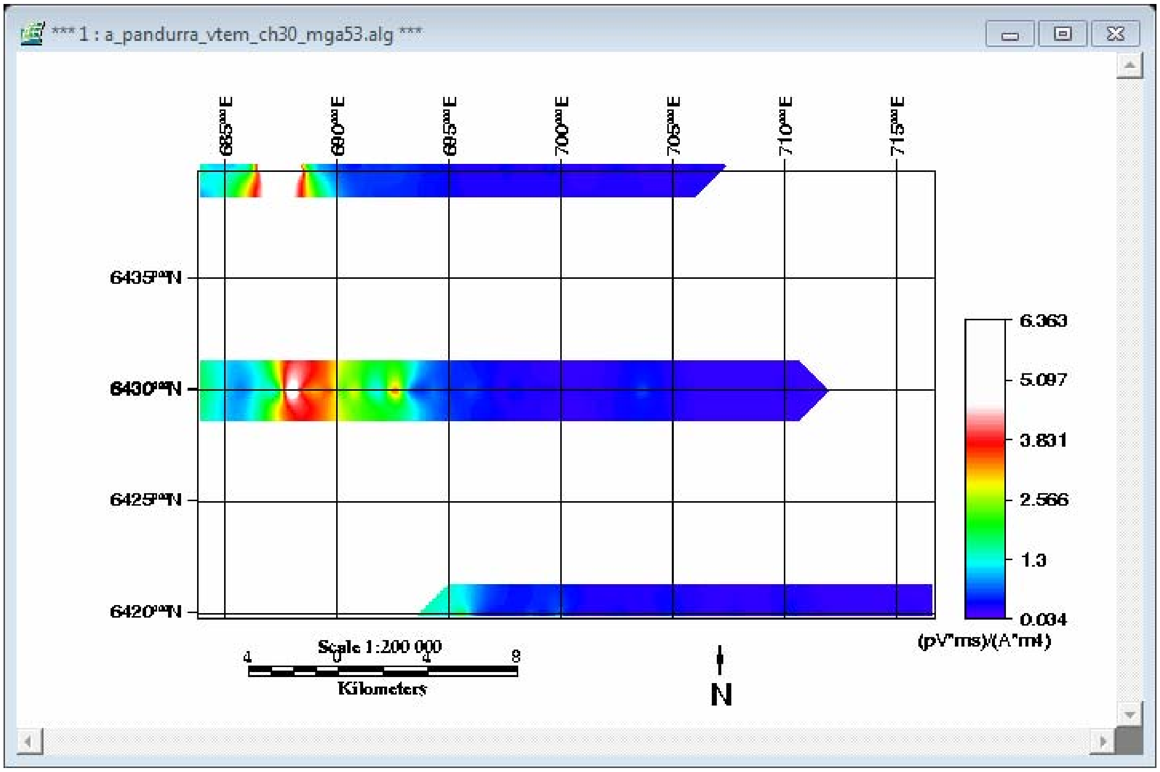

Figure 4b. Plan map of Pandurra mid time (ch 30) VTEM image.

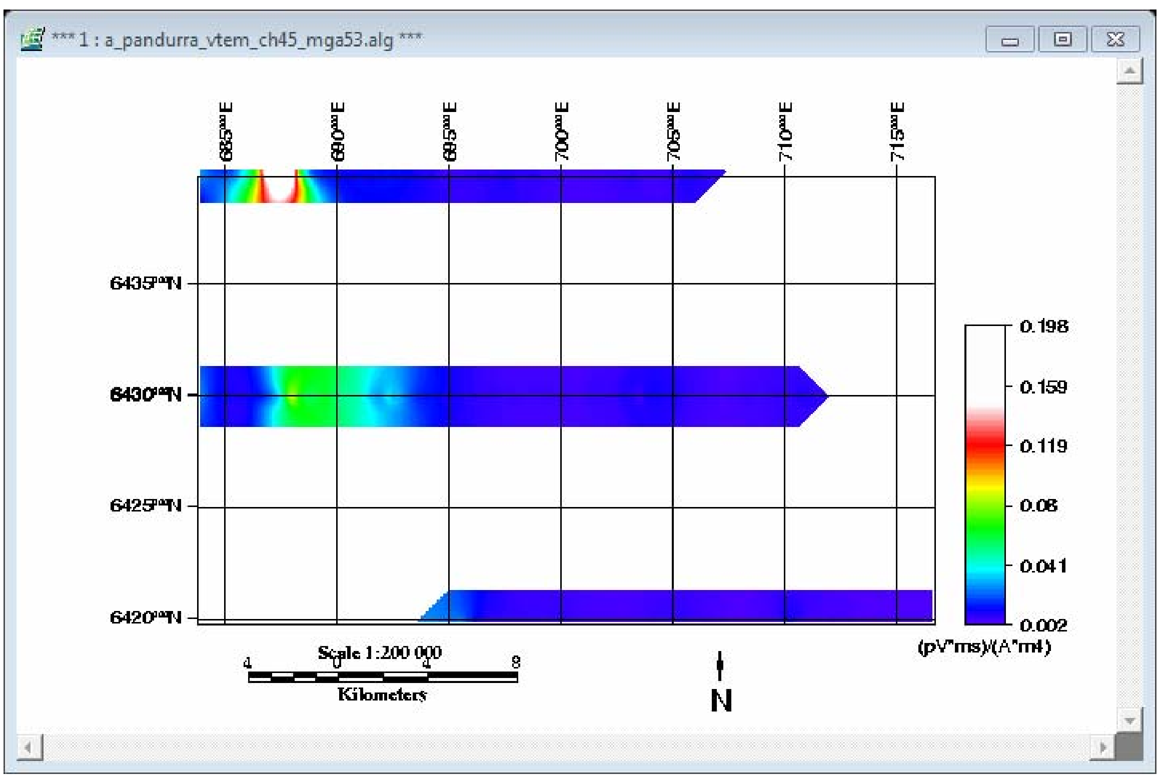

Figure 4c. Plan map of Pandurra late time (ch 45) VTEM image.

