Litchfield, Arunta & Musgrave
NT & WA
Airborne Geotem / Magnetic
Geophysical Survey

for

Discovery Nickel Limited

Acquisition and Processing Report

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Authorised for release by : ……..

……..

Survey flown: October 2004

by

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FAS JOB# 1682

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1. SURVEY OPERATIONS AND LOGISTICS

1.1 Introduction

A **GEOTEM$_{DEEP}$**® airborne electromagnetic / magnetic survey was flown by Fugro Airborne Surveys Pty Limited for Discovery Nickel Limited from the 7th of October 2004 to the 26th of October 2004. The survey consisted of five areas, four in the Northern Territory and one in Western Australia. Survey coverage amounted to 5203 line kilometres, flown in 15 flights. This report summarises the procedures, details and equipment used by Fugro in the acquisition, verification and processing of the airborne geophysical data.

The survey employed the **GEOTEM$_{DEEP}$**® electromagnetic system, operating at a base frequency of 25Hz. Ancillary equipment consisted of a magnetometer, radar altimeter, video camera, analogue and digital recorders and an electronic navigation system. The instrumentation was installed in a CASA C212-200 Turbo Prop survey aircraft registration VH-TEM. The aircraft was flown at an average speed of 235 km/h with an EM bird receiver height of 85 m.

1.2 Survey Base

The survey was based out of three different locations, details of which are below. The survey aircraft was also operated from three separate airports with the aircraft fuel available on site. A temporary office was set up at each of the bases where all survey operations were run from and the post-flight data verification was performed.

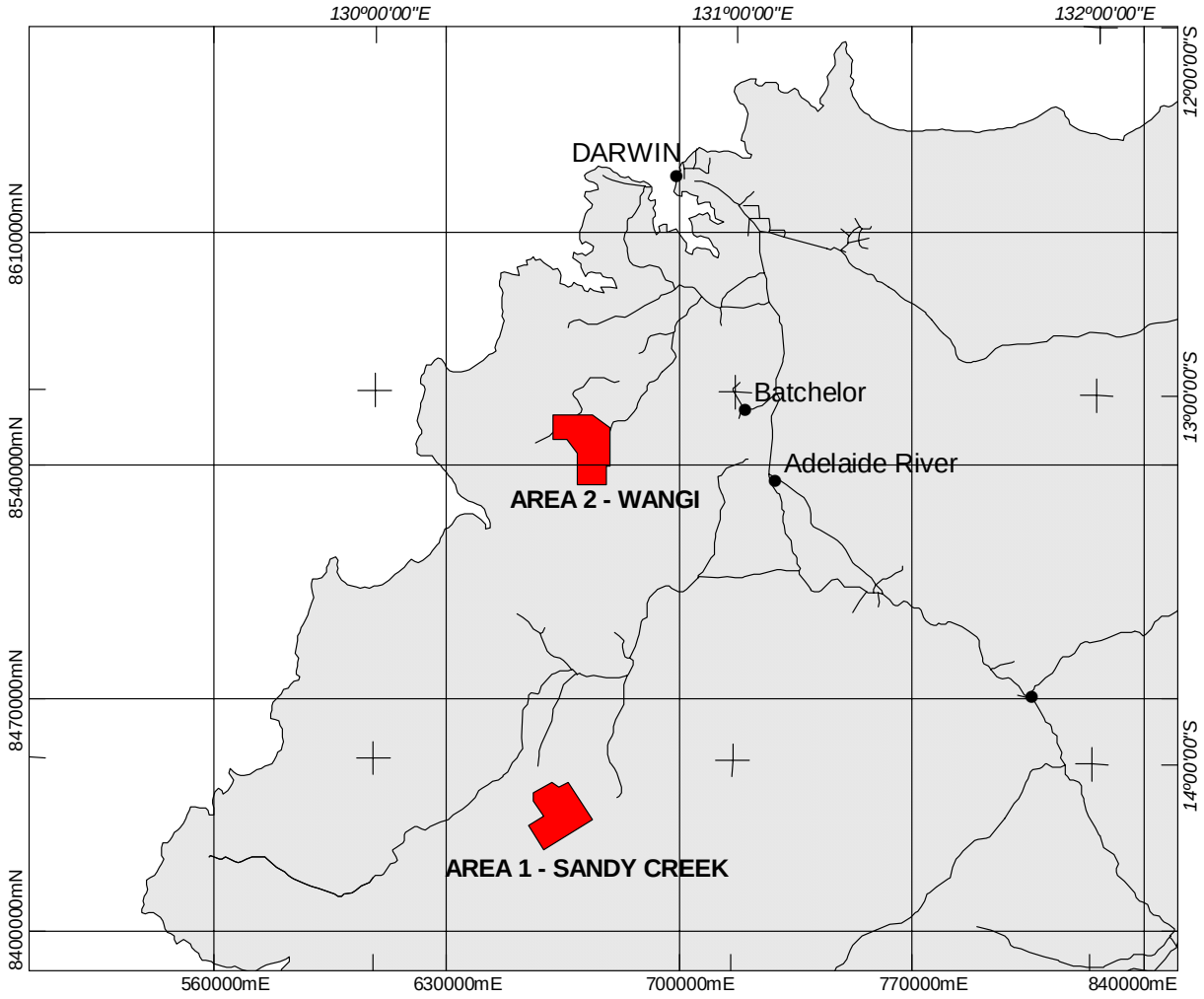
Area	Base	Date	Accommodation
Sandy Creek, NT	Batchelor, NT	2/10/04 – 17/10/04	Rum Jungle Motor Inn
Wangi, NT	Batchelor, NT	2/10/04 – 17/10/04	Rum Jungle Motor Inn
Jarra East, NT	Ti Tree, NT	17/10/04 – 22/10/04	Ti Tree Motor Inn
Willowra, NT	Ti Tree, NT	17/10/04 – 22/10/04	Ti Tree Motor Inn
Musgrave, WA	Warburton, WA	23/10/04 – 26/10/04	Warburton Roadhouse

1.3 Survey Personnel

The following personnel were involved in this project:

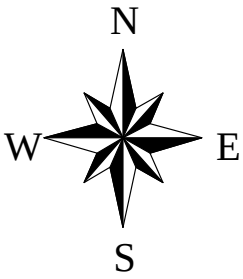
Project Supervision - Acquisition	Davin Allen
- Processing	Andrea Tovey
On-site Crew Leader	Shane Hulme
Pilots	Tim Haldane / Troy Jacobsen
System Operator / Technician	Shane Hulme
Data Processing (Field)	Matthew Hope / Matthew Lawrence
Data Processing (Perth)	Stuart Baron-Hay

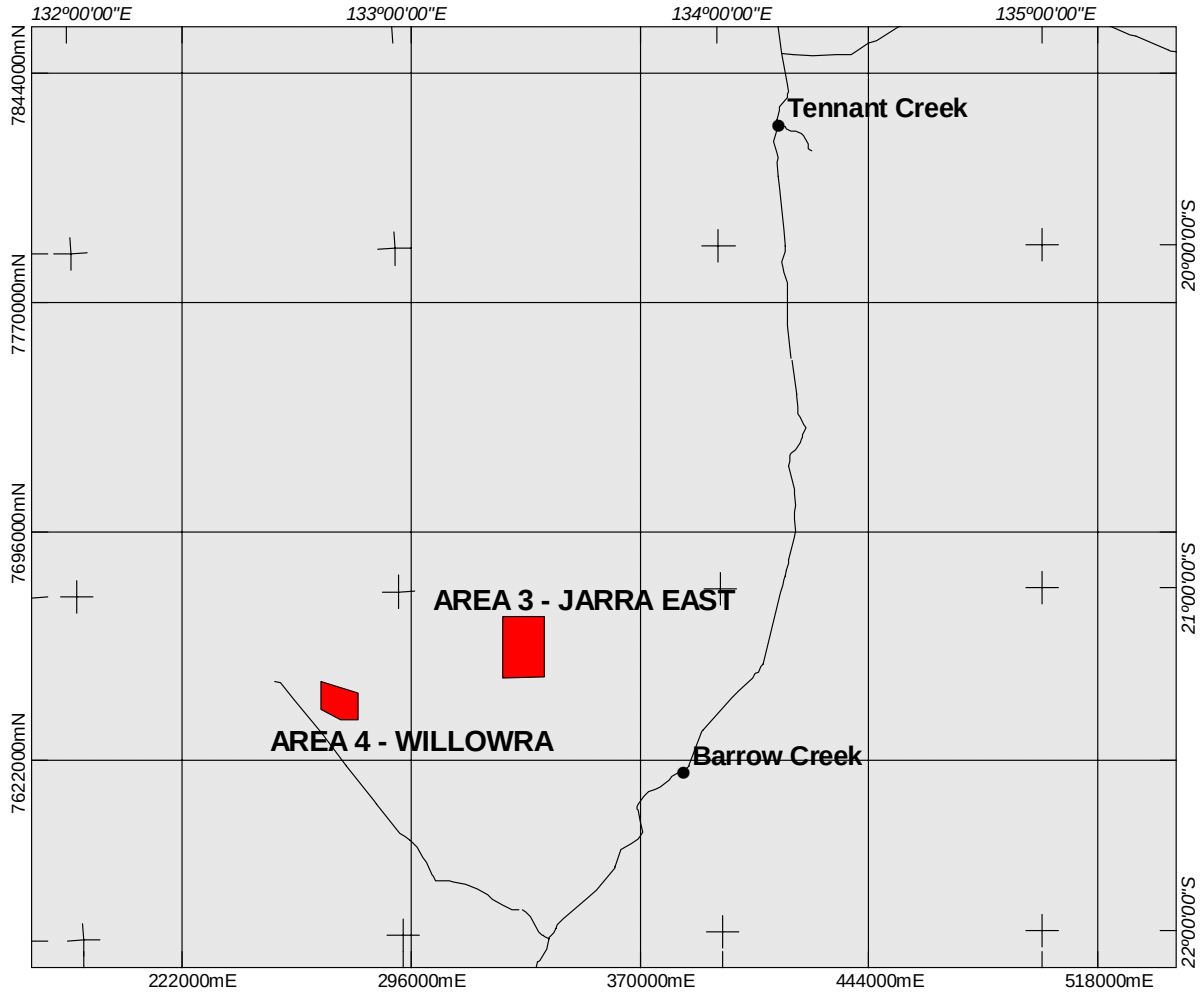
1.4 Area Maps



DISCOVERY NICKEL LIMITED
Litchfield Area, NT
GEOTEMDeep Airborne EM Survey

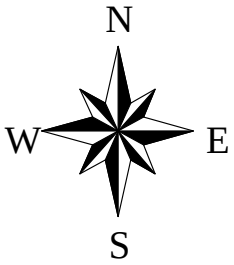
Datum : WGS84
Projection : SUTM
Zone : 52

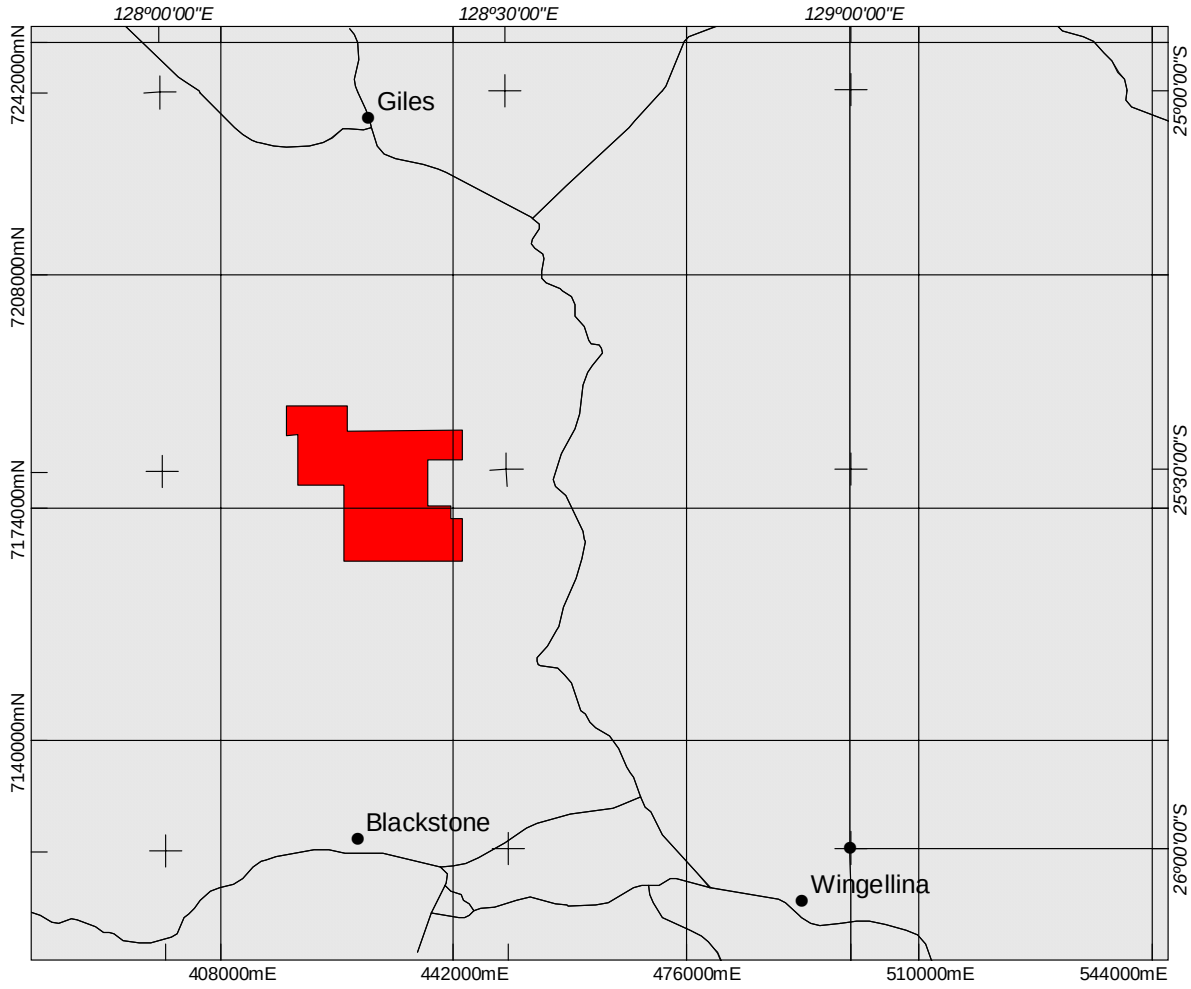




DISCOVERY NICKEL LIMITED
Arunta Area, NT
GEOTEMDeep Airborne EM Survey

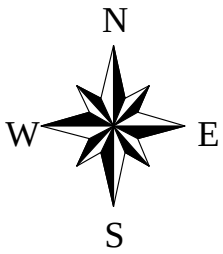
Datum : WGS84
Projection : SUTM
Zone : 53





DISCOVERY NICKEL LIMITED
Musgrave Area, WA
GEOTEMDeep Airborne EM Survey

Datum : WGS84
Projection : SUTM
Zone : 52



2. SURVEY SPECIFICATIONS AND PARAMETERS

2.1 Area Co-ordinates

The survey areas were located within UTM Zone 52 and 53, Central Meridian = 123 and 129
(Note - Co-ordinates in WGS84)

Area 1 - Sandy Creek Zone 52S

656234E	8441702N
661691E	8444790N
663910E	8443284N
666837E	8444829N
674119E	8433707N
659369E	8424580N
654733E	8431897N
659206E	8434617N
656230E	8439162N

Area 2 – Wangi Zone 52S

673993E	8555357N
679400E	8551506N
679400E	8540002N
678256E	8540001N
678214E	8534244N
669594E	8534290N
669611E	8543583N
666211E	8547772N
662218E	8547830N
662237E	8555413N

Area 3 – Jarra East Zone 53S

339294E	7668553N
339359E	7649045N
325808E	7648920N
325798E	7668500N

Area 4 – Willowra Zone 53S

278978E	7643777N
279097E	7635476N
273400E	7635391N
267017E	7638615N
266904E	7647767N

Area 5 – Musgrave Zone 52S

426547E	7189006N
426567E	7185314N
443325E	7185396N
443343E	7181104N
438317E	7181082N
438349E	7174300N
441698E	7174314N
441706E	7172469N
443380E	7172476N
443409E	7166301N
426073E	7166255N
426012E	7177328N
419312E	7177290N
419268E	7184672N
417592E	7184663N

417566E 7188953N

2.2 Survey Area Parameters

Job Number	1682
Survey Company	Fugro Airborne Surveys Pty Ltd
Date Flown	7th October 2004 - 26th October 2004
Client	Discovery Nickel Limited
Project Name	Litchfield, Arunta and Musgrave
Flying Height	120 metres
Total Line kilometres	5203 km

Area	Traverse Line Spacing	Traverse Line DIrection	Tie Line Spacing	Tie Line Direction	Traverse Line Numbers	Tie Line Numbers	Line kilometres (km)
Sandy Ck	250 m	147° - 327°	2550 m	058° - 238°	10011 - 10691	17011 - 17071	1007.62
Wangi	250 m	90° - 270°	2560 m	0° - 180°	20012 - 20841	27012 - 27072	1110.87
Jarra East	250 m	0° - 180°	2100 m	90° - 270°	30011 - 30541	37011 - 37101	1190.52
Willowra	250 m	0° - 180°	2500 m	90° - 270°	40011 - 40481	47011 - 47051	502.83
Musgrave	300 m	90° - 270°	3900 m	0° - 180°	50011 - 50761	57011 - 57071	1390.91

2.3 Data Sample Intervals

Nominal data sample intervals.

