North West Tasmania Offshore Airborne Magnetic Survey

for

Geoscience Australia

Acquisition and Processing Report

Prepared by : P. Chambers ……..

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Authorised for release by : ……..

Survey flown: January – April 2008

by

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FAS JOB# 1968
GA JOB# 1181

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1. INTRODUCTION

This report provides details of the NW Tasmania offshore airborne magnetic survey, carried out in Tasmania. The survey area consists of 43,829 line kilometres flown in one block over 58 flights. The survey was flown for the Commonwealth of Australia through Geoscience Australia (GA), and was undertaken by Fugro Airborne Surveys Pty Ltd.

2. SURVEY DETAILS

2.1 Project Identification

Area Name:	NW Tasmania Offshore, Tas
Contractor:	Fugro Airborne Surveys Pty Ltd
Geoscience Job No.:	1181
Fugro Job No.:	1968

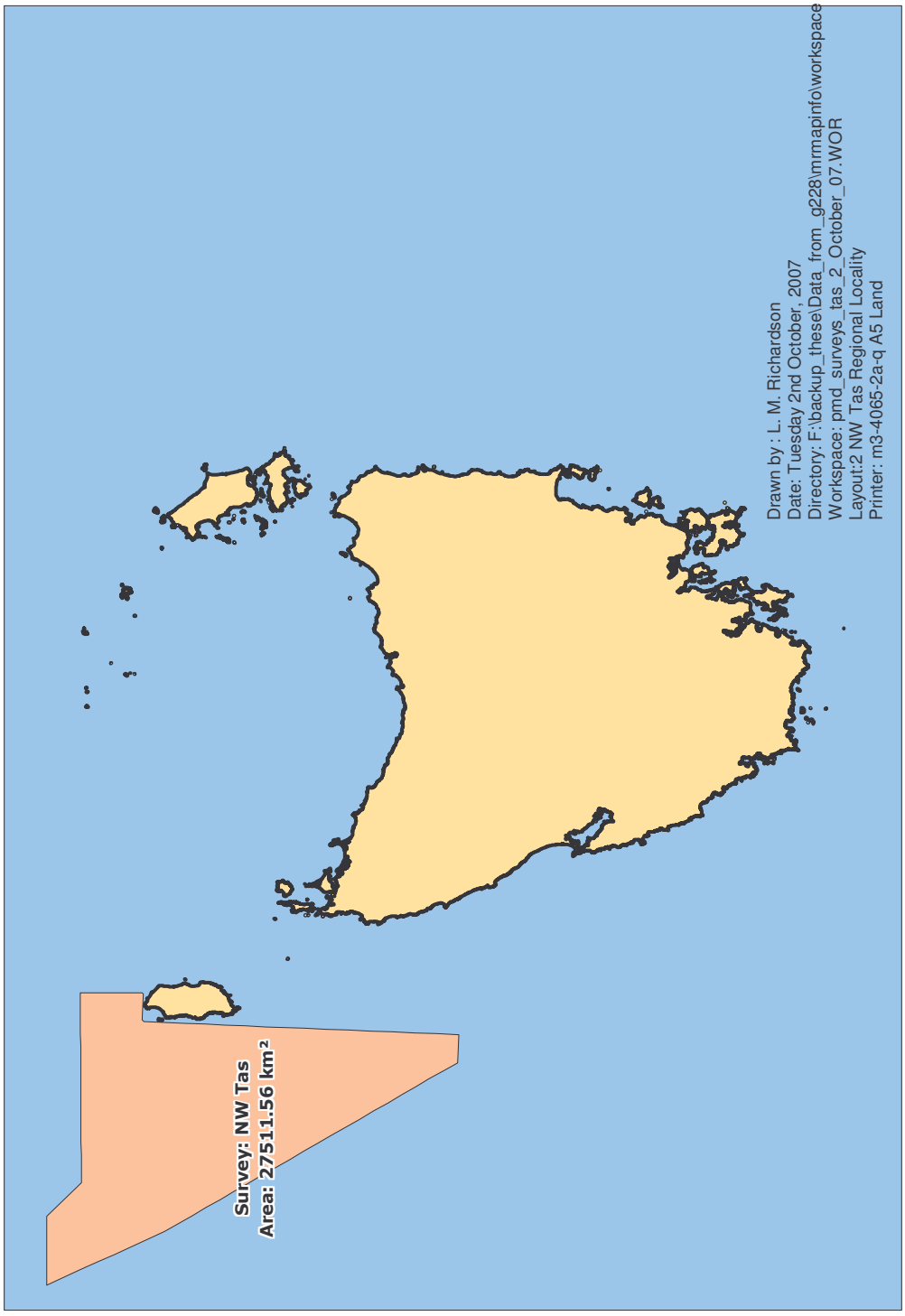
2.2 Survey Location

The survey location is shown in Figure 1.

Survey boundary co-ordinates for 800 m line spacing in GDA94.

	Longitude	Latitude
1	141.665385792	-38.988281920
2	142.225143326	-38.986304174
3	142.512097426	-39.179602596
4	144.088684451	-39.191737571
5	144.061812613	-39.567506142
6	144.036741453	-39.577277349
7	143.830839446	-39.570104843
8	143.814024790	-39.580048384
9	143.799796837	-39.832483261
10	143.759086819	-40.561265647
11	143.706710450	-41.095949621
12	143.706710450	-41.499302589
13	143.478836044	-41.493057972
14	142.101313111	-39.706488789

Figure 1 NW Tasmania Offshore, Tas



2.3 Specifications and Tolerances

Fugro job number	1968
Geoscience Australia project number	1181
Line kilometres (including ties)	34,829 km
Traverse direction	090°-270°
Traverse spacing	800 m
Traverse line numbers	10001 – 10350
Tie-line direction	000°-180°
Tie-line spacing	4,000 m