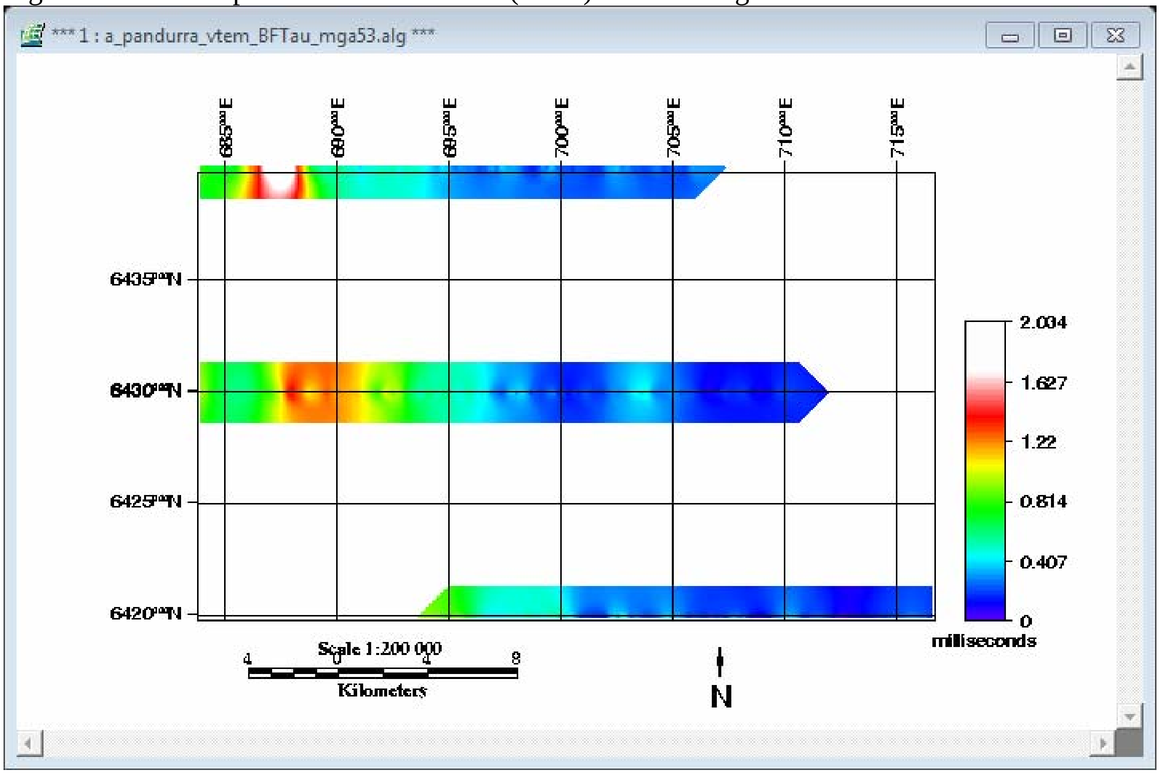

Figure 5. Plan map of Pandurra B Field Tau (Conductivity) image.

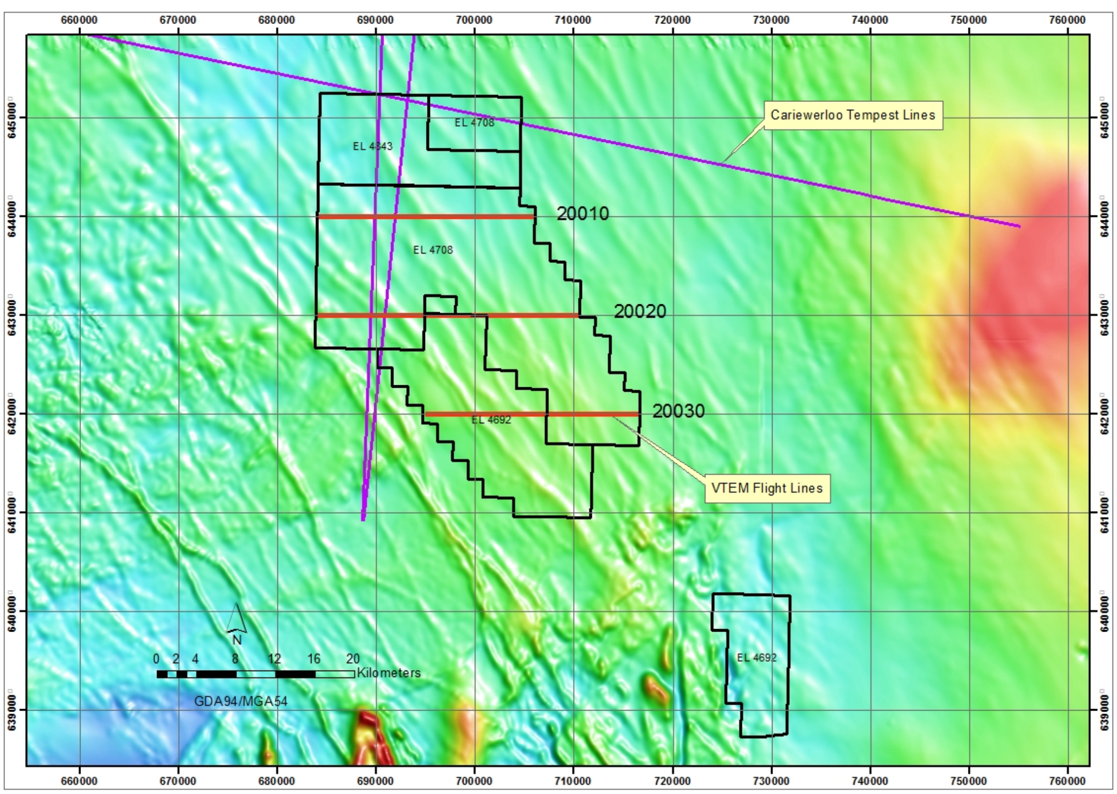

Figure 6. Plan map of Pandurra VTEM lines over RTPTMI image.