Magnetometer	-	65 m (@1 Hz)
Electromagnetics	-	16 m (@4 Hz)
Radar altimeter	-	65 m (@1 Hz)
Barometric altimeter	-	65 m (@1 Hz)
GPS	-	65 m (@1 Hz)

2.4 Survey Reflight Specifications

As specified in the contract, the following tolerances were used.

- If electronic navigation data are not available.
- Where the actual flight line spacing exceeds 125 % of the nominal spacing over a continuous distance exceeding 3 km or where lines cross. The line spacing measurements to be used in determining such reflights will be made from the field flight path recovery.
- If the terrain clearance continuously exceeds the nominal terrain clearance by +/- 20 m over a distance of 3 km or more unless to do so would, in the sole opinion of the pilot, jeopardise the safety of the aircraft or the crew or the equipment or would be in contravention of the Aviation Authority regulations such as those pertaining to built up areas.
- GEOTEM X or Z data is not interpretable. Where the dB/dt RMS noise calculated over 3 km of the raw digital data in the last off-time channel at 25 Hz exceeds 5 nT/s (or 10 pT for B-field) in resistive areas devoid of any external interference. Also, the FAS field geophysicist will examine all anomalous regions on the analogues to determine if the character and shape of the significant geophysical anomalies can be properly separated from the noise, and re-fly any sections of lines where the noise levels irreparably distort the significant geophysical anomalies.
- The magnetometer noise envelope of ± 1.0 nT is exceeded intermittently over a cumulative total of 10% or more of any flight line or continuously over 2 km or more.

- The departure of the diurnal magnetic field from a straight line chord, 10 minutes in length, exceeds 10 nT.

2.5 Flight Plans

The flight plans are given in Appendix I.

2.6 Job Safety Plan

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

3. GEOTEM SYSTEM AND SURVEY EQUIPMENT

3.1 The GEOTEM$_{DEEP}$® Multi-Coil System

GEOTEM$_{DEEP}$® is a time domain towed bird electromagnetic system incorporating a high speed EM receiver. The primary electromagnetic pulses are created by a series of discontinuous half-sine current pulses fed into a multi turn transmitting loop surrounding the aircraft and fixed to the nose, tail and wing tips. The pulse repetition rate is 25 Hz (50 bipolar pulses per second).

The EM sensor is an orthogonal set of coils mounted in a "bird", towed behind the aircraft on a cable. The cable is demagnetised to reduce noise levels. Three coil orientations are available. The X component has a horizontal axis in the direction of flight. The Y component has a lateral horizontal component. The Z component has a vertical axis, which is coplanar with the transmitter coil.

Time-domain airborne electromagnetic systems have historically measured the in-line horizontal (X) component using a coaxial receiver coil. New versions of the electromagnetic systems are designed to collect two additional components (the vertical component (Z) and the lateral horizontal component (Y)) to provide greater diagnostic information. The three components, X, Y and Z can be combined to give the “energy envelope” of the response. Due to asymmetry in the transmitter and receiver coil geometry, the shapes of the component profiles depend on flight direction, the most sensitive component being X component.

In areas where lithological strike is near horizontal, the Z component response provides greater signal-to-noise due to greater coupling. In comparison, the X coils couple best with vertical structures striking perpendicular to the flight direction. In a laterally symmetric environment, the symmetry implies that the Y component will be zero; hence a non-zero y-component indicates lateral inhomogeneity.

In the interpretation of discrete conductors, the Z component data may be used to ascertain the dip and depth to the conductor using simple rules of thumb. The response of the Y component can be used to ascertain the strike direction and lateral offset of the target respectively.

Having the Y and Z component data increases the total response when the profile line has not traversed the target. This increases the possibility of detecting a target located between adjacent flight lines or beyond a survey area.

Each primary current pulse may induce eddy currents in subsurface conductors that decay following cessation of each pulse. Any decaying earth currents can induce voltages in the receiver coils that are proportional to the electromagnetic field. These voltages are sampled over 20 time gates. The centres and widths of these gates are variable and may be placed anywhere within or outside the transmitter pulse.

The time varying EM signals received at the sensor pass through anti-aliasing filters and are then digitised with an A/D converter. The digital data stream from the A/D converter passes into an array processor where all the numerically intensive processing tasks are carried out. The array processor is under control of a multi-tasking minicomputer. The on-board processing sequence is as follows:

Transient Analysis: Transient analysis enables the separation of noise from signal in real time.

Digital Stacking: The stacking of transients to produce 1 recorded reading, of which 4 are recorded every second.

Windowing of Data: The transient is initially sampled into 384 time windows that are then binned to form 20 channels.

Table 1: Airborne Equipment Specifications

System Parameters		**GEOTEM$_{DEEP}$®** Specifications
Navigation		Real time Differential GPS
Nominal aircraft speed (m/s)		65
Geometry	Transmitter height Above ground level (m agl) (Nominal terrain clearance)	120
	Receiver Bird Height (agl, m)	85
	Tx-Rx horizontal separation (m)	122
	Tx-Rx vertical separation (m)	35
Transmitter	Coil Axis	Vertical
	Signal	Half sine wave current pulse
	Base frequency (Hz)	25
	Repetition rate (pulses per second)	50
	Pulse width (microseconds)	4108
	Loop area (square metres)	231
	Number of turns	6
	Peak Current (amps)	450
	Tx loop dipole moment (Am^2)	6.237×10^5
Receiver	Coil Axes	X, Y and Z
	Sample Interval (seconds)	0.25
	Channel times	see Table 2

Table 2: Receiver Channel Positions

Gate No.	Sample Number Start	Sample Number End	Width	Microseconds after Trigger Start	Microseconds after Trigger End	Microseconds after Trigger Centre
1	4	12	9	156	625	391
2	13	33	21	625	1719	1172
3	34	57	24	1719	2969	2344
4	58	87	30	2969	4531	3750
5	88	90	3	4531	4688	4609
6	91	93	3	4688	4844	4766
7	94	96	3	4844	5000	4922
8	97	102	6	5000	5313	5156
9	103	108	6	5313	5625	5469
10	109	117	9	5625	6094	5859
11	118	126	9	6094	6563	6328
12	127	138	12	6563	7188	6875
13	139	153	15	7188	7969	7578
14	154	171	18	7969	8906	8438
15	172	192	21	8906	10000	9453
16	193	216	24	10000	11250	10625
17	217	246	30	11250	12813	12031
18	247	282	36	12813	14688	13750
19	283	330	48	14688	17188	15938
20	331	384	54	17188	20000	18594

3.2 Electromagnetic Acquisition System

The Digital Acquisition System (GEODAS) is a computer-based software system using a Pentium field PC. It runs multiple DOS programs in a multi-tasking environment. The modular design of the GEODAS allows for re-configuring of the system to record different types of surveys by adding, removing or changing task modules.

The GEODAS is currently installed on a rugged, totally enclosed, moisture and dust-proof system, originally designed for military use. The GEODAS currently uses a Pentium CPU on a plug-in module card that can be upgraded.

The following are recorded digitally using the GEODAS:

Each second:	Flight number Navigation data Total magnetic field Fiducial number (time in seconds) Altitude (radar and barometer)
Each 0.25 secs:	20 X, Y, & Z component dB/dt **GEOTEM$_{DEEP}$®** channels 20 X, Y, & Z component B-field **GEOTEM$_{DEEP}$®** channels X, Y, & Z component transmitter primary field Power line (50Hz) monitor (X, Y, & Z component) Earth field monitor (X, Y, & Z component)

3.3 Magnetometers

3.3.1 Survey Magnetometer

Model:	Cesium vapour optical absorption magnetometer sensor
Mounting:	Tail stinger
Sample period:	50 milliseconds
Sample interval:	1.0 seconds *
Sensitivity:	0.01 nanoTeslas (nT)

* To operate both the **GEOTEM$_{DEEP}$®** system and the magnetometer system simultaneously, the transmitter is switched off for a period of 200 milliseconds every second to allow for a noise free magnetometer reading.

3.4 Altimeter System

3.4.1 Radar Altimeter

Model:	Sperry Stars RT-220 radio altimeter system
Sample interval:	1.0 second
Accuracy:	+/- 1.5 % of indicated altitude.

The Sperry radio altimeter is a high quality instrument whose output is factory calibrated. It is fitted with a test function which checks the calibration of a terrain clearance of 100 feet, and altitudes which are multiples of 100 feet. The aircraft radio altitude is recorded onto digital tape as well as displayed on the aircraft chart recorder. The recorded value is the average of the altimeters output during the previous second.

3.4.2 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.

3.5 Video Tracking System

The video tape recorded by a PAL VHS colour 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.

3.6 Electronic Navigation

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 WGS-84 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 analog HSI indicator. 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, enabling the aircraft to fly as close to the intended track as possible.

3.7 Analogue Recorder

Model:	RMS GR33 Thermal Dot Matrix Printer
Chart speed:	11 cm/minute; time increases from left to right
Event marks:	20 second marks are recorded on the bottom of the chart with the associated fiducial numbers being printed at the base of the chart.
GEOTEM$_{DEEP}$® Traces:	The scales for the **GEOTEM$_{DEEP}$®** traces are displayed on the analogue charts. The zero line for each channel is separated by 0.5 cm with the latest channel always being plotted closest to the bottom of the page.
Synchronisation:	A lag of approximately 5.0 seconds occurs between the **GEOTEM$_{DEEP}$®** channels and the magnetometer and altimeter traces.
Channels Displayed:	Channel 16 noise monitors (X, Y and Z) Primary field monitor (X and Z) Earth field monitors (X, Y and Z) Total magnetic field - fine and coarse scale Terrain clearance - radar Barometer Selected **GEOTEM$_{DEEP}$®** X and Z channels Powerline monitor

4. EQUIPMENT TESTS AND CALIBRATIONS

4.1 GEOTEM$_{DEEP}$® Daily Calibration

All checks and adjustments are performed at high altitude at the start of each flight to allow for automatic compensation and calibration at survey altitude. The calibrations and compensations are as follows:

4.1.1 Compensation

At the beginning of the flight data is acquired at high altitude (in excess of 600m). These data are used by the airborne operator to determine if:

a) the system noise level is acceptable
b) the response had not varied significantly from previous flights, and
c) the sferics level is acceptable,

This calibration system produces a reference waveform (or series of coefficients) which is used to establish the compensation algorithm within the GEOTEM receiver itself. This therefore allows automatic compensation to take place at survey altitude. Zero levels of the GEOTEM channels are verified at the beginning and end of each flight.

Following this aircraft manoeuvres (swoops) are performed before and after each sortie to ensure that the system operates correctly when the relative position of the towed sensor is varied relative to the aircraft.

4.2 Lag Tests

4.2.1 Electromagnetic Lag Test

An electromagnetic lag check is routinely carried out to determine the lag of the **GEOTEM$_{DEEP}$**® system. The check is conducted by flying in two different directions over a known target with a particular electromagnetic signature. The value calculated by the electromagnetic test is used in the processing of the **GEOTEM$_{DEEP}$**® electromagnetic data.
A lag check was completed over a known conductive feature near Mandurah, Western Australia, in September 2004. The results showed that the lag for the electromagnetic data was 16 samples (4 seconds).

4.2.2 Magnetometer Lag Test

The lag of the magnetics can be calculated by flying the aircraft in opposite directions over a sharp magnetic anomaly with the navigation system and magnetometer operating. The position of the magnetic high is determined from the navigation system for each line direction. The numerical difference in position is the 2-way or total lag. The lag to be applied to each direction is this value divided by two. Varying lag due to varying ground speed will be compensated for in the processing. However, for this survey the lag was calculated using grids of the magnetics data from the survey. The results showed that there was a lag of 2.25 seconds.

5. GROUND DATA ACQUISITION EQUIPMENT

5.1 GPS Base Station System

The GPS base station consists of a Marconi GPS receiver card connected to a portable laptop computer. The computer is connected to a mains UPS backup, with a reserve capacity of approximately 100 minutes, to ensure continuous data logging in the event of mains power interruptions. For this survey, the antenna for the GPS base station was located at each of the base locations

1. Batchelor – above room 7 at Rum Jungle Motor Inn
2. Ti Tree – above room 3 at the Ti Tree Motor Inn
3. Warburton – above room 2 at Warburton Roadhouse

The GPS base station was positioned by collecting 2 hours of data at the aircraft and this was used to post correct the base GPS position using GrafNav software.

The calculated GPS base position was (in WGS 84):

Batchelor Lat: 13° 02′ 30.63″ S
Long: 131° 01′ 25.82″ E
Height: 159.72 m

Ti Tree Lat: 22° 07′ 50.02″ S
Long: 133° 25′ 01.30″ E
Height: 576.02 m

Warburton Lat: 26° 07′ 54.86″ S
Long: 126° 34′ 06.52″ E
Height: 453.63 m

5.2 Base Magnetometer System

Two Geometrics G856 proton precession magnetometers were used as diurnal base stations. The units were located near each of the respective airports in an area where they were not affected by aircraft or motor vehicle movement, approximately 100 m apart.

The units were time checked prior to each survey flight commencement against the GPS receiver time in the aircraft, which is the time base for all acquired data.

6. PRODUCTS AND PROCESSING

Raw **GEOTEM$_{DEEP}$**® data collected on the aircraft GEODAS is read onto a Pentium IV laptop computer where proprietary Fugro software is then used to further process the data.

Processed data is displayed as profiles and plans in the field. Displays are produced of flight path plots, magnetic and EM channel amplitudes. The field processor / geophysicist uses these displays and other QC procedures to analyse the quality of the data collected, and decide on any reflights.

Field Processing System

Hardware: Laptop Pentium PC operating on a Windows XP platform
Ricoh DVD+R/RW external CD/DVD burner
Iomega Jazz drive

Software: Fugro Airborne Surveys developed GMAPS **GEOTEM$_{DEEP}$**®
processing software
OASIS Montaj geophysical processing software
GRAFNAV GPS processing software

Office Processing System

Hardware: Pentium PC network and peripherals operating on a Windows XP platform
Ricoh DVD+R/RW CD/DVD burner
HP 1055 Design-jet Plotters

Software: Fugro Airborne Surveys developed GMAPS **GEOTEM$_{DEEP}$**®
processing software
OASIS Montaj geophysical processing software

6.1 Electromagnetics

6.1.1 Levelling

Since the **GEOTEM$_{DEEP}$**® receiver constantly normalises and calibrates during data acquisition there is normally minimal levelling of data required at the post-survey processing stage. However, some low amplitude noise and microlevelling is generally applied to adjust small line to line level busts and improve the cosmetic appearance of the gridded data.