Tie line numbers	19001 – 19053
Nominal Terrain Clearance	90 m

Sample Intervals:

Magnetics (aircraft)	10 Hz (approx. 7.0 m)
GPS positions	1 Hz
Radar altimeter	10 Hz
Temperature & pressure	1 Hz
Magnetics (base stations)	2 s

Contracted tolerances:

Flight or tie lines	must not exceed 20 m off course for 1 km or more
Position accuracy	5 m horizontal; 10 m height
Radar altimeter accuracy	0.3 m
Temperature accuracy	1°C
Pressure accuracy	0.1%

Magnetic base stations:

Noise envelope	0.1 nT
Variation	5 nT in 5 minutes and less than 1 nT from any chord 1 minute long across the diurnal record

Aircraft magnetometer:

Non-geological noise envelope	0.1 nT
Variation with heading	+/- 1 nT
Total noise on unfiltered profiles	0.2 nT

Terrain clearance envelope 80 to 100 m

3. PROJECT PERSONNEL

PROJECT SUPERVISION	Bart Anderson – Fugro: data acquisition Denis Cowey – Fugro: data processing
SURVEY PILOTS	Helen Maeder, Gary Brooks, Leigh Anderson, Terry Miller
SURVEY OPERATORS	Matthew Blomfield (crew Leader), John Black, Murray Johnston (crew Leader), Michael Walker, Adam Frew
FIELD PROCESSING	Mathew Blomfield (crew leader), Murray Johnston (crew leader)
TECHNICIAN/ENGINEER	Adam Rae
DATA PROCESSING	Peter Chambers

4. ACQUISITION

4.1 Aircraft and Equipment

VH-EXS	
Aircraft Model	Aerocommander Shrike 500S
Aircraft Registration	VH-EXS
Aircraft Magnetometer	Scintrex CS-2 Caesium vapour
Magnetic Compensator	Fugro FASDAS mag decoupler unit
Base station magnetometer	2 x Scintrex ENVI Mag magnetometer
Altimeter	Collins ALT-55 radio altimeter
Barometer	Vaisala PMB100 pressure sensor
Thermometer	Vaisala HMT100 temperature & humidity sensor
Navigation system	Fugro Omnistar in VBS (Virtual Base Station)
	Ashtech 12 Channel GPS receiver
Data acquisition system	FAS digital acquisition system

4.2 Base Stations

Base Station Logs can be found in Appendix A.

