Lower Macquarie River Airborne Electromagnetic (AEM) Mapping Survey

Acquisition and Processing Report

for

Commonwealth of Australia

Represented by and acting through the Department of Agriculture, Fisheries and Forestry, **Bureau of Rural Sciences** (**Commonwealth**)

Prepared by : M. Noteboom ……………………………..

L. Stenning ……………………………..

Authorised for release by : ……………………………..

……………………………..

Survey flown: December 2006 – April 2007

by

Fugro Airborne Surveys
65 Brockway Road, Floreat. WA 6014, Australia
Tel: (61-8) 9273 6400 Fax: (61-8) 9273 6466

FAS JOB # 1835

CONTENTS

SURVEY OPERATIONS AND LOGISTICS

1.1 Introduction

Between the 14th of December 2006 and the 19th of April 2007, Fugro Airborne Surveys Pty. Ltd., (FAS) undertook an airborne TEMPEST electromagnetic and magnetic survey for the Commonwealth of Australia, over the Lower Macquarie River Project area in New South Wales. The survey was flown over two areas with total coverage of the survey amounting to 35,189 line kilometres flown in 118 flights. The survey was flown using a Casa C212-200 Turbo Prop aircraft, registration VH-TEM, and a Shorts Skyvan SC7 aircraft, registration VH-WGT, both owned and operated by FAS. This report summarises the procedures and equipment used by FAS in the acquisition, verification and processing of the airborne geophysical data.

1.2 Survey Base

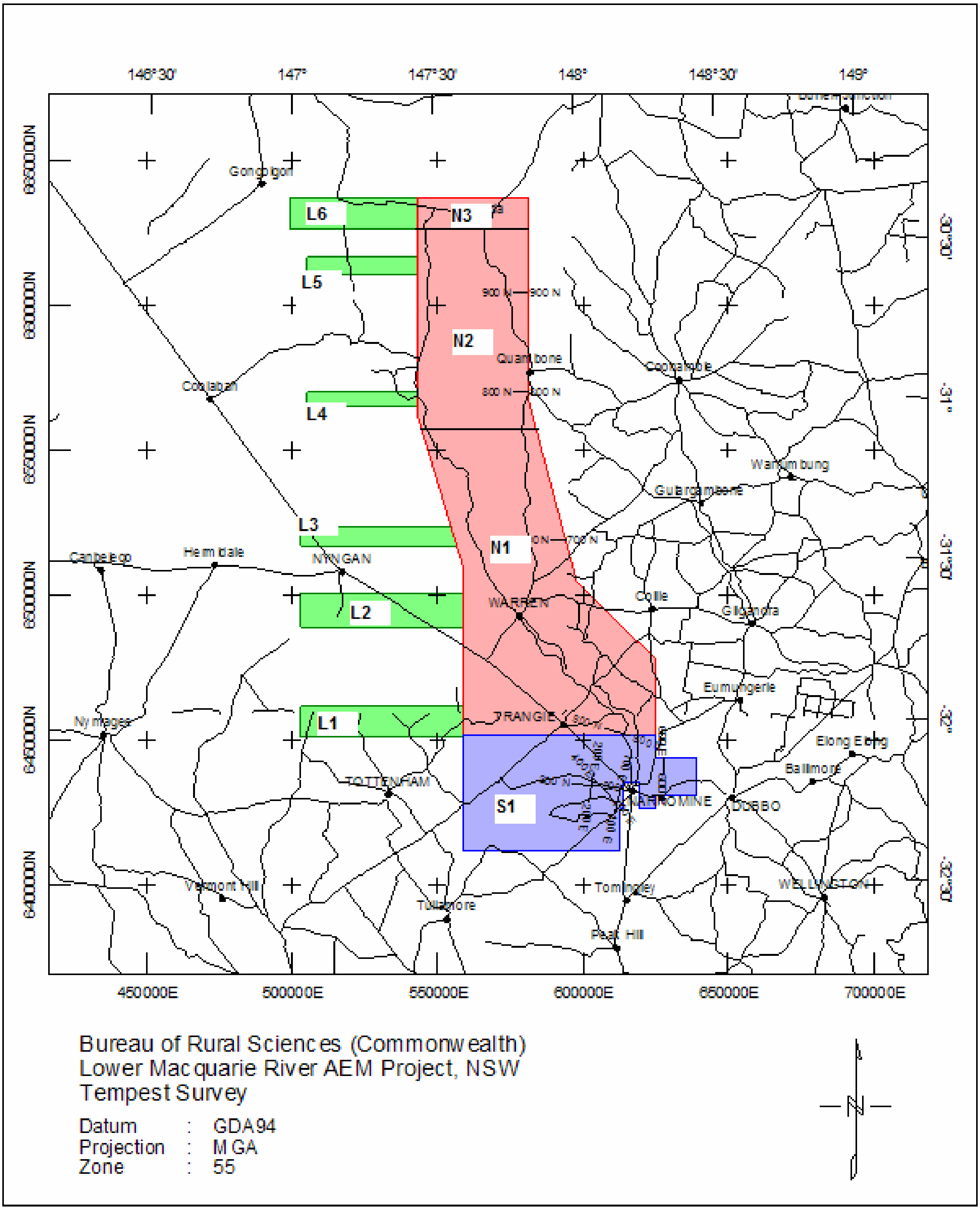
The survey was based out of Dubbo and Coonamble, New South Wales. The survey aircraft were operated from the Dubbo and Coonamble airports with the aircraft fuel available on site. Temporary offices were set up in rooms at the Tallarook Motor Inn, Dubbo, and the Castlereagh Motel, Coonamble, from where all survey operations were run and the post-flight data verification was performed.

1.3 Survey Personnel

The following personnel were involved in this project:

Project Supervision	- Acquisition	Bart Anderson
	- Processing	Matthew Owers, Kathlene Oliver
Pilot/s		Grant Hamilton
		Joshua Cox
		Mark Harradence
		Mick Young
		Peter Hiskins
		Til Ribarich
		Tim Haldane
System Operator/s		Adam Ellis
		Danial Green
		Glendon Turner
		Luke Young
		Michael Wirski
		Scott Miller
Field Data Processing		Martyn Allen
		Kah Tho Lee
		Matthew Lawrence
		Matthew Noteboom
		Nadir Halim
		Stephen Carter
Office Data Processing		Matthew Noteboom
		Glenn Gooch

1.4 Area Map


146°30'
147°
147°30'
148°
148°30'
149°
6650000N
6600000N
6550000N
6500000N
6450000N
6400000N
-30°30'
-31°
-31°30'
-32°
-32°30'
450000E
500000E
550000E
600000E
650000E
700000E
L6
L5
L4
L3
L2
L1
N3
N2
N1
S1
900 N
800 N
Gongolgon
Quambone
Coonamble
Collaburi
Warrumbung
Gulargambone
Canbelego
Hermidale
NYNGAN
WARREN
Coolle
Gilgandra
Eumungerie
Nymagee
TRANGIE
Elong Elong
Ballimore
TOTTENHAM
NARROMINE
DUBBO
Vermont Hill
Tomingley
WELLINGTON
Tullamore
Peak Hill
Bureau of Rural Sciences (Commonwealth)
Lower Macquarie River AEM Project, NSW
Tempest Survey
Datum : GDA94
Projection : MGA
Zone : 55
N

SURVEY SPECIFICATIONS AND PARAMETERS

1.5 Area Co-ordinates

The survey area was located within Universal Transverse Mercator (UTM) Zone 55S, Central Meridian = 147º E
Note - Co-ordinates in Geocentric Datum of Australia 1994 (GDA94), Map Grid of Australia zone 55 (MGA55)

Coordinates of Survey Area S1 (Southern Survey Area).

Vertex	Easting (m)	Northing (m)	Vertex	Easting (m)	Northing (m)
1	558900	6411900	8	624900	6426300
2	558900	6451800	9	619500	6426300
3	624900	6451800	10	619500	6435900
4	624900	6444000	11	613800	6435900
5	639000	6444000	12	613800	6426300
6	639000	6431100	13	612600	6426300
7	624900	6431100	14	612600	6411900

Coordinates of the polygon that encloses Survey Areas N1, N2, N3, L1, L2, L3, L4, L5 and L6 i.e. the complete area to be flown with east-west lines (Northern Survey Area).

Vertex	Easting (m)	Northing (m)	Vertex	Easting (m)	Northing (m)
1	499200	6637200	16	503100	6517200
2	581100	6637200	17	503100	6523500
3	581100	6567437	18	554672	6523500
4	597855	6504531	19	543300	6561106
5	624900	6477900	20	543300	6565200
6	624900	6451200	21	505200	6565200
7	503100	6451200	22	505200	6570000
8	503100	6462000	23	543300	6570000
9	558900	6462000	24	543300	6610200
10	558900	6489000	25	505200	6610200
11	503100	6489000	26	505200	6616800
12	503100	6500700	27	543300	6616800
13	558900	6500700	28	543300	6626400
14	558900	6509516	29	499200	6626400
15	556550	6517200			

Coordinates of Survey Area N1, L1, L2 and L3 (300m/900m spacing)

Vertex	Easting (m)	Northing (m)	Vertex	Easting (m)	Northing (m)
1	581100	6567437	10	503100	6500700
2	597855	6504531	11	558900	6500700
3	624900	6477900	12	558900	6509516
4	624900	6451200	13	556550	6517200
5	503100	6451200	14	503100	6517200
6	503100	6462000	15	503100	6523500
7	558900	6462000	16	554672	6523500
8	558900	6489000	17	544239	6558000
9	503100	6489000	18	583614	6558000

Coordinates of Survey Area N2, L4 and L5 (600m spacing)

Vertex	Easting (m)	Northing (m)	Vertex	Easting (m)	Northing (m)
1	543300	6561106	8	505200	6616800
2	543300	6565200	9	543300	6616800
3	505200	6565200	10	543300	6626400
4	505200	6570000	11	581100	6626400
5	543300	6570000	12	581100	6567437
6	543300	6610200	13	583614	6558000
7	505200	6610200	14	544239	6558000

Coordinates of Survey Area N3 and L6 (300m/900m spacing)

Vertex	Easting (m)	Northing (m)
1	499200	6637200
2	581100	6637200
3	581100	6626400
4	499200	6626400

Line Coordinates for Seismic and Borehole Lines

Line #	Surveyed Line #	Easting	Northing	Easting	Northing
100	81090	613347	6434698	610966	6424986
200	82090	601924	6428719	603589	6438579
300	93090	596009	6435176	605968	6434261
400	84162, 84260	603860	6436700	610600	6429300
500	85010, 85161	606908	6454490	616415	6451390

Line Coordinates for Repeat Calibration Lines

Line #	Surveyed Line #	Easting	Northing	Easting	Northing
600	86xxa	627600	6439000	627600	6444000
700	87xxa	589001	6519000	594001	6519000
800	88xxa	576100	6570000	581100	6570000
900	89xxa	576100	6604800	581100	6604800

Note – "xx" is flight number in which repeat line was flown, "a" is attempt number See Appendix III for details.

1.6 Survey Area Parameters

Coverage specifications for Survey Area S1

Line spacing	300 metres
Tie line spacing	N/A
Line direction	0° grid (constant Easting)
Tie line direction	N/A
Terrain clearance	116m
Approximate line kilometres	8,661 kilometres
Project number	1140

Coverage specifications for Survey Areas N1, N2, N3, L1, L2, L3, L4, L5 AND L6

Line spacing	300m for Survey Areas N1 and N3 600m for Survey Areas N2, L4 and L5 900m for Survey Areas L1, L2, L3 and L6
Tie line spacing	N/A
Line direction	90° grid (constant Northing)
Tie line direction	N/A
Terrain clearance	116m
Approximate line kilometres	26,529 kilometres
Project number	1140

Coverage specifications for Seismic/Borehole/Calibration lines

Line spacing	N/A
Tie line spacing	N/A
Line direction	Multiple headings
Tie line direction	N/A
Terrain clearance	116m
Approximate distance (planned)	70 km
Line kilometres flown	235.5 km
Project number	1140

Job Number	-	1835
Survey Company	-	Fugro Airborne Surveys Pty Ltd
Date Flown	-	14th December 2006 – 19th April 2007
Client	-	Commonwealth of Australia
EM System	-	25 Hz TEMPEST
Navigation	-	Real-time differential GPS
Datum	-	GDA94 (MGA 55)
Nominal Terrain Clearance	-	116 m

1.7 Job Safety Plan

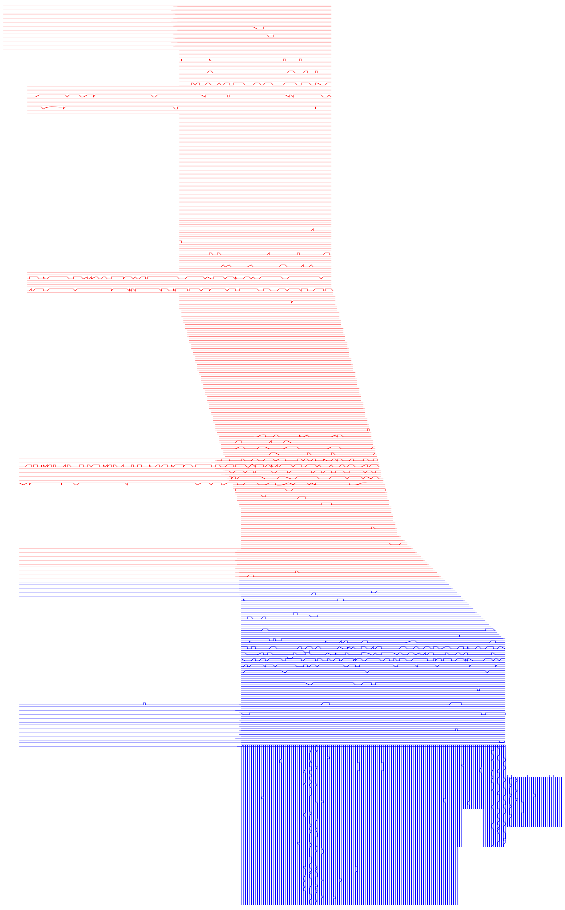
A Job Safety Plan was prepared and implemented in accordance with the Fugro Airborne Surveys Occupational Safety & Health Management System.

2. AIRCRAFT EQUIPMENT AND SPECIFICATIONS

2.1 Aircraft

Manufacturer	-	CASA
Model	-	C212-200 Turbo Prop
Registration	-	VH-TEM
Ownership	-	Fugro Airborne Surveys Pty Ltd
System number		1 (system flag in delivered dataset)

Manufacturer	-	Shorts SKYVAN
Model	-	SC7
Registration	-	VH-WGT
Ownership	-	Fugro Airborne Surveys Pty Ltd
System number		2 (system flag in delivered dataset)



Lines flown with VH-WGT are coloured blue; lines flown with VH-TEM are coloured red.

2.2 TEMPEST System Specifications

Specifications of the TEMPEST Airborne EM System (Lane et al., 2000) are:

- Base frequency - 25 Hz
- Transmitter area - 221 m^2 (TEM) 186 m^2 (WGT)
- Transmitter turns - 1
- Waveform - Square
- Duty cycle - 50%
- Transmitter pulse width - 10 ms
- Transmitter off-time - 10 ms
- Peak current - 280 A (TEM) 300 A (WGT)
- Peak moment - 61880 Am^2 (TEM) 55800 Am^2 (WGT)
- Average moment - 30940 Am^2 (TEM) 27900 Am^2 (WGT)

- Sample rate - 75 kHz on X and Z
- Sample interval - 13.333 microseconds
- Samples per half-cycle - 1500
- System bandwidth - 25 Hz to 37.5 kHz
- Tx Loop Flying height nominal - 116 m (subject to safety considerations)
- Tx Loop Flying height average - 116.0 (TEM) 118.2 (WGT)
- EM sensor - Towed bird with 3 component dB/dt coils
- Tx-Rx horizontal separation average- -120.7 (TEM) -114.9 (WGT)
- Tx-Rx vertical separation average - -39.4 (TEM) -45.2 (WGT)
- Tx-Rx horizontal separation standard- -115 m (geometry corrected standard)
- Tx-Rx vertical separation standard - -45 m (geometry corrected standard)
- Stacked data output interval - 200 ms (~12 m)
- Number of output windows - 15
- Window centre times - 13 μs to 16.2 ms
- Magnetometer - Stinger-mounted caesium vapour
- Magnetometer compensation - Fully digital
- Magnetometer output interval - 200 ms (~12 m)
- Magnetometer resolution - 0.001 nT
- Typical noise level - 0.2 nT
- GPS cycle rate - 1 second

2.2.1 EM Receiver and Logging Computer

The EM receiver computer is a Picodas PDAS-1000 data acquisition system. The EM receiver computer executes a proprietary program for system control, timing, data acquisition and recording. Control, triggering and timing is provided to the TEMPEST transmitter and Digital Signal Processing (DSP) boards by the timing card, which ensures that all waveform generation and sampling is accomplished with high accuracy. The timing card is synchronised to the Global Positioning System (GPS) through the use of the Pulse Per Second (PPS) output from the system GPS card. Synchronisation is also provided to the magnetometer processor card for the purpose of accurate magnetic sampling with respect to the EM transmitter waveform.

The EM receiver computer displays information on the main screen during system calibrations and survey line acquisition to enable the airborne operator to assess the data quality and performance of the system.

2.2.2 TEMPEST Transmitter

The transmitted waveform is a square wave of alternating polarity, which is triggered directly from the EM receiver computer. The nominal transmitter base frequency was 25 Hz with a pulse width of 10ms (50 % duty cycle). Loop current waveform monitoring is provided by a current transformer located directly in the loop current path to allow for full logging of the waveform shape and amplitude, which is sampled by the EM receiver.

2.2.3 TEMPEST 3-Axis Towed Bird Assembly

The TEMPEST 3-axis towed bird assembly provides accurate low noise sampling of the X (horizontal in line), Y (horizontal transverse) and Z (vertical) components of the electromagnetic field. Note that the Y component data were sampled at a lower rate and were not processed or delivered in the dataset for this survey. The receiver coils measure the time rate of change of the magnetic field (dB/dt). Signals from each axis are transferred to the aircraft through a tow cable specifically designed for its electrical and mechanical properties.

2.3 PDAS 1000 Survey Computer

The SURVEY computer is a PICODAS PDAS 1000 data acquisition system. The SURVEY computer executes a proprietary program for acquisition and recording of location, magnetic and ancillary data.

Data are presented both numerically and graphically in real time on the Video Graphics Array (VGA) Liquid Crystal Display (LCD) display, which provides an on-line display capability. The operator may alter the sensitivity of the displays on-line to assist in quality control. Selected EM data are transferred from the EM receiver computer to the SURVEY computer for quality control (QC) display.

2.3.1 Caesium Vapour Magnetometer Sensor

A caesium vapour magnetometer sensor is utilised on the aircraft and consists of the sensor head, cable and the sensor electronics. The sensor head is housed at the end of a composite material tail stinger.

2.3.2 Magnetometer Processor Board

A Picodas magnetometer processor board is used for de-coupling and processing the Larmor frequency output of the magnetometer sensor. The processor board interfaces with the PDAS 1000 survey computer, which initiates data sampling and transfer for precise sample intervals and also with the EM receiver computer to ensure that the magnetic samples remain synchronised with the EM system.

2.3.3 Fluxgate Magnetometer

A tail stinger mounted Bartington MAG-03MC three-axis fluxgate magnetometer is used to provide information on the attitude of the aircraft. This information is used for compensation of the measured magnetic total field.

2.3.4 GPS Receiver

A Novatel GPScard 951R is utilised for airborne positioning and navigation. Satellite range data are recorded for generating post processed differential solutions.

2.3.5 Differential GPS Demodulator

The OMNISTAR differential GPS service provides real time differential corrections.

2.4 Navigation System

A Picodas PNAV 2001 Navigation Computer is used for real-time navigation. The PNAV computer loads a pre-programmed flight plan from disk which contains boundary co-ordinates, line start and end co-ordinates, local co-ordinate system parameters, line spacing, and cross track definitions. The World Geodetic System 1984 (WGS84) latitude and longitude positional data received from the Novatel GPScard contained in the SURVEY computer is transformed to the local co-ordinate system for calculation of the cross track and distance to go values. This information, along with ground heading and ground speed, is displayed to the pilot numerically and graphically on a two line LCD display, and on an analogue Horizontal Strip Indicator (HSI). It is also presented on a LCD screen in conjunction with a pictorial representation of the survey area, survey lines, and ongoing flight path.

The PNAV is interlocked to the SURVEY computer for auto selection and verification of the line to be flown. The GPS information passed to the PNAV 2001 navigation computer is corrected using the received real time differential data from the OMNISTAR service, enabling the aircraft to fly as close to the intended track as possible.

2.5 Altimeter System

2.5.1 Radar Altimeter

Model:	Sperry Stars RT-220 radar altimeter system (VH-TEM)
Model:	Collins ALT55 radar altimeter system (VH-WGT)
Sample interval:	0.2 second
Accuracy:	± 1.5 % of indicated altitude (both instruments).

The radar altimeters fitted to these aircraft are high quality instruments whose output is factory calibrated. The aircraft radar altitude is recorded onto hard drive as well as displayed on the aircraft chart recorder. The recorded value is the average of the altimeter's output during the previous 0.2 seconds.

2.5.2 Laser Altimeter

Model:	Optech 501SB (TEM)
	Regal LD90-3300HR (WGT)
Sample interval:	0.2 second
Accuracy:	± 0.05m at survey altitude (both instruments)

2.5.3 Barometric Altimeter

Output of a Digiquartz 215A-101pressure transducer is used for calculating the barometric altitude of the aircraft. The atmospheric pressure is taken from a gimbal-mounted probe projecting 0.5 metres from the wing tip of the aircraft and fed to the transducer mounted in the aircraft wingtip.

2.6 Video Tracking System

The video tape recorded by a PAL VHS (VH-WGT) or digital (VH-TEM) video system is synchronised with the geophysical record by a digital fiducial display, which is recorded along with GPS latitude and longitude information and survey line number.

2.7 Data Recorded by the Airborne Acquisition Equipment

Raw EM data including fiducial, local time, X and Z axis sensor response, current monitor and bird auxiliary sensor output are recorded on the EM receiver computer as "**G**" EM files.

The Survey computer records all other survey data including aeromagnetic and GPS data using as "**S**" Survey files, and "**R**" Rover files containing GPS raw range data for post processing.

3. GROUND DATA ACQUISITION EQUIPMENT AND SPECIFICATIONS

3.1 Magnetic Base Station

A CF1 magnetometer was used for VH-TEM and two Geometrics G856 magnetometers for VH-WGT to measure the daily variations of the Earth's magnetic field. The base stations were established in an area of low gradient, away from cultural influences. The base stations were run continuously throughout the survey flying period with a sampling interval of 0.5 seconds (CF1) or 5 seconds (G856) at a sensitivity of 0.1 nT. All magnetometer base stations at Dubbo were set up near an access track west of the airport, and at Coonamble (for VH-TEM only) approximately 100m from the aircraft parking position, away from the terminal building.

3.2 GPS Base Station

A GPS base logging station integrated with the CF1 unit was used for VH-TEM throughout, setup at locations as for the magnetic base stations above (see 3.1). For VH-WGT, a GPS base station comprising a Novatel receiver and portable computer was set up at the Tallarook Motor Inn, Dubbo. The GPS antenna was mounted on the balcony of the office, with the antenna set above the roof level.

Each GPS base station position was calculated by logging data continuously at the base position over a period of approximately 24 hours. These data were then averaged to obtain the position of the base station using GrafNav software.

Dubbo (VH-WGT)
The calculated GPS base position was (in WGS84):
Lat: 32° 12' 54.55194" S
Long: 148° 34' 08.06473" E
Height: 300.984 m. (WGS84 Ellipsoidal Height)

Dubbo (VH-TEM flts 32-38)
The calculated GPS base position was (in WGS84):
Lat: 32° 14' 56.37838" S
Long: 148° 35' 60.90650" E
Height: 298.882 m. (WGS84 Ellipsoidal Height)

Coonamble (VH-TEM)
The calculated GPS base position was (in WGS84):
Lat: 30° 57' 14.04442" S
Long: 148° 22' 54.80051" E
Height: 209.570 m. (WGS84 Ellipsoidal Height)

4. EM AND OTHER CALIBRATIONS AND MONITORING

At the beginning and end of each individual survey flight, the EM system is checked for background noise levels and performance. The airborne checks are conducted at a nominal terrain clearance of 1100 m (3600 ft) to eliminate ground response.

These checks include:-

4.1 Pre-Flight Barometer Calibration: Line C60FF

A recording of the barometer output at a known elevation is carried out before take-off to assist with calibration and determination of drift during the flight. The barometer is used as a back-up to the GPS for aircraft altitude. The GPS position of the aircraft in parking position is also recorded for GPS QC. *Note: FF is the flight number*

4.2 Pre/Post-Flight Transmitter-off: Lines C9000, 9006

These lines are recorded in straight and level flight with the system in standard survey geometry, with the transmitter turned off and bird response turned on to observe ambient noise and to check for noise in the receiver system (bird/coils → tow cable → winch → computer).

4.3 Pre/Post-Flight Noise Additive: Lines C9001, 9004

These lines are recorded in straight and level flight with the system in standard survey geometry, with the transmitter on and the bird response turned off at the tow cable winch. This is to check the noise contribution from the acquisition system and is used in deconvolution of survey line data.

4.4 Pre/Post-Flight Zero: Line 70FF, 71FF

These lines are recorded in straight and level flight with the system in standard survey configuration with transmitter and receiver turned on. This is used to determine the system's response in the absence of ground signal and is used to determine a standard waveform for deconvolution of survey lines. *Note: FF is the flight number*

Additionally, through all these calibrations the airborne operator can assess the system and ambient noise levels.

4.5 Pre-Flight Swoops: Line C9003

This line is recorded immediately after the pre-flight zero. During this manoeuvre the pilot conducts a series of 'swoop' manoeuvres (pitch up/pitch down) over approximately 30-40 seconds to vary the position of the towed sensor relative to the aircraft. The EM data are monitored by the airborne operator to confirm correct operation of the system during the manoeuvre. This data is used to determine coefficients used in the processing to compensate for such variations in the survey data

4.6 Post-Flight Barometer Calibration: Line C61FF

A recording of the barometer output is repeated following landing at the end of the flight to assist with calibration and determination of drift during the flight. Again, the GPS position of the aircraft in parking position is also recorded for GPS QC. *Note: FF is the flight number*

4.7 Dynamic Magnetometer Compensation

To limit aircraft manoeuvre effects on the magnetic data that can be of the same spatial wavelength as the signals from geological sources, compensation calibration lines are flown as high as practical in a low magnetic gradient area close to the survey. This involves flying a series of tests at 2500m or higher on the survey line heading and approximately 15 degrees either side to accommodate small heading variations whilst flying survey lines. The data for each heading consists of a series of aircraft manoeuvres, including pitches, rolls and yaws. This is done to artificially create the most extreme possible attitude the aircraft may encounter whilst on survey. Data from these lines are used to derive compensation coefficients for removing magnetic noise induced by the aircraft's attitude in the naturally occurring magnetic field.

Compensation data were acquired on the following dates:

Aircraft	Compensation Date	Flights Covered
VH-TEM	1/3/2007	All Flights
VH-WGT	16/1/2007	1 – 56
VH-WGT	28/3/2007	57 - 80

The following tables summarise the compensation improvement based on RMS values (in nanoTeslas) for high-pass filtered magnetic data from compensation flights.

Aircraft	Date		North	South	East	West
VH-TEM	1/3/2007	RMS Uncomp	2.23186	2.34532	2.04766	2.25468
		RMS Comp	0.15455	0.14177	0.14672	0.18308
VH-WGT	16/1/2007	RMS Uncomp	0.28943	0.16679	0.15944	0.17407
		RMS Comp	0.07604	0.08381	0.08029	0.08654
VH-WGT	28/3/2007	RMS Uncomp	0.14113	0.10225	0.11407	0.10630
		RMS Comp	0.07588	0.07697	0.07637	0.07557

4.8 Parallax Checks

Due to the relative positions of the EM towed bird and the magnetometer instruments on the aircraft and to processing / recording time lags, raw readings from each vary in position. To correct for this and to align selected anomaly features on lines flown in opposite directions, magnetics, EM data and the altimeters are 'parallaxed' with respect to the position information. System parallax is checked by flying in opposing directions over known geophysical features. This is also monitored routinely during processing of jobs and specifically checked following any major changes in the aircraft system which are likely to affect the parallax values. The last parallax check was performed in May 2006; all values were found to be consistent with previous results.

VH-TEM

Variable	Parallax Value
Magnetics	0.6 s
GPS	0 s
Radar Altimeter	0.6 s
EM – X	0.2 s
EM – Z	1.4 s

VH-WGT

Variable	Parallax Value
Magnetics	0.4 s
GPS	0 s
Radar Altimeter	0.6 s
EM - X	0.2 s
EM – Z	1.4 s

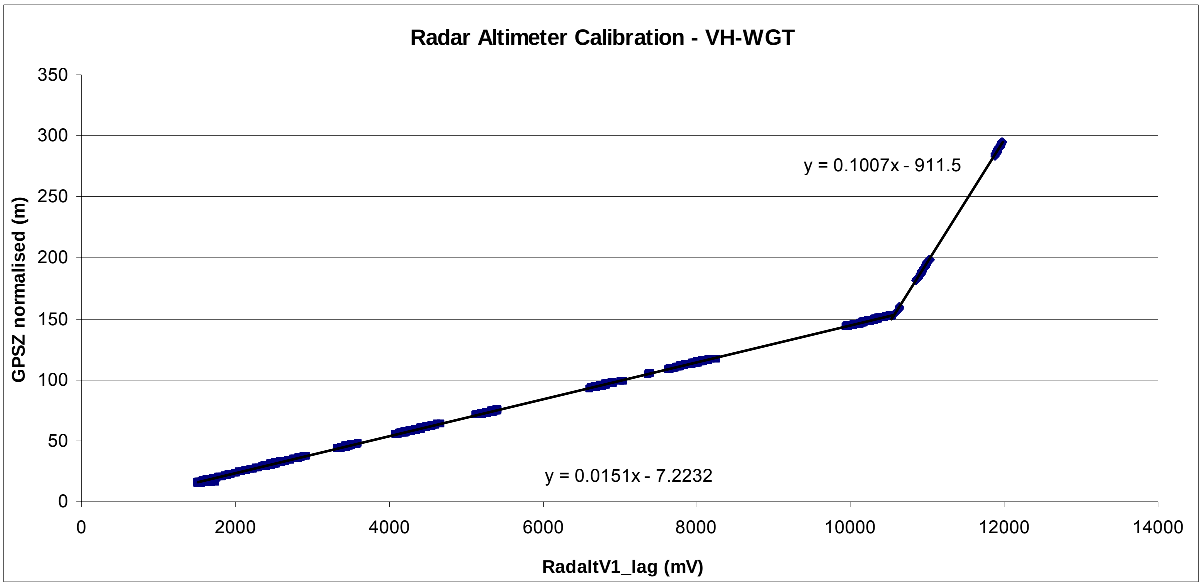
Note that a positive parallax value in the tables above indicates that samples in that data stream are moved to lower fiducial numbers.

4.9 Radar Altimeter Calibration

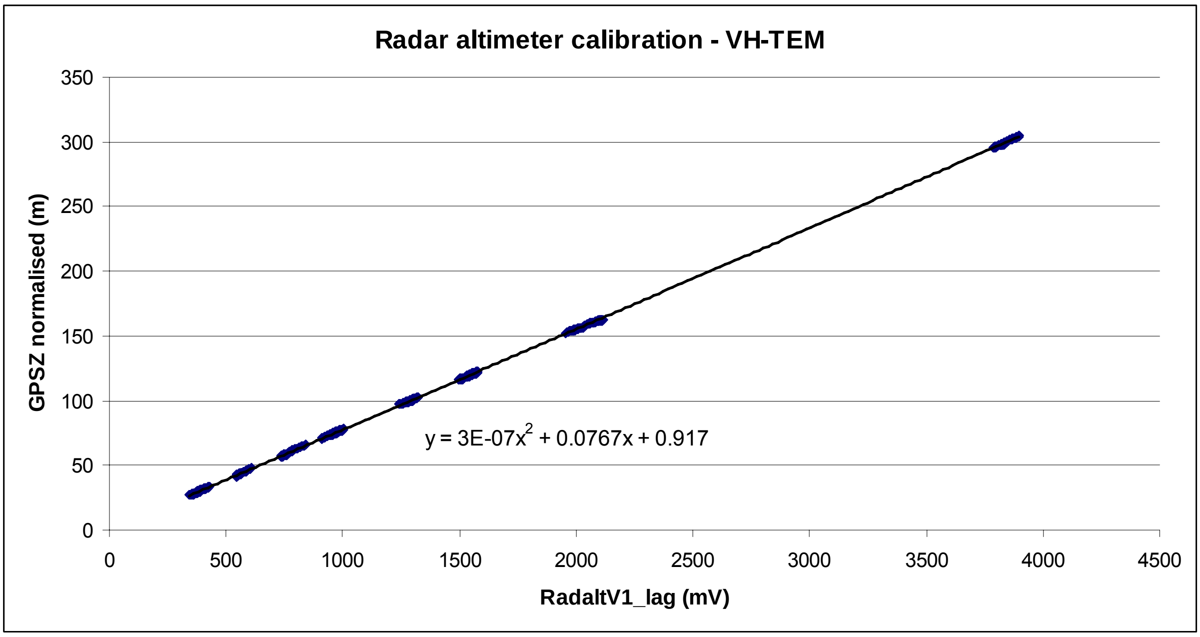
The radar altimeter is checked for accuracy and linearity every 12 months or when any change in a key system component requires this procedure to be carried out. This calibration involves flying a number of lines at a range of constant altitudes to allow the radar altimeter data to be compared to and assessed with other height data (GPS and barometric) to confirm the accuracy of the radar altimeter over its operating range.

Absolute radar calibration for VH-WGT was carried out over Dubbo airport , NSW in January 2007 and was successful in calibrating the radar altimeter to information provided by the GPS and barometer instrument.

The graph below shows the results of this calibration for VH-WGT as Radar Altimeter output (mV) versus the GPS height normalised to altitude above the airstrip (based on average GPS along the lowest altitude pass). This chart shows the linear behaviour of the radar altimeter in each range, and the coefficients to convert from millivolts to metres.



Absolute radar calibration for VH-TEM was carried out over Dubbo airport on 1st March 2007. Results are shown below. Similar to the VH-WGT results, GPS height is normalised based on a line recorded while taxiing along the runway.



4.10 Laser Altimeter Calibration

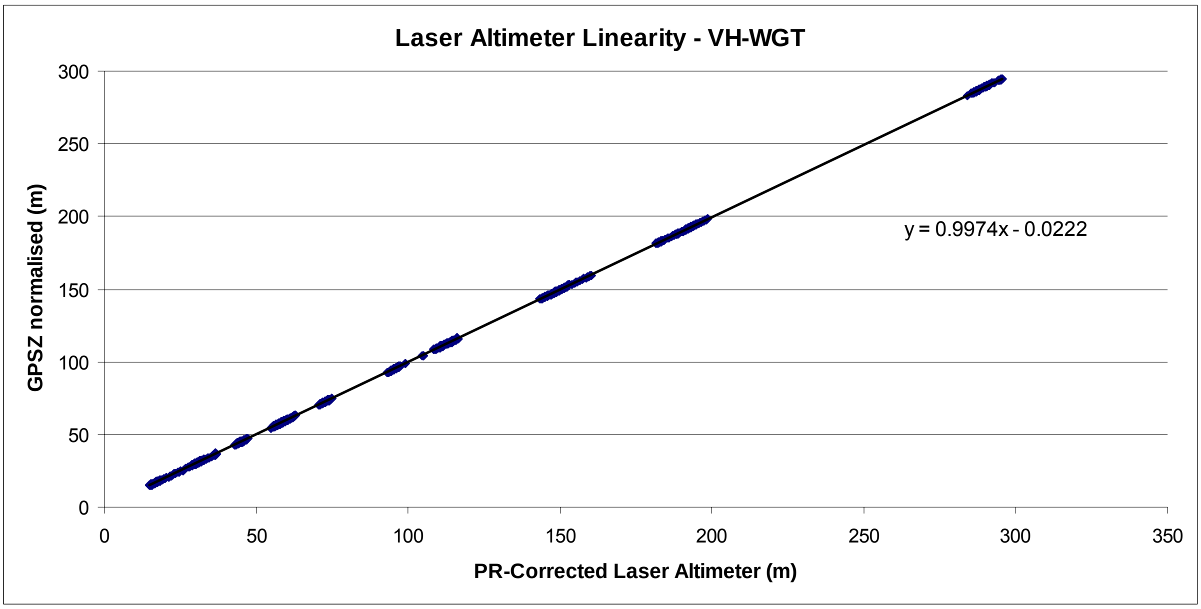
The Laser altimeters for both aircraft were checked based on the same process as that described above for the radar altimeters. The data used for VH-TEM was from the same flight and based on passes of the Dubbo airstrip, while VH-WGT flew similar passes over the Narromine airstrip. The two plots below show the laser altimeter heights compared to normalised GPS heights. Pitch and roll manoeuvres were also conducted to determine coefficients to correct for the laser's deviation from the vertical.

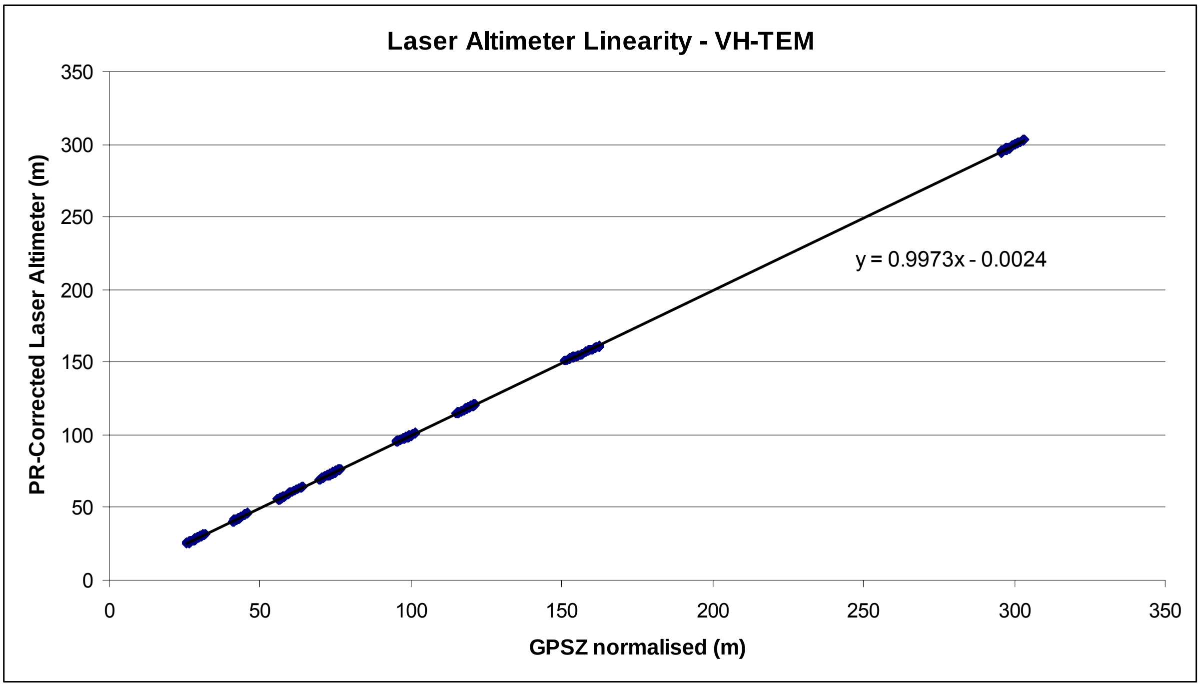
The following equation was used to correct the laser altimeter for changes in pointing direction:

$$l_c = l_m \cos(p_m + p_0)\cos(r_m + r_0) - h_l \sin(p_m + p_0)$$

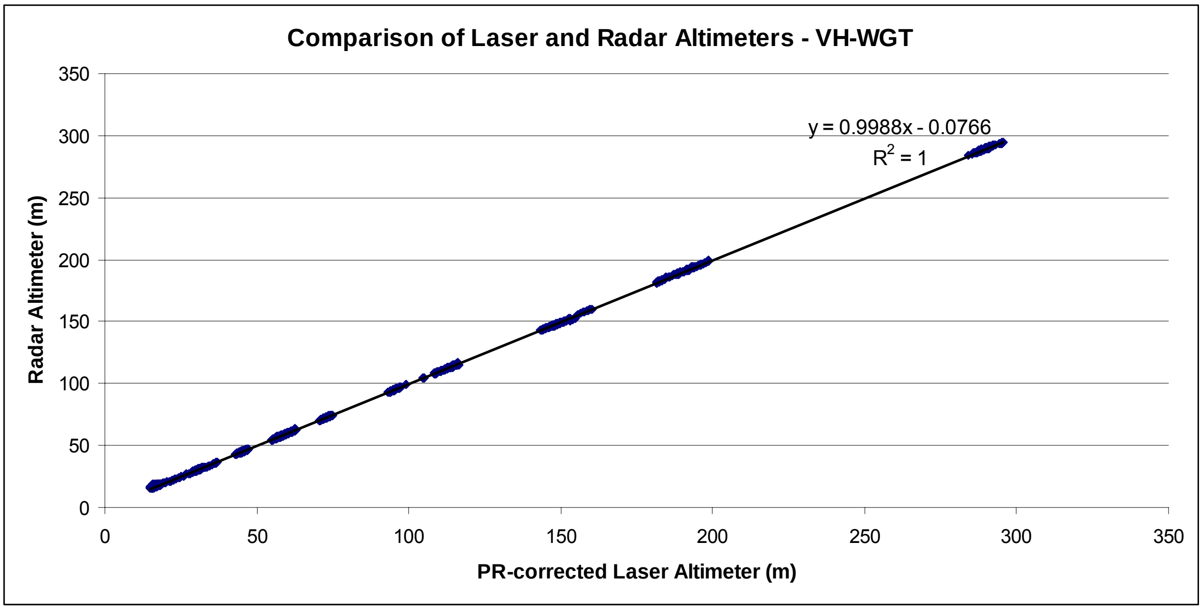
Where l_c is the corrected altimeter value, l_m the raw measured altimeter value, p_m and r_m are the measured transmitter loop pitch and roll respectively, p_0 and r_0 are the laser altimeter pointing pitch and roll offsets relative to the transmitter loop orientation respectively, and h_0 is the horizontal offset between the laser altimeter and the aircraft's centre of rotation. Based on the data acquired during the calibration flights, the following values for p_0, r_0 and h_0 were used for corrections throughout the survey.

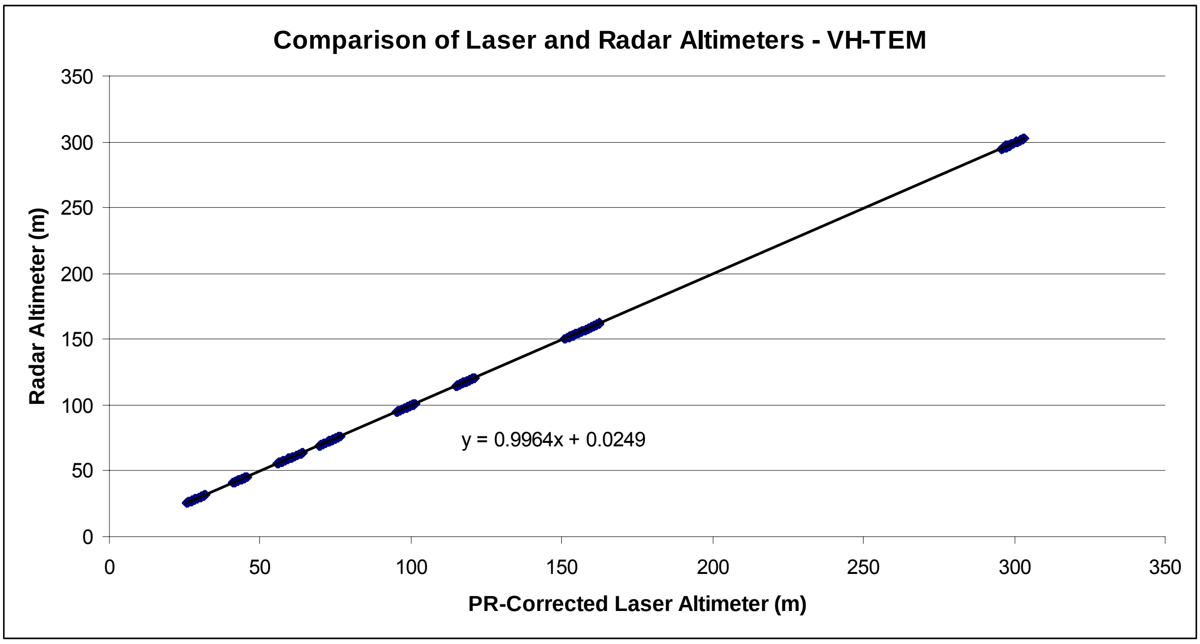
	p_0	r_0	h_0
VH-WGT	-1.00	1.60	1.03
VH-TEM	0.90	-0.10	0.42





The following two plots show the radar altimeter compared to the laser altimeter, corrected for aircraft pitch and roll.



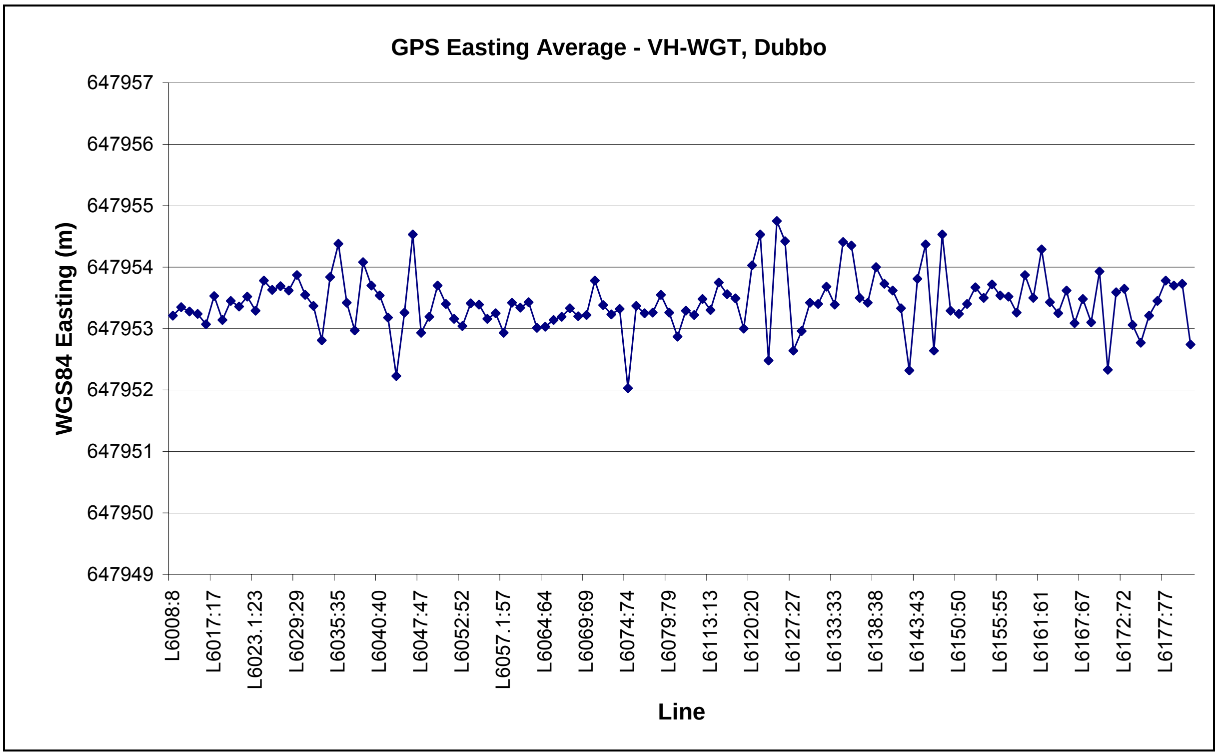


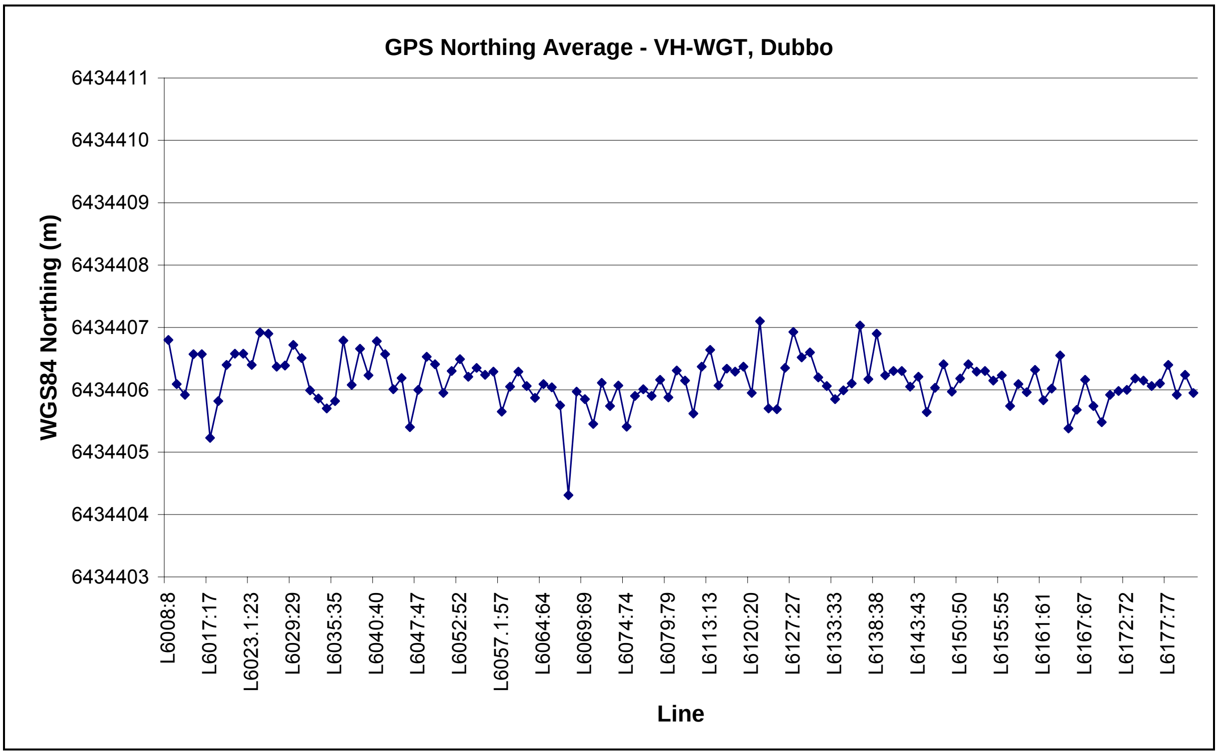
4.11 Heading Error Checks

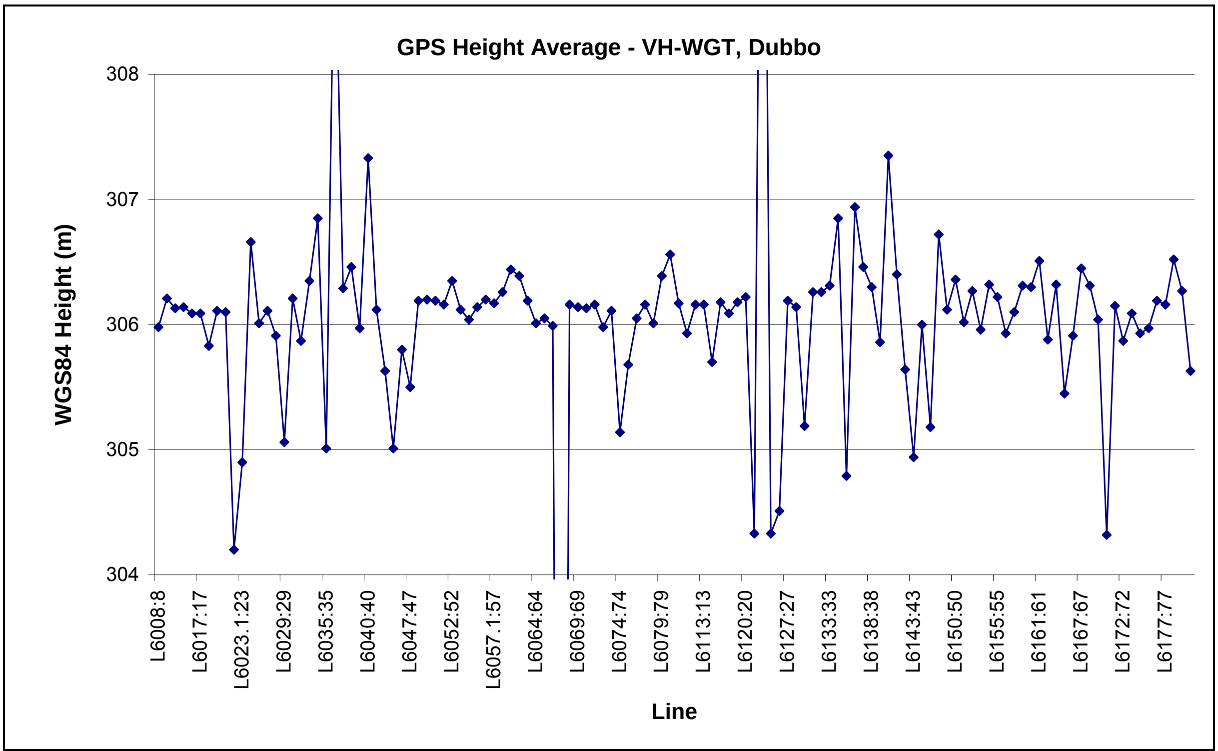
Historically, heading error checks have been part of the aeromagnetic data acquisition procedure but they are no longer used. Fugro Airborne Surveys now calculates these effects using the aircraft magnetic compensation system and specially developed software. The precision to which these effects are now calculated and corrected for is far in excess of the manual methods used in the past.

4.12 Repeat Point GPS Check

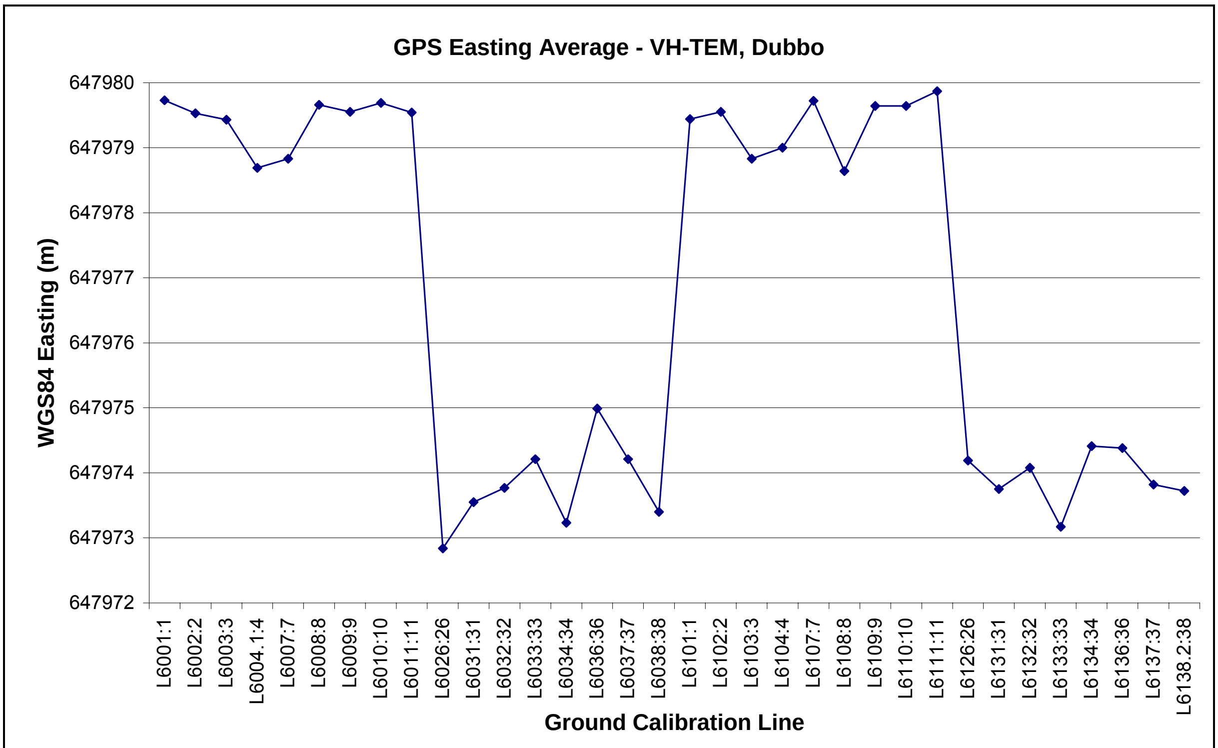
At the end of each flight the aircraft were parked as close to the same position as possible. Before and after the flight 90-120 seconds of data was recorded in this location to provide a check for consistency in navigation data. The following pages show plots of the average GPS height, northing and easting for each ground calibration during the survey. Comments on spurious data follow each plot.