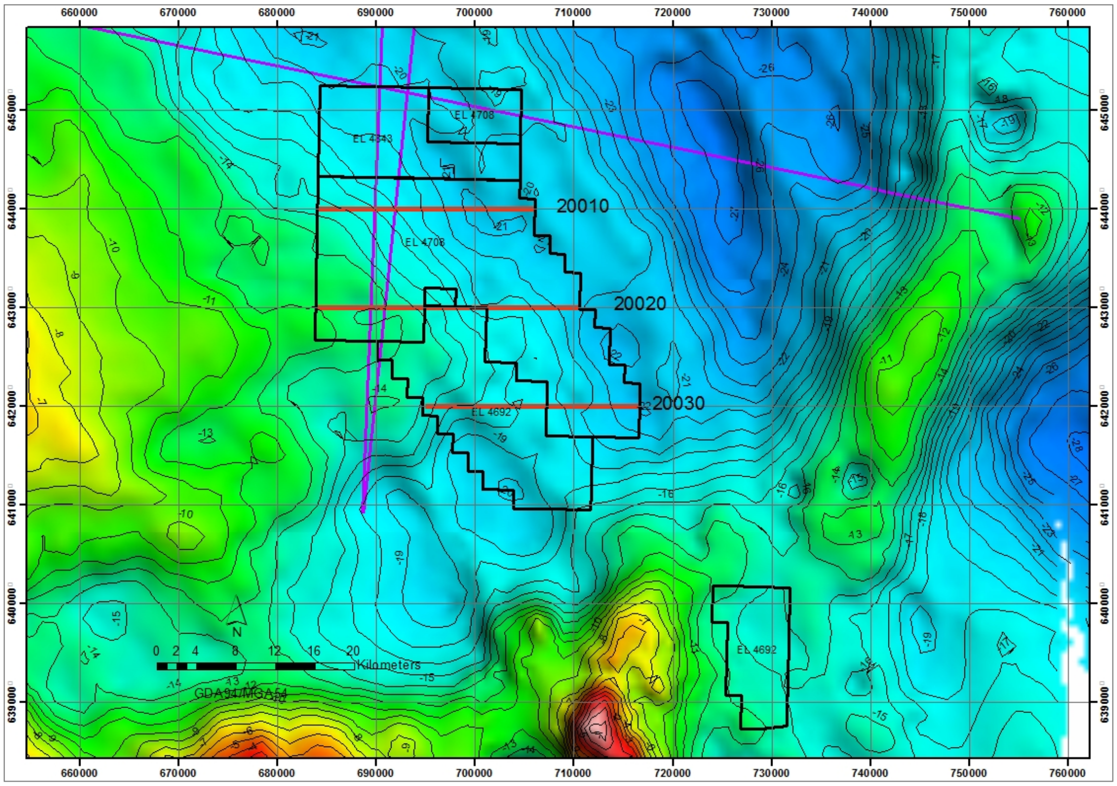

Figure 7. Plan map of Pandurra VTEM lines over Bouguer Anomaly gravity image.

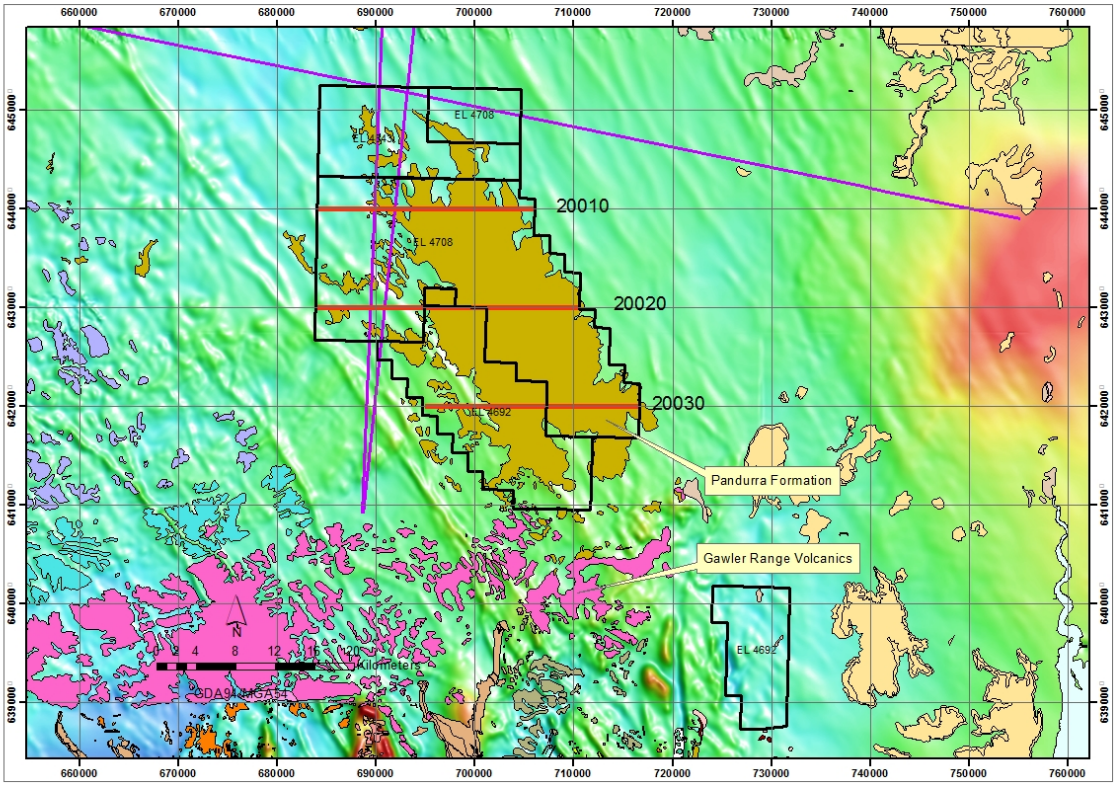

Figure 8. Plan map fo Pandurra VTEM lines over outcrop geology.

Conductivity depth images (CDI) which represent conductive variations with depth was also produced from the dB/dT data for each line (figure 9). This assists in identifying the depth, conductivity and also the depth of conductive cover for each of the prospective targets.

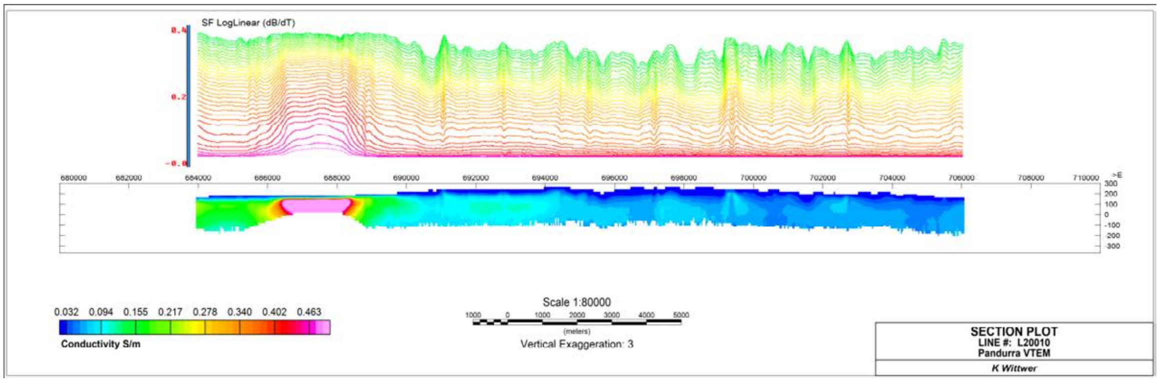

Figure 9. CDI image for Pandurra VTEM line 20010.

Targeting

The data was examined on a line by line basis for responses that might be caused by sulphide mineralization. Firstly each line was examined to see how the response varied with time in comparison to the decays nearby. The CDI section for each line was then examined to provide further information on the nature of the response. The magnetic intensity and the geology in the vicinity of each response was also taken into account when determining its prospectivity.

Each target was given a prospectivity rating as follows:

- very high - targets generated from this survey that have the highest possibility of being caused by sulphide mineralization
- high – targets generated from this survey that have a lower possibility of being caused by sulphide mineralization but are still prospective.
- moderate – targets that are more likely to be caused by sources other than sulphides but still have the potential for a sulphide source or targets that may represent a host for mineralization such as Palaeochannels.
- low – targets that are probably due to culture or artefacts.in the data

The top targets were also ranked with respect to each other based on their conductivity, size, location and magnetic association.