GPS Receiver

Model Novatel OEM4 GPS Receiver

The acquired WGS84 GPS positions (latitude, longitude and altitude) were differentially post-processed in the field. Final co-ordinates reference GDA94, MGA Zone 55.

Magnetometers

Two Scintrex ENVI mag base station magnetometers were used to measure the daily variations of the Earth's magnetic field. The base stations were established in an area of low gradient, away from cultural influences. These data were displayed and recorded on a laptop computer. The base stations were run continuously throughout the survey flying period with a sampling interval of 2 seconds and a sensitivity of 0.1 nT.

The base station data were closely examined after each days production flying to determine if any data had been acquired during periods of out-of-specification diurnal variation.

4.3 Survey Operations

A summary of the acquisition phase is given in Table 1. Full operations reports are provided in Appendix B. The survey flight logs are provided as Appendix E.

Date	Aircraft	Base	Comment
January 20, 2008	VH-EXS	Wynyard, Tas	Acquisition commenced
March 5, 2008	VH-EXS	King Island, Tas	Moved Base
April 11, 2008	VH-EXS	King Island, Tas	Acquisition complete

TABLE 1 – OPERATIONS SUMMARY

4.4 Recorded Parameters

All acquired data were recorded digitally.

The following parameters are recorded at 10 Hz:

Parameter	*Resolution*	*units*
Fiducial number	1.0	unit
Uncompensated Total Magnetic Intensity (TMI)	0.001	nT
Fluxgates X, Y & Z	0.01	nT
Fluxgate Total Field	0.01	nT
Compensated TMI	0.001	nT
Terrain clearance (radar altimeter)	0.01	m

The following parameters are recorded at 1 Hz:

Parameter	*Resolution*	*units*
GPS time	1.0	s
Latitude	0.0000001	°
Longitude	0.0000001	°
GPS height	0.01	m
Outside air temperature	1.0	℃
Barometric pressure	0.01	hPa
Number of satellites	1.0	
Position dilution of precision (PDOP)	0.1	
HDOP	0.1	

4.5 Calibrations and System Checks

4.5.1 Magnetic Compensation

Magnetic compensation sequences were flown before acquisition commenced and after routine maintenance was performed, as required. The resulting coefficients were used for real-time magnetic compensation:

Aircraft	Date	Flight	StDev (UnC)	StDev (Cmp)	IR
VH-EXS	26/01/08	9	0.212	0.035	6.133
	8/02/08	21	0.219	0.039	5.625
	19/02/08	24	0.260	0.053	4.903
	16/03/08	42	0.215	0.027	8.044

TABLE 2 – MAGNETIC COMPENSATION STATISTICS

UNC: Standard deviation of uncompensated TMI (nT)

CMP: Standard deviation of compensated TMI (nT)

IR: Improvement ratio (UNC/CMP)

4.5.2 Radar Altimeter Stacks

Prior to commencement of acquisition, radar altimeter stacks were flown as accurately as possible with reference to the radar altimeter indicator, which was set at a pre-determined height. The results are shown below in Table 3.

RADAR ALTIMETER/BAROMETRIC ALTIMETER CHECK
VH-EXS

Flown 5th January, 2007

Planned Height (feet)	Planned Height (metres)	Radar Altimeter (metres)	Barometric Height (metres)	GPS Height (metres)	Hr – Hb (metres)	Hr – Hg (metres)
100	30	35	36	35	-1	0
150	46	48	48	48	0	0
200	61	61	61	62	0	-1
250	76	76	74	75	2	1
300	91	90	88	90	2	0
350	107	103	101	103	2	0
400	122	118	117	118	1	0
500	152	148	147	148	1	0
600	183	182	180	181	2	1
800	244	236	234	234	2	2
1000	305	296	294	293	2	3

TABLE 3 – RADAR ALTIMETER STACKS

5. PROCESSING

5.1 Hardware and Software

All data processing was carried out by Fugro Airborne Surveys Pty Ltd in its Western Australia office in Floreat, Perth.