GPS Easting Average - VH-WGT, Dubbo
WGS84 Easting (m)
647957
647956
647955
647954
647953
647952
647951
647950
647949
L6008:8
L6017:17
L6023.1:23
L6029:29
L6035:35
L6040:40
L6047:47
L6052:52
L6057.1:57
L6064:64
L6069:69
L6074:74
L6079:79
L6113:13
L6120:20
L6127:27
L6133:33
L6138:38
L6143:43
L6150:50
L6155:55
L6161:61
L6167:67
L6172:72
L6177:77
Line

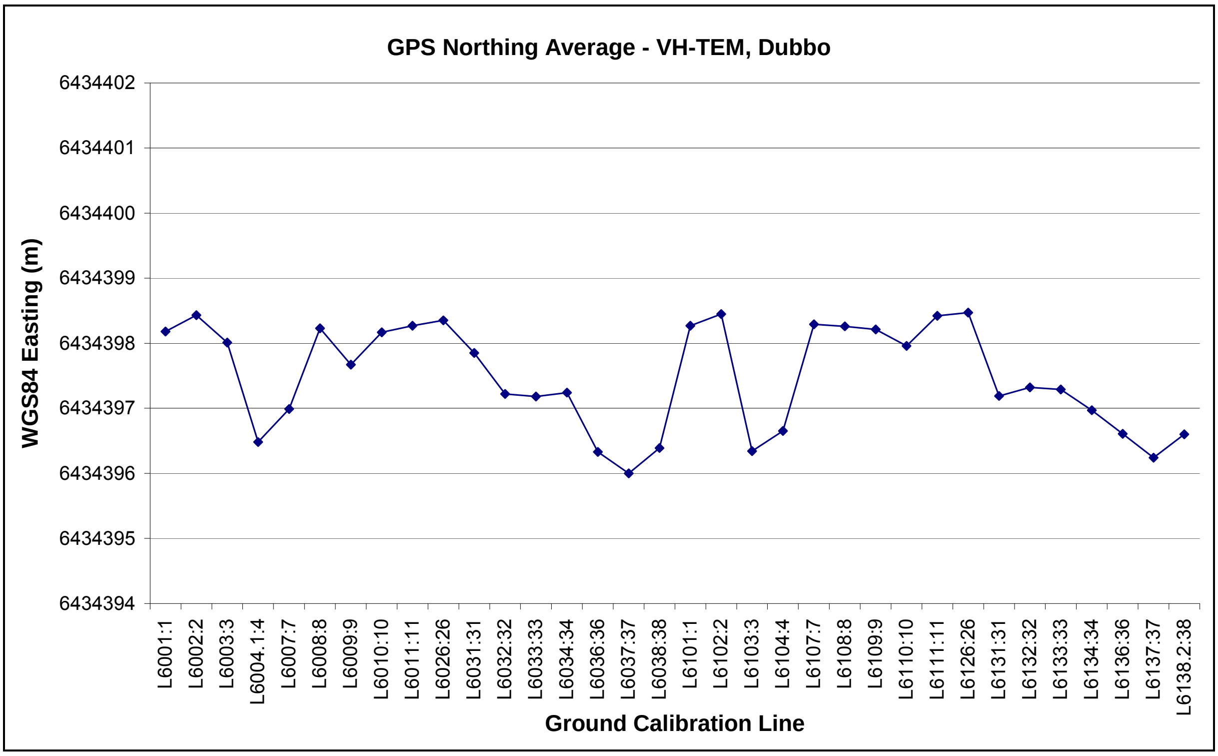

GPS Northing Average - VH-WGT, Dubbo
WGS84 Northing (m)
6434411
6434410
6434409
6434408
6434407
6434406
6434405
6434404
6434403
L6008:8
L6017:17
L6023.1:23
L6029:29
L6035:35
L6040:40
L6047:47
L6052:52
L6057.1:57
L6064:64
L6069:69
L6074:74
L6079:79
L6113:13
L6120:20
L6127:27
L6133:33
L6138:38
L6143:43
L6150:50
L6155:55
L6161:61
L6167:67
L6172:72
L6177:77
Line

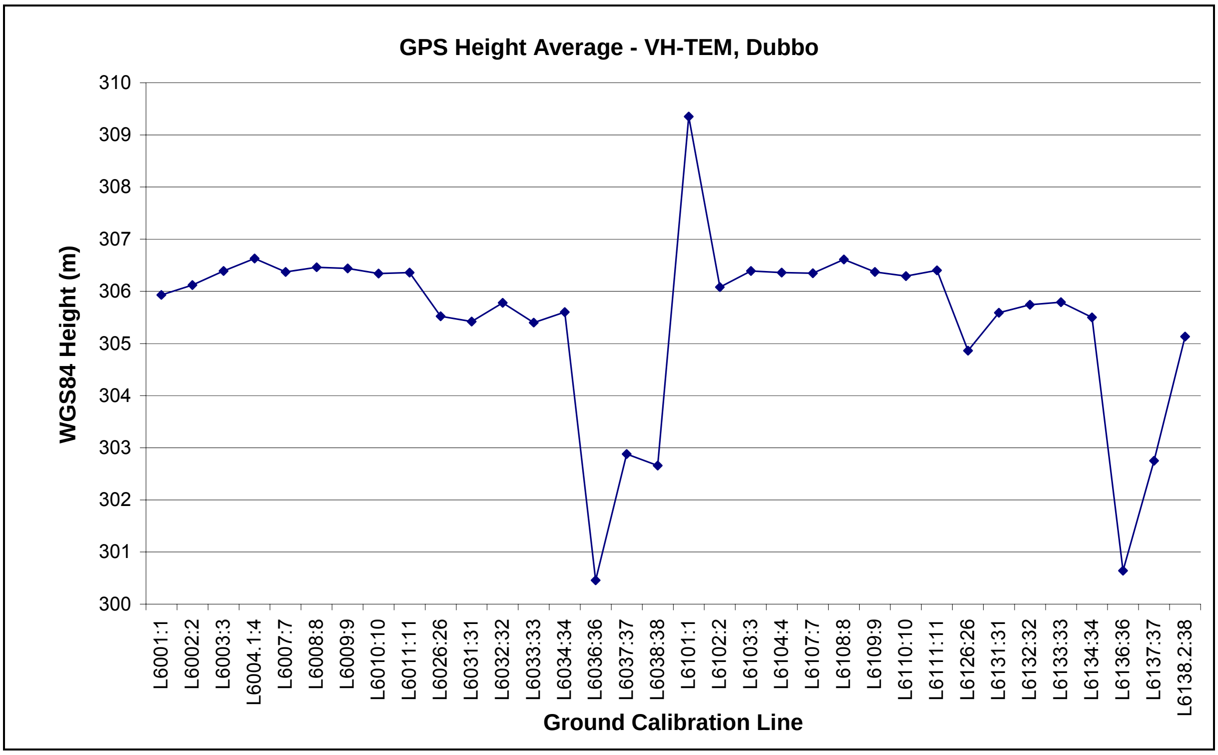


Note: Data for outlying points generally displays significant drift during line record likely indicative of GPS system continuing initialisation during ground calibration line.

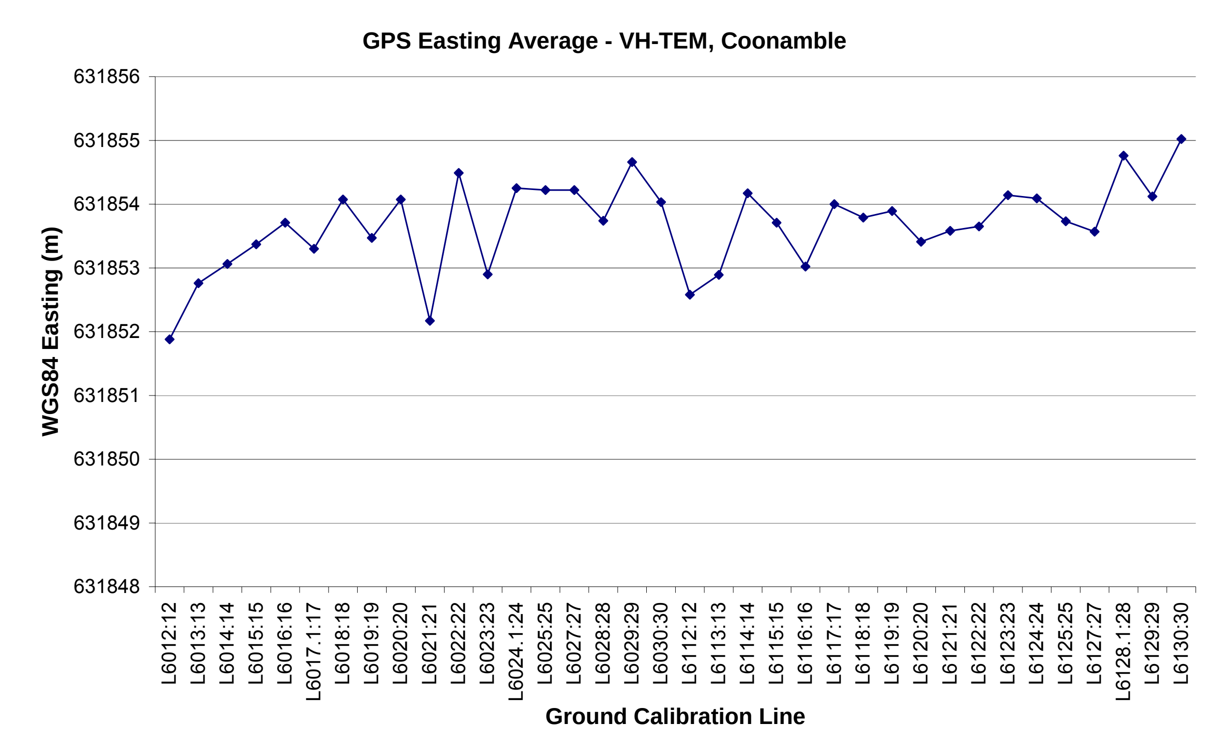


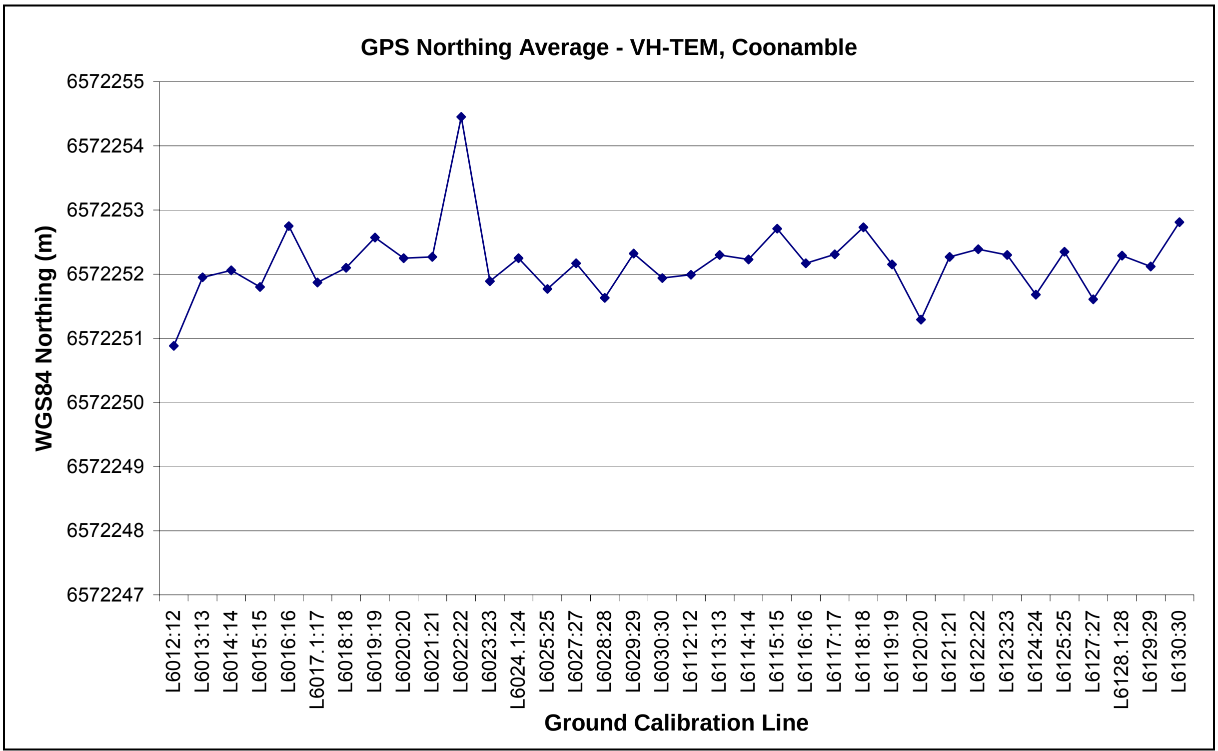
Note: Flights 26 and 31-38 parking location different from previous parking in Dubbo.

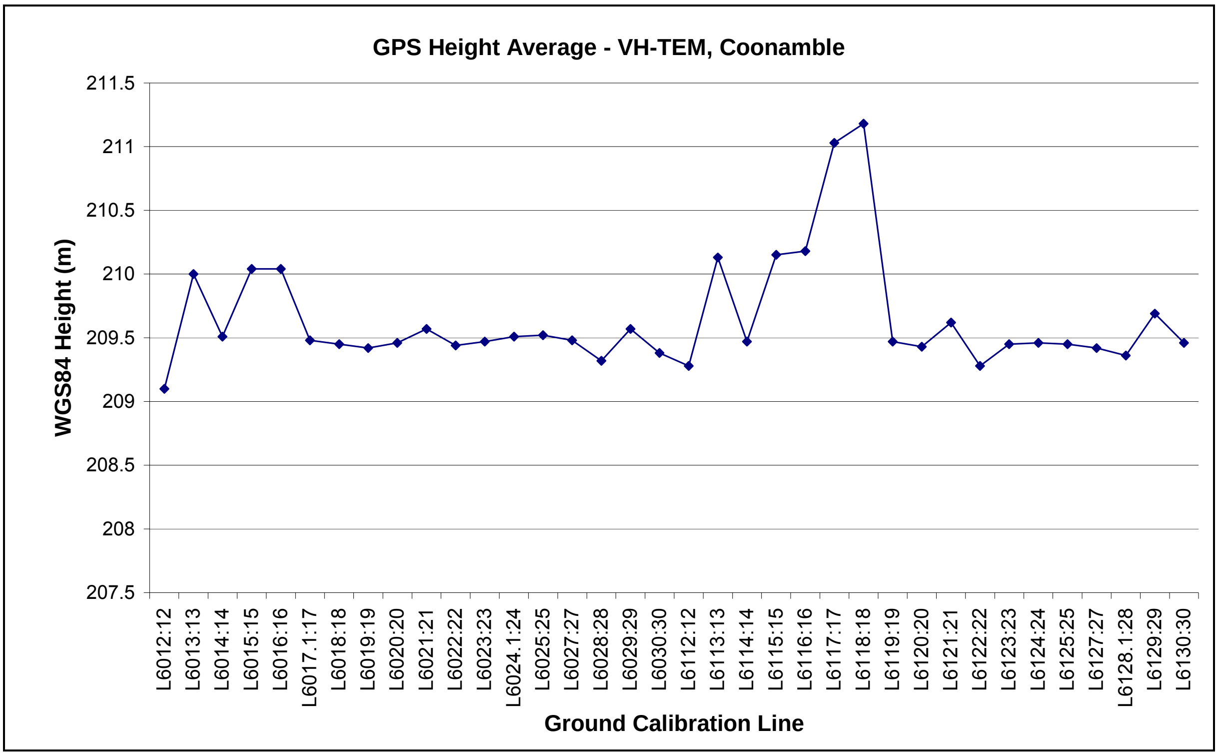




Note: Flights 36-38 post-processed against a different GPS base station from that used for earlier flights.


GPS Easting Average - VH-TEM, Coonamble
WGS84 Easting (m)
631856
631855
631854
631853
631852
631851
631850
631849
631848
L6012:12
L6013:13
L6014:14
L6015:15
L6016:16
L6017.1:17
L6018:18
L6019:19
L6020:20
L6021:21
L6022:22
L6023:23
L6024.1:24
L6025:25
L6027:27
L6028:28
L6029:29
L6030:30
L6112:12
L6113:13
L6114:14
L6115:15
L6116:16
L6117:17
L6118:18
L6119:19
L6120:20
L6121:21
L6122:22
L6123:23
L6124:24
L6125:25
L6127:27
L6128.1:28
L6129:29
L6130:30
Ground Calibration Line


GPS Northing Average - VH-TEM, Coonamble
WGS84 Northing (m)
6572255
6572254
6572253
6572252
6572251
6572250
6572249
6572248
6572247
L6012:12
L6013:13
L6014:14
L6015:15
L6016:16
L6017.1:17
L6018:18
L6019:19
L6020:20
L6021:21
L6022:22
L6023:23
L6024.1:24
L6025:25
L6027:27
L6028:28
L6029:29
L6030:30
L6112:12
L6113:13
L6114:14
L6115:15
L6116:16
L6117:17
L6118:18
L6119:19
L6120:20
L6121:21
L6122:22
L6123:23
L6124:24
L6125:25
L6127:27
L6128.1:28
L6129:29
L6130:30
Ground Calibration Line


GPS Height Average - VH-TEM, Coonamble
WGS84 Height (m)
211.5
211
210.5
210
209.5
209
208.5
208
207.5
L6012:12
L6013:13
L6014:14
L6015:15
L6016:16
L6017.1:17
L6018:18
L6019:19
L6020:20
L6021:21
L6022:22
L6023:23
L6024.1:24
L6025:25
L6027:27
L6028:28
L6029:29
L6030:30
L6112:12
L6113:13
L6114:14
L6115:15
L6116:16
L6117:17
L6118:18
L6119:19
L6120:20
L6121:21
L6122:22
L6123:23
L6124:24
L6125:25
L6127:27
L6128.1:28
L6129:29
L6130:30
Ground Calibration Line

5. DATA PROCESSING

5.1 Field Data Processing

5.1.1 Quality Control Specifications

5.1.1.1 Navigation Tolerance

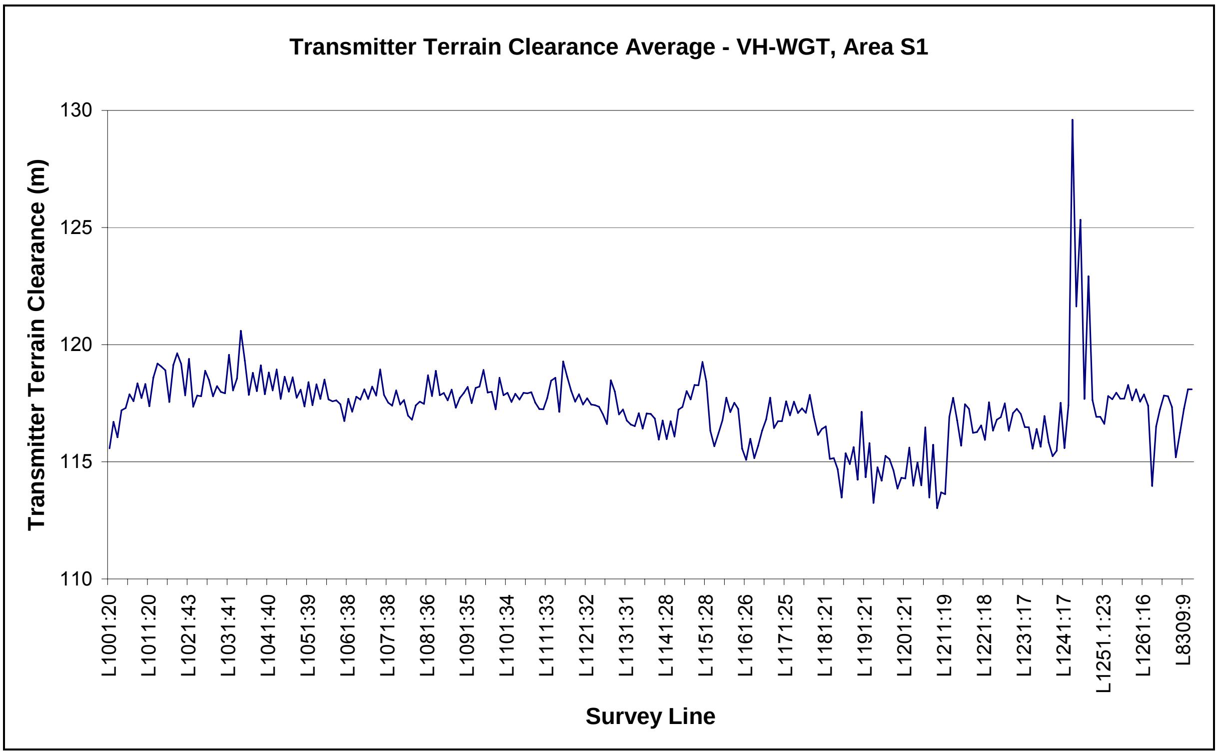
The re-flight specifications applied for the duration of the survey were:

Electronic Navigation - absence of electronic navigation data (e.g. GPS base station fails).

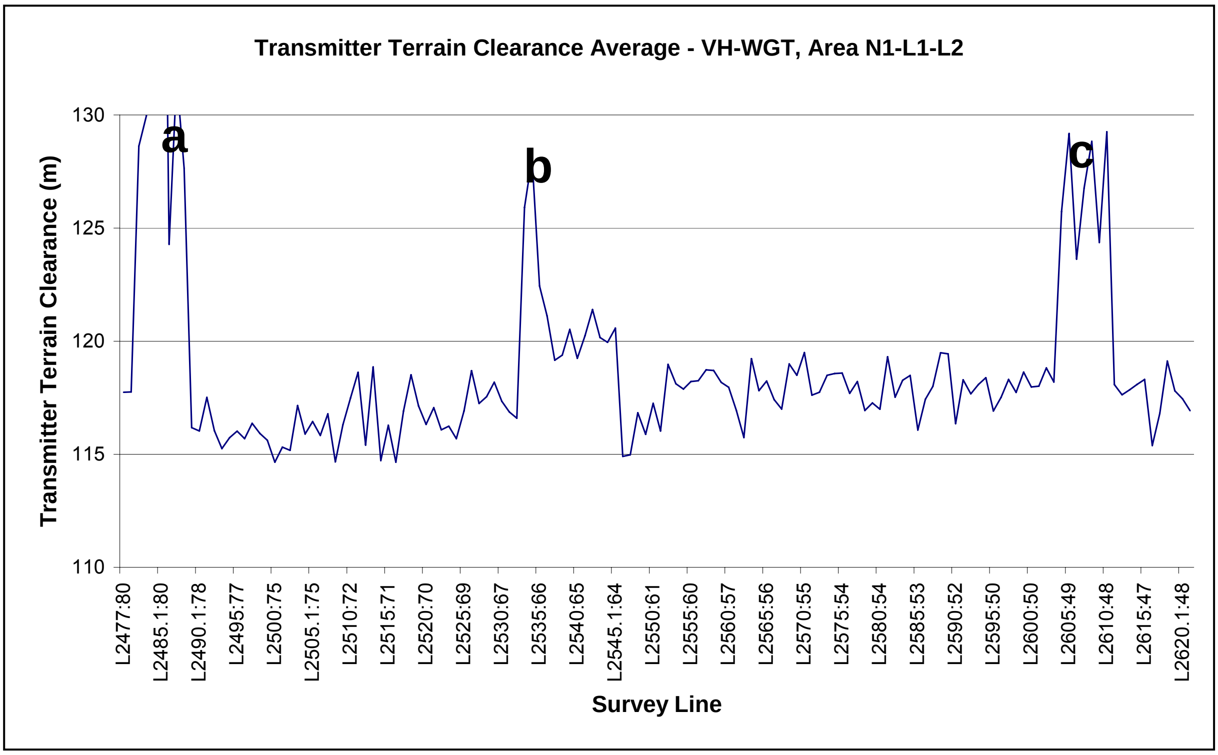
Flight Path – flight path deviates by more than 40 metres over a continuous distance of 1500 metres or more unless the deviation is required by civil aviation requirements.

Altitude – the average terrain clearance for any one flight line shall be within ±5 metres of the nominal aircraft terrain clearance. Portions of survey lines that are unable to be flown at the nominal survey height due to Australian Civil Aviation Safety Authority regulations of safety considerations shall be excluded from the average. Where the terrain clearance varies from that nominated by more than 20 metres over a continuous distance of two kilometres or more, a fill-in line will be flown at the Contractor's expense unless it can be reasonably demonstrated that such flying would put pilot and crew at risk.

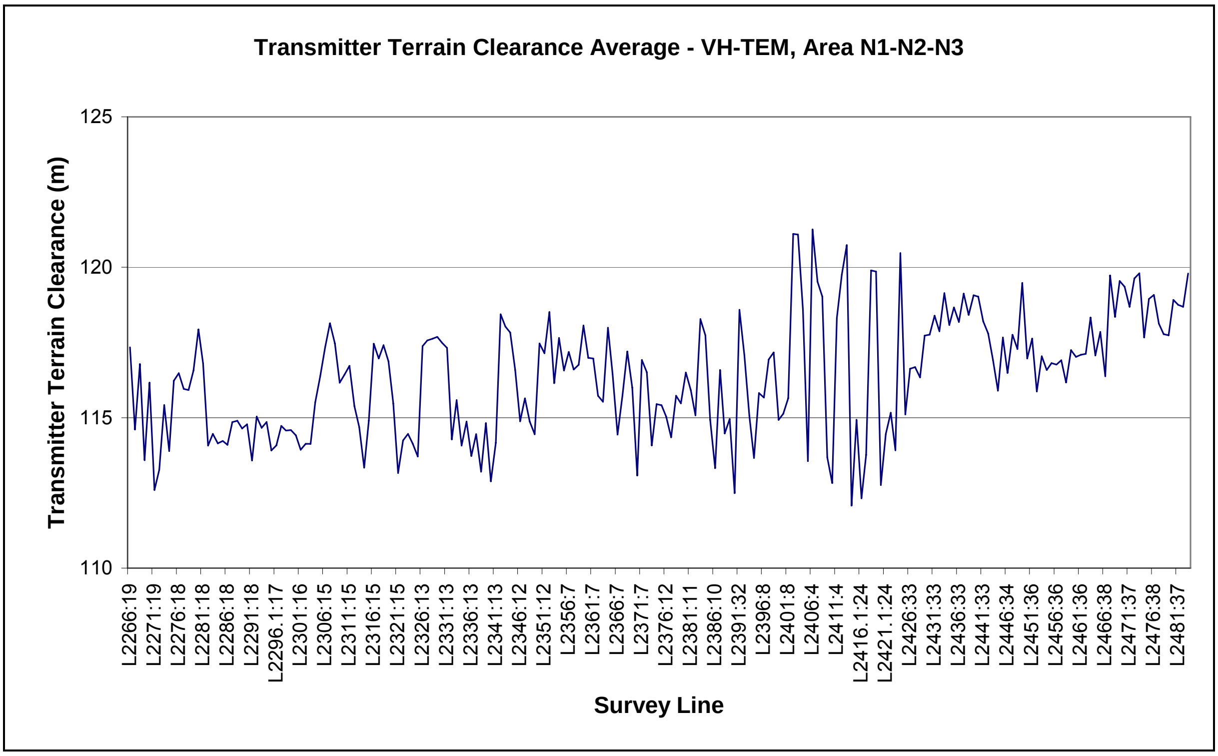
The following plots show the average transmitter ground clearance for all survey lines flown by VH-WGT and VH-TEM for this project. Some lines appear to violate the above specification for average height – comments are included below each plot.



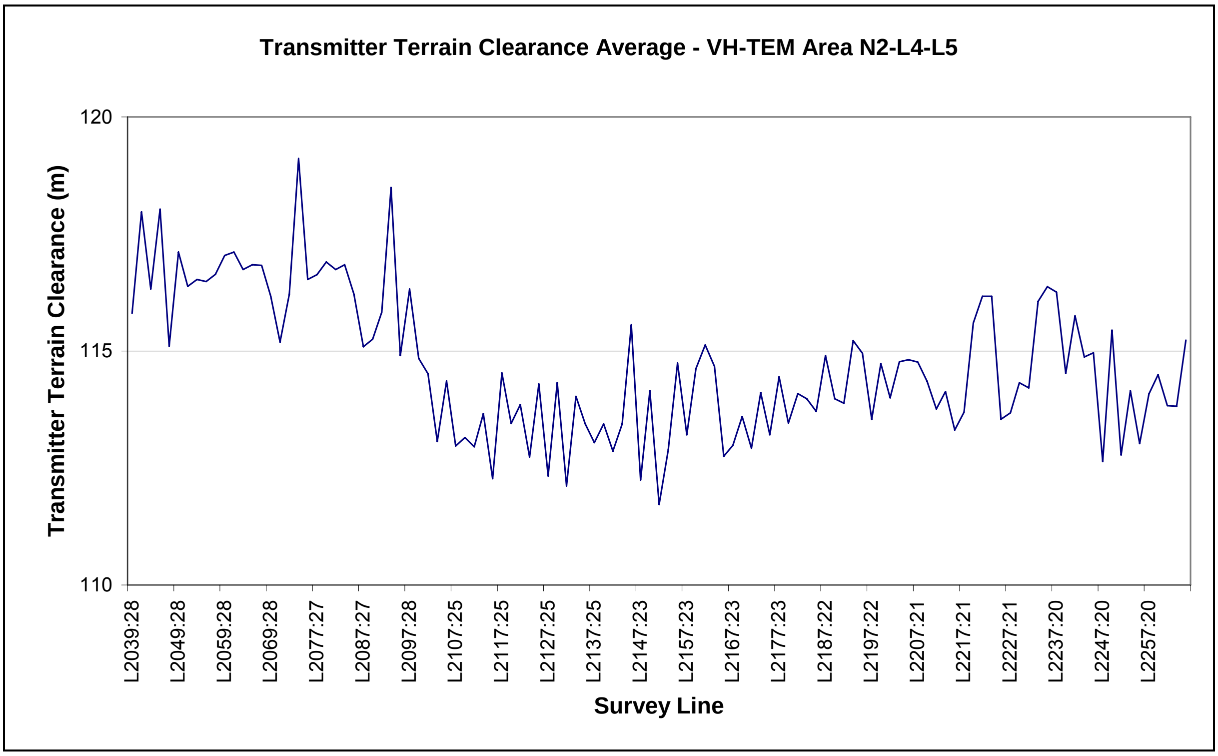
Note: Some lines in this area violate contract specifications due to rough terrain.

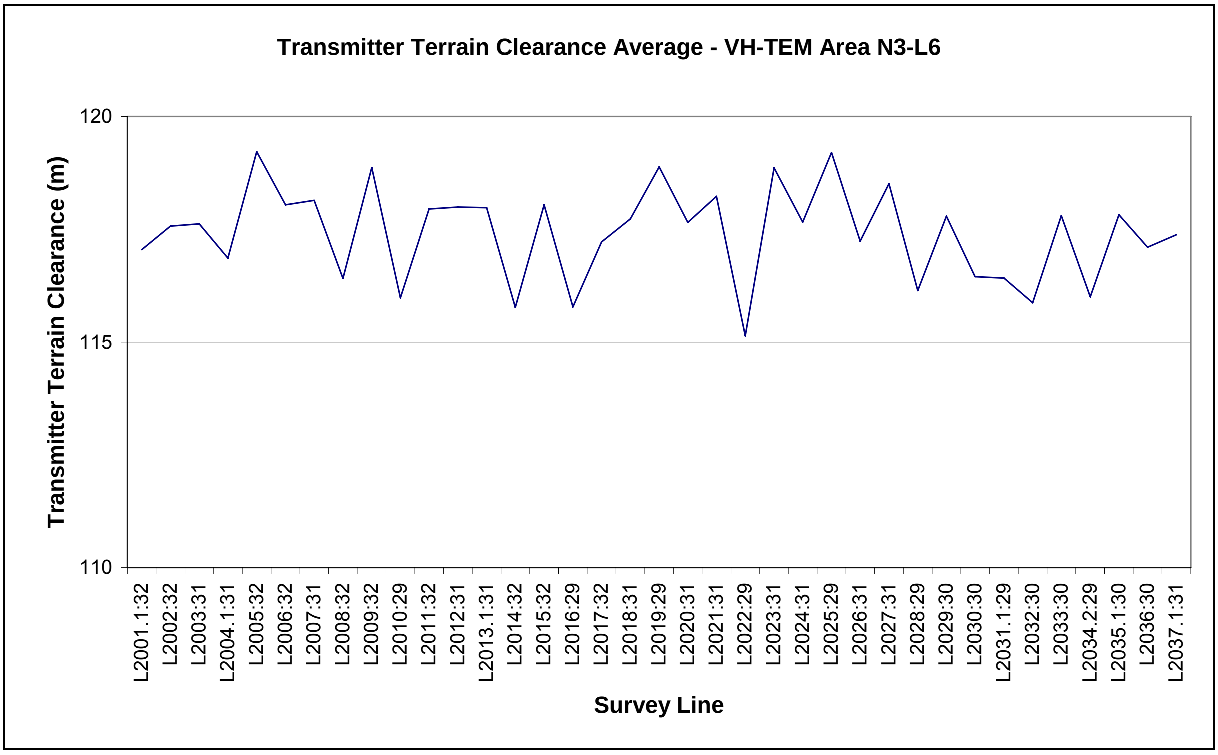


Notes from left to right: a) Biased by pilot climbing to 1500ft over Warren; b) Large spike due to pilot climbing to 1500ft over Nevertire, flat section due to a problem with pilot's altimeter display; c) Biased by pilot climbing to 1500ft over Trangie.



Note: Some lines early in survey were flown too high due to a discrepancy between pilots' instruments and recorded radar/laser altimeter values. The worst cases were reflown.





5.1.1.2 Electromagnetic Data

The quality control checks on the electromagnetic data were:

Noise – For any flight, if the standard deviation of the processed high altitude data for a window exceeds 2 times the corresponding window standard deviation specified in the table below, then that window will be deemed to be 'noisy'. If more than 25% of the windows are deemed to be noisy in either component, then that flight must be reflown at the Contractor's expense. See Appendix IV for full record of zero-line statistics.

Window	X component standard deviation (fT)	Z component standard deviation (fT)
1	0.021	0.014
2	0.019	0.010
3	0.018	0.009
4	0.017	0.009
5	0.016	0.008
6	0.015	0.008
7	0.014	0.008
8	0.013	0.007
9	0.013	0.008
10	0.016	0.009
11	0.021	0.009
12	0.014	0.007
13	0.012	0.006
14	0.009	0.004
15	0.009	0.005

Repeat lines – A number of repeat lines were flown regularly to check system repeatability. These lines were flown once every day for the first four successful production days, and once every three production days after that. Comparison plots of derived conductivity data are included as an attachment (see Appendix VIII).

Borehole calibration lines – Five specified lines were flown by one or both aircraft to coincide with existing seismic and borehole data for comparison. Plots of these lines are also included as an attachment (see Appendix VIII).

5.1.2 In-Field Data Processing

Following acquisition, multiple copies of the EM data are made onto DVDs or CDs. The EM, location, magnetic and ancillary data are then processed at the field base to the point that the quality of the data from each flight can be fully assessed. Copies of the raw and processed data are then transferred to Perth for final data processing. A more comprehensive statement of EM data processing is given in section 5.2.3.

5.2 Final Data Processing

5.2.1 Flight Path Recovery

The GPS position of the aircraft at every point along the survey line is post-processed (differentially corrected) by applying the same X, Y and Z positional changes (deviations from averaged position) as seen at the base GPS unit (see 3.2 for a description of establishing the base GPS position).

The post-processed flight path (X and Y co-ordinates) and GPS height are then checked for spikes and level shifts, and if required, edited or improved by re-running the GPS post-processing. Section 4.12 describes the GPS repeat point test we conducted on every flight to confirm the repeatability of the GPS system. No other calibration procedures are performed for the GPS.

5.2.2 Magnetics

Magnetic data were compensated for aircraft manoeuvre noise using coefficients derived from the appropriate compensation flight (see 4.7). Base station data is edited so that all significant spikes, level shifts and null data are eliminated.

A diurnal base value was then added.

Area	Base Value
All	56715 nT

A lag was applied to synchronise the magnetic data with the navigation data.

The International Geomagnetic Reference Field (IGRF) 2005 model (updated for secular variation 2006.9) was removed from the levelled total field magnetics. An IGRF base value was then added to the data.

Area	Base Value
All	56786 nT

Following this, microlevelling was applied in order to subtly level the data. The algorithm is a FAS proprietary operation used to remove the small across-line corrugations that may appear in any gridded data. The process attempts to de-corrugate the data without destroying the data's integrity. This is achieved by confining the changes to very small values and applying them as a correction to the along-line data.

5.2.3 Altimeters

Radar altimeter data are recorded by the data acquisition system (DAS) as a value in millivolts. This value is converted to metres using the relationships determined during the altimeter calibration flights. This data has a parallax applied followed by a short smoothing filter to eliminate short-wavelength system noise.

The Laser Altimeter data are recorded directly as a height in metres. As a first step all spurious values, and values of 0m were removed, followed by a routine that used local maxima and minima to remove small sharp steps & spikes, resulting from vegetation and other cultural features. The resulting channel from this process was splined and filtered, then finally the expression defined in section 4.10 was applied to correct for the changing pointing angle of the altimeter due to aircraft pitch and roll.

5.2.4 Derived Ground Elevation

Aircraft navigation whilst in survey mode is via real time differential GPS, obtained by combining broadcast differential corrections with on-board GPS measurements. Terrain clearance is measured with a laser altimeter.

The ground elevation, relative to the WGS84 spheroid used by GPS receiver units, is obtained by finding the difference between the terrain clearance (from the final processed laser altimeter) and the aircraft altitude above the ellipsoid (GPS height derived from post-processing of the DGPS data using the field base station data), and taking into account that the laser altimeter is mounted 2.4 metres below the GPS antenna.

The digital elevation model derived from this survey can be expected to have an absolute accuracy of +/- several metres in areas of low to moderate topographic relief. Sources of error include uncertainty in the height of the GPS base station, variations in the laser altimeter characteristics over ground of varying surface texture, and the finite footprint of the laser altimeter.

Following this, microlevelling was applied in order to more subtly level the data. The algorithm is a FAS proprietary operation used to remove the small across-line corrugations that may appear in any gridded data. The process attempts to de-corrugate the data without destroying the data's integrity. This is achieved by confining the changes to very small values and applying them as a correction to the along-line data.

An N-Value is subtracted to correct the final data to the Australian Height Datum (AHD).

Available spot heights were supplied by Geoscience Australia and compared to the DEM data on a grid basis. The following table (over page) summarises these spot height comparisons. The largest discrepancies occur at stations FOSTER, MINORE, EUROMBEDAH and MOUNT HARRIS which are all in high topographic gradient locations (situated on hilltops). In these high gradient areas interpolation errors are much greater than in the low gradient areas that make up the vast majority of the survey area. Otherwise, in the low gradient areas the DEM appears to be accurate to within ± 2m.

Station Name	Station Num.	Height	Easting	Northing	DTM height	Diff. (m)	Area
FROST	NSW 2113	294.7	609010.01	6418587.99	290.02	-4.68	S1
GRADGERY	NSW 2287	173.7	587369.16	6542272.48	177.06	3.36	N1/L1
NM C 114	NSW 5292	194.9	546962.10	6459701.28	195.9	1	N1/L1
NM C 115	NSW 5293	235.79	596769.12	6459286.60	237.62	1.83	N1/L1
EUROMBEDAH	NSW 2007	292.2	623812.96	6434782.92	284.23	-7.97	S1
FOSTER	NSW 2094	266.4	560144.00	6544540.75	227	-39.4	N1/L1
MOUNT HARRIS	NSW 2419	242.3	563205.54	6537353.36	237.08	-5.22	N1/L1
WARREN	NSW 6227	195.22	577698.22	6492968.27	194.57	-0.65	N1/L1
MERRINELE	NSW 3080	181.6	577307.61	6543604.34	180.37	-1.23	N1/L1
MINORE	NSW 6692	365.69	632304.81	6431551.39	352.27	-13.42	S1
PM5008	PM5008	196.13	566687.49	6478030.07	198.35	2.23	N1/L1

Note:

The accuracy of the elevation calculation is directly dependent on the accuracy of the two input parameters, laser altitude and GPS altitude. The GPS altitude value is primarily dependent on the number of available satellites. Although post-processing of GPS data will yield X and Y accuracies in the order of 0.5 metres, the accuracy of the altitude value is usually much less, but generally still within 1-2 metres. Further inaccuracies may be introduced during the interpolation and gridding process as only 1 out of every 5 points across-line is real data. Furthermore, along line obstructions may cause the pilot to veer laterally and so data interpolated between lines may vary significantly from real topography, and do not show artificial vertical obstructions.

Because of the inherent inaccuracies of this method, no guarantee is made or implied that the information displayed is a true representation of the height above sea level. Although this product may be of some use as a general reference, THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.

5.2.5 Electromagnetic Data Processing

Details of the pre-processing applied to TEMPEST data can be found in Lane et al. (2000), and are summarised below.

Calibration

High altitude pre and post flight zero line data (Section 4.4) are used to characterise the system response in the absence of any ground response. These calibration lines were acquired pre and post flight and were linearly interpolated during processing for use at individual transients during the flight.

Cleaning and Stacking

Routines to suppress sferic noise, powerline noise, VLF noise and coil motion noise (collectively termed “cleaning”) and to stack the data are applied to the survey line data. Output from the stacking filter is drawn at 0.2 second intervals. A cosine shaped filter making use of 152 transients (approximately 3 sec) is used in the stacking process.

Deconvolution

The survey height stacked data are deconvolved in the frequency domain using the interpolated high altitude reference waveform, to yield a quantity that is independent of system characteristics. This procedure accounts for slow variations in the transmitted current waveform’s amplitude and shape during the flight. It also accounts for the effect of eddy currents induced in the transmitter loop and airframe. The output of the deconvolved data is the summed effect of the direct coupling between the transmitter loop and receiver coils (primary field) and the coupling between currents induced in the ground and the receiver (secondary field).

Primary Field Estimation

Since the receiver's orientation and position (relative to the transmitter) is not precisely known, the primary field cannot simply be theoretically computed and subtracted from the deconvolved data to yield the desired pure ground response. The primary field is instead estimated using knowledge of the asymptotic behaviour at the low frequency in-phase component of the deconvolved spectrum. The estimation of the primary field requires some assumptions to be made regarding the conductivity structure of the ground at depth. Once estimated the primary field is subtracted from the deconvolved data to yield the estimated pure ground response.

Transmitter-Receiver Separation Estimation

Once the primary field and coupling terms are estimated it is then possible to estimate the position of the receiver coils relative to the transmitter loop via basic dipole theory. Equations (1) and (2) define the coupling terms for an infinitesimal vertical magnetic dipole transmitter and an ideal receiver located at co-ordinates (*x,z*) with respect to the transmitter. The horizontal (or X) component coupling is defined by,

$$g_x = \frac{3xz}{\left(x^2+z^2\right)^{5/2}}, \tag{1}$$

and for the vertical (or Z) component data;

$$g_z = \frac{2z^2-x^2}{\left(x^2+z^2\right)^{5/2}}. \tag{2}$$

The above equations are inverted to solve for the coil set position defined by the co-ordinates (x,z) as follows. From equations (1) and (2),

$$\frac{g_z}{g_x} = r = \frac{(2z^2-x^2)}{3xz} \tag{3}$$

Therefore,

$$x^2+3rxz-2z^2=0 \tag{4}$$

Therefore,

$$x = -(3rz \pm \sqrt{9r^2z^2+8z^2})/2 = z(-3r \pm \sqrt{9r^2+8})/2 = zr_1 \tag{5}$$

Substituting back into the expression for g_x, we get

$$g_x = \frac{3r_1}{z^3(r_1{}^2+1)^{5/2}} \tag{6}$$

and

$$z = \left\{\frac{3r_1}{g_x(r_1{}^2+1)^{5/2}}\right\}^{1/3}, \quad and \quad x = r_1\left\{\frac{3r_1}{g_x(r_1{}^2+1)^{5/2}}\right\}^{1/3} \tag{7}$$

where

$$r_1 = \left\{-3(g_z/g_x)+\sqrt{9(g_z/g_x)^2+8}\right\}/2 \tag{8}$$

The +/- solutions collapse to a single solution due to a basic knowledge that the bird is always going to be below and behind the transmitter. Therefore equations (7) and (8) provide the necessary

calculation to convert g_x and g_z values to x and z values which define the position of the receiver with respect to the transmitter.
An estimate of transmitter-receiver separation is made for every 0.2 second sample drawn from the stacking filter. Along with other system geometry variables (either measured or assumed) the survey wide averages of the system geometry for each aircraft is shown in the table following.

Geometry Variable		**VH-WGT**	**VH-TEM**
Transmitter loop pitch	measured	2.97 deg	1.64 deg
Transmitter loop roll	measured	-0.15 deg	-0.62 deg
Transmitter loop yaw	measured	0.0 deg	0.0 deg
Transmitter loop terrain clearance	measured	118.15 m	116.00 m
Transmitter-receiver in-line horizontal separation	estimated	-114.86 m	-120.71 m
Transmitter-receiver vertical separation	estimated	-45.16 m	-39.41 m
Transmitter-receiver transverse horizontal l separation	assumed	0.0 m	0.0 m
Receiver pitch	assumed	0.0 deg	0.0 deg
Receiver roll	assumed	0.0 deg	0.0 deg
Receiver yaw	assumed	0.0 deg	0.0 deg

Transformation to B-field Response
The pure ground response data are transformed from dB/dt to B-field responses equivalent to that which would be observed for a perfect 100% duty cycle square wave waveform with a 1 A peak to peak step.

Windowing
Finally, the evenly spaced samples are binned into a number of windows.

Table of TEMPEST window information for 25Hz base frequency

Window #	**Start sample**	**End sample**	**No of samples**	**start time (s)**	**End time (s)**	**centre time (s)**	**centre time (ms)**
1	1	2	2	0.000007	0.000020	0.000013	0.013
2	3	4	2	0.000033	0.000047	0.000040	0.040
3	5	6	2	0.000060	0.000073	0.000067	0.067
4	7	10	4	0.000087	0.000127	0.000107	0.107
5	11	16	6	0.000140	0.000207	0.000173	0.173
6	17	26	10	0.000220	0.000340	0.000280	0.280
7	27	42	16	0.000353	0.000553	0.000453	0.453
8	43	66	24	0.000567	0.000873	0.000720	0.720
9	67	102	36	0.000887	0.001353	0.001120	1.120
10	103	158	56	0.001367	0.002100	0.001733	1.733
11	159	246	88	0.002113	0.003273	0.002693	2.693
12	247	384	138	0.003287	0.005113	0.004200	4.200
13	385	600	216	0.005127	0.007993	0.006560	6.560
14	601	930	330	0.008007	0.012393	0.010200	10.200
15	931	1500	570	0.012407	0.019993	0.016200	16.200

Geometry Corrections to EM Data
The final EM dataset includes both "non-geometry corrected" and geometry-corrected" located EM data. The non-geometry corrected EM amplitudes reflect, not only the variations in ground conductivity, but the variations in geometry of the various parts of the EM measurements (i.e. transmitter loop pitch, transmitter loop roll, transmitter loop terrain clearance, transmitter loop to receiver coil horizontal longitudinal separation, transmitter loop to receiver coil horizontal transverse separation, and transmitter loop to receiver coil vertical separation) during the survey. For example, the largest influence on the early time EM amplitude is the terrain clearance of the transmitter loop. The larger the terrain clearance, the smaller the amplitude. Later window times (larger window number) show diminished variations due to terrain clearance.

Geometry-corrected located data are produced for optimum presentation of the EM amplitude data in image format (e.g. window amplitude images, principal component analysis images derived from the window amplitudes (Green,1998b)). Between non-geometry and geometry corrected states, the ground response data undergo an approximate correction to produce data that would be measured if the system had always maintained a nominated standard (constant) geometry. A dipole-image method (Green, 1998a) is used to adjust the data to the response that would be expected at a standard terrain clearance (115m), standard transmitter loop pitch and roll (zero degrees), and a standard transmitter loop to receiver coil geometry (115m behind and 45 below the aircraft). These geometry variables have been set to their respective standard values in the geometry corrected located data. The non-geometry corrected located data file contains the measured (or estimated) geometry variables. Zero parallax is applied to transmitter loop pitch, roll, terrain clearance, X component EM and Z component EM data prior to geometry correction. Over extremely conductive ground (e.g. > 100 S conductance), the estimates for transmitter loop to receiver coil separation determined from the primary field coupling factors may be in error at the metre scale due to uncertainty in the estimation of the primary field. This will influence the accuracy of very early time window amplitude information in the geometry-corrected located data. Receiver coil pitch has a significant effect on early time Z component response and late time X component response (Green and Lin, 1996). Receiver coil roll impacts early time Z component response.

Due to a miscommunication in the field, the data from the two aircraft were not corrected to the same geometry (due to a slightly higher average airspeed, the receiver generally flies higher behind VH-TEM). This led to a large amplitude change, where the data acquired from each aircraft abutted in the field-processed dataset that was returned from the field and was delivered to GA at that time. To correct this, the first phase of the final processing was to re-geometry correct the VH-TEM data to the same standard geometry as VH-WGT (see table below) since levelling of area S1 had already commenced.

Values used to standardise transmitter height, pitch and roll and transmitter-receiver geometry

Geometry Variable	**Standard Value**
Transmitter loop pitch	0.0 deg
Transmitter loop roll	0.0 deg
Transmitter loop yaw	0.0 deg
Transmitter loop terrain clearance	115.0 m
Transmitter-receiver in-line horizontal separation	-115.0 m
Transmitter-receiver vertical separation	-45.0 m
Transmitter-receiver transverse horizontal separation	0.0 m
Receiver pitch	0.0 deg
Receiver roll	0.0 deg
Receiver yaw	0.0 deg

Based on the overall character of the data, and statistics of the geometry figures determined from the high-altitude zero calibration line, it was inferred that the receiver 'bird' operating with VH-TEM had some coil suspension issues (ie. the support and the way the coil-set is suspended within the bird-shell) throughout the survey. This resulted in small changes in the apparent tilt of the coil-set, and as steps (or level shifts) in the signal amplitudes of the Z-component data. Fortunately the day-to-day changes were slight, but based on observations of the geometry of all 38 flights, a system of small corrections was applied, prior to re-applying geometry corrections hence both the geometry corrected and non-geometry corrected EM data have been adjusted. The rotation corrections applied are tabulated below.

Flights	Rotation (degrees)
17,19,28,30,31	7
24,29	5
16,18,20,21,22,23,25,26,27	6
4,7,9,13,15	4
8,12	3
2	2
34	1
10,11	4.5

Levelling

Once the full dataset had been corrected to the same standard geometry, limited range micro-levelling was applied to all windows for presentation purposes and to ensure the input data for CDI processing was free of striping.

5.2.6 Conductivity Depth Images (CDI)

CDI conductivity sections for TEMPEST data were calculated using EMFlow and then modified to reflect the finite depth of investigation using an in-house routine, *Sigtime*.

The *Sigtime* routine removes many of the spurious conductive features that appear at depth as a result of fitting long time constant exponential decays to very small amplitude features in the late times. For each observation, the time when the response falls below a signal threshold amplitude is determined. This time is transformed into a diffusion depth with reference to the conductivity values determined for that observation. Anomalous conductivity values below this depth are replaced by background values or set to undefined, reflecting the uncertainty in their origin. The settings and options applied are indicated in the appropriate header files for *Sigtime* output. This procedure is different to that which would be obtained by filtering conductivity values using either a constant time or constant depth across the entire line.

The “final” data for each area were input into version 5.10 of EMFlow to calculate Conductivity Depth Images (CDI). Conductivity values were calculated at each point then run through *Sigtime.*

EMFlow was developed within the CRC-AMET through AMIRA research projects (Macnae et al, 1998, Stolz and Macnae, 1998). The software has been commercialised by Encom Technology Pty Ltd. Examples of TEMPEST conductivity data can be seen in Lane et al. (2000), Lane et al. (1999), and Lane and Pracillio (2000).

Conductivity values were calculated to a depth of 200m below surface at each point, using a depth increment of 5m and a conductivity range of 1-1000mS/m.

5.2.6.1 Factors and Corrections

Geometric Factor
The geometric factor gives the ratio of the strength of the primary field coupling between the transmitter loop and the receiver coil at each observation relative to the coupling observed at high altitude during acquisition of reference waveform data. Variations in this factor indicate a change in the attitude and/or relative separation of the transmitter loop and the receiver coil.

Transmitter-Receiver Geometry
Transmitter-to-receiver geometry values for each observation are derived from the high altitude reference waveforms and knowledge of the system characteristics. These data are available in the located data (see section 5.2.4 for “standardised” values)

GPS Antenna, Laser Altimeter and Transmitter Loop Offset Corrections
For VH-TEM the transmitter loop was mounted 0.1m above the GPS antenna, whilst for VH-WGT it was mounted 0.25m below the GPS antenna. The GPS antenna is 2.3m above the belly of the aircraft on VH-TEM, and 3.3m above the belly on VH-WGT. For both aircraft the laser altimeter sensor is mounted in the belly. Therefore a total of 2.4m and 3.05m was added to the laser altimeter data for VH-TEM and VH-WGT, respectively, to determine the transmitter loop height above the ground.

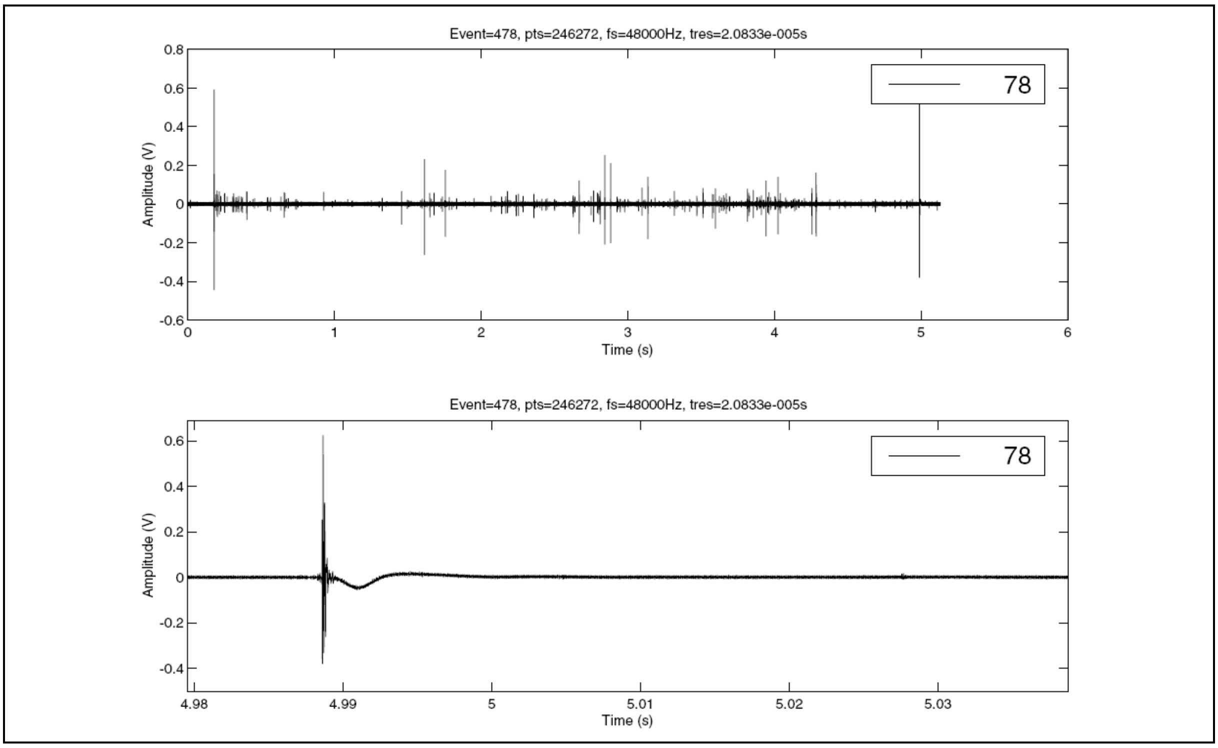
Transmitter Loop Pitch and Roll Correction
Measured vertical gyro aircraft pitch and roll attitude measurements are converted to transmitter loop pitch and roll by adding -0.9 degrees for pitch and -0.1 degrees for roll, for VH-TEM, and -0.45 for pitch and 0.6 degrees for roll, for VH-WGT. Nose up is positive for pitch, and left wing up is positive for roll.

5.2.6.2 Primary Sources of EM Noise

A number of "monitor" values are calculated during processing to assist with interpretation. They generally represent quantities that have been removed as far as is practical from the data, but may still be present in trace amounts. These are more significant for interpretation of discrete conductors than for general mapping applications.

Sferic Monitor
Sferics are the electromagnetic signals associated with lightning activity. These signals travel large distances around the Earth. Background levels of sferics are present at all times from lightning activity in tropical areas of the world (eg tropical parts of Asia, South America and Africa). Additional higher amplitude signals are produced by "local" lightning activity (ie at distances of kilometres to hundreds of kilometres).

The sferic monitor is the sum of the absolute differences brought about by the sferic filter operations, summed over 0.2 second intervals, normalised by the receiver effective area. It is given in units of uV/sq.m/0.2s. Many sferics have a characteristic form that is well illustrated by figure 2 in Garner and Thiel (2000), over page. The high frequency, initial part of a sferic event can be detected and filtered more easily than the later, low frequency portion. The sferic monitor indicates where at least the high frequency portion of a sferic has been successfully removed, but it is quite possible that lower frequency elements of the sferic event may have eluded detection, passing through to the window amplitude data. Thus, discrete anomalies coincident with sferic activity as indicated by the sferic monitor should be down-weighted relative to features clear of any sign of sferic activity.



An electric field time-series sampled at 48 kilo samples per second using MIMDAS. The top panel exhibits the entire event, while the lower panel depicts a close up view of an individual sferic from that event. The sample rate and resolution in time are denoted by fs and tres, respectively. (Garner & Thiel, 2000.)

Low Frequency Monitor
The Low Frequency Monitor (LFM) makes use of amplitudes at frequencies below the base frequency which are present in the streamed data to estimate the amplitude of coil motion noise at the base frequency in log10(pV/sqrt(Hz)/sq.m). This noise is primarily induced by the coil's motion through the earth's magnetic field – a change in coupling between the receiver coil and the ambient magnetic field will induce a voltage in the receiver coil. This noise is referred to as coil motion or Earth field noise. Receiver coils in the towed bird are suspended in a fashion that attempts to keep this noise below the noise floor at frequencies equal to and above the base frequency of the system. Severe turbulence, however, can result in 'coil knock events' that introduce noise into the processed data. Note that the LFM will also respond to sferic events with an appreciable low frequency (sub-base frequency)

component. This situation can be inferred when both the LFM and sferic monitors show a discrete kick.

The coil motion noise below the base frequency is rejected through the use of tapered stacking, but the coil motion noise at the base frequency itself is not easily removed.

Powerline Monitor
The powerline monitor gives the amplitude of the received signal at the powerline frequency (50 or 60 Hz) in log10(pV/sqrt(Hz)/sq.m). Careful selection of the base frequency (such that the powerline frequency is an even harmonic of the base frequency) and tapered stacking combine to strongly attenuate powerline signals. When passing directly over a powerline, the rapid lateral variations in the strength and direction of the magnetic fields associated with the powerline can result in imperfect cancellation of the powerline response during stacking. Some powerline-related interference can manifest itself in a form that is similar to the response of a discrete conductor. The exact form of the monitor profile over a powerline depends on the line direction, powerline direction, powerline current, and receiver component, but the monitor will show a general increase in amplitude approaching the powerline.

Grids (or images) of the powerline monitor reveal the location of the transmission lines. Note that the X component (horizontal receiver coil axis parallel with the flight line direction) does not register any response from powerlines parallel to the flight line direction since the magnetic fields associated with powerlines only vary in a direction perpendicular to the powerline. Note also that the Z component (vertical receiver coil axis) shows a narrow low directly over the powerline where the magnetic fields are purely horizontal.

Very Low Frequency Monitors
Wide area VLF communication signals in the 15 to 25 kHz frequency band are monitored by the TEMPEST system. In the Australian region, signals at 18.2 kHz, 19.8 kHz, 21.4 kHz and 22.2 kHz are monitored as the amplitude of the received signal at these frequencies in log10(pV/sqrt(Hz)/sq.m). The strongest signal comes from North West Cape (19.8 kHz). The signal at 18.2 kHz is often observed to pulse in a regular sequence. These strong narrow band signals have some impact on the high frequency response of the system, but they are strongly attenuated by selection of the base frequency and tapered stacking. The VLF transmissions are strongest in amplitude, in the horizontal direction at right angles to the direction to the VLF transmitter. This directional dependence enables the VLF monitors to be used to indicate the receiver coil attitude.