In all a total of 3 targets were selected during the interpretation process of which were classified as “High” and 2 as “Moderate” prospectivity. The following table lists each selected target.

Table 1. List of VTEM targets.

Target	Line	East	North	Description	Rating
P01	20010	687339	6439996	Slow decay, probably palaeochannel	Moderate
P01	20020	688028	6429998	Slow decay, probably palaeochannel	Moderate
P01	20030	695536	6420002	Slow decay, probably palaeochannel	Moderate
P02	20020	692600	6430000	Slow decay, probably palaeochannel	Moderate
P03	20030	706604	6419999	late time short wavelength response	High
P04	20030	710236	6420002	slow decay response	High
P05	20030	712175	6419997	late time short wavelength response	High

Each of the "High" priority targets should be field checked in the first instance. The targets have been plotted over a plan showing the outcrop geology, the magnetics and the conductivity along the line (figure 10).

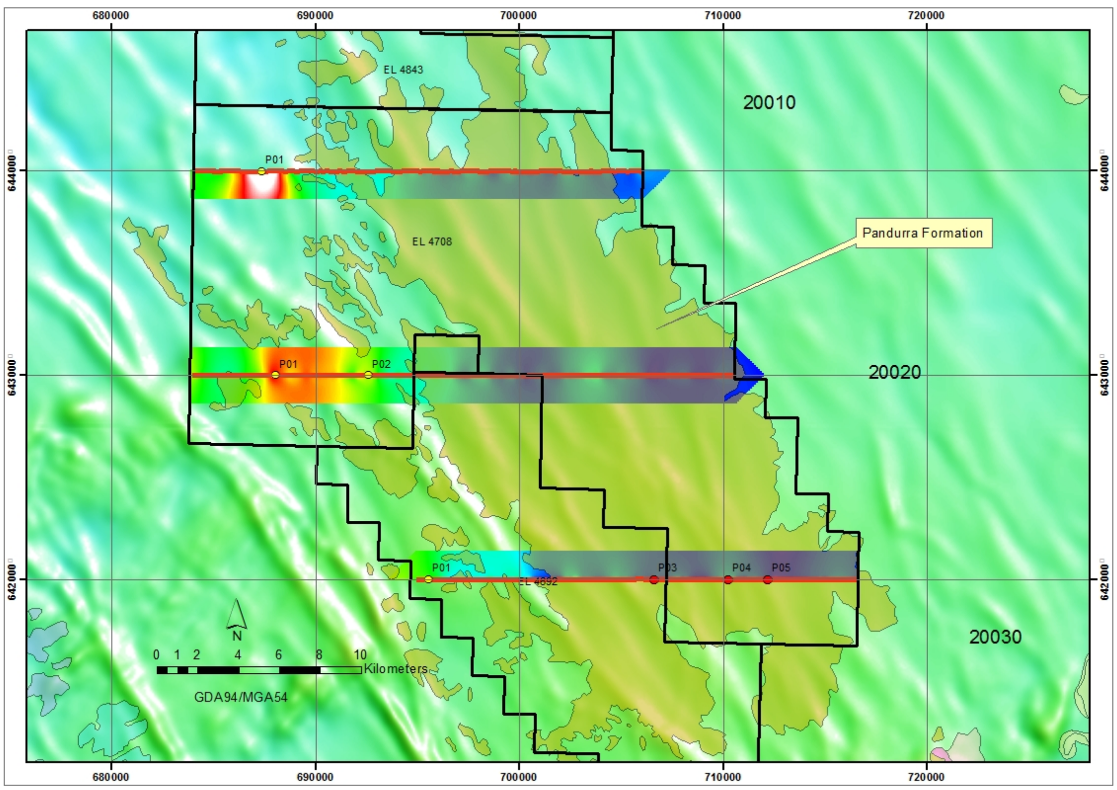

Figure 10. Plan map showing location of targets over outcrop geology, RTPTMI image and conductivity along the VTEM lines.

The targets will now be discussed individually.

P01

Target P01 is a slow decay anomaly present on all lines but is predominant on line 20010 (figure 1). It is thought to represent a palaeochannel due to its long strikelength and strong early time response. The inversion clearly resolves the source of the response as a shallow high conductance feature. This target should be followed up with air core drilling to test the base of the palaeochannel for roll front Uranium mineralization.

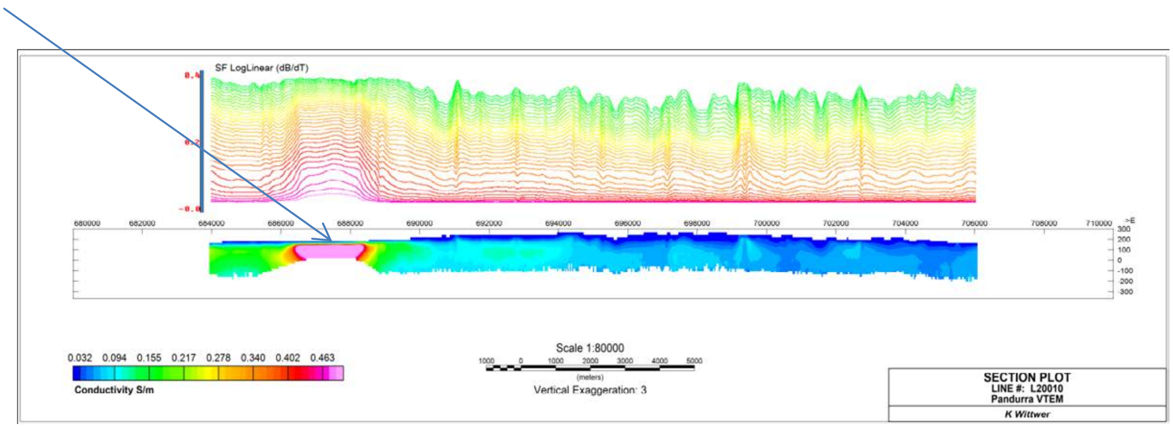

Figure 11. Target P01 VTEM profile (top) mag, powerline and radar profiles.

P02

Target P02 is another slow decay response, however its conductivity is less than that of P01 to the west (figure 12). The inversion confirms the shallow nature but lower conductivity of this feature. This target should also be tested with a traverse of air core drilling however is a lower priority.