6.1.2 Synchronisation Lag

All **GEOTEM$_{DEEP}$**® and auxiliary geophysical data have been synchronised with navigation data so that there is no "peak position" offset between the responses obtained from lines flown in opposite directions over a narrow vertical conductor (see also section 4.2.1)

6.1.3 Noise Reduction

Noise reduction in the digital data is accomplished by identification of the noise type (atmospheric, system or cultural), analysis of the spectral content of the entire signal (geological + noise) and selective filtering.

6.1.3.1 Atmospheric Noise

The first stage of processing is atmospheric (spheric) noise removal which is achieved by using a method based loosely on cross correlation and non linear filtering, since most spheric events are single reading (impulse response) features which cannot be properly removed by linear filtering.

6.1.3.2 Cultural noise

Cultural noise (which includes sources such as 50 Hz powerlines, electric fences, cathodic protected metal structures) is measured by the 50 Hz monitor. Normally cultural noise is not removed during processing.

6.1.3.3 System noise

System noise is removed by filtering using strict amplitude and wavelength thresholds to correctly isolate noise from geological signal. The filter shape and amplitude thresholds are determined on a flight by flight basis from raw data plots of at least 2 flight lines flown in opposite directions at the beginning and end of the flight. This allows customised filtering for directional, diurnal and flight noise, ensuring that the minimal amount of filtering is performed so that real signal is not degraded by using a "lowest common denominator" philosophy of applying one filter (usually the maximum) for all noise conditions.

6.2 Magnetics

6.2.1 Diurnal Levelling

Base station data is edited so that all significant spikes, level shifts and null data are eliminated. The data is re-sampled and synchronised to the airborne fiducial system prior to subtraction from airborne magnetic readings. A diurnal base value was then added.

Area	Base Value
Sandy Creek	46710 nT
Wangi	46710 nT
Jarra East	52200 nT
Willowra	52200 nT
Musgrave	55900 nT

6.2.2 Synchronisation Lag

A lag was applied to synchronise the magnetic data with the navigation data (see section 4.2.2).

6.2.3 IGRF Removal

The International Geomagnetic Reference Field (IGRF) 2000 model (updated for secular variation 2004.10) was removed from the levelled total field magnetics. An IGRF base value was then added to the data.

Area	Base Value
Sandy Creek	47500 nT
Wangi	46860 nT
Jarra East	51800 nT
Willowra	51800 nT
Musgrave	54860 nT

6.2.4 Levelling

Using the tie lines (flown at 90 degrees to the traverse lines) a set of miss-tie values were determined. These miss-tie values reflected the differences in the magnetic value between the tie lines and the traverse lines over the same geographical point. Using a least squares fit algorithm, which also takes into account the statistical variation inherent in DGPS positioning, a series of corrections were applied to the traverse line data. These allowed the data to be levelled to the same base value.

A Fugro proprietary micro-levelling process was then applied in order to more subtly level the data. This process removes sub-gamma pulls evident only under image enhancement algorithms.

6.3 Digital Elevation Model

Where necessary, spike corrections to the raw radar altimeter data are carried out and undefined values interpolated. The data is then co-ordinated with post-processed GPS data. The aircraft's height above ground is subtracted from the aircraft's height above the WGS84 ellipsoid.
Using the tie lines (flown at 90 degrees to the traverse lines) a set of miss-tie values were determined. These miss-tie values reflected the differences in the computed topographic height between the tie lines and the traverse lines over the same geographical point. Using a least squares fit algorithm, which also takes into account the statistical variation inherent in DGPS positioning, a series of corrections were applied to the traverse line data.
Following this, a Fugro proprietary micro-levelling process was applied in order to more subtly level the data.

The accuracy of the elevation calculation is directly dependent on the accuracy of the two input parameters, radar altitude and GPS altitude. The radar altitude value may be erroneous in areas of heavy tree cover, where the altimeter reflects the distance to the tree canopy rather than the ground. 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 1-2 metres, the accuracy of the altitude value is usually much less, sometimes in the ±5 metre range. Further inaccuracies may be introduced during the interpolation and gridding process. 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.

6.4 Flight Path Recovery

A GPS receiver mounted in the survey aircraft uses 3D triangulation of satellite signals to calculate both the position of the aircraft in real time and to provide pilots with steering information. GPS data are read into the field computer and plotted on a daily basis to ensure data quality control and determine any re-flights. Positioning data are stored digitally as Latitudes and Longitudes and later converted to Universal Transverse Mercator coordinates using the appropriate datum. Raw GPS data are corrected with post differential corrections improving the accuracy of the recorded position.

The integrated aircraft track is plotted on a daily basis using the differential GPS data. Plots are analysed to ensure data quality and to determine any re-flights.

6.5 Survey Products

6.5.1 Multi-Parameter Profile Plots

Final **GEOTEM$_{DEEP}$**® data is presented as multi-parameter profiles after final processing in the Fugro Airborne Surveys office in Perth. The processed geophysical data are plotted at suitable scales from top to bottom. The x-axes of alternate sections of each plot are annotated with fiducial numbers or grid coordinates. The scales for the **GEOTEM$_{DEEP}$**® traces vary according to the channel, to allow resolution in late channels whilst keeping early channels on scale. The base level for each channel is separated by 0.5 cm with the latest channel always being plotted closest to the bottom of the page. Each plot has a title containing line number, job number, area name, transmitter frequency and average northing or easting.

6.5.2 Hardcopy Products

- CDI-multiplots of B-field X and Z channels with dB/dt X CDI sections
- Flight Path maps

6.5.3 Digital Products

- Located Data - EM window data, CDI data and auxiliary data as ASCII and Geosoft GDB
- CDI plots (stacks and multiplots as PNG and HPGL plot files)
- Gridded Data – ERMapper grids of EM and auxillary data
- Flight Path RTL plot files.
- Waveform - representative transmitter waveform for each flight.

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APPENDIX I – Flight Plans

AREA 1 – SANDY CREEK

```
JOB_Number  1682                                                                *
CLIENT      Discovery Nickel                                                    *
AREA_NAME   Sandy Creek                                                         *
PLANNED_BY  gps2                                                                *
|                                                                               *
SPHEROID    22  W.G.S_1984 6378137.0 298.257223563 0.9996                       *
DELTAXYZ    0.0 0.0 0.0 0.0 0.0 0.0 0.0                                         *
HEMISPHERE  SOUTH                                                               *
UTM_ORIGIN  52   129   129                                                     *
BOUNDARY    1   656234  8441702 -14.091245 +130.447173 -140528.5 +1302649.8 12 *
BOUNDARY    2   661691  8444790 -14.063024 +130.497527 -140346.9 +1302951.1 12 *
BOUNDARY    3   663910  8443284 -14.076508 +130.518156 -140435.4 +1303105.4 12 *
BOUNDARY    4   666837  8444829 -14.062371 +130.545174 -140344.5 +1303242.6 12 *
BOUNDARY    5   674119  8433707 -14.162455 +130.613305 -140944.8 +1303647.9 12 *
BOUNDARY    6   659369  8424580 -14.245832 +130.477206 -141445.0 +1302837.9 12 *
BOUNDARY    7   654733  8431897 -14.179956 +130.433825 -141047.8 +1302601.8 12 *
BOUNDARY    8   659206  8434617 -14.155118 +130.475109 -140918.4 +1302830.4 12 *
BOUNDARY    9   656230  8439162 -14.114204 +130.447278 -140651.1 +1302650.2 12 *
SQUARE_KMS  226.976                                                             *
|                                                                               *
NAVTYPE     NOVATEL                                                             *
NAVMODE     U.T.M                                                               *
PLAN_TYPE   Normal                                                              *
LINE_TYPE   S.LINE    X.LINE    0         0                                     *
HEADING     147       238                                                       *
SPACING     250       2550      250       250                                   *
OVER_LINE   1         1                                                         *
OVERFLY     0         0                                                         *
MIN_LENGTH  8         8                                                         *
FIRST_LINE  10        10                                                        *
INCREMENT   10        10                                                        *
X_TRACK     100       100                                                       *
MASTER_PT   1   656234  8441702 -14.091245 +130.447173                        *
MASTER_NEW  0  Not implemented.                                                 *
KM_IN_AREA  908       101                                                       *
KM+OVERFLY  908       101                                                       *
```

AREA 2 WANGI

```
JOB_Number  1682                                                                *
CLIENT      Discovery Nickel                                                    *
AREA_NAME   Wangi                                                               *
PLANNED_BY  gps2                                                                *
|                                                                               *
SPHEROID    22  W.G.S_1984 6378137.0 298.257223563 0.9996                       *
DELTAXYZ    0.0 0.0 0.0 0.0 0.0 0.0 0.0                                         *
HEMISPHERE  SOUTH                                                               *
UTM_ORIGIN  52   129   129                                                      *
BOUNDARY    1   673993  8555357 -13.062905 +130.604705 -130346.5 +1303616.9 12 *
BOUNDARY    2   679400  8551506 -13.097400 +130.654790 -130550.6 +1303917.2 12 *
BOUNDARY    3   679400  8540002 -13.201382 +130.655488 -131205.0 +1303919.8 12 *
BOUNDARY    4   678256  8540001 -13.201459 +130.644935 -131205.3 +1303841.8 12 *
BOUNDARY    5   678214  8534244 -13.253498 +130.644897 -131512.6 +1303841.6 12 *
BOUNDARY    6   669594  8534290 -13.253583 +130.565356 -131512.9 +1303355.3 12 *
BOUNDARY    7   669611  8543583 -13.169581 +130.564972 -131010.5 +1303353.9 12 *
BOUNDARY    8   666211  8547772 -13.131904 +130.533379 -130754.9 +1303200.2 12 *
BOUNDARY    9   662218  8547830 -13.131597 +130.496544 -130753.7 +1302947.6 12 *
BOUNDARY   10   662237  8555413 -13.063049 +130.496305 -130347.0 +1302946.7 12 *
SQUARE_KMS  252.778                                                             *
|                                                                               *
NAVTYPE     NOVATEL                                                             *
NAVMODE     U.T.M                                                               *
PLAN_TYPE   Normal                                                              *
LINE_TYPE   S.LINE    X.LINE    0         0                                     *
HEADING     90        180                                                       *
SPACING     250       2560      250       250                                   *
OVER_LINE   1         1                                                         *
OVERFLY     0         0                                                         *
MIN_LENGTH  8         8                                                         *
FIRST_LINE  10        10                                                        *
INCREMENT   10        10                                                        *
X_TRACK     100       100                                                       *
MASTER_PT   1   673993  8555357 -13.062905 +130.604705                        *
MASTER_NEW  0  Not implemented.                                                 *
KM_IN_AREA  1005      106                                                       *
KM+OVERFLY  1005      106                                                       *
```

AREA 3 JARRA EAST

```
JOB_Number  1682_3                                                          *
CLIENT      Discovery Nickel                                                *
AREA_NAME   Jarra_east                                                      *
PLANNED_BY  gps2                                                            *
|                                                                           *
SPHEROID    22  W.G.S_1984 6378137.0 298.257223563 0.9996                   *
DELTAXYZ    0.0 0.0 0.0 0.0 0.0 0.0 0.0                                     *
HEMISPHERE  SOUTH                                                           *
UTM_ORIGIN  53   135   135                                                  *
BOUNDARY    1   339294  7668553 -21.076979 +133.453037 -210437.1 +1332710.9 12 *
BOUNDARY    2   339359  7649045 -21.253180 +133.451831 -211511.4 +1332706.6 12 *
BOUNDARY    3   325808  7648920 -21.253059 +133.321263 -211511.0 +1331916.5 12 *
BOUNDARY    4   325798  7668500 -21.076220 +133.323158 -210434.4 +1331923.4 12 *
SQUARE_KMS  264.303                                                         *
|                                                                           *
NAVTYPE     NOVATEL                                                         *
NAVMODE     U.T.M                                                           *
PLAN_TYPE   Normal                                                          *
LINE_TYPE   S.LINE    X.LINE    0         0                                 *
HEADING     0         90                                                    *
SPACING     250       2100      250       250                             *
OVER_LINE   1         1                                                     *
OVERFLY     0         0                                                     *
MIN_LENGTH  8         8                                                     *
FIRST_LINE  10        10                                                    *
INCREMENT   10        10                                                    *
X_TRACK     100       100                                                   *
MASTER_PT   1   339294  7668553 -21.076979 +133.453037                      *
MASTER_NEW  0  Not implemented.                                             *
KM_IN_AREA  1055      135                                                   *
KM+OVERFLY  1055      135                                                   *
```

AREA 4 WILLOWRA

```
JOB_Number  1682_4                                                          *
CLIENT      Discovery Nickel                                                *
AREA_NAME   Willowra                                                        *
PLANNED_BY  gps2                                                            *
|                                                                           *
SPHEROID    22  W.G.S_1984 6378137.0 298.257223563 0.9996                   *
DELTAXYZ    0.0 0.0 0.0 0.0 0.0 0.0 0.0                                     *
HEMISPHERE  SOUTH                                                           *
UTM_ORIGIN  53   135   135                                                  *
BOUNDARY    1   278978  7643777 -21.294404 +132.869489 -211739.9 +1325210.2 12 *
BOUNDARY    2   279097  7635476 -21.369364 +132.869557 -212209.7 +1325210.4 12 *
BOUNDARY    3   273400  7635391 -21.369425 +132.814633 -212209.9 +1324852.7 12 *
BOUNDARY    4   267017  7638615 -21.339505 +132.753553 -212022.2 +1324512.8 12 *
BOUNDARY    5   266904  7647767 -21.256863 +132.753716 -211524.7 +1324513.4 12 *
SQUARE_KMS  114.427                                                         *
|                                                                           *
NAVTYPE     NOVATEL                                                         *
NAVMODE     U.T.M                                                           *
PLAN_TYPE   Normal                                                          *
LINE_TYPE   S.LINE    X.LINE    0         0                                 *
HEADING     0         90                                                    *
SPACING     250       2500      250       250                             *
OVER_LINE   1         1                                                     *
OVERFLY     0         0                                                     *
MIN_LENGTH  8         8                                                     *
FIRST_LINE  10        10                                                    *
INCREMENT   10        10                                                    *
X_TRACK     100       100                                                   *
MASTER_PT   1   278978  7643777 -21.294404 +132.869489                      *
MASTER_NEW  0  Not implemented.                                             *
KM_IN_AREA  455       52                                                    *
KM+OVERFLY  455       52                                                    *
```