5.2.6.3 Other Sources of EM Noise

Man-made periodic discharges
If an image of the Z component sferic monitor shows the presence of spatially coherent events, then pulsed cultural interference would be strongly suspected. Since sferic signals are much stronger in the horizontal plane than in the vertical plane, few sferics of significant amplitude are recorded in Z component data. In contrast, evidence of cultural interference is generally swamped by true sferics in X component sferic monitor images.

Electric fences are the most common source of pulsed cultural interference. Periodic discharges (eg every second or so) into a large wire loop (fence) produce very large spikes in raw data. These are attenuated to a large degree by the sferic filter, but a residual artefact can still be present in the processed data.

Grounded metal objects
Grounded extensive metal objects such as pipelines and rail lines can qualify as conductors and may produce a response that is visible in processed data. Grounded metal objects produce a response similar to shallow, highly conductive, steeply dipping conductors. These objects can sometimes be identified from good quality topographic maps, from aerial photographs, by viewing the tracking video, from their unusual spatial distribution (ie often a series of linear segments) and in some circumstances from their effect on the powerline monitor. A powerline running close to a long metal object will induce a 50 Hz response in the object.

5.2.7 System Specifications for Modelling TEMPEST Data

Differences between the specifications for the acquisition system, and those of the virtual system for which processed results are given, must be kept in mind when forward modelling, transforming or inverting TEMPEST data.

Acquisition is carried out with a 50% duty cycle square transmitter current waveform and dB/dt sensors.

During processing, TEMPEST EM data are transformed to the response that would be obtained with a B-field sensor for a 100% duty cycle square waveform at the base frequency, involving a 1A change in current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter. Data are given in units of femtoTesla (fT = 10^{-15} Tesla). It is this configuration, rather than the actual acquisition configuration, which must be specified when modelling fully pre-processed TEMPEST data.

Window timing information is given above (see section 5.2.5).

The geometry-corrected EM data have been standardised through an approximate transformation to a standard transmitter loop terrain clearance, transmitter loop pitch and roll of zero degrees, and a fixed transmitter loop to receiver coil geometry (roughly equal to the average estimated geometry values). Transmitter loop pitch, transmitter loop roll and transmitter loop terrain clearance values for each observation have been modified to reflect the standard values. Hence, the standardised geometry values should be used if modelling with the geometry- corrected X- and Z-component amplitude data (see table section 5.2.5).

5.2.7.1 Parallax

The located data files utilise the following parallax values :-

- magnetics (TEM) = 0.6 fiducials (3 observations from the zero parallax position),
- magnetics (WGT) = 0.4 fiducials (2 observations from the zero parallax position),
- radar altimeter = 0.6 fiducials (3 observations from the zero parallax position),
- EM X-component = 0.2 fiducials (1 observation from the zero parallax position),
- EM Z-component = 1.4 fiducials (7 observations from the zero parallax position),

These EM parallax values are optimised for aligning, from line to line, the EM response amplitudes for horizontal or broad steeply dipping conductors, which account for the majority of responses in regolith-dominated terrains such as this.

For optimum gridded display of the response for discrete vertical or narrow conductors, the following EM parallax values are appropriate :-

- EM X-component = 1.8 fiducials (9 observations from the zero parallax position, or 8 observations from the “horizontal” parallax position),
- EM Z-component = 0.6 fiducials (3 observations from the zero parallax position, or -4 observations from the “horizontal” parallax position).

(NB Positive parallax values are defined in this case as shifting the indicated quantity back along line to smaller fiducial values. Location information remains in the zero parallax state.)

The final corrected and levelled data were gridded using a bi-directional spline interpolation (with no anti-aliasing) algorithm with a square cell size of 60m.

5.2.8 Delivered Products

Appendix VII contains a complete list of all data supplied digitally.

Digital located data in ASCII format was produced containing the non-geometry corrected and geometry corrected X and Z EM data as well as magnetics, digital elevation and derived conductivity data. The header file can be found in Appendix IV.

Grids (in ER Mapper format) of selected conductivity slices, total magnetic field and digital elevation were also produced.

Acquisition and processing report in hardcopy and digital format.

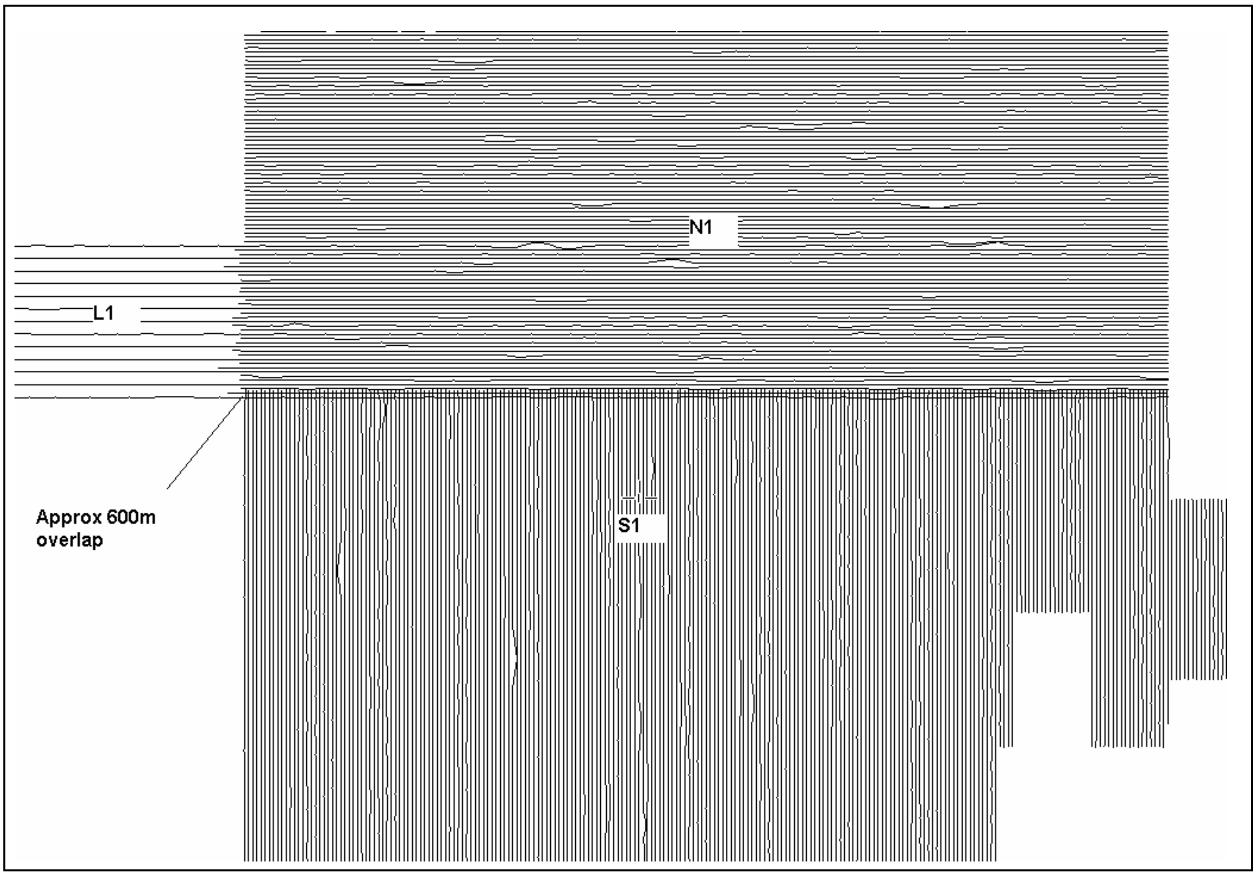
5.3 Data Analysis and Comparisons

The survey contained two variables that could affect the continuity of the results across the dataset. These were the perpendicular line paths between the northern and southern areas, and the fact that multiple aircraft were utilised for the survey. Boundaries where the differences occur were examined and a summary of the observations is documented below.

5.3.1 Perpendicular line paths

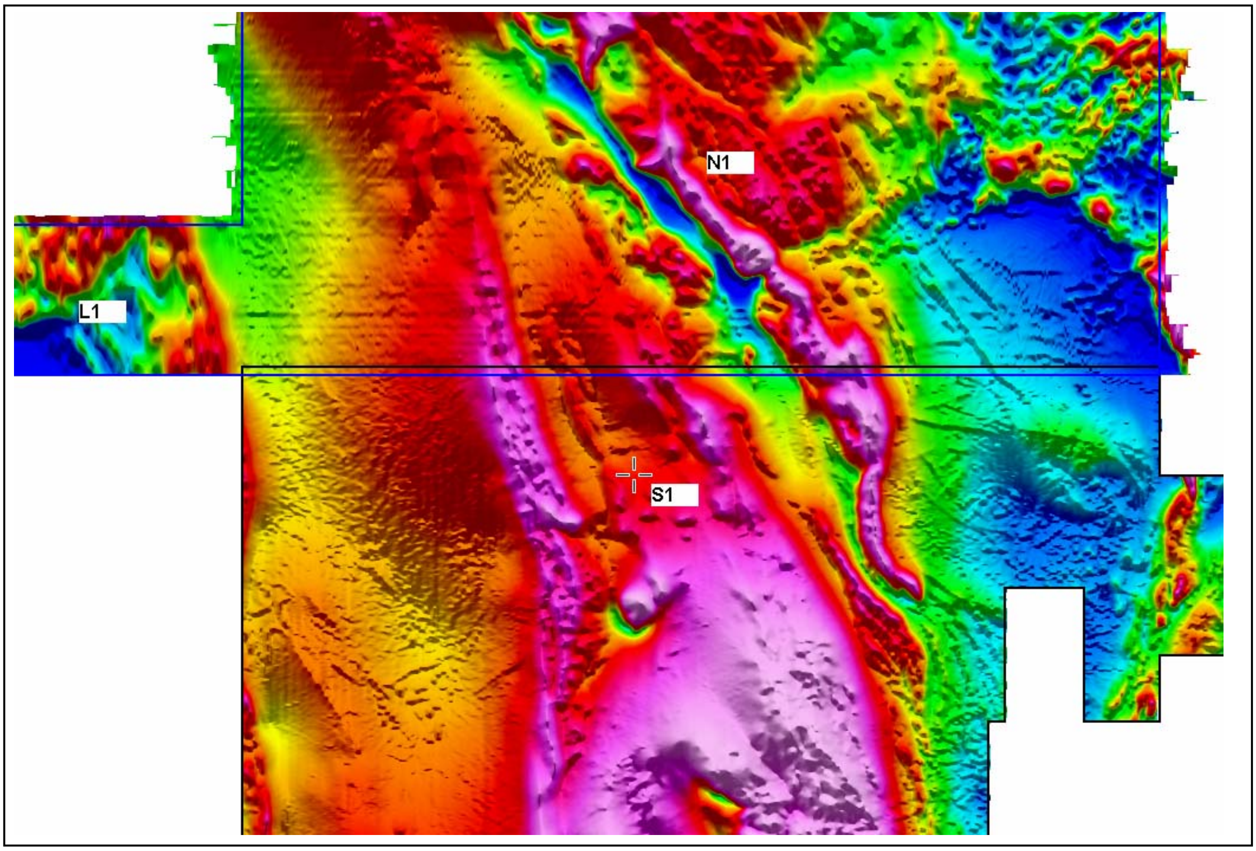
Final data was processed to minimise the difference between the two blocks flown on different headings (E/W for blocks L1/N1 and N/S for block S1). Lines flown on either side of this join were acquired by a single aircraft (VH-WGT) which helped to minimise differences and resulted in a high level of consistency between datasets.

The following image shows the overlap area between area L1/N1 and S1. The overlap is approximately 600m wide.

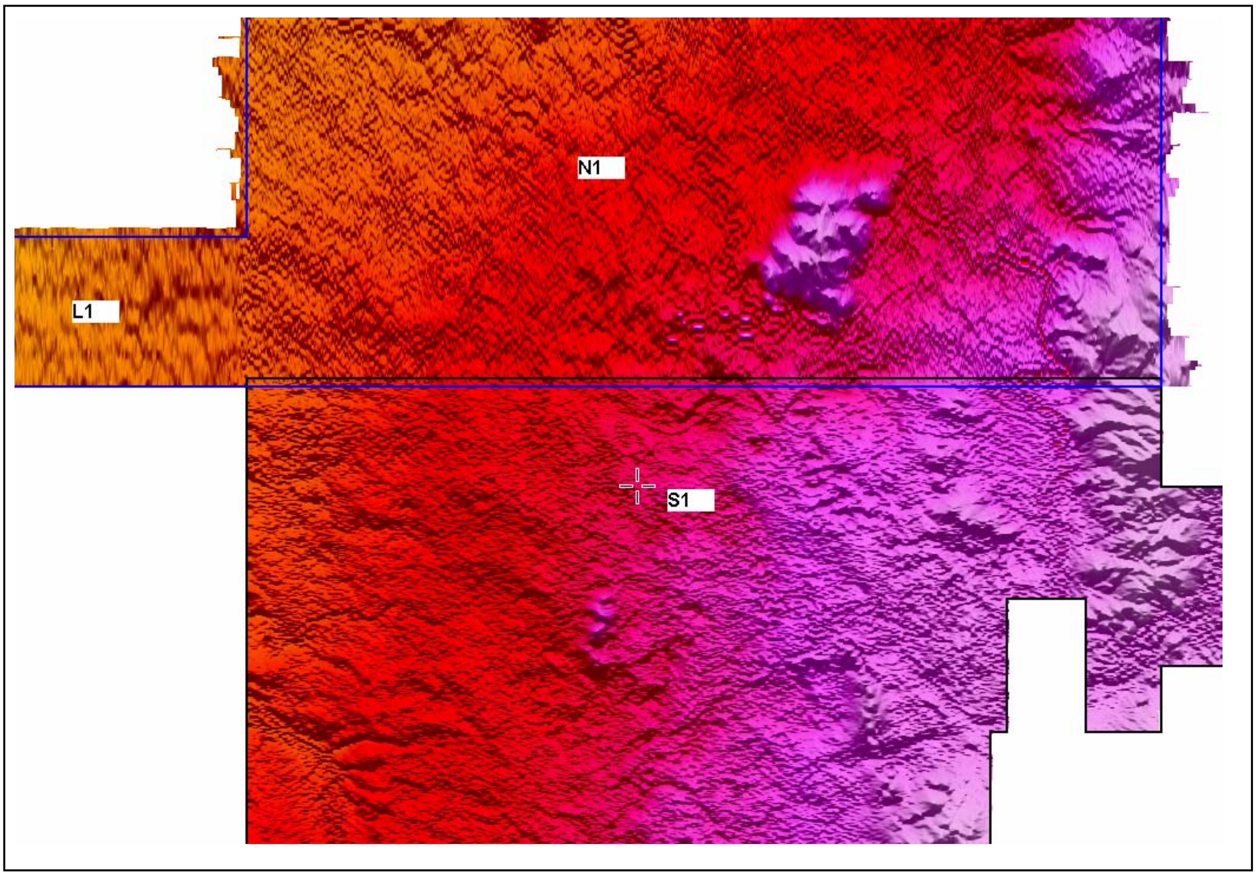


To check the continuity of the results across this overlap, grids of the separate survey components TMI, DEM and a sample of the interval conductivity grids were examined. In all cases the sun shade is from the north, which will highlight any level shifts across the join. In all grids there is a slight textural change between the E/W and N/S flown lines. This is purely an artefact of the gridding with respect to the sunshade applied to it.

Magnetics - The image below shows the final merged TMI grid. The magnetic field is not affected by geometry of the aircraft with respect to the local geology and the same diurnal and IGRF base values were applied to the data. This resulted in a consistent join between the two areas.

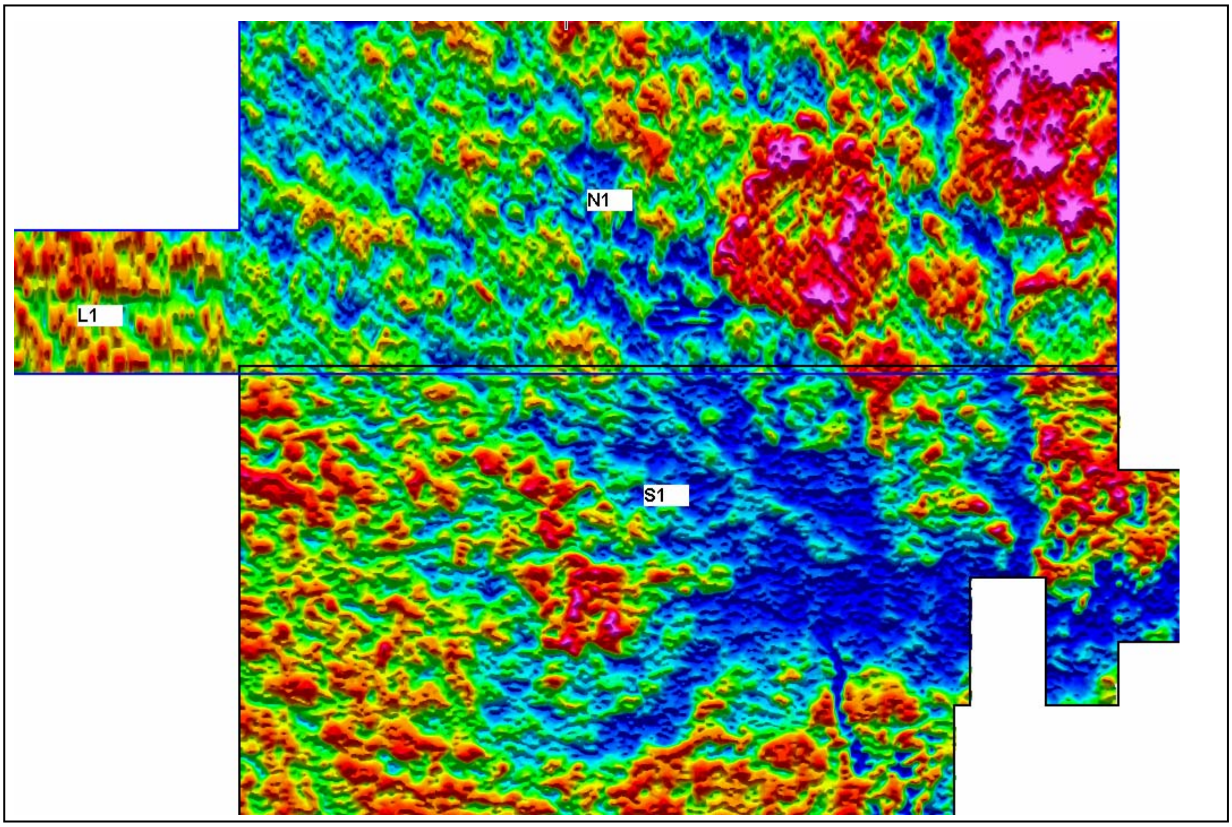


Digital Elevation Model - The image below shows the final merged DEM grid. The GPS data collected by the aircraft is absolute if operating correctly. The radar altimeter data also came from a single aircraft using the same calibrated conversion factors. The result is a smooth join across the two areas.

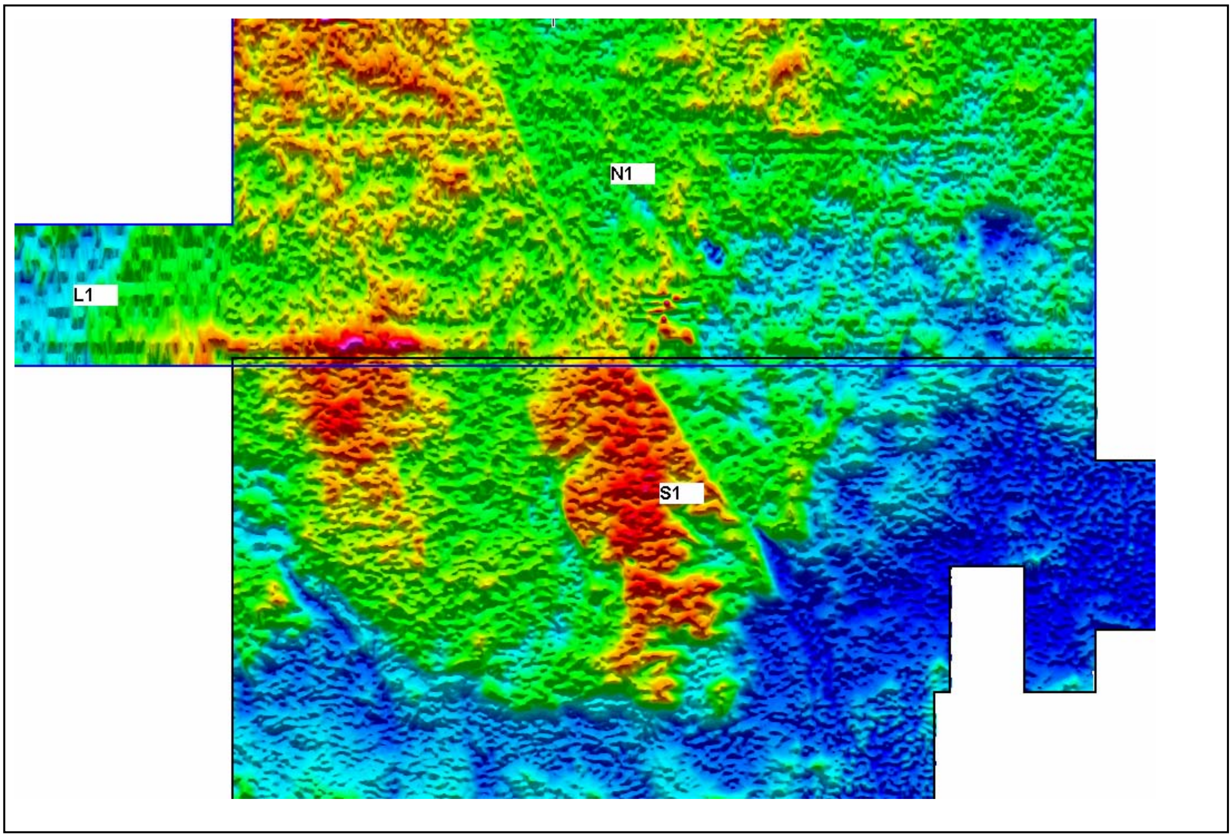


Interval conductivities
Conductance and depth values derived from EMFlow are used to calculate specific interval conductivities. An example from a near surface and deeper interval conductivity are examined.

Interval Conductivity (5m-10m) - The image below shows the final merged interval conductivity grid, for the depth range 5m to 10m. As we can see there is a consistent join between the two areas.



Interval Conductivity (60m-100m) - The image below shows the final merged interval conductivity grid, for the depth range 60m to 100m. There is a slight level shift to the north of the cross-over area, however this is a shift within area L1/N1 itself, and not a shift between the two areas. The join itself is acceptable.



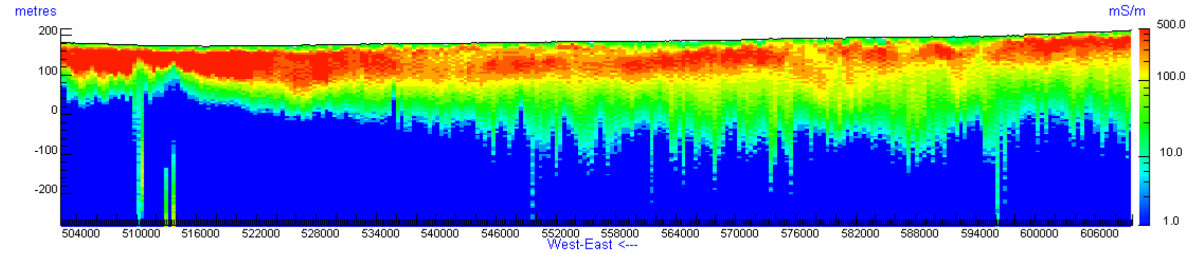
5.3.2 Multiple aircraft

As described in Section 2, there were two different survey aircraft involved in the acquisition, VH-TEM and VH-WGT. To test the consistency and repeatability of the data collected from each, we created CDI data for two lines, 2477 and 2480, that were flown by both aircraft. The EMFLOW output for these are shown on the next page.

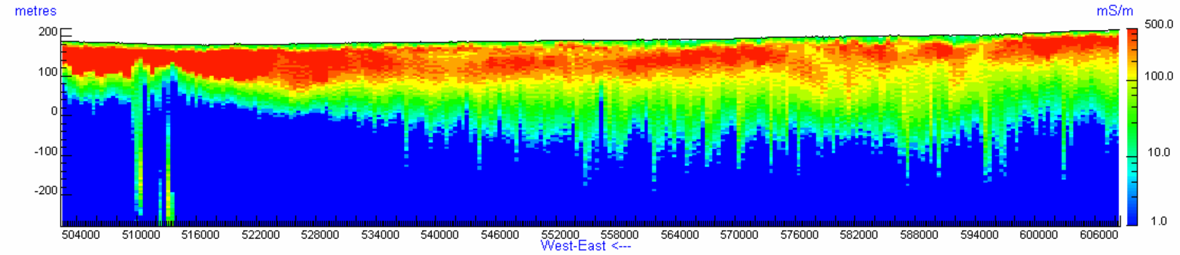
In general, a high-level of consistency is evident between the CDI's derived from both aircraft, in terms of both conductivity and depth distribution. This consistency is further demonstrated in Appendix VIII which contains CDI sections of the repeat and seismic / borehole lines that were flown by both aircraft.

Line 2477 (24771 flown by VH-TEM, 24772 flown by VH-WGT)

LINE 24771(CDI-Exponent:)

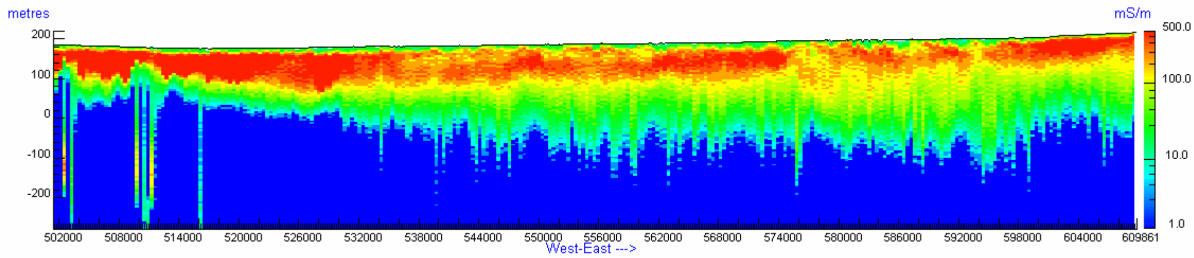


LINE 24772(CDI-Exponent:)

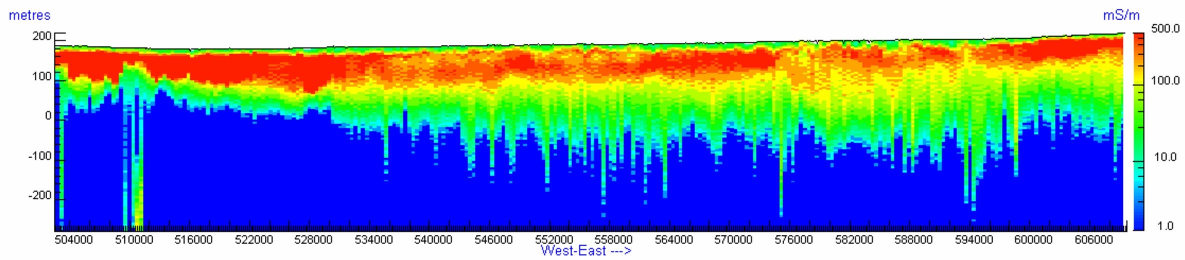


Line 2480 (24801 flown by VH-TEM, 24802 flown by VH-WGT)

LINE 24801(CDI-Exponent:)



LINE 24802(CDI-Exponent:)



REFERENCES

Garner, S.J., Thiel, D.V., 2000, Broadband (ULF-VLF) surface impedance measurements using MIMDAS: Exploration Geophysics, 31, 173-178.

Green, A., 1998. Altitude correction of time domain AEM data for image display and geological mapping, using the Apparent Dipole Depth (ADD) method. Exploration Geophysics. 29, 87-91.

Green, A., 1998. The use of multivariate statistical techniques for the analysis and display of AEM data. Exploration Geophysics. 29, 77-82.

Green, A., Lin, Z., 1996. Effect of uncertain or changing system geometry on airborne transient electromagnetic data: CSIRO Exploration. and Mining Research News No. 6, August 1996, 9-11, CSIRO Division of Exploration and Mining.

Lane, R., 2000, Conductive unit parameters : summarising complex conductivity distributions: Paper accepted for presentation at the SEG Annual Meeting, August 2000.

Lane, R., Green, A., Golding, C., Owers, M., Pik, P., Plunkett, C., Sattel, D., Thorn, B., 2000, An example of 3D conductivity mapping using the TEMPEST airborne electromagnetic system: Exploration Geophysics, 31, 162-172.

Lane, R., Leeming, P., Owers, M., Triggs, D., 1999, Undercover assignment for TEMPEST: Preview, Issue 82, 17-21.

Lane, R., Pracilio, G., 2000: Visualisation of sub-surface conductivity derived from airborne EM, SAGEEP 2000, 101-111.

Macnae, J.C., King, A., Stolz, N., Osmakoff, A. and Blaha, A., 1998, Fast AEM data processing and inversion: Exploration Geophysics, 29, 163-169.

Stolz, E., and Macnae, J., 1998, Evaluating EM waveforms by singular-value decomposition of exponential basis functions: Geophysics, 63, 64–74.

APPENDIX I – Weekly Acquisition Reports VH-WGT

Week Commencing:	**Monday 11-Dec-06**	Aircraft:	VH-WGT	Operators:	Nathan Alexander	Pilots:	Grant Hamilton, Troy Wilhelmi, Mark Harradence, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Kah Tho Lee	Techs:	Michael Wirski, Craig Lyra
Area S1 Total km:	34065.0	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065	Area Name:	S1	Accom:	Cattleman's Country	Contact #:	0429 109 240 / 02 6884 5222

Date		**Flight**	**Crew**		**Time**		**M/R**	**Oil**		**Fuel**	**This Flight**			**To Date**		**Standby**	**Comments**
		Number	**Plt(s)**	**Op**	**T/O**	**Land**	**Hrs**	**L**	**R**	**Added**	**Prod**	**Refly**	**Scrub**	**Prod**	**Refly**	**(0, 0.5, 1)**	
Monday	11-Dec-06	nil					0.0										Weather: Strong Cool S winds +24C
							0.0										Remarks: Replaced tow cable and standardised wiring to match.
Julian	10-Dec-00						0.0										
Day	1				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Tuesday	12-Dec-06	test	GH	SM/NA	5:55	6:45	0.8			400							Weather: Cool morning S Winds 15kts. +20C. Dubbo NE winds +32C
		Ferry	GH	SM/NA	9:33	12:21	2.8										Remarks : Quick Test flight for Tow cable then Mobilised to Dubbo,
Julian	346						0.0										Mark Harradence, Troy Wilhelmi & Til Ribarich arrive on site at 20:20
Day	2				Hours Today		3.6				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday	13-Dec-06						0.0			799							Weather: NE winds 15kts +34C
							0.0										Remarks: Set up base mags, Base GPS and liaise with Airport Manager for
Julian	347						0.0										permission to park aircraft in suitable location
Day	3				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Thursday	14-Dec-06	1	GH/TR	SM/NA	8:43	10:07	1.4			900							Weather: NE winds 5kts +30C
		TRAINING	TW/TR		11:34	13:07	1.6			600							Remarks: Liaised with Client and met with CMA.
Julian	348	TRAINING	TW/TR		14:34	15:33	1.0										Training fliight M.Harradence
Day	4				Hours Today		3.9				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Friday	15-Dec-06	2	TW/GH	NA	6:43	7:05	0.4			799							Weather: +22C NE winds; Midday Winds 15kts +28C
		Training	MH/TR	TR	8:54	12:29	3.6										Remarks: Test flight in morning to check LIDAR data. Liased with Office for
Julian	349	TRAINING	MH/TR/TW		21:34	21:55	0.4										assistance. Micheal Wirski & Craig Lyra to help. Night flying for pilots
Day	5				Hours Today		4.3				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Saturday	16-Dec-06	3	TW/GH	NA/MW	17:39	18:33	0.9			401							Weather: +20C NE winds 20kts; Midday Winds 25kts +26C
		TRAINING	MH/TR	NA	11:55	12:17	0.4										Remarks: Michael Wirski & Craig Lyra arrive on site. Work on LIDAR
Julian	350						0.0										Test flights of LIDAR with new software.
Day	6				Hours Today		1.3				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Sunday	17-Dec-06	4	MH/TR	NA/CL			0.8										Weather: +20C NE winds 20kts; Midday Winds 25kts +26C
		5	MH/TR	SM/MW			0.0										Remarks: Test flight in morning to check LIDAR data. Craig & Michael re writing
Julian	351	Training	MH/TR	MW/CL			0.0										software.
Day	7				Hours Today		0.8				0.0	0.0	0.0	0.0	0.0		Safety Meeting:

Total Job Hours	13.9	Weekly Totals	13.9	0	0	3899	0.0	0.0	0.0			0.0
Aircraft Hrs at		Total Aircraft Hours	7887.0	Ltrs/Hr		280					Total Standby	0.0
start of job	7873.1	Hours to Next Periodic	155.7	Running Avg			0.0 km/day				% Complete	0.0 %
Next service	8042.7	Anticipated Hours Next week	13.9				0.0 km/hr				km Remaining	34065.0 km

Seismic Line 50
Area North 16015

Week Commencing:	**Monday 18-Dec-06**	Aircraft:	VH-WGT	Operators:	Nathan Alexander	Pilots:	Grant Hamilton, Troy Wilhelmi, Mark Harradence, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Kah Tho Lee	Techs:	Michael Wirski, Craig Lyra
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Mark Harradence	Client:	BRS, Geo Australia
1835 Total Area KM:	34065	Area Name:	S1	Accom:	Cattleman's Country	Contact #:	0429 109 240 / 02 6884 5222

Date		**Flight Number**	**Crew Plt(s)**	**Crew Op**	**Time T/O**	**Time Land**	**M/R Hrs**	**Oil L**	**Oil R**	**Fuel Added**	**This Flight Prod**	**This Flight Refly**	**This Flight Scrub**	**To Date Prod**	**To Date Refly**	**Standby (0, 0.5, 1)**	**Comments**
Monday	18-Dec-06						0.0										Weather:
							0.0										Remarks: Work On Software for LIDAR
Julian	352						0.0										Scott Miller back to Sydney for Family emergency. Mark Harradence Crew Leader
Day	8				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Tuesday	19-Dec-06	Training	MH?TR/TW				1.8										Weather:
							0.0										Remarks: Software trials on the ground, rewired LIDAR cable
Julian	353						0.0										
Day	9				Hours Today		1.8				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday	20-Dec-06						0.0										Weather:
							0.0										Remarks:Testing of LIDAR software and relaibility
Julian	354						0.0										Clean aircraft and pack up fo equipment for pending departures 21/22DEC
Day	10				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Thursday	21-Dec-06		MH	MW			0.5										Weather:
			MH	MW			0.5										Remarks: Ferry to Naromine, for Opening of project
Julian	355						0.0										Other crew demob for Home for Xmas
Day	11				Hours Today		1.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Friday	22-Dec-06		MH	MW	7:50	9:00	1.2										Weather:
							0.0										Remarks: Ferry Aircraft to Bankstown for service in January
Julian	356						0.0										Mark and Michael home for Xmas
Day	12				Hours Today		1.2				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Saturday	23-Dec-06						0.0										Weather:
							0.0										Remarks:
Julian	357						0.0										
Day	13				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Sunday	24-Dec-06						0.0										Weather:
							0.0										Remarks:
Julian	358						0.0										
Day	14				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Total Job Hours	17.9		Weekly Totals				4.0	0	0	0	0.0	0.0	0.0			0.0	

Aircraft Hrs at		Total Aircraft Hours	7891.0	Ltrs/Hr	0	Total Standby	0.0
start of job	7873.1	Hours to Next Periodic	151.7	Running Avg	0.0 km/day	% Complete	0.0
Next service	8042.7	Anticipated Hours Next week	8.9		0.0 km/hr	km Remaining	34065.0

Survey Equipment Problems: ______________________________

Week Commencing:	**Monday 8-Jan-07**	Aircraft:	VH-WGT	Operators:	Scott Miller	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Lawrence, Nadir Halim	Techs:	Micheal Wriski
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	8-Jan-07	TEST	GH		16:45	17:50	1.8										Weather:
							0.0										Remarks: Test flight for engine change only
Julian	8						0.0										
Day	29				Hours Today		1.8				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Tuesday	9-Jan-07	Ferry	GH	MW	9:54	11:13	1.3										Weather:
							0.0										Remarks: Ferry Aircraft to Dubbo for further engine work as Bankstown
Julian	9						0.0										was too restrictive for flight tests
Day	30				Hours Today		1.3				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday	10-Jan-07	TEST	GH	GS	7:02	7:32	0.5										Weather: Warm day, NW winds +38C
		TEST	GH	GS	16:48	17:19	0.5										Remarks: Engine test flight only
Julian	10						0.0										
Day	31				Hours Today		1.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Thursday	11-Jan-07	TEST	GH/TR	MW	9:52	10:20	0.5										Weather: Warm Day NW winds +39C
							0.0										Remarks: Engine test flight only
Julian	11						0.0										Survey equipment will not work in hot daily temperatures system locks up
Day	32				Hours Today		0.5				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Friday	12-Jan-07	TEST	GH/TR	AM	14:38	15:03	0.9										Weather: Very Hot day +42C Westerly winds
							0.0										Remarks: Engine test flight only
Julian	12						0.0										Survey equipment will not work in hot daily temperatures system locks up
Day	33				Hours Today		0.9				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Saturday	13-Jan-07						0.0										Weather: Very Hot day +42C
							0.0										Remarks:
Julian	13						0.0										Survey equipment will not work in hot daily temperatures system locks up
Day	34				Hours Today		0.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Sunday	14-Jan-07	TEST	TR/GH	MW	8:32	8:58	0.4										Weather: Warm Day NE winds +35C
		TEST	TR/GH		15:18	15:45	0.5										Remarks: Engine test flight only
Julian	14						0.0										Relocated aircraft due to bushfire waterbombing using previous facilities
Day	35				Hours Today		0.9				0.0	0.0	0.0	0.0	0.0		Safety Meeting:

Total Job Hours	24.3	Weekly Totals	6.4	0	0	0	0.0 0.0 0.0	0.0
Aircraft Hrs at		Total Aircraft Hours	7896.5	Ltrs/Hr		0	Total Standby	0.0
start of job	7873.1	Hours to Next Periodic	146.2	Running Avg			0.0 km/day % Complete	0.0
Next service	8042.7	Anticipated Hours Next week	4.7				0.0 km/hr km Remaining	34065.0

Survey Equipment Problems: ______________________________

Week Commencing:	**Monday 15-Jan-07**	Aircraft:	VH-WGT	Operators:	Scott Miller	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Lawrence, Nadir Halim	Techs:	Micheal Wriski
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	15-Jan-07	TEST	GH/TR	MW	6:45	7:45	1.0										Weather: Strong Easterly wind 15-20 Kts Cool AM +20C Midday +35C
							0.0										Remarks: Test of LIDAR
Julian	15						0.0										WGT now located near RFDS due to emergency fire bombing program
Day	36				Hours Today		1.0				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Tuesday	16-Jan-07	6	TR/GH	MW			0.0										Weather: Strong Easterly wind 15-20 Kts Cool AM +20C Midday +35C
		7	TR/GH	MW													Remarks: Test of LIDAR over water
Julian	16						0.0										Second flight LIDAR Stacks over airport
Day	37				Hours Today		3.4				0.0	0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday	17-Jan-07	8	TR/GH	MW			2.1				64.5		25.8				Weather: North East winds 10kts AM 20C, PM 36C
							0.0										Remarks: Production
Julian	17						0.0										
Day	38				Hours Today		2.1				64.5	0.0	25.8	38.7	0.0		Safety Meeting:
Thursday	18-Jan-07	9	TR/GH	SM	6:50	9:15	2.4										Weather:North East Winds 15-20kts AM +25C PM +38C
							0.0										Remarks: Seismic lines and reflight of 400 foot ptiches and rolls
Julian	18						0.0										
Day	39				Hours Today		2.4				0.0	0.0	0.0	38.7	0.0		Safety Meeting:
Friday	19-Jan-07	10	TR/GH	SM			0.0										Weather:Hot Nrtherly winds midday +38C
		11	GH	SM			0.0										Remarks: Flights to fix low Z problems
Julian	19						0.0										
Day	40				Hours Today		2.6				0.0	0.0	0.0	38.7	0.0		Safety Meeting:
Saturday	20-Jan-07						0.0										Weather: Strong Winds 25-30kts +41C
							0.0										Remarks: PDO work on "Matilda"
Julian	20						0.0										
Day	41				Hours Today		0.0				0.0	0.0	0.0	38.7	0.0		Safety Meeting:
Sunday	21-Jan-07	12	GH/TR	SM			1.4										Weather: Strong Westerly winds 13-25kts AM +28C PM +40C
							0.0										Remarks: Test flight resolved Z problems and LIDAR drop outs caused by TX
Julian	21						0.0										off.
Day	42				Hours Today		1.4				0.0	0.0	0.0	38.7	0.0		Safety Meeting: Delayed until crew changes completed.
Total Job Hours		37.2	Weekly Totals				12.9	0	0	0	64.5	0.0	25.8			0.0	
Aircraft Hrs at			Total Aircraft Hours				7909.4	Ltrs/Hr		0				Total Standby		0.0	
start of job	7873.1		Hours to Next Periodic				133.3	Running Avg			9.2 km/day			% Complete		0.1	
Next service	8042.7		Anticipated Hours Next week				6.1				5.0 km/hr			km Remaining		34026.3	

Survey Equipment Problems: ______________________________

Week Commencing:	**Monday 22-Jan-07**	Aircraft:	VH-WGT	Operators:	Scott Miller	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Lawrence, Nadir Halim	Techs:	Micheal Wriski
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	22-Jan-07	13	GH/TR	SM	7:07	8:29	1.4			501							Weather: Slight Southerly 3kts +18C AM +35C Midday
		14	GH/TR	SM			0.5										Remarks: Flew seismic lines, errors in Lidar
Julian	22	15	GH	SM	20:20	20:45	0.4										Subsequent flights for LIDAR problem. Final flight landed at 2045
Day	43				Hours Today		2.3				0.0	0.0	0.0	38.7	0.0		Could not work on EMPDAS due to heat failures. (Crashes at > +35C)
Tuesday	23-Jan-07	TEST	TR/GH	SM/MW			0.5			850							Weather: South Easterly breeze.
							0.0										Remarks: Test flights of LIDAR, assumed fixed at this stage.
Julian	23						0.0										LIDAR mounted into shock mount as per specifications.
Day	44				Hours Today		0.5				0.0	0.0	0.0	38.7	0.0		Safety Meeting: Nil due to long work hours
Wednesday	24-Jan-07	16	TR/GH	MW	7:00	10:08	3.1			220	154.8		12.9				Weather: Slight Easterly breeze 3 kts +23C AM +36C Midday
							0.0			1150							Remarks: Production flight with no LIDAR problems. 2 lines flown short,
Julian	24						0.0										due to checks of LIDAR.
Day	45				Hours Today		3.1				154.8	0.0	12.9	180.6	0.0		Safety Meeting:
Thursday	25-Jan-07	17	TR/GH	MW	7:57	11:29	3.5			1129	335.4		12.9				Weather: +23C AM Slight Easterly Breeze, 6 Kts. +35C Midday
							0.0										Remarks: Delay of flight as LIDAR output error message in Laptop Data stream
Julian	25						0.0										(Using Hyperterminal). Changed to +12V. No problems
Day	46				Hours Today		3.5				335.4	0.0	12.9	503.1	0.0		Safety Meeting: Nil due to long work hours
Friday	26-Jan-07	18	TR/GH	SM	7:07	10:34	3.5			1160	332.4						Weather: Sout Easterly Breeze 6Kts. +16C AM +34C midday
							0.0										Remarks: Production flight. Still getting PDAS reboots in flight for no reason
Julian	26						0.0										Waiting for Cable to build new LIDAR cable. Temp on floor.
Day	47				Hours Today		3.5				332.4	0.0	0.0	835.5	0.0		Safety Meeting: Nil due to long work hours
Saturday	27-Jan-07						0.0										Weather: Strong Easterly breeze 15-20Kts
							0.0										Remarks:PDO no flying
Julian	27						0.0										
Day	48				Hours Today		0.0				0.0	0.0	0.0	835.5	0.0		Safety Meeting: Nil due to long work hours
Sunday	28-Jan-07	19	TR/GH	SM	6:23	9:24	3.0			1062	245.4	12.9					Weather: Southerly change winds 7 Kts +14C AM +29C Midday
							0.0										Remarks: Production flight with repaet lines. PDAS reboot still occuring
Julian	28						0.0										Attempted to swap PNAV but was supplied with wrong one.
Day	49				Hours Today		3.0				245.4	12.9	0.0	1093.8	12.9		Safety Meeting: Nil due to long work hours
Total Job Hours	53.1		Weekly Totals				15.9	0	0	6072	1068.0	12.9	25.8			0.0	
Aircraft Hrs at			Total Aircraft Hours				7925.3	Ltrs/Hr		382					Total Standby	0.0	
start of job	7873.1		Hours to Next Periodic				117.4	Running Avg			152.6 km/day				% Complete	3.2	
Next service	8042.7		Anticipated Hours Next week				7.5				67.2 km/hr				km Remaining	32971.2	

Survey Equipment Problems: \

Week Commencing:	**Monday 29-Jan-07**	Aircraft:	VH-WGT	Operators:	Scott Miller	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Steve Carter	Techs:	Micheal Wriski
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	29-Jan-07	20	GH/TR	SM	6:26	9:54	3.5			1160	438.9						Weather:S;ight Southerly brreze 3 kts +13C AM +29C Midday
							0.0										Remarks: Production flight. PDAS reboot in flight still occuring
Julian	29						0.0										
Day	50				Hours Today		3.5				438.9	0.0	0.0	1532.7	12.9		Safety Meeting:
Tuesday	30-Jan-07	21	TR/GH	SM	6:25	10:03	3.6			1110	372.3						Weather:Slight southerly 8kts, +18C AM +37C Midday
							0.0										Remarks: Production flight. Pdas reboot in flight cost 2 lines
Julian	30						0.0										
Day	51				Hours Today		3.6				372.3	0.0	0.0	1905.0	12.9		Safety Meeting:
Wednesday	31-Jan-07	22	GH/TR	SM	6:29	7:01	0.5			381						1.0	Weather: Easterly breeze 9kts. +18C AM +40C Midday
							0.0										Remarks: Severe Sferix in flight while doing cals. No production possible
Julian	31						0.0										S.Miller visited Dr for neck injurry
Day	52				Hours Today		0.5				0.0	0.0	0.0	1905.0	12.9		Safety Meeting: Held today
Thursday	1-Feb-07						0.0									1.0	Weather: Strong easterly breeze 25Kts gusting to 28. +18C AM + 35C midday
							0.0										Remarks: Winds too strong for survey. No flights
Julian	32						0.0										S.Miller on sick leave (1 day)
Day	53				Hours Today		0.0				0.0	0.0	0.0	1905.0	12.9		Safety Meeting:
Friday	2-Feb-07	23	TR	SM	6:37	8:37	2.0				159.6	12.9				0.5	Weather: Strong easterly breeze 15kts, +20C AM +37C midday
		24	TR	MW	13:26	13:36	0.2			720							Remarks: Winds too strong for continued EM (bird) survey.
Julian	33						0.0										Test flight of LDAR protection with optical glass. Did not work with protective
Day	54				Hours Today		2.2				159.6	12.9	0.0	2077.5	25.8		glass plate. Plate removed after test.
Saturday	3-Feb-07	25	GH	SM	6:37	9:55	3.3			1160	399.0						Weather:Slight Northerly breeze 8Kts, +22C AM, +38C Midday
							0.0										Remarks:Production flight cut short by 30 minutes due to incresed turbulence.
Julian	34						0.0										PDAS reboot cost 20 minutes and one line reflown inflight
Day	55				Hours Today		3.3				399.0	0.0	0.0	2476.5	25.8		PNAV replacement installed after flight, check test OK
Sunday	4-Feb-07	26	TR	MW	6:37	9:39	3.0			1086	279.3		39.9				Weather: Winds East 8 kts +23C AM +40C Midday
							0.0										Remarks: Several system problems with PDAS, EM XFR, GPS and HDD.
Julian	35						0.0										Production shortened due to problems.
Day	56				Hours Today		3.0				279.3	0.0	39.9	2715.9	25.8		Work on Robyn ongoing, installed new Regulator board
Total Job Hours	69.2		Weekly Totals				16.1	0	0	5617	1649.1	12.9	39.9			2.5	

Aircraft Hrs at		Total Aircraft Hours	7941.5	Ltrs/Hr	348	Total Standby	2.5
start of job	7873.1	Hours to Next Periodic	101.3	Running Avg	235.6 km/day	% Complete	8.0
Next service	8042.7	Anticipated Hours Next week	8.5		102.2 km/hr	km Remaining	31349.1

Survey Equipment Problems: ____________________

Week Commencing:	**Monday 5-Feb-07**	Aircraft:	VH-WGT	Operators:	Scott Miller	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Steve Carter	Techs:	Micheal Wriski
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	5-Feb-07						0.0									1.0	Weather:Strong Easterly winds 19kts +23C AM +38C midday
							0.0										Remarks: No flight due to strong winds
Julian	36						0.0										Work on Robyn and PDAS
Day	57				Hours Today		0.0				0.0	0.0	0.0	2715.9	25.8		Safety Meeting: Nil
Tuesday	6-Feb-07	27	TR	SM	6:26	10:14	3.8			1159	319.2	39.9					Weather: Winds From East 8kts +22C AM +40C midday
							0.0										Remarks: Full production flight PDAS reboot inflight.
Julian	37						0.0										
Day	58				Hours Today		3.8				319.2	39.9	0.0	3075.0	65.7		Safety Meeting: Nil
Wednesday	7-Feb-07						0.0										Weather: Stong gusting winds, Average 20kts gusting to 30Kts +23C AM, +39C
							0.0										Remarks: No flight due to strong winds. Work ongoing with Robyn.
Julian	38						0.0										M. Wirski to complete coil balance and re install into bird sheel.
Day	59				Hours Today		0.0				0.0	0.0	0.0	3075.0	65.7		Safety : Incident report in for LIDAR. QIR submitted on glass.
Thursday	8-Feb-07	28	TR	SM	6:30	10:12	3.7			1120	478.8		39.9				Weather: North Easterly breeze, 7kts. +19C AM, +36C Midday
							0.0										Remarks: Full production flight. ! Scrub due to cross track of PNAV.
Julian	39						0.0										
Day	60				Hours Today		3.7				478.8	0.0	39.9	3513.9	65.7		Safety Meeting:Held at 1800.
Friday	9-Feb-07						0.0										Weather: Strong Easterly +16kts. +19C AM +36C Midday
							0.0										Remarks: No flight due to system crash and strong winds.
Julian	40						0.0										
Day	61				Hours Today		0.0				0.0	0.0	0.0	3513.9	65.7		Safety Meeting:
Saturday	10-Feb-07						0.0										Weather: Strong Winds +20Kts by 9AM. +18C AM +35C Midday
							0.0										Remarks: Rebuilding EMPDAS & PDAS software files including backups.
Julian	41						0.0										Robyn Bird ready for test flight, no brass bolts for tail
Day	62				Hours Today		0.0				0.0	0.0	0.0	3513.9	65.7		Safety Meeting:
Sunday	11-Feb-07	29	GH	SM\GT	6:25	9:05	2.7			1085	279.3	39.9					Weather: Slight Easterly Breeze 6 Kts. +16C AM +34C Midday
							0.0										Remarks: Production flght short due to strong turbulence and winds
Julian	42						0.0										Also had High Sferix in flight.
Day	63				Hours Today		2.7				279.3	39.9	0.0	3833.1	105.6		Safety Meeting:
Total Job Hours		79.4	Weekly Totals				10.2	0	0	3364	1077.3	79.8	39.9			1.0	

Aircraft Hrs at start of job	**7873.1**	Total Aircraft Hours	7951.6	Ltrs/Hr	331	Total Standby	3.5
Next service	**8042.7**	Hours to Next Periodic	91.1	Running Avg	153.9 km/day	% Complete	11.3
		Anticipated Hours Next week	8.7		106.0 km/hr	km Remaining	30231.9

Survey Equipment Problems: ______________________________

Week Commencing:	**Monday 12-Feb-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Grant Hamilton, Til Ribarich
Job Number:	1835	Base:	Dubbo	Data Proc:	Steve Carter	Techs:	Glendon Turner/ Scott Miller
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	12-Feb-07	30	TR	SM/GT	6:30	7:16	0.8			290						1.0	Weather: Strong winds 30 Kts +18C AM +29C Midday Large storms in region
							0.0										Remarks: Strong winds just after take off, resulted in flight cancelled. Sferix also high
Julian	43						0.0										Electrical failure of main supply rail for Rack just before landing
Day	64				Hours Today		0.8				0.0	0.0	0.0	3833.1	105.6		Safety Meeting:
Tuesday	13-Feb-07						0.0									1.0	Weather: Winds 18-20KTs 6AM. +17C AM +25C Midday
							0.0										Remarks: All wiring checked by Engineer on site. Rack Supply battery OK. Possible Relay
Julian	44						0.0										No Production due to contined strong winds, from Low pressure trough throughout inland
Day	65				Hours Today		0.0				0.0	0.0	0.0	3833.1	105.6		Eastern Australia. (QLD - VIC)
Wednesday	14-Feb-07	31	TR	SM/GT	6:30	9:26	2.9			961	239.4						Weather: Easterly breeze, 7 kts +18C AM, +30C Midday Storms in afternoon
							0.0										Remarks: Production flight cut short due winds.
Julian	45						0.0										Mid air near miss incident.
Day	66				Hours Today		2.9				239.4	0.0	0.0	4072.5	105.6		Safety Meeting:
Thursday	15-Feb-07	32	GH	SM/GT	6:35	9:48	3.2			1100	399.0						Weather: Winds 070/7kts +19C AM +30C Midday. Storms in afternoon
							0.0										Remarks: Production Flight cut short by 25 mins due to turbulence and winds
Julian	46						0.0										John Stewart arrived on site 2030, assitance on RH Gen and voltages.
Day	67				Hours Today		3.2				399.0	0.0	0.0	4471.5	105.6		Safety Meeting:
Friday	16-Feb-07	33	TR	SM/GT	7:05	10:10	3.1			971	279.3						Weather: 060/6Kts +19C AM +32C Midday Storms in Afternoon
							0.0										Remarks: Aircraft Voltage Regulator adjusted to 28V, turbulence cut short survey flight
Julian	47						0.0										Tested Flash card in C: Drive of PDAS OK
Day	68				Hours Today		3.1				279.3	0.0	0.0	4750.8	105.6		Safety Meeting:
Saturday	17-Feb-07	34	GH	SM/GT	6:30	10:06	3.6			1160	438.9						Weather: 110/04 kts +18C AM +33C Midday
							0.0										Remarks: Full Production flight
Julian	48						0.0										
Day	69				Hours Today		3.6				438.9	0.0	0.0	5189.7	105.6		Safety Meeting:
Sunday	18-Feb-07	35	GH	SM/GT	6:25	9:27	3.0			1100	359.1						Weather: 060 / 8 kts +20C AM +32C Midday
							0.0										Remarks: Shorter flight due to turbulence. Trialed CF Flash in PDAS C: drive for last line.
Julian	49						0.0										
Day	70				Hours Today		3.0				359.1	0.0	0.0	5548.8	105.6		Safety Meeting:
Total Job Hours		96.0	Weekly Totals				16.6	0	0	5582	1715.7	0.0	0.0			2.0	

Aircraft Hrs at		Total Aircraft Hours	7968.3	Ltrs/Hr	336	Total Standby	5.5
start of job	**7873.1**	Hours to Next Periodic	74.4	Running Avg	245.1 km/day	% Complete	16.3
Next service	**8042.7**	Anticipated Hours Next week	9.5		103.1 km/hr	km Remaining	28516.2

Survey Equipment Problems: ____________________

Week Commencing:	**Monday 19-Feb-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Grant Hamilton
Job Number:	1835	Base:	Dubbo	Data Proc:	Steve Carter	Techs:	Glendon Turner/ Scott Miller
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Scott Miller	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	19-Feb-07	36	GH	GT/SM	6:35	10:16	3.7			1160	478.8						Weather: 090/07kts +22C AM +36C midday Clouds 6/8 AM Cumulous Midday
							0.0										Remarks: Full production flight using CF in PDAS C: Drive.
Julian	50						0.0										Unable to trial CF in EMPDAS D: Drive due to full flight.
Day	71				Hours Today		3.7				478.8	0.0	0.0	6027.6	105.6		Safety Meeting: Held at 1745
Tuesday	20-Feb-07	37	GH	GT	6:27	9:46	3.3			600	359.1		39.9				Weather: 140 /11kts +21C AM, +36C Midday. Clouds 1/8 AM, Cumulous and storms Mid
		Test	GH	GT	11:13	11:44	0.5			842							Remarks: Production cut short due to winds, and equipment failure. Test of Robyn Bird
Julian	51						0.0										succesfully completed before temps got too high for take off.
Day	72				Hours Today		3.8				359.1	0.0	39.9	6346.8	105.6		Safety Meeting:
Wednesday	21-Feb-07	38	GH	GT	6:34	9:56	3.4			1140	359.1	39.9					Weather: 100 /12Kts +23C AM Clouds 4/8, +30C Midday, 350/ 10kts +35C PM Clouds 3/
							0.0										Remarks: Production short due turbulence, and PDAS lockup on line. Replaced CF with H
Julian	52						0.0										Reflight from previous day flown OK
Day	73				Hours Today		3.4				359.1	39.9	0.0	6745.8	145.5		Safety Meeting:
Thursday	22-Feb-07	39	GH	GT	6:38	10:26	3.8			241	478.8						Weather: 020/05 Kts +23C AM clouds 7/8 light showers in area, +35 PM 350/10 kts thund
		Test			14:00	14:15	0.2			1161							Remarks: Full production flight, light winds and cloud cover kept thermals and temps low
Julian	53						0.0										Test flight for Co Pilot Altimeter (not used for survey acquisition)
Day	74				Hours Today		4.1				478.8	0.0	0.0	7224.6	145.5		Safety Meeting:
Friday	23-Feb-07						0.0										Weather: 030/7kts +22C AM clouds 4/8 +33C PM 350/12Kts hail / thundersorms
							0.0										Remarks: PDO No flying today
Julian	54						0.0										
Day	75				Hours Today		0.0				0.0	0.0	0.0	7224.6	145.5		Safety Meeting:
Saturday	24-Feb-07	40	GH	GT	6:45	10:35	3.8			1120	478.8						Weather: 300/06kts +21C AM cloud 1/8, +35C PM 320/12kts clouds 5/8
							0.0										Remarks: Full production flight
Julian	55						0.0										
Day	76				Hours Today		3.8				478.8	0.0	0.0	7703.4	145.5		Safety Meeting:
Sunday	25-Feb-07	41	GH/MY	SM	7:01	10:26	3.4			1119	359.1						Weather: 140/06kts +20C AM Clouds 3/8. +33C PM 120/08kts clouds 6/8
							0.0										Remarks: Full production flight with 50km ferry from/to Dubbo
Julian	56						0.0										
Day	77				Hours Today		3.4				359.1	0.0	0.0	8062.5	145.5		Safety Meeting:
Total Job Hours	118.2		Weekly Totals				22.2	0	0	7383	2513.7	39.9	39.9			0.0	