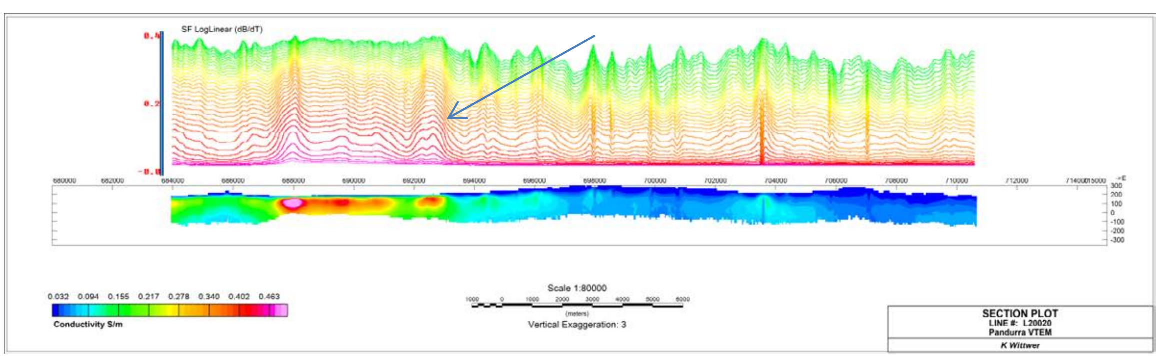

Figure 12. Target P02 profile (top) and CDI image.

P03 and P05

Targets P03 and P05 are isolated, late time, high frequency responses that could be due to a mineralised source but could also be due to noise (figure 13). These responses appear shallow due to their short wavelength (although are not resolved by the inversion process figure 14) and are therefore thought to lie within the Pandurra Formation. They do not appear to be associated with any faulting and as such it is difficult to relate these features to Athabasca style Uranium mineralisation however these targets should be followed up with a field inspection and ground EM or surface sampling to furhter characterise and progress the targets.

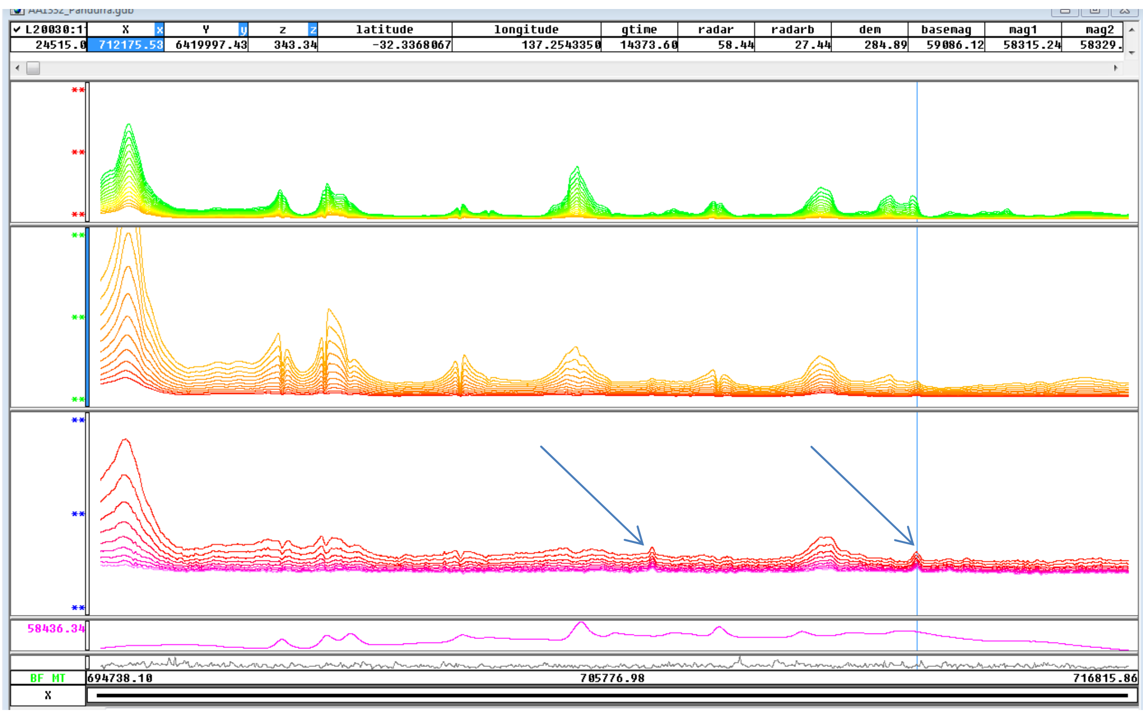

Figure 13. Line 20030 early, mid and late time VTEM profiles showing targets P03 and P05.

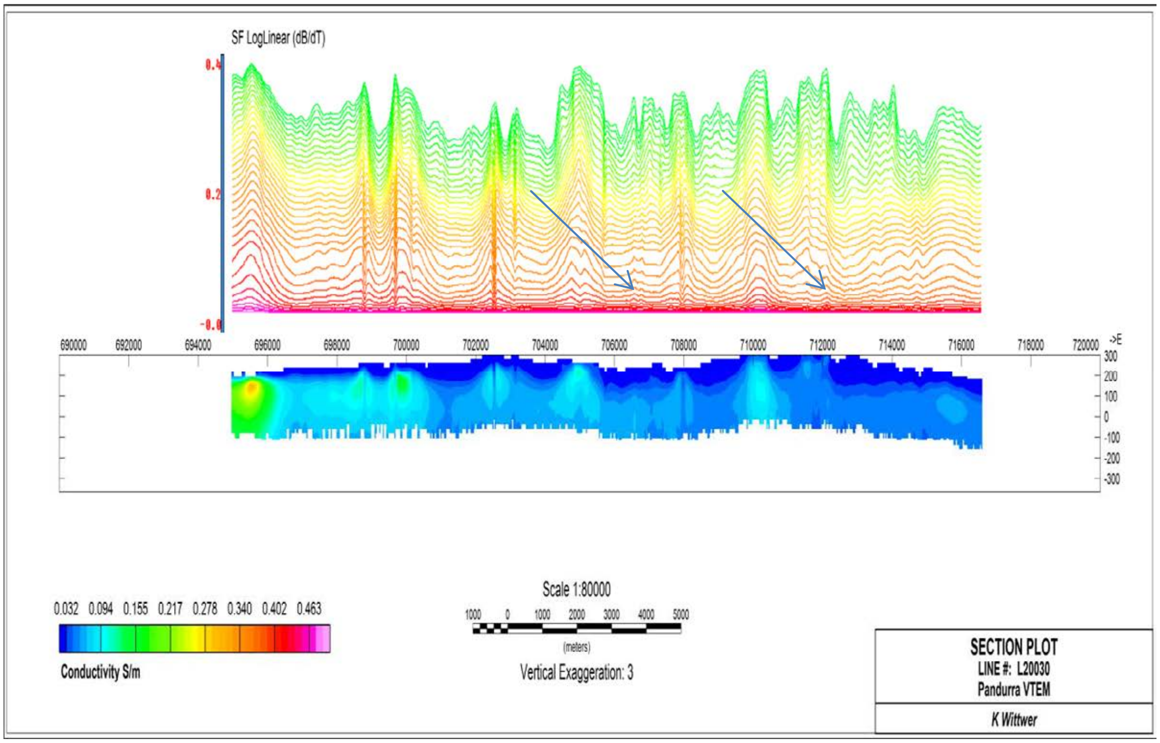

Figure 14. Target P03 and P05 VTEM profile (top) and CDI image (bottom).