Hardware	Core2 Duo PC (Windows XP) HP Designjet 1050 and 1055 Plotters Pioneer DVD Writer
Software	Fugro in-house software Oasis montaj 6.4.2

5.2 GPS Positioning

5.2.1 Spheroids, Datums and Zones

The acquired GPS positions (latitude, longitude and altitude) were differentially post-processed in the field. Final co-ordinates reference GDA94, MGA Zone 55.

The 1 Hz position data was interpolated to coordinate all 10 Hz data.

5.2.2 Quality Control

The following position quality control plots were produced:

- flight path
- ground speed

5.3 Magnetics

5.3.1 Quality Control

The following quality control plots were produced:

- diurnal variation
- radar altimeter

This visual aspect of quality control was aided by the determination of statistics (max., min., mean and SD.) for all parameters for every line.

System spikes were removed from the magnetic data but cultural responses were retained.

5.3.2 Parallax Correction

Parallax error is caused by the physical difference in distance between the various sensors, the electronic delay and software timing in the acquisition system. Hence all variables are subjected to a displacement from the GPS co-ordinates. If these variables are processed without a position offset a parallax error will occur. The co-ordinates were moved by linear interpolation.

Data	Parallax
GPS easting	-0.5 sec (~37.1 m)
GPS northing	-0.5 sec (~37.1 m)
GPS height	-0.5 sec (~37.1m)
Magnetics	0 sec
Radar altitude	0 sec
Pressure	0.3 sec (~22.3 m)
Temperature	0 sec

TABLE 4 – PARALLAX VALUES

5.3.3 Diurnal Correction

The magnetic data were corrected for diurnal variations. The correction formula was:

diurnal corrected TMI = compensated TMI *minus* diurnal *plus* mean diurnal value

Area Name	Aircraft	Mean Diurnal Value
NW Tasmania Offshore	VH-EXS	61600 nT

TABLE 5 – DIURNAL BASE VALUES

5.3.4 IGRF Correction

The International Geophysical Reference Field (IGRF) was removed from the data using the 2005 model extrapolated to the survey date 20/01/2008. The correction formula was:

IGRF corrected MI = diurnal corrected TMI *minus* local IGRF (no mean IGRF value added back)

Area Name	Mean IGRF Value
NW Tasmania Offshore	0

TABLE 6 – IGRF BASE VALUES

5.3.5 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.

Tie line levelling and further micro-levelling produced the final levelled magnetics. The parameters used for levelling the magnetics are shown in Table 7 and 8.

Tie Lines	Mean Correction
Traverse Lines	To all crossovers 3 point median filter, 5 point Hanning filter

TABLE 7 – MAGNETIC TIE-LINE LEVELLING PARAMETERS

Filter Type	High Pass	Threshold (nT)
Hanning	41 cells	1
Hanning	11 cells	2

TABLE 8 – MAGNETIC MICRO-LEVELLING PARAMETERS

5.3.6 Low Pass Filtered Channel

Low pass filtering was selectively applied to parts of the data bounded by polygons, listed in table 9, to remove perceived wave noise from the final levelled magnetic channel to make a selectively smoothed MI channel. The filter wavelength was 80 readings.

	Easting (bottom left)	Northing (bottom left)	Easting (top right)	Northing (top right)
Box 1	35600	5663100	102900	5671100
Box 2	45400	5647100	185200	5651600
Box 3	50000	5633700	198700	5642900
Box 4	194900	5655300	206800	5757400
Box 5	219000	5654600	249700	5657700
Box 6	220300	5648100	239500	5650400
Box 7	204700	5634200	232500	5641500

TABLE 9 – BOUNDING BOXES FOR SMOOTHING

5.3.7 Gridding & Further Enhancements

A bi-cubic spline algorithm was used to produce gridded data, of both the MI and MI smoothed channels, with a grid cell size of 160 metres.