AREA 5 MUSGRAVE

```
JOB_Number  1682_5                                                          *
CLIENT      Discovery Nickel                                                *
AREA_NAME   Musgraves                                                       *
PLANNED_BY  gps2                                                            *
|                                                                           *
SPHEROID    22  W.G.S_1984 6378137.0 298.257223563 0.9996                   *
DELTAXYZ    0.0 0.0 0.0 0.0 0.0 0.0 0.0                                     *
HEMISPHERE  SOUTH                                                           *
UTM_ORIGIN  52   129   129                                                  *
BOUNDARY    1   426547  7189006 -25.414026 +128.269642 -252450.5 +1281610.7 12 *
BOUNDARY    2   426567  7185314 -25.447361 +128.269640 -252650.5 +1281610.7 12 *
BOUNDARY    3   443325  7185396 -25.447359 +128.436304 -252650.5 +1282610.7 12 *
BOUNDARY    4   443343  7181104 -25.486113 +128.436308 -252910.0 +1282610.7 12 *
BOUNDARY    5   438317  7181082 -25.486111 +128.386305 -252910.0 +1282310.7 12 *
BOUNDARY    6   438349  7174300 -25.547358 +128.386305 -253250.5 +1282310.7 12 *
BOUNDARY    7   441698  7174314 -25.547363 +128.419642 -253250.5 +1282510.7 12 *
BOUNDARY    8   441706  7172469 -25.564028 +128.419641 -253350.5 +1282510.7 12 *
BOUNDARY    9   443380  7172476 -25.564030 +128.436305 -253350.5 +1282610.7 12 *
BOUNDARY   10   443409  7166301 -25.619786 +128.436342 -253711.2 +1282610.8 12 *
BOUNDARY   11   426073  7166255 -25.619438 +128.263669 -253710.0 +1281549.2 12 *
BOUNDARY   12   426012  7177328 -25.519445 +128.263674 -253110.0 +1281549.2 12 *
BOUNDARY   13   419312  7177290 -25.519443 +128.197000 -253110.0 +1281149.2 12 *
BOUNDARY   14   419268  7184672 -25.452779 +128.197005 -252710.0 +1281149.2 12 *
BOUNDARY   15   417592  7184663 -25.452773 +128.180336 -252710.0 +1281049.2 12 *
BOUNDARY   16   417566  7188953 -25.414030 +128.180343 -252450.5 +1281049.2 12 *
SQUARE_KMS  381.367                                                         *
|                                                                           *
NAVTYPE     NOVATEL                                                         *
NAVMODE     U.T.M                                                           *
PLAN_TYPE   Normal                                                          *
LINE_TYPE   S.LINE    X.LINE    0         0                                 *
HEADING     90        180                                                   *
SPACING     300       3900      300       300                               *
OVER_LINE   1         1                                                     *
OVERFLY     0         0                                                     *
MIN_LENGTH  5         5                                                     *
FIRST_LINE  10        10                                                    *
INCREMENT   10        10                                                    *
X_TRACK     100       100                                                   *
MASTER_PT   1   426547  7189006 -25.414026 +128.269642                      *
MASTER_NEW  0  Not implemented.                                             *
KM_IN_AREA  1277      116                                                   *
KM+OVERFLY  1277      116                                                   *
```

APPENDIX II – Weekly Acquisition Reports

Week Commencing: **Monday 27-Sep-04** Aircraft: VH-TEM Operators: Shane Hulme Pilots: Tim Haldane / Troy Jacobsen
Job Number: 1682 Base: Batchelor, NT Data Proc: Matt Lawrence Techs: Shane Hulme
Total km: 5211 Country: Australia Crew Leader: Shane Hulme Client: Discovery Nickel
Area Name: Sandy Creek Accom: Batchelor Resort Contact #: 89762123

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	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday 27-Sep-04															Weather:
Julian 271															Remarks:
Day				Hours Today		0.0				0.0	0.0				Safety Meeting:
Tuesday 28-Sep-04															Weather:
Julian 272															Remarks:
Day				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday 29-Sep-04															Weather:
															Remarks:
Julian 273															
Day				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Thursday 30-Sep-04															Weather:
															Remarks:
Julian 274															
Day				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Friday 1-Oct-04	Ferry			6:15	13:00	6.8									Weather: CAVOK
															Remarks: ML & SH arrive on site. Do recon of town and airport
Julian 275															
Day 1				Hours Today		6.8				0.0	0.0	0.0	0.0		Safety Meeting:
Saturday 2-Oct-04	Ferry			8:20	13:00	4.7									Weather: CAVOK
															Remarks: VH-TEM arrives. Refuelling from drums setup and base stations setup
Julian 276															
Day 2				Hours Today		4.7				0.0	0.0	0.0	0.0		Safety Meeting: Startup Safety meeting completed.
Sunday 3-Oct-04															Weather: CAVOK
															Remarks: Receiver failure on system startup. Appears to be failure of IDE controller o
Julian 277															Processor board. Geoff Wells sending board on Next Flight Service Monday
Day 3				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Total Job Hours	267.6	Weekly Totals				11.4	0	0	0	0.0	0.0			0.0	

Total Aircraft Hours 15539.9 Ltrs/Hr 0 Total Standby 0.0
Hours to Next Periodic 28.2 Running Avg 0.0 km/day % Complete 0.0 %
Anticipated Hours Next week 0.0 km/hr km Remaining 5211.0 km

Survey Equipment Problems: Receiver failure on system startup. Appears to be failure of IDE controller on Processor board. Geoff Wells sending board on Next Flight Service Monday

Week Commencing: **Monday 4-Oct-04**
Job Number: 1682
Total km: 5211

Aircraft: VH-TEM
Base: Batchelor, NT
Country: Australia
Area Name: Sandy Creek

Operators: Shane Hulme
Data Proc: Matt Lawrence
Crew Leader: Shane Hulme
Accom: Batchelor Resort

Pilots: Tim Haldane / Troy Jacobsen
Techs: Shane Hulme
Client: Discovery Nickel
Contact #: 89762123

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	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday 4-Oct-04															Weather: CAVOK
															Remarks: Processor board received at 2130. SH fitted to Receiver basic check OK.
Julian 278															Receiver to be reassembled on Tuesday morning. No flight will be possible
Day 4				Hours Today		0.0				0.0	0.0				Safety Meeting:
Tuesday 5-Oct-04															Weather: CAVOK
															Remarks: SCSI Adaptor needed for new type. Geoff Wells sent item to field
Julian 279															
Day 5				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Wednesday 6-Oct-04															Weather:
															Remarks: SCSI Adaptor recveived System ground run OK
Julian 280															
Day 6				Hours Today		0.0				0.0	0.0	0.0	0.0		Safety Meeting:
Thursday 7-Oct-04	1	TJ/TH	SH	6:10	10:50	4.7				405.6					Weather:
															Remarks:
Julian 281															
Day 7				Hours Today		4.7				405.6	0.0	405.6	0.0		Safety Meeting:
Friday 8-Oct-04	2	TH/TJ	SH	6:15	10:25	4.2				442.7					Weather: CAVOK
															Remarks:
Julian 282															
Day 8				Hours Today		4.2				442.7	0.0	848.3	0.0		Safety Meeting:
Saturday 9-Oct-04	3	TH/TJ	SH	6:15	8:15	2.0					13.8				Weather: CAVOK
															Remarks: Calibration difficulties and question on one chanel only reflight line flown to
Julian 283															check system
Day 9				Hours Today		2.0				0.0	13.8	848.3	13.8		Safety Meeting:
Sunday 10-Oct-04	4	TJ/TH	SH	6:10	10:40	4.5				482.8					Weather: CAVOK
															Remarks: Problems with dummy load flight continued though data in question due to
Julian 284															mag noise caused. PNAV froze twice onnline.
Day 10				Hours Today		4.5				482.8	0.0	1331.1	13.8		Safety Meeting:
Total Job Hours	267.6	Weekly Totals			15.3	0	0	0	1331.1	13.8			0.0		
		Total Aircraft Hours			15555.3	Ltrs/Hr		0			Total Standby		0.0		
		Hours to Next Periodic			12.9	Running Avg			190.2	km/day	% Complete		25.5	%	
		Anticipated Hours Next week							86.8	km/hr	km Remaining		3879.9	km	

Survey Equipment Problems: Rx mother board, Dummy load and PNAV

Week Commencing: **Monday 11-Oct-04** | Aircraft: VH-TEM | Operators: Shane Hulme | Pilots: Tim Haldane / Troy Jacobsen
Job Number: 1682 | Base: Batchelor, NT | Data Proc: Matt Lawrence / Matt Hope | Techs: Shane Hulme
Total km: 5211 | Country: Australia | Crew Leader: Shane Hulme | Client: Discovery Nickel
Area Name: Sandy Ck & Wan | Accom: Batchelor Resort & Ti Tree | Contact #: 0427980414

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	Prod	Refly	(0, 0.5, 1)	
Monday	11-Oct-04	5	TH/TJ	SH	6:15	10:55	4.7				530.7	15.8				Weather:
																Remarks:
Julian	285															
Day	11				Hours Today		4.7				530.7	15.8	1861.8	29.6		Safety Meeting:
Tuesday	12-Oct-04	6	TJ/TH	SH	6:15	10:55	4.7				258.0	316.0				Weather:
																Remarks:
Julian	286															
Day	12				Hours Today		4.7				258.0	316.0	2119.8	345.6		Safety Meeting:
Wednesday	13-Oct-04	7	TH/TJ	SH	6:25	8:35	2.2					185.4				Weather:
																Remarks:
Julian	287															
Day	13				Hours Today		2.2				0.0	185.4	2119.8	531.0		Safety Meeting:
Thursday	14-Oct-04															Weather:
																Remarks: Aircraft servicing
Julian	288															SH & MH mob to Ti Tree, ML Demob to Perth
Day	14				Hours Today		0.0				0.0	0.0	2119.8	531.0		Safety Meeting:
Friday	15-Oct-04															Weather: CAVOK
																Remarks: Aircraft servicing
Julian	289															
Day	15				Hours Today		0.0				0.0	0.0	2119.8	531.0		Safety Meeting:
Saturday	16-Oct-04															Weather:
																Remarks: Aircraft servicing
Julian	290															
Day	16				Hours Today		0.0				0.0	0.0	2119.8	531.0		Safety Meeting:
Sunday	17-Oct-04	Ferry	TH/TJ		6:00	7:00	1.0			2137						Weather: CAVOK
		Ferry	TH/TJ		8:00	11:25	3.4									Remarks: VHTEM mob to Ti Tree, DC onboard with TH & TJ. LG demob to Pert
Julian	291															
Day	17				Hours Today		4.4				0.0	0.0	2119.8	531.0		Safety Meeting: Pre production safety meeting held
Total Job Hours		267.6	Weekly Totals				15.9	0	0	2137	788.7	517.2			0.0	
			Total Aircraft Hours				15571.2	Ltrs/Hr		134			Total Standby		0.0	
			Hours to Next Periodic				145.6	Running Avg			112.7	km/day	% Complete		40.7	%
			Anticipated Hours Next week				25				49.6	km/hr	km Remaining		3091.2	km

Survey Equipment Problems: PNAV having problems with heat. Extra air diverted to PNAV.

Week Commencing: **Monday 18-Oct-04** | Aircraft: VH-TEM | Operators: Shane Hulme | Pilots: Tim Haldane / Troy Jacobsen
Job Number: 1682 | Base: Batchelor, NT | Data Proc: Matt Hope | Techs: Shane Hulme
Total km: 5211 | Country: Australia | Crew Leader: Shane Hulme | Client: Discovery Nickel
Area Name: Willowra & Jarra | Accom: Batchelor Resort & Ti Tree | Contact #: 0427980414

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	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday 18-Oct-04	8	TH/TJ	SH	5:45	10:20	4.6				507.0					Weather: Thermals and Turbulence early
															Remarks:
Julian 292															Willowra block completed in one flight
Day 18				Hours Today		4.6				507.0	0.0	2626.8	531.0		Safety Meeting:
Tuesday 19-Oct-04	9	TJ/TH	SH	5:40	10:40	5.0				644.2					Weather: Thermals and Turbulence Strong wind easterly 20 to 25 knots
															Remarks: Jarra_East block Tie lines and half of travs
Julian 293															
Day 19				Hours Today		5.0				644.2	0.0	3271.0	531.0		Safety Meeting:
Wednesday 20-Oct-04	10	TH/TJ	SH	7:10	11:50	4.7				390.0					Weather: Thermals and turbulence
										45.6					Remarks: 45.6km Job 1687
Julian 294															
Day 20				Hours Today		4.7				390.0	0.0	3661.0	531.0		Safety Meeting:
Thursday 21-Oct-04	11	TJ/TH	SH	5:30	8:30	3.0				156.0					Weather:
										45.6					Remarks:
Julian 295															
Day 21				Hours Today		3.0				156.0	0.0	3817.0	531.0		Safety Meeting:
Friday 22-Oct-04	Ferry	TH/TJ		6:00	9:25	3.4									Weather: CAVOK
															Remarks: SH & MH onboard
Julian 296															DC driving Landcruiser via Yulara
Day 22				Hours Today		3.4				0.0	0.0	3817.0	531.0		Safety Meeting:
Saturday 23-Oct-04	PDO														Weather: CAVOK
															Remarks: PDO
Julian 297															DC arrived at Warburton
Day 23				Hours Today		0.0				0.0	0.0	3817.0	531.0		Safety Meeting: Local conditions discussed
Sunday 24-Oct-04	12	TH/TJ	SH	4:45	9:25	4.7				540.7					Weather: CAVOK
															Remarks:
Julian 298															
Day 24				Hours Today		4.7				540.7	0.0	4357.7	531.0		Safety Meeting: Safety meeting held
Total Job Hours	267.6	Weekly Totals				25.3	0	0	0	2237.9	0.0			0.0	

Total Aircraft Hours 15596.5 | Ltrs/Hr 0 | Total Standby 0.0
Hours to Next Periodic 120.3 | Running Avg 319.7 km/day | % Complete 83.6 %
Anticipated Hours Next week 25 | 88.3 km/hr | km Remaining 853.3 km

Survey Equipment Problems: _____

Week Commencing: **Monday 25-Oct-04** Aircraft: VH-TEM Operators: Shane Hulme Pilots: Tim Haldane / Troy Jacobsen
Job Number: 1682 Base: Warburton, NT Data Proc: Matt Hope Techs: Shane Hulme
Total km: 5211 Country: Australia Crew Leader: Shane Hulme Client: Discovery Nickel
Area Name: Musgrave Accom: Warburton Roadhouse Contact #: 08 8956 7656 Roadhouse

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	To Date Prod	To Date Refly	Standby (0, 0.5, 1)	Comments
Monday 25-Oct-04	13	TH/TJ		4:35	9:15	4.7				574.8					Weather:
															Remarks:
Julian 299															
Day 25				Hours Today		4.7				574.8	0.0	4932.5	531.0		Safety Meeting:
Tuesday 26-Oct-04	14	TJ/TH	SH	4:35	7:35	3.0				224.9					Weather: Servere Spherics in early am
	15	TJ/TH	SH	9:45	12:40	2.9				51.9	173.0				Remarks:
Julian 300															
Day 26				Hours Today		5.9				276.8	173.0	5209.3	704.0		Safety Meeting:
															Weather:
															Remarks:
				Hours Today		0.0				0.0	0.0	5209.3	704.0		Safety Meeting:
															Weather:
															Remarks:
				Hours Today		0.0				0.0	0.0	5209.3	704.0		Safety Meeting:
															Weather: CAVOK
															Remarks:
				Hours Today		0.0				0.0	0.0	5209.3	704.0		Safety Meeting:
															Weather:
															Remarks:
				Hours Today		0.0				0.0	0.0	5209.3	704.0		Safety Meeting:
															Weather:
															Remarks:
				Hours Today		0.0				0.0	0.0	5209.3	704.0		Safety Meeting:
Total Job Hours	267.6	Weekly Totals				10.6	0	0	0	851.6	173.0			0.0	

Total Aircraft Hours 15607.1 Ltrs/Hr 0 Total Standby 0.0
Hours to Next Periodic 109.7 Running Avg 121.7 km/day % Complete 100.0 %
Anticipated Hours Next week 25 80.5 km/hr km Remaining 1.7 km