P04

Target P04 is a slow decay response that appears more conductive than other early time responses present on this line (with the exception of P01) (figure 15). The inversion resolves this target as a shallow response placing it within the outcropping Pandurra Formation unit (figure 16). The anomaly is not likely to be due to noise however it could be due to a weathering trough or salt water. A field inspection and surface sampling should be conducted to further characterise and progress this target.

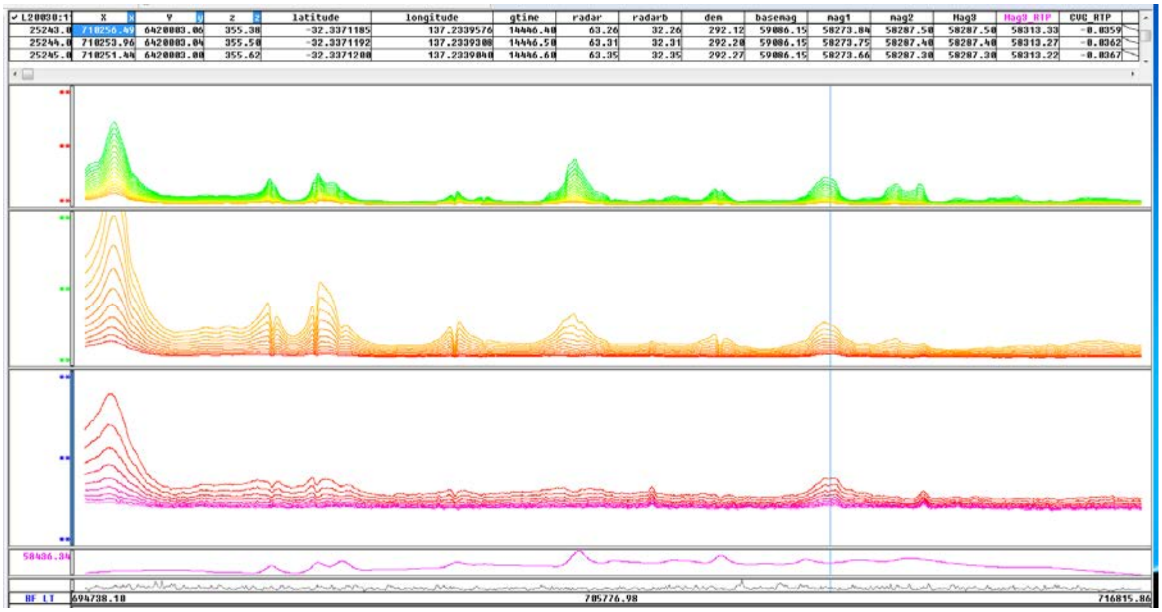

Figure 15. Line 20030 early, mid and late time VTEM profiles showing target P04.

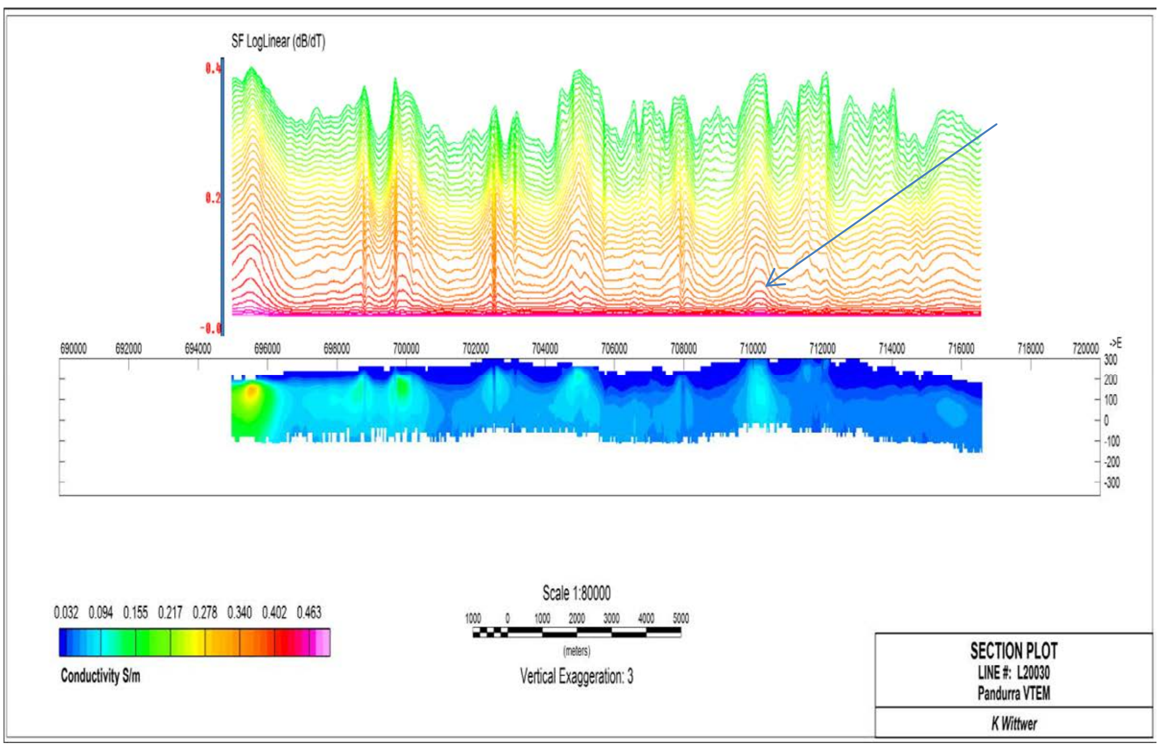

Figure 16. Target P04 VTEM profile (top) and CDI image (bottom).

Discussion

A thorough interpretation of the Cariewerloo Tempest data was conducted by GA. A number of geophysical domains were defined through the integration of potential field and geological data culminating in the creation of a comprehensive 3D geological model constrained by a number of drillholes, petraphysical measurements, gravity and magnetic data. The interpretation of the basement units was primarily conducted using the magnetic, gravity and drillhole data due to the considerable depth of the magnetic basement beneath the Pandurra Formation and underlying GRV units.

The inversions of the VTEM data do show variations in resistivity which may be resolving a contact between the Pandurra Formation and the GRV (figure 17) however without the integration of drillhole data this cannot be confirmed. The location of the depth of the Hutchinson Group beneath the GRV is certainly not resolved in the VTEM data and is likely to be much deeper than the depth of investigation of the VTEM system.