Aircraft Hrs at		Total Aircraft Hours	7990.4	Ltrs/Hr	333	Total Standby	5.5
start of job	7873.1	Hours to Next Periodic	52.3	Running Avg	359.1 km/day	% Complete	23.7
Next service	8042.7	Anticipated Hours Next week	10.7		113.3 km/hr	km Remaining	26002.5

Survey Equipment Problems: ______________________________

Week Commencing:	**Monday 26-Feb-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Grant Hamilton / Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Steve Carter	Techs:	Glendon Turner/ Scott Miller
Area S1 Total km:	34065	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	S1/N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	26-Feb-07	42	MY/GH	GT	6:48	9:00	2.2			1119	199.5						110/10 +20C AM CLD6/8 HEAVY RAIN AT 1000. +28CPM
							0.0										Flight cut short due rain and wind
Julian	57						0.0										
Day	78				Hours Today		2.2				199.5	0.0	0.0	8262.0	145.5		Safety Meeting:
Tuesday	27-Feb-07	43	MY	GT	6:55	10:28	3.6			1260	399.0		39.9				Am 120/05 +19C CLD 7/8 Pm 100/10 +28c
							0.0										Full flight 1 line scrubed due to system noise
Julian	58						0.0										
Day	79				Hours Today		3.6				399.0	0.0	39.9	8621.1	145.5		Safety Meeting:
Wednesday	28-Feb-07	44	GH	SM	6:49	8:21	1.5			550	0.0					1.0	Am 070/08 +19c CLD 4/8 (storms) Pm +28c
							0.0										Spherics no production possible
Julian	59						0.0										
Day	80				Hours Today		1.5				0.0	0.0	0.0	8621.1	145.5		Safety Meeting:
Thursday	1-Mar-07	45	MY	GT	7:00	10:45	3.8			1140	375.6		375.6				Weather:130/07 20c
							0.0										Remarks:Extreme spherics
Julian	60						0.0										
Day	81				Hours Today		3.8				375.6	0.0	375.6	8621.1	145.5		Safety Meeting:Held by SM
Friday	2-Mar-07	46	MY	GT	7:25	10:30	3.1			1021	253.8	121.8					Weather:010/05 20c-25c Fine cond.
							0.0										Remarks:Cut short due turbulence
Julian	61						0.0										
Day	82				Hours Today		3.1				253.8	121.8	0.0	8996.7	267.3		Safety Meeting:
Saturday	3-Mar-07						0.0										Weather:
							0.0										Remarks:Nil flying due rebalancing bird
Julian	62						0.0										
Day	83				Hours Today		0.0				0.0	0.0	0.0	8996.7	267.3		Safety Meeting:
Sunday	4-Mar-07	47	MY	GT	6:50	10:15	3.4			1100	441.6						Weather: VRB/05 20c-30c Fine cond.
							0.0										Remarks:Cut short due spherics and turbulence
Julian	63						0.0										
Day	84				Hours Today		3.4				441.6	0.0	0.0	9438.3	267.3		Safety Meeting:
Total Job Hours		135.8	Weekly Totals				17.5	0	0	6190	1669.5	121.8	415.5			1.0	

Aircraft Hrs at		Total Aircraft Hours	8008.0	Ltrs/Hr	353		Total Standby	6.5	
start of job	7873.1	Hours to Next Periodic	34.7	Running Avg		238.5 km/day	% Complete	27.7	39.9
Next service	8042.7	Anticipated Hours Next week	11.2			95.2 km/hr	km Remaining	24626.7	10
Survey Equipment Problems:									399

Week Commencing:	**Monday 5-Mar-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34165 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	5-Mar-07						0.0										Weather:
							0.0										Remarks:Nil flying due wx - rain/storms
Julian	64						0.0										
Day	85				Hours Today		0.0				0.0	0.0	0.0	9438.3	267.3	1.0	Safety Meeting:
Tuesday	6-Mar-07						0.0										Weather:
							0.0										Remarks:Nil flying due wx - 13017
Julian	65						0.0										
Day	86				Hours Today		0.0				0.0	0.0	0.0	9438.3	267.3	1.0	Safety Meeting:
Wednesday	7-Mar-07						0.0										Weather:
							0.0									1.0	Nil Flying due wx - rain low cld
Julian	66						0.0										
Day	87				Hours Today		0.0		1		0.0	0.0	0.0	9438.3	267.3		Safety Meeting:
Thursday	8-Mar-07						0.0									1.0	Weather:
							0.0										Nil flying due storms am and turb pm
Julian	67						0.0										
Day	88				Hours Today		0.0				0.0	0.0	0.0	9438.3	267.3		Safety Meeting:Held no items raised
Friday	9-Mar-07	48	MY	GT	10:00	13:25	3.4			1200	198.0	172.0					Weather: Early fog then fine w/v 12007
							0.0										Remarks: Re-fly due to spherics
Julian	68						0.0										
Day	89				Hours Today		3.4				198.0	172.0	0.0	9808.3	439.3		Safety Meeting:
Saturday	10-Mar-07	49	MY	GT	7:00	10:40	3.7		1	1272	452.0	122.0					Weather:Fine 08011
							0.0										Remarks: Re-fly due to spherics
Julian	69						0.0										
Day	90				Hours Today		3.7				452.0	122.0	0.0	10382.3	561.3		Safety Meeting:
Sunday	11-Mar-07	50	MY	GT	7:00	10:45	3.8			1250	574.0						Weather:Perfect 12007
							0.0										Remarks:
Julian	70						0.0										
Day	91				Hours Today		3.8				574.0	0.0	0.0	10956.3	561.3		Safety Meeting:
Total Job Hours		146.6	Weekly Totals				10.8	0	2	3722	1224.0	294.0	0.0			4.0	

Aircraft Hrs at		Total Aircraft Hours	8018.8	Ltrs/Hr	344	Total Standby	10.5
start of job	7873.1	Hours to Next Periodic	23.9	Running Avg	174.9 km/day	% Complete	32.1
Next service	8042.7	Anticipated Hours Next week	11.2		113.0 km/hr	km Remaining	23208.7

Survey Equipment Problems: ______

Week Commencing:	**Monday 12-Mar-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight	Crew		Time		M/R	Oil		Fuel	This Flight			To Date		Standby	Comments
		Number	Plt(s)	Op	T/O	Land	Hrs	L	R	Added	Prod	Refly	Scrub	Prod	Refly	(0, 0.5, 1)	
Monday	12-Mar-07	51	MY	GT	7:00	10:40	3.7			1340	553.0						Weather: Fine 19005 to 08012
							0.0										Remarks:
Julian	71						0.0										
Day	92				Hours Today		3.7				553.0	0.0	0.0	11509.3	561.3		Safety Meeting:
Tuesday	13-Mar-07	52	MY	GT	9:10	10:50	1.7			600	132.0						Weather: Marginal 10018 to 08018
							0.0										Remarks: Flight cut short due turbulence
Julian	72						0.0										
Day	93				Hours Today		1.7				132.0	0.0	0.0	11641.3	561.3		Safety Meeting:
Wednesday	14-Mar-07	53	MY	GT	7:40	11:20	3.7			1232	452.0						Weather: Fine 11011 to 10010
							0.0										Remarks:
Julian	73						0.0										
Day	94				Hours Today		3.7				452.0	0.0	0.0	12093.3	561.3		Safety Meeting:
Thursday	15-Mar-07	54	MY	GT	7:00	10:00	3.0			1004	396.0						Weather: Fine 06010 to 06011
							0.0										Remarks:
Julian	74						0.0										
Day	95				Hours Today		3.0				396.0	0.0	0.0	12489.3	561.3		Safety Meeting:
Friday	16-Mar-07	N/A	MY	GT	9:30	10:00	0.5			460							Weather: 33013 to 31014
					12:15	12:40	0.4										Remarks: CMOS battery failure so no production. Warren open day
Julian	75						0.0										
Day	96				Hours Today		0.9				0.0	0.0	0.0	12489.3	561.3		Safety Meeting:
Saturday	17-Mar-07	55	MY	GT	7:00	10:40	3.7			1460	528.0						Weather: Fine 06004 to 28008
							0.0										Remarks: Compac flash card reader problem + data cable problem. Field repair carr
Julian	76						0.0										
Day	97				Hours Today		3.7				528.0	0.0	0.0	13017.3	561.3		Safety Meeting: Held, no issue's raised
Sunday	18-Mar-07	56	MY	GT	8:15	11:00	2.8			920	330.0						Weather: Windy + Turbulent 09016 to 09017
							0.0										Remarks: Flight cut short due turbulence
Julian	77						0.0										
Day	98				Hours Today		2.8				330.0	0.0	0.0	13347.3	561.3		Safety Meeting:

Total Job Hours	165.9	Weekly Totals	19.3	0	0	7016	2391.0	0.0	0.0	0.0
Aircraft Hrs at		Total Aircraft Hours	8038.1	Ltrs/Hr		363			Total Standby	10.5
start of job	7873.1	Hours to Next Periodic	4.6	Running Avg			341.6 km/day		% Complete	39.1
Next service	8042.7	Anticipated Hours Next week	11.8				123.7 km/hr		km Remaining	20817.7

Survey Equipment Problems: ______________________

Week Commencing:	**Monday 19-Mar-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	19-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	78						0.0										
Day	99				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Tuesday	20-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	79						0.0										
Day	100				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Wednesday	21-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	80						0.0										
Day	101				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Thursday	22-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	81						0.0										
Day	102				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Friday	23-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	82						0.0										
Day	103				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Saturday	24-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	83						0.0										
Day	104				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Sunday	25-Mar-07						0.0										Weather:
							0.0										Remarks: Maintenance
Julian	84						0.0										
Day	105				Hours Today		0.0				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Total Job Hours		165.9		Weekly Totals			0.0	0	0	0	0.0	0.0	0.0			0.0	
Aircraft Hrs at				Total Aircraft Hours			8038.1	Ltrs/Hr		-					Total Standby	10.5	
start of job		7873.1		Hours to Next Periodic			4.6	Running Avg			0.0 km/day				% Complete	39.1	
Next service		8042.7		Anticipated Hours Next week			11.0				- km/hr				km Remaining	20817.7	

Survey Equipment Problems: ____________________

Week Commencing:	**Monday 26-Mar-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	26-Mar-07		MY		18:15	19:35	1.3										Weather:
							0.0										Remarks: Ferry Bankstown to Dubbo
Julian	85						0.0										
Day	106				Hours Today		1.3				0.0	0.0	0.0	13347.3	561.3		Safety Meeting:
Tuesday	27-Mar-07	57	MY	GT/LK	8:15	10:25	2.2			691	198.0						Weather: 06014
							0.0			658							Remarks: Cut short due ill crew member.
Julian	86						0.0										
Day	107				Hours Today		2.2				198.0	0.0	0.0	13545.3	561.3		Safety Meeting:
Wednesday	28-Mar-07	58	MY	GT/LK	7:20	9:30	2.2			600	198.0		66.0				Weather: 08007
		59	MY	GT/LK	16:55	18:10	1.3			540				Comp. Box			Remarks: Line scrubbed due coil knock. Flight shortend due turb.
Julian	87						0.0										
Day	108				Hours Today		3.4				198.0	0.0	66.0	13677.3	561.3		Safety Meeting:
Thursday	29-Mar-07	60	MY	GT/LK	7:10	10:05	2.9		1	1000	330.0	66.0					Weather:06004
			MY	GT/LK	11:10	12:10	1.0			370	30.0		30.0				Remarks:2nd flight failed due rain
Julian	88						0.0										
Day	109				Hours Today		3.9				360.0	66.0	30.0	14073.3	627.3		Safety Meeting: Yes
Friday	30-Mar-07	61	MY	GT/LK	7:15	10:20	3.1			1050	264.0						Weather:23008
							0.0										Remarks:
Julian	89						0.0										
Day	110				Hours Today		3.1				264.0	0.0	0.0	14337.3	627.3		Safety Meeting:
Saturday	31-Mar-07	62	MY	GT/LK	7:00	10:00	3.0		1	990	330.0		330.0				Weather:00000 and 13009
		63	MY	GT/LK	11:25	13:15	1.8			624	132.0						Remarks: 1st flight scrubbed due flown wrong direction 2nd flight cut short
Julian	90						0.0										due to turbulance
Day	111				Hours Today		4.8				462.0	0.0	330.0	14469.3	627.3		Safety Meeting:
Sunday	1-Apr-07	64	MY	GT/LK	6:10	9:10	3.0			1124	264.0	198.0					Weather:13009
							0.0										Remarks:
Julian	91						0.0										
Day	112				Hours Today		3.0				264.0	198.0	0.0	14931.3	825.3		Safety Meeting:
Total Job Hours		187.7		Weekly Totals			21.8	0	2	7647	1746.0	264.0	426.0			0.0	

Aircraft Hrs at		Total Aircraft Hours	8059.9	Ltrs/Hr	352	Total Standby	10.5
start of job	7873.1	Hours to Next Periodic	80.1	Running Avg	249.4 km/day	% Complete	43.7
Next service	8140	Anticipated Hours Next week	11.7		80.3 km/hr	km Remaining	19233.7

Survey Equipment Problems: ______________________

Week Commencing:	**Monday 2-Apr-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	2-Apr-07	65	MY	LK/GT	6:15	9:00	2.8			988	198.0						Weather: 13010
		66	MY	LK/GT	9:55	12:35	2.7			906	330.0						Remarks:
Julian	92						0.0										
Day	113				Hours Today		5.4				528.0	0.0	0.0	15459.3	825.3		Safety Meeting:
Tuesday	3-Apr-07						0.0										Weather:
							0.0										Remarks:PDO
Julian	93						0.0										
Day	114				Hours Today		0.0				0.0	0.0	0.0	15459.3	825.3		Safety Meeting:
Wednesday	4-Apr-07	67	MY	LK/GT	6:25	10:30	4.1			1006	327.0		66.0				Weather:11009
		68	MY	LK/GT	10:30	12:15	1.8			596	129.0						Remarks:
Julian	94						0.0										
Day	115				Hours Today		5.8				456.0	0.0	66.0	15849.3	825.3		Safety Meeting:
Thursday	5-Apr-07	69	MY	LK/GT	6:15	9:00	2.8			906	254.0	66.0					Weather: 15007
		70	MY	LK	10:05	12:15	2.2			729	248.0						Remarks:
Julian	95						0.0										
Day	116				Hours Today		4.9				502.0	66.0	0.0	16417.3	891.3		Safety Meeting:
Friday	6-Apr-07	71	MY	LK	6:10	9:10	3.0			984	244.0		60.0				Weather: 14010
							0.0										Remarks:
Julian	96						0.0										
Day	117				Hours Today		3.0				244.0	0.0	60.0	16601.3	891.3		Safety Meeting:
Saturday	7-Apr-07						0.0										Weather:
							0.0										Remarks: PDO
Julian	97						0.0										
Day	118				Hours Today		0.0				0.0	0.0	0.0	16601.3	891.3		Safety Meeting:
Sunday	8-Apr-07	72	MY	LK	6:05	8:25	2.3			898	119.0		60.0				Weather: 08006
		73	MY	LK	9:15	10:50	1.6			520	59.0		59.0				Remarks:
Julian	98						0.0										
Day	119				Hours Today		3.9				178.0	0.0	119.0	16660.3	891.3		Safety Meeting:
Total Job Hours		210.8		Weekly Totals			23.1	0	0	7533	1908.0	66.0	245.0			0.0	

Aircraft Hrs at		Total Aircraft Hours	8083.0	Ltrs/Hr	326	Total Standby	10.5
start of job	7873.1	Hours to Next Periodic	57.0	Running Avg	272.6 km/day	% Complete	48.8
Next service	8140	Anticipated Hours Next week	12.3		82.7 km/hr	km Remaining	17504.7

Survey Equipment Problems: ______________________

Week Commencing:	**Monday 9-Apr-07**	Aircraft:	VH-WGT	Operators:	Glendon Turner	Pilots:	Mick Young
Job Number:	1835	Base:	Dubbo	Data Proc:	Matt Noteboom	Techs:	Glendon Turner
Total km	34165	Country:	Australia	Crew Leader:	Mick Young	Client:	BRS, Geo Australia
1835 Total Area KM:	34065 0	Area Name:	N1	Accom:	Talarook Motor Inn	Contact #:	0429 109 240 / 02 6884 5222

Date		Flight Number	Crew Plt(s)	Crew Op	Time T/O	Time Land	M/R Hrs	Oil L	Oil R	Fuel Added	This Flight Prod	This Flight Refly	This Flight Scrub	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday	9-Apr-07	74	MY	LK	6:10	8:25	2.3			750	115.0	119.0					Weather: 12006
		75	MY	LK	9:20	12:05	2.8			906	342.0						Remarks:
Julian	99						0.0										
Day	120				Hours Today		5.0				457.0	119.0	0.0	17236.3	1010.3		Safety Meeting:
Tuesday	10-Apr-07	76	MY	LK	6:05	8:50	2.8			1100	277.0						12006
		77	MY	LK	9:55	12:10	2.3			780	274.0						Remarks:
Julian	100						0.0										
Day	121				Hours Today		5.0				551.0	0.0	0.0	17787.3	1010.3		Safety Meeting:
Wednesday	11-Apr-07	78	MY	LK	6:05	9:10	3.1			1044	372.0						13005
		79	MY	LK	10:00	12:00	2.0			658	215.0						Remarks:
Julian	101						0.0										
Day	122				Hours Today		5.1				587.0	0.0	0.0	18374.3	1010.3		Safety Meeting:
Thursday	12-Apr-07	80	MY	LK	6:00	9:15	3.3				313.0						Weather:13007
							0.0										Remarks: Last flight for WGT on 1835. Casa to finish
Julian	102						0.0										
Day	123				Hours Today		3.3				313.0	0.0	0.0	18687.3	1010.3		Safety Meeting: Yes, no items
Friday	13-Apr-07						0.0										Weather:
							0.0										Remarks:
Julian	103						0.0										
Day	124				Hours Today		0.0				0.0	0.0	0.0	18687.3	1010.3		Safety Meeting:
Saturday	14-Apr-07						0.0										Weather:
							0.0										Remarks:
Julian	104						0.0										
Day	125				Hours Today		0.0				0.0	0.0	0.0	18687.3	1010.3		Safety Meeting:
Sunday	15-Apr-07						0.0										Weather:
							0.0										Remarks:
Julian	105						0.0										
Day	126				Hours Today		0.0				0.0	0.0	0.0	18687.3	1010.3		Safety Meeting:
Total Job Hours		229.1			Weekly Totals		18.3	0	0	5238	1908.0	119.0	0.0			0.0	

Aircraft Hrs at		Total Aircraft Hours	8101.3	Ltrs/Hr	286	Total Standby	10.5
start of job	7873.1	Hours to Next Periodic	38.7	Running Avg	272.6 km/day	% Complete	54.7
Next service	8140	Anticipated Hours Next week	12.7		104.1 km/hr	km Remaining	15477.7

Survey Equipment Problems: ______

APPENDIX II – Weekly Acquisition Reports VH-TEM

Aircraft:	VH-TEM		17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms			
Proc. Reflight Kms:	Kms		13345.300 Kms	- Total Job Kms including Proc. Reflights
Kms Remain:	12891.600 Kms		12891.600 Kms	- Kms remaining including Proc. Reflights
% Complete:	3.40 %			

Contract Number:	
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	Country Comfort
Flying Base:	Dubbo Airport
Client:	BRS

Date		Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date	26-Feb																		Landing gear on Casa being repaired
Julian Day	57																		
Monday																			
											92.2						1.0	Weather►	Overcast skies, rain in afternoon, high winds
Date	27-Feb																		Landing gear on Casa being repaired
Julian Day	58																		
Tuesday																			
											92.2						1.0	Weather►	Overcast skies, rain in afternoon, high winds
Date	28-Feb																		Landing gear on Casa being repaired
Julian Day	59																		
Wednesday																			
											92.2						1.0	Weather►	Overcast, thunder and lightning storms, rain in afternoon, extremely high winds
Date	1-Mar	1	TH,SC	AE,SM	TF														
Julian Day	60																		
Thursday																			
											92.2							Weather►	Overcast skies, calm winds, light rain in afternoon
Date	2-Mar	2	TH,SC	AE	37.700		113.000	7:16	9:08	1.9									
Julian Day	61																		
Friday																			
					37.700		113.000			1.9	90.3	1.9	37.700		113.000			Weather►	Clear Skies, Calm winds, hot temperatures in afternoon
Date	3-Mar	3	TH,JC	AE	75.400		188.600	6:25	9:09	2.7									
Julian Day	62																		
Saturday																			
					75.400		188.600			2.7	87.6	4.6	113.100		301.600			Weather►	Clear Skies, Calm winds, hot temperature in afternoon
Date	4-Mar	4	TH,JC	AE	340.600		151.300	6:55	10:44	3.8									
Julian Day	63																		
Sunday																			
					340.600		151.300			3.8	83.8	8.4	453.700		452.900			Weather►	Clear skies, calm winds which turned high in afternoon creating turbulence in late morning
				Totals This Week: ►	**453.700**	**0.000**	**452.900**	Week Hours:►		**8.4**	▲: A/C Hrs to Next Service					**0.0**	**3.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	11762.800 Kms	11762.800 Kms	- Kms remaining including Proc. Reflights
% Complete:	11.86 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	Country Comfort
Flying Base:	Dubbo Airport
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 5-Mar									0.0									
Julian Day 64									0.0									
									0.0									
Monday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	83.8	8.4	453.700	0.000	452.900		1.0	Weather►	Overcast rain, high winds
Date 6-Mar									0.0									
Julian Day 65									0.0									
									0.0									
Tuesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	83.8	8.4	453.700	0.000	452.900		1.0	Weather►	Overcast rain, high winds
Date 7-Mar									0.0									
Julian Day 66									0.0									
									0.0									
Wednesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	83.8	8.4	453.700	0.000	452.900		1.0	Weather►	Overcast, rain, high winds
Date 8-Mar									0.0									
Julian Day 67									0.0									
									0.0									
Thursday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	83.8	8.4	453.700	0.000	452.900		1.0	Weather►	Lightning storms, cloudy
Date 9-Mar	5	TH,JC	AE	0.000	0.000	0.000	8:47	10:06	1.3									Laser Altimeter issues, monitored and fixed.
Julian Day 68	6	TH,JC	AE	0.000	0.000	0.000	11:02	12:17	1.3									
									0.0									
Friday									0.0									
									0.0									
				0.000	0.000	0.000			2.6	81.2	11.0	453.700	0.000	452.900			Weather►	Morning Fog, cleared in late morning, sunny and clear for remainder of day
Date 10-Mar	7	TH,JC	AE	613.000	0.000	0.000	6:42	11:09	4.4									
Julian Day 69									0.0									
									0.0									
Saturday									0.0									
									0.0									
				613.000	0.000	0.000			4.4	76.8	15.4	1066.700	0.000	452.900			Weather►	Clear, calm winds
Date 11-Mar	8	TH,JC	AE	515.800		38.000	6:59	10:54	3.9									
Julian Day 70									0.0									
									0.0									
Sunday									0.0									
									0.0									
				515.800	0.000	38.000			3.9	72.9	19.3	1582.500	0.000	490.900			Weather►	Clear, calm winds
			Totals This Week: ►	1128.800	0.000	38.000		Week Hours:►	**10.9**	▲: A/C Hrs to Next Service					**0.0**	**4.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	9483.100 Kms	9483.100 Kms	- Kms remaining including Proc. Reflights
% Complete:	28.94 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	Country Comfort
Flying Base:	Dubbo Airport
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 12-Mar	9	PH,JC	AE		113.400	37.700	6:54	8:53	2.0									
Julian Day 71									0.0									Turbulence caused early end of flight
									0.0									
Monday									0.0									
									0.0									
				0.000	113.400	37.700			2.0	70.9	21.3	1582.500	113.400	528.600			Weather►	Clear and sunny, high winds and hot in afternoon
Date 13-Mar									0.0									
Julian Day 72									0.0									No flying due to high winds
									0.0									
Tuesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	70.9	21.3	1582.500	113.400	528.600			Weather►	Clear and sunny, extremely high winds
Date 14-Mar	10	PH,JC	AE	512.400		38.000	6:42	11:03	4.4									
Julian Day 73									0.0									
									0.0									
Wednesday									0.0									
									0.0									
				512.400	0.000	38.000			4.4	66.5	25.7	2094.900	113.400	566.600			Weather►	Clear and sunny. Hot in afternoon
Date 15-Mar	11	PH,JC	AE	114.300			6:59	9:04	2.1									
Julian Day 74									0.0									Turbulence caused early end of flight
									0.0									
Thursday									0.0									
									0.0									
				114.300	0.000	0.000			2.1	64.4	27.8	2209.200	113.400	566.600			Weather►	Clear, little clouds, high winds in afternoon
Date 16-Mar							9:30	10:00	0.5									
Julian Day 75							12:00	12:30	0.5									Pete Hiskins and Josua Cox flew to Warren then flew to Coonamble after showcase in Warren.
									0.0									
Friday									0.0									
									0.0									
				0.000	0.000	0.000			1.0	63.4	28.8	2209.200	113.400	566.600			Weather►	Clear and sunny.
Date 17-Mar	12	PH,JC	AE	844.000			6:47	12:00	5.2									
Julian Day 76									0.0									
									0.0									
Saturday									0.0									
									0.0									
				844.000	0.000	0.000			5.2	58.2	34.0	3053.200	113.400	566.600			Weather►	Clear and sunny, hot in afternoon
Date 18-Mar	13	PH,JC	AE	695.600			6:46	11:30	4.7									
Julian Day 77									0.0									Turbulence caused early end of flight.
									0.0									
Sunday									0.0									
									0.0									
				695.600	0.000	0.000			4.7	53.5	38.7	3748.800	113.400	566.600			Weather►	Clear and sunny, hot in afternoon
			Totals This Week: ►	2166.300	113.400	75.700		Week Hours:►	**19.4**	▲: A/C Hrs to Next Service					**0.0**	**0.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	7054.100 Kms	7054.100 Kms	- Kms remaining including Proc. Reflights
% Complete:	47.14 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	Country Comfort
Flying Base:	Dubbo Airport
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 19-Mar	14	PH,JC	AE	163.800			7:03	8:44	1.7									
Julian Day 78									0.0									Turbulance caused early end to flight.
Monday									0.0									
									0.0									
									0.0									
				163.800	0.000	0.000			1.7	51.8	40.4	3912.600	113.400	566.600			Weather►	Clear and Sunny, windy in afternoon
Date 20-Mar									0.0									
Julian Day 79									0.0									
Tuesday									0.0									
									0.0									
									0.0									
				0.000	0.000	0.000			0.0	51.8	40.4	3912.600	113.400	566.600			Weather►	Clear and sunny, little cloud.
Date 21-Mar	15	PH,JC	AE,DG	777.000			6:46	11:39	4.9									
Julian Day 80									0.0									
Wednesday									0.0									
									0.0									
									0.0									
				777.000	0.000	0.000			4.9	46.9	45.3	4689.600	113.400	566.600			Weather►	Cloudy
Date 22-Mar	16	PH,JC	AE,DG	234.000		78.000	6:49	9:19	2.5									
Julian Day 81									0.0									Turbulance caused early end of flight.
Thursday									0.0									
									0.0									
									0.0									
				234.000	0.000	78.000			2.5	44.4	47.8	4923.600	113.400	644.600			Weather►	Clear and sunny, windy in afternoon.
Date 23-Mar	17	PH,JC	AE,DG	117.600	78.000	39.200	6:47	8:50	2.1									
Julian Day 82									0.0									
Friday									0.0									
									0.0									
									0.0									
				117.600	78.000	39.200			2.1	42.3	49.9	5041.200	191.400	683.800			Weather►	Cloudy, windy in afternoon
Date 24-Mar	18	PH,JC	AE,DG	665.700		78.300	6:45	11:35	4.8									
Julian Day 83									0.0									
Saturday									0.0									
									0.0									
									0.0									
				665.700	0.000	78.300			4.8	37.5	54.7	5706.900	191.400	762.100			Weather►	Cloudy, overcast, rain in afternoon
Date 25-Mar	19	PH,JC	AE,DG	314.600	78.300		5:41	9:08	3.5									
Julian Day 84									0.0									
Sunday									0.0									
									0.0									
									0.0									
				314.600	78.300	0.000			3.5	34.0	58.2	6021.500	269.700	762.100			Weather►	Overcast
			Totals This Week: ►	2272.700	156.300	195.500	Week Hours:►		**19.5**	▲: A/C Hrs to Next Service					**0.0**	**0.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	3896.100 Kms	3896.100 Kms	- Kms remaining including Proc. Reflights
% Complete:	70.81 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	Country Comfort
Flying Base:	Dubbo Airport
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 26-Mar	20	PH,JC	AE,DG	772.900	39.400	39.400	5:45	10:54	5.2									
Julian Day 85									0.0									
									0.0									
Monday									0.0									
									0.0									
				772.900	39.400	39.400			5.2	28.8	63.4	6794.400	309.100	801.500			Weather►	Clear and sunny, slight cloud cover in afternoon
Date 27-Mar									0.0									
Julian Day 86									0.0									Pilots Day Off
									0.0									
Tuesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	28.8	63.4	6794.400	309.100	801.500			Weather►	
Date 28-Mar									0.0									
Julian Day 87									0.0									New Pilot arrived in late afternoon, no survey flight
									0.0									
Wednesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	28.8	63.4	6794.400	309.100	801.500			Weather►	
Date 29-Mar	21	PH,MH	DG	796.200			6:00	10:50	4.8									
Julian Day 88									0.0									
									0.0									
Thursday									0.0									
									0.0									
				796.200	0.000	0.000			4.8	24.0	68.2	7590.600	309.100	801.500			Weather►	Cloudy, overcast, light winds
Date 30-Mar	22	PH,MH	DG	378.000					0.0									
Julian Day 89									0.0									
									0.0									
Friday									0.0									
									0.0									
				378.000	0.000	0.000			0.0	24.0	68.2	7968.600	309.100	801.500			Weather►	Clear, Sunny, high winds in afternoon
Date 31-Mar	23	PH,G	DG	567.000			8:33	12:49	4.3									
Julian Day 90									0.0									
									0.0									
Saturday									0.0									
									0.0									
				567.000	0.000	0.000			4.3	**19.7**	72.5	8535.600	309.100	801.500			Weather►	Clear and sunny, cloudy in afternoon
Date 1-Apr	24	PH,G	DG	151.200	453.300		6:02	10:50	4.8									Reflights from flight 3 and 4 flown
Julian Day 91									0.0									
									0.0									
Sunday									0.0									
									0.0									
				151.200	453.300	0.000			4.8	**14.9**	77.3	8686.800	762.400	801.500			Weather►	Clear and sunny, windy in afternoon
			Totals This Week: ►	2665.300	492.700	39.400		Week Hours:►	19.1	▲: A/C Hrs to Next Service					0.0	0.0		

Aircraft:	VH-TEM	17157.0	Hrs - Progressive M/R Hrs at the start of job	Contract Number:	0
				Job Name:	Lower Macquarie River
Total Job kms:	13345.300 Kms			Area Names:	F4, N3
Proc. Reflight Kms:	0.000 Kms	13345.300	Kms - Total Job Kms including Proc. Reflights	Accommodation:	Castleraegh Motel
Plan Kms Remain:	464.800 Kms	464.800	Kms - Kms remaining including Proc. Reflights	Flying Base:	Coonamble NSW
% Complete:	96.52 %			Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 2-Apr	25	PH, GH	DG	680.400			6:13	10:49	4.6									
Julian Day 92	FERRY	PH, GH	NIL				11:58	12:30	0.5									FERRY TO DUBBO FOR 150HRLY MAINT
	26	PH, GH	AE				13:48	14:53	1.1									REFLY BORE HOLE LINE PROB WITH PNAV FILE
Monday									0.0									
									0.0									
				680.400	0.000	0.000			6.2	**8.7**	83.5	9367.200	762.400	801.500			Weather►	wind
Date 3-Apr									0.0									150 HRLY MAINT AT DUBBO
Julian Day 93									0.0									
									0.0									
Tuesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	**8.7**	83.5	9367.200	762.400	801.500			Weather►	
Date 4-Apr									0.0									150 HRLY MAINT AT DUBBO
Julian Day 94									0.0									REPLACED WINCH MTR TIME EXP
									0.0									
Wednesday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	**8.7**	83.5	9367.200	762.400	801.500			Weather►	
Date 5-Apr	ferry	PH, GH	nil				6:04	6:40	0.6									
Julian Day 95	27	PH, GH	DG	758.400			7:14	12:05	4.8									M/R TIME 17254.5
									0.0									
Thursday									0.0									NEW WINCH MOTOR FAILED ON RETREVAL
									0.0									ENGR Dubbo TO Coonamble TO CHANGE
				758.400	0.000	0.000			5.4	**3.3**	88.9	10125.600	762.400	801.500			Weather►	very windy
Date 6-Apr	28	PH,GH	DG	946.600			6:00	11:53	5.9									
Julian Day 96									0.0									
									0.0									
Friday									0.0									
									0.0									
				946.600	0.000	0.000			5.9	**-2.6**	94.8	11072.200	762.400	801.500			Weather►	very windy
Date 7-Apr	29	PH,GH	DG	737.000	81.900	101.900			0.0									scrub HDD WRITE PROB LOST LINE & EM TRANSFER
Julian Day 97									0.0									Proc scrub due turb / coil knocks
									0.0									
Saturday									0.0									LIMITED FUEL AVAIL FOR NEXT FLT DUE NO DELIVERY THROUGH EASTER
									0.0									M/R TIME 17265.7
				737.000	81.900	101.900			0.0	**-2.6**	94.8	11809.200	844.300	903.400			Weather►	very windy
Date 8-Apr	30	PH,GH	DG	227.000			6:08	8:33	2.4									M/R TIME 17268.1 LDGS 9140
Julian Day 98									0.0									NO FUEL REMAING DELAY ON DELIVERY DUE EASTER
									0.0									EXPECT TUESDAY
Sunday									0.0									
									0.0									
				227.000	0.000	0.000			2.4	**-5.0**	97.2	12036.200	844.300	903.400			Weather►	very windy
			Totals This Week: ►	3349.400	81.900	101.900	Week Hours:►		**19.9**	▲: A/C Hrs to Next Service					**0.0**	**0.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	-1665.000 Kms	-1665.000 Kms	- Kms remaining including Proc. Reflights
% Complete:	112.48 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	COUNTRY COMFORT
Flying Base:	DUBBO NSW
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 9-Apr									0.0									
Julian Day 99									0.0									Waiting on fuel drums to arrive, contacted truck driver he advised not possible until Wednesday afternoon
									0.0									Plan move to Dubbo to complete survey
Monday									0.0									Cancel fuel order
									0.0									
				0.000	0.000	0.000			0.0	**-5.0**	97.2	12036.200	844.300	903.400			Weather►	ok
Date 10-Apr	Ferry	PH, GH					6:52	7:24	0.5									Reposition crew to Dubbo
Julian Day 100									0.0									
									0.0									
Tuesday									0.0									
									0.0									
				0.000	0.000	0.000			0.5	**-5.5**	97.7	12036.200	844.300	903.400			Weather►	ok
Date 11-Apr	31	PH, GH	DG	667.800			5:50	11:25	5.6									Long ferry to northern area Approx 2 hours total ferry
Julian Day 101									0.0									
									0.0									
Wednesday									0.0									
									0.0									
				667.800	0.000	0.000			5.6	**-11.1**	103.3	12704.000	844.300	903.400			Weather►	ok
Date 12-Apr	32	PH, GH	DG	536.000			5:52	11:18	5.4									Long ferry to northern area Approx 2 hours total ferry
Julian Day 102									0.0									Complete northern area
									0.0									
Thursday									0.0									
									0.0									
				536.000	0.000	0.000			5.4	**-16.5**	108.7	13240.000	844.300	903.400			Weather►	ok
Date 13-Apr	33	PH, GH	DG	646.000			6:54	11:39	4.8									Commence south part of block
Julian Day 103									0.0									M/R 17284.4 LDG 9144
									0.0									
Friday									0.0									
									0.0									
				646.000	0.000	0.000			4.8	**-21.3**	113.5	13886.000	844.300	903.400			Weather►	ok
Date 14-Apr	34	PH, GH	DG	280.000			6:24	8:54	2.5									Return early very turbulent condits possible data issues
Julian Day 104									0.0									
									0.0									
Saturday									0.0									
									0.0									
				280.000	0.000	0.000			2.5	**-23.8**	116.0	14166.000	844.300	903.400			Weather►	very windy
Date 15-Apr	35	PH, GH	DG	0.000			5:58	7:32	1.6									very high spherics in all directions no lines flown
Julian Day 105		PH, GH					18:19	18:58	0.7									night currency circuits
									0.0									
Sunday									0.0									
									0.0									
				0.000	0.000	0.000			2.3	**-26.1**	118.3	14166.000	844.300	903.400			Weather►	
			Totals This Week: ►	2129.800	0.000	0.000	Week Hours:►		**21.1**	▲: A/C Hrs to Next Service					**0.0**	**0.0**		

Aircraft:	VH-TEM	17157.0 Hrs	- Progressive M/R Hrs at the start of job
Total Job kms:	13345.300 Kms		
Proc. Reflight Kms:	0.000 Kms	13345.300 Kms	- Total Job Kms including Proc. Reflights
Plan Kms Remain:	-3816.900 Kms	-3816.900 Kms	- Kms remaining including Proc. Reflights
% Complete:	128.60 %		

Contract Number:	0
Job Name:	Lower Macquarie River
Area Names:	F4, N3
Accommodation:	COUNTRY COMFORT
Flying Base:	DUBBO NSW
Client:	BRS

qwertyui qwertyuiopas qwertyui qwertyuiopa qwertyui qwertyui qwertyu qwerty qwertyui qwertyuiopasd qwertyuiopa qwertyuiop qwertyuiop qwertyuiopasdfghjklzxcvbnm qwertyuiopasdfghjklzxcvb

Date	Flt	Pilot initials	On board Oper initials	Production excludes Scrubs & Reflights	Processing Reflights flown today	Fugro Scrub	Time Take Off	Time Land	Flt Hrs on M/R	Hours to Periodic Inspection	Job Hrs to Date	Prod. to Date	Proc. Reflights to Date	Scrubs to Date	Stdby Days	Lost Days	Activity	COMMENTS Weather, Data delivery, Safety Meetings Crew movements etc
Date 16-Apr	PDO								0.0									
Julian Day 106									0.0									
									0.0									
Monday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	**-26.1**	118.3	14166.000	844.300	903.400			Weather►	
Date 17-Apr	36	PH, GH	DG	658.000			5:59	10:39	4.7									
Julian Day 107									0.0									
									0.0									
Tuesday									0.0									D.Carden IN
									0.0									
				658.000	0.000	0.000			4.7	**-30.8**	123.0	14824.000	844.300	903.400			Weather►	ok / turbulent
Date 18-Apr	37	PH, GH	DG	810.000			5:50	10:47	5.0									
Julian Day 108									0.0									
									0.0									
Wednesday									0.0									M/R 17298.9 LDG 9151
									0.0									M. Harradence IN
				810.000	0.000	0.000			5.0	**-35.8**	128.0	15634.000	844.300	903.400			Weather►	ok / becoming turbulent
Date 19-Apr	38	PH, GH	DG	683.900					0.0									
Julian Day 109									0.0									T. Wilhelmi IN
									0.0									M/R 17303.6 LDG 9152
Thursday									0.0									
									0.0									Area completed
				683.900	0.000	0.000			0.0	**-35.8**	128.0	16317.900	844.300	903.400			Weather►	ok / becoming turbulent
Date 20-Apr									0.0									
Julian Day 110									0.0									Wait for confirmation of data prior to de-mob
									0.0									Maint on aircraft brakes and rear door hyd lines
Friday									0.0									Maint on EM das
									0.0									Maint on External power Inverter
				0.000	0.000	0.000			0.0	**-35.8**	128.0	16317.900	844.300	903.400			Weather►	
Date 21-Apr		TW, PH, MH					12:59	14:28	1.5									
Julian Day 111									0.0									Wait for confirmation of data prior to de-mob
									0.0									
Saturday									0.0									Training flights Hiskins, Wilhelmi, Harradence
									0.0									
				0.000	0.000	0.000			1.5	**-37.3**	129.5	16317.900	844.300	903.400			Weather►	
Date 22-Apr									0.0									
Julian Day 112									0.0									
									0.0									
Sunday									0.0									
									0.0									
				0.000	0.000	0.000			0.0	**-37.3**	129.5	16317.900	844.300	903.400			Weather►	
			Totals This Week: ►	2151.900	0.000	0.000	Week Hours:►		**11.2**	▲: A/C Hrs to Next Service					**0.0**	**0.0**		

APPENDIX III – Flight Summary (Line Listing)

Notes on Line numbers included below:

60FF – pre-flight barometer calibration for flight FF
61FF -- post=-flight barometer calibration for flight FF
70FF – pre-flight 'zero' calibration line for flight FFf
71FF – post-flight 'zero' calibration line for flight FF
9000-9006 – other pre/post flight EM calibrations (See Chapter 4)
18?? – magnetic compensation lines
81FF-89FF – repeat/seismic/borehole line from flight FF

1001-1268 – Area S1
2001-2621 – Area N1-3/L1-6

Shorts Skyvan – VH-WGT

Flight	Date (yyyymmdd)	Line	Direction	Start Fid	End Fid	Start Time	End Time
6	20070116	6006	N	1	100	8:28:49	8:30:28
6	20070116	1810	N	1356	1588	10:12:10	10:16:02
6	20070116	1811	E	1589	1874	10:17:08	10:21:53
6	20070116	1812	S	1875	2157	10:22:39	10:27:21
6	20070116	1813	W	2158	2442	10:28:35	10:33:19
6	20070116	6106	N	2443	2534	10:47:29	10:49:00
8	20070117	6008	N	1	90	6:55:54	6:57:24
8	20070117	9000.1	S	391	480	7:24:14	7:25:44
8	20070117	9001.1	S	481	570	7:26:40	7:28:10
8	20070117	7008.1	S	571	660	7:28:49	7:30:19
8	20070117	9003	N	661	713	7:31:02	7:31:55
8	20070117	8608	N	714	804	7:39:16	7:40:47
8	20070117	8608.1	S	805	897	7:43:01	7:44:34
8	20070117	1268	N	898	1118	7:51:49	7:55:30
8	20070117	1265	S	1578	1793	8:08:15	8:11:51
8	20070117	1264	N	1794	2026	8:13:11	8:17:04
8	20070117	9004	N	2027	2116	8:21:53	8:23:23
8	20070117	7108	N	2117	2206	8:24:47	8:26:17
8	20070117	9006	N	2207	2296	8:27:19	8:28:49
8	20070117	6108	N	2444	2533	9:16:56	9:18:26
9	20070118	6009	N	1	60	6:50:55	6:51:55
9	20070118	9000	N	61	150	7:08:02	7:09:32
9	20070118	9001	W	151	240	7:11:41	7:13:11
9	20070118	7009	S	241	330	7:14:47	7:16:17
9	20070118	9003	S	331	442	7:16:49	7:18:41
9	20070118	8109	N	443	801	7:26:44	7:32:43
9	20070118	8209	S	802	1044	7:37:54	7:41:57
9	20070118	8309	W	1045	1288	7:52:48	7:56:52
9	20070118	9004.1	N	2085	2174	8:38:34	8:40:04
9	20070118	7109	N	2175	2264	8:40:53	8:42:23
9	20070118	9006	N	2265	2354	8:43:05	8:44:35
9	20070118	6109	N	1	60	9:25:41	9:26:41
12	20070121	6012	N	1	60	6:55:08	6:56:08
12	20070121	9000	N	61	150	7:09:51	7:11:21
12	20070121	9001	N	151	240	7:12:16	7:13:46
12	20070121	7012	N	241	330	7:14:24	7:15:54
12	20070121	9003	N	331	400	7:16:37	7:17:47
12	20070121	8612	N	401	569	7:36:28	7:39:17
12	20070121	9004	N	570	659	7:46:34	7:48:04

12	20070121	7112	N	660	749	7:48:46	7:50:16
12	20070121	9006	S	750	839	7:51:28	7:52:58
12	20070121	6112	N	1	59	8:27:37	8:28:36
16	20070124	6016	N	1	91	6:53:56	6:55:27
16	20070124	9000	N	92	181	7:09:50	7:11:20
16	20070124	7016	N	272	363	7:15:28	7:17:00
16	20070124	9001.1	N	364	453	7:18:21	7:19:51
16	20070124	9003	N	454	527	7:21:23	7:22:37
16	20070124	8516.1	E	773	963	8:02:42	8:05:53
16	20070124	8416.2	E	964	1223	8:17:30	8:21:50
16	20070124	8616	S	1224	1338	8:30:48	8:32:43
16	20070124	1254	N	1339	1575	8:41:26	8:45:23
16	20070124	1255	S	1576	1797	8:46:53	8:50:35
16	20070124	1256	N	1798	2024	8:51:46	8:55:33
16	20070124	1257	S	2025	2244	8:57:00	9:00:40
16	20070124	1258	N	2245	2463	9:02:18	9:05:57
16	20070124	1259	S	2464	2678	9:07:32	9:11:07
16	20070124	1260	N	2679	2904	9:12:46	9:16:32
16	20070124	1261	S	2905	3138	9:18:21	9:22:15
16	20070124	1262	N	3139	3362	9:23:42	9:27:27
16	20070124	1263	S	3364	3569	9:29:25	9:32:51
16	20070124	1266.1	N	3570	3797	9:34:25	9:38:13
16	20070124	1267	S	3798	4042	9:39:26	9:43:31
16	20070124	7116	N	4143	4232	9:51:32	9:53:02
16	20070124	9006	S	4233	4322	9:53:48	9:55:18
16	20070124	6116	N	1	90	10:12:16	10:13:46
17	20070125	6017	N	1	90	7:49:31	7:51:01
17	20070125	9000	N	91	180	8:06:20	8:07:50
17	20070125	9001	N	181	270	8:09:51	8:11:21
17	20070125	7017	N	271	360	8:12:06	8:13:36
17	20070125	9003	N	361	445	8:14:38	8:16:03
17	20070125	8617	S	446	573	8:28:03	8:30:12
17	20070125	1253	S	575	806	8:35:48	8:39:40
17	20070125	1252	N	807	1028	8:41:27	8:45:09
17	20070125	1251	S	1029	1247	8:47:44	8:51:23
17	20070125	1250	N	1248	1474	8:52:58	8:56:45
17	20070125	1249	S	1475	1720	8:58:34	9:02:40
17	20070125	1248	N	1721	1939	9:04:18	9:07:57
17	20070125	1247	S	1940	2193	9:09:21	9:13:35
17	20070125	1246	N	2194	2416	9:15:27	9:19:10
17	20070125	1245	S	2417	2674	9:20:56	9:25:14
17	20070125	1244	N	2675	2898	9:26:57	9:30:42
17	20070125	1243	S	2900	3153	9:32:38	9:36:52
17	20070125	1242	N	3154	3364	9:38:28	9:41:59
17	20070125	1241	S	3365	3602	9:43:37	9:47:35
17	20070125	1240	N	3603	3834	9:49:17	9:53:09
17	20070125	1239	S	3835	4089	9:55:00	9:59:15
17	20070125	1238	N	4090	4313	10:01:16	10:05:01
17	20070125	1237	S	4315	4560	10:07:03	10:11:09
17	20070125	1236	N	4561	4793	10:12:37	10:16:30
17	20070125	1235	S	4794	5035	10:18:45	10:22:47
17	20070125	1234	N	5036	5257	10:24:17	10:27:59
17	20070125	1233	S	5258	5492	10:29:57	10:33:52
17	20070125	1232	N	5493	5727	10:35:55	10:39:50
17	20070125	1231	S	5728	5994	10:41:32	10:45:59
17	20070125	1230	N	5995	6224	10:47:39	10:51:29
17	20070125	1229	S	6225	6480	10:52:48	10:57:05
17	20070125	1228	N	6482	6696	10:58:38	11:02:13

17	20070125	9004	N	6697	6786	11:08:11	11:09:41
17	20070125	7117	N	6787	6880	11:10:44	11:12:18
17	20070125	9006	N	6881	6970	11:13:09	11:14:39
17	20070125	6117	N	6971	7061	11:32:20	11:33:51
18	20070126	6018	N	1	77	6:59:08	7:00:25
18	20070126	9000	N	1	90	7:15:35	7:17:05
18	20070126	9001	N	91	180	7:18:13	7:19:43
18	20070126	7018	N	181	270	7:20:14	7:21:44
18	20070126	9003	S	271	360	7:23:07	7:24:37
18	20070126	8618	S	361	454	7:30:12	7:31:46
18	20070126	1227	S	455	715	7:38:25	7:42:46
18	20070126	1226	N	716	946	7:46:33	7:50:24
18	20070126	1225	S	1	249	8:02:37	8:06:46
18	20070126	1224	N	250	485	8:08:39	8:12:35
18	20070126	1223	S	486	735	8:14:39	8:18:49
18	20070126	1222	N	736	977	8:21:21	8:25:23
18	20070126	1221	S	978	1437	8:28:52	8:36:33
18	20070126	1220	N	1439	1880	8:38:58	8:46:20
18	20070126	1219	S	1881	2337	8:48:14	8:55:51
18	20070126	1218	N	2338	2804	8:57:46	9:05:33
18	20070126	1217	S	2805	3255	9:07:43	9:15:14
18	20070126	1216	N	3256	3703	9:16:51	9:24:19
18	20070126	1215	S	3704	4153	9:26:11	9:33:41
18	20070126	1214	N	4154	4706	9:35:18	9:44:31
18	20070126	1213	S	4707	5236	9:46:16	9:55:06
18	20070126	1212	N	5237	5686	9:56:42	10:04:12
18	20070126	9004	N	5687	5776	10:09:54	10:11:24
18	20070126	7118	N	5777	5866	10:12:23	10:13:53
18	20070126	9006	N	5869	5958	10:14:53	10:16:23
18	20070126	6118	N	1	60	10:38:22	10:39:22
19	20070128	6019	N	1	60	6:11:24	6:12:24
19	20070128	9000	N	61	150	6:33:18	6:34:48
19	20070128	9001	N	151	240	6:35:43	6:37:13
19	20070128	7019	S	241	330	6:38:28	6:39:58
19	20070128	9003	S	331	450	6:40:23	6:42:23
19	20070128	8619	S	1	166	6:47:59	6:50:45
19	20070128	1263	S	167	411	6:55:31	6:59:36
19	20070128	1211	S	412	909	7:08:12	7:16:30
19	20070128	1210	N	910	1309	7:18:49	7:25:29
19	20070128	1209	S	1310	1883	7:27:20	7:36:54
19	20070128	1208	N	1884	2301	7:39:24	7:46:22
19	20070128	1207	S	2302	2812	7:48:27	7:56:58
19	20070128	1206	N	2813	3329	7:59:37	8:08:14
19	20070128	1205	S	3330	3844	8:13:20	8:21:55
19	20070128	1204	N	3845	4250	8:23:42	8:30:28
19	20070128	1203	S	4251	4807	8:32:52	8:42:09
19	20070128	1202	N	4808	5072	8:44:56	8:49:21
19	20070128	9004	S	5073	5162	8:57:12	8:58:42
19	20070128	7119	S	5163	5252	8:59:05	9:00:35
19	20070128	9006	S	5253	5342	9:01:12	9:02:42
19	20070128	6119	N	1	60	9:29:01	9:30:01
20	20070129	6020	N	1	67	6:21:05	6:22:12
20	20070129	9000	N	68	157	6:35:23	6:36:53
20	20070129	9001	N	158	247	6:38:03	6:39:33
20	20070129	7020	N	248	337	6:39:59	6:41:29
20	20070129	9003	S	338	410	6:42:21	6:43:34
20	20070129	1001	S	411	1106	7:00:52	7:12:28
20	20070129	1002	N	1107	1696	7:15:51	7:25:41

20	20070129	1003	S	1697	2455	7:27:49	7:40:28
20	20070129	1004	N	2456	3050	7:41:52	7:51:47
20	20070129	1005	S	3051	3815	7:53:21	8:06:06
20	20070129	1006	N	1	615	8:09:51	8:20:06
20	20070129	1007	S	616	1372	8:21:42	8:34:19
20	20070129	1008	N	1373	1986	8:35:35	8:45:49
20	20070129	1009	S	1987	2744	8:47:10	8:59:48
20	20070129	1010	N	2745	3352	9:00:51	9:10:59
20	20070129	1011	S	3353	4114	9:12:07	9:24:49
20	20070129	9004	N	4115	4204	9:31:15	9:32:45
20	20070129	7120	N	4205	4294	9:33:24	9:34:54
20	20070129	9006	N	4295	4384	9:35:22	9:36:52
20	20070129	6120	N	1	60	9:57:57	9:58:57
21	20070130	6021	N	1	60	6:14:30	6:15:30
21	20070130	9000	N	61	150	6:33:01	6:34:31
21	20070130	9001	N	151	240	6:35:25	6:36:55
21	20070130	7021	N	241	330	6:37:41	6:39:11
21	20070130	9003	N	331	450	6:39:31	6:41:31
21	20070130	1201	S	451	758	6:49:11	6:54:19
21	20070130	1200	N	759	1033	6:56:02	7:00:37
21	20070130	1199	S	1034	1344	7:02:23	7:07:34
21	20070130	1198	N	1	290	7:19:06	7:23:56
21	20070130	1197	S	291	596	7:25:48	7:30:54
21	20070130	1196	N	597	883	7:32:16	7:37:03
21	20070130	1195	S	884	1192	7:38:48	7:43:57
21	20070130	1194	N	1193	1473	7:45:31	7:50:12
21	20070130	1193	S	1474	1783	7:51:44	7:56:54
21	20070130	1192	N	1784	2086	7:59:11	8:04:14
21	20070130	1191	S	2087	2392	8:06:15	8:11:21
21	20070130	1190	N	2393	2686	8:13:01	8:17:55
21	20070130	1189	S	2687	2994	8:19:33	8:24:42
21	20070130	1188	N	2996	3289	8:26:12	8:31:06
21	20070130	1187	S	3290	3584	8:32:54	8:37:49
21	20070130	1186	N	3585	3875	8:39:19	8:44:10
21	20070130	1185	S	3876	4178	8:46:09	8:51:12
21	20070130	1184	N	4179	4666	8:55:08	9:03:16
21	20070130	1183	S	4667	5128	9:05:21	9:13:03
21	20070130	1182	N	5129	5573	9:14:19	9:21:44
21	20070130	1181	S	5574	6034	9:23:32	9:31:13
21	20070130	9004	N	6035	6128	9:45:42	9:47:16
21	20070130	7121	N	6129	6218	9:47:52	9:49:22
21	20070130	9006	N	6219	6308	9:50:21	9:51:51
21	20070130	6121	N	1	60	10:07:29	10:08:29
23	20070202	6023.1	N	61	120	6:29:22	6:30:22
23	20070202	9000	N	121	180	6:44:51	6:45:51
23	20070202	9001	N	181	270	6:46:32	6:48:02
23	20070202	7023	N	271	360	6:48:32	6:50:02
23	20070202	9004	N	361	461	6:50:26	6:52:07
23	20070202	8623	S	462	614	6:58:51	7:01:24
23	20070202	1251.1	S	615	865	7:05:50	7:10:01
23	20070202	1180	N	866	1559	7:18:51	7:30:25
23	20070202	1179	S	1560	2240	7:32:19	7:43:40
23	20070202	1178	N	2241	2943	7:45:39	7:57:22
23	20070202	1177	S	2944	3664	7:59:09	8:11:10
23	20070202	9004	N	3665	3754	8:18:23	8:19:53
23	20070202	7123	N	3755	3844	8:20:17	8:21:47
23	20070202	9006	N	3845	3934	8:22:17	8:23:47
23	20070202	6123	N	1	60	8:37:48	8:38:48

25	20070203	6025	N	1	120	6:26:24	6:28:24
25	20070203	9000	N	1	90	6:46:06	6:47:36
25	20070203	9001	S	91	180	6:48:22	6:49:52
25	20070203	7025	S	187	276	6:50:50	6:52:20
25	20070203	9003	N	277	350	6:53:38	6:54:52
25	20070203	1176	N	351	1053	7:03:14	7:14:57
25	20070203	1175	S	1054	1731	7:16:22	7:27:40
25	20070203	1174	N	1732	2509	7:30:30	7:43:28
25	20070203	1173	S	2510	3152	7:44:39	7:55:22
25	20070203	1172	N	3153	3866	7:56:41	8:08:35
25	20070203	1171	S	3867	4505	8:10:06	8:20:45
25	20070203	1170	N	4506	5261	8:22:13	8:34:49
25	20070203	1169	S	5262	5891	8:35:57	8:46:27
25	20070203	1167	S	1	624	9:05:07	9:15:31
25	20070203	1168	N	625	1422	9:17:30	9:30:48
25	20070203	9004	S	1423	1512	9:36:27	9:37:57
25	20070203	7125	S	1513	1602	9:38:46	9:40:16
25	20070203	9006	S	1605	1694	9:41:16	9:42:46
25	20070203	6125	N	1	120	10:00:32	10:02:32
26	20070204	6026.1	N	13	132	6:29:41	6:31:41
26	20070204	9000	S	1	90	6:46:47	6:48:17
26	20070204	9001	S	91	180	6:49:39	6:51:09
26	20070204	7026	S	181	269	6:51:59	6:53:29
26	20070204	9003	S	271	360	6:54:20	6:55:50
26	20070204	1165.1	S	1189	1891	7:38:08	7:49:51
26	20070204	1164	N	1892	2605	7:51:18	8:03:12
26	20070204	1163	S	2606	3270	8:05:10	8:16:15
26	20070204	1162	N	3271	3987	8:17:41	8:29:38
26	20070204	1161	S	3988	4659	8:31:24	8:42:37
26	20070204	1160	N	4661	5430	8:44:02	8:56:52
26	20070204	9004	N	1	90	9:13:30	9:15:00
26	20070204	7126.2	N	118	207	9:17:28	9:18:58
26	20070204	9006	N	208	297	9:19:42	9:21:12
26	20070204	6126	N	298	417	9:42:46	9:44:46
27	20070206	6027	N	1	120	6:17:02	6:19:02
27	20070206	9000	N	121	210	6:38:30	6:40:00
27	20070206	9001	N	211	300	6:43:58	6:45:28
27	20070206	7027	S	301	390	6:46:05	6:47:35
27	20070206	9003	S	391	489	6:48:05	6:49:44
27	20070206	8627	S	490	606	6:56:50	6:58:47
27	20070206	1166.1	N	607	1323	7:08:29	7:20:26
27	20070206	1165.1	S	1324	1951	7:24:41	7:35:09
27	20070206	1164.1	N	1952	2664	7:36:57	7:48:50
27	20070206	1159	S	2831	3472	7:59:59	8:10:41
27	20070206	1158	N	3473	4187	8:12:18	8:24:13
27	20070206	1157	S	1	742	8:29:01	8:41:23
27	20070206	1156	N	743	1484	8:43:10	8:55:32
27	20070206	1155	S	1485	2149	8:57:17	9:08:22
27	20070206	1154	N	2150	2940	9:09:54	9:23:05
27	20070206	1153	S	2941	3672	9:25:06	9:37:18
27	20070206	1152	N	3673	4407	9:38:41	9:50:56
27	20070206	9004	N	4408	4497	9:59:15	10:00:45
27	20070206	7127	N	4498	4587	10:01:28	10:02:58
27	20070206	9006	S	4588	4677	10:03:52	10:05:22
27	20070206	6127	N	1	120	10:18:28	10:20:28
28	20070208	6028	N	1	120	6:20:18	6:22:18
28	20070208	9000	N	121	210	6:40:00	6:41:30
28	20070208	9001	S	211	300	6:46:02	6:47:32