Survey Equipment Problems: _____

APPENDIX III – Final Located Data Formats

FINAL DATA HEADER

Final headers for each area were delivered. All areas have the same data format.

```
COMM JOB NUMBER:                                                    1682
COMM SURVEY COMPMANY:                                Fugro Airborne Surveys
COMM CLIENT:                                                Discovery Nickel
COMM SURVEY TYPE:                                25Hz 4ms GEOTEMDeep SURVEY
COMM STATE:                                                            NT
COMM SURVEY FLOWN:                                          October, 2004
COMM
COMM DATUM:                                                         GDA94
COMM PROJECTION:                                                      MGA
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                        Casa 212-200 VH-TEM
COMM
COMM MAGNETOMETER:                                       Scintrex CS-2 CV
COMM INSTALLATION:                                                Stinger
COMM RESOLUTION:                                               0.001 nT
COMM RECORDING INTERVAL:                                          0.2 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                  25Hz GEOTEMdeep
COMM INSTALLATION:                 Transmitter loop mounted on the aircraft
COMM                                        Receiver coils in a towed bird
COMM COIL ORIENTATION:                                              X,Y,Z
COMM RECORDING INTERVAL:                                         0.25 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                       35 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                       122 m
COMM
COMM RADAR ALTIMETER:                                  Sperry Stars AA200
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM NAVIGATION:                          Omnistar real-time differential GPS
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM ACQUISITION SYSTEM:                                      Fugro GEODAS
COMM
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 GEOTEMdeep IS A TIME-DOMAIN HALF SINE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 3 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 4 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 20 WINDOWS ARE:
COMM
COMM WINDOW      START        END        CENTRE
COMM 1            0.156        0.625      0.391
COMM 2            0.625        1.719      1.172
COMM 3            1.719        2.969      2.344
COMM 4            2.969        4.531      3.750
COMM 5            4.531        4.688      4.609
COMM 6            4.688        4.844      4.766
COMM 7            4.844        5.000      4.922
COMM 8            5.000        5.313      5.156
COMM 9            5.313        5.625      5.469
COMM 10           5.625        6.094      5.859
COMM 11           6.094        6.563      6.328
COMM 12           6.563        7.188      6.875
COMM 13           7.188        7.969      7.578
COMM 14           7.969        8.906      8.438
COMM 15           8.906       10.000      9.453
COMM 16          10.000       11.250     10.625
COMM 17          11.250       12.813     12.031
COMM 18          12.813       14.688     13.750
COMM 19          14.688       17.188     15.938
COMM 20          17.188       20.000     18.594
COMM
COMM PULSE WIDTH 4.108 ms
COMM
COMM WAVEFORM FILE HAS BEEN PROVIDED WITH DATA (xxxxxx.out)
COMM
COMM
```

```
 Output field format : DOS  - Flat ascii
 Number of fields    : 360

 Field  Columns  Type Format  Channel        Description

  1     1 -   6  int  (i 6)   LINE          [Line                                ]
  2     7 -  10  int  (i 4)   FLIGHT        [Flight                              ]
  3    11 -  18  int  (i 8)   DATE          [Date                          (ddmmyy)]
  4    19 -  28  real (f10.2) FID           [Fiducial                           (s)]
  5    29 -  38  real (f10.2) EASTING       [Easting   MGA53S-GDA94             (m)]
  6    39 -  49  real (f11.2) NORTHING      [Northing  MGA53S-GDA94             (m)]
  7    50 -  62  real (f13.6) LATITUDE      [Latitude  GDA94                  (deg)]
  8    63 -  75  real (f13.6) LONGITUDE     [Longitude GDA94                  (deg)]
  9    76 -  85  real (f10.3) MAGU          [Raw TMI                           (nT)]
 10    86 -  95  real (f10.3) MAGF          [Final TMI                         (nT)]
 11    96 - 107  real (f12.5) MAGF_1VD      [Final TMI 1VD                   (nT/m)]
 12   108 - 117  real (f10.3) DIURNAL       [Base Mag                          (nT)]
 13   118 - 125  real (f 8.2) DTM           [DTM                                (m)]
 14   126 - 133  real (f 8.2) TxHeight      [Tx Altitude                        (m)]
 15   134 - 141  real (f 8.2) RAlt          [Radar Altitude                     (m)]
 16   142 - 149  real (f 8.2) BaroHgt       [Barometric Altitude                (m)]
 17   150 - 157  real (f 8.3) Pitch         [Tx pitch                         (deg)]
 18   158 - 165  real (f 8.3) Roll          [Tx roll                          (deg)]
 19   166 - 175  int  (i10)   X_Pow         [X Powerline Monitor               (mV)]
 20   176 - 185  int  (i10)   Z_Pow         [Z Powerline Monitor               (mV)]
 21   186 - 195  int  (i10)   XRaw[1]       [EM X dB/dt Raw 1                (nT/s)]
 22   196 - 205  int  (i10)   XRaw[2]       [EM X dB/dt Raw 2                (nT/s)]
 23   206 - 215  int  (i10)   XRaw[3]       [EM X dB/dt Raw 3                (nT/s)]
 24   216 - 225  int  (i10)   XRaw[4]       [EM X dB/dt Raw 4                (nT/s)]
 25   226 - 235  int  (i10)   XRaw[5]       [EM X dB/dt Raw 5                (nT/s)]
 26   236 - 245  int  (i10)   XRaw[6]       [EM X dB/dt Raw 6                (nT/s)]
 27   246 - 255  int  (i10)   XRaw[7]       [EM X dB/dt Raw 7                (nT/s)]
```

28	256 - 265	int	(i10)	XRaw[8]	[EM X dB/dt Raw 8 (nT/s)]
29	266 - 275	int	(i10)	XRaw[9]	[EM X dB/dt Raw 9 (nT/s)]
30	276 - 285	int	(i10)	XRaw[10]	[EM X dB/dt Raw 10 (nT/s)]
31	286 - 295	int	(i10)	XRaw[11]	[EM X dB/dt Raw 11 (nT/s)]
32	296 - 305	int	(i10)	XRaw[12]	[EM X dB/dt Raw 12 (nT/s)]
33	306 - 315	int	(i10)	XRaw[13]	[EM X dB/dt Raw 13 (nT/s)]
34	316 - 325	int	(i10)	XRaw[14]	[EM X dB/dt Raw 14 (nT/s)]
35	326 - 335	int	(i10)	XRaw[15]	[EM X dB/dt Raw 15 (nT/s)]
36	336 - 345	int	(i10)	XRaw[16]	[EM X dB/dt Raw 16 (nT/s)]
37	346 - 355	int	(i10)	XRaw[17]	[EM X dB/dt Raw 17 (nT/s)]
38	356 - 365	int	(i10)	XRaw[18]	[EM X dB/dt Raw 18 (nT/s)]
39	366 - 375	int	(i10)	XRaw[19]	[EM X dB/dt Raw 19 (nT/s)]
40	376 - 385	int	(i10)	XRaw[20]	[EM X dB/dt Raw 20 (nT/s)]
41	386 - 395	int	(i10)	YRaw[1]	[EM Y dB/dt Raw 1 (nT/s)]
42	396 - 405	int	(i10)	YRaw[2]	[EM Y dB/dt Raw 2 (nT/s)]
43	406 - 415	int	(i10)	YRaw[3]	[EM Y dB/dt Raw 3 (nT/s)]
44	416 - 425	int	(i10)	YRaw[4]	[EM Y dB/dt Raw 4 (nT/s)]
45	426 - 435	int	(i10)	YRaw[5]	[EM Y dB/dt Raw 5 (nT/s)]
46	436 - 445	int	(i10)	YRaw[6]	[EM Y dB/dt Raw 6 (nT/s)]
47	446 - 455	int	(i10)	YRaw[7]	[EM Y dB/dt Raw 7 (nT/s)]
48	456 - 465	int	(i10)	YRaw[8]	[EM Y dB/dt Raw 8 (nT/s)]
49	466 - 475	int	(i10)	YRaw[9]	[EM Y dB/dt Raw 9 (nT/s)]
50	476 - 485	int	(i10)	YRaw[10]	[EM Y dB/dt Raw 10 (nT/s)]
51	486 - 495	int	(i10)	YRaw[11]	[EM Y dB/dt Raw 11 (nT/s)]
52	496 - 505	int	(i10)	YRaw[12]	[EM Y dB/dt Raw 12 (nT/s)]
53	506 - 515	int	(i10)	YRaw[13]	[EM Y dB/dt Raw 13 (nT/s)]
54	516 - 525	int	(i10)	YRaw[14]	[EM Y dB/dt Raw 14 (nT/s)]
55	526 - 535	int	(i10)	YRaw[15]	[EM Y dB/dt Raw 15 (nT/s)]
56	536 - 545	int	(i10)	YRaw[16]	[EM Y dB/dt Raw 16 (nT/s)]
57	546 - 555	int	(i10)	YRaw[17]	[EM Y dB/dt Raw 17 (nT/s)]
58	556 - 565	int	(i10)	YRaw[18]	[EM Y dB/dt Raw 18 (nT/s)]
59	566 - 575	int	(i10)	YRaw[19]	[EM Y dB/dt Raw 19 (nT/s)]
60	576 - 585	int	(i10)	YRaw[20]	[EM Y dB/dt Raw 20 (nT/s)]
61	586 - 595	int	(i10)	ZRaw[1]	[EM Z dB/dt Raw 1 (nT/s)]
62	596 - 605	int	(i10)	ZRaw[2]	[EM Z dB/dt Raw 2 (nT/s)]
63	606 - 615	int	(i10)	ZRaw[3]	[EM Z dB/dt Raw 3 (nT/s)]
64	616 - 625	int	(i10)	ZRaw[4]	[EM Z dB/dt Raw 4 (nT/s)]
65	626 - 635	int	(i10)	ZRaw[5]	[EM Z dB/dt Raw 5 (nT/s)]
66	636 - 645	int	(i10)	ZRaw[6]	[EM Z dB/dt Raw 6 (nT/s)]
67	646 - 655	int	(i10)	ZRaw[7]	[EM Z dB/dt Raw 7 (nT/s)]
68	656 - 665	int	(i10)	ZRaw[8]	[EM Z dB/dt Raw 8 (nT/s)]
69	666 - 675	int	(i10)	ZRaw[9]	[EM Z dB/dt Raw 9 (nT/s)]
70	676 - 685	int	(i10)	ZRaw[10]	[EM Z dB/dt Raw 10 (nT/s)]
71	686 - 695	int	(i10)	ZRaw[11]	[EM Z dB/dt Raw 11 (nT/s)]
72	696 - 705	int	(i10)	ZRaw[12]	[EM Z dB/dt Raw 12 (nT/s)]
73	706 - 715	int	(i10)	ZRaw[13]	[EM Z dB/dt Raw 13 (nT/s)]
74	716 - 725	int	(i10)	ZRaw[14]	[EM Z dB/dt Raw 14 (nT/s)]
75	726 - 735	int	(i10)	ZRaw[15]	[EM Z dB/dt Raw 15 (nT/s)]
76	736 - 745	int	(i10)	ZRaw[16]	[EM Z dB/dt Raw 16 (nT/s)]
77	746 - 755	int	(i10)	ZRaw[17]	[EM Z dB/dt Raw 17 (nT/s)]
78	756 - 765	int	(i10)	ZRaw[18]	[EM Z dB/dt Raw 18 (nT/s)]
79	766 - 775	int	(i10)	ZRaw[19]	[EM Z dB/dt Raw 19 (nT/s)]
80	776 - 785	int	(i10)	ZRaw[20]	[EM Z dB/dt Raw 20 (nT/s)]
81	786 - 795	int	(i10)	XProc[1]	[EM X dB/dt Proc 1 (nT/s)]
82	796 - 805	int	(i10)	XProc[2]	[EM X dB/dt Proc 2 (nT/s)]
83	806 - 815	int	(i10)	XProc[3]	[EM X dB/dt Proc 3 (nT/s)]
84	816 - 825	int	(i10)	XProc[4]	[EM X dB/dt Proc 4 (nT/s)]
85	826 - 835	int	(i10)	XProc[5]	[EM X dB/dt Proc 5 (nT/s)]
86	836 - 845	int	(i10)	XProc[6]	[EM X dB/dt Proc 6 (nT/s)]
87	846 - 855	int	(i10)	XProc[7]	[EM X dB/dt Proc 7 (nT/s)]
88	856 - 865	int	(i10)	XProc[8]	[EM X dB/dt Proc 8 (nT/s)]
89	866 - 875	int	(i10)	XProc[9]	[EM X dB/dt Proc 9 (nT/s)]
90	876 - 885	int	(i10)	XProc[10]	[EM X dB/dt Proc 10 (nT/s)]
91	886 - 895	int	(i10)	XProc[11]	[EM X dB/dt Proc 11 (nT/s)]
92	896 - 905	int	(i10)	XProc[12]	[EM X dB/dt Proc 12 (nT/s)]
93	906 - 915	int	(i10)	XProc[13]	[EM X dB/dt Proc 13 (nT/s)]
94	916 - 925	int	(i10)	XProc[14]	[EM X dB/dt Proc 14 (nT/s)]
95	926 - 935	int	(i10)	XProc[15]	[EM X dB/dt Proc 15 (nT/s)]
96	936 - 945	int	(i10)	XProc[16]	[EM X dB/dt Proc 16 (nT/s)]
97	946 - 955	int	(i10)	XProc[17]	[EM X dB/dt Proc 17 (nT/s)]
98	956 - 965	int	(i10)	XProc[18]	[EM X dB/dt Proc 18 (nT/s)]
99	966 - 975	int	(i10)	XProc[19]	[EM X dB/dt Proc 19 (nT/s)]
100	976 - 985	int	(i10)	XProc[20]	[EM X dB/dt Proc 20 (nT/s)]

