Goldstream – Titan Joint Venture
Corinna Project

EL 43/94 : Relinquishment Report August 2002

APPENDIX 3

HELI-EM SURVEY SPECIFICATIONS FROM FUGRO

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GENERAL
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Project:          Heli EM Survey
Client:           Goldstream Mining N.L.
Client Rep:       Rob Edwards
Survey By:        GEO Instruments
GEO Number        2113 - Reece Dam A7
Survey date:      23 & 25 March 2002
Survey Base:      Zeehan


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DATA ACQUISITION
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AIRBORNE SURVEY SPECIFICATIONS

Area A:
Survey flown:                23 & 25 March 2002
Traverse line spacing:       100 metres
Traverse line direction:     340 / 160 degrees
Tie line spacing:            1000 metres approx
Tie line direction:          070 / 250 degrees approx
Survey height:               EM towed Bird at 30m agl


Electromagnetic System       Hummingbird 5 frequency EM system.
Data acquisition:            Geo Instruments Model G2002 system
                                       Geotech Hummingbird system
Aircraft:                    Squirrel helicopter

MAGNETOMETER
Type:                        Geometrics G822A Caesium vapour
Resolution:                  0.001 nT
Recording interval:          0.1 sec (approx. 3.5 metres sampling)
Installation:                Magnetometer sensor mounted in HEM bird.

NAVIGATION
Flight path navigation:      Real time satellite
                             Differential GPS system
Navigation equipment:        Fugro OMNISTAR GPS receivers
Flight path record:          WGS84 Easting/ Northing coordinates

Radar altimeter:             Collins Alt50
GPS base station locations:  Fugro OMNISTAR(Real Time DGPS)
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HUMMINGBIRD COIL SPECIFICATIONS:


Bird 2  After Julian day 67, 2002 ,
Channel             :  1     2     3     4     5
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Freq (Hz)           :  7000  6600  980   880   34000
Orientation         :  CX    CP    CX    CP    CP
Coil Separation (m) :  6.25  6.25  6.03  6.03  4.79



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DATA PROCESSING
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MAGNETIC DATA
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The magnetic data has been corrected for regional gradient by subtraction of IGRF model 2001.9 and secular variation model 1995-2000. Diurnal variations have been removed. System parallax has been removed. Tieline levelling has been applied. Microlevelling has been applied. The mean diurnal value and the IGRF base value have been added to the data.

ELECTROMAGNETIC DATA
The electromagnetic data has been filtered to remove the effects of sferics and other noise sources. Data has been corrected for system drift by subtraction of background zero levels determined from high altitude callibration data. System parallax has been removed. Apparent resistivities have been calculated using the Inversion techniques using the Geosoft HEM module. Inphase and quadrature channels have been levelled to remove residual flight line features in apparent resistivities.   Microlevelling has been applied.

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GRIDDING - Electromagnetics-  Inphase & quad
Algorithm:                    Minimum Curvature
Grid mesh size:               20 x 20 metres
Grid filter:                  None

GRIDDING - Electromagnetics-  Resistivities & Conductivity
Algorithm:                    Minimum Curvature
Grid mesh size:               20 x 20 metres
Grid filter:                  none

GRIDDING - Magnetics:
Algorithm:                    Minimum Curvature
Grid mesh size:               20 x 20 metres
Grid filter:                  None

GRIDDING - Digital Terrain:
Algorithm:                    Minimum Curvature
Grid mesh size:               20 x 20 metres
Grid filter:                  3x3 mean
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LINE NUMBERING
Line numbers are in the form 'TLLLAA' where
T = Line type (1 = traverse, 7 = tie)
LLL = Line sequence number
AA = Line attempt number

eg: 100201 is traverse line 2 attempt 1
704802 is tie lie 48 attempt 2


BIBLIOGRAPHIC REFERENCE
Surveyed by:               GeoInstruments Pty Ltd
Geo Instruments job number:    2113
Processed by:              GeoInstruments Pty Ltd
Grid production by:        GeoInstruments Pty Ltd




EM DATA:
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Nomenclature for field name / processing relationship:

'_ppm'            Raw data:
'_F_L'            Filtered and levelled data.
'_F_LD'           Filtered, levelled and microlevelled data.
'_AResistINV'     Apparent Resistivity ohms/m calculated using the INVERSION
                  technique.
'_ACondINV'       Apparent Conductivity uS/m calculated using the INVERSION
                  technique.


GRIDDED DATA FILES:
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Files:            Extensions as for processed data above.
Format:           ER Mapper