28	20070208	7028	S	301	390	6:48:08	6:49:38
28	20070208	9003	N	391	470	6:51:03	6:52:23
28	20070208	1151	S	471	1174	7:00:56	7:12:40
28	20070208	1150	N	1175	1877	7:14:05	7:25:48
28	20070208	1149	S	1878	2824	7:28:03	7:43:50
28	20070208	1148	N	2825	3522	7:46:28	7:58:06
28	20070208	1147	S	3523	4288	8:00:24	8:13:10
28	20070208	1146	N	4289	5024	8:14:39	8:26:56
28	20070208	1145	S	5026	5877	8:29:06	8:43:18
28	20070208	1144	N	5878	6548	8:44:28	8:55:39
28	20070208	1143	S	6549	7326	8:57:24	9:10:22
28	20070208	1142	N	7327	7992	9:11:54	9:23:00
28	20070208	1141	S	7993	8734	9:24:38	9:37:00
28	20070208	1140	N	8735	9398	9:38:03	9:49:07
28	20070208	9004	N	9399	9488	9:56:04	9:57:34
28	20070208	7128	N	9489	9579	9:58:20	9:59:51
28	20070208	9006	S	9580	9669	10:01:11	10:02:41
28	20070208	6128	N	1	120	10:16:27	10:18:27
29	20070211	6029	N	1	120	6:18:53	6:20:53
29	20070211	9000	N	1	90	6:34:21	6:35:51
29	20070211	9001	N	91	181	6:37:12	6:38:43
29	20070211	7029	N	182	271	6:39:15	6:40:45
29	20070211	9003	N	272	351	6:41:19	6:42:39
29	20070211	1139	S	352	1030	6:51:21	7:02:40
29	20070211	1138	N	1031	1723	7:04:16	7:15:49
29	20070211	1137	S	1724	2419	7:19:08	7:30:44
29	20070211	1136	N	2420	3094	7:32:15	7:43:30
29	20070211	1135	S	3095	3790	7:45:18	7:56:54
29	20070211	1134	N	3794	4466	7:58:19	8:09:35
29	20070211	1133	S	4467	5164	8:11:10	8:22:48
29	20070211	1140.1	N	5165	5857	8:24:40	8:36:13
29	20070211	9004	N	5858	5947	8:42:42	8:44:12
29	20070211	7129	N	5948	6037	8:44:48	8:46:18
29	20070211	9006	N	6038	6127	8:47:21	8:48:51
29	20070211	6129	N	1	120	9:07:21	9:09:21
31	20070214	6031	N	1	120	6:23:13	6:25:13
31	20070214	9000	N	121	210	6:45:15	6:46:45
31	20070214	9001.1	N	487	576	7:00:27	7:01:57
31	20070214	7031.1	N	606	666	7:02:33	7:04:03
31	20070214	9003.1	N	667	753	7:05:31	7:06:58
31	20070214	8631	S	754	862	7:17:47	7:19:36
31	20070214	1132	N	863	1554	7:33:42	7:45:14
31	20070214	1131	S	1555	2225	7:47:27	7:58:40
31	20070214	1130	N	2228	2920	8:00:45	8:12:18
31	20070214	1129	S	2921	3582	8:17:55	8:28:57
31	20070214	1128	N	3583	4278	8:31:21	8:42:57
31	20070214	1127	S	4279	4927	8:45:12	8:56:01
31	20070214	9004	N	4928	5017	9:05:40	9:07:10
31	20070214	7131	N	5018	5107	9:08:37	9:10:07
31	20070214	9006	N	5108	5197	9:10:57	9:12:27
31	20070214	6131	N	1	120	9:30:03	9:32:03
32	20070215	6032	N	1	120	6:27:44	6:29:44
32	20070215	9000	N	121	210	6:49:52	6:51:22
32	20070215	9001	N	211	300	6:53:58	6:55:28
32	20070215	7032	N	301	391	6:56:19	6:57:50
32	20070215	9003	N	392	466	6:58:40	6:59:55
32	20070215	1126	N	467	1201	7:12:57	7:25:12
32	20070215	1125	S	1202	1868	7:27:06	7:38:13

32	20070215	1124	N	1869	2597	7:40:00	7:52:09
32	20070215	1123	S	2598	3237	7:53:35	8:04:16
32	20070215	1122	N	3239	3960	8:06:04	8:18:06
32	20070215	1121	S	3961	4600	8:19:39	8:30:19
32	20070215	1120	N	4601	5326	8:31:48	8:43:54
32	20070215	1119	S	5327	5953	8:45:29	8:55:56
32	20070215	1118	N	5954	6698	8:57:41	9:10:06
32	20070215	1117	S	6699	7317	9:12:07	9:22:26
32	20070215	9004	N	7318	7407	9:29:28	9:30:58
32	20070215	7132	N	7408	7497	9:31:32	9:33:02
32	20070215	9006	N	7498	7587	9:33:45	9:35:15
32	20070215	6132	N	1	120	9:50:36	9:52:36
33	20070216	6033	N	1	120	6:57:35	6:59:35
33	20070216	9000	S	1	90	7:23:59	7:25:29
33	20070216	9001	S	91	180	7:26:38	7:28:08
33	20070216	7033	S	181	270	7:28:45	7:30:15
33	20070216	9003	S	271	370	7:30:42	7:32:22
33	20070216	1116	N	1	768	7:49:00	8:01:49
33	20070216	1115	S	770	1376	8:04:23	8:14:30
33	20070216	1114	N	1377	2144	8:17:08	8:29:57
33	20070216	1113	S	2146	2733	8:35:30	8:45:18
33	20070216	1112	N	2734	3501	8:47:33	9:00:22
33	20070216	1111	S	3503	4101	9:03:40	9:13:39
33	20070216	1110	N	4102	4874	9:16:33	9:29:26
33	20070216	9004	N	4875	4964	9:38:32	9:40:02
33	20070216	7133	N	4965	5054	9:40:39	9:42:09
33	20070216	9006	N	5055	5144	9:42:43	9:44:13
33	20070216	6133	N	271	390	10:13:44	10:15:44
34	20070217	6034	N	1	120	6:23:14	6:25:14
34	20070217	9000	N	121	210	6:39:15	6:40:45
34	20070217	9001.1	N	253	342	6:43:00	6:44:30
34	20070217	7034	N	343	432	6:45:25	6:46:55
34	20070217	9003	N	433	493	6:48:16	6:49:17
34	20070217	8634	S	494	608	6:57:28	6:59:23
34	20070217	1109	S	609	1262	7:13:22	7:24:16
34	20070217	1108	N	1263	2009	7:27:07	7:39:34
34	20070217	1107	S	2010	2660	7:41:33	7:52:24
34	20070217	1106	N	2661	3384	7:54:08	8:06:12
34	20070217	1105	S	3385	4035	8:07:48	8:18:39
34	20070217	1104	N	4036	4754	8:20:15	8:32:14
34	20070217	1103	S	4755	5401	8:33:37	8:44:24
34	20070217	1102	N	5402	6124	8:45:47	8:57:50
34	20070217	1101	S	6125	6759	8:59:13	9:09:48
34	20070217	1100	N	6760	7490	9:11:38	9:23:49
34	20070217	1099	S	7491	8121	9:25:11	9:35:42
34	20070217	9004	N	8122	8211	9:41:45	9:43:15
34	20070217	7134	N	8212	8301	9:43:50	9:45:20
34	20070217	9006	N	8302	8391	9:45:53	9:47:23
34	20070217	6134	N	1	120	10:07:15	10:09:15
35	20070218	6035	N	1	120	6:19:29	6:21:29
35	20070218	9000	S	1	90	6:34:54	6:36:24
35	20070218	9001	S	105	194	6:37:48	6:39:18
35	20070218	7035	S	195	284	6:40:00	6:41:30
35	20070218	9003	S	285	354	6:41:57	6:43:07
35	20070218	1098	N	355	1137	6:51:10	7:04:13
35	20070218	1097	S	1138	1769	7:05:49	7:16:21
35	20070218	1096	N	1770	2560	7:18:13	7:31:24
35	20070218	1095	S	2561	3180	7:33:08	7:43:28

35	20070218	1094	N	3181	3976	7:45:07	7:58:23
35	20070218	1093	S	3977	4611	8:00:17	8:10:52
35	20070218	1092	N	4612	5391	8:12:41	8:25:41
35	20070218	1091	S	5392	6017	8:27:24	8:37:50
35	20070218	1090	N	1	876	8:44:13	8:58:49
35	20070218	9004	N	877	966	9:04:53	9:06:23
35	20070218	7135	N	967	1056	9:06:56	9:08:26
35	20070218	9006	N	1057	1146	9:08:52	9:10:22
35	20070218	6135	N	1	120	9:30:05	9:32:05
36	20070219	6036	N	1	120	6:29:13	6:31:13
36	20070219	9000	N	121	210	6:44:48	6:46:18
36	20070219	9001	N	211	300	6:47:29	6:48:59
36	20070219	7036	N	301	390	6:49:38	6:51:08
36	20070219	9003	N	391	474	6:51:31	6:52:55
36	20070219	1089	S	475	1124	7:07:53	7:18:43
36	20070219	1088	N	1125	1857	7:20:52	7:33:05
36	20070219	1087	S	1858	2499	7:34:39	7:45:21
36	20070219	1086	N	2500	3301	7:47:09	8:00:31
36	20070219	1085	S	3302	3916	8:03:14	8:13:29
36	20070219	1084	N	3917	4716	8:15:36	8:28:56
36	20070219	1083	S	4717	5323	8:30:32	8:40:39
36	20070219	1082	N	5324	6122	8:42:37	8:55:56
36	20070219	1081	S	6123	6716	8:57:34	9:07:28
36	20070219	1080	N	6717	7503	9:09:07	9:22:14
36	20070219	1079	S	7504	8095	9:23:35	9:33:27
36	20070219	1078	N	8096	8801	9:35:07	9:46:53
36	20070219	9004	N	8802	8891	9:54:49	9:56:19
36	20070219	7136	N	8892	8981	9:56:49	9:58:19
36	20070219	9006	N	8982	9071	9:58:54	10:00:24
36	20070219	6136	N	1	120	10:19:17	10:21:17
37	20070220	6037	N	1	120	5:52:39	5:54:39
37	20070220	9000	N	121	210	6:35:15	6:36:45
37	20070220	9001.1	N	256	345	6:38:20	6:39:50
37	20070220	7037	N	346	435	6:40:30	6:42:00
37	20070220	9003	N	436	512	6:42:26	6:43:43
37	20070220	8637	S	513	630	6:50:29	6:52:27
37	20070220	1077	S	631	1319	7:06:02	7:17:31
37	20070220	1076	N	1320	2031	7:19:40	7:31:32
37	20070220	1075	S	2032	2707	7:33:08	7:44:24
37	20070220	1074	N	2708	3423	7:46:21	7:58:17
37	20070220	1073	S	3424	4044	7:59:50	8:10:11
37	20070220	1072	N	4045	4738	8:11:56	8:23:30
37	20070220	1070	N	1	744	8:53:51	9:06:15
37	20070220	1069	S	745	1343	9:07:43	9:17:42
37	20070220	9004	N	1344	1433	9:24:59	9:26:29
37	20070220	7137	N	1434	1523	9:27:04	9:28:34
37	20070220	9006	N	1524	1613	9:29:20	9:30:50
37	20070220	6137	N	1	120	9:48:20	9:50:20
38	20070221	6038	N	1	120	6:01:19	6:03:19
38	20070221	9000	N	121	210	6:41:04	6:42:34
38	20070221	9001	N	211	300	6:43:20	6:44:50
38	20070221	7038	N	301	390	6:45:26	6:46:56
38	20070221	9003	N	391	461	6:47:13	6:48:24
38	20070221	1071	S	462	1084	7:03:19	7:13:42
38	20070221	1068	N	1085	1817	7:16:53	7:29:06
38	20070221	1067	S	1818	2454	7:30:59	7:41:36
38	20070221	1066	N	2455	3181	7:43:36	7:55:43
38	20070221	1065	S	3182	3808	7:57:28	8:07:55

38	20070221	1064	N	3809	4525	8:09:42	8:21:39
38	20070221	1063	S	4526	5141	8:23:29	8:33:45
38	20070221	1062	N	1	799	8:48:13	9:01:32
38	20070221	1061	S	800	1375	9:03:14	9:12:50
38	20070221	1060	N	1376	2145	9:14:24	9:27:14
38	20070221	9004	N	2146	2235	9:34:56	9:36:26
38	20070221	7138	N	2236	2325	9:36:48	9:38:18
38	20070221	9006	N	2326	2415	9:38:40	9:40:10
38	20070221	6138	N	1	120	10:00:29	10:02:29
39	20070222	6039	N	1	120	6:16:05	6:18:05
39	20070222	9000	S	211	300	6:49:31	6:51:01
39	20070222	9001	S	301	390	6:51:31	6:53:01
39	20070222	7039	S	391	480	6:53:27	6:54:57
39	20070222	9003	S	481	555	6:55:19	6:56:34
39	20070222	1059	S	556	1227	7:16:51	7:28:03
39	20070222	1058	N	1228	1980	7:30:04	7:42:37
39	20070222	1057	S	1981	2614	7:44:28	7:55:02
39	20070222	1056	N	2615	3334	7:56:32	8:08:32
39	20070222	1055	S	3335	3959	8:10:16	8:20:41
39	20070222	1054	N	3960	4702	8:22:13	8:34:36
39	20070222	1053	S	4703	5316	8:36:09	8:46:23
39	20070222	1052	N	5317	6026	8:47:58	8:59:48
39	20070222	1051	S	6027	6680	9:01:24	9:12:18
39	20070222	1050	N	6681	7401	9:14:03	9:26:04
39	20070222	1049	S	7402	8009	9:27:38	9:37:46
39	20070222	1048	N	8010	8739	9:39:31	9:51:41
39	20070222	9004	N	8740	8829	9:58:16	9:59:46
39	20070222	7139	N	8830	8919	10:00:09	10:01:39
39	20070222	9006	N	8920	9009	10:02:06	10:03:36
39	20070222	6139	N	1	120	10:27:51	10:29:51
40	20070224	6040	N	1	120	6:09:37	6:11:37
40	20070224	9000	N	121	210	6:51:38	6:53:08
40	20070224	9001	N	211	300	6:54:10	6:55:40
40	20070224	7040	N	301	390	6:56:34	6:58:04
40	20070224	9003	N	391	456	6:58:40	6:59:46
40	20070224	8640	S	457	559	7:07:17	7:09:00
40	20070224	1047	S	560	1189	7:28:46	7:39:16
40	20070224	1046	N	1190	1983	7:41:05	7:54:19
40	20070224	1045	S	1984	2568	7:55:50	8:05:35
40	20070224	1044	N	2569	3357	8:07:18	8:20:27
40	20070224	1043	S	3358	3946	8:21:53	8:31:42
40	20070224	1042	N	3947	4714	8:33:29	8:46:17
40	20070224	1041	S	4715	5306	8:47:45	8:57:37
40	20070224	1040	N	5307	6102	9:00:15	9:13:31
40	20070224	1039	S	6103	6696	9:15:06	9:25:00
40	20070224	1038	N	6697	7467	9:26:36	9:39:27
40	20070224	1037	S	7468	8056	9:40:52	9:50:41
40	20070224	1036	N	8057	8810	9:52:18	10:04:52
40	20070224	9004	N	8811	8900	10:12:01	10:13:31
40	20070224	7140	N	8901	8990	10:14:02	10:15:32
40	20070224	9006	N	8991	9080	10:15:56	10:17:26
40	20070224	6140	N	1	120	10:37:34	10:39:34
41	20070225	6041	N	1	120	6:17:04	6:19:04
41	20070225	9000	N	121	210	7:10:57	7:12:27
41	20070225	9001	N	211	300	7:13:02	7:14:32
41	20070225	7041	N	301	390	7:15:00	7:16:30
41	20070225	9003	S	391	460	7:18:25	7:19:35
41	20070225	8641	S	461	582	7:26:25	7:28:27

41	20070225	1035	S	583	1413	7:47:21	8:01:12
41	20070225	1034	N	1414	2219	8:03:42	8:17:08
41	20070225	1033	S	2220	3034	8:21:21	8:34:56
41	20070225	1032	N	3035	3686	8:37:01	8:47:53
41	20070225	1031	S	3687	4405	8:49:46	9:01:45
41	20070225	1030	N	4406	5061	9:04:32	9:15:28
41	20070225	1029	S	5062	5790	9:17:25	9:29:34
41	20070225	1028	N	5791	6446	9:30:58	9:41:54
41	20070225	1027	S	6447	7157	9:43:20	9:55:11
41	20070225	9004	N	7158	7247	10:02:31	10:04:01
41	20070225	7141	N	7248	7337	10:04:36	10:06:06
41	20070225	9006	N	7338	7427	10:06:38	10:08:08
41	20070225	6141	N	1	120	10:29:18	10:31:18
42	20070226	6042.1	N	1	120	6:04:22	6:06:22
42	20070226	9000	S	1	90	6:57:05	6:58:35
42	20070226	9001	S	91	180	6:59:03	7:00:33
42	20070226	7042	S	181	270	7:00:59	7:02:29
42	20070226	9003	S	271	355	7:02:50	7:04:15
42	20070226	1026	N	356	1004	7:18:14	7:29:03
42	20070226	1025	S	1005	1680	7:31:22	7:42:38
42	20070226	1024	N	1681	2383	7:44:16	7:55:59
42	20070226	1023	S	2384	3103	7:58:02	8:10:02
42	20070226	1022	N	3104	3773	8:12:00	8:23:10
42	20070226	9004	N	3774	3864	8:30:32	8:32:03
42	20070226	7142	N	3865	3954	8:32:28	8:33:58
42	20070226	9006	N	3955	4044	8:34:28	8:35:58
42	20070226	9142	N	1	120	9:03:22	9:05:22
43	20070227	6043.1	N	121	240	6:09:57	6:11:57
43	20070227	9000	N	241	330	7:03:20	7:04:50
43	20070227	9001	N	331	420	7:05:41	7:07:11
43	20070227	7043	N	421	510	7:07:31	7:09:01
43	20070227	9003	N	511	567	7:09:43	7:10:40
43	20070227	1021	S	568	1288	7:29:29	7:41:30
43	20070227	1020	N	1289	1991	7:43:47	7:55:30
43	20070227	1019	S	2002	2691	8:00:56	8:12:26
43	20070227	1018	N	2692	3381	8:14:07	8:25:37
43	20070227	1017	S	3382	4041	8:27:45	8:38:45
43	20070227	1016	N	4042	4753	8:40:50	8:52:42
43	20070227	1015	S	4754	5408	8:54:43	9:05:38
43	20070227	1014	N	5409	6073	9:07:47	9:18:52
43	20070227	1013	S	6074	6722	9:20:51	9:31:40
43	20070227	1012	N	6723	7381	9:33:42	9:44:41
43	20070227	9004	N	7382	7471	9:48:56	9:50:26
43	20070227	7143	N	7472	7561	9:50:49	9:52:19
43	20070227	9006	N	7562	7651	9:52:52	9:54:22
43	20070227	6143	N	1	120	10:30:15	10:32:15
46	20070302	6046	N	1	120	6:47:44	6:49:44
46	20070302	9000	W	121	210	7:37:20	7:38:50
46	20070302	9001	W	211	300	7:39:23	7:40:53
46	20070302	7046	W	301	390	7:41:14	7:42:44
46	20070302	9003	W	391	450	7:43:05	7:44:05
46	20070302	2621.1	W	451	2357	7:56:17	8:28:04
46	20070302	2612	E	2358	4426	8:30:55	9:05:24
46	20070302	2613	W	4504	5596	9:15:54	9:34:07
46	20070302	2614	E	5597	6735	9:42:02	10:01:01
46	20070302	9004	E	6736	6825	10:07:08	10:08:38
46	20070302	7146	E	6826	6915	10:09:14	10:10:44
46	20070302	9006	E	6916	7005	10:11:10	10:12:40

46	20070302	6146.1	N	1	120	10:38:44	10:40:44
47	20070304	6047	N	1	120	6:13:46	6:15:46
47	20070304	9000	W	121	210	7:02:21	7:03:51
47	20070304	9001	W	211	300	7:04:52	7:06:22
47	20070304	7047	W	301	390	7:06:48	7:08:18
47	20070304	9003	W	391	489	7:08:41	7:10:20
47	20070304	2617	W	490	1613	7:22:04	7:40:48
47	20070304	2616	E	1614	2691	7:44:34	8:02:32
47	20070304	2615	W	2692	4625	8:06:21	8:38:35
47	20070304	2606	E	4631	6732	8:43:14	9:18:16
47	20070304	2611	W	6733	7767	9:20:42	9:37:57
47	20070304	9004	E	7768	7857	9:45:55	9:47:25
47	20070304	7147	E	7858	7942	9:47:48	9:49:18
47	20070304	9006	E	7948	8039	9:49:41	9:51:13
47	20070304	6147	N	1	120	10:15:51	10:17:51
48	20070309	6048	N	1	120	9:10:17	9:12:17
48	20070309	9000	W	121	210	10:08:12	10:09:42
48	20070309	9001	W	211	300	10:10:17	10:11:47
48	20070309	7048	W	301	390	10:12:07	10:13:37
48	20070309	9003	W	391	430	10:14:06	10:14:46
48	20070309	8648	S	431	553	10:23:14	10:25:17
48	20070309	1021.1	S	554	1251	10:50:34	11:02:12
48	20070309	2620.1	E	1252	2352	11:24:09	11:42:30
48	20070309	2619.1	W	2353	3401	11:44:09	12:01:38
48	20070309	2610	E	3402	4484	12:03:45	12:21:48
48	20070309	2607	W	4485	5536	12:23:28	12:41:00
48	20070309	2608	E	5537	6593	12:44:23	13:02:00
48	20070309	9004	E	6594	6683	13:09:22	13:10:52
48	20070309	7148	E	6684	6773	13:11:14	13:12:44
48	20070309	9006	E	6774	6863	13:13:11	13:14:41
48	20070309	6148	N	1	120	13:29:19	13:31:19
49	20070310	6049.1	N	21	140	6:25:53	6:27:53
49	20070310	9000	W	141	230	7:09:08	7:10:38
49	20070310	9001	W	231	320	7:11:12	7:12:42
49	20070310	7049	W	321	410	7:13:01	7:14:31
49	20070310	9003	W	411	460	7:14:49	7:15:39
49	20070310	2609	W	461	2254	7:27:28	7:57:22
49	20070310	2618.1	E	2255	4444	8:00:01	8:36:31
49	20070310	2605	E	4445	5419	8:41:17	8:57:32
49	20070310	2604	E	5420	6575	9:01:39	9:20:55
49	20070310	2601	W	6576	7549	9:22:48	9:39:02
49	20070310	2602	E	7550	8689	9:40:55	9:59:55
49	20070310	2599	W	8690	9717	10:01:11	10:18:19
49	20070310	9004	E	9718	9807	10:23:15	10:24:45
49	20070310	7149	E	9808	9897	10:25:07	10:26:37
49	20070310	9006	E	9898	9987	10:27:00	10:28:30
49	20070310	6149	N	1	120	10:50:25	10:52:25
50	20070311	6050	N	1	120	6:19:30	6:21:30
50	20070311	9000	W	121	210	7:07:04	7:08:34
50	20070311	9001	W	211	300	7:09:09	7:10:39
50	20070311	7050	W	301	390	7:11:02	7:12:32
50	20070311	9003	W	391	434	7:12:55	7:13:39
50	20070311	2598	E	435	1510	7:30:18	7:48:14
50	20070311	2603	W	1511	3457	7:49:57	8:22:24
50	20070311	2600	E	3458	5374	8:25:35	8:57:32
50	20070311	2595	W	5375	6395	8:59:14	9:16:15
50	20070311	2596	E	6396	7465	9:17:51	9:35:41
50	20070311	2593	W	7466	8518	9:36:36	9:54:09

50	20070311	2592	E	8519	9579	9:55:26	10:13:07
50	20070311	9004	E	9580	9669	10:20:20	10:21:50
50	20070311	7150	E	9670	9759	10:22:12	10:23:42
50	20070311	9006	E	9760	9849	10:24:06	10:25:36
50	20070311	6150	N	1	120	10:47:58	10:49:58
51	20070312	6051.1	N	88	208	6:28:40	6:30:41
51	20070312	9000	W	209	298	7:08:54	7:10:24
51	20070312	9001	W	299	388	7:11:02	7:12:32
51	20070312	7051	W	389	478	7:12:58	7:14:28
51	20070312	9003	W	479	523	7:14:53	7:15:38
51	20070312	8651.1	S	533	640	7:25:06	7:26:54
51	20070312	2597	W	641	2697	7:33:17	8:07:34
51	20070312	2594	E	2698	4591	8:09:30	8:41:04
51	20070312	2591	W	4592	6598	8:45:31	9:18:58
51	20070312	2588	E	6599	8479	9:20:55	9:52:16
51	20070312	2589	W	8480	9546	9:56:07	10:13:54
51	20070312	9004	E	9547	9636	10:22:37	10:24:07
51	20070312	7151	E	9637	9726	10:24:54	10:26:24
51	20070312	9006	E	9727	9816	10:27:06	10:28:36
51	20070312	6151	N	1	120	10:47:18	10:49:18
52	20070313	6052	N	1	120	8:58:30	9:00:30
52	20070313	9000	W	121	210	9:23:45	9:25:15
52	20070313	9001	W	211	300	9:25:53	9:27:23
52	20070313	7052	W	301	390	9:27:58	9:29:28
52	20070313	9003	W	391	450	9:29:51	9:30:51
52	20070313	2590	E	451	1764	9:39:10	10:01:04
52	20070313	2587	W	1765	2689	10:03:20	10:18:45
52	20070313	9004	E	2690	2779	10:27:54	10:29:24
52	20070313	7152	E	2780	2869	10:29:50	10:31:20
52	20070313	9006	E	2870	2959	10:31:47	10:33:17
52	20070313	6152	N	1	120	10:54:27	10:56:27
53	20070314	6053.1	N	43	162	7:33:25	7:35:25
53	20070314	9000.1	E	472	561	7:59:23	8:00:53
53	20070314	9001.1	E	562	651	8:01:23	8:02:53
53	20070314	7053.1	E	652	741	8:03:14	8:04:44
53	20070314	9003.1	E	742	781	8:05:03	8:05:43
53	20070314	2585	W	782	2557	8:12:22	8:41:58
53	20070314	2586	E	2558	3791	9:00:42	9:21:16
53	20070314	2583	W	3792	5032	9:24:07	9:44:48
53	20070314	2584	E	5033	6239	9:50:30	10:10:37
53	20070314	2581.1	W	6279	7271	10:14:58	10:31:31
53	20070314	2582	E	7272	8435	10:34:17	10:53:41
53	20070314	9004	E	8436	8525	11:01:07	11:02:37
53	20070314	7153	E	8526	8615	11:03:13	11:04:43
53	20070314	9006	E	8616	8705	11:05:37	11:07:07
53	20070314	6153	N	1	120	11:28:40	11:30:40
54	20070315	6054.1	N	7	126	6:49:35	6:51:35
54	20070315	9000	W	127	216	7:07:45	7:09:15
54	20070315	9001	W	217	306	7:09:55	7:11:25
54	20070315	7054	W	307	396	7:11:55	7:13:25
54	20070315	9003	W	397	439	7:14:10	7:14:53
54	20070315	2580	E	440	1658	7:28:53	7:49:12
54	20070315	2579	W	1659	2610	7:50:39	8:06:31
54	20070315	2578	E	2611	3787	8:08:01	8:27:38
54	20070315	2577	W	3788	4794	8:29:11	8:45:58
54	20070315	2576	E	4795	5963	8:47:50	9:07:19
54	20070315	2575	W	5964	6994	9:09:07	9:26:18
54	20070315	9004	E	6995	7084	9:34:20	9:35:50

54	20070315	7154.1	E	7175	7264	9:38:36	9:40:06
54	20070315	9006	E	7265	7354	9:40:37	9:42:07
54	20070315	6154	N	1	120	10:02:15	10:04:15
55	20070317	6055	N	1	120	6:25:39	6:27:39
55	20070317	9000	W	121	210	7:08:47	7:10:17
55	20070317	9001	W	211	300	7:10:54	7:12:24
55	20070317	7055	W	301	390	7:12:51	7:14:21
55	20070317	9003	W	391	430	7:14:46	7:15:26
55	20070317	8655	S	431	523	7:23:08	7:24:41
55	20070317	2573	W	524	1656	7:34:13	7:53:06
55	20070317	2572	E	1657	2689	7:55:36	8:12:49
55	20070317	2571	W	2690	3825	8:15:18	8:34:14
55	20070317	2570	E	3826	4847	8:35:56	8:52:58
55	20070317	2569	W	4848	5948	8:56:53	9:15:14
55	20070317	2568	E	5949	6958	9:17:56	9:34:46
55	20070317	2567	W	6959	8051	9:36:46	9:54:59
55	20070317	2574	E	8052	9077	9:57:28	10:14:34
55	20070317	9004	E	9078	9167	10:19:43	10:21:13
55	20070317	7155.1	E	9213	9302	10:23:02	10:24:32
55	20070317	9006	E	9303	9392	10:25:07	10:26:37
55	20070317	6155	N	1	120	10:47:37	10:49:37
56	20070318	6056	N	1	120	7:42:14	7:44:14
56	20070318	9000	W	121	210	8:21:34	8:23:04
56	20070318	9001	W	211	300	8:23:40	8:25:10
56	20070318	7056	W	301	390	8:25:36	8:27:06
56	20070318	9003	W	391	430	8:27:37	8:28:17
56	20070318	2566	E	431	1707	8:46:22	9:07:39
56	20070318	2565	W	1708	2656	9:09:33	9:25:22
56	20070318	2564	E	2657	3952	9:26:51	9:48:27
56	20070318	2563	W	3953	4908	9:50:18	10:06:14
56	20070318	2562	E	4909	6171	10:08:03	10:29:06
56	20070318	9004	E	6172	6261	10:35:02	10:36:32
56	20070318	7156	E	6262	6351	10:37:05	10:38:35
56	20070318	9006	E	6352	6441	10:39:15	10:40:45
56	20070318	6156	N	1	120	11:03:12	11:05:12
57	20070327	6057.1	N	12	131	8:34:45	8:36:45
57	20070327	9000	W	132	221	9:24:48	9:26:18
57	20070327	9001	W	222	311	9:27:41	9:29:11
57	20070327	7057	W	312	401	9:29:45	9:31:15
57	20070327	9003	W	402	468	9:31:49	9:32:56
57	20070327	8657	S	469	590	9:50:14	9:52:16
57	20070327	2561	W	591	1583	10:04:32	10:21:05
57	20070327	2560	E	1584	2736	10:23:48	10:43:01
57	20070327	2559	W	2737	3730	10:45:13	11:01:47
57	20070327	9004	E	3731	3820	11:08:36	11:10:06
57	20070327	7157	E	3821	3910	11:10:30	11:12:00
57	20070327	9006	E	3911	4000	11:12:24	11:13:54
57	20070327	6157	N	1	120	11:39:27	11:41:27
58	20070328	6058.1	N	1	120	8:08:14	8:10:14
58	20070328	9000	W	121	210	8:35:37	8:37:07
58	20070328	9001	W	211	300	8:39:20	8:40:50
58	20070328	7058	W	301	390	8:42:08	8:43:38
58	20070328	9003	W	391	448	8:44:35	8:45:33
58	20070328	2557	W	1577	2627	9:20:49	9:38:20
58	20070328	2556	E	2628	3744	9:41:14	9:59:51
58	20070328	9004	E	3745	3834	10:08:02	10:09:32
58	20070328	7158	E	3835	3924	10:10:03	10:11:33
58	20070328	9006	E	3925	4014	10:11:54	10:13:24

58	20070328	6158	N	1	120	10:34:22	10:36:22
59	20070328	1810	N	14	551	17:12:19	17:21:17
59	20070328	1811	E	552	1069	17:22:51	17:31:29
59	20070328	1812	S	1070	1716	17:35:57	17:46:44
59	20070328	1813	W	1717	2195	17:49:29	17:57:28
60	20070329	6060	N	1	120	6:59:15	7:01:15
60	20070329	9000	W	121	210	7:22:12	7:23:42
60	20070329	9001	W	211	300	7:26:49	7:28:19
60	20070329	7060	W	301	390	7:29:24	7:30:54
60	20070329	9003	W	391	420	7:32:07	7:32:37
60	20070329	2558.1	E	421	1492	7:49:55	8:07:47
60	20070329	2555	W	1493	2605	8:09:55	8:28:28
60	20070329	2554	E	2606	3706	8:30:56	8:49:17
60	20070329	2553	W	3707	4817	8:51:28	9:09:59
60	20070329	2552	E	4818	5882	9:12:02	9:29:47
60	20070329	9004	E	5883	5972	9:36:55	9:38:25
60	20070329	7160	E	5973	6062	9:39:51	9:41:21
60	20070329	9006	E	6063	6152	9:42:46	9:44:16
60	20070329	6160	N	1	120	10:10:36	10:12:36
61	20070330	6061	N	1	120	7:04:02	7:06:02
61	20070330	9000	W	121	210	7:26:29	7:27:59
61	20070330	9001.1	W	213	302	7:31:10	7:32:40
61	20070330	7061.1	W	393	482	7:37:11	7:38:41
61	20070330	9003	W	483	552	7:40:37	7:41:47
61	20070330	8661	S	553	712	7:59:14	8:01:54
61	20070330	2551	W	713	1861	8:11:45	8:30:54
61	20070330	2550	E	1862	2892	8:33:27	8:50:38
61	20070330	2549	W	2893	4057	8:53:25	9:12:50
61	20070330	2548	E	4058	5088	9:15:15	9:32:26
61	20070330	9004.1	E	1	90	9:47:55	9:49:25
61	20070330	7161	E	91	180	9:50:05	9:51:35
61	20070330	9006	E	181	270	9:53:09	9:54:39
61	20070330	6161	N	271	450	10:21:11	10:24:11
62	20070331	6062	N	1	120	6:52:46	6:54:46
62	20070331	9000.1	W	124	213	7:21:45	7:23:15
62	20070331	9001	W	214	303	7:24:52	7:26:22
62	20070331	7062	W	304	393	7:27:05	7:28:35
62	20070331	9003	W	394	447	7:30:15	7:31:09
62	20070331	2547	E	448	1567	7:49:11	8:07:51
62	20070331	2546	W	1568	2690	8:09:58	8:28:41
62	20070331	2545	E	2691	3814	8:30:28	8:49:12
62	20070331	2544	W	3815	4946	8:51:30	9:10:22
62	20070331	2543	E	4947	6077	9:12:20	9:31:11
62	20070331	9004.1	E	6083	6172	9:39:03	9:40:33
62	20070331	7162	E	6173	6262	9:41:21	9:42:51
62	20070331	9006	E	6263	6352	9:43:38	9:45:08
62	20070331	6162	N	1	120	10:05:21	10:07:21
63	20070331	6063.2	N	13	132	11:15:58	11:17:58
63	20070331	9000	W	133	222	11:35:42	11:37:12
63	20070331	9001	W	223	312	11:38:32	11:40:02
63	20070331	7063	W	313	402	11:40:44	11:42:14
63	20070331	9003	W	403	450	11:44:06	11:44:54
63	20070331	2547.1	W	451	1576	11:57:27	12:16:13
63	20070331	2546.2	E	1640	2752	12:21:54	12:40:27
63	20070331	9004	E	2753	2842	12:46:33	12:48:03
63	20070331	7163.1	E	2893	2982	12:49:57	12:51:27
63	20070331	9006	E	2983	3072	12:51:50	12:53:20

63	20070331	6163	N	1	120	13:14:46	13:16:46
64	20070401	6064	N	1	120	5:57:05	5:59:05
64	20070401	9000	W	121	210	6:32:10	6:33:40
64	20070401	9001	W	211	300	6:35:29	6:36:59
64	20070401	7064	W	301	390	6:37:49	6:39:19
64	20070401	9003	W	391	438	6:39:56	6:40:44
64	20070401	2545.1	W	439	1368	7:03:28	7:18:58
64	20070401	2544.1	E	1369	2663	7:22:57	7:44:32
64	20070401	2543.1	W	2664	3620	7:47:45	8:03:42
64	20070401	2542	E	3621	4902	8:05:14	8:26:36
64	20070401	9004	E	4903	4992	8:32:26	8:33:56
64	20070401	9006.2	E	12	101	8:52:48	8:54:18
64	20070401	6164	N	1	120	9:20:32	9:22:32
65	20070402	6065	N	1	120	5:37:13	5:39:13
65	20070402	9000.1	E	1	90	6:37:28	6:38:58
65	20070402	9001	E	91	180	6:40:09	6:41:39
65	20070402	7065.1	E	190	279	6:42:46	6:44:16
65	20070402	9003	E	280	330	6:45:03	6:45:54
65	20070402	8665	S	331	531	7:06:52	7:10:13
65	20070402	2541	W	532	1497	7:25:11	7:41:17
65	20070402	2540	E	1498	2676	7:44:31	8:04:10
65	20070402	2539	W	2677	3674	8:06:05	8:22:43
65	20070402	9004.1	E	3765	3854	8:34:00	8:35:30
65	20070402	7165.1	E	3885	3974	8:37:25	8:38:55
65	20070402	9006	E	3975	4064	8:39:45	8:41:15
65	20070402	6165	N	1	120	9:03:37	9:05:37
66	20070402	6066	N	1	120	9:34:07	9:36:07
66	20070402	9000	W	121	210	10:00:56	10:02:26
66	20070402	9001	W	211	300	10:03:23	10:04:53
66	20070402	7066	W	301	390	10:05:15	10:06:45
66	20070402	9003	W	391	430	10:07:19	10:07:59
66	20070402	2538	E	431	1493	10:26:35	10:44:18
66	20070402	2537	W	1494	2616	10:46:35	11:05:18
66	20070402	2536	E	2617	3658	11:07:47	11:25:09
66	20070402	2535	W	3659	4736	11:27:33	11:45:31
66	20070402	2534	E	4737	5760	11:47:51	12:04:55
66	20070402	9004	E	5761	5850	12:11:57	12:13:27
66	20070402	7166	E	5851	5940	12:13:54	12:15:24
66	20070402	9006.1	E	5962	6051	12:16:32	12:18:02
66	20070402	6166	N	1	120	12:38:10	12:40:10
67	20070404	6067.1	N	1	120	5:45:09	5:47:09
67	20070404	9000	W	121	210	6:37:44	6:39:14
67	20070404	9001.1	W	1	90	6:45:39	6:47:09
67	20070404	7067	W	91	180	6:47:45	6:49:15
67	20070404	9003	W	181	231	6:50:06	6:50:57
67	20070404	2532	E	1183	2406	7:18:15	7:38:39
67	20070404	2531	W	2407	3382	7:40:49	7:57:05
67	20070404	2530	E	3383	4554	7:59:48	8:19:20
67	20070404	2529	W	4555	5552	8:21:28	8:38:06
67	20070404	2528	E	5553	6682	8:40:22	8:59:12
67	20070404	9004	E	6683	6772	9:04:31	9:06:01
67	20070404	7167	E	6773	6862	9:06:38	9:08:08
67	20070404	9006	E	6863	6952	9:08:56	9:10:26
67	20070404	6167	N	1	120	9:30:50	9:32:50
68	20070404	6068	N	1	120	10:12:33	10:14:33
68	20070404	9000	E	121	210	10:41:08	10:42:38
68	20070404	9001	E	211	300	10:43:43	10:45:13
68	20070404	7068	E	301	390	10:46:07	10:47:37

68	20070404	9003	E	391	439	10:48:15	10:49:04
68	20070404	2527	W	440	1466	11:04:00	11:21:07
68	20070404	2526	E	1467	2516	11:23:26	11:40:56
68	20070404	9004	E	2517	2606	11:47:01	11:48:31
68	20070404	7168	E	2607	2696	11:49:01	11:50:31
68	20070404	9006	E	2697	2786	11:51:22	11:52:52
68	20070404	6168	N	1	120	12:17:47	12:19:47
69	20070405	6069	N	1	120	5:33:22	5:35:22
69	20070405	9000	W	121	210	6:23:56	6:25:26
69	20070405	9001	W	211	300	6:26:42	6:28:12
69	20070405	7069	W	1	90	6:30:14	6:31:44
69	20070405	9003	W	91	139	6:32:32	6:33:21
69	20070405	2533	W	140	1243	6:45:35	7:03:59
69	20070405	2524	E	1244	2266	7:07:30	7:24:33
69	20070405	2525	W	2267	3383	7:27:01	7:45:38
69	20070405	2522	E	3384	4393	7:52:05	8:08:55
69	20070405	2523	W	4394	5434	8:10:42	8:28:03
69	20070405	9004	E	5435	5524	8:36:24	8:37:54
69	20070405	7169	E	5525	5614	8:38:21	8:39:51
69	20070405	9006	E	5615	5704	8:40:42	8:42:12
69	20070405	6169	N	1	120	9:00:12	9:02:12
70	20070405	6070	N	1	120	9:47:32	9:49:32
70	20070405	9000	W	121	210	10:13:41	10:15:11
70	20070405	9001	W	211	300	10:16:32	10:18:02
70	20070405	7070	W	301	390	10:18:34	10:20:04
70	20070405	9003	W	391	435	10:20:27	10:21:12
70	20070405	2521	W	436	1469	10:33:20	10:50:34
70	20070405	2520	E	1470	2451	10:53:41	11:10:03
70	20070405	2519	W	2452	3504	11:11:46	11:29:19
70	20070405	2518	E	3505	4470	11:31:16	11:47:22
70	20070405	9004	E	4471	4561	11:52:45	11:54:16
70	20070405	7170	E	4562	4651	11:54:50	11:56:20
70	20070405	9006	E	4652	4741	11:57:01	11:58:31
70	20070405	6170	N	1	120	12:17:36	12:19:36
71	20070406	6071	N	1	120	5:33:10	5:35:10
71	20070406	9000	W	121	211	6:23:16	6:24:47
71	20070406	9001.1	W	1	90	6:27:03	6:28:33
71	20070406	7071	W	91	180	6:29:02	6:30:32
71	20070406	9003	W	181	220	6:30:54	6:31:34
71	20070406	8671	S	221	325	6:43:31	6:45:16
71	20070406	2517	W	326	1249	7:00:43	7:16:07
71	20070406	2516	E	1250	2387	7:18:34	7:37:32
71	20070406	2515	W	2388	3303	7:40:01	7:55:17
71	20070406	2514	E	3304	4423	7:57:03	8:15:43
71	20070406	9004	E	5328	5417	8:41:18	8:42:48
71	20070406	7171	E	5418	5507	8:43:20	8:44:50
71	20070406	9006	E	5508	5597	8:45:42	8:47:12
71	20070406	6171	N	1	120	9:14:16	9:16:16
72	20070408	6072	N	1	120	5:30:09	5:32:09
72	20070408	9000	W	1	90	6:15:40	6:17:10
72	20070408	9001.1	W	112	201	6:18:24	6:19:54
72	20070408	7072.1	W	233	322	6:21:16	6:22:46
72	20070408	9003	W	323	376	6:23:18	6:24:12
72	20070408	2512	E	1242	2409	6:49:22	7:08:50
72	20070408	2511	W	2410	3275	7:11:14	7:25:40
72	20070408	2510	E	3276	4382	7:28:10	7:46:37
72	20070408	9004.1	E	4483	4572	8:00:16	8:01:46
72	20070408	7172	E	4573	4662	8:02:25	8:03:55

72	20070408	9006	E	4663	4752	8:04:26	8:05:56
72	20070408	6172	N	1	120	8:27:35	8:29:35
73	20070408	6073	N	1	120	8:57:47	8:59:47
73	20070408	9000	W	121	210	9:26:10	9:27:40
73	20070408	9001	W	211	300	9:28:21	9:29:51
73	20070408	7073	W	301	390	9:30:34	9:32:04
73	20070408	9003	W	391	435	9:32:30	9:33:15
73	20070408	2508	E	1281	2447	10:01:24	10:20:51
73	20070408	9004.1	E	2472	2561	10:26:45	10:28:15
73	20070408	7173	E	2562	2651	10:28:50	10:30:20
73	20070408	9006	E	2652	2741	10:30:51	10:32:21
73	20070408	6173	N	1	120	10:51:47	10:53:47
74	20070409	6074	N	1	120	5:29:06	5:31:06
74	20070409	9000	W	121	210	6:19:47	6:21:17
74	20070409	9001	W	211	300	6:22:03	6:23:33
74	20070409	7074	W	301	390	6:24:07	6:25:37
74	20070409	9003	W	391	435	6:26:05	6:26:50
74	20070409	2513	W	436	1321	6:38:42	6:53:28
74	20070409	2506	E	1322	2399	6:57:57	7:15:55
74	20070409	2509.1	W	2412	3295	7:20:20	7:35:04
74	20070409	2504	E	3296	4331	7:37:17	7:54:33
74	20070409	9004	E	4332	4421	8:00:06	8:01:36
74	20070409	7174	E	4422	4511	8:02:13	8:03:43
74	20070409	9006	E	4512	4601	8:04:16	8:05:46
74	20070409	6174	N	1	120	8:27:39	8:29:39
75	20070409	6075	N	1	120	9:04:10	9:06:10
75	20070409	9000	W	121	210	9:30:53	9:32:23
75	20070409	9001	W	211	300	9:33:09	9:34:39
75	20070409	7075	W	301	390	9:35:11	9:36:41
75	20070409	9003	W	391	435	9:37:11	9:37:56
75	20070409	2507	W	436	1315	9:48:09	10:02:49
75	20070409	2502	E	1316	2324	10:04:54	10:21:43
75	20070409	2505.1	W	2339	3217	10:25:43	10:40:22
75	20070409	2500	E	3218	4185	10:43:20	10:59:28
75	20070409	2503	W	4186	5064	11:00:50	11:15:29
75	20070409	2498	E	5065	6000	11:17:02	11:32:38
75	20070409	9004.1	E	6001	6090	11:38:36	11:40:06
75	20070409	7175	E	6091	6180	11:40:31	11:42:01
75	20070409	9006	E	6181	6270	11:42:40	11:44:10
75	20070409	6175	N	1	120	12:06:21	12:08:21
76	20070410	6076	N	1	120	5:31:09	5:33:09
76	20070410	9000	W	121	210	6:18:30	6:20:00
76	20070410	9001	W	211	300	6:20:51	6:22:21
76	20070410	7076.1	W	376	465	6:24:18	6:25:48
76	20070410	9003	W	466	510	6:26:09	6:26:54
76	20070410	8676	S	511	618	6:35:50	6:37:38
76	20070410	2501	W	619	1457	6:54:36	7:08:35
76	20070410	2496	E	1458	2478	7:11:26	7:28:27
76	20070410	2499	W	2479	3306	7:29:24	7:43:12
76	20070410	2494	E	3307	4299	7:45:24	8:01:57
76	20070410	2497	W	4300	5138	8:03:15	8:17:14
76	20070410	9004	E	5139	5228	8:24:38	8:26:08
76	20070410	7176	E	5229	5318	8:26:34	8:28:04
76	20070410	9006	E	5319	5408	8:28:33	8:30:03
76	20070410	6176	N	1	120	8:54:48	8:56:48
77	20070410	6077	N	1	120	9:37:53	9:39:53
77	20070410	9000	W	121	210	10:04:50	10:06:20
77	20070410	9001	W	211	300	10:06:54	10:08:24

77	20070410	7077	W	301	390	10:08:50	10:10:20
77	20070410	9003	W	391	440	10:10:40	10:11:30
77	20070410	2495	W	441	2198	10:18:22	10:47:40
77	20070410	2492	E	2199	4002	10:49:46	11:19:50
77	20070410	2493	W	4003	4887	11:21:51	11:36:36
77	20070410	9004	E	4888	4977	11:44:24	11:45:54
77	20070410	7177	E	4978	5067	11:46:15	11:47:45
77	20070410	9006	E	5068	5157	11:48:29	11:49:59
77	20070410	6177	N	1	120	12:13:04	12:15:04
78	20070411	6078	N	1	120	5:36:15	5:38:15
78	20070411	9000	W	121	210	6:14:59	6:16:29
78	20070411	9001	W	211	300	6:17:03	6:18:33
78	20070411	7078	W	301	390	6:18:54	6:20:24
78	20070411	9003	W	391	435	6:20:45	6:21:30
78	20070411	2491	W	436	1274	6:33:36	6:47:35
78	20070411	2490.1	E	1283	2228	6:49:45	7:05:31
78	20070411	2489	W	2229	3875	7:07:38	7:35:05
78	20070411	2488	E	3876	4804	7:53:18	8:08:47
78	20070411	2487	W	4805	5625	8:12:23	8:26:04
78	20070411	2484	E	5626	6529	8:27:38	8:42:42
78	20070411	9004	E	6530	6619	8:49:14	8:50:44
78	20070411	7178	E	6620	6709	8:51:07	8:52:37
78	20070411	9006	E	6710	6799	8:53:06	8:54:36
78	20070411	6178	N	1	120	9:15:39	9:17:39
79	20070411	6079	N	1	120	9:41:21	9:43:21
79	20070411	9000	W	121	210	10:07:31	10:09:01
79	20070411	9001	W	1	90	10:10:29	10:11:59
79	20070411	7079	W	91	180	10:12:24	10:13:54
79	20070411	9003	W	181	226	10:14:20	10:15:06
79	20070411	2483	W	1	1674	10:26:29	10:54:23
79	20070411	2486	E	1675	3534	10:56:17	11:27:17
79	20070411	9004	E	3545	3634	11:34:25	11:35:55
79	20070411	7179	E	3635	3725	11:36:17	11:37:48
79	20070411	9006	E	3726	3815	11:38:49	11:40:19
79	20070411	6179	N	1	120	11:59:16	12:01:16
80	20070412	6080	N	1	120	5:39:37	5:41:37
80	20070412	9000.1	E	732	821	6:51:02	6:52:32
80	20070412	9001.2	E	822	911	6:53:31	6:55:01
80	20070412	7080.1	E	912	1001	6:55:20	6:56:50
80	20070412	9003.1	E	1002	1041	6:57:10	6:57:50
80	20070412	2485.1	W	1042	1795	7:08:10	7:20:44
80	20070412	2482	E	1796	2774	7:22:31	7:38:50
80	20070412	2477	W	2775	4271	7:40:30	8:05:27
80	20070412	2480	E	4272	6267	8:06:52	8:40:09
80	20070412	9004	E	6269	6358	8:45:39	8:47:09
80	20070412	7180	E	6359	6448	8:47:32	8:49:02
80	20070412	9006	E	6449	6538	8:49:27	8:50:57
80	20070412	6180	N	1	120	9:15:12	9:17:12

Casa 212-200 – VH-TEM

Flight	Date (yyyymmdd)	Line	Direction	Start Fid	End Fid	Start Time	End Time
1	20070301	6001	N	1	120	0.273484	6:35:49
1	20070301	9000	E	121	210	0.295	7:06:18
1	20070301	9001	E	211	300	0.296852	7:08:58
1	20070301	7001	E	301	390	0.298368	7:11:09
1	20070301	9003	E	391	428	0.299873	7:12:27

1	20070301	1811	N	509	726	0.316262	7:39:03
1	20070301	1812	W	727	942	0.319734	7:44:01
1	20070301	1813	S	1080	1292	0.325162	7:51:47
1	20070301	1814	E	1293	1504	0.328125	7:56:02
1	20070301	8601	S	1	111	0.346748	8:21:10
1	20070301	8401	N	112	579	0.352535	8:35:27
1	20070301	8501	S	580	935	0.372488	9:02:19
1	20070301	7101	E	936	1025	0.380208	9:09:00
1	20070301	9004	E	1026	1115	0.381829	9:11:20
1	20070301	9006	E	1116	1205	0.383472	9:13:42
1	20070301	6101	N	1	120	0.433287	10:25:56
2	20070302	6002	N	1	120	0.297407	7:10:16
2	20070302	9000	W	121	210	0.309236	7:26:48
2	20070302	9001	W	211	300	0.310961	7:29:17
2	20070302	7002	W	301	390	0.312581	7:31:37
2	20070302	9003	W	391	440	0.314144	7:33:12
2	20070302	2425	W	441	1014	0.323322	7:55:09
2	20070302	2424	E	1015	1652	0.331829	8:08:28
2	20070302	2423	W	1653	2219	0.340405	8:19:38
2	20070302	2422	E	2220	2877	0.348889	8:33:22
2	20070302	8702	W	2878	2982	0.360428	8:40:46
2	20070302	7102	E	2983	3072	0.36588	8:48:22
2	20070302	9004	E	3073	3162	0.367662	8:50:56
2	20070302	9006	E	3163	3252	0.369201	8:53:09
2	20070302	6102	N	3253	3372	0.383009	9:13:32
3	20070303	6003	N	1	120	0.261759	6:18:56
3	20070303	9000	W	121	210	0.27316	6:34:51
3	20070303	9001	W	211	300	0.275081	6:37:37
3	20070303	7003	W	301	390	0.276655	6:39:53
3	20070303	9003	W	391	437	0.278113	6:41:16
3	20070303	2421	W	438	1032	0.290567	7:08:20
3	20070303	2420	E	1033	1694	0.300521	7:23:47
3	20070303	2419	W	1695	2238	0.309375	7:34:35
3	20070303	2418	E	2240	2884	0.31684	7:47:00
3	20070303	2417	W	2885	3419	0.325694	7:57:55
3	20070303	2416	E	3420	4067	0.333715	8:11:21
3	20070303	2415	W	4068	4634	0.342361	8:22:27
3	20070303	7103	E	4635	4724	0.352639	8:29:18
3	20070303	9004	E	4725	4814	0.354421	8:31:52
3	20070303	9006	E	4815	4904	0.356435	8:34:46
3	20070303	8703	W	4905	4999	0.362731	8:43:55
3	20070303	6103	N	5000	5119	0.383553	9:14:19
4	20070304	6004.1	N	125	244	0.284271	6:51:21
4	20070304	9000	W	245	334	0.295718	7:07:20
4	20070304	9001	W	335	424	0.297616	7:10:04
4	20070304	7004	W	425	514	0.299398	7:12:38
4	20070304	9003	W	515	577	0.300903	7:14:21
4	20070304	2414	E	578	1176	0.315683	7:44:34
4	20070304	2413	W	1177	1796	0.324919	7:58:13
4	20070304	2412	E	1797	2388	0.333183	8:09:39
4	20070304	2411	W	2389	2973	0.341088	8:20:55
4	20070304	2410	E	2974	3573	0.349063	8:32:39
4	20070304	2409	W	1	583	0.358657	8:46:11
4	20070304	2408	E	584	1212	0.366539	8:58:18
4	20070304	2407	W	1213	1787	0.37485	9:09:22
4	20070304	2406	E	1788	2410	0.382778	9:21:35
4	20070304	2405	W	2411	2986	0.391516	9:33:23
4	20070304	2404	E	2987	3620	0.399294	9:45:33

4	20070304	2403	W	3621	4210	0.407512	9:56:39
4	20070304	2402	E	4211	4844	0.415938	10:09:31
4	20070304	8704	W	4845	4913	0.426817	10:15:46
4	20070304	7104	E	4914	5003	0.431713	10:23:10
4	20070304	9004	E	5004	5093	0.433356	10:25:32
4	20070304	9006.1	E	5100	5189	0.435521	10:28:39
4	20070304	6104	N	5190	5309	0.451076	10:51:33
7	20070310	6007	N	1	120	0.274838	6:37:46
7	20070310	9000	W	121	210	0.285301	6:52:20
7	20070310	9001	W	211	300	0.287014	6:54:48
7	20070310	7007	W	301	390	0.288681	6:57:12
7	20070310	9003	W	391	450	0.290023	6:58:38
7	20070310	2371	W	451	985	0.301944	7:23:43
7	20070310	2370	E	986	1661	0.309907	7:37:32
7	20070310	2369	W	1662	2216	0.319259	7:48:59
7	20070310	2368	E	2217	2888	0.327292	8:02:30
7	20070310	2367	W	2889	3451	0.336308	8:13:40
7	20070310	2366	E	3452	4113	0.343993	8:26:23
7	20070310	2365	W	4114	4699	0.353044	8:38:09
7	20070310	2364	E	4700	5342	0.361609	8:51:26
7	20070310	2363	W	5343	5909	0.370185	9:02:31
7	20070310	2362	E	5910	6534	0.378021	9:14:46
7	20070310	2361	W	6535	7113	0.386921	9:26:49
7	20070310	2360	E	7114	7752	0.395162	9:39:41
7	20070310	2359	W	7753	8321	0.403507	9:50:32
7	20070310	2358	E	8322	8963	0.411262	10:02:55
7	20070310	2357.1	W	9028	9597	0.422743	10:18:15
7	20070310	2356	E	9598	10233	0.431134	10:31:26
7	20070310	8707	E	10234	10361	0.443368	10:40:35
7	20070310	7107	E	10362	10451	0.448079	10:46:44
7	20070310	9004	E	10452	10541	0.449572	10:48:53
7	20070310	9006	E	10542	10631	0.451319	10:51:24
7	20070310	6107	N	10632	10751	0.467292	11:14:54
8	20070311	6008	N	1	120	0.286551	6:54:38
8	20070311	9000	W	121	210	0.296447	7:08:23
8	20070311	9001	W	211	300	0.298206	7:10:55
8	20070311	7008	W	301	390	0.299769	7:13:10
8	20070311	9003	W	391	438	0.301215	7:14:33
8	20070311	2401	W	439	1804	0.312095	7:52:11
8	20070311	2398	E	1805	3129	0.329931	8:17:11
8	20070311	2399	W	3130	3737	0.346887	8:29:39
8	20070311	2400	E	3738	4310	0.355324	8:41:13
8	20070311	2395	W	4311	5752	0.364653	9:09:08
8	20070311	2392	E	5753	7138	0.382546	9:33:58
8	20070311	2397	W	7139	7750	0.400081	9:46:19
8	20070311	2396	E	7751	8335	0.408958	9:58:39
8	20070311	7108	E	1	90	0.434456	10:27:07
8	20070311	9004	E	91	180	0.435856	10:29:08
8	20070311	9006	E	181	270	0.437535	10:31:33
8	20070311	6108	N	271	390	0.457257	11:00:27
9	20070312	6009	N	1	120	0.280984	6:46:37
9	20070312	9000	W	121	210	0.296215	7:08:03
9	20070312	9001	W	211	300	0.298067	7:10:43
9	20070312	7009	W	301	390	0.299815	7:13:14
9	20070312	9003	W	391	450	0.301366	7:14:58
9	20070312	2423.1	W	451	1070	0.31184	7:39:23
9	20070312	2422.1	E	1071	1623	0.320833	7:51:13
9	20070312	2394.1	E	2235	2837	0.34169	8:22:05