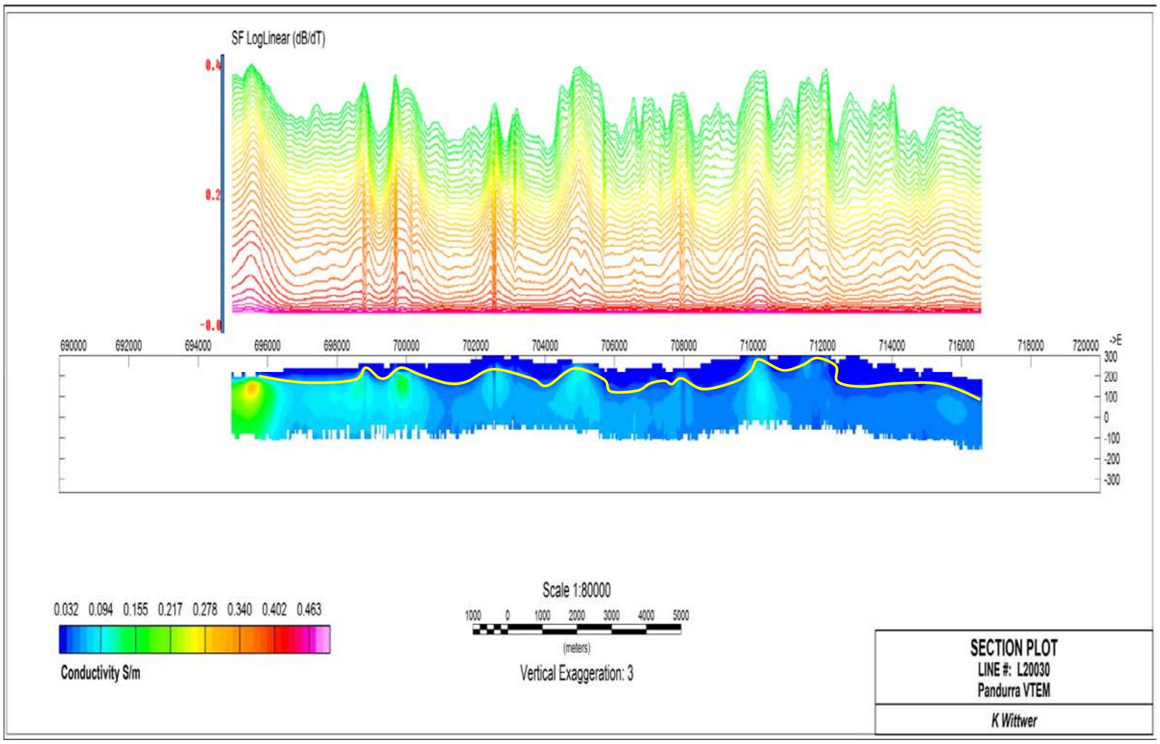

Figure 17. Section showing potential contact (in yellow) between Pandurra Formation and GRV.

The interpretation of the Palaeochannel in the VTEM data correlates well with the Cariewerloo Tempest inversions in the area which show a shallow increase in conductivity in these areas (figure 18). This is not as apparent on the northern line however the location of the Tempest traverse is further from the interpreted palaeochannel here.

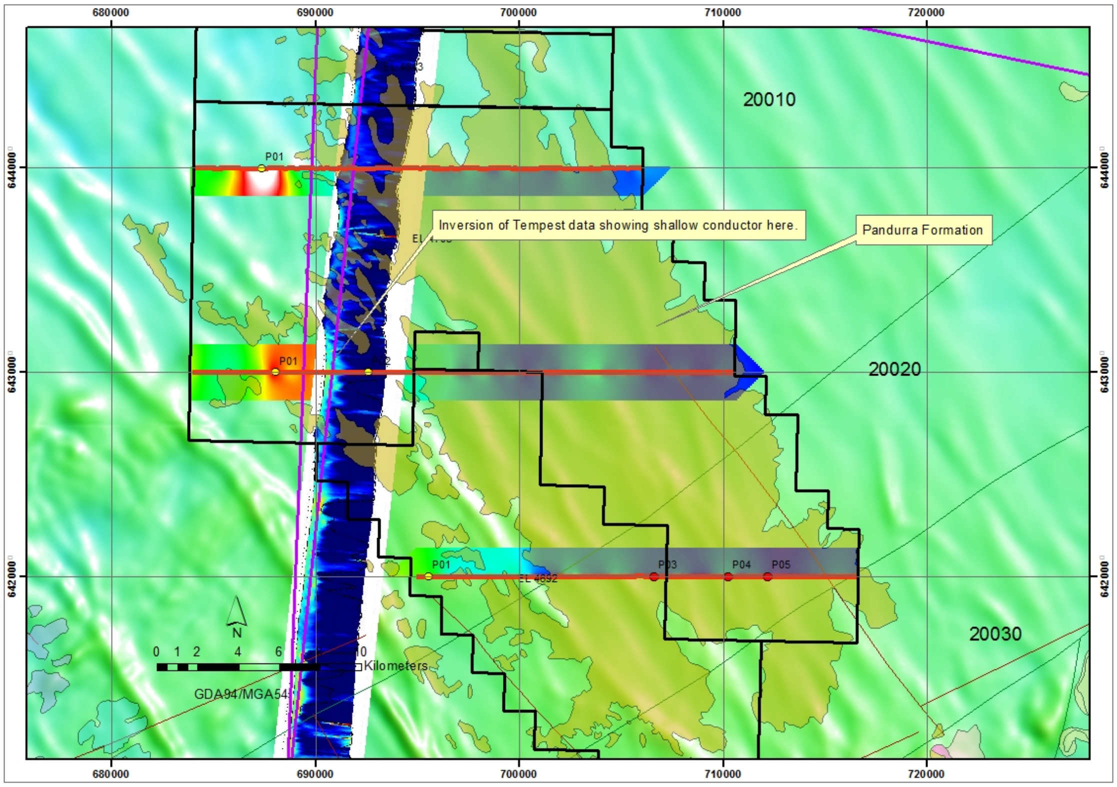

Figure 18. Figure showing Cariewerloo inverted section showing correlation with Pandurra VTEM conductivity (Tau) image

Summary and Recommendations

The three lines of VTEM throughout the Pandurra tenement have resolved what appears to be a palaeochannel in the west and several other shallow, isolated targets. These features should be field checked and a program of surface geochemical sampling conducted over them in order to determine whether or not these targets may be due to mineralised sources. In the case of the interpreted palaeochannel, an aircore program may be required to test the base of the palaeochannel for roll front type deposits.

The inversions of the VTEM data in general show a resistive layer ovelying a slightly more conductive layer and could be mapping the contact between the Pandurra Formation and the underlaying GRV unit however this would need to be verified using available drillhole information.