Cell size:  20 metres

Datum:            AGD66
Projection:       TMAMG
Zone:             55
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            LOCATED DATA FORMAT
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Field               Field Name            Description
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Field	Field Name	Description
Column 1	LineNo_TLLLAA	line number (TLLLAA)
Column 2	FlightNo	flight
Column 3	Julian_Day	julian_day (YYYYDDD)
Column 4	Fid_geo	fiducial- Geoinstruments acqusition system
Column 5	Fid_humm	fiducial- HEM acqusition system
Column 6	Time_hh	time (decimal hours)
Column 7	AGD66TMAMG55_East	AGD66 easting (metres, TMAMG Zone 55)
Column 8	AGD66TMAMG55_North	AGD66 northing (metres, TMAMG Zone 55)
Column 9	GDA94MGA55_East	GDA94 easting (metres, MGA Zone 55)
Column 10	GDA94MGA55_North	GDA94 northing (metres, MGA Zone 55)
Column 11	AGD66GEODETIC_LAT	AGD66 longitude (decimal degrees, GEODETIC)
Column 12	AGD66GEODETIC_LONG	AGD66 latitude (decimal degrees, GEODETIC)
Column 13	GDA94GEODETIC_LAT	GDA94 longitude (decimal degrees, GEODETIC)
Column 14	GDA94GEODETIC_LONG	GDA94 latitude (decimal degrees, GEODETIC)
Column 15	Mag_Raw	Raw uncompensated magnetics (nanoTeslas)
Column 16	GPSalt_Raw	Raw GPS height (metres)
Column 17	Radalt_Raw	Raw radar altimeter (metres)
Column 18	Diurnal	Diurnal magnetics (nanoTeslas)
Column 19	IGRF	IGRF magnetics (nanoTeslas)
Column 20	TMI_Corrected	Diurnal & IGRF corrected magnetics (nanoTeslas)
Column 21	TMI_Levelled	Levelled magnetics (nanoTeslas)
Column 22	TMI_Final	Final magnetics microlevelled (nanoTeslas)
Column 23	GPSalt_Final	Final GPS height (metres, AHD)
Column 24	Radalt_Final	Final Radar altimeter (metres)
Column 25	DTM_Final	Final digital terrain model (metres, AHD)
Column 26	cx7Ki_PPM	Raw cx7Ki (ppm)
Column 27	cx7Kq_PPM	Raw cx7Kq (ppm)
Column 28	cp6Ki_PPM	Raw cp6Ki (ppm)
Column 29	cp6Kq_PPM	Raw cp6Kq (ppm)
Column 30	cx980i_PPM	Raw cx980i (ppm)
Column 31	cx980q_PPM	Raw cx980q (ppm)
Column 32	cp880i_PPM	Raw cp880i (ppm)
Column 33	cp880q_PPM	Raw cp880q (ppm)
Column 34	cp34ki_PPM	Raw cp34ki (ppm)
Column 35	cp34kq_PPM	Raw cp34kq (ppm)
Column 36	cx7Ki_F_L	Filtered & Levelled cx7Ki (ppm)
Column 37	cx7Kq_F_L	Filtered & Levelled cx7Kq (ppm)
Column 38	cp6Ki_F_L	Filtered & Levelled cp6Ki (ppm)
Column 39	cp6Kq_F_L	Filtered & Levelled cp6Kq (ppm)
Column 40	cx980i_F_L	Filtered & Levelled cx980i (ppm)
Column 41	cx980q_F_L	Filtered & Levelled cx980q (ppm)
Column 42	cp880i_F_L	Filtered & Levelled cp880i (ppm)
Column 43	cp880q_F_L	Filtered & Levelled cp880q (ppm)
Column 44	cp34ki_F_L	Filtered & Levelled cp34ki (ppm)
Column 45	cp34kq_F_L	Filtered & Levelled cp34kq (ppm)
Column 46	cx7Ki_F_LD	Final Levelled cx7Ki (ppm)
Column 47	cx7Kq_F_LD	Final Levelled cx7Kq (ppm)
Column 48	cp6Ki_F_LD	Final Levelled cp6Ki (ppm)

Column 49	cp6Kq_F_LD	Final Levelled cp6Kq (ppm)
Column 50	cx980i_F_LD	Final Levelled cx980i (ppm)
Column 51	cx980q_F_LD	Final Levelled cx980q (ppm)
Column 52	cp880i_F_LD	Final Levelled cp880i (ppm)
Column 53	cp880q_F_LD	Final Levelled cp880q (ppm)
Column 54	cp34ki_F_LD	Final Levelled cp34ki (ppm)
Column 55	cp34kq_F_LD	Final Levelled cp34kq (ppm)
Column 56	cp34k_AResistINV	Apparent cp34k Resistivity (ohms/m) INVERSION technique.
Column 57	cp6k_AResistINV	Apparent cp6k Resistivity (ohms/m) INVERSION technique.
Column 58	cp880_AResistINV	Apparent cp880 Resistivity (ohms/m) INVERSION technique.
Column 59	cx7K_AResistINV	Apparent cx7K Resistivity (ohms/m) INVERSION technique.
Column 60	cx980_AResistINV	Apparent cx980 Resistivity (ohms/m) INVERSION technique.
Column 61	cp34k_ACondINV	Apparent cp34k Conductivity (uS/m) INVERSION technique.
Column 62	cp6k_ACondINV	Apparent cp6k Conductivity (uS/m) INVERSION technique.
Column 63	cp880_ACondINV	Apparent cp880 Conductivity (uS/m) INVERSION technique.
Column 64	cx7k_ACondINV	Apparent cx7K Conductivity (uS/m) INVERSION technique.
Column 65	cx980_ACondINV	Apparent cx980 Conductivity (uS/m) INVERSION technique.

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========================================================================
          LOCATED DATA FILES
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Data type:              Geosoft GDB


Archive Media:          CDs (Joliet format)


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