9	20070312	7109	E	1	95	0.353287	8:30:19
9	20070312	9004	E	96	185	0.354942	8:32:37
9	20070312	9006	E	186	275	0.356655	8:35:05
9	20070312	6109	N	276	395	0.371863	8:57:29
10	20070314	6010	N	1	120	0.273611	6:36:00
10	20070314	9000	W	121	210	0.286979	6:54:45
10	20070314	9001	W	211	300	0.290787	7:00:14
10	20070314	7010	W	301	390	0.29272	7:03:01
10	20070314	9003	W	391	444	0.294259	7:04:38
10	20070314	2393.1	W	1761	2319	0.329919	8:04:24
10	20070314	2388	E	2320	2990	0.337789	8:17:36
10	20070314	2389	W	2991	4323	0.347153	8:42:07
10	20070314	2386	E	4324	5894	0.363738	9:09:58
10	20070314	2387	W	5895	6494	0.383542	9:22:18
10	20070314	2384	E	6495	7192	0.392326	9:36:35
10	20070314	2383	W	7193	8428	0.401863	9:59:17
10	20070314	2380	E	8429	9919	0.418044	10:26:50
10	20070314	8710	W	9920	10026	0.438252	10:32:52
10	20070314	7110	E	10027	10116	0.44316	10:39:39
10	20070314	9004	E	10117	10206	0.444664	10:41:49
10	20070314	9006	E	10207	10296	0.446285	10:44:09
10	20070314	6110	N	10297	10416	0.462569	11:08:06
11	20070315	6011	S	121	128	0.296713	7:07:24
11	20070315	9000	W	129	248	0.297535	7:10:27
11	20070315	9001	E	339	428	0.303229	7:18:09
11	20070315	7011	W	429	518	0.30515	7:20:55
11	20070315	9003	W	519	573	0.307188	7:23:16
11	20070315	2385	W	574	1140	0.320938	7:51:36
11	20070315	2382	E	1141	1811	0.331273	8:08:13
11	20070315	2381	W	1812	2391	0.340799	8:20:25
11	20070315	7111	W	1	90	0.351169	8:27:11
11	20070315	9004	W	91	180	0.353495	8:30:32
11	20070315	9006	W	181	270	0.355498	8:33:25
11	20070315	6111	N	271	390	0.395069	9:30:54
12	20070317	6012	S	1	120	0.277986	6:42:18
12	20070317	9000	W	121	210	0.289468	6:58:20
12	20070317	9001	W	211	300	0.291331	7:01:01
12	20070317	7012	W	301	390	0.293125	7:03:36
12	20070317	9003	W	391	448	0.294421	7:04:56
12	20070317	2379	W	449	1100	0.304433	7:29:15
12	20070317	2378	E	1101	1702	0.313542	7:41:32
12	20070317	2377	W	1703	2336	0.321586	7:53:39
12	20070317	2376	E	2337	2927	0.330139	8:05:15
12	20070317	2375	W	2928	3527	0.338947	8:18:05
12	20070317	2374	E	3528	4100	0.346956	8:29:10
12	20070317	2373	W	4101	4736	0.355162	8:42:02
12	20070317	2372	E	4737	5310	0.364132	8:53:55
12	20070317	2355	W	5311	5916	0.372419	9:06:23
12	20070317	2354	E	5917	6500	0.380775	9:18:03
12	20070317	2353	W	6501	7096	0.389178	9:30:21
12	20070317	2352	E	7097	7674	0.397581	9:42:09
12	20070317	2351	W	7675	8300	0.405938	9:54:59
12	20070317	2350	E	8301	8887	0.414514	10:06:41
12	20070317	2349	W	8888	9500	0.422593	10:18:45
12	20070317	2348	E	9501	10082	0.430637	10:29:49
12	20070317	2347	W	10083	10664	0.438542	10:41:12
12	20070317	2346	E	10665	11244	0.446169	10:52:09
12	20070317	2345	W	11245	11837	0.45412	11:03:49

12	20070317	2344	E	11838	12440	0.462234	11:15:40
12	20070317	2343	W	12441	13035	0.470255	11:27:05
12	20070317	2342	E	13036	13625	0.478241	11:38:30
12	20070317	7112	E	13626	13715	0.488611	11:45:06
12	20070317	9004	E	13716	13805	0.490081	11:47:13
12	20070317	9006	E	13806	13896	0.491609	11:49:26
12	20070317	6112	S	13897	14016	0.503275	12:06:43
13	20070318	6013	S	1	120	0.278403	6:42:54
13	20070318	9000.1	W	126	215	0.28735	6:55:17
13	20070318	9001	W	216	305	0.289282	6:58:04
13	20070318	7013	W	306	395	0.290891	7:00:23
13	20070318	9003	W	396	439	0.29235	7:01:43
13	20070318	2341	W	440	1018	0.300625	7:22:33
13	20070318	2340	E	1019	1726	0.308519	7:36:04
13	20070318	2339	W	1727	2312	0.317998	7:47:41
13	20070318	2338	E	2313	3031	0.325961	8:01:22
13	20070318	2337	W	3032	3611	0.335694	8:13:04
13	20070318	2336	E	3612	4280	0.343727	8:26:07
13	20070318	2335	W	4281	4844	0.352407	8:36:52
13	20070318	2334	E	4845	5528	0.359826	8:49:33
13	20070318	2333	W	5529	6100	0.3689	9:00:45
13	20070318	2332	E	6101	6765	0.376331	9:13:00
13	20070318	2331	W	6766	7333	0.385451	9:24:31
13	20070318	2330	E	7334	7999	0.393148	9:37:14
13	20070318	2329	W	8000	8571	0.402546	9:49:12
13	20070318	2328	E	8572	9222	0.410451	10:01:54
13	20070318	2327	W	9223	9794	0.419317	10:13:21
13	20070318	2326	E	9795	10456	0.427257	10:26:17
13	20070318	2325	W	10457	11015	0.435984	10:37:08
13	20070318	2324	E	11016	11670	0.44353	10:49:36
13	20070318	8713	E	11792	11936	0.460938	11:06:16
13	20070318	7113	E	11937	12026	0.466169	11:12:47
13	20070318	9004	E	12027	12116	0.467928	11:15:19
13	20070318	9006	E	12117	12206	0.469456	11:17:31
13	20070318	6113	S	12207	12327	0.482407	11:36:41
15	20070321	6015	S	1	120	0.278171	6:42:34
15	20070321	9000	W	121	210	0.290208	6:59:24
15	20070321	9001	W	211	300	0.29235	7:02:29
15	20070321	7015	W	301	390	0.29419	7:05:08
15	20070321	9003	W	391	447	0.295602	7:06:37
15	20070321	2323	W	448	1102	0.302894	7:27:05
15	20070321	2322	E	1103	1703	0.311644	7:38:47
15	20070321	2321	W	1704	2351	0.320093	7:51:44
15	20070321	2320	E	2352	2956	0.328669	8:03:22
15	20070321	2319	W	2957	3605	0.337338	8:16:35
15	20070321	2318	E	3606	4200	0.346192	8:28:26
15	20070321	2317	W	4201	4821	0.35441	8:40:42
15	20070321	2316	E	4822	5428	0.363044	8:52:54
15	20070321	2315	W	5429	6043	0.371192	9:04:46
15	20070321	2314	E	6044	6660	0.379549	9:16:50
15	20070321	2313	W	6661	7270	0.388148	9:29:06
15	20070321	2312	E	7271	7886	0.39625	9:40:52
15	20070321	2311	W	7887	8497	0.404792	9:53:05
15	20070321	2310	E	8498	9104	0.412859	10:04:38
15	20070321	2309	W	9105	9706	0.420926	10:16:10
15	20070321	2308	E	9707	10331	0.429225	10:28:30
15	20070321	2307	W	10332	10924	0.438009	10:40:37
15	20070321	2306	E	10925	11525	0.44603	10:52:18

15	20070321	2305	W	11526	12114	0.454433	11:04:12
15	20070321	2304	E	12115	12721	0.462141	11:15:36
15	20070321	7115	E	12722	12811	0.473032	11:22:40
15	20070321	9004	E	12812	12901	0.474537	11:24:50
15	20070321	9006	E	12902	12991	0.476389	11:27:30
15	20070321	6115	S	12992	13111	0.488009	11:44:44
16	20070322	6016	S	1	120	0.281516	6:47:23
16	20070322	9001	W	1	90	0.294352	7:05:22
16	20070322	7016	W	91	180	0.296204	7:08:02
16	20070322	9003	W	181	226	0.297824	7:09:38
16	20070322	2303	W	227	806	0.302928	7:25:53
16	20070322	2302	E	807	1507	0.310706	7:39:06
16	20070322	2301	W	1508	2078	0.319919	7:50:12
16	20070322	2300	E	2079	2730	0.327454	8:02:24
16	20070322	2298	E	3301	3967	0.346921	8:30:41
16	20070322	2297	W	3968	4561	0.356111	8:42:42
16	20070322	7116	E	5206	5295	0.375463	9:02:10
16	20070322	9004	E	5296	5385	0.37728	9:04:47
16	20070322	9006	E	5386	5475	0.379178	9:07:31
16	20070322	6116	S	5476	5595	0.391424	9:25:39
17	20070323	6017.1	S	8	127	0.278542	6:43:06
17	20070323	9000	W	128	217	0.2886	6:57:05
17	20070323	9001	W	218	307	0.290405	6:59:41
17	20070323	7017	W	308	397	0.292257	7:02:21
17	20070323	9003	W	398	439	0.293947	7:03:59
17	20070323	2299.1	W	471	1054	0.300058	7:21:49
17	20070323	2296.1	E	1055	1717	0.307894	7:34:25
17	20070323	2285	W	1718	2305	0.318148	7:47:56
17	20070323	2283	W	2978	3563	0.335417	8:12:46
17	20070323	2282	E	3564	4208	0.343715	8:25:42
17	20070323	7117	E	4209	4298	0.355405	8:33:17
17	20070323	9004	E	4299	4388	0.357025	8:35:37
17	20070323	9006	E	4389	4478	0.358958	8:38:24
17	20070323	6117	S	4479	4598	0.370463	8:55:28
18	20070324	6018	S	1	120	0.276273	6:39:50
18	20070324	9000	W	121	211	0.287188	6:55:04
18	20070324	9001	W	212	301	0.289352	6:58:10
18	20070324	7018	W	302	391	0.2911	7:00:41
18	20070324	9003	W	392	449	0.292639	7:02:22
18	20070324	8718	W	450	555	0.299641	7:13:15
18	20070324	2295	W	556	1153	0.308137	7:33:41
18	20070324	2294	E	1154	1835	0.316412	7:47:00
18	20070324	2293	W	1836	2436	0.325532	7:58:47
18	20070324	2292	E	2437	3079	0.333588	8:11:05
18	20070324	2291	W	3080	3678	0.342083	8:22:35
18	20070324	2290	E	3679	4324	0.350139	8:34:58
18	20070324	2288	E	4923	5562	0.366991	8:59:08
18	20070324	2287	W	5563	6159	0.375359	9:10:28
18	20070324	2286	E	6160	6784	0.382975	9:21:54
18	20070324	2281	W	6785	7390	0.391123	9:33:19
18	20070324	2279	W	8009	8628	0.407141	9:56:37
18	20070324	2280	E	8629	9240	0.415567	10:08:37
18	20070324	2277	W	9241	9872	0.42441	10:21:41
18	20070324	2278	E	9873	10472	0.433102	10:33:40
18	20070324	2275	W	10473	11122	0.441782	10:47:00
18	20070324	2276	E	11123	11681	0.450579	10:58:09
18	20070324	2273	W	11682	12350	0.458345	11:11:10
18	20070324	7118	E	12351	12440	0.470544	11:19:05

18	20070324	9004	E	12441	12530	0.472222	11:21:30
18	20070324	9006	E	12531	12620	0.47419	11:24:20
18	20070324	6118	S	12621	12740	0.486007	11:41:51
19	20070325	6019	S	1	129	0.274583	6:37:33
19	20070325	9000	W	130	219	0.284873	6:51:43
19	20070325	9001	W	220	309	0.286863	6:54:35
19	20070325	7019	W	310	399	0.288657	6:57:10
19	20070325	9003	W	400	450	0.290266	6:58:50
19	20070325	2289.1	W	451	1103	0.297373	7:19:06
19	20070325	2284.3	E	1104	1701	0.30765	7:32:59
19	20070325	2271	W	1702	2362	0.316053	7:46:08
19	20070325	2274	E	2363	2989	0.324896	7:58:18
19	20070325	2269	W	2990	3673	0.333993	8:12:21
19	20070325	2272	E	3674	4299	0.343345	8:24:51
19	20070325	2267	W	4300	4974	0.352488	8:38:50
19	20070325	2270	E	4975	5620	0.361574	8:51:26
19	20070325	2268	E	5665	6289	0.380729	9:18:40
19	20070325	2266	E	6290	6895	0.399676	9:45:38
19	20070325	7119	E	6896	6985	0.410139	9:52:06
19	20070325	9004	E	6986	7075	0.411782	9:54:28
19	20070325	9006	E	7076	7165	0.413565	9:57:02
19	20070325	6119	S	7166	7285	0.425613	10:14:53
20	20070326	6020	S	1	120	0.277593	6:41:44
20	20070326	9000	W	121	210	0.288032	6:56:16
20	20070326	9001	W	211	300	0.290035	6:59:09
20	20070326	7020	W	301	390	0.29162	7:01:26
20	20070326	9003	W	391	440	0.292998	7:02:45
20	20070326	2263	E	1029	1727	0.305486	7:31:34
20	20070326	2265.1	W	1729	2314	0.315185	7:43:38
20	20070326	2259	E	2315	2995	0.323044	7:56:32
20	20070326	2261	W	2996	3580	0.332199	8:08:07
20	20070326	2255	E	3581	4289	0.34044	8:22:03
20	20070326	2257	W	4290	4887	0.349618	8:33:25
20	20070326	2251	E	4888	5582	0.357801	8:46:49
20	20070326	2253	W	5583	6185	0.366944	8:58:27
20	20070326	2247	E	6186	6864	0.375231	9:11:39
20	20070326	2249	W	6865	7466	0.384236	9:23:20
20	20070326	2243	E	7467	8110	0.392766	9:36:19
20	20070326	2241	W	8111	9246	0.402002	9:57:49
20	20070326	2239	E	9247	10546	0.416273	10:21:06
20	20070326	2237	W	10547	11610	0.432604	10:40:41
20	20070326	2235	E	11611	12883	0.446088	11:03:35
20	20070326	2221	W	12884	13415	0.462523	11:14:54
20	20070326	2223	E	13416	14080	0.469965	11:27:50
20	20070326	8820	W	14081	14183	0.480116	11:33:05
20	20070326	7120	E	14184	14273	0.484225	11:38:47
20	20070326	9004	E	14274	14363	0.485718	11:40:56
20	20070326	9006	E	14364	14453	0.487407	11:43:22
20	20070326	6120	S	14454	14579	0.4989	12:00:31
21	20070329	6021	S	1	120	0.246076	5:56:21
21	20070329	9000	W	121	210	0.256979	6:11:33
21	20070329	9001	W	211	300	0.259699	6:15:28
21	20070329	7021	W	301	390	0.261551	6:18:08
21	20070329	9003	W	391	445	0.262975	6:19:36
21	20070329	2245	W	446	1052	0.268148	6:36:15
21	20070329	2219	E	1053	1637	0.277072	6:48:44
21	20070329	2233	W	1638	2760	0.285266	7:09:30
21	20070329	2231	E	2761	3960	0.299363	7:31:05

21	20070329	2229	W	3961	5124	0.314641	7:52:29
21	20070329	2227	E	5125	6305	0.329433	8:14:04
21	20070329	2225	W	6306	7442	0.345255	8:36:07
21	20070329	2215	E	7443	8050	0.365532	8:56:30
21	20070329	2217	W	8051	8629	0.374572	9:09:02
21	20070329	2211	E	8630	9217	0.382396	9:20:27
21	20070329	2213	W	9218	9807	0.390984	9:32:51
21	20070329	2207	E	9808	10378	0.398993	9:44:04
21	20070329	2209	W	10379	10973	0.406817	9:55:44
21	20070329	2203	E	10974	11583	0.414606	10:07:12
21	20070329	2205	W	11584	12185	0.423356	10:19:40
21	20070329	2199	E	12186	12752	0.431192	10:30:22
21	20070329	7121	E	12753	12842	0.440799	10:36:15
21	20070329	9004	E	12843	12932	0.4425	10:38:42
21	20070329	9006	E	12933	13022	0.444583	10:41:42
21	20070329	6121	S	13023	13142	0.453715	10:55:21
22	20070330	6022	S	1	120	0.282627	6:48:59
22	20070330	9000.1	W	209	298	0.292928	7:03:19
22	20070330	9001	W	299	388	0.296343	7:08:14
22	20070330	7022	W	389	478	0.298299	7:11:03
22	20070330	9003	W	479	518	0.299861	7:12:28
22	20070330	2201	W	519	1179	0.306088	7:31:47
22	20070330	2195	E	1180	1765	0.314838	7:43:08
22	20070330	2197	W	1766	2405	0.322905	7:55:39
22	20070330	2191	E	2406	2999	0.331285	8:06:57
22	20070330	2193	W	3000	3641	0.339769	8:19:58
22	20070330	2187	E	3642	4214	0.348287	8:31:05
22	20070330	2189	W	4215	4834	0.355972	8:42:56
22	20070330	2183	E	4835	5412	0.364259	8:54:10
22	20070330	2185	W	5413	6024	0.372199	9:06:10
22	20070330	2179	E	6025	6619	0.38015	9:17:20
22	20070330	8822	W	6620	6736	0.390995	9:24:59
22	20070330	7122	E	6737	6826	0.395613	9:31:11
22	20070330	9004	E	6827	6916	0.397315	9:33:38
22	20070330	9006	E	6917	7006	0.399282	9:36:28
22	20070330	6122	S	7007	7126	0.412847	9:56:30
23	20070331	6023	S	1	120	0.350856	8:27:14
23	20070331	9000	W	1	90	0.366181	8:48:48
23	20070331	9001	W	91	180	0.368796	8:52:34
23	20070331	7023.1	W	253	342	0.371875	8:57:00
23	20070331	9003	W	343	397	0.373438	8:58:40
23	20070331	2181	W	398	993	0.381528	9:19:20
23	20070331	2175	E	994	1611	0.389676	9:31:26
23	20070331	2177	W	1612	2226	0.39772	9:42:58
23	20070331	2171	E	2227	2832	0.405903	9:54:36
23	20070331	2173	W	2833	3452	0.4139	10:06:21
23	20070331	2167	E	3453	4062	0.422211	10:18:09
23	20070331	2169	W	4063	4695	0.430567	10:30:34
23	20070331	2163	E	4696	5309	0.439074	10:42:30
23	20070331	2165	W	5310	5935	0.447998	10:55:33
23	20070331	2159	E	5936	6543	0.456597	11:07:38
23	20070331	2155	E	7165	7775	0.473333	11:31:47
23	20070331	2157	W	7776	8395	0.481644	11:43:54
23	20070331	2151	E	8396	9023	0.490197	11:56:21
23	20070331	2153	W	9024	9638	0.499039	12:08:52
23	20070331	2147	E	9639	10253	0.507245	12:20:41
23	20070331	7123	E	10254	10343	0.51765	12:26:55
23	20070331	9004	E	10344	10433	0.519444	12:29:30

23	20070331	9006	E	10434	10523	0.521192	12:32:01
23	20070331	6123	S	10524	10644	0.536875	12:55:07
24	20070401	6024.1	S	55	174	0.251644	6:04:22
24	20070401	9000	W	175	264	0.263345	6:20:43
24	20070401	9001	W	265	354	0.267569	6:26:48
24	20070401	7024	W	355	444	0.269352	6:29:22
24	20070401	9003	W	445	497	0.270972	6:31:05
24	20070401	2425.1	W	498	1065	0.288183	7:04:27
24	20070401	2420.1	E	1066	1731	0.295891	7:17:11
24	20070401	2421.1	W	1732	2283	0.305278	7:28:48
24	20070401	2416.1	E	2284	2946	0.312998	7:41:46
24	20070401	2417.1	W	2947	3502	0.322211	7:53:15
24	20070401	2414.1	E	3503	4176	0.33022	8:06:45
24	20070401	2415.1	W	4177	4730	0.33919	8:17:40
24	20070401	2410.1	E	4731	5400	0.347049	8:30:55
24	20070401	2409.1	W	5401	5968	0.355972	8:42:04
24	20070401	2390.1	E	5969	6651	0.365498	8:57:42
24	20070401	2405.1	W	6652	7210	0.375116	9:09:29
24	20070401	2161.1	W	7211	7760	0.398183	9:42:33
24	20070401	2143	E	7761	8434	0.407049	9:57:23
24	20070401	2149.1	W	8510	9053	0.419097	10:12:34
24	20070401	2139	E	9054	9713	0.426609	10:25:19
24	20070401	2145	W	9714	10257	0.43537	10:36:00
24	20070401	7124	E	10258	10347	0.446713	10:44:46
24	20070401	9004	E	10348	10437	0.448183	10:46:53
24	20070401	9006	E	10438	10527	0.449861	10:49:18
24	20070401	6124	S	10528	10647	0.465451	11:12:15
25	20070402	6025	S	1	120	0.252627	6:05:47
25	20070402	9000	W	121	210	0.263657	6:21:10
25	20070402	9001	W	211	300	0.265741	6:24:10
25	20070402	7025	W	301	390	0.267315	6:26:26
25	20070402	9003	W	391	446	0.268704	6:27:52
25	20070402	2135	E	906	1571	0.283519	6:59:22
25	20070402	2141.1	W	1572	2127	0.292176	7:10:00
25	20070402	2131	E	2128	2797	0.299861	7:22:58
25	20070402	2137	W	2798	3363	0.308646	7:33:53
25	20070402	2127	E	3364	4022	0.316563	7:46:50
25	20070402	2133	W	4023	4592	0.325069	7:57:36
25	20070402	2123	E	4593	5244	0.332963	8:10:20
25	20070402	2129	W	5245	5817	0.341678	8:21:34
25	20070402	2119	E	5818	6465	0.349826	8:34:33
25	20070402	2125	W	6466	7032	0.358461	8:45:38
25	20070402	2115	E	7033	7660	0.366204	8:57:48
25	20070402	2121	W	7661	8230	0.37419	9:08:20
25	20070402	2111	E	8231	8868	0.381968	9:20:40
25	20070402	2117	W	8869	9434	0.390127	9:31:13
25	20070402	2107	E	9435	10069	0.397894	9:43:33
25	20070402	2113	W	10070	10635	0.407963	9:56:54
25	20070402	2103	E	10636	11251	0.415648	10:08:48
25	20070402	2109	W	11252	11822	0.423576	10:19:28
25	20070402	7125	E	11823	11912	0.433449	10:25:40
25	20070402	9004	E	11913	12002	0.434896	10:27:45
25	20070402	9006	E	12003	12092	0.436586	10:30:11
25	20070402	6125	S	12093	12212	0.452465	10:53:33
27	20070405	6027	S	1	120	0.296875	7:09:30
27	20070405	9000	W	121	210	0.306516	7:22:53
27	20070405	9001	W	211	300	0.308449	7:25:40
27	20070405	7027	W	301	390	0.310243	7:28:15

27	20070405	9003	W	391	447	0.31162	7:29:41
27	20070405	8927	W	448	586	0.316655	7:38:18
27	20070405	2105	W	587	1212	0.321887	7:53:57
27	20070405	2099	E	1213	1852	0.330868	8:07:07
27	20070405	2101	W	1853	2484	0.339769	8:19:48
27	20070405	2095	E	2485	3114	0.348507	8:32:21
27	20070405	2089	W	3115	4327	0.357778	8:55:25
27	20070405	2087	E	4328	5537	0.373449	9:17:56
27	20070405	2085	W	5538	6717	0.389306	9:40:16
27	20070405	2083.1	E	7020	8162	0.412442	10:12:58
27	20070405	2081	W	8163	9383	0.426898	10:35:05
27	20070405	2079	E	9384	10516	0.44184	10:55:08
27	20070405	2077	W	10517	11727	0.455914	11:16:42
27	20070405	2075	E	11728	12864	0.471065	11:37:17
27	20070405	7127	E	12865	12954	0.487257	11:43:09
27	20070405	9004	E	12955	13044	0.488831	11:45:25
27	20070405	9006	E	13045	13134	0.490521	11:47:51
27	20070405	6127	S	13135	13254	0.505231	12:09:32
28	20070406	6028	S	1	120	0.246343	5:56:44
28	20070406	9000	W	121	210	0.256123	6:10:19
28	20070406	9001	W	211	300	0.257963	6:12:58
28	20070406	7028	W	301	390	0.259606	6:15:20
28	20070406	9003	W	391	450	0.2611	6:16:59
28	20070406	2073	W	451	1641	0.267072	6:44:26
28	20070406	2071	E	1642	2799	0.282188	7:05:39
28	20070406	2069	W	2800	3965	0.29662	7:26:34
28	20070406	2091	E	3966	5131	0.312164	7:48:57
28	20070406	2097	W	5132	5755	0.327014	8:01:18
28	20070406	2067	E	5756	6392	0.3364	8:15:02
28	20070406	2065	W	6393	7011	0.344907	8:26:59
28	20070406	2063	E	7012	7651	0.353877	8:40:16
28	20070406	2061	W	7653	8271	0.362095	8:51:44
28	20070406	2059	E	8272	8908	0.37037	9:03:57
28	20070406	2057	W	8909	9520	0.378634	9:15:26
28	20070406	2055	E	9521	10156	0.387118	9:28:03
28	20070406	2053	W	10157	10767	0.395382	9:39:32
28	20070406	2051	E	10768	11403	0.403461	9:51:35
28	20070406	2049	W	11404	11982	0.412095	10:03:04
28	20070406	2047	E	11983	12606	0.419931	10:15:06
28	20070406	2045	W	12607	13178	0.42831	10:26:18
28	20070406	2043	E	13179	13803	0.436169	10:38:30
28	20070406	2041	W	13804	14376	0.444988	10:50:20
28	20070406	2039	E	14377	15002	0.452604	11:02:11
28	20070406	2093	W	1	598	0.464757	11:19:13
28	20070406	7128	E	599	688	0.474306	11:24:30
28	20070406	9004	E	689	778	0.475822	11:26:41
28	20070406	9006	E	779	868	0.477581	11:29:13
28	20070406	6128.1	S	897	1016	0.49794	11:59:02
29	20070407	6029	S	1	120	0.25	6:02:00
29	20070407	9000	W	121	210	0.260683	6:16:53
29	20070407	9001	W	211	300	0.26456	6:22:28
29	20070407	7029	W	301	390	0.266262	6:24:55
29	20070407	9003	W	391	453	0.267685	6:26:31
29	20070407	2034.2	E	29	1385	0.298611	7:32:37
29	20070407	2031.1	W	1812	2987	0.330613	8:15:41
29	20070407	2028	E	2988	4352	0.345556	8:40:21
29	20070407	2025	W	4353	5474	0.362581	9:00:49
29	20070407	2022	E	5475	6950	0.376863	9:27:17

29	20070407	2019	W	6951	8084	0.395185	9:47:58
29	20070407	2016	E	8085	9524	0.409491	10:13:41
29	20070407	2010	E	10673	12064	0.441644	10:59:10
29	20070407	7129	E	12065	12154	0.460648	11:04:50
29	20070407	9004	E	12155	12244	0.462188	11:07:03
29	20070407	9006	E	12245	12334	0.463889	11:09:30
29	20070407	6129	S	12335	12454	0.478912	11:31:38
30	20070408	6030	S	1	120	0.251412	6:04:02
30	20070408	9000	W	121	210	0.262685	6:19:46
30	20070408	9001	W	211	300	0.265428	6:23:43
30	20070408	7030	W	301	390	0.267269	6:26:22
30	20070408	9003	W	391	445	0.268669	6:27:48
30	20070408	8930	W	446	555	0.274421	6:37:00
30	20070408	2035.1	W	675	1236	0.286921	7:02:32
30	20070408	2036	E	1237	1926	0.294525	7:15:37
30	20070408	2033	W	1927	2486	0.303854	7:26:53
30	20070408	2032	E	2487	3183	0.311609	7:40:20
30	20070408	2029	W	3184	3758	0.321146	7:52:02
30	20070408	2030	E	3759	4450	0.329167	8:05:32
30	20070408	7130	E	4451	4540	0.340162	8:11:20
30	20070408	9004	E	4541	4630	0.341782	8:13:40
30	20070408	9006	E	4631	4720	0.343866	8:16:40
30	20070408	6130	S	4721	4840	0.357616	8:36:58
31	20070411	6031	N	1	120	0.237431	5:43:54
31	20070411	9000	W	121	210	0.262373	6:19:19
31	20070411	9001	W	211	300	0.265405	6:23:41
31	20070411	7031	W	301	390	0.266956	6:25:55
31	20070411	9003	W	391	446	0.268461	6:27:31
31	20070411	2037.1	W	447	1645	0.278102	7:00:27
31	20070411	2026	E	1646	2288	0.300532	7:23:29
31	20070411	2013.1	W	2289	3471	0.309201	7:44:58
31	20070411	2012	E	3472	4136	0.330891	8:07:34
31	20070411	2027	W	4137	4680	0.34066	8:19:37
31	20070411	2024	E	4681	5322	0.348438	8:32:27
31	20070411	2023	W	5323	5882	0.356678	8:42:57
31	20070411	2020	E	5883	6512	0.364201	8:54:57
31	20070411	2021	W	6513	7078	0.372512	9:05:51
31	20070411	2018	E	7079	7697	0.38037	9:18:03
31	20070411	2007	W	7698	8932	0.388796	9:40:27
31	20070411	2004.1	E	8933	10276	0.405648	10:06:32
31	20070411	2003	W	10277	10861	0.422002	10:17:26
31	20070411	7131	E	10862	10951	0.431979	10:23:33
31	20070411	9004	E	10952	11041	0.433553	10:25:49
31	20070411	9006	E	11042	11131	0.435336	10:28:23
31	20070411	6131	N	11132	11251	0.476933	11:28:47
32	20070412	6032	N	1	120	0.239063	5:46:15
32	20070412	9000	W	121	210	0.264306	6:22:06
32	20070412	9001	W	211	300	0.266424	6:25:09
32	20070412	7032	W	301	390	0.267975	6:27:23
32	20070412	9003	W	391	451	0.26941	6:28:58
32	20070412	2001.1	W	452	1568	0.283553	7:06:56
32	20070412	2002	E	1569	2257	0.305428	7:31:18
32	20070412	2017	W	2258	2817	0.315359	7:43:27
32	20070412	2014	E	2818	3523	0.32294	7:56:48
32	20070412	2015	W	3524	4078	0.331875	8:07:09
32	20070412	2008	E	4079	4782	0.339514	8:20:39
32	20070412	2011	W	4784	5333	0.348438	8:30:55
32	20070412	2006	E	5334	6030	0.355544	8:43:36

32	20070412	2009	W	6031	6574	0.364641	8:54:09
32	20070412	2005	W	6575	7135	0.380313	9:17:00
32	20070412	2073.1	W	7136	8200	0.396424	9:48:36
32	20070412	2073.1	W	7136	8200	0.396424	9:48:36
32	20070412	8732	W	8201	8310	0.431111	10:22:38
32	20070412	2391	W	8311	8876	0.436771	10:38:23
32	20070412	7132	E	8877	8966	0.446389	10:44:18
32	20070412	9004	E	8967	9056	0.448889	10:47:54
32	20070412	9006	E	9057	9146	0.45059	10:50:21
32	20070412	6132	N	9147	9266	0.472431	11:22:18
33	20070413	6033	N	1	120	0.280382	6:45:45
33	20070413	9000.1	W	347	436	0.304236	7:19:36
33	20070413	9001.1	W	437	526	0.306169	7:22:23
33	20070413	7033.1	W	527	616	0.307697	7:24:35
33	20070413	9003.1	W	617	670	0.309167	7:26:06
33	20070413	2426	E	671	1380	0.316042	7:46:56
33	20070413	2427	W	1381	1944	0.325556	7:58:12
33	20070413	2428	E	1945	2622	0.333507	8:11:33
33	20070413	2429	W	2623	3206	0.342222	8:22:32
33	20070413	2430	E	3207	3871	0.35066	8:36:02
33	20070413	2431	W	3872	4428	0.359306	8:46:41
33	20070413	2432	E	4429	5082	0.366863	8:59:11
33	20070413	2433	W	5083	5649	0.375625	9:10:21
33	20070413	2434	E	5650	6308	0.383356	9:23:01
33	20070413	2435	W	6309	6878	0.39191	9:33:51
33	20070413	2436	E	6879	7528	0.399688	9:46:23
33	20070413	2437	W	7529	8104	0.408252	9:57:29
33	20070413	2438	E	8105	8746	0.416123	10:09:55
33	20070413	2439	W	8747	9330	0.424942	10:21:39
33	20070413	2440	E	9331	9966	0.432801	10:33:50
33	20070413	2441	W	9967	10560	0.441157	10:45:10
33	20070413	2442	E	10561	11190	0.449236	10:57:24
33	20070413	7133	E	11674	11763	0.465718	11:12:08
33	20070413	9004	E	11764	11853	0.467442	11:14:37
33	20070413	9006	W	11854	11943	0.469178	11:17:07
33	20070413	6133	N	11944	12063	0.487662	11:44:14
34	20070414	6034	N	1	120	0.258831	6:14:43
34	20070414	9000	W	121	210	0.27338	6:35:10
34	20070414	9001	W	211	300	0.275289	6:37:55
34	20070414	7034	W	301	390	0.276771	6:40:03
34	20070414	9003	W	391	456	0.27809	6:41:33
34	20070414	2443	W	457	1031	0.287639	7:03:47
34	20070414	2444	E	1032	1714	0.295914	7:17:30
34	20070414	2445	W	1715	2298	0.305069	7:29:02
34	20070414	2446	E	2299	2988	0.313426	7:42:50
34	20070414	2447	W	2989	3598	0.322616	7:54:44
34	20070414	2448	E	3599	4312	0.331505	8:09:16
34	20070414	2449	W	4313	4913	0.341169	8:21:18
34	20070414	7134	E	4914	5003	0.350868	8:26:45
34	20070414	9004	E	5004	5093	0.352326	8:28:51
34	20070414	9006	E	5094	5183	0.354039	8:31:19
34	20070414	6134	N	5184	5303	0.372801	8:58:50
36	20070417	6036	N	1	120	0.242998	5:51:55
36	20070417	9000	W	121	210	0.256273	6:10:32
36	20070417	9001	W	211	300	0.257998	6:13:01
36	20070417	7036	W	301	390	0.259583	6:15:18
36	20070417	9003	W	391	460	0.261076	6:17:07
36	20070417	8736.1	W	1	103	0.277894	6:41:53

36	20070417	2450	E	104	829	0.285775	7:03:37
36	20070417	2451	W	830	1411	0.29559	7:15:21
36	20070417	2452	E	1412	2179	0.303715	7:30:09
36	20070417	2453	W	2180	2771	0.313808	7:41:45
36	20070417	2454	E	2772	3524	0.321817	7:55:58
36	20070417	2455	W	3525	4138	0.331516	8:07:37
36	20070417	2458	E	4139	4874	0.340463	8:22:33
36	20070417	2459	W	4876	6312	0.349873	8:47:46
36	20070417	2456	E	6313	7860	0.368495	9:16:26
36	20070417	2457	W	7861	8517	0.387789	9:29:22
36	20070417	2460	E	8518	9227	0.398611	9:45:50
36	20070417	2461	W	9228	9897	0.407708	9:58:16
36	20070417	2464	E	9898	10620	0.416794	10:12:14
36	20070417	7136	E	10621	10710	0.427951	10:17:45
36	20070417	9004	E	10711	10800	0.429444	10:19:54
36	20070417	9006	E	10801	10890	0.43103	10:22:11
36	20070417	6136	N	10891	11010	0.445995	10:44:14
37	20070418	6037	N	1	120	0.237095	5:43:25
37	20070418	9000	W	121	210	0.249479	6:00:45
37	20070418	9001.1	W	91	183	0.261296	6:17:49
37	20070418	7037	W	184	273	0.262951	6:20:09
37	20070418	9003	W	274	339	0.264421	6:21:52
37	20070418	2465	W	340	1756	0.27191	6:55:10
37	20070418	2462	E	1757	3529	0.290012	7:27:10
37	20070418	2471	W	3530	4965	0.31235	7:53:43
37	20070418	2468	E	4966	6679	0.330174	8:24:01
37	20070418	2477	W	6680	8191	0.352164	8:52:19
37	20070418	2474	E	8192	9840	0.370718	9:21:19
37	20070418	2481	W	9841	10590	0.391146	9:35:45
37	20070418	2482	E	10591	11400	0.401644	9:51:52
37	20070418	2479	W	11401	12156	0.412292	10:06:18
37	20070418	2478	E	12157	12939	0.422303	10:21:10
37	20070418	7137	E	12940	13029	0.433935	10:26:22
37	20070418	9004	E	13030	13119	0.435347	10:28:24
37	20070418	9006	E	13120	13209	0.436933	10:30:41
37	20070418	6137	N	13210	13329	0.451528	10:52:12
38	20070419	6038	N	1	120	0.243831	5:53:07
38	20070419	9000	W	121	210	0.257095	6:11:43
38	20070419	9001	W	211	300	0.259387	6:15:01
38	20070419	7038	W	301	390	0.261076	6:17:27
38	20070419	9003	W	391	450	0.2625	6:19:00
38	20070419	2463	W	451	1131	0.270185	6:40:25
38	20070419	2466	E	1132	1881	0.279468	6:54:56
38	20070419	2467	W	1882	2575	0.289086	7:07:51
38	20070419	2470	E	2576	3338	0.302292	7:28:01
38	20070419	2473	W	4626	5361	0.333935	8:13:09
38	20070419	2472.1	E	5363	6118	0.343773	8:27:38
38	20070419	2475	W	6119	6864	0.354051	8:42:16
38	20070419	2476	E	6865	7642	0.364387	8:57:41
38	20070419	2483	W	7643	9235	0.374977	9:26:31
38	20070419	2480	E	9236	10861	0.394699	9:55:28
38	20070419	2469.1	W	10862	11585	0.415139	10:09:52
38	20070419	7138	E	11586	11675	0.426296	10:15:22
38	20070419	9004	E	11676	11765	0.42772	10:17:25
38	20070419	9006	E	11766	11855	0.429468	10:19:56
38	20070419	6138.2	N	1	120	0.453889	10:55:36

APPENDIX IV – Pre- and Post-flight Zero Statistics

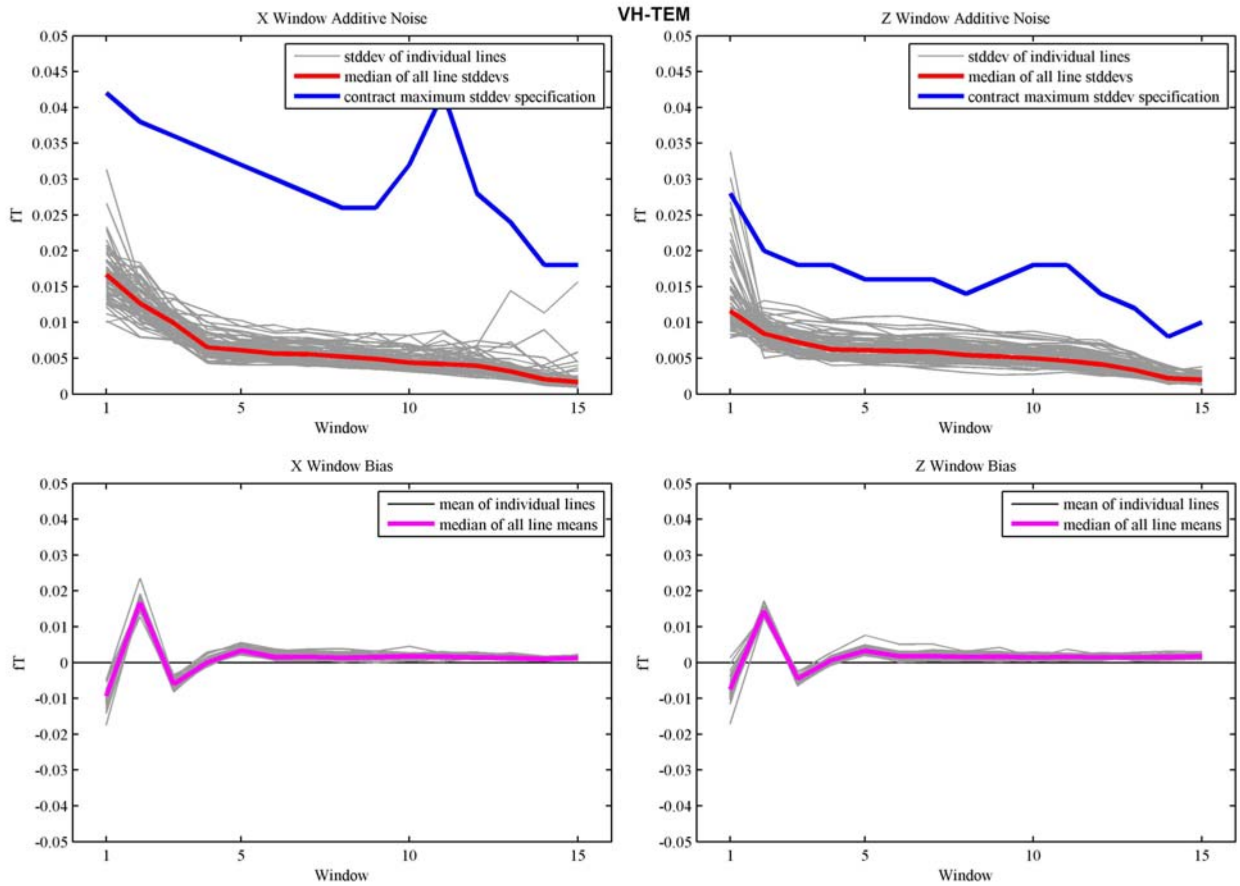


Figure 1 Plots of the mean and standard deviation of all high altitude lines for the survey flown by VH-TEM Plot provided courtesy of Geoscience Australia.

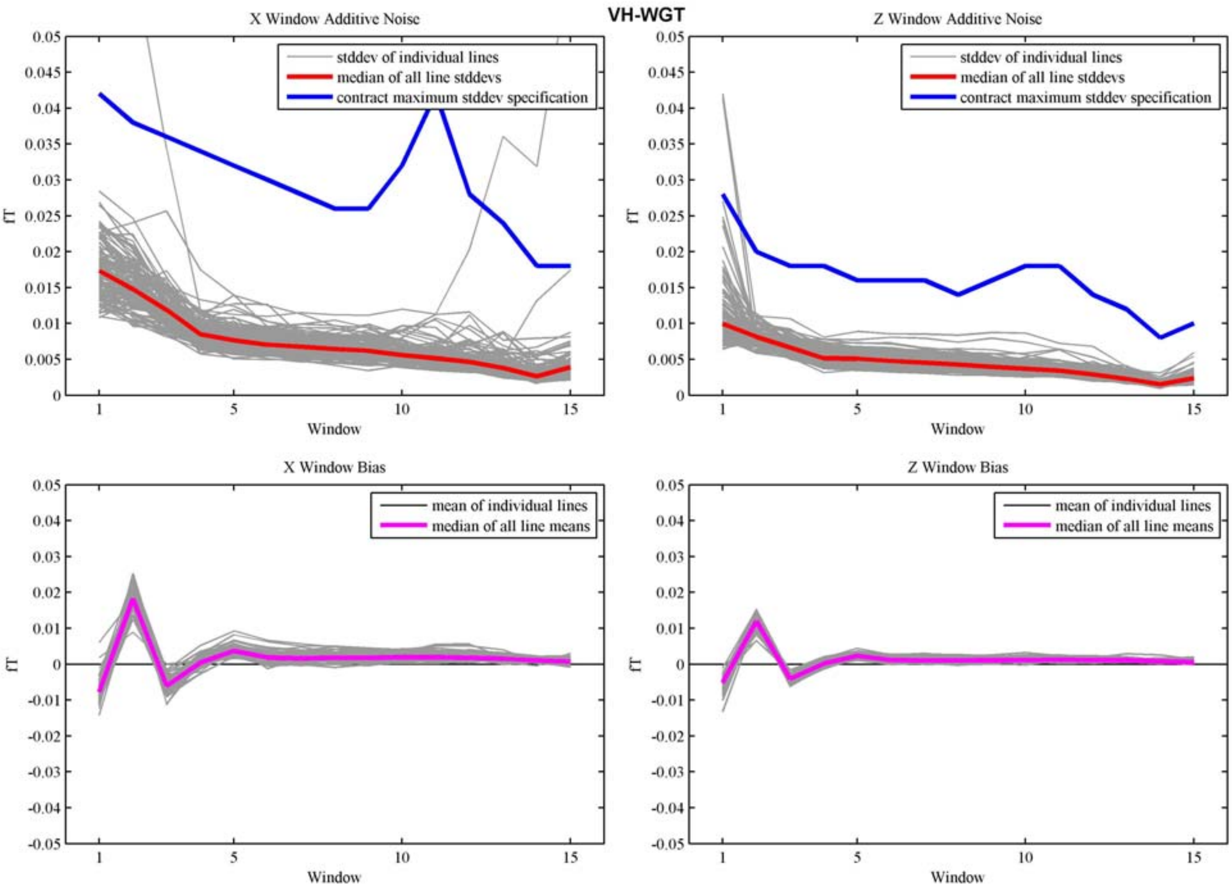


Figure 1 Plots of the mean and standard deviation of all high altitude lines for the survey flown by VH-WGT Plot provided courtesy of Geoscience Australia.

APPENDIX V – Located Data Format

DUBBO S1 NON-GEOMETRY CORRECTED (LMRAEM_S1_NON-HPR.HDR)

```
COMM JOB NUMBER:                                                  1835
COMM AREA NUMBER:                                                   S1
COMM SURVEY COMPANY:                            Fugro Airborne Surveys
COMM CLIENT:                                                       BRS
COMM SURVEY TYPE:                                  25Hz TEMPEST Survey
COMM AREA NAME:                               Lower Macquarie River AEM
COMM STATE:                                                        NSW
COMM COUNTRY:                                                Australia
COMM SURVEY FLOWN:                                January-April, 2007
COMM LOCATED DATA CREATED:                                   June 2007
COMM
COMM DATUM:                                                      GDA94
COMM PROJECTION:                                                   MGA
COMM ZONE:                                                          55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                      300 m
COMM TRAVERSE LINE DIRECTION:                              000-180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                  115 m
COMM FINAL LINE KILOMETRES:                                  8661.0 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                              10010 - 12680
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 558900  6451800
COMM 624900  6451800
COMM 624900  6444000
COMM 639000  6444000
COMM 639000  6431100
COMM 624900  6431100
COMM 624900  6426300
COMM 619500  6426300
COMM 619500  6435900
COMM 613800  6435900
COMM 613800  6426300
COMM 612600  6426300
COMM 612600  6411900
COMM 558900  6411900
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                    Skyvan SC-3-200, VH-WGT
COMM
COMM MAGNETOMETER:                            Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                           stinger mount
COMM RESOLUTION:                                                 0.001 nT
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                  25Hz TEMPEST
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
COMM                                            Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                 X,Z
COMM RECORDING INTERVAL:                                            0.2 s
```

```
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER (AVERAGE):          114.0 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER (AVERAGE):            47.3 m
COMM
COMM RADAR ALTIMETER:                                         Collins ALT55
COMM RECORDING INTERVAL:                                              0.2 s
COMM
COMM LASER ALTIMETER:                                     Regal LD90-3300HR
COMM RECORDING INTERVAL:                                              0.2 s
COMM
COMM NAVIGATION:                                real-time differential GPS
COMM RECORDING INTERVAL:                                              1.0 s
COMM
COMM ACQUISITION SYSTEM:                                          PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                    56715 nT
COMM PARALLAX CORRECTION APPLIED                                      0.4 s
COMM IGRF BASE VALUE APPLIED                                       56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                 2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                              0.2 s
COMM Z-COMPONENT EM DATA                                              1.4 s
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA               0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                 0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM ---------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ---------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
```

```
COMM    5         0.140      0.207      0.173
COMM    6         0.220      0.340      0.280
COMM    7         0.353      0.553      0.453
COMM    8         0.567      0.873      0.720
COMM    9         0.887      1.353      1.120
COMM   10         1.367      2.100      1.733
COMM   11         2.113      3.273      2.693
COMM   12         3.287      5.113      4.200
COMM   13         5.127      7.993      6.560
COMM   14         8.007     12.393     10.200
COMM   15        12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
COMM Field     Columns  Type Format  Channel                Description
COMM
COMM  1     1 -   4  int  (i 4)   PROJECT        [Project Number                       ]
COMM  2     5 -   6  int  (i 2)   AIRCRAFT       [Aircraft (1-TEM, 2-WGT)              ]
COMM  3     7 -  10  int  (i 4)   FLIGHT         [Flight                               ]
COMM  4    11 -  16  int  (i 6)   LINE           [Line                                 ]
COMM  5    17 -  24  real (f 8.1) FID            [Fiducial                          (s)]
COMM  6    25 -  33  int  (i 9)   DATE           [Date                         ddmmyyyy]
COMM  7    34 -  41  real (f 8.1) TIME           [Time                              (s)]
COMM  8    42 -  45  int  (i 4)   BEARING        [Bearing                         (deg)]
COMM  9    46 -  58  real (f13.6) LONGITUDE      [Longitude GDA94                 (deg)]
COMM 10    59 -  71  real (f13.6) LATITUDE       [Latitude  GDA94                 (deg)]
COMM 11    72 -  82  real (f11.2) EASTING        [Easting   MGA55                   (m)]
COMM 12    83 -  94  real (f12.2) NORTHING       [Northing  MGA55                   (m)]
COMM 13    95 - 101  real (f 7.2) Lasalt_final   [Final Laser Altimeter             (m)]
COMM 14   102 - 108  real (f 7.2) Radalt_final   [Final Radar Altimeter             (m)]
COMM 15   109 - 116  real (f 8.2) TxHeight       [Transmitter GPS height            (m)]
COMM 16   117 - 124  real (f 8.2) DTM            [DTM                               (m)]
COMM 17   125 - 134  real (f10.3) MAG            [Compensated TMI                  (nT)]
COMM 18   135 - 144  real (f10.5) Roll_Raw       [Raw Tx loop roll                (deg)]
COMM 19   145 - 154  real (f10.5) Pitch_Raw      [Raw Tx loop pitch               (deg)]
COMM 20   155 - 160  real (f 6.1) TxLasalt       [Tx ground clearance               (m)]
COMM 21   161 - 168  real (f 8.2) HSep_Raw       [Raw Tx-Rx horizontal separation (m)]
COMM 22   169 - 176  real (f 8.2) VSep_Raw       [Raw Tx-Rx vertical separation   (m)]
COMM 23   177 - 186  real (f10.3) X_Geofact      [X_Geometric factor                   ]
COMM 24   187 - 196  real (f10.3) Z_Geofact      [Z_Geometric factor                   ]
COMM 25   197 - 208  real (f12.6) EMX_Raw[1]     [Raw EMX01 Window                 (fT)]
COMM 26   209 - 220  real (f12.6) EMX_Raw[2]     [Raw EMX02 Window                 (fT)]
COMM 27   221 - 232  real (f12.6) EMX_Raw[3]     [Raw EMX03 Window                 (fT)]
COMM 28   233 - 244  real (f12.6) EMX_Raw[4]     [Raw EMX04 Window                 (fT)]
COMM 29   245 - 256  real (f12.6) EMX_Raw[5]     [Raw EMX05 Window                 (fT)]
COMM 30   257 - 268  real (f12.6) EMX_Raw[6]     [Raw EMX06 Window                 (fT)]
COMM 31   269 - 280  real (f12.6) EMX_Raw[7]     [Raw EMX07 Window                 (fT)]
COMM 32   281 - 292  real (f12.6) EMX_Raw[8]     [Raw EMX08 Window                 (fT)]
COMM 33   293 - 304  real (f12.6) EMX_Raw[9]     [Raw EMX09 Window                 (fT)]
COMM 34   305 - 316  real (f12.6) EMX_Raw[10]    [Raw EMX10 Window                 (fT)]
COMM 35   317 - 328  real (f12.6) EMX_Raw[11]    [Raw EMX11 Window                 (fT)]
COMM 36   329 - 340  real (f12.6) EMX_Raw[12]    [Raw EMX12 Window                 (fT)]
COMM 37   341 - 352  real (f12.6) EMX_Raw[13]    [Raw EMX13 Window                 (fT)]
COMM 38   353 - 364  real (f12.6) EMX_Raw[14]    [Raw EMX14 Window                 (fT)]
COMM 39   365 - 376  real (f12.6) EMX_Raw[15]    [Raw EMX15 Window                 (fT)]
```

```
COMM 40   377 - 388  real (f12.6) EMZ_Raw[1]     [Raw EMZ01 Window              (fT)]
COMM 41   389 - 400  real (f12.6) EMZ_Raw[2]     [Raw EMZ02 Window              (fT)]
COMM 42   401 - 412  real (f12.6) EMZ_Raw[3]     [Raw EMZ03 Window              (fT)]
COMM 43   413 - 424  real (f12.6) EMZ_Raw[4]     [Raw EMZ04 Window              (fT)]
COMM 44   425 - 436  real (f12.6) EMZ_Raw[5]     [Raw EMZ05 Window              (fT)]
COMM 45   437 - 448  real (f12.6) EMZ_Raw[6]     [Raw EMZ06 Window              (fT)]
COMM 46   449 - 460  real (f12.6) EMZ_Raw[7]     [Raw EMZ07 Window              (fT)]
COMM 47   461 - 472  real (f12.6) EMZ_Raw[8]     [Raw EMZ08 Window              (fT)]
COMM 48   473 - 484  real (f12.6) EMZ_Raw[9]     [Raw EMZ09 Window              (fT)]
COMM 49   485 - 496  real (f12.6) EMZ_Raw[10]    [Raw EMZ10 Window              (fT)]
COMM 50   497 - 508  real (f12.6) EMZ_Raw[11]    [Raw EMZ11 Window              (fT)]
COMM 51   509 - 520  real (f12.6) EMZ_Raw[12]    [Raw EMZ12 Window              (fT)]
COMM 52   521 - 532  real (f12.6) EMZ_Raw[13]    [Raw EMZ13 Window              (fT)]
COMM 53   533 - 544  real (f12.6) EMZ_Raw[14]    [Raw EMZ14 Window              (fT)]
COMM 54   545 - 556  real (f12.6) EMZ_Raw[15]    [Raw EMZ15 Window              (fT)]
COMM 55   557 - 566  real (f10.3) X_Sferics      [X_Sferics                         ]
COMM 56   567 - 576  real (f10.3) Z_Sferics      [Z_Sferics                         ]
COMM 57   577 - 586  real (f10.3) X_VLF1         [X_18.2kHz                         ]
COMM 58   587 - 596  real (f10.3) X_VLF2         [X_19.8kHz                         ]
COMM 59   597 - 606  real (f10.3) X_VLF3         [X_21.4kHz                         ]
COMM 60   607 - 616  real (f10.3) X_VLF4         [X_22.2kHz                         ]
COMM 61   617 - 626  real (f10.3) Z_VLF1         [Z_18.2kHz                         ]
COMM 62   627 - 636  real (f10.3) Z_VLF2         [Z_19.8kHz                         ]
COMM 63   637 - 646  real (f10.3) Z_VLF3         [Z_21.4kHz                         ]
COMM 64   647 - 656  real (f10.3) Z_VLF4         [Z_22.2kHz                         ]
COMM 65   657 - 666  real (f10.3) X_Powerline    [X_Powerline                       ]
COMM 66   667 - 676  real (f10.3) Z_Powerline    [Z_Powerline                       ]
COMM 67   677 - 686  real (f10.3) X_Lowfreq      [X_Lowfreq                         ]
COMM 68   687 - 696  real (f10.3) Z_Lowfreq      [Z_Lowfreq                         ]
COMM      697 - 698 <newline>

COMM Total number of lines :  268
COMM Total Kilometres :      8659.97
```