101	986 - 995	int	(i10)	YProc[1]	[EM Y dB/dt Proc 1	(nT/s)]
102	996 -1005	int	(i10)	YProc[2]	[EM Y dB/dt Proc 2	(nT/s)]
103	1006 -1015	int	(i10)	YProc[3]	[EM Y dB/dt Proc 3	(nT/s)]
104	1016 -1025	int	(i10)	YProc[4]	[EM Y dB/dt Proc 4	(nT/s)]
105	1026 -1035	int	(i10)	YProc[5]	[EM Y dB/dt Proc 5	(nT/s)]
106	1036 -1045	int	(i10)	YProc[6]	[EM Y dB/dt Proc 6	(nT/s)]
107	1046 -1055	int	(i10)	YProc[7]	[EM Y dB/dt Proc 7	(nT/s)]
108	1056 -1065	int	(i10)	YProc[8]	[EM Y dB/dt Proc 8	(nT/s)]
109	1066 -1075	int	(i10)	YProc[9]	[EM Y dB/dt Proc 9	(nT/s)]
110	1076 -1085	int	(i10)	YProc[10]	[EM Y dB/dt Proc 10	(nT/s)]
111	1086 -1095	int	(i10)	YProc[11]	[EM Y dB/dt Proc 11	(nT/s)]
112	1096 -1105	int	(i10)	YProc[12]	[EM Y dB/dt Proc 12	(nT/s)]
113	1106 -1115	int	(i10)	YProc[13]	[EM Y dB/dt Proc 13	(nT/s)]
114	1116 -1125	int	(i10)	YProc[14]	[EM Y dB/dt Proc 14	(nT/s)]
115	1126 -1135	int	(i10)	YProc[15]	[EM Y dB/dt Proc 15	(nT/s)]
116	1136 -1145	int	(i10)	YProc[16]	[EM Y dB/dt Proc 16	(nT/s)]
117	1146 -1155	int	(i10)	YProc[17]	[EM Y dB/dt Proc 17	(nT/s)]
118	1156 -1165	int	(i10)	YProc[18]	[EM Y dB/dt Proc 18	(nT/s)]
119	1166 -1175	int	(i10)	YProc[19]	[EM Y dB/dt Proc 19	(nT/s)]
120	1176 -1185	int	(i10)	YProc[20]	[EM Y dB/dt Proc 20	(nT/s)]
121	1186 -1195	int	(i10)	ZProc[1]	[EM Z dB/dt Proc 1	(nT/s)]
122	1196 -1205	int	(i10)	ZProc[2]	[EM Z dB/dt Proc 2	(nT/s)]
123	1206 -1215	int	(i10)	ZProc[3]	[EM Z dB/dt Proc 3	(nT/s)]
124	1216 -1225	int	(i10)	ZProc[4]	[EM Z dB/dt Proc 4	(nT/s)]
125	1226 -1235	int	(i10)	ZProc[5]	[EM Z dB/dt Proc 5	(nT/s)]
126	1236 -1245	int	(i10)	ZProc[6]	[EM Z dB/dt Proc 6	(nT/s)]
127	1246 -1255	int	(i10)	ZProc[7]	[EM Z dB/dt Proc 7	(nT/s)]
128	1256 -1265	int	(i10)	ZProc[8]	[EM Z dB/dt Proc 8	(nT/s)]
129	1266 -1275	int	(i10)	ZProc[9]	[EM Z dB/dt Proc 9	(nT/s)]
130	1276 -1285	int	(i10)	ZProc[10]	[EM Z dB/dt Proc 10	(nT/s)]
131	1286 -1295	int	(i10)	ZProc[11]	[EM Z dB/dt Proc 11	(nT/s)]
132	1296 -1305	int	(i10)	ZProc[12]	[EM Z dB/dt Proc 12	(nT/s)]
133	1306 -1315	int	(i10)	ZProc[13]	[EM Z dB/dt Proc 13	(nT/s)]
134	1316 -1325	int	(i10)	ZProc[14]	[EM Z dB/dt Proc 14	(nT/s)]
135	1326 -1335	int	(i10)	ZProc[15]	[EM Z dB/dt Proc 15	(nT/s)]
136	1336 -1345	int	(i10)	ZProc[16]	[EM Z dB/dt Proc 16	(nT/s)]
137	1346 -1355	int	(i10)	ZProc[17]	[EM Z dB/dt Proc 17	(nT/s)]
138	1356 -1365	int	(i10)	ZProc[18]	[EM Z dB/dt Proc 18	(nT/s)]
139	1366 -1375	int	(i10)	ZProc[19]	[EM Z dB/dt Proc 19	(nT/s)]
140	1376 -1385	int	(i10)	ZProc[20]	[EM Z dB/dt Proc 20	(nT/s)]
141	1386 -1395	int	(i10)	BXRaw[1]	[EM X B Field Raw 1	(pT)]
142	1396 -1405	int	(i10)	BXRaw[2]	[EM X B Field Raw 2	(pT)]
143	1406 -1415	int	(i10)	BXRaw[3]	[EM X B Field Raw 3	(pT)]
144	1416 -1425	int	(i10)	BXRaw[4]	[EM X B Field Raw 4	(pT)]
145	1426 -1435	int	(i10)	BXRaw[5]	[EM X B Field Raw 5	(pT)]
146	1436 -1445	int	(i10)	BXRaw[6]	[EM X B Field Raw 6	(pT)]
147	1446 -1455	int	(i10)	BXRaw[7]	[EM X B Field Raw 7	(pT)]
148	1456 -1465	int	(i10)	BXRaw[8]	[EM X B Field Raw 8	(pT)]
149	1466 -1475	int	(i10)	BXRaw[9]	[EM X B Field Raw 9	(pT)]
150	1476 -1485	int	(i10)	BXRaw[10]	[EM X B Field Raw 10	(pT)]
151	1486 -1495	int	(i10)	BXRaw[11]	[EM X B Field Raw 11	(pT)]
152	1496 -1505	int	(i10)	BXRaw[12]	[EM X B Field Raw 12	(pT)]
153	1506 -1515	int	(i10)	BXRaw[13]	[EM X B Field Raw 13	(pT)]
154	1516 -1525	int	(i10)	BXRaw[14]	[EM X B Field Raw 14	(pT)]
155	1526 -1535	int	(i10)	BXRaw[15]	[EM X B Field Raw 15	(pT)]
156	1536 -1545	int	(i10)	BXRaw[16]	[EM X B Field Raw 16	(pT)]
157	1546 -1555	int	(i10)	BXRaw[17]	[EM X B Field Raw 17	(pT)]
158	1556 -1565	int	(i10)	BXRaw[18]	[EM X B Field Raw 18	(pT)]
159	1566 -1575	int	(i10)	BXRaw[19]	[EM X B Field Raw 19	(pT)]
160	1576 -1585	int	(i10)	BXRaw[20]	[EM X B Field Raw 20	(pT)]
161	1586 -1595	int	(i10)	BYRaw[1]	[EM Y B Field Raw 1	(pT)]
162	1596 -1605	int	(i10)	BYRaw[2]	[EM Y B Field Raw 2	(pT)]
163	1606 -1615	int	(i10)	BYRaw[3]	[EM Y B Field Raw 3	(pT)]
164	1616 -1625	int	(i10)	BYRaw[4]	[EM Y B Field Raw 4	(pT)]
165	1626 -1635	int	(i10)	BYRaw[5]	[EM Y B Field Raw 5	(pT)]
166	1636 -1645	int	(i10)	BYRaw[6]	[EM Y B Field Raw 6	(pT)]
167	1646 -1655	int	(i10)	BYRaw[7]	[EM Y B Field Raw 7	(pT)]
168	1656 -1665	int	(i10)	BYRaw[8]	[EM Y B Field Raw 8	(pT)]
169	1666 -1675	int	(i10)	BYRaw[9]	[EM Y B Field Raw 9	(pT)]
170	1676 -1685	int	(i10)	BYRaw[10]	[EM Y B Field Raw 10	(pT)]
171	1686 -1695	int	(i10)	BYRaw[11]	[EM Y B Field Raw 11	(pT)]
172	1696 -1705	int	(i10)	BYRaw[12]	[EM Y B Field Raw 12	(pT)]
173	1706 -1715	int	(i10)	BYRaw[13]	[EM Y B Field Raw 13	(pT)]

174	1716	-1725	int	(i10)	BYRaw[14]	[EM Y B Field Raw 14 (pT)]
175	1726	-1735	int	(i10)	BYRaw[15]	[EM Y B Field Raw 15 (pT)]
176	1736	-1745	int	(i10)	BYRaw[16]	[EM Y B Field Raw 16 (pT)]
177	1746	-1755	int	(i10)	BYRaw[17]	[EM Y B Field Raw 17 (pT)]
178	1756	-1765	int	(i10)	BYRaw[18]	[EM Y B Field Raw 18 (pT)]
179	1766	-1775	int	(i10)	BYRaw[19]	[EM Y B Field Raw 19 (pT)]
180	1776	-1785	int	(i10)	BYRaw[20]	[EM Y B Field Raw 20 (pT)]
181	1786	-1795	int	(i10)	BZRaw[1]	[EM Z B Field Raw 1 (pT)]
182	1796	-1805	int	(i10)	BZRaw[2]	[EM Z B Field Raw 2 (pT)]
183	1806	-1815	int	(i10)	BZRaw[3]	[EM Z B Field Raw 3 (pT)]
184	1816	-1825	int	(i10)	BZRaw[4]	[EM Z B Field Raw 4 (pT)]
185	1826	-1835	int	(i10)	BZRaw[5]	[EM Z B Field Raw 5 (pT)]
186	1836	-1845	int	(i10)	BZRaw[6]	[EM Z B Field Raw 6 (pT)]
187	1846	-1855	int	(i10)	BZRaw[7]	[EM Z B Field Raw 7 (pT)]
188	1856	-1865	int	(i10)	BZRaw[8]	[EM Z B Field Raw 8 (pT)]
189	1866	-1875	int	(i10)	BZRaw[9]	[EM Z B Field Raw 9 (pT)]
190	1876	-1885	int	(i10)	BZRaw[10]	[EM Z B Field Raw 10 (pT)]
191	1886	-1895	int	(i10)	BZRaw[11]	[EM Z B Field Raw 11 (pT)]
192	1896	-1905	int	(i10)	BZRaw[12]	[EM Z B Field Raw 12 (pT)]
193	1906	-1915	int	(i10)	BZRaw[13]	[EM Z B Field Raw 13 (pT)]
194	1916	-1925	int	(i10)	BZRaw[14]	[EM Z B Field Raw 14 (pT)]
195	1926	-1935	int	(i10)	BZRaw[15]	[EM Z B Field Raw 15 (pT)]
196	1936	-1945	int	(i10)	BZRaw[16]	[EM Z B Field Raw 16 (pT)]
197	1946	-1955	int	(i10)	BZRaw[17]	[EM Z B Field Raw 17 (pT)]
198	1956	-1965	int	(i10)	BZRaw[18]	[EM Z B Field Raw 18 (pT)]
199	1966	-1975	int	(i10)	BZRaw[19]	[EM Z B Field Raw 19 (pT)]
200	1976	-1985	int	(i10)	BZRaw[20]	[EM Z B Field Raw 20 (pT)]
201	1986	-1995	int	(i10)	BXProc[1]	[EM X B Field Proc 1 (pT)]
202	1996	-2005	int	(i10)	BXProc[2]	[EM X B Field Proc 2 (pT)]
203	2006	-2015	int	(i10)	BXProc[3]	[EM X B Field Proc 3 (pT)]
204	2016	-2025	int	(i10)	BXProc[4]	[EM X B Field Proc 4 (pT)]
205	2026	-2035	int	(i10)	BXProc[5]	[EM X B Field Proc 5 (pT)]
206	2036	-2045	int	(i10)	BXProc[6]	[EM X B Field Proc 6 (pT)]
207	2046	-2055	int	(i10)	BXProc[7]	[EM X B Field Proc 7 (pT)]
208	2056	-2065	int	(i10)	BXProc[8]	[EM X B Field Proc 8 (pT)]
209	2066	-2075	int	(i10)	BXProc[9]	[EM X B Field Proc 9 (pT)]
210	2076	-2085	int	(i10)	BXProc[10]	[EM X B Field Proc 10 (pT)]
211	2086	-2095	int	(i10)	BXProc[11]	[EM X B Field Proc 11 (pT)]
212	2096	-2105	int	(i10)	BXProc[12]	[EM X B Field Proc 12 (pT)]
213	2106	-2115	int	(i10)	BXProc[13]	[EM X B Field Proc 13 (pT)]
214	2116	-2125	int	(i10)	BXProc[14]	[EM X B Field Proc 14 (pT)]
215	2126	-2135	int	(i10)	BXProc[15]	[EM X B Field Proc 15 (pT)]
216	2136	-2145	int	(i10)	BXProc[16]	[EM X B Field Proc 16 (pT)]
217	2146	-2155	int	(i10)	BXProc[17]	[EM X B Field Proc 17 (pT)]
218	2156	-2165	int	(i10)	BXProc[18]	[EM X B Field Proc 18 (pT)]
219	2166	-2175	int	(i10)	BXProc[19]	[EM X B Field Proc 19 (pT)]
220	2176	-2185	int	(i10)	BXProc[20]	[EM X B Field Proc 20 (pT)]
221	2186	-2195	int	(i10)	BYProc[1]	[EM Y B Field Proc 1 (pT)]
222	2196	-2205	int	(i10)	BYProc[2]	[EM Y B Field Proc 2 (pT)]
223	2206	-2215	int	(i10)	BYProc[3]	[EM Y B Field Proc 3 (pT)]
224	2216	-2225	int	(i10)	BYProc[4]	[EM Y B Field Proc 4 (pT)]
225	2226	-2235	int	(i10)	BYProc[5]	[EM Y B Field Proc 5 (pT)]
226	2236	-2245	int	(i10)	BYProc[6]	[EM Y B Field Proc 6 (pT)]
227	2246	-2255	int	(i10)	BYProc[7]	[EM Y B Field Proc 7 (pT)]
228	2256	-2265	int	(i10)	BYProc[8]	[EM Y B Field Proc 8 (pT)]
229	2266	-2275	int	(i10)	BYProc[9]	[EM Y B Field Proc 9 (pT)]
230	2276	-2285	int	(i10)	BYProc[10]	[EM Y B Field Proc 10 (pT)]
231	2286	-2295	int	(i10)	BYProc[11]	[EM Y B Field Proc 11 (pT)]
232	2296	-2305	int	(i10)	BYProc[12]	[EM Y B Field Proc 12 (pT)]
233	2306	-2315	int	(i10)	BYProc[13]	[EM Y B Field Proc 13 (pT)]
234	2316	-2325	int	(i10)	BYProc[14]	[EM Y B Field Proc 14 (pT)]
235	2326	-2335	int	(i10)	BYProc[15]	[EM Y B Field Proc 15 (pT)]
236	2336	-2345	int	(i10)	BYProc[16]	[EM Y B Field Proc 16 (pT)]
237	2346	-2355	int	(i10)	BYProc[17]	[EM Y B Field Proc 17 (pT)]
238	2356	-2365	int	(i10)	BYProc[18]	[EM Y B Field Proc 18 (pT)]
239	2366	-2375	int	(i10)	BYProc[19]	[EM Y B Field Proc 19 (pT)]
240	2376	-2385	int	(i10)	BYProc[20]	[EM Y B Field Proc 20 (pT)]
241	2386	-2395	int	(i10)	BZProc[1]	[EM Z B Field Proc 1 (pT)]
242	2396	-2405	int	(i10)	BZProc[2]	[EM Z B Field Proc 2 (pT)]
243	2406	-2415	int	(i10)	BZProc[3]	[EM Z B Field Proc 3 (pT)]
244	2416	-2425	int	(i10)	BZProc[4]	[EM Z B Field Proc 4 (pT)]
245	2426	-2435	int	(i10)	BZProc[5]	[EM Z B Field Proc 5 (pT)]
246	2436	-2445	int	(i10)	BZProc[6]	[EM Z B Field Proc 6 (pT)]