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A.C.N. 108 925 284

27 May 2014

Executive Director
DMITRE Mineral Resources Division
Mineral Tenements
GPO Box 1264
Adelaide, SA 5001

Dear Sir,

RE: Combined Annual Technical Report EL 4692 (Pandurra) EL 4708 (Koolcutta) & EL 4843 (Yudnapinna)

I refer to the Combined Annual Technical Report for Exploration Licence 4692 (Pandurra) EL 4708 (Koolcutta) and EL 4843 (Yudnapinna) for the year ending the 5th May 2014

Minotaur Exploration Ltd believes that no new technical investigations were undertaken by Spencer Resources (Bulletproof Group Limited) on the tenements during the reporting period; hence this letter represents the Annual Technical Report and Final Report for EL 4692, 4708 and 4843 as all titles have now been cancelled in the Mining Register.

Should you require any further information please contact me on 8132 3423.

Yours sincerely

Phil Cronin
Tenement Manager
Minotaur Operations Pty Ltd

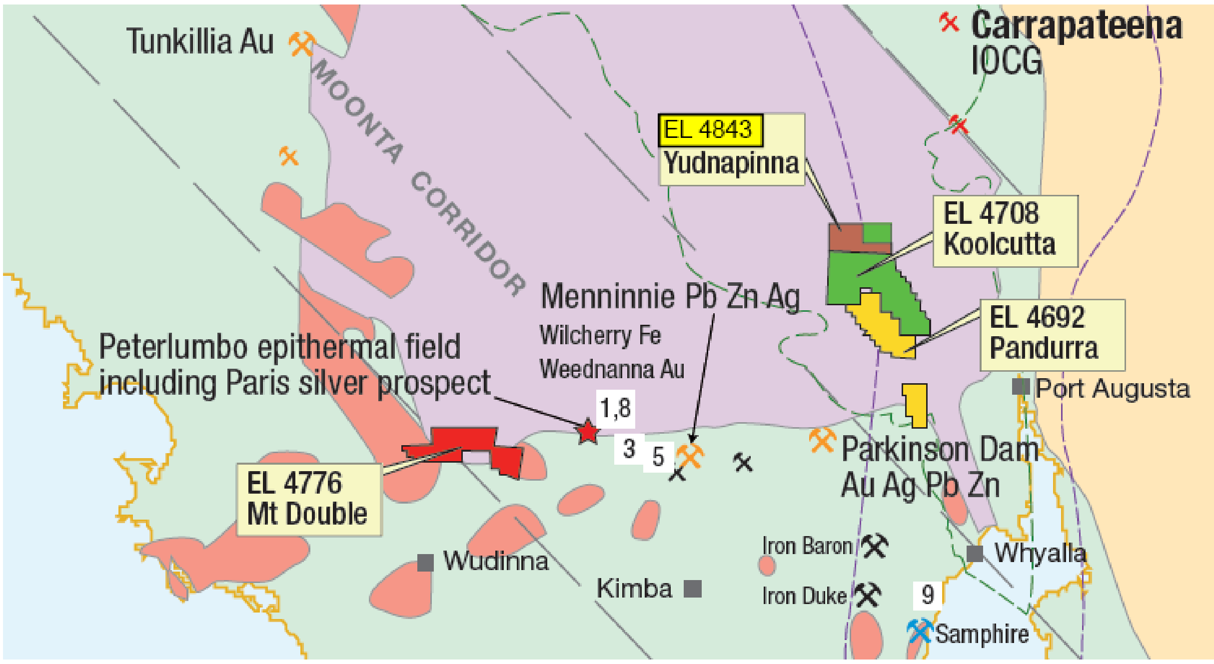
COMBINED FINAL ANNUAL TECHNICAL REPORT
PANDURRA PROJECT

For the Period ending 5 May 2014

EL 4692 Pandurra
EL 4708 Koolcutta
EL 4843 Yudnapinna

Prepared by David Paterson
Director
Spencer Resources Ltd now Bulletproof Group Ltd

Date 6 June 2014



1. TENURE

The Pandurra Project comprised 3 exploration licences originally covering approximately 982 sq km. The registered title holders were Spencer Resources Limited (SPENCER) 80% and Minotaur Operations Pty Ltd (MOPL) 20%. Spencer Resources Limited changed its name to Bulletproof Group Limited (BPF) on 15 January 2014.

On 28 October 2013 Spencer announced to the Australian Stock Exchange Ltd its intended acquisition of Bulletproof Networks Pty Ltd an established business involved in providing and managing Cloud based computer infrastructure. This involved a decision by Spencer to focus on this new business sector and it was announced at the time Spencer exploration interests would be divested.

Following an assessment of market conditions, significantly depressed interest in green fields exploration for uranium and discussion with MOPL it was agreed by the joint owners to exit the 3 Pandurra Block titles.

EL 4843 Yudnapinna was due to expire on 4 April 2014. A renewal application was not lodged with DMITRE Mineral Tenements and the department was advised of the holders intentions. The licence subsequently expired.

DMITRE Mineral Tenements was also provided with Surrender paperwork for EL 4692 Pandurra and EL 4708 Koolcutta on or about 3 April 2014. BPF was advised by DMITRE Mineral Tenements that surrender of both EL 4708 and EL 4692 had been recorded in the Mining register effective 2 May 2014.

2. WORK COMPLETED

Work completed on the Pandurra Project is covered in a Combined Annual Technical Report for the period ending 31 May 2013 prepared by Spencer consultant PetraSearch (Baheta Enday) and dated 27 June 2013. No further field work has been carried out. Neither has there been any further office or geophysical or other data processing been undertaken.

Work since 27 June 2013 was conceptually related and focused on identifying effective, focused and cost efficient methods of exploration for deep unconformity related Uranium accumulations. Efforts to attract potential joint venture partners were not productive due primarily to low to non existent sentiment in the industry for grass roots uranium exploration.

3. EXENDITURE

9. EXPENDITURE

Table 4: Expenditure for the period ending 31 May 2013

Activity	EL4692 Pandurra	EL4708 Koolcutta	EL 4843 Yudnapinna	Combined totals $
Professional Geology	20,658	13,463	15,608	49,729
Geochemical assays	456	456	456	1,368
Airborne Geophysics	19,953	21,637	0	41,590
Drafting	1,068	1,068	1,068	3,203
Field camp costs	771	771	771	2,314
Tenement managements & related	9,146	3,026	9,146	21,318
Overheads	**5,205**	**4,042**	**2,705**	**11,952**
Total this period	**57,256**	**44,463**	**29,754**	**131,474**
Total since grant	**76,675**	**64,054**	**30,594**	**171,323**

The table above is extracted from the Combined Annual Technical Report for the period ending 31 May 2013 and dated 27 June 2013 (refer page 9)

Additional expenditure to that above is limited and comprises $4,076 and $3,084 for EL 4843 and EL 4708 respectively. This covered consultant geological services, tenement licencing and administration costs (10%).

David Paterson
6 June 2014

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