DUBBO S1 GEOMETRY CORRECTED (LMRAEM_S1_HPR.HDR)

```
COMM JOB NUMBER:                                                    1835
COMM AREA NUMBER:                                                     S1
COMM SURVEY COMPANY:                                 Fugro Airborne Surveys
COMM CLIENT:                                                         BRS
COMM SURVEY TYPE:                                       25Hz TEMPEST Survey
COMM AREA NAME:                                   Lower Macquarie River AEM
COMM STATE:                                                          NSW
COMM COUNTRY:                                                  Australia
COMM SURVEY FLOWN:                                   January-April, 2007
COMM LOCATED DATA CREATED:                                     June 2007
COMM
COMM DATUM:                                                        GDA94
COMM PROJECTION:                                                     MGA
COMM ZONE:                                                            55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                        300 m
COMM TRAVERSE LINE DIRECTION:                                000-180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                    115 m
COMM FINAL LINE KILOMETRES:                                    8661.0 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                10010 - 12680
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 558900  6451800
COMM 624900  6451800
COMM 624900  6444000
COMM 639000  6444000
COMM 639000  6431100
COMM 624900  6431100
COMM 624900  6426300
COMM 619500  6426300
COMM 619500  6435900
COMM 613800  6435900
COMM 613800  6426300
COMM 612600  6426300
COMM 612600  6411900
COMM 558900  6411900
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                   Skyvan SC-3-200, VH-WGT
COMM
COMM MAGNETOMETER:                            Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                         stinger mount
COMM RESOLUTION:                                                0.001 nT
COMM RECORDING INTERVAL:                                           0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                 25Hz TEMPEST
COMM INSTALLATION:                Transmitter loop mounted on the aircraft
COMM                                        Receiver coils in a towed bird
COMM COIL ORIENTATION:                                               X,Z
COMM RECORDING INTERVAL:                                           0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                     115 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                       45 m
COMM
```

```
COMM RADAR ALTIMETER:                                       Collins ALT55
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM LASER ALTIMETER:                                   Regal LD90-3300HR
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM NAVIGATION:                                real-time differential GPS
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM ACQUISITION SYSTEM:                                        PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                  56715 nT
COMM PARALLAX CORRECTION APPLIED                                    0.4 s
COMM IGRF BASE VALUE APPLIED                                     56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                               2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                            0.2 s
COMM Z-COMPONENT EM DATA                                            1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA             0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA               0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM --------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM --------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
```

```
COMM    6         0.220      0.340      0.280
COMM    7         0.353      0.553      0.453
COMM    8         0.567      0.873      0.720
COMM    9         0.887      1.353      1.120
COMM   10         1.367      2.100      1.733
COMM   11         2.113      3.273      2.693
COMM   12         3.287      5.113      4.200
COMM   13         5.127      7.993      6.560
COMM   14         8.007     12.393     10.200
COMM   15        12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
COMM Field     Columns  Type Format  Channel        Description
COMM
COMM 1     1 -   4  int  (i 4)   PROJECT       [Project Number                      ]
COMM 2     5 -   6  int  (i 2)   AIRCRAFT      [Aircraft (1-TEM, 2-WGT)             ]
COMM 3     7 -  10  int  (i 4)   FLIGHT        [Flight                              ]
COMM 4    11 -  16  int  (i 6)   LINE          [Line                                ]
COMM 5    17 -  24  real (f 8.1) FID           [Fiducial                        (s) ]
COMM 6    25 -  33  int  (i 9)   DATE          [Date                       ddmmyyyy ]
COMM 7    34 -  41  real (f 8.1) TIME          [Time                            (s) ]
COMM 8    42 -  45  int  (i 4)   BEARING       [Bearing                       (deg) ]
COMM 9    46 -  58  real (f13.6) LONGITUDE     [Longitude GDA94               (deg) ]
COMM10    59 -  71  real (f13.6) LATITUDE      [Latitude  GDA94               (deg) ]
COMM11    72 -  82  real (f11.2) EASTING       [Easting   MGA55                 (m) ]
COMM12    83 -  94  real (f12.2) NORTHING      [Northing  MGA55                 (m) ]
COMM13    95 - 101  real (f 7.2) Lasalt_final  [Final Laser Altimeter           (m) ]
COMM14   102 - 108  real (f 7.2) Radalt_final  [Final Radar Altimeter           (m) ]
COMM15   109 - 116  real (f 8.2) TxHeight      [Transmitter GPS height          (m) ]
COMM16   117 - 124  real (f 8.2) DTM           [DTM                             (m) ]
COMM17   125 - 134  real (f10.3) MAG           [Compensated TMI                (nT) ]
COMM18   135 - 144  real (f10.5) Roll_Final    [Final Tx loop roll            (deg) ]
COMM19   145 - 154  real (f10.5) Pitch_Final   [Final Tx loop pitch           (deg) ]
COMM20   155 - 160  real (f 6.1) TxAlt         [Tx ground clearance             (m) ]
COMM21   161 - 168  real (f 8.2) HSep_Final    [Final Tx-Rx horizontal separation(m) ]
COMM22   169 - 176  real (f 8.2) VSep_Final    [Final Tx-Rx vertical separation  (m) ]
COMM23   177 - 186  real (f10.3) X_Geofact     [X_Geometric factor                  ]
COMM24   187 - 196  real (f10.3) Z_Geofact     [Z_Geometric factor                  ]
COMM25   197 - 208  real (f12.6) EMX_Final[1]  [Final EMX01 Window             (fT) ]
COMM26   209 - 220  real (f12.6) EMX_Final[2]  [Final EMX02 Window             (fT) ]
COMM27   221 - 232  real (f12.6) EMX_Final[3]  [Final EMX03 Window             (fT) ]
COMM28   233 - 244  real (f12.6) EMX_Final[4]  [Final EMX04 Window             (fT) ]
COMM29   245 - 256  real (f12.6) EMX_Final[5]  [Final EMX05 Window             (fT) ]
COMM30   257 - 268  real (f12.6) EMX_Final[6]  [Final EMX06 Window             (fT) ]
COMM31   269 - 280  real (f12.6) EMX_Final[7]  [Final EMX07 Window             (fT) ]
COMM32   281 - 292  real (f12.6) EMX_Final[8]  [Final EMX08 Window             (fT) ]
COMM33   293 - 304  real (f12.6) EMX_Final[9]  [Final EMX09 Window             (fT) ]
COMM34   305 - 316  real (f12.6) EMX_Final[10] [Final EMX10 Window             (fT) ]
COMM35   317 - 328  real (f12.6) EMX_Final[11] [Final EMX11 Window             (fT) ]
COMM36   329 - 340  real (f12.6) EMX_Final[12] [Final EMX12 Window             (fT) ]
COMM37   341 - 352  real (f12.6) EMX_Final[13] [Final EMX13 Window             (fT) ]
COMM38   353 - 364  real (f12.6) EMX_Final[14] [Final EMX14 Window             (fT) ]
COMM39   365 - 376  real (f12.6) EMX_Final[15] [Final EMX15 Window             (fT) ]
COMM40   377 - 388  real (f12.6) EMZ_Final[1]  [Final EMZ01 Window             (fT) ]
```

```
COMM41   389 - 400  real (f12.6) EMZ_Final[2]  [Final EMZ02 Window             (fT) ]
COMM42   401 - 412  real (f12.6) EMZ_Final[3]  [Final EMZ03 Window             (fT) ]
COMM43   413 - 424  real (f12.6) EMZ_Final[4]  [Final EMZ04 Window             (fT) ]
COMM44   425 - 436  real (f12.6) EMZ_Final[5]  [Final EMZ05 Window             (fT) ]
COMM45   437 - 448  real (f12.6) EMZ_Final[6]  [Final EMZ06 Window             (fT) ]
COMM46   449 - 460  real (f12.6) EMZ_Final[7]  [Final EMZ07 Window             (fT) ]
COMM47   461 - 472  real (f12.6) EMZ_Final[8]  [Final EMZ08 Window             (fT) ]
COMM48   473 - 484  real (f12.6) EMZ_Final[9]  [Final EMZ09 Window             (fT) ]
COMM49   485 - 496  real (f12.6) EMZ_Final[10] [Final EMZ10 Window             (fT) ]
COMM50   497 - 508  real (f12.6) EMZ_Final[11] [Final EMZ11 Window             (fT) ]
COMM51   509 - 520  real (f12.6) EMZ_Final[12] [Final EMZ12 Window             (fT) ]
COMM52   521 - 532  real (f12.6) EMZ_Final[13] [Final EMZ13 Window             (fT) ]
COMM53   533 - 544  real (f12.6) EMZ_Final[14] [Final EMZ14 Window             (fT) ]
COMM54   545 - 556  real (f12.6) EMZ_Final[15] [Final EMZ15 Window             (fT) ]
COMM55   557 - 566  real (f10.3) X_Sferics     [X_Sferics                           ]
COMM56   567 - 576  real (f10.3) Z_Sferics     [Z_Sferics                           ]
COMM57   577 - 586  real (f10.3) X_VLF1        [X_18.2kHz                           ]
COMM58   587 - 596  real (f10.3) X_VLF2        [X_19.8kHz                           ]
COMM59   597 - 606  real (f10.3) X_VLF3        [X_21.4kHz                           ]
COMM60   607 - 616  real (f10.3) X_VLF4        [X_22.2kHz                           ]
COMM61   617 - 626  real (f10.3) Z_VLF1        [Z_18.2kHz                           ]
COMM62   627 - 636  real (f10.3) Z_VLF2        [Z_19.8kHz                           ]
COMM63   637 - 646  real (f10.3) Z_VLF3        [Z_21.4kHz                           ]
COMM64   647 - 656  real (f10.3) Z_VLF4        [Z_22.2kHz                           ]
COMM65   657 - 666  real (f10.3) X_Powerline   [X_Powerline                         ]
COMM66   667 - 676  real (f10.3) Z_Powerline   [Z_Powerline                         ]
COMM67   677 - 686  real (f10.3) X_Lowfreq     [X_Lowfreq                           ]
COMM68   687 - 696  real (f10.3) Z_Lowfreq     [Z_Lowfreq                           ]
COMM     697 - 698 <newline>
```

COMM Total Kilometres :   8659.97

DUBBO S1 Conductivity data (LMRAEM_S1_COND.HDR)

```
COMM JOB NUMBER:                                                       1835
COMM AREA NUMBER:                                                         1
COMM SURVEY COMPANY:                                 Fugro Airborne Surveys
COMM CLIENT:                                                            BRS
COMM SURVEY TYPE:                                       25Hz TEMPEST Survey
COMM AREA NAME:                                   Lower Macquarie River AEM
COMM STATE:                                                             NSW
COMM COUNTRY:                                                     Australia
COMM SURVEY FLOWN:                                      January-April, 2007
COMM LOCATED DATA CREATED:                                        June 2007
COMM
COMM DATUM:                                                           GDA94
COMM PROJECTION:                                                        MGA
COMM ZONE:                                                               55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                           300 m
COMM TRAVERSE LINE DIRECTION:                                   000-180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                       115 m
COMM FINAL LINE KILOMETRES:                                       8661.0 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                   10010 - 12680
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 558900  6451800
COMM 624900  6451800
COMM 624900  6444000
COMM 639000  6444000
COMM 639000  6431100
COMM 624900  6431100
COMM 624900  6426300
COMM 619500  6426300
COMM 619500  6435900
COMM 613800  6435900
COMM 613800  6426300
COMM 612600  6426300
COMM 612600  6411900
COMM 558900  6411900
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                      Skyvan SC-3-200, VH-WGT
COMM
COMM MAGNETOMETER:                             Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                            stinger mount
COMM RESOLUTION:                                                   0.001 nT
COMM RECORDING INTERVAL:                                              0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                    25Hz TEMPEST
COMM INSTALLATION:                   Transmitter loop mounted on the aircraft
COMM                                           Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                  X,Z
COMM RECORDING INTERVAL:                                              0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                        115 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                          45 m
COMM
```

```
COMM RADAR ALTIMETER:                                       Collins ALT55
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM LASER ALTIMETER:                                   Regal LD90-3300HR
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM NAVIGATION:                               real-time differential GPS
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM ACQUISITION SYSTEM:                                        PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                  56715 nT
COMM PARALLAX CORRECTION APPLIED                                    0.4 s
COMM IGRF BASE VALUE APPLIED                                     56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                               2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                            0.2 s
COMM Z-COMPONENT EM DATA                                            1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM CONDUCTIVITY DEPTH INVERSION CALCULATED               EMFlow V5.10
COMM CONDUCTIVITIES CALCULATED USING corrected EM DATA
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA             0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA               0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM --------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM --------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
```

```
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    : 127
COMM
COMM Field     Columns  Type Format  Channel            Description
COMM
COMM  1    1 -   4  int  (i 4)   PROJECT      [Project Number                         ]
COMM  2    5 -   6  int  (i 2)   AIRCRAFT     [Aircraft (1-TEM, 2-WGT)                ]
COMM  3    7 -  10  int  (i 4)   FLIGHT       [Flight                                 ]
COMM  4   11 -  16  int  (i 6)   LINE         [Line                                   ]
COMM  5   17 -  24  real (f 8.1) FID          [Fiducial                           (s) ]
COMM  6   25 -  33  int  (i 9)   DATE         [Date                          ddmmyyyy ]
COMM  7   34 -  41  real (f 8.1) TIME         [Time                               (s) ]
COMM  8   42 -  45  int  (i 4)   BEARING      [Bearing                          (deg) ]
COMM  9   46 -  58  real (f13.6) LONGITUDE    [Longitude GDA94                  (deg) ]
COMM 10   59 -  71  real (f13.6) LATITUDE     [Latitude  GDA94                  (deg) ]
COMM 11   72 -  82  real (f11.2) EASTING      [Easting   MGA55                    (m) ]
COMM 12   83 -  94  real (f12.2) NORTHING     [Northing  MGA55                    (m) ]
COMM 13   95 - 101  real (f 7.2) Lasalt_final [Final Laser Altimeter              (m) ]
COMM 14  102 - 108  real (f 7.2) Radalt_final [Final Radar Altimeter              (m) ]
COMM 15  109 - 116  real (f 8.2) TxHeight     [Transmitter GPS height             (m) ]
COMM 16  117 - 124  real (f 8.2) DTM          [DTM                                (m) ]
COMM 17  125 - 134  real (f10.3) MAG          [Compensated TMI                   (nT) ]
COMM 18  135 - 144  real (f10.3) CND[1]       [Conductivity_001     0-5 m     (mS/m) ]
COMM 19  145 - 154  real (f10.3) CND[2]       [Conductivity_002     5-10 m    (mS/m) ]
COMM 20  155 - 164  real (f10.3) CND[3]       [Conductivity_003    10-15 m    (mS/m) ]
COMM 21  165 - 174  real (f10.3) CND[4]       [Conductivity_004    15-20 m    (mS/m) ]
COMM 22  175 - 184  real (f10.3) CND[5]       [Conductivity_005    20-25 m    (mS/m) ]
COMM 23  185 - 194  real (f10.3) CND[6]       [Conductivity_006    25-30 m    (mS/m) ]
COMM 24  195 - 204  real (f10.3) CND[7]       [Conductivity_007    30-35 m    (mS/m) ]
COMM 25  205 - 214  real (f10.3) CND[8]       [Conductivity_008    35-40 m    (mS/m) ]
COMM 26  215 - 224  real (f10.3) CND[9]       [Conductivity_009    40-45 m    (mS/m) ]
COMM 27  225 - 234  real (f10.3) CND[10]      [Conductivity_010    45-50 m    (mS/m) ]
COMM 28  235 - 244  real (f10.3) CND[11]      [Conductivity_011    50-55 m    (mS/m) ]
COMM 29  245 - 254  real (f10.3) CND[12]      [Conductivity_012    55-60 m    (mS/m) ]
COMM 30  255 - 264  real (f10.3) CND[13]      [Conductivity_013    60-65 m    (mS/m) ]
COMM 31  265 - 274  real (f10.3) CND[14]      [Conductivity_014    65-70 m    (mS/m) ]
COMM 32  275 - 284  real (f10.3) CND[15]      [Conductivity_015    70-75 m    (mS/m) ]
COMM 33  285 - 294  real (f10.3) CND[16]      [Conductivity_016    75-80 m    (mS/m) ]
COMM 34  295 - 304  real (f10.3) CND[17]      [Conductivity_017    80-85 m    (mS/m) ]
COMM 35  305 - 314  real (f10.3) CND[18]      [Conductivity_018    85-90 m    (mS/m) ]
COMM 36  315 - 324  real (f10.3) CND[19]      [Conductivity_019    90-95 m    (mS/m) ]
COMM 37  325 - 334  real (f10.3) CND[20]      [Conductivity_020    95-100 m   (mS/m) ]
COMM 38  335 - 344  real (f10.3) CND[21]      [Conductivity_021   100-105 m   (mS/m) ]
```

```
COMM 39  345 - 354  real (f10.3) CND[22]      [Conductivity_022   105-110 m   (mS/m) ]
COMM 40  355 - 364  real (f10.3) CND[23]      [Conductivity_023   110-115 m   (mS/m) ]
COMM 41  365 - 374  real (f10.3) CND[24]      [Conductivity_024   115-120 m   (mS/m) ]
COMM 42  375 - 384  real (f10.3) CND[25]      [Conductivity_025   120-125 m   (mS/m) ]
COMM 43  385 - 394  real (f10.3) CND[26]      [Conductivity_026   125-130 m   (mS/m) ]
COMM 44  395 - 404  real (f10.3) CND[27]      [Conductivity_027   130-135 m   (mS/m) ]
COMM 45  405 - 414  real (f10.3) CND[28]      [Conductivity_028   135-140 m   (mS/m) ]
COMM 46  415 - 424  real (f10.3) CND[29]      [Conductivity_029   140-145 m   (mS/m) ]
COMM 47  425 - 434  real (f10.3) CND[30]      [Conductivity_030   145-150 m   (mS/m) ]
COMM 48  435 - 444  real (f10.3) CND[31]      [Conductivity_031   150-155 m   (mS/m) ]
COMM 49  445 - 454  real (f10.3) CND[32]      [Conductivity_032   155-160 m   (mS/m) ]
COMM 50  455 - 464  real (f10.3) CND[33]      [Conductivity_033   160-165 m   (mS/m) ]
COMM 51  465 - 474  real (f10.3) CND[34]      [Conductivity_034   165-170 m   (mS/m) ]
COMM 52  475 - 484  real (f10.3) CND[35]      [Conductivity_035   170-175 m   (mS/m) ]
COMM 53  485 - 494  real (f10.3) CND[36]      [Conductivity_036   175-180 m   (mS/m) ]
COMM 54  495 - 504  real (f10.3) CND[37]      [Conductivity_037   180-185 m   (mS/m) ]
COMM 55  505 - 514  real (f10.3) CND[38]      [Conductivity_038   185-190 m   (mS/m) ]
COMM 56  515 - 524  real (f10.3) CND[39]      [Conductivity_039   190-195 m   (mS/m) ]
COMM 57  525 - 534  real (f10.3) CND[40]      [Conductivity_040   195-200 m   (mS/m) ]
COMM118 1135 -1144  real (f10.3) INT_CND_0_5  [Interval Conductivity   0-5m   (mS/m) ]
COMM119 1145 -1154  real (f10.3) INT_CND_5_10 [Interval Conductivity   5-10m  (mS/m) ]
COMM120 1155 -1164  real (f10.3) INT_CND_10_15[Interval Conductivity  10-15m  (mS/m) ]
COMM121 1165 -1174  real (f10.3) INT_CND_15_20[Interval Conductivity  15-20m  (mS/m) ]
COMM122 1175 -1184  real (f10.3) INT_CND_20_30[Interval Conductivity  20-30m  (mS/m) ]
COMM123 1185 -1194  real (f10.3) INT_CND_30_40[Interval Conductivity  30-40m  (mS/m) ]
COMM124 1195 -1204  real (f10.3) INT_CND_40_60[Interval Conductivity  40-60m  (mS/m) ]
COMM125 1205 -1214  real (f10.3) INT_CND_60_10[Interval Conductivity  60-100m (mS/m) ]
COMM126 1215 -1224  real (f10.3) INT_CND_100_150[Interval Conductivity 100-150m (mS/m)]
COMM127 1225 -1234  real (f10.3) INT_CND_150_200[Interval Conductivity 150-200m (mS/m)]
COMM    1235 -1236 <newline>

COMM Total number of lines :  268


COMM Total Kilometres :      8659.97
```

DUBBO N1-3 NON-GEOMERTY CORRECTED (LMRAEM_N1-3_NON-HPR.HDR)

```
COMM JOB NUMBER:                                                        1835
COMM AREA NUMBER:                                                  N1-3/L1-6
COMM SURVEY COMPANY:                                  Fugro Airborne Surveys
COMM CLIENT:                                                             BRS
COMM SURVEY TYPE:                                        25Hz TEMPEST Survey
COMM AREA NAME:                                     Lower Macquarie River AEM
COMM STATE:                                                              NSW
COMM COUNTRY:                                                      Australia
COMM SURVEY FLOWN:                                    January-April, 2007
COMM LOCATED DATA CREATED:                                         June 2007
COMM
COMM DATUM:                                                            GDA94
COMM PROJECTION:                                                         MGA
COMM ZONE:                                                                55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                        300-900 m
COMM TRAVERSE LINE DIRECTION:                                    090-270 deg
COMM NOMINAL TERRAIN CLEARANCE:                                        115 m
COMM FINAL LINE KILOMETRES:                                      26529.31 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                    20010 - 26210
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 499200  6637200          503100  6517200
COMM 581100  6637200          503100  6523500
COMM 581100  6567437          554672  6523500
COMM 597855  6504531          543300  6561106
COMM 624900  6477900          543300  6565200
COMM 624900  6451200          505200  6565200
COMM 503100  6451200          505200  6570000
COMM 503100  6462000          543300  6570000
COMM 558900  6462000          543300  6610200
COMM 558900  6489000          505200  6610200
COMM 503100  6489000          505200  6616800
COMM 503100  6500700          543300  6616800
COMM 558900  6500700          543300  6626400
COMM 558900  6509516          499200  6626400
COMM 556550  6517200
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                        Skyvan SC-3-200, VH-WGT
COMM                                            CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                              Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                             stinger mount
COMM RESOLUTION:                                                    0.001 nT
COMM RECORDING INTERVAL:                                               0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                    25Hz TEMPEST
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
COMM                                          Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                   X,Z
COMM RECORDING INTERVAL:                                               0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER (TEM AVERAGE):         120.7 m
```

```
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER (TEM AVERAGE):          39.4 m
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER (WGT AVERAGE):        115.6 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER (WGT AVERAGE):          43.2 m
COMM
COMM RADAR ALTIMETER:                                      Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                                      Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                                 0.2 s
COMM
COMM LASER ALTIMETER:                                       Optech 501SB (TEM)
COMM LASER ALTIMETER:                                   Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                                 0.2 s
COMM
COMM NAVIGATION:                                    real-time differential GPS
COMM RECORDING INTERVAL:                                                 1.0 s
COMM
COMM ACQUISITION SYSTEM:                                             PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                       56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                                   0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                                   0.6 s
COMM IGRF BASE VALUE APPLIED                                          56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                    2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                                 0.2 s
COMM Z-COMPONENT EM DATA                                                 1.4 s
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA                  0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                    0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM ----------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ----------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
```

```
COMM    2         0.033      0.047      0.040
COMM    3         0.060      0.073      0.067
COMM    4         0.087      0.127      0.107
COMM    5         0.140      0.207      0.173
COMM    6         0.220      0.340      0.280
COMM    7         0.353      0.553      0.453
COMM    8         0.567      0.873      0.720
COMM    9         0.887      1.353      1.120
COMM   10         1.367      2.100      1.733
COMM   11         2.113      3.273      2.693
COMM   12         3.287      5.113      4.200
COMM   13         5.127      7.993      6.560
COMM   14         8.007     12.393     10.200
COMM   15        12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ____________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
COMM Field     Columns  Type Format  Channel        Description
COMM
COMM 1   1 -   4  int  (i 4)   PROJECT       [Project Number                      ]
COMM 2   5 -   6  int  (i 2)   AIRCRAFT      [Aircraft (1-TEM, 2-WGT)             ]
COMM 3   7 -  10  int  (i 4)   FLIGHT        [Flight                              ]
COMM 4  11 -  16  int  (i 6)   LINE          [Line                                ]
COMM 5  17 -  24  real (f 8.1) FID           [Fiducial                        (s) ]
COMM 6  25 -  33  int  (i 9)   DATE          [Date                       ddmmyyyy ]
COMM 7  34 -  41  real (f 8.1) TIME          [Time                            (s) ]
COMM 8  42 -  45  int  (i 4)   BEARING       [Bearing                       (deg) ]
COMM 9  46 -  58  real (f13.6) LONGITUDE     [Longitude GDA94               (deg) ]
COMM10  59 -  71  real (f13.6) LATITUDE      [Latitude  GDA94               (deg) ]
COMM11  72 -  82  real (f11.2) EASTING       [Easting   MGA55                 (m) ]
COMM12  83 -  94  real (f12.2) NORTHING      [Northing  MGA55                 (m) ]
COMM13  95 - 101  real (f 7.2) Lasalt_final  [Final Laser Altimeter           (m) ]
COMM14 102 - 108  real (f 7.2) Radalt_final  [Final Radar Altimeter           (m) ]
COMM15 109 - 116  real (f 8.2) TxHeight      [Transmitter GPS height          (m) ]
COMM16 117 - 124  real (f 8.2) DTM           [DTM                             (m) ]
COMM17 125 - 134  real (f10.3) MAG           [Compensated TMI                (nT) ]
COMM18 135 - 144  real (f10.5) Roll_Raw      [Raw Tx loop roll              (deg) ]
COMM19 145 - 154  real (f10.5) Pitch_Raw     [Raw Tx loop pitch             (deg) ]
COMM20 155 - 160  real (f 6.1) TxLasalt      [Tx ground clearance             (m) ]
COMM21 161 - 168  real (f 8.2) HSep_Raw      [Raw Tx-Rx horizontal separation  (m) ]
COMM22 169 - 176  real (f 8.2) VSep_Raw      [Raw Tx-Rx vertical separation   (m) ]
COMM23 177 - 186  real (f10.3) X_Geofact     [X_Geometric factor                  ]
COMM24 187 - 196  real (f10.3) Z_Geofact     [Z_Geometric factor                  ]
COMM25 197 - 208  real (f12.6) EMX_Raw[1]    [Raw EMX01 Window               (fT) ]
COMM26 209 - 220  real (f12.6) EMX_Raw[2]    [Raw EMX02 Window               (fT) ]
COMM27 221 - 232  real (f12.6) EMX_Raw[3]    [Raw EMX03 Window               (fT) ]
COMM28 233 - 244  real (f12.6) EMX_Raw[4]    [Raw EMX04 Window               (fT) ]
COMM29 245 - 256  real (f12.6) EMX_Raw[5]    [Raw EMX05 Window               (fT) ]
COMM30 257 - 268  real (f12.6) EMX_Raw[6]    [Raw EMX06 Window               (fT) ]
COMM31 269 - 280  real (f12.6) EMX_Raw[7]    [Raw EMX07 Window               (fT) ]
COMM32 281 - 292  real (f12.6) EMX_Raw[8]    [Raw EMX08 Window               (fT) ]
COMM33 293 - 304  real (f12.6) EMX_Raw[9]    [Raw EMX09 Window               (fT) ]
COMM34 305 - 316  real (f12.6) EMX_Raw[10]   [Raw EMX10 Window               (fT) ]
COMM35 317 - 328  real (f12.6) EMX_Raw[11]   [Raw EMX11 Window               (fT) ]
COMM36 329 - 340  real (f12.6) EMX_Raw[12]   [Raw EMX12 Window               (fT) ]
```

```
COMM37 341 - 352  real (f12.6) EMX_Raw[13]   [Raw EMX13 Window                 (fT) ]
COMM38 353 - 364  real (f12.6) EMX_Raw[14]   [Raw EMX14 Window                 (fT) ]
COMM39 365 - 376  real (f12.6) EMX_Raw[15]   [Raw EMX15 Window                 (fT) ]
COMM40 377 - 388  real (f12.6) EMZ_Raw[1]    [Raw EMZ01 Window                 (fT) ]
COMM41 389 - 400  real (f12.6) EMZ_Raw[2]    [Raw EMZ02 Window                 (fT) ]
COMM42 401 - 412  real (f12.6) EMZ_Raw[3]    [Raw EMZ03 Window                 (fT) ]
COMM43 413 - 424  real (f12.6) EMZ_Raw[4]    [Raw EMZ04 Window                 (fT) ]
COMM44 425 - 436  real (f12.6) EMZ_Raw[5]    [Raw EMZ05 Window                 (fT) ]
COMM45 437 - 448  real (f12.6) EMZ_Raw[6]    [Raw EMZ06 Window                 (fT) ]
COMM46 449 - 460  real (f12.6) EMZ_Raw[7]    [Raw EMZ07 Window                 (fT) ]
COMM47 461 - 472  real (f12.6) EMZ_Raw[8]    [Raw EMZ08 Window                 (fT) ]
COMM48 473 - 484  real (f12.6) EMZ_Raw[9]    [Raw EMZ09 Window                 (fT) ]
COMM49 485 - 496  real (f12.6) EMZ_Raw[10]   [Raw EMZ10 Window                 (fT) ]
COMM50 497 - 508  real (f12.6) EMZ_Raw[11]   [Raw EMZ11 Window                 (fT) ]
COMM51 509 - 520  real (f12.6) EMZ_Raw[12]   [Raw EMZ12 Window                 (fT) ]
COMM52 521 - 532  real (f12.6) EMZ_Raw[13]   [Raw EMZ13 Window                 (fT) ]
COMM53 533 - 544  real (f12.6) EMZ_Raw[14]   [Raw EMZ14 Window                 (fT) ]
COMM54 545 - 556  real (f12.6) EMZ_Raw[15]   [Raw EMZ15 Window                 (fT) ]
COMM55 557 - 566  real (f10.3) X_Sferics     [X_Sferics                             ]
COMM56 567 - 576  real (f10.3) Z_Sferics     [Z_Sferics                             ]
COMM57 577 - 586  real (f10.3) X_VLF1        [X_18.2kHz                             ]
COMM58 587 - 596  real (f10.3) X_VLF2        [X_19.8kHz                             ]
COMM59 597 - 606  real (f10.3) X_VLF3        [X_21.4kHz                             ]
COMM60 607 - 616  real (f10.3) X_VLF4        [X_22.2kHz                             ]
COMM61 617 - 626  real (f10.3) Z_VLF1        [Z_18.2kHz                             ]
COMM62 627 - 636  real (f10.3) Z_VLF2        [Z_19.8kHz                             ]
COMM63 637 - 646  real (f10.3) Z_VLF3        [Z_21.4kHz                             ]
COMM64 647 - 656  real (f10.3) Z_VLF4        [Z_22.2kHz                             ]
COMM65 657 - 666  real (f10.3) X_Powerline   [X_Powerline                           ]
COMM66 667 - 676  real (f10.3) Z_Powerline   [Z_Powerline                           ]
COMM67 677 - 686  real (f10.3) X_Lowfreq     [X_Lowfreq                             ]
COMM68 687 - 696  real (f10.3) Z_Lowfreq     [Z_Lowfreq                             ]
COMM   697 - 698 <newline>
COMM________________________________________________________________________________

COMM Total number of lines :  507
COMM Total Kilometres :     26529.31
```

DUBBO N1-3 GEOMETRY CORRECTED (LMRAEM_N1-3_HPR.HDR)

```
COMM JOB NUMBER:                                                    1835
COMM AREA NUMBER:                                              N1-3/L1-6
COMM SURVEY COMPANY:                                Fugro Airborne Surveys
COMM CLIENT:                                                         BRS
COMM SURVEY TYPE:                                     25Hz TEMPEST Survey
COMM AREA NAME:                                  Lower Macquarie River AEM
COMM STATE:                                                          NSW
COMM COUNTRY:                                                  Australia
COMM SURVEY FLOWN:                                  January-April, 2007
COMM LOCATED DATA CREATED:                                     June 2007
COMM
COMM DATUM:                                                        GDA94
COMM PROJECTION:                                                     MGA
COMM ZONE:                                                            55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                    300-900 m
COMM TRAVERSE LINE DIRECTION:                                090-270 deg
COMM NOMINAL TERRAIN CLEARANCE:                                    115 m
COMM FINAL LINE KILOMETRES:                                  26529.31 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                20010 - 26210
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 499200  6637200          503100  6517200
COMM 581100  6637200          503100  6523500
COMM 581100  6567437          554672  6523500
COMM 597855  6504531          543300  6561106
COMM 624900  6477900          543300  6565200
COMM 624900  6451200          505200  6565200
COMM 503100  6451200          505200  6570000
COMM 503100  6462000          543300  6570000
COMM 558900  6462000          543300  6610200
COMM 558900  6489000          505200  6610200
COMM 503100  6489000          505200  6616800
COMM 503100  6500700          543300  6616800
COMM 558900  6500700          543300  6626400
COMM 558900  6509516          499200  6626400
COMM 556550  6517200
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                     Skyvan SC-3-200, VH-WGT
COMM                                         CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                           Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                          stinger mount
COMM RESOLUTION:                                                 0.001 nT
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                 25Hz TEMPEST
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
COMM                                          Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                X,Z
COMM RECORDING INTERVAL:                                            0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                      115 m
```

```
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                            45 m
COMM
COMM RADAR ALTIMETER:                                       Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                                       Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                                  0.2 s
COMM
COMM LASER ALTIMETER:                                        Optech 501SB (TEM)
COMM LASER ALTIMETER:                                    Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                                  0.2 s
COMM
COMM NAVIGATION:                                     real-time differential GPS
COMM RECORDING INTERVAL:                                                  1.0 s
COMM
COMM ACQUISITION SYSTEM:                                              PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                        56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                                    0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                                    0.6 s
COMM IGRF BASE VALUE APPLIED                                           56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                     2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                                  0.2 s
COMM Z-COMPONENT EM DATA                                                  1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA                   0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                     0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM ---------------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ---------------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
```

```
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
Field     Columns  Type Format  Channel          Description

 1     1 -   4  int  (i 4)   PROJECT         [Project Number                          ]
 2     5 -   6  int  (i 2)   AIRCRAFT        [Aircraft (1-TEM, 2-WGT)                 ]
 3     7 -  10  int  (i 4)   FLIGHT          [Flight                                  ]
 4    11 -  16  int  (i 6)   LINE            [Line                                    ]
 5    17 -  24  real (f 8.1) FID             [Fiducial                            (s) ]
 6    25 -  33  int  (i 9)   DATE            [Date                           ddmmyyyy ]
 7    34 -  41  real (f 8.1) TIME            [Time                                (s) ]
 8    42 -  45  int  (i 4)   BEARING         [Bearing                           (deg) ]
 9    46 -  58  real (f13.6) LONGITUDE       [Longitude GDA94                   (deg) ]
10    59 -  71  real (f13.6) LATITUDE        [Latitude  GDA94                   (deg) ]
11    72 -  82  real (f11.2) EASTING         [Easting   MGA55                     (m) ]
12    83 -  94  real (f12.2) NORTHING        [Northing  MGA55                     (m) ]
13    95 - 101  real (f 7.2) Lasalt_final    [Final Laser Altimeter               (m) ]
14   102 - 108  real (f 7.2) Radalt_final    [Final Radar Altimeter               (m) ]
15   109 - 116  real (f 8.2) TxHeight        [Transmitter GPS height              (m) ]
16   117 - 124  real (f 8.2) DTM             [DTM                                 (m) ]
17   125 - 134  real (f10.3) MAG             [Compensated TMI                    (nT) ]
18   135 - 144  real (f10.5) Roll_Final      [Final Tx loop roll                (deg) ]
19   145 - 154  real (f10.5) Pitch_Final     [Final Tx loop pitch               (deg) ]
20   155 - 160  real (f 6.1) TxAlt           [Tx ground clearance                 (m) ]
21   161 - 168  real (f 8.2) HSep_Final      [Final Tx-Rx horizontal separation  (m) ]
22   169 - 176  real (f 8.2) VSep_Final      [Final Tx-Rx vertical separation    (m) ]
23   177 - 186  real (f10.3) X_Geofact       [X_Geometric factor                      ]
24   187 - 196  real (f10.3) Z_Geofact       [Z_Geometric factor                      ]
25   197 - 208  real (f12.6) EMX_Final[1]    [Final EMX01 Window                 (fT) ]
26   209 - 220  real (f12.6) EMX_Final[2]    [Final EMX02 Window                 (fT) ]
27   221 - 232  real (f12.6) EMX_Final[3]    [Final EMX03 Window                 (fT) ]
28   233 - 244  real (f12.6) EMX_Final[4]    [Final EMX04 Window                 (fT) ]
29   245 - 256  real (f12.6) EMX_Final[5]    [Final EMX05 Window                 (fT) ]
30   257 - 268  real (f12.6) EMX_Final[6]    [Final EMX06 Window                 (fT) ]
31   269 - 280  real (f12.6) EMX_Final[7]    [Final EMX07 Window                 (fT) ]
32   281 - 292  real (f12.6) EMX_Final[8]    [Final EMX08 Window                 (fT) ]
33   293 - 304  real (f12.6) EMX_Final[9]    [Final EMX09 Window                 (fT) ]
34   305 - 316  real (f12.6) EMX_Final[10]   [Final EMX10 Window                 (fT) ]
```

```
35   317 - 328  real (f12.6) EMX_Final[11]   [Final EMX11 Window               (fT) ]
36   329 - 340  real (f12.6) EMX_Final[12]   [Final EMX12 Window               (fT) ]
37   341 - 352  real (f12.6) EMX_Final[13]   [Final EMX13 Window               (fT) ]
38   353 - 364  real (f12.6) EMX_Final[14]   [Final EMX14 Window               (fT) ]
39   365 - 376  real (f12.6) EMX_Final[15]   [Final EMX15 Window               (fT) ]
40   377 - 388  real (f12.6) EMZ_Final[1]    [Final EMZ01 Window               (fT) ]
41   389 - 400  real (f12.6) EMZ_Final[2]    [Final EMZ02 Window               (fT) ]
42   401 - 412  real (f12.6) EMZ_Final[3]    [Final EMZ03 Window               (fT) ]
43   413 - 424  real (f12.6) EMZ_Final[4]    [Final EMZ04 Window               (fT) ]
44   425 - 436  real (f12.6) EMZ_Final[5]    [Final EMZ05 Window               (fT) ]
45   437 - 448  real (f12.6) EMZ_Final[6]    [Final EMZ06 Window               (fT) ]
46   449 - 460  real (f12.6) EMZ_Final[7]    [Final EMZ07 Window               (fT) ]
47   461 - 472  real (f12.6) EMZ_Final[8]    [Final EMZ08 Window               (fT) ]
48   473 - 484  real (f12.6) EMZ_Final[9]    [Final EMZ09 Window               (fT) ]
49   485 - 496  real (f12.6) EMZ_Final[10]   [Final EMZ10 Window               (fT) ]
50   497 - 508  real (f12.6) EMZ_Final[11]   [Final EMZ11 Window               (fT) ]
51   509 - 520  real (f12.6) EMZ_Final[12]   [Final EMZ12 Window               (fT) ]
52   521 - 532  real (f12.6) EMZ_Final[13]   [Final EMZ13 Window               (fT) ]
53   533 - 544  real (f12.6) EMZ_Final[14]   [Final EMZ14 Window               (fT) ]
54   545 - 556  real (f12.6) EMZ_Final[15]   [Final EMZ15 Window               (fT) ]
55   557 - 566  real (f10.3) X_Sferics       [X_Sferics                             ]
56   567 - 576  real (f10.3) Z_Sferics       [Z_Sferics                             ]
57   577 - 586  real (f10.3) X_VLF1          [X_18.2kHz                             ]
58   587 - 596  real (f10.3) X_VLF2          [X_19.8kHz                             ]
59   597 - 606  real (f10.3) X_VLF3          [X_21.4kHz                             ]
60   607 - 616  real (f10.3) X_VLF4          [X_22.2kHz                             ]
61   617 - 626  real (f10.3) Z_VLF1          [Z_18.2kHz                             ]
62   627 - 636  real (f10.3) Z_VLF2          [Z_19.8kHz                             ]
63   637 - 646  real (f10.3) Z_VLF3          [Z_21.4kHz                             ]
64   647 - 656  real (f10.3) Z_VLF4          [Z_22.2kHz                             ]
65   657 - 666  real (f10.3) X_Powerline     [X_Powerline                           ]
66   667 - 676  real (f10.3) Z_Powerline     [Z_Powerline                           ]
67   677 - 686  real (f10.3) X_Lowfreq       [X_Lowfreq                             ]
68   687 - 696  real (f10.3) Z_Lowfreq       [Z_Lowfreq                             ]
     697 - 698 <newline>
```

COMM Total number of lines : 507

COMM Total Kilometres :   26529.31

DUBBO N1-3 Conductivity data

```
COMM JOB NUMBER:                                                        1835
COMM AREA NUMBER:                                                  N1-3/L1-6
COMM SURVEY COMPANY:                                  Fugro Airborne Surveys
COMM CLIENT:                                                             BRS
COMM SURVEY TYPE:                                        25Hz TEMPEST Survey
COMM AREA NAME:                                     Lower Macquarie River AEM
COMM STATE:                                                              NSW
COMM COUNTRY:                                                      Australia
COMM SURVEY FLOWN:                                       January-April, 2007
COMM LOCATED DATA CREATED:                                         June 2007
COMM
COMM DATUM:                                                            GDA94
COMM PROJECTION:                                                         MGA
COMM ZONE:                                                                55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                        300-900 m
COMM TRAVERSE LINE DIRECTION:                                    090-270 deg
COMM NOMINAL TERRAIN CLEARANCE:                                        115 m
COMM FINAL LINE KILOMETRES:                                      26529.31 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                    20010 - 26210
COMM
COMM AREA BOUNDARY (GDA94, MGA55)
COMM
COMM 499200  6637200          503100  6517200
COMM 581100  6637200          503100  6523500
COMM 581100  6567437          554672  6523500
COMM 597855  6504531          543300  6561106
COMM 624900  6477900          543300  6565200
COMM 624900  6451200          505200  6565200
COMM 503100  6451200          505200  6570000
COMM 503100  6462000          543300  6570000
COMM 558900  6462000          543300  6610200
COMM 558900  6489000          505200  6610200
COMM 503100  6489000          505200  6616800
COMM 503100  6500700          543300  6616800
COMM 558900  6500700          543300  6626400
COMM 558900  6509516          499200  6626400
COMM 556550  6517200
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                         Skyvan SC-3-200, VH-WGT
COMM                                               CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                                 Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                               stinger mount
COMM RESOLUTION:                                                     0.001 nT
COMM RECORDING INTERVAL:                                                 0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                       25Hz TEMPEST
COMM INSTALLATION:                      Transmitter loop mounted on the aircraft
COMM                                              Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                      X,Z
COMM RECORDING INTERVAL:                                                 0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                           115 m
```

```
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                          45 m
COMM
COMM RADAR ALTIMETER:                                   Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                                   Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                              0.2 s
COMM
COMM LASER ALTIMETER:                                    Optech 501SB (TEM)
COMM LASER ALTIMETER:                                Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                              0.2 s
COMM
COMM NAVIGATION:                                 real-time differential GPS
COMM RECORDING INTERVAL:                                              1.0 s
COMM
COMM ACQUISITION SYSTEM:                                          PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                    56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                                0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                                0.6 s
COMM IGRF BASE VALUE APPLIED                                       56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                 2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                              0.2 s
COMM Z-COMPONENT EM DATA                                              1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM CONDUCTIVITY DEPTH INVERSION CALCULATED                   EMFlow V5.10
COMM CONDUCTIVITIES CALCULATED USING corrected EM DATA
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA               0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                 0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM ---------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ---------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
```

```
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    : 127
COMM
COMM Field     Columns  Type Format  Channel            Description
COMM
COMM  1    1 -   4  int  (i 4)   PROJECT      [Project Number                            ]
COMM  2    5 -   6  int  (i 2)   AIRCRAFT     [Aircraft (1-TEM, 2-WGT)                   ]
COMM  3    7 -  10  int  (i 4)   FLIGHT       [Flight                                    ]
COMM  4   11 -  16  int  (i 6)   LINE         [Line                                      ]
COMM  5   17 -  24  real (f 8.1) FID          [Fiducial                              (s) ]
COMM  6   25 -  33  int  (i 9)   DATE         [Date                             ddmmyyyy ]
COMM  7   34 -  41  real (f 8.1) TIME         [Time                                  (s) ]
COMM  8   42 -  45  int  (i 4)   BEARING      [Bearing                             (deg) ]
COMM  9   46 -  58  real (f13.6) LONGITUDE    [Longitude GDA94                     (deg) ]
COMM 10   59 -  71  real (f13.6) LATITUDE     [Latitude  GDA94                     (deg) ]
COMM 11   72 -  82  real (f11.2) EASTING      [Easting   MGA55                       (m) ]
COMM 12   83 -  94  real (f12.2) NORTHING     [Northing  MGA55                       (m) ]
COMM 13   95 - 101  real (f 7.2) Lasalt_final [Final Laser Altimeter                 (m) ]
COMM 14  102 - 108  real (f 7.2) Radalt_final [Final Radar Altimeter                 (m) ]
COMM 15  109 - 116  real (f 8.2) TxHeight     [Transmitter GPS height                (m) ]
COMM 16  117 - 124  real (f 8.2) DTM          [DTM                                   (m) ]
COMM 17  125 - 134  real (f10.3) MAG          [Compensated TMI                      (nT) ]
COMM 18  135 - 144  real (f10.3) CND[1]       [Conductivity_001     0-5 m     (mS/m) ]
COMM 19  145 - 154  real (f10.3) CND[2]       [Conductivity_002     5-10 m    (mS/m) ]
COMM 20  155 - 164  real (f10.3) CND[3]       [Conductivity_003    10-15 m    (mS/m) ]
COMM 21  165 - 174  real (f10.3) CND[4]       [Conductivity_004    15-20 m    (mS/m) ]
COMM 22  175 - 184  real (f10.3) CND[5]       [Conductivity_005    20-25 m    (mS/m) ]
COMM 23  185 - 194  real (f10.3) CND[6]       [Conductivity_006    25-30 m    (mS/m) ]
COMM 24  195 - 204  real (f10.3) CND[7]       [Conductivity_007    30-35 m    (mS/m) ]
COMM 25  205 - 214  real (f10.3) CND[8]       [Conductivity_008    35-40 m    (mS/m) ]
COMM 26  215 - 224  real (f10.3) CND[9]       [Conductivity_009    40-45 m    (mS/m) ]
COMM 27  225 - 234  real (f10.3) CND[10]      [Conductivity_010    45-50 m    (mS/m) ]
COMM 28  235 - 244  real (f10.3) CND[11]      [Conductivity_011    50-55 m    (mS/m) ]
COMM 29  245 - 254  real (f10.3) CND[12]      [Conductivity_012    55-60 m    (mS/m) ]
COMM 30  255 - 264  real (f10.3) CND[13]      [Conductivity_013    60-65 m    (mS/m) ]
COMM 31  265 - 274  real (f10.3) CND[14]      [Conductivity_014    65-70 m    (mS/m) ]
COMM 32  275 - 284  real (f10.3) CND[15]      [Conductivity_015    70-75 m    (mS/m) ]
```

```
COMM 33  285 - 294  real (f10.3) CND[16]      [Conductivity_016    75-80 m    (mS/m) ]
COMM 34  295 - 304  real (f10.3) CND[17]      [Conductivity_017    80-85 m    (mS/m) ]
COMM 35  305 - 314  real (f10.3) CND[18]      [Conductivity_018    85-90 m    (mS/m) ]
COMM 36  315 - 324  real (f10.3) CND[19]      [Conductivity_019    90-95 m    (mS/m) ]
COMM 37  325 - 334  real (f10.3) CND[20]      [Conductivity_020    95-100 m   (mS/m) ]
COMM 38  335 - 344  real (f10.3) CND[21]      [Conductivity_021   100-105 m   (mS/m) ]
COMM 39  345 - 354  real (f10.3) CND[22]      [Conductivity_022   105-110 m   (mS/m) ]
COMM 40  355 - 364  real (f10.3) CND[23]      [Conductivity_023   110-115 m   (mS/m) ]
COMM 41  365 - 374  real (f10.3) CND[24]      [Conductivity_024   115-120 m   (mS/m) ]
COMM 42  375 - 384  real (f10.3) CND[25]      [Conductivity_025   120-125 m   (mS/m) ]
COMM 43  385 - 394  real (f10.3) CND[26]      [Conductivity_026   125-130 m   (mS/m) ]
COMM 44  395 - 404  real (f10.3) CND[27]      [Conductivity_027   130-135 m   (mS/m) ]
COMM 45  405 - 414  real (f10.3) CND[28]      [Conductivity_028   135-140 m   (mS/m) ]
COMM 46  415 - 424  real (f10.3) CND[29]      [Conductivity_029   140-145 m   (mS/m) ]
COMM 47  425 - 434  real (f10.3) CND[30]      [Conductivity_030   145-150 m   (mS/m) ]
COMM 48  435 - 444  real (f10.3) CND[31]      [Conductivity_031   150-155 m   (mS/m) ]
COMM 49  445 - 454  real (f10.3) CND[32]      [Conductivity_032   155-160 m   (mS/m) ]
COMM 50  455 - 464  real (f10.3) CND[33]      [Conductivity_033   160-165 m   (mS/m) ]
COMM 51  465 - 474  real (f10.3) CND[34]      [Conductivity_034   165-170 m   (mS/m) ]
COMM 52  475 - 484  real (f10.3) CND[35]      [Conductivity_035   170-175 m   (mS/m) ]
COMM 53  485 - 494  real (f10.3) CND[36]      [Conductivity_036   175-180 m   (mS/m) ]
COMM 54  495 - 504  real (f10.3) CND[37]      [Conductivity_037   180-185 m   (mS/m) ]
COMM 55  505 - 514  real (f10.3) CND[38]      [Conductivity_038   185-190 m   (mS/m) ]
COMM 56  515 - 524  real (f10.3) CND[39]      [Conductivity_039   190-195 m   (mS/m) ]
COMM 57  525 - 534  real (f10.3) CND[40]      [Conductivity_040   195-200 m   (mS/m) ]
COMM118 1135 -1144  real (f10.3) INT_CND_0_5  [Interval Conductivity   0-5m   (mS/m) ]
COMM119 1145 -1154  real (f10.3) INT_CND_5_10 [Interval Conductivity   5-10m  (mS/m) ]
COMM120 1155 -1164  real (f10.3) INT_CND_10_15[Interval Conductivity  10-15m  (mS/m) ]
COMM121 1165 -1174  real (f10.3) INT_CND_15_20[Interval Conductivity  15-20m  (mS/m) ]
COMM122 1175 -1184  real (f10.3) INT_CND_20_30[Interval Conductivity  20-30m  (mS/m) ]
COMM123 1185 -1194  real (f10.3) INT_CND_30_40[Interval Conductivity  30-40m  (mS/m) ]
COMM124 1195 -1204  real (f10.3) INT_CND_40_60[Interval Conductivity  40-60m  (mS/m) ]
COMM125 1205 -1214  real (f10.3) INT_CND_60_10[Interval Conductivity  60-100m (mS/m) ]
COMM126 1215 -1224  real (f10.3) INT_CND_100_150[Interval Conductivity 100-150m (mS/m)]
COMM127 1225 -1234  real (f10.3) INT_CND_150_200[Interval Conductivity 150-200m (mS/m)]
COMM    1235 -1236 <newline>
```

Total number of lines : 507

Total Kilometres :   26529.31

DUBBO Seismic/Borehole/Repeat Lines – NON-GEOMETRY CORRECTED
(LMRAEM_Test_RptLines_NON-HPR.HDR)

```
COMM JOB NUMBER:                                                1835
COMM AREA NUMBER:                         Seismic/Borehole/Repeat Lines
COMM SURVEY COMPANY:                             Fugro Airborne Surveys
COMM CLIENT:                                                     BRS
COMM SURVEY TYPE:                                 25Hz TEMPEST Survey
COMM AREA NAME:                              Lower Macquarie River AEM
COMM STATE:                                                      NSW
COMM COUNTRY:                                              Australia
COMM SURVEY FLOWN:                                January-April 2007
COMM LOCATED DATA CREATED:                                 June 2007
COMM
COMM DATUM:                                                    GDA94
COMM PROJECTION:                                                 MGA
COMM ZONE:                                                        55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                    N/A m
COMM TRAVERSE LINE DIRECTION:                            Various deg
COMM NOMINAL TERRAIN CLEARANCE:                                115 m
COMM FINAL LINE KILOMETRES:                                 235.5 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                            81090 - 88320
COMM
COMM LINE COORDINATES (GDA94, MGA55)
COMM
COMM LINE 81??
COMM 613347 6434698    610966 6424986
COMM LINE 82??
COMM 601924 6428719    603589 6438579
COMM LINE 83??
COMM 596009 6435176    605968 6434261
COMM LINE 84??
COMM 601654 6434125    610340 6439080
COMM LINE 85??
COMM 606908 6454490    616415 6451390
COMM LINE 86??
COMM 627600 6439000    627600 6444000
COMM LINE 87??
COMM 589001 6519000    594001 6519000
COMM LINE 88??
COMM 576100 6570000    581100 6570000
COMM LINE 89??
COMM 576100 6604800    581100 6604800
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                 Skyvan SC-3-200, VH-WGT
COMM                                       CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                         Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                      stinger mount
COMM RESOLUTION:                                            0.001 nT
COMM RECORDING INTERVAL:                                       0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                             25Hz TEMPEST
COMM INSTALLATION:                 Transmitter loop mounted on the aircraft
COMM                                       Receiver coils in a towed bird
```

```
COMM COIL ORIENTATION:                                                X,Z
COMM RECORDING INTERVAL:                                            0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER (TEM AVERAGE):      120.8 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER (TEM AVERAGE):        39.4 m
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER (WGT AVERAGE):      114.8 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER (WGT AVERAGE):        44.6 m
COMM
COMM RADAR ALTIMETER:                                  Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                                  Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM LASER ALTIMETER:                                   Optech 501SB (TEM)
COMM LASER ALTIMETER:                              Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                            0.2 s
COMM
COMM NAVIGATION:                                real-time differential GPS
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM ACQUISITION SYSTEM:                                         PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                   56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                              0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                              0.6 s
COMM IGRF BASE VALUE APPLIED                                      56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                            0.2 s
COMM Z-COMPONENT EM DATA                                            1.4 s
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA             0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA               0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM --------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM --------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
```

```
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
COMM Field     Columns  Type Format  Channel        Description
COMM
COMM 1   1 -   4  int  (i 4)   PROJECT      [Project Number                     ]
COMM 2   5 -   6  int  (i 2)   AIRCRAFT     [Aircraft (1-TEM, 2-WGT)            ]
COMM 3   7 -  10  int  (i 4)   FLIGHT       [Flight                             ]
COMM 4  11 -  16  int  (i 6)   LINE         [Line                               ]
COMM 5  17 -  24  real (f 8.1) FID          [Fiducial                       (s) ]
COMM 6  25 -  33  int  (i 9)   DATE         [Date                      ddmmyyyy ]
COMM 7  34 -  41  real (f 8.1) TIME         [Time                           (s) ]
COMM 8  42 -  45  int  (i 4)   BEARING      [Bearing                      (deg) ]
COMM 9  46 -  58  real (f13.6) LONGITUDE    [Longitude GDA94              (deg) ]
COMM10  59 -  71  real (f13.6) LATITUDE     [Latitude  GDA94              (deg) ]
COMM11  72 -  82  real (f11.2) EASTING      [Easting   MGA55                (m) ]
COMM12  83 -  94  real (f12.2) NORTHING     [Northing  MGA55                (m) ]
COMM13  95 - 101  real (f 7.2) Lasalt_final [Final Laser Altimeter          (m) ]
COMM14 102 - 108  real (f 7.2) Radalt_final [Final Radar Altimeter          (m) ]
COMM15 109 - 116  real (f 8.2) TxHeight     [Transmitter GPS height         (m) ]
COMM16 117 - 124  real (f 8.2) DTM          [DTM                            (m) ]
COMM17 125 - 134  real (f10.3) MAG          [Compensated TMI               (nT) ]
COMM18 135 - 144  real (f10.5) Roll_Raw     [Raw Tx loop roll             (deg) ]
COMM19 145 - 154  real (f10.5) Pitch_Raw    [Raw Tx loop pitch            (deg) ]
COMM20 155 - 160  real (f 6.1) TxLasalt     [Tx ground clearance            (m) ]
COMM21 161 - 168  real (f 8.2) HSep_Raw     [Raw Tx-Rx horizontal separation  (m) ]
COMM22 169 - 176  real (f 8.2) VSep_Raw     [Raw Tx-Rx vertical separation    (m) ]
COMM23 177 - 186  real (f10.3) X_Geofact    [X_Geometric factor                 ]
COMM24 187 - 196  real (f10.3) Z_Geofact    [Z_Geometric factor                 ]
COMM25 197 - 208  real (f12.6) EMX_Raw[1]   [Raw EMX01 Window              (fT) ]
COMM26 209 - 220  real (f12.6) EMX_Raw[2]   [Raw EMX02 Window              (fT) ]
COMM27 221 - 232  real (f12.6) EMX_Raw[3]   [Raw EMX03 Window              (fT) ]
COMM28 233 - 244  real (f12.6) EMX_Raw[4]   [Raw EMX04 Window              (fT) ]
COMM29 245 - 256  real (f12.6) EMX_Raw[5]   [Raw EMX05 Window              (fT) ]
COMM30 257 - 268  real (f12.6) EMX_Raw[6]   [Raw EMX06 Window              (fT) ]
```

```
COMM31 269 - 280  real (f12.6) EMX_Raw[7]    [Raw EMX07 Window                (fT) ]
COMM32 281 - 292  real (f12.6) EMX_Raw[8]    [Raw EMX08 Window                (fT) ]
COMM33 293 - 304  real (f12.6) EMX_Raw[9]    [Raw EMX09 Window                (fT) ]
COMM34 305 - 316  real (f12.6) EMX_Raw[10]   [Raw EMX10 Window                (fT) ]
COMM35 317 - 328  real (f12.6) EMX_Raw[11]   [Raw EMX11 Window                (fT) ]
COMM36 329 - 340  real (f12.6) EMX_Raw[12]   [Raw EMX12 Window                (fT) ]
COMM37 341 - 352  real (f12.6) EMX_Raw[13]   [Raw EMX13 Window                (fT) ]
COMM38 353 - 364  real (f12.6) EMX_Raw[14]   [Raw EMX14 Window                (fT) ]
COMM39 365 - 376  real (f12.6) EMX_Raw[15]   [Raw EMX15 Window                (fT) ]
COMM40 377 - 388  real (f12.6) EMZ_Raw[1]    [Raw EMZ01 Window                (fT) ]
COMM41 389 - 400  real (f12.6) EMZ_Raw[2]    [Raw EMZ02 Window                (fT) ]
COMM42 401 - 412  real (f12.6) EMZ_Raw[3]    [Raw EMZ03 Window                (fT) ]
COMM43 413 - 424  real (f12.6) EMZ_Raw[4]    [Raw EMZ04 Window                (fT) ]
COMM44 425 - 436  real (f12.6) EMZ_Raw[5]    [Raw EMZ05 Window                (fT) ]
COMM45 437 - 448  real (f12.6) EMZ_Raw[6]    [Raw EMZ06 Window                (fT) ]
COMM46 449 - 460  real (f12.6) EMZ_Raw[7]    [Raw EMZ07 Window                (fT) ]
COMM47 461 - 472  real (f12.6) EMZ_Raw[8]    [Raw EMZ08 Window                (fT) ]
COMM48 473 - 484  real (f12.6) EMZ_Raw[9]    [Raw EMZ09 Window                (fT) ]
COMM49 485 - 496  real (f12.6) EMZ_Raw[10]   [Raw EMZ10 Window                (fT) ]
COMM50 497 - 508  real (f12.6) EMZ_Raw[11]   [Raw EMZ11 Window                (fT) ]
COMM51 509 - 520  real (f12.6) EMZ_Raw[12]   [Raw EMZ12 Window                (fT) ]
COMM52 521 - 532  real (f12.6) EMZ_Raw[13]   [Raw EMZ13 Window                (fT) ]
COMM53 533 - 544  real (f12.6) EMZ_Raw[14]   [Raw EMZ14 Window                (fT) ]
COMM54 545 - 556  real (f12.6) EMZ_Raw[15]   [Raw EMZ15 Window                (fT) ]
COMM55 557 - 566  real (f10.3) X_Sferics     [X_Sferics                            ]
COMM56 567 - 576  real (f10.3) Z_Sferics     [Z_Sferics                            ]
COMM57 577 - 586  real (f10.3) X_VLF1        [X_18.2kHz                            ]
COMM58 587 - 596  real (f10.3) X_VLF2        [X_19.8kHz                            ]
COMM59 597 - 606  real (f10.3) X_VLF3        [X_21.4kHz                            ]
COMM60 607 - 616  real (f10.3) X_VLF4        [X_22.2kHz                            ]
COMM61 617 - 626  real (f10.3) Z_VLF1        [Z_18.2kHz                            ]
COMM62 627 - 636  real (f10.3) Z_VLF2        [Z_19.8kHz                            ]
COMM63 637 - 646  real (f10.3) Z_VLF3        [Z_21.4kHz                            ]
COMM64 647 - 656  real (f10.3) Z_VLF4        [Z_22.2kHz                            ]
COMM65 657 - 666  real (f10.3) X_Powerline   [X_Powerline                          ]
COMM66 667 - 676  real (f10.3) Z_Powerline   [Z_Powerline                          ]
COMM67 677 - 686  real (f10.3) X_Lowfreq     [X_Lowfreq                            ]
COMM68 687 - 696  real (f10.3) Z_Lowfreq     [Z_Lowfreq                            ]
COMM   697 - 698 <newline>
COMM________________________________________________________________________________
COMM
COMM  Total number of lines :   40
COMM
COMM   Flt    Line   Start X   Start Y     End X     End Y      Kms
COMM
COMM     9   81090    610947   6424980    613359   6434737    10.05
COMM    27   89270    581110   6604810    576057   6604802     5.05
COMM    30   89300    581107   6604792    576096   6604798     5.01
COMM     9   82090    603637   6438623    601917   6428686    10.08
COMM     9   83090    606145   6434244    595999   6435175    10.19
COMM    16   84162    610604   6429292    603839   6436726    10.05
COMM    26   84260    610635   6429320    603861   6436704    10.02
COMM     1   85010    606913   6454499    616455   6451378    10.04
COMM    16   85161    606881   6454542    616420   6451386    10.05
COMM     1   86010    627548   6444035    627595   6439001     5.03
COMM     8   86081    627602   6443986    627598   6439012     4.97
COMM    12   86120    627598   6438986    627610   6444019     5.03
COMM    16   86160    627596   6444029    627598   6438957     5.07
COMM    17   86170    627598   6444019    627593   6438985     5.03
COMM    18   86180    627590   6443997    627610   6438971     5.03
COMM    19   86190    627597   6444005    627603   6438977     5.03
COMM    23   86230    627592   6444037    627596   6438990     5.05
COMM    27   86270    627614   6444041    627605   6438976     5.07
COMM    31   86310    627596   6444015    627597   6438981     5.03
COMM    34   86340    627592   6443991    627599   6438980     5.01
COMM    37   86370    627594   6444047    627603   6438963     5.08
COMM    40   86400    627612   6444039    627605   6438953     5.09
COMM    41   86410    627606   6444023    627591   6438971     5.05
COMM    48   86480    627595   6444017    627607   6438998     5.02
COMM    51   86511    627549   6444012    627605   6438990     5.02
COMM    55   86550    627604   6444025    627601   6438948     5.08
```