247	2446	-2455	int (i10)	BZProc[7]	[EM Z B Field Proc 7	(pT)]
248	2456	-2465	int (i10)	BZProc[8]	[EM Z B Field Proc 8	(pT)]
249	2466	-2475	int (i10)	BZProc[9]	[EM Z B Field Proc 9	(pT)]
250	2476	-2485	int (i10)	BZProc[10]	[EM Z B Field Proc 10	(pT)]
251	2486	-2495	int (i10)	BZProc[11]	[EM Z B Field Proc 11	(pT)]
252	2496	-2505	int (i10)	BZProc[12]	[EM Z B Field Proc 12	(pT)]
253	2506	-2515	int (i10)	BZProc[13]	[EM Z B Field Proc 13	(pT)]
254	2516	-2525	int (i10)	BZProc[14]	[EM Z B Field Proc 14	(pT)]
255	2526	-2535	int (i10)	BZProc[15]	[EM Z B Field Proc 15	(pT)]
256	2536	-2545	int (i10)	BZProc[16]	[EM Z B Field Proc 16	(pT)]
257	2546	-2555	int (i10)	BZProc[17]	[EM Z B Field Proc 17	(pT)]
258	2556	-2565	int (i10)	BZProc[18]	[EM Z B Field Proc 18	(pT)]
259	2566	-2575	int (i10)	BZProc[19]	[EM Z B Field Proc 19	(pT)]
260	2576	-2585	int (i10)	BZProc[20]	[EM Z B Field Proc 20	(pT)]
261	2586	-2595	real (f10.3)	CNDX[1]	[Conductivity_X1 0-5 m	(mS/m)]
262	2596	-2605	real (f10.3)	CNDX[2]	[Conductivity_X2 5-10 m	(mS/m)]
263	2606	-2615	real (f10.3)	CNDX[3]	[Conductivity_X3 10-15 m	(mS/m)]
264	2616	-2625	real (f10.3)	CNDX[4]	[Conductivity_X4 15-20 m	(mS/m)]
265	2626	-2635	real (f10.3)	CNDX[5]	[Conductivity_X5 20-25 m	(mS/m)]
266	2636	-2645	real (f10.3)	CNDX[6]	[Conductivity_X6 25-30 m	(mS/m)]
267	2646	-2655	real (f10.3)	CNDX[7]	[Conductivity_X7 30-35 m	(mS/m)]
268	2656	-2665	real (f10.3)	CNDX[8]	[Conductivity_X8 35-40 m	(mS/m)]
269	2666	-2675	real (f10.3)	CNDX[9]	[Conductivity_X9 40-45 m	(mS/m)]
270	2676	-2685	real (f10.3)	CNDX[10]	[Conductivity_X10 45-50 m	(mS/m)]
271	2686	-2695	real (f10.3)	CNDX[11]	[Conductivity_X11 50-55 m	(mS/m)]
272	2696	-2705	real (f10.3)	CNDX[12]	[Conductivity_X12 55-60 m	(mS/m)]
273	2706	-2715	real (f10.3)	CNDX[13]	[Conductivity_X13 60-65 m	(mS/m)]
274	2716	-2725	real (f10.3)	CNDX[14]	[Conductivity_X14 65-70 m	(mS/m)]
275	2726	-2735	real (f10.3)	CNDX[15]	[Conductivity_X15 70-75 m	(mS/m)]
276	2736	-2745	real (f10.3)	CNDX[16]	[Conductivity_X16 75-80 m	(mS/m)]
277	2746	-2755	real (f10.3)	CNDX[17]	[Conductivity_X17 80-85 m	(mS/m)]
278	2756	-2765	real (f10.3)	CNDX[18]	[Conductivity_X18 85-90 m	(mS/m)]
279	2766	-2775	real (f10.3)	CNDX[19]	[Conductivity_X19 90-95 m	(mS/m)]
280	2776	-2785	real (f10.3)	CNDX[20]	[Conductivity_X20 95-100 m	(mS/m)]
281	2786	-2795	real (f10.3)	CNDX[21]	[Conductivity_X21 100-105 m	(mS/m)]
282	2796	-2805	real (f10.3)	CNDX[22]	[Conductivity_X22 105-110 m	(mS/m)]
283	2806	-2815	real (f10.3)	CNDX[23]	[Conductivity_X23 110-115 m	(mS/m)]
284	2816	-2825	real (f10.3)	CNDX[24]	[Conductivity_X24 115-120 m	(mS/m)]
285	2826	-2835	real (f10.3)	CNDX[25]	[Conductivity_X25 120-125 m	(mS/m)]
286	2836	-2845	real (f10.3)	CNDX[26]	[Conductivity_X26 125-130 m	(mS/m)]
287	2846	-2855	real (f10.3)	CNDX[27]	[Conductivity_X27 130-135 m	(mS/m)]
288	2856	-2865	real (f10.3)	CNDX[28]	[Conductivity_X28 135-140 m	(mS/m)]
289	2866	-2875	real (f10.3)	CNDX[29]	[Conductivity_X29 140-145 m	(mS/m)]
290	2876	-2885	real (f10.3)	CNDX[30]	[Conductivity_X30 145-150 m	(mS/m)]
291	2886	-2895	real (f10.3)	CNDX[31]	[Conductivity_X31 150-155 m	(mS/m)]
292	2896	-2905	real (f10.3)	CNDX[32]	[Conductivity_X32 155-160 m	(mS/m)]
293	2906	-2915	real (f10.3)	CNDX[33]	[Conductivity_X33 160-165 m	(mS/m)]
294	2916	-2925	real (f10.3)	CNDX[34]	[Conductivity_X34 165-170 m	(mS/m)]
295	2926	-2935	real (f10.3)	CNDX[35]	[Conductivity_X35 170-175 m	(mS/m)]
296	2936	-2945	real (f10.3)	CNDX[36]	[Conductivity_X36 175-180 m	(mS/m)]
297	2946	-2955	real (f10.3)	CNDX[37]	[Conductivity_X37 180-185 m	(mS/m)]
298	2956	-2965	real (f10.3)	CNDX[38]	[Conductivity_X38 185-190 m	(mS/m)]
299	2966	-2975	real (f10.3)	CNDX[39]	[Conductivity_X39 190-195 m	(mS/m)]
300	2976	-2985	real (f10.3)	CNDX[40]	[Conductivity_X40 195-200 m	(mS/m)]
301	2986	-2995	real (f10.3)	CNDX[41]	[Conductivity_X41 200-205 m	(mS/m)]
302	2996	-3005	real (f10.3)	CNDX[42]	[Conductivity_X42 205-210 m	(mS/m)]
303	3006	-3015	real (f10.3)	CNDX[43]	[Conductivity_X43 210-215 m	(mS/m)]
304	3016	-3025	real (f10.3)	CNDX[44]	[Conductivity_X44 215-220 m	(mS/m)]
305	3026	-3035	real (f10.3)	CNDX[45]	[Conductivity_X45 220-225 m	(mS/m)]
306	3036	-3045	real (f10.3)	CNDX[46]	[Conductivity_X46 225-230 m	(mS/m)]
307	3046	-3055	real (f10.3)	CNDX[47]	[Conductivity_X47 230-235 m	(mS/m)]
308	3056	-3065	real (f10.3)	CNDX[48]	[Conductivity_X48 235-240 m	(mS/m)]
309	3066	-3075	real (f10.3)	CNDX[49]	[Conductivity_X49 240-245 m	(mS/m)]
310	3076	-3085	real (f10.3)	CNDX[50]	[Conductivity_X50 245-250 m	(mS/m)]
311	3086	-3095	real (f10.3)	CNDX[51]	[Conductivity_X51 250-255 m	(mS/m)]
312	3096	-3105	real (f10.3)	CNDX[52]	[Conductivity_X52 255-260 m	(mS/m)]
313	3106	-3115	real (f10.3)	CNDX[53]	[Conductivity_X53 260-265 m	(mS/m)]
314	3116	-3125	real (f10.3)	CNDX[54]	[Conductivity_X54 265-270 m	(mS/m)]
315	3126	-3135	real (f10.3)	CNDX[55]	[Conductivity_X55 270-275 m	(mS/m)]
316	3136	-3145	real (f10.3)	CNDX[56]	[Conductivity_X56 275-280 m	(mS/m)]
317	3146	-3155	real (f10.3)	CNDX[57]	[Conductivity_X57 280-285 m	(mS/m)]
318	3156	-3165	real (f10.3)	CNDX[58]	[Conductivity_X58 285-290 m	(mS/m)]
319	3166	-3175	real (f10.3)	CNDX[59]	[Conductivity_X59 290-295 m	(mS/m)]

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320  3176 -3185  real (f10.3) CNDX[60]      [Conductivity_X60 295-300 m     (mS/m)]
321  3186 -3195  real (f10.3) CNDX[61]      [Conductivity_X61 300-305 m     (mS/m)]
322  3196 -3205  real (f10.3) CNDX[62]      [Conductivity_X62 305-310 m     (mS/m)]
323  3206 -3215  real (f10.3) CNDX[63]      [Conductivity_X63 310-315 m     (mS/m)]
324  3216 -3225  real (f10.3) CNDX[64]      [Conductivity_X64 315-320 m     (mS/m)]
325  3226 -3235  real (f10.3) CNDX[65]      [Conductivity_X65 320-325 m     (mS/m)]
326  3236 -3245  real (f10.3) CNDX[66]      [Conductivity_X66 325-330 m     (mS/m)]
327  3246 -3255  real (f10.3) CNDX[67]      [Conductivity_X67 330-335 m     (mS/m)]
328  3256 -3265  real (f10.3) CNDX[68]      [Conductivity_X68 335-340 m     (mS/m)]
329  3266 -3275  real (f10.3) CNDX[69]      [Conductivity_X69 340-345 m     (mS/m)]
330  3276 -3285  real (f10.3) CNDX[70]      [Conductivity_X70 345-350 m     (mS/m)]
331  3286 -3295  real (f10.3) CNDX[71]      [Conductivity_X71 350-355 m     (mS/m)]
332  3296 -3305  real (f10.3) CNDX[72]      [Conductivity_X72 355-360 m     (mS/m)]
333  3306 -3315  real (f10.3) CNDX[73]      [Conductivity_X73 360-365 m     (mS/m)]
334  3316 -3325  real (f10.3) CNDX[74]      [Conductivity_X74 365-370 m     (mS/m)]
335  3326 -3335  real (f10.3) CNDX[75]      [Conductivity_X75 370-375 m     (mS/m)]
336  3336 -3345  real (f10.3) CNDX[76]      [Conductivity_X76 375-380 m     (mS/m)]
337  3346 -3355  real (f10.3) CNDX[77]      [Conductivity_X77 380-385 m     (mS/m)]
338  3356 -3365  real (f10.3) CNDX[78]      [Conductivity_X78 385-390 m     (mS/m)]
339  3366 -3375  real (f10.3) CNDX[79]      [Conductivity_X79 390-395 m     (mS/m)]
340  3376 -3385  real (f10.3) CNDX[80]      [Conductivity_X80 395-400 m     (mS/m)]
341  3386 -3395  real (f10.3) CNDX[81]      [Conductivity_X81 400-405 m     (mS/m)]
342  3396 -3405  real (f10.3) CNDX[82]      [Conductivity_X82 405-410 m     (mS/m)]
343  3406 -3415  real (f10.3) CNDX[83]      [Conductivity_X83 410-415 m     (mS/m)]
344  3416 -3425  real (f10.3) CNDX[84]      [Conductivity_X84 415-420 m     (mS/m)]
345  3426 -3435  real (f10.3) CNDX[85]      [Conductivity_X85 420-425 m     (mS/m)]
346  3436 -3445  real (f10.3) CNDX[86]      [Conductivity_X86 425-430 m     (mS/m)]
347  3446 -3455  real (f10.3) CNDX[87]      [Conductivity_X87 430-435 m     (mS/m)]
348  3456 -3465  real (f10.3) CNDX[88]      [Conductivity_X88 435-440 m     (mS/m)]
349  3466 -3475  real (f10.3) CNDX[89]      [Conductivity_X89 440-445 m     (mS/m)]
350  3476 -3485  real (f10.3) CNDX[90]      [Conductivity_X90 445-450 m     (mS/m)]
351  3486 -3495  real (f10.3) CNDX[91]      [Conductivity_X91 450-455 m     (mS/m)]
352  3496 -3505  real (f10.3) CNDX[92]      [Conductivity_X92 455-460 m     (mS/m)]
353  3506 -3515  real (f10.3) CNDX[93]      [Conductivity_X93 460-465 m     (mS/m)]
354  3516 -3525  real (f10.3) CNDX[94]      [Conductivity_X94 465-470 m     (mS/m)]
355  3526 -3535  real (f10.3) CNDX[95]      [Conductivity_X95 470-475 m     (mS/m)]
356  3536 -3545  real (f10.3) CNDX[96]      [Conductivity_X96 475-480 m     (mS/m)]
357  3546 -3555  real (f10.3) CNDX[97]      [Conductivity_X97 480-485 m     (mS/m)]
358  3556 -3565  real (f10.3) CNDX[98]      [Conductivity_X98 485-490 m     (mS/m)]
359  3566 -3575  real (f10.3) CNDX[99]      [Conductivity_X99 490-495 m     (mS/m)]
360  3576 -3585  real (f10.3) CNDX[100]     [Conductivity_X100 495-500 m    (mS/m)]
     3586 -3587 <newline>
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APPENDIX IV – Flight Line Summary

AREA 1 – SANDY CREEK

Total number of lines : 76

Flt	Line	Start X	Start Y	End X	End Y	Kms
1	17011	661940	8444639	656254	8441122	6.69
1	17021	656814	8438236	666872	8444744	11.98
1	17031	668263	8442663	658126	8436263	11.99
1	17041	655381	8430816	669691	8440469	17.26
1	17051	671092	8438349	656448	8429244	17.24
1	17061	657775	8427088	672503	8436170	17.30
1	17071	673894	8434083	659313	8424641	17.37
1	10011	659600	8424671	654793	8431936	8.71
1	10121	657128	8433376	661916	8426183	8.64
1	10031	660001	8424944	655239	8432156	8.64
1	10141	657568	8433607	662350	8426406	8.64
1	10051	660447	8425194	655667	8432403	8.65
1	10161	657986	8433867	662737	8426698	8.60
1	10071	660838	8425458	656088	8432701	8.66
1	10181	658420	8434154	663172	8426962	8.62
1	10091	661298	8425728	656513	8432968	8.68
1	10201	658844	8434426	663584	8427232	8.62
1	10111	661680	8426001	656943	8433236	8.65
1	10021	654954	8432029	659761	8424854	8.64
1	10131	662156	8426266	657392	8433459	8.63
1	10041	655426	8432342	660209	8425110	8.67
1	10151	662582	8426516	657787	8433764	8.69
1	10061	655864	8432578	660644	8425361	8.66
1	10171	662996	8426791	658213	8433995	8.65
1	10081	656277	8432866	661048	8425639	8.66
1	10191	663438	8427041	658663	8434242	8.64
1	10101	656699	8433121	661474	8425901	8.66
1	10211	663824	8427354	659084	8434518	8.59
1	10221	656207	8439300	664031	8427489	14.17
1	10231	664265	8427581	656223	8439742	14.58
1	10241	656239	8440119	664466	8427724	14.88
1	10251	664703	8427827	656232	8440632	15.35
1	10261	656235	8441071	664856	8428037	15.63
1	10271	665115	8428096	656245	8441519	16.09
1	10281	656360	8441784	665301	8428290	16.19
1	10291	665546	8428385	656587	8441893	16.21
2	10691	674045	8433654	666709	8444757	13.31
2	10681	666450	8444672	673833	8433519	13.38
2	10671	673643	8433367	666237	8444527	13.39
2	10661	666013	8444445	673390	8433292	13.37
2	10651	673210	8433109	665821	8444261	13.38
2	10641	665544	8444196	672951	8433033	13.40
2	10631	672785	8432835	665351	8444051	13.46
2	10621	665113	8443952	672532	8432761	13.43
2	10611	672341	8432595	664946	8443781	13.41
2	10601	664666	8443711	672128	8432458	13.50
2	10591	671920	8432320	664462	8443591	13.52
2	10581	664254	8443459	671676	8432232	13.46
2	10571	671497	8432065	664032	8443345	13.53
2	10551	671079	8431795	663135	8443792	14.39
2	10541	662578	8444192	670837	8431710	14.97
2	10531	670633	8431565	662016	8444561	15.59
2	10521	661578	8444767	670415	8431404	16.02
2	10511	670212	8431298	661395	8444599	15.96

2	10302	656776	8442057	665736	8428572	16.19
2	10311	665968	8428628	657030	8442148	16.21
2	10321	657226	8442278	666143	8428821	16.14
2	10331	666386	8428910	657458	8442403	16.18
2	10341	657676	8442499	666587	8429051	16.13
2	10351	666842	8429157	657919	8442616	16.15
2	10361	658111	8442763	667012	8429332	16.11
2	10371	667243	8429421	658343	8442872	16.13
2	10381	658517	8443024	667425	8429594	16.12
2	10391	667679	8429677	658798	8443096	16.09
2	10401	658984	8443260	667851	8429876	16.05
3	10562	663634	8443493	671271	8431945	13.84
6	10502	661169	8444506	670019	8431162	16.01
6	10492	669800	8431028	660987	8444338	15.96
6	10482	660707	8444281	669548	8430928	16.01
6	10472	669376	8430740	660520	8444107	16.03
6	10462	660287	8443990	669145	8430622	16.04
6	10452	668955	8430474	660084	8443854	16.05
6	10442	659827	8443764	668705	8430391	16.05
6	10432	668495	8430241	659636	8443634	16.06
6	10422	659425	8443491	668278	8430123	16.03
6	10412	668090	8429969	659218	8443359	16.06