The MI and MI smoothed grids were then reduced to the pole and a first vertical derivative of the RTP grid calculated.

Inputs into the RTP algorithm:

Inclination: -71.151°

Declination: 11.417°

5.4 Digital Elevation

No processing was carried out on the digital elevation data. Only raw digital elevation components were delivered as located data.

6. PRELIMINARY PRODUCTS

6.1 Corrected MI TIFF

A TIFF image of the corrected MI channel was made and delivered.

6.2 Corrected MI Grid

A grid of the corrected MI channel in ERMapper format was made and delivered.

6.3 Raw Located Data

- 0.1 second magnetics
- 0.1 second digital elevation

Preliminary raw located data is in ASEG-GDF II format. Descriptions of each are shown in Appendix C.

7. FINAL PRODUCTS

7.1 Final Located Data

- 0.1 second magnetics

Final located data is in ASEG-GDF II format. Descriptions are shown in Appendix D.

7.2 Final Gridded Data

Final gridded data was produced in ERMapper format.

- Magnetic intensity (mag), nT
- Magnetic intensity reduced to the pole (RTP), nT
- RTP 1st vertical derivative (RTP1VD), nT/m
- Magnetic intensity smoothed (magS), nT
- Magnetic intensity smoothed reduced to the pole (RTPS), nT
- RTPS 1st vertical derivative (RTPS1VD), nT/m

APPENDIX A

BASE STATION LOGS

VH-EXS Base Records

GPS Base Records

Wynyard

Job Number:	1968	Client:	Geoscience Australia
Aircraft:	EXS	Job Name:	King Island Offshore
Date Calculated:	21-Jan-08	Crew Leader:	Matt Blomfield
Calculated by:	John Black	Signature:	

BASE GPS - Calculated Base GPS Co-ordinates

Latitude: 40 ° 59 ' 56.84698 " S Longitude: 145 ° 45 ' 53.28880 " Height: 6.296 m E

Antenna Location: Antenna is placed on roof at the centre of the northern side of cabin 5 of Leisure Ville, Wynyard

King Island

Job Number:	1968	Client:	Geoscience Australia
Aircraft:	EXS	Job Name:	King Island Offshore
Date Calculated:	10-Mar-08	Crew Leader:	Murray Johnston
Calculated by:	Murray Johnston	Signature:	

BASE GPS - Calculated Base GPS Co-ordinates

Latitude: 39 ° 52 ' 48.62108 " S Longitude: 143 ° 52 ' 56.05713 " Height: 40.709 m E

Antenna Location: Antenna is placed on top of Chimmney of Aeroclub at King Island Aerodrome

Magnetic Base Station Records

Wynyard

Base Magnetometer #1

Location:	Wynyard AP - S40 59' 39" E145 43' 34"				61608.3	nT		
Type:	Envi				2m N			
Serial No.:			61603.2	nT	2m W 61602.2	nT	2m E 61603.0	nT
Cycle Rate:	2s				2m S			
Sensor Height:	2.1	m AGL			61597.6	nT		

Base Magnetometer #2

Location:	Wynyard AP - S40 59'40" E145 43'46"				61597.5	nT		
Type:	Envi				2m N			
Serial No.:			61595.2	nT	2m W 61596.0	nT	2m E 61596.2	nT
Cycle Rate:	2s				2m S			
Sensor Height:	2.1	m AGL			61595.0	nT		

King Island

Base Magnetometer #5

Location:	King Island AP				61135.7 nT			
Type:	Envi				2m N			
Serial No.:			61136.2 nT	2m W	61136.4 nT	2m E	61136.5 nT	
Cycle Rate:	2s				2m S			
Sensor Height:	1.8	m AGL			61136.7 nT			