COMM	57	86570	627602	6444023	627607	6438984	5.04
COMM	61	86610	627601	6444008	627601	6438961	5.05
COMM	65	86650	627602	6444009	627599	6438995	5.01
COMM	71	86710	627600	6444019	627601	6439000	5.02
COMM	76	86760	627602	6443999	627602	6438976	5.02
COMM	2	87020	594022	6519005	588978	6518995	5.04
COMM	3	87030	594030	6518998	588969	6519006	5.06
COMM	4	87040	590312	6518983	593994	6518999	3.68
COMM	7	87070	588980	6518995	594025	6519016	5.05
COMM	10	87100	594056	6518996	588956	6519006	5.10
COMM	32	87320	594010	6519005	588967	6519005	5.04
COMM	36	87361	593993	6519006	588948	6519003	5.05
COMM	20	88200	581095	6570005	576044	6570007	5.05
COMM	22	88220	581121	6570005	576057	6569996	5.06
COMM							

COMM Total Kilometres : 235.52

DUBBO Seismic/Borehole/Repeat Lines – GEOMETRY CORRECTED
(LMRAEM_Test_RptLines_HPR.HDR)

```
COMM JOB NUMBER:                                                    1835
COMM AREA NUMBER:                               Seismic/Borehole/Repeat Lines
COMM SURVEY COMPANY:                                   Fugro Airborne Surveys
COMM CLIENT:                                                         BRS
COMM SURVEY TYPE:                                      25Hz TEMPEST Survey
COMM AREA NAME:                                    Lower Macquarie River AEM
COMM STATE:                                                          NSW
COMM COUNTRY:                                                  Australia
COMM SURVEY FLOWN:                                     January-April 2007
COMM LOCATED DATA CREATED:                                     June 2007
COMM
COMM DATUM:                                                        GDA94
COMM PROJECTION:                                                     MGA
COMM ZONE:                                                            55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                        N/A m
COMM TRAVERSE LINE DIRECTION:                                Various deg
COMM NOMINAL TERRAIN CLEARANCE:                                    115 m
COMM FINAL LINE KILOMETRES:                                     235.5 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                81090 - 88320
COMM
COMM LINE COORDINATES (GDA94, MGA55)
COMM
COMM LINE 81??
COMM 613347 6434698    610966 6424986
COMM LINE 82??
COMM 601924 6428719    603589 6438579
COMM LINE 83??
COMM 596009 6435176    605968 6434261
COMM LINE 84??
COMM 601654 6434125    610340 6439080
COMM LINE 85??
COMM 606908 6454490    616415 6451390
COMM LINE 86??
COMM 627600 6439000    627600 6444000
COMM LINE 87??
COMM 589001 6519000    594001 6519000
COMM LINE 88??
COMM 576100 6570000    581100 6570000
COMM LINE 89??
COMM 576100 6604800    581100 6604800
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                     Skyvan SC-3-200, VH-WGT
COMM                                           CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                              Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                          stinger mount
COMM RESOLUTION:                                                0.001 nT
COMM RECORDING INTERVAL:                                           0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                  25Hz TEMPEST
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
```

```
COMM                                             Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                      X,Z
COMM RECORDING INTERVAL:                                                  0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                            115 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                              45 m
COMM
COMM RADAR ALTIMETER:                                        Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                                        Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                                  0.2 s
COMM
COMM LASER ALTIMETER:                                         Optech 501SB (TEM)
COMM LASER ALTIMETER:                                    Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                                  0.2 s
COMM
COMM NAVIGATION:                                      real-time differential GPS
COMM RECORDING INTERVAL:                                                  1.0 s
COMM
COMM ACQUISITION SYSTEM:                                              PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                                        56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                                    0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                                    0.6 s
COMM IGRF BASE VALUE APPLIED                                           56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                                     2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                                  0.2 s
COMM Z-COMPONENT EM DATA                                                  1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA                   0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                     0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM ---------------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ---------------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
```

```
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM
COMM ______________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    :  68
COMM
Field     Columns  Type Format  Channel         Description

 1     1 -   4  int  (i 4)   PROJECT         [Project Number                             ]
 2     5 -   6  int  (i 2)   AIRCRAFT        [Aircraft (1-TEM, 2-WGT)                    ]
 3     7 -  10  int  (i 4)   FLIGHT          [Flight                                     ]
 4    11 -  16  int  (i 6)   LINE            [Line                                       ]
 5    17 -  24  real (f 8.1) FID             [Fiducial                               (s) ]
 6    25 -  33  int  (i 9)   DATE            [Date                              ddmmyyyy ]
 7    34 -  41  real (f 8.1) TIME            [Time                                   (s) ]
 8    42 -  45  int  (i 4)   BEARING         [Bearing                              (deg) ]
 9    46 -  58  real (f13.6) LONGITUDE       [Longitude GDA94                      (deg) ]
10    59 -  71  real (f13.6) LATITUDE        [Latitude  GDA94                      (deg) ]
11    72 -  82  real (f11.2) EASTING         [Easting   MGA55                        (m) ]
12    83 -  94  real (f12.2) NORTHING        [Northing  MGA55                        (m) ]
13    95 - 101  real (f 7.2) Lasalt_final    [Final Laser Altimeter                  (m) ]
14   102 - 108  real (f 7.2) Radalt_final    [Final Radar Altimeter                  (m) ]
15   109 - 116  real (f 8.2) TxHeight        [Transmitter GPS height                 (m) ]
16   117 - 124  real (f 8.2) DTM             [DTM                                    (m) ]
17   125 - 134  real (f10.3) MAG             [Compensated TMI                       (nT) ]
18   135 - 144  real (f10.5) Roll_Final      [Final Tx loop roll                   (deg) ]
19   145 - 154  real (f10.5) Pitch_Final     [Final Tx loop pitch                  (deg) ]
20   155 - 160  real (f 6.1) TxAlt           [Tx ground clearance                    (m) ]
21   161 - 168  real (f 8.2) HSep_Final      [Final Tx-Rx horizontal separation  (m) ]
22   169 - 176  real (f 8.2) VSep_Final      [Final Tx-Rx vertical separation    (m) ]
23   177 - 186  real (f10.3) X_Geofact       [X_Geometric factor                         ]
24   187 - 196  real (f10.3) Z_Geofact       [Z_Geometric factor                         ]
25   197 - 208  real (f12.6) EMX_Final[1]    [Final EMX01 Window                    (fT) ]
26   209 - 220  real (f12.6) EMX_Final[2]    [Final EMX02 Window                    (fT) ]
27   221 - 232  real (f12.6) EMX_Final[3]    [Final EMX03 Window                    (fT) ]
28   233 - 244  real (f12.6) EMX_Final[4]    [Final EMX04 Window                    (fT) ]
```

```
29   245 - 256  real (f12.6) EMX_Final[5]    [Final EMX05 Window              (fT) ]
30   257 - 268  real (f12.6) EMX_Final[6]    [Final EMX06 Window              (fT) ]
31   269 - 280  real (f12.6) EMX_Final[7]    [Final EMX07 Window              (fT) ]
32   281 - 292  real (f12.6) EMX_Final[8]    [Final EMX08 Window              (fT) ]
33   293 - 304  real (f12.6) EMX_Final[9]    [Final EMX09 Window              (fT) ]
34   305 - 316  real (f12.6) EMX_Final[10]   [Final EMX10 Window              (fT) ]
35   317 - 328  real (f12.6) EMX_Final[11]   [Final EMX11 Window              (fT) ]
36   329 - 340  real (f12.6) EMX_Final[12]   [Final EMX12 Window              (fT) ]
37   341 - 352  real (f12.6) EMX_Final[13]   [Final EMX13 Window              (fT) ]
38   353 - 364  real (f12.6) EMX_Final[14]   [Final EMX14 Window              (fT) ]
39   365 - 376  real (f12.6) EMX_Final[15]   [Final EMX15 Window              (fT) ]
40   377 - 388  real (f12.6) EMZ_Final[1]    [Final EMZ01 Window              (fT) ]
41   389 - 400  real (f12.6) EMZ_Final[2]    [Final EMZ02 Window              (fT) ]
42   401 - 412  real (f12.6) EMZ_Final[3]    [Final EMZ03 Window              (fT) ]
43   413 - 424  real (f12.6) EMZ_Final[4]    [Final EMZ04 Window              (fT) ]
44   425 - 436  real (f12.6) EMZ_Final[5]    [Final EMZ05 Window              (fT) ]
45   437 - 448  real (f12.6) EMZ_Final[6]    [Final EMZ06 Window              (fT) ]
46   449 - 460  real (f12.6) EMZ_Final[7]    [Final EMZ07 Window              (fT) ]
47   461 - 472  real (f12.6) EMZ_Final[8]    [Final EMZ08 Window              (fT) ]
48   473 - 484  real (f12.6) EMZ_Final[9]    [Final EMZ09 Window              (fT) ]
49   485 - 496  real (f12.6) EMZ_Final[10]   [Final EMZ10 Window              (fT) ]
50   497 - 508  real (f12.6) EMZ_Final[11]   [Final EMZ11 Window              (fT) ]
51   509 - 520  real (f12.6) EMZ_Final[12]   [Final EMZ12 Window              (fT) ]
52   521 - 532  real (f12.6) EMZ_Final[13]   [Final EMZ13 Window              (fT) ]
53   533 - 544  real (f12.6) EMZ_Final[14]   [Final EMZ14 Window              (fT) ]
54   545 - 556  real (f12.6) EMZ_Final[15]   [Final EMZ15 Window              (fT) ]
55   557 - 566  real (f10.3) X_Sferics       [X_Sferics                            ]
56   567 - 576  real (f10.3) Z_Sferics       [Z_Sferics                            ]
57   577 - 586  real (f10.3) X_VLF1          [X_18.2kHz                            ]
58   587 - 596  real (f10.3) X_VLF2          [X_19.8kHz                            ]
59   597 - 606  real (f10.3) X_VLF3          [X_21.4kHz                            ]
60   607 - 616  real (f10.3) X_VLF4          [X_22.2kHz                            ]
61   617 - 626  real (f10.3) Z_VLF1          [Z_18.2kHz                            ]
62   627 - 636  real (f10.3) Z_VLF2          [Z_19.8kHz                            ]
63   637 - 646  real (f10.3) Z_VLF3          [Z_21.4kHz                            ]
64   647 - 656  real (f10.3) Z_VLF4          [Z_22.2kHz                            ]
65   657 - 666  real (f10.3) X_Powerline     [X_Powerline                          ]
66   667 - 676  real (f10.3) Z_Powerline     [Z_Powerline                          ]
67   677 - 686  real (f10.3) X_Lowfreq       [X_Lowfreq                            ]
68   687 - 696  real (f10.3) Z_Lowfreq       [Z_Lowfreq                            ]
     697 - 698 <newline>
COMM ________________________________________________________________________________
COMM
COMM  Total number of lines :   40
COMM
COMM Total Kilometres :       235.52
```

DUBBO Seismic/Borehole/Repeat Lines – Conductivity data

```
COMM JOB NUMBER:                                                    1835
COMM AREA NUMBER:                           Seismic/Borehole/Repeat Lines
COMM SURVEY COMPANY:                               Fugro Airborne Surveys
COMM CLIENT:                                                         BRS
COMM SURVEY TYPE:                                     25Hz TEMPEST Survey
COMM AREA NAME:                                 Lower Macquarie River AEM
COMM STATE:                                                          NSW
COMM COUNTRY:                                                  Australia
COMM SURVEY FLOWN:                                  January-April 2007
COMM LOCATED DATA CREATED:                                     June 2007
COMM
COMM DATUM:                                                        GDA94
COMM PROJECTION:                                                     MGA
COMM ZONE:                                                            55
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                        N/A m
COMM TRAVERSE LINE DIRECTION:                                Various deg
COMM NOMINAL TERRAIN CLEARANCE:                                    115 m
COMM FINAL LINE KILOMETRES:                                     235.5 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                81090 - 88320
COMM
COMM LINE COORDINATES (GDA94, MGA55)
COMM
COMM LINE 81??
COMM 613347 6434698    610966 6424986
COMM LINE 82??
COMM 601924 6428719    603589 6438579
COMM LINE 83??
COMM 596009 6435176    605968 6434261
COMM LINE 84??
COMM 601654 6434125    610340 6439080
COMM LINE 85??
COMM 606908 6454490    616415 6451390
COMM LINE 86??
COMM 627600 6439000    627600 6444000
COMM LINE 87??
COMM 589001 6519000    594001 6519000
COMM LINE 88??
COMM 576100 6570000    581100 6570000
COMM LINE 89??
COMM 576100 6604800    581100 6604800
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                   Skyvan SC-3-200, VH-WGT
COMM                                        CASA C212 Turbo Prop, VH-TEM
COMM
COMM MAGNETOMETER:                          Scintrex Cs-2 Caesium Vapour
COMM INSTALLATION:                                         stinger mount
COMM RESOLUTION:                                                0.001 nT
COMM RECORDING INTERVAL:                                           0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                25Hz TEMPEST
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
COMM                                         Receiver coils in a towed bird
COMM COIL ORIENTATION:                                               X,Z
```

```
COMM RECORDING INTERVAL:                                         0.2 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                   115 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                     45 m
COMM
COMM RADAR ALTIMETER:                               Sperry RT-220 (TEM)
COMM RADAR ALTIMETER:                               Collins ALT55 (WGT)
COMM RECORDING INTERVAL:                                         0.2 s
COMM
COMM LASER ALTIMETER:                                Optech 501SB (TEM)
COMM LASER ALTIMETER:                           Regal LD90-3300HR (WGT)
COMM RECORDING INTERVAL:                                         0.2 s
COMM
COMM NAVIGATION:                               real-time differential GPS
COMM RECORDING INTERVAL:                                         1.0 s
COMM
COMM ACQUISITION SYSTEM:                                     PDAS-1000
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL BASE VALUE APPLIED                               56715 nT
COMM PARALLAX CORRECTION APPLIED (WGT)                           0.4 s
COMM PARALLAX CORRECTION APPLIED (TEM)                           0.6 s
COMM IGRF BASE VALUE APPLIED                                  56786 nT
COMM IGRF MODEL 2005 EXTRAPOLATED TO                            2006.9
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                         0.2 s
COMM Z-COMPONENT EM DATA                                         1.4 s
COMM DATA CORRECTED FOR TRANSMITTER HEIGHT, PITCH AND ROLL
COMM DATA CORRECTED FOR TRANSMITTER-RECEIVER GEOMETRY VARIATIONS
COMM DATA HAVE BEEN MICROLEVELLED
COMM CONDUCTIVITY DEPTH INVERSION CALCULATED              EMFlow V5.10
COMM CONDUCTIVITIES CALCULATED USING corrected EM DATA
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA          0.6 s
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA            0.0 s
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM -------------------------------------------------------------------
COMM The accuracy of the elevation calculation is directly dependent on
COMM the accuracy of the two input parameters, radar altitude and GPS
COMM altitude.  The radar altitude value may be erroneous in areas of heavy
COMM tree cover, where the altimeter reflects the distance to the tree
COMM canopy rather than the ground.  The GPS altitude value is primarily
COMM dependent on the number of available satellites. Although
COMM post-processing of GPS data will yield X and Y accuracies in the
COMM order of 1-2 metres, the accuracy of the altitude value is usually
COMM much less, sometimes in the ±5 metre range.  Further inaccuracies
COMM may be introduced during the interpolation and gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM -------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM TEMPEST IS A TIME-DOMAIN SQUARE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
```

```
COMM WITH 2 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 5 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 15 WINDOWS ARE:
COMM
COMM WINDOW      START       END      CENTRE
COMM    1        0.007      0.020      0.013
COMM    2        0.033      0.047      0.040
COMM    3        0.060      0.073      0.067
COMM    4        0.087      0.127      0.107
COMM    5        0.140      0.207      0.173
COMM    6        0.220      0.340      0.280
COMM    7        0.353      0.553      0.453
COMM    8        0.567      0.873      0.720
COMM    9        0.887      1.353      1.120
COMM   10        1.367      2.100      1.733
COMM   11        2.113      3.273      2.693
COMM   12        3.287      5.113      4.200
COMM   13        5.127      7.993      6.560
COMM   14        8.007     12.393     10.200
COMM   15       12.407     19.993     16.200
COMM
COMM PULSE WIDTH: 10 ms
COMM
COMM TEMPEST EM data are transformed to the response that would be
COMM obtained with a B-field sensor for a 100% duty cycle square
COMM waveform at the base frequency, involving a 1A change in
COMM current (from -0.5A to +0.5A to -0.5A) in a 1sq.m transmitter.
COMM It is this configuration, rather than the actual acquisition
COMM configuration, which must be specified when modelling TEMPEST data.
COMM
COMM
COMM ________________________________________________________________________
COMM
COMM Output field format : DOS  - Flat ascii
COMM Number of fields    : 127
COMM
COMM Field     Columns  Type Format  Channel             Description
COMM
COMM  1    1 -   4  int  (i 4)   PROJECT      [Project Number                        ]
COMM  2    5 -   6  int  (i 2)   AIRCRAFT     [Aircraft (1-TEM, 2-WGT)               ]
COMM  3    7 -  10  int  (i 4)   FLIGHT       [Flight                                ]
COMM  4   11 -  16  int  (i 6)   LINE         [Line                                  ]
COMM  5   17 -  24  real (f 8.1) FID          [Fiducial                          (s) ]
COMM  6   25 -  33  int  (i 9)   DATE         [Date                         ddmmyyyy ]
COMM  7   34 -  41  real (f 8.1) TIME         [Time                              (s) ]
COMM  8   42 -  45  int  (i 4)   BEARING      [Bearing                         (deg) ]
COMM  9   46 -  58  real (f13.6) LONGITUDE    [Longitude GDA94                 (deg) ]
COMM 10   59 -  71  real (f13.6) LATITUDE     [Latitude  GDA94                 (deg) ]
COMM 11   72 -  82  real (f11.2) EASTING      [Easting   MGA55                   (m) ]
COMM 12   83 -  94  real (f12.2) NORTHING     [Northing  MGA55                   (m) ]
COMM 13   95 - 101  real (f 7.2) Lasalt_final [Final Laser Altimeter             (m) ]
COMM 14  102 - 108  real (f 7.2) Radalt_final [Final Radar Altimeter             (m) ]
COMM 15  109 - 116  real (f 8.2) TxHeight     [Transmitter GPS height            (m) ]
COMM 16  117 - 124  real (f 8.2) DTM          [DTM                               (m) ]
COMM 17  125 - 134  real (f10.3) MAG          [Compensated TMI                  (nT) ]
COMM 18  135 - 144  real (f10.3) CND[1]       [Conductivity_001     0-5 m     (mS/m) ]
COMM 19  145 - 154  real (f10.3) CND[2]       [Conductivity_002     5-10 m    (mS/m) ]
COMM 20  155 - 164  real (f10.3) CND[3]       [Conductivity_003    10-15 m    (mS/m) ]
COMM 21  165 - 174  real (f10.3) CND[4]       [Conductivity_004    15-20 m    (mS/m) ]
COMM 22  175 - 184  real (f10.3) CND[5]       [Conductivity_005    20-25 m    (mS/m) ]
COMM 23  185 - 194  real (f10.3) CND[6]       [Conductivity_006    25-30 m    (mS/m) ]
COMM 24  195 - 204  real (f10.3) CND[7]       [Conductivity_007    30-35 m    (mS/m) ]
COMM 25  205 - 214  real (f10.3) CND[8]       [Conductivity_008    35-40 m    (mS/m) ]
COMM 26  215 - 224  real (f10.3) CND[9]       [Conductivity_009    40-45 m    (mS/m) ]
COMM 27  225 - 234  real (f10.3) CND[10]      [Conductivity_010    45-50 m    (mS/m) ]
COMM 28  235 - 244  real (f10.3) CND[11]      [Conductivity_011    50-55 m    (mS/m) ]
COMM 29  245 - 254  real (f10.3) CND[12]      [Conductivity_012    55-60 m    (mS/m) ]
```

```
COMM 30  255 - 264  real (f10.3) CND[13]      [Conductivity_013    60-65 m    (mS/m) ]
COMM 31  265 - 274  real (f10.3) CND[14]      [Conductivity_014    65-70 m    (mS/m) ]
COMM 32  275 - 284  real (f10.3) CND[15]      [Conductivity_015    70-75 m    (mS/m) ]
COMM 33  285 - 294  real (f10.3) CND[16]      [Conductivity_016    75-80 m    (mS/m) ]
COMM 34  295 - 304  real (f10.3) CND[17]      [Conductivity_017    80-85 m    (mS/m) ]
COMM 35  305 - 314  real (f10.3) CND[18]      [Conductivity_018    85-90 m    (mS/m) ]
COMM 36  315 - 324  real (f10.3) CND[19]      [Conductivity_019    90-95 m    (mS/m) ]
COMM 37  325 - 334  real (f10.3) CND[20]      [Conductivity_020    95-100 m   (mS/m) ]
COMM 38  335 - 344  real (f10.3) CND[21]      [Conductivity_021   100-105 m   (mS/m) ]
COMM 39  345 - 354  real (f10.3) CND[22]      [Conductivity_022   105-110 m   (mS/m) ]
COMM 40  355 - 364  real (f10.3) CND[23]      [Conductivity_023   110-115 m   (mS/m) ]
COMM 41  365 - 374  real (f10.3) CND[24]      [Conductivity_024   115-120 m   (mS/m) ]
COMM 42  375 - 384  real (f10.3) CND[25]      [Conductivity_025   120-125 m   (mS/m) ]
COMM 43  385 - 394  real (f10.3) CND[26]      [Conductivity_026   125-130 m   (mS/m) ]
COMM 44  395 - 404  real (f10.3) CND[27]      [Conductivity_027   130-135 m   (mS/m) ]
COMM 45  405 - 414  real (f10.3) CND[28]      [Conductivity_028   135-140 m   (mS/m) ]
COMM 46  415 - 424  real (f10.3) CND[29]      [Conductivity_029   140-145 m   (mS/m) ]
COMM 47  425 - 434  real (f10.3) CND[30]      [Conductivity_030   145-150 m   (mS/m) ]
COMM 48  435 - 444  real (f10.3) CND[31]      [Conductivity_031   150-155 m   (mS/m) ]
COMM 49  445 - 454  real (f10.3) CND[32]      [Conductivity_032   155-160 m   (mS/m) ]
COMM 50  455 - 464  real (f10.3) CND[33]      [Conductivity_033   160-165 m   (mS/m) ]
COMM 51  465 - 474  real (f10.3) CND[34]      [Conductivity_034   165-170 m   (mS/m) ]
COMM 52  475 - 484  real (f10.3) CND[35]      [Conductivity_035   170-175 m   (mS/m) ]
COMM 53  485 - 494  real (f10.3) CND[36]      [Conductivity_036   175-180 m   (mS/m) ]
COMM 54  495 - 504  real (f10.3) CND[37]      [Conductivity_037   180-185 m   (mS/m) ]
COMM 55  505 - 514  real (f10.3) CND[38]      [Conductivity_038   185-190 m   (mS/m) ]
COMM 56  515 - 524  real (f10.3) CND[39]      [Conductivity_039   190-195 m   (mS/m) ]
COMM 57  525 - 534  real (f10.3) CND[40]      [Conductivity_040   195-200 m   (mS/m) ]
COMM118 1135 -1144  real (f10.3) INT_CND_0_5  [Interval Conductivity   0-5m   (mS/m) ]
COMM119 1145 -1154  real (f10.3) INT_CND_5_10 [Interval Conductivity   5-10m  (mS/m) ]
COMM120 1155 -1164  real (f10.3) INT_CND_10_15[Interval Conductivity  10-15m  (mS/m) ]
COMM121 1165 -1174  real (f10.3) INT_CND_15_20[Interval Conductivity  15-20m  (mS/m) ]
COMM122 1175 -1184  real (f10.3) INT_CND_20_30[Interval Conductivity  20-30m  (mS/m) ]
COMM123 1185 -1194  real (f10.3) INT_CND_30_40[Interval Conductivity  30-40m  (mS/m) ]
COMM124 1195 -1204  real (f10.3) INT_CND_40_60[Interval Conductivity  40-60m  (mS/m) ]
COMM125 1205 -1214  real (f10.3) INT_CND_60_10[Interval Conductivity  60-100m (mS/m) ]
COMM126 1215 -1224  real (f10.3) INT_CND_100_150[Interval Conductivity 100-150m (mS/m)]
COMM127 1225 -1234  real (f10.3) INT_CND_150_200[Interval Conductivity 150-200m (mS/m)]
COMM    1235 -1236 <newline>
COMM ________________________________________________________________________________
COMM
COMM Total number of lines :   40
COMM
COMM Total Kilometres :       235.52
```

APPENDIX VI – Standby Days

Aircraft: VH-TEM

Date	Days	Description	Kms Flown
26-Feb	1	Rain, High winds	0
27-Feb	1	Rain, High winds	0
28-Feb	1	Lightning Storms	0

Aircraft: VH-WGT

Date	Days	Description	Kms Flown
31-Jan	1	Spherics	0
1-Feb	1	High Winds	0
2-Feb	0.5	High Winds	159
5-Feb	1	High Winds	0
12-Feb	1	High Winds, Spherics	0
13-Feb	1	High Winds	0
28-Feb	1	Lightning Storms	0
5-Mar	1	Rain, Storms	0
6-Mar	1	Bad Weather	0
7-Mar	1	Rain, Low Cloud	0
8-Mar	1	Storms/Turbulence	0
16-Mar	2	Warren Open Day	0

APPENDIX VII – List of all Supplied Data and Products

Final Located Data

Area S1:
- LMRAEM_S1_HPR
- LMRAEM_S1_NON-HPR
- LMRAEM_S1_Cond

Areas N1-3/L1-6:
- LMRAEM_N1-3_HPR
- LMRAEM_N1-3_NON-HPR
- LMRAEM_N1-3_Cond

Seismic, borehole and repeat lines:
- LMRAEM_Test_RptLines_HPR
- LMRAEM_Test_RptLines_NON-HPR
- LMRAEM_Test_RptLines_Cond

For each filename above, there are 3 files. Extension '.asc' is the data, '.hdr' is a header describing the data format and survey specifications and '.i4' is a geosoft import template. For all files, some changes to field format were required – these are shown in the '.hdr' files.

For each of the suffixes HPR, NON-HPR and Cond, the contents are as follows:

NON-HPR	–	data **without** geometry correction as defined in Attachment 2, section 3.3.2 of the contract.
HPR	–	data **with** geometry correction as defined in Attachment 2, section 3.3.3 of the contract.
Cond	–	Conductivity-depth data as defined in Attachment 2, section 3.3.4 of the contract.

Final Gridded Products (delivered in ERMapper format GDA94 MGA55)

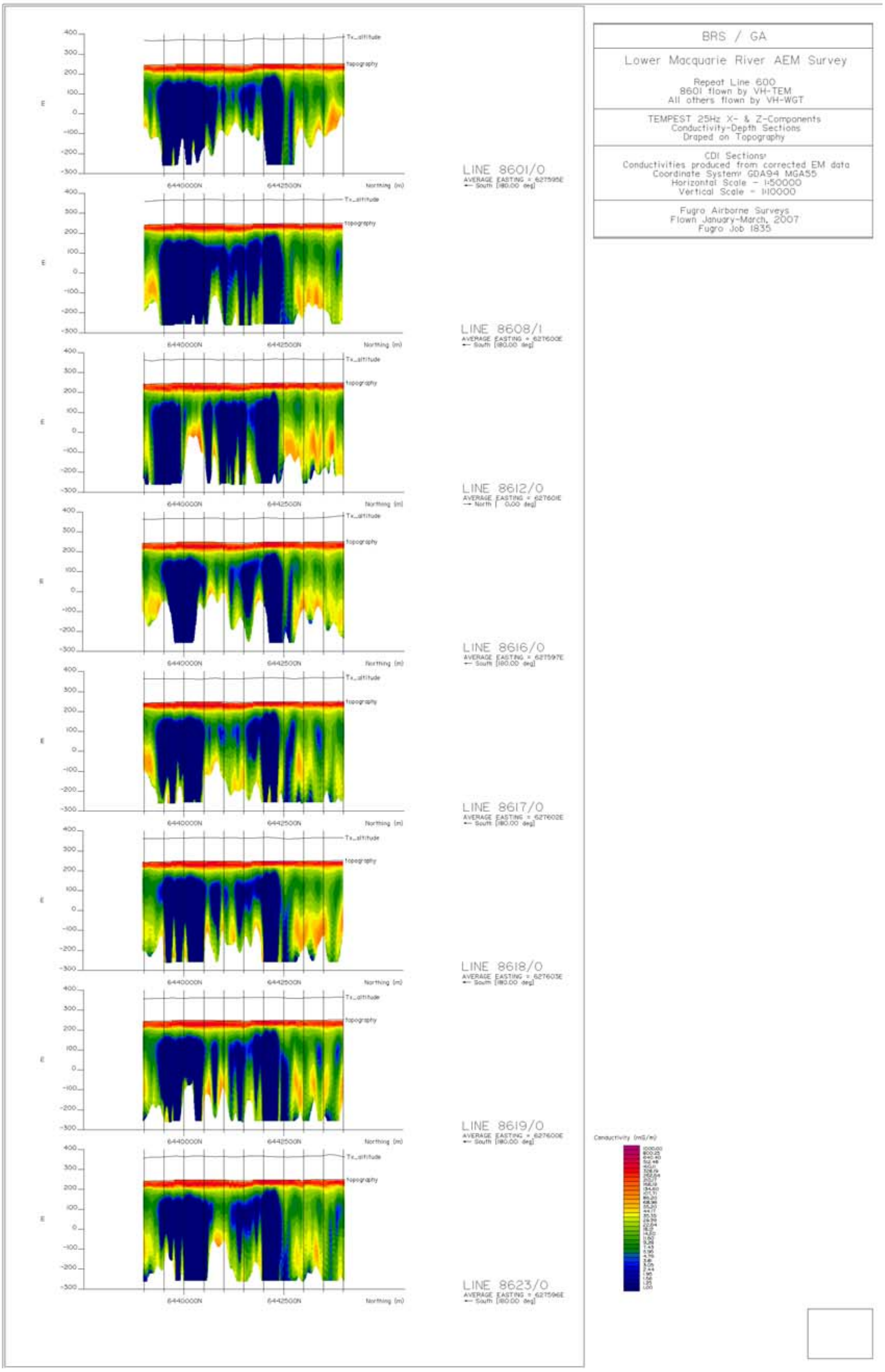
- Total Magnetic Intensity
- Digital Elevation Model
- Interval Conductivity grids for these depth ranges:
  - 0-5 metres
  - 5-10 metres
  - 10-15 metres
  - 15-20 metres
  - 20-30 metres
  - 30-40 metres
  - 40-60 metres
  - 60-100 metres
  - 100-150 metres
  - 150-200 metres

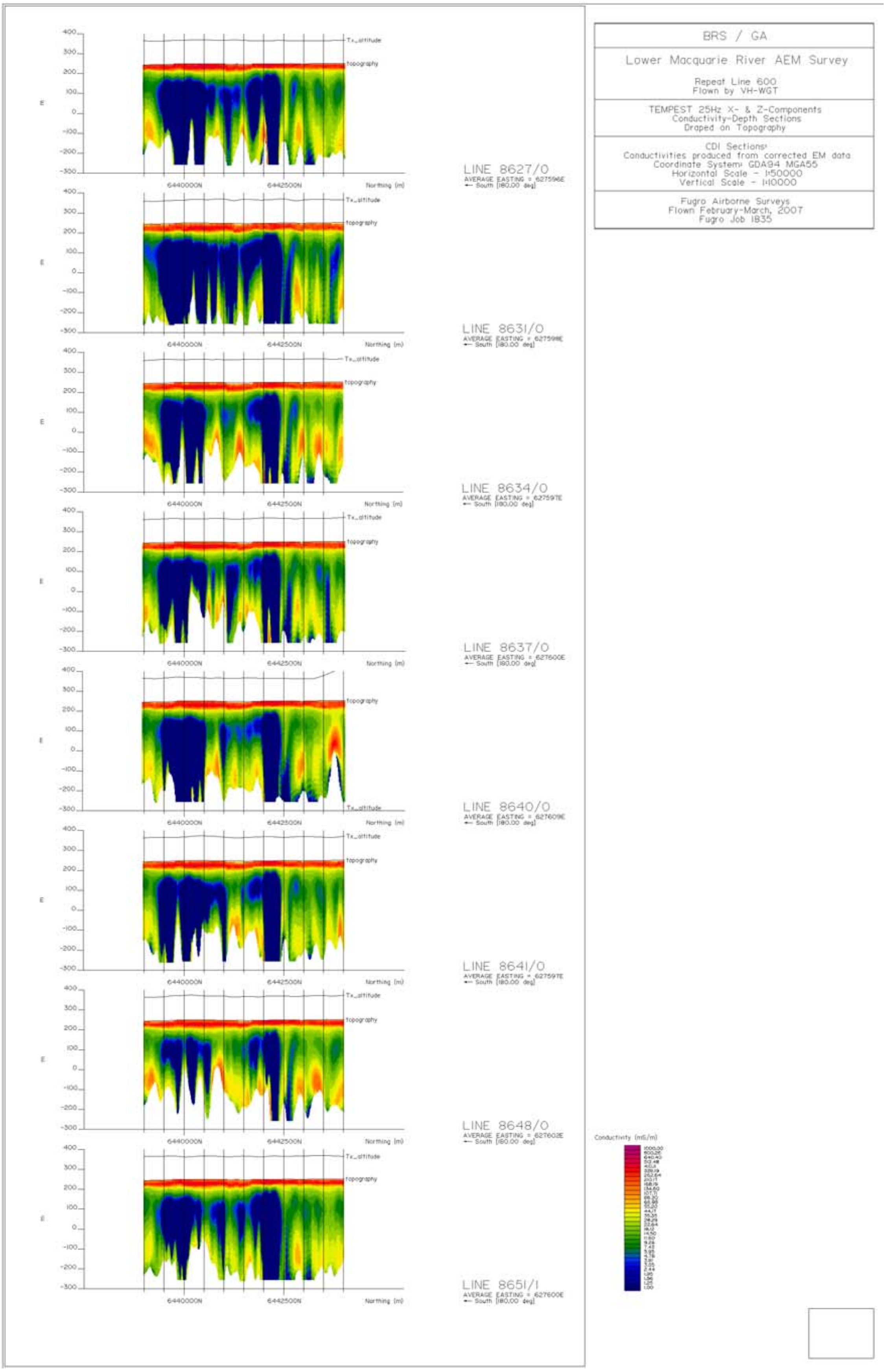
Final Acquisition and Processing Report

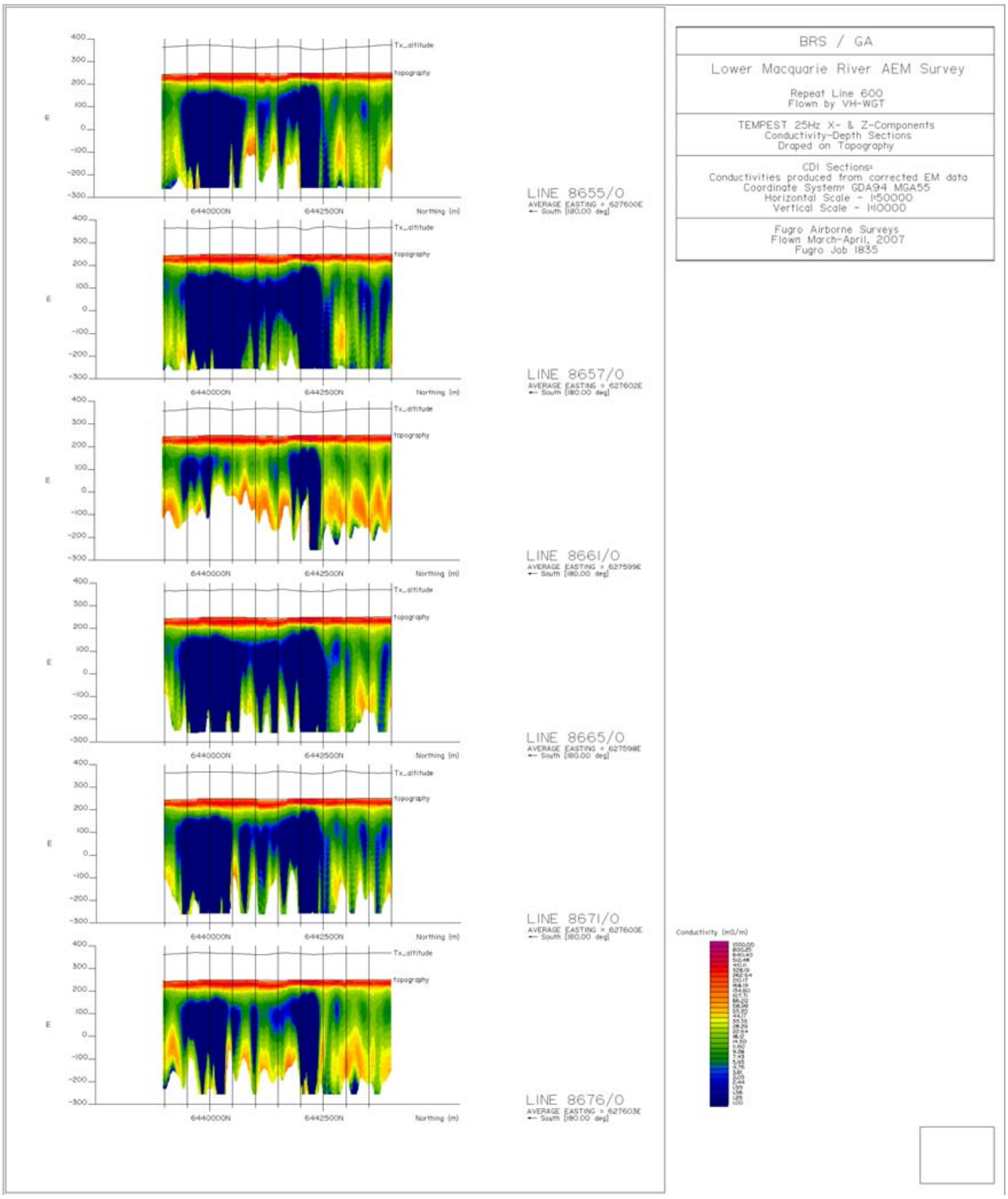
Delivered as hardcopy and digitally (6 copies)

APPENDIX VIII – EM Repeat line and Seismic / Borehole line CDIs

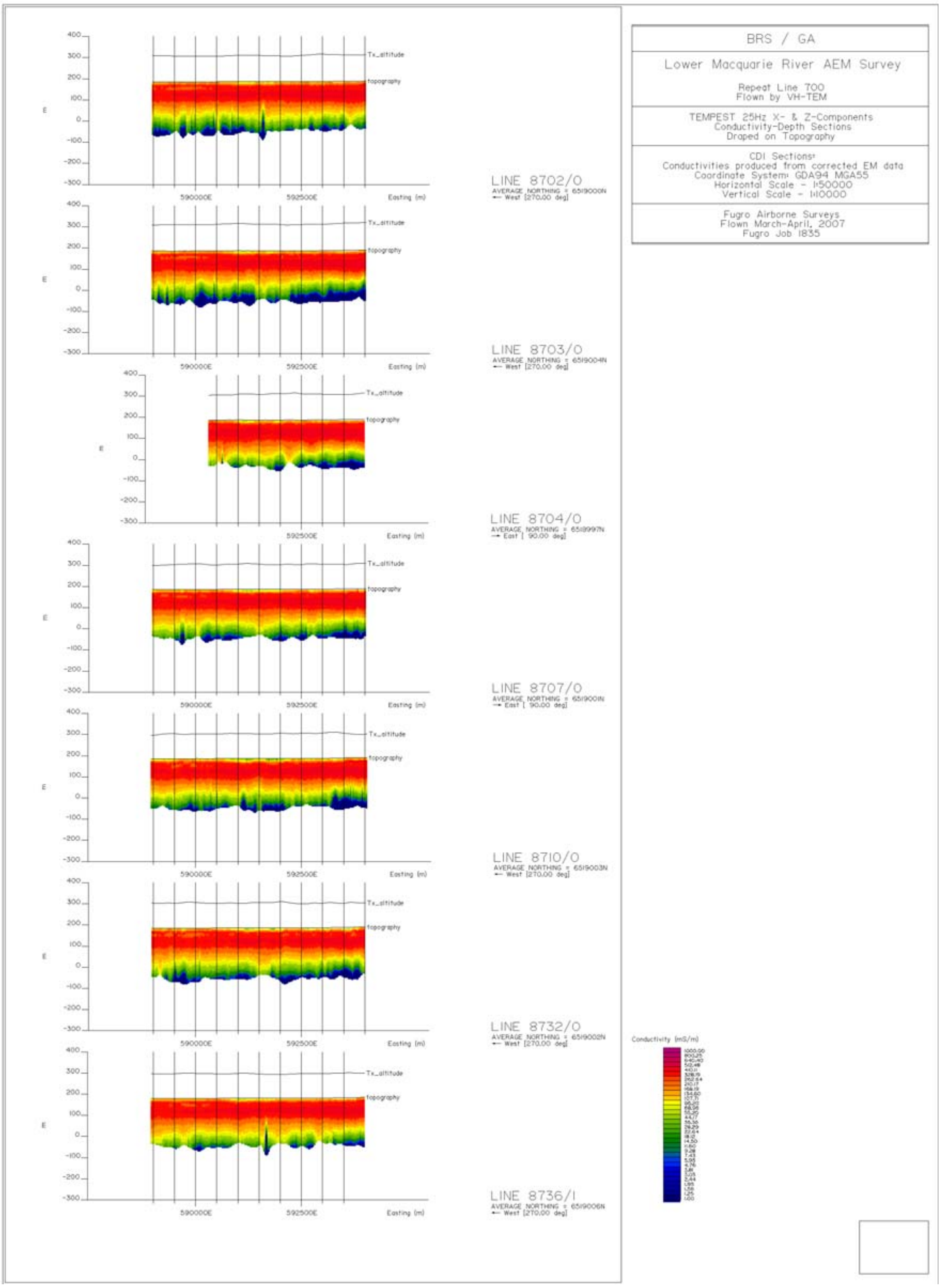
Repeat Line 600 - 8601 flown by VH-TEM, All others flown by VH-WGT



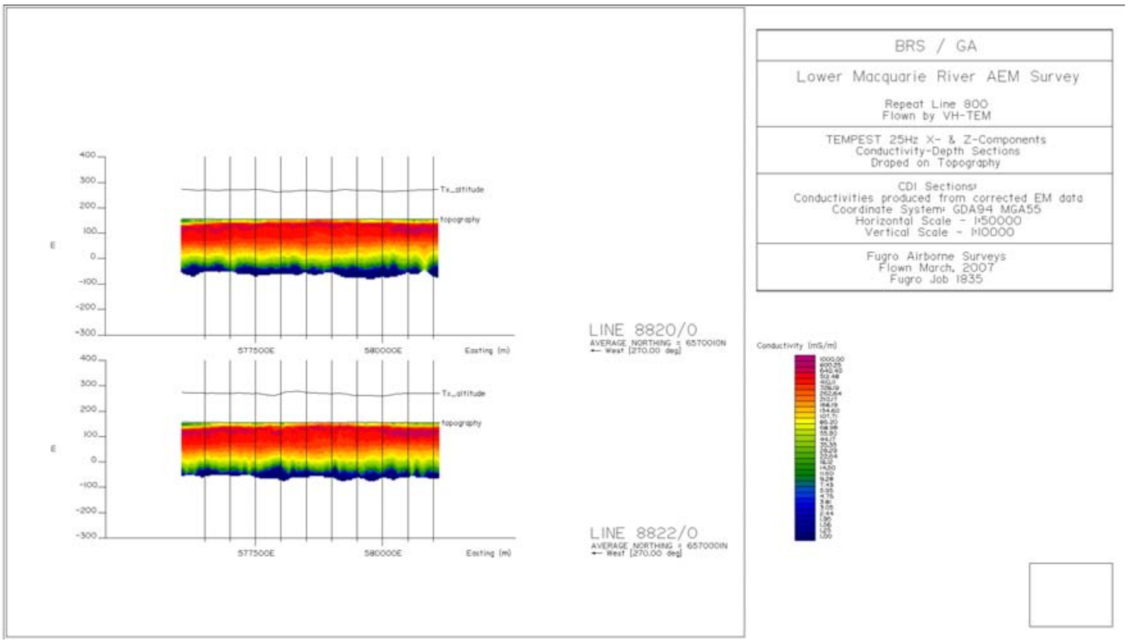

BRS / GA
Lower Macquarie River AEM Survey
Repeat Line 600
Flown by VH-WGT
TEMPEST 25Hz X- & Z-Components
Conductivity-Depth Sections
Draped on Topography
CDI Sections:
Conductivities produced from corrected EM data
Coordinate System: GDA94 MGA55
Horizontal Scale - 1:50000
Vertical Scale - 1:10000
Fugro Airborne Surveys
Flown February-March, 2007
Fugro Job 1835
LINE 8627/0
LINE 8631/0
LINE 8634/0
LINE 8637/0
LINE 8640/0
LINE 8641/0
LINE 8648/0
LINE 8651/1
Conductivity (mS/m)
6440000N
6442500N
Northing (m)
Tx_altitude
topography


BRS / GA
Lower Macquarie River AEM Survey
Repeat Line 600
Flown by VH-WGT
TEMPEST 25Hz X- & Z-Components
Conductivity-Depth Sections
Draped on Topography
CDI Sections:
Conductivities produced from corrected EM data
Coordinate System: GDA94 MGA55
Horizontal Scale - 1:50000
Vertical Scale - 1:10000
Fugro Airborne Surveys
Flown March-April, 2007
Fugro Job 1835
LINE 8655/0
LINE 8657/0
LINE 8661/0
LINE 8665/0
LINE 8671/0
LINE 8676/0
Tx_altitude
topography
6440000N
6442500N
Northing (m)
Conductivity (mS/m)

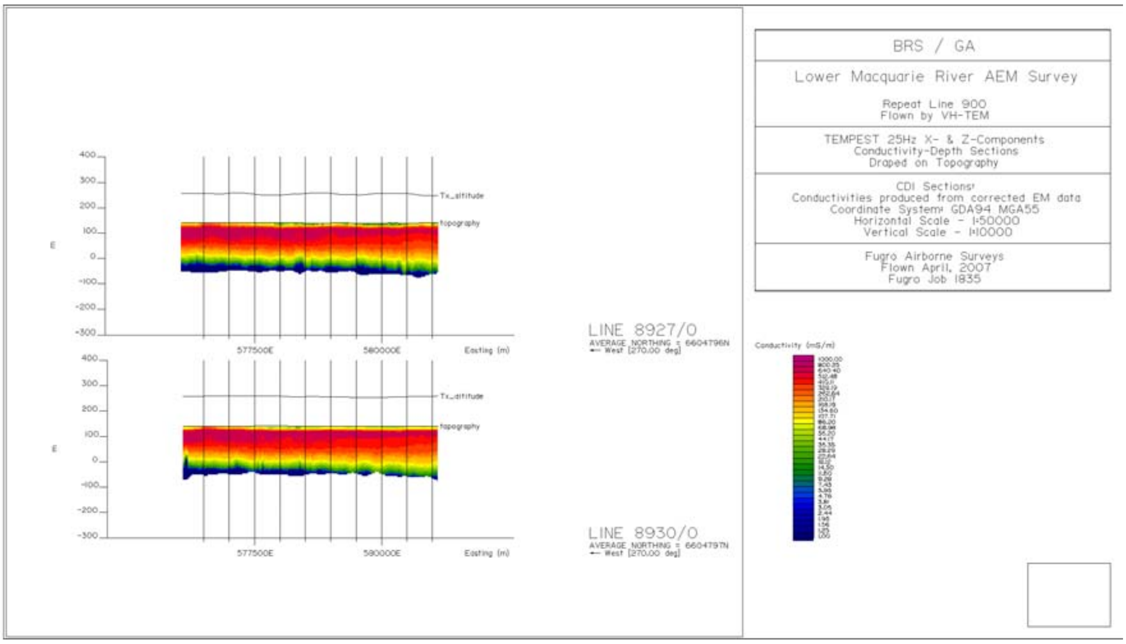
Repeat Line 700 - All flown by VH-TEM



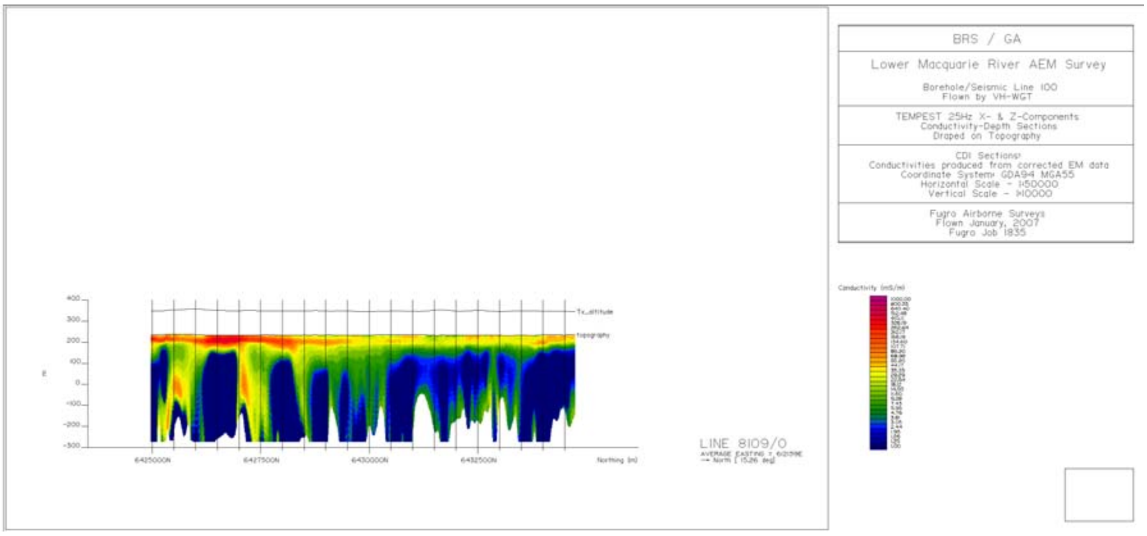
Repeat Line 800 - All flown by VH-TEM



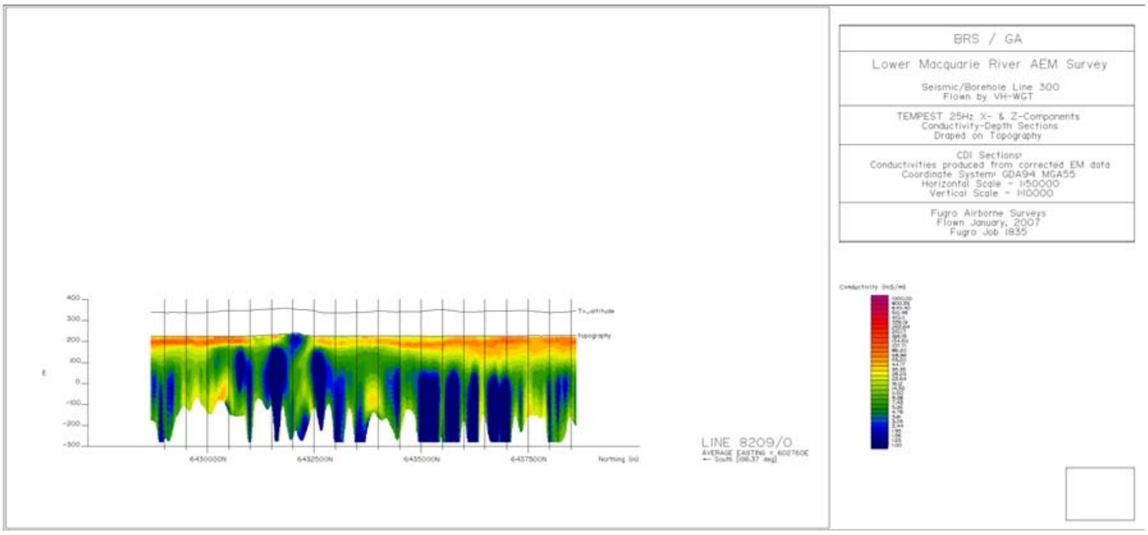
Repeat Line 900 - All flown by VH-TEM



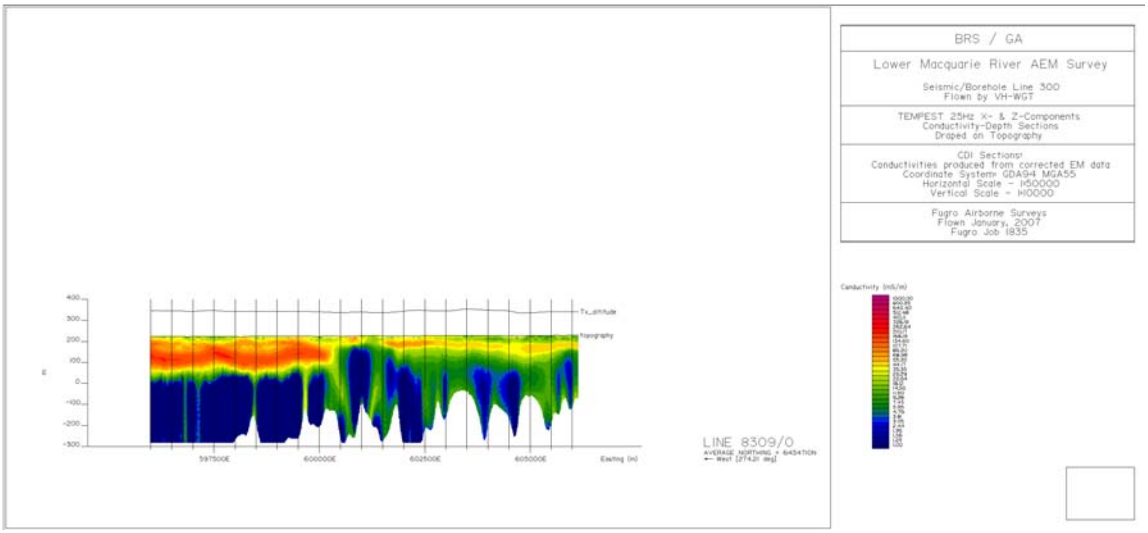
Seismic / Borehole Line 100 - Flown by VH-WGT



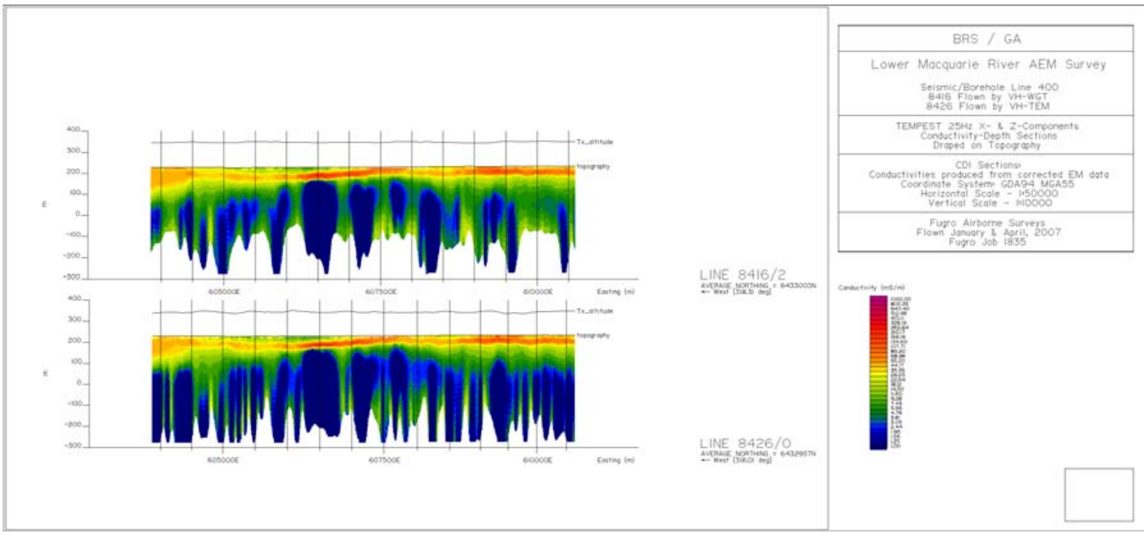
Seismic / Borehole Line 200 - Flown by VH-WGT



Seismic / Borehole Line 300 - Flown by VH-WGT



Seismic / Borehole Line 400 - Line 8416 flown by VH-WGT, Line 8426 flown by VH-TEM



Seismic / Borehole Line 500 - Line 8501 flown by VH-TEM, Line 8516 flown by VH-WGT