AREA 2 - WANGI

Total number of lines : 91

Flt	Line	Start X	Start Y	End X	End Y	Kms
5	20122	662214	8552474	678032	8552457	15.82
5	20841	669591	8534468	678223	8534436	8.63
5	20751	678231	8536709	669621	8536714	8.61
5	20821	669572	8535001	678207	8534970	8.64
5	20731	678225	8537188	669603	8537203	8.62
5	20801	669560	8535486	678219	8535446	8.66
5	20711	678266	8537672	669609	8537710	8.66
5	20781	669567	8535967	678186	8535944	8.62
5	20691	678234	8538198	669585	8538214	8.65
5	20761	669588	8536463	678220	8536450	8.63
5	20831	678246	8534709	669642	8534705	8.60
5	20741	669595	8536956	678216	8536939	8.62
5	20811	678257	8535201	669582	8535197	8.68
5	20721	669613	8537453	678234	8537453	8.62
5	20791	678227	8535709	669608	8535709	8.62
5	20701	669592	8538021	678233	8537957	8.64
5	20771	678241	8536204	669645	8536202	8.60
5	20681	669596	8538462	678235	8538452	8.64
5	20591	679399	8540706	669629	8540709	9.77
5	20661	669553	8538952	678259	8538951	8.71
5	20571	679425	8541220	669632	8541206	9.79
5	20641	669573	8539490	678248	8539447	8.68
5	20551	679386	8541694	669595	8541706	9.79
5	20621	669569	8539967	678242	8539938	8.67
5	20531	679407	8542203	669618	8542214	9.79
5	20601	669556	8540464	679384	8540457	9.83
5	20671	678293	8538710	669646	8538714	8.65
5	20581	669614	8540955	679385	8540957	9.77
5	20651	678281	8539214	669618	8539212	8.66
5	20561	669562	8541437	679356	8541459	9.79
5	20631	678283	8539709	669641	8539714	8.64
5	20541	669623	8541950	679408	8541955	9.79
5	20611	679445	8540176	669617	8540197	9.83
5	20521	669611	8542445	679375	8542461	9.76

5	20431	679394	8544697	668697	8544699	10.70
5	20501	669618	8542955	679404	8542957	9.79
5	20411	679388	8545207	668293	8545211	11.10
5	20481	669611	8543459	679362	8543458	9.75
5	20391	679423	8545697	667931	8545706	11.49
5	20461	669305	8543956	679395	8543949	10.09
5	20371	679425	8546157	667487	8546198	11.94
5	20441	668889	8544473	679390	8544449	10.50
5	20511	679404	8542727	669597	8542712	9.81
5	20421	668465	8544950	679360	8544946	10.90
5	20491	679385	8543197	669658	8543204	9.73
5	20401	668135	8545415	679367	8545456	11.23
5	20471	679437	8543720	669521	8543702	9.92
5	20381	667670	8545953	679361	8545956	11.69
5	20451	679386	8544206	669130	8544214	10.26
5	20361	667263	8546444	679364	8546456	12.10
5	20351	679395	8546730	667066	8546735	12.33
5	20341	666880	8546949	679354	8546959	12.47
5	20331	679437	8547203	666699	8547192	12.74
5	20321	666458	8547458	679407	8547445	12.95
5	20311	679423	8547704	666293	8547704	13.13
6	27012	662567	8547793	662567	8555393	7.60
6	27022	665033	8555421	665121	8547824	7.60
6	27032	667675	8545943	667687	8555360	9.42
6	27042	670240	8555405	670254	8534278	21.13
6	27052	672809	8534275	672817	8555374	21.10
6	27062	675367	8554410	675363	8534275	20.14
6	27072	677916	8534210	677932	8552555	18.35
6	20132	678454	8552212	662266	8552212	16.19
6	20241	662199	8549459	679411	8549445	17.21
6	20152	679175	8551697	662257	8551687	16.92
6	20261	662197	8548956	679366	8548957	17.17
6	20171	679432	8551207	662218	8551212	17.21
6	20281	662178	8548463	679370	8548454	17.19
6	20191	679418	8550704	662210	8550714	17.21
6	20301	662183	8547993	679383	8547948	17.20
6	20211	679421	8550201	662226	8550204	17.19
6	20142	662231	8551963	678781	8551957	16.55
6	20231	679397	8549786	662249	8549710	17.15
6	20162	662195	8551465	679370	8551445	17.18
6	20181	662213	8550963	679353	8550961	17.14
6	20201	662186	8550488	679360	8550458	17.17
6	20291	679391	8548196	662222	8548202	17.17
6	20221	662184	8549954	679354	8549948	17.17
7	20272	679432	8548718	662247	8548707	17.19
7	20252	679413	8549193	662227	8549211	17.19
7	20012	674215	8555207	662229	8555208	11.99
7	20062	662216	8553965	675978	8553950	13.76
7	20032	674930	8554707	662268	8554707	12.66
7	20082	662202	8553458	676621	8553458	14.42
7	20052	675639	8554215	662252	8554208	13.39
7	20102	662193	8552954	677328	8552960	15.14
7	20072	676321	8553712	662245	8553716	14.08
7	20022	662219	8554956	674563	8554954	12.34
7	20092	676995	8553208	662240	8553204	14.76
7	20042	662213	8554404	675267	8554461	13.05
7	20112	677761	8552708	662253	8552706	15.51

AREA 3 – JARRA EAST

Total number of lines : 64

Flt	Line	Start X	Start Y	End X	End Y	Kms
9	30011	325904	7648934	325912	7668515	19.58
9	30101	328134	7668533	328151	7648957	19.58
9	30031	326387	7648908	326394	7668504	19.60
9	30121	328637	7668517	328646	7648986	19.53
9	30051	326900	7648917	326899	7668473	19.56
9	30141	329130	7668546	329152	7648985	19.56
9	30071	327396	7648919	327403	7668487	19.57
9	30161	329646	7668525	329649	7648940	19.58
9	30091	327885	7648903	327904	7668516	19.61
9	30181	330127	7668511	330151	7649003	19.51
9	30111	328403	7648946	328402	7668520	19.57
9	30021	326142	7668525	326161	7648908	19.62
9	30131	328903	7648915	328906	7668524	19.61
9	30041	326654	7668531	326657	7648966	19.57
9	30151	329406	7648921	329395	7668506	19.59
9	30061	327156	7668519	327154	7648933	19.59
9	30171	329870	7648969	329908	7668476	19.51
9	30081	327666	7668547	327618	7648944	19.60
9	37101	325779	7649252	339336	7649251	13.56
9	37091	339349	7651360	325817	7651352	13.53
9	37081	325800	7653453	339336	7653452	13.54
9	37071	339337	7655479	325826	7655546	13.51
9	37061	325803	7657653	339331	7657646	13.53
9	37051	339316	7659743	325796	7659750	13.52
9	37041	325808	7661869	339315	7661846	13.51
9	37031	339353	7663926	325810	7663957	13.54
9	37021	325798	7666056	339315	7666060	13.52
9	37011	339296	7668134	325797	7668150	13.50
9	30201	330656	7668535	330646	7648951	19.58
9	30191	330394	7648924	330394	7668506	19.58
9	30221	331143	7668549	331148	7648995	19.55
9	30211	330914	7648948	330904	7668496	19.55
9	30241	331626	7668542	331660	7648968	19.57
9	30231	331408	7648928	331398	7668484	19.56
9	30261	332141	7668541	332152	7649000	19.54
9	30251	331916	7648969	331897	7668521	19.55
10	30271	332393	7648992	332398	7668512	19.52
10	30341	334134	7668548	334147	7648988	19.56
10	30291	332912	7648992	332901	7668499	19.51
10	30361	334646	7668522	334650	7649038	19.48
10	30311	333386	7648949	333401	7668535	19.59
10	30381	335149	7668571	335147	7649013	19.56
10	30331	333911	7649010	333902	7668529	19.52
10	30401	335638	7668533	335656	7649015	19.52
10	30351	334395	7648957	334407	7668525	19.57
10	30281	332690	7668537	332662	7648997	19.54
10	30371	334899	7649019	334891	7668491	19.47
10	30301	333163	7668569	333160	7649007	19.56
10	30391	335372	7648992	335393	7668519	19.53
10	30321	333648	7668541	333649	7648984	19.56
10	30411	335874	7648980	335901	7668525	19.55
10	30421	336158	7668566	336147	7649065	19.50
10	30431	336402	7648989	336399	7668492	19.50
10	30441	336655	7668527	336647	7649061	19.47
10	30451	336900	7649025	336903	7668496	19.47
10	30461	337152	7668536	337168	7649018	19.52
11	30471	337405	7649037	337407	7668560	19.52

11	30481	337664	7668546	337656	7649067	19.48
11	30491	337914	7649038	337900	7668516	19.48
11	30501	338147	7668572	338149	7649027	19.55
11	30511	338401	7648986	338404	7668501	19.51
11	30521	338656	7668549	338657	7649079	19.47
11	30531	338902	7649052	338904	7668560	19.51
11	30541	339150	7668540	339148	7649087	19.45

AREA 4 - WILLOWRA

Total number of lines : 53

Flt	Line	Start X	Start Y	End X	End Y	Kms
8	40011	267170	7638517	267167	7647656	9.14
8	40101	269381	7646945	269422	7637446	9.50
8	40031	267668	7638293	267676	7647495	9.20
8	40121	269917	7646768	269915	7637148	9.62
8	40051	268189	7637981	268155	7647352	9.37
8	40141	270416	7646631	270402	7636946	9.69
8	40071	268694	7637722	268660	7647173	9.45
8	40161	270899	7646483	270911	7636680	9.80
8	40091	269168	7637487	269165	7646971	9.48
8	40181	271421	7646319	271418	7636387	9.93
8	40111	269652	7637279	269645	7646834	9.56
8	40021	267402	7647613	267393	7638441	9.17
8	40131	270136	7637032	270155	7646659	9.63
8	40041	267888	7647488	267901	7638189	9.30
8	40151	270626	7636752	270657	7646512	9.76
8	40061	268404	7647271	268401	7637911	9.36
8	40171	271162	7636531	271152	7646327	9.80
8	40081	268909	7647112	268906	7637656	9.46
8	40191	271642	7636295	271659	7646168	9.87
8	40281	273892	7645475	273905	7635394	10.08
8	40211	272186	7635977	272161	7645992	10.02
8	40301	274406	7645311	274405	7635428	9.88
8	40321	274889	7645166	274907	7635402	9.76
8	40251	273153	7635471	273162	7645661	10.19
8	40341	275372	7644951	275407	7635452	9.50
8	40271	273656	7635388	273653	7645518	10.13
8	40361	275899	7644810	275906	7635433	9.38
8	40291	274175	7635404	274153	7645329	9.93
8	40201	271905	7646101	271894	7636139	9.96
8	40311	274644	7635412	274660	7645207	9.80
8	40221	272404	7645952	272404	7635896	10.06
8	40331	275153	7635409	275154	7645002	9.59
8	40241	272901	7645788	272896	7635677	10.11
8	40351	275648	7635401	275664	7644879	9.48
8	40261	273419	7645617	273400	7635412	10.21
8	40371	276144	7635443	276157	7644715	9.27
8	40441	277913	7644137	277907	7635466	8.67
8	40391	276646	7635406	276656	7644519	9.11
8	40461	278401	7643998	278401	7635515	8.48
8	40411	277160	7635438	277150	7644342	8.90
8	40381	276415	7644609	276419	7635473	9.14
8	40431	277657	7635415	277659	7644164	8.75
8	40401	276914	7644456	276914	7635475	8.98
8	40471	278628	7635444	278657	7643874	8.43
8	40421	277397	7644324	277413	7635464	8.86
8	40451	278163	7635442	278157	7644038	8.60
8	40481	278902	7643797	278911	7635503	8.29
8	47051	279141	7636165	271859	7636162	7.28
8	47041	267006	7638680	279043	7638668	12.04

8	47031	279007	7641164	267017	7641157	11.99
8	47021	266926	7643668	278942	7643663	12.02
8	47011	271730	7646171	266919	7646167	4.81
8	40232	272664	7635769	272661	7645826	10.06

AREA 5 MUSGRAVE

Total number of lines : 83

Flt	Line	Start X	Start Y	End X	End Y	Kms
12	57071	441762	7166279	441772	7185371	19.09
12	57061	437841	7185368	437856	7166315	19.05
12	57051	433966	7166260	433952	7185313	19.05
12	57041	430088	7185331	430065	7166266	19.07
12	57031	426174	7166260	426150	7188994	22.73
12	57021	422323	7189016	422277	7177350	11.67
12	57011	418361	7184625	418368	7188925	4.30
12	50011	417579	7188795	426533	7188803	8.95
12	50081	426548	7186710	417602	7186710	8.95
12	50031	417527	7188209	426508	7188203	8.98
12	50101	426564	7186137	417608	7186112	8.96
12	50051	417532	7187610	426561	7187605	9.03
12	50121	426619	7185489	417582	7185512	9.04
12	50071	417550	7187006	426522	7187009	8.97
12	50021	426581	7188512	417590	7188510	8.99
12	50091	417592	7186407	426525	7186405	8.93
12	50041	426554	7187912	417620	7187918	8.93
12	50111	417542	7185803	426521	7185799	8.98
12	50061	426566	7187305	417565	7187305	9.00
12	50131	417550	7185205	443282	7185189	25.73
12	50141	443378	7184903	417640	7184907	25.74
12	50151	419238	7184608	443340	7184599	24.10
12	50161	443343	7184302	419305	7184311	24.04
12	50171	419228	7184016	443329	7184013	24.10
12	50181	443333	7183731	419264	7183687	24.07
12	50191	419265	7183406	443343	7183404	24.08
12	50201	443352	7183107	419313	7183102	24.04
12	50211	419273	7182817	443303	7182804	24.03
12	50221	443346	7182501	419325	7182507	24.02
12	50231	419271	7182199	443347	7182207	24.08
12	50241	443392	7181901	419290	7181903	24.10
12	50251	419281	7181609	443351	7181591	24.07
13	50261	443365	7181243	419297	7181316	24.07
13	50271	419294	7181012	438330	7181010	19.04
13	50341	438355	7178927	419346	7178899	19.01
13	50291	419277	7180405	438302	7180401	19.02
13	50361	438360	7178296	419344	7178301	19.02
13	50311	419294	7179787	438294	7179816	19.00
13	50381	438331	7177707	419356	7177704	18.98
13	50331	419310	7179206	438333	7179203	19.02
13	50281	438306	7180705	419311	7180712	19.00
13	50351	419301	7178604	438297	7178613	19.00
13	50301	438325	7180072	419325	7180111	19.00
13	50371	419301	7178020	438305	7178002	19.00
13	50321	438329	7179522	419286	7179505	19.04
13	50391	419293	7177506	438348	7177397	19.06
13	50401	438335	7177117	426031	7177107	12.30
13	50451	426005	7175671	438357	7175619	12.35
13	50421	438333	7176526	426020	7176510	12.31
13	50471	425977	7175008	438332	7175001	12.36
13	50441	438368	7175909	426007	7175908	12.36
13	50491	425984	7174400	438305	7174405	12.32

13	50461	438370	7175308	426011	7175312	12.36
13	50411	425972	7176798	438349	7176797	12.38
13	50481	438369	7174697	426059	7174716	12.31
13	50431	425979	7176202	438297	7176204	12.32
13	50501	441695	7174128	426018	7174103	15.68
13	50511	426007	7173833	441696	7173804	15.69
13	50521	441716	7173506	426065	7173509	15.65
13	50531	426049	7173199	441664	7173214	15.62
13	50541	441709	7172919	426041	7172905	15.67
13	50551	426015	7172607	441693	7172606	15.68
13	50561	443424	7172306	426041	7172313	17.38
13	50571	426013	7172013	443393	7172003	17.38
13	50581	443399	7171702	426037	7171713	17.36
13	50591	426023	7171409	443360	7171408	17.34
13	50601	443384	7171092	426040	7171099	17.34
14	50691	426024	7168410	443375	7168407	17.35
14	50761	442702	7166296	426079	7166301	16.62
14	50711	426049	7167813	443379	7167794	17.33
15	50722	443411	7167517	426064	7167510	17.35
15	50632	426056	7170210	443392	7170204	17.34
15	50702	443446	7168110	426102	7168114	17.34
15	50612	426056	7170796	443338	7170803	17.28
15	50682	443391	7168734	426081	7168717	17.31
15	50751	426075	7166629	443415	7166584	17.34
15	50661	443402	7169296	426049	7169326	17.35
15	50732	426047	7167221	443409	7167202	17.36
15	50641	443400	7169922	426043	7169901	17.36
15	50672	426051	7169020	443387	7169015	17.34
15	50622	443423	7170511	426064	7170508	17.36
15	50653	426038	7169625	443344	7169609	17.31
15	50743	443394	7166898	426093	7166908	17.30