Base Magnetometer #6

Location:	King Island AP				61121.5 nT			
Type:	Envi				2m N			
Serial No.:			61122.8 nT	2m W	61122.3 nT	2m E	61122.0 nT	
Cycle Rate:	2s				2m S			
Sensor Height:	1.8	m AGL			61121.1 nT			

King Island

Base Magnetometer #7

Location:	King Island AP				61136.8 nT			
Type:	Envi							
Serial No.:			61136.8 nT	2m W	61137.1 nT	2m E	61137.5 nT	
Cycle Rate:	2s				2m S			
Sensor Height:	1.8	m AGL			61136.5 nT			

Base Magnetometer #8

Location:	King Island AP				61141.8 nT			
Type:	Envi				2m N			
Serial No.:			61141.4 nT	2m W	61142.0 nT	2m E	61140.9 nT	
Cycle Rate:	2s				2m S			
Sensor Height:	1.8	m AGL			61141.7 nT			

APPENDIX B

OPERATIONS REPORT

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 43829.000 Kms
% Complete: 0.000 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
14-January-2008														0.50	MA	1928 - EXS getting Oil temp gauges fixed
Julian Day 14		TM				11:25:00	13:50:00	2.4						0.30	OJ	1928 - mob from charters towers to burketown
		TM				16:35:00	17:30:00	0.9						0.10	OJ	1928 compbox
Monday														0.10	Comment	MB going over compbox data
									111.8	3.3						
Date 15-Jan		TM				9:30:00	12:30:00	3.0						0.40	OJ	reflights for 1928
Julian Day 15														0.60	Comment	processed data and pack up gear for 1928
Tuesday																
									108.8	6.3						
Date 16-Jan		TM				8:30:00	11:50:00	3.3						0.50	MO	Burketown to Birdsville
Julian Day 16		TM				13:10:00	15:45:00	2.6						0.50	MO	Birdsville to Broken Hill, MB mobed to Isa on rpt
Wednesday																
									102.9	12.2						
Date 17-Jan		TM				9:55:00	12:25:00	2.5						0.30	MO	Broken Hill to Essendon AP
Julian Day 17														0.70	E	Technician to remove crystal packs and spectrometer
Thursday																
									100.4	14.7						
Date 18-Jan														0.40	E	Mag sensor orientation changed
Julian Day 18														0.40	A	Oil temp sensors changed, AH changed
		TM	MB			16:15:00	17:40:00	1.4						0.20	MO	Essendon AP to Wynyard for job commencement
Friday																
									99.0	16.1						
Date 19-Jan													1.00	1.00	W	Thick and low cloud base - no compbox/ recce
Julian Day 19																
Saturday																
									99.0	16.1						
Date 20-Jan		LA	MB			8:10:00	9:50:00	1.7						0.20	TF	Attempted compbox, attempted recce, abort due low cloud.
Julian Day 20														0.60	E	Technician manipulating and ground testing sensor position
	1	LA	MB/ JB			14:00:00	15:30:00	1.5						0.20	TF	Successful compbox and checkbox
Sunday																
									95.8	19.3						
Totals This Week: ►						Week Hours:►		**19.3**	▲: A/C Hrs to Next Service				**1.00**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 43829.000 Kms
% Complete: 0.000 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
21-January-2008	2	TM	MB		808.033	6:25:00	11:35:00	5.2						0.50	P & S	*Note (15/2/08) Lines from Flights 1 - 8 Scrubbed. MJ
Julian Day 21	3	LA	JB		737.450	12:35:00	17:25:00	4.8						0.50	P & S	Flight called back early due to noisy mag - scrubs
															Comment	Technician investigated mag and current problems
Monday																
									85.8	29.3		1545.483				
Date 22-Jan														0.90	E	Technician fixing noise issues
Julian Day 22	4	LA	MB			17:40:00	18:20:00	0.7						0.10	E	Test flight, testing new mag - all good, current stabiliser U/S.
Tuesday																
									85.1	30.0		1545.483				
Date 23-Jan														0.90	E	Technician fixing current stabiliser
Julian Day 23	5	LA	JB			15:22:00	16:44:00	1.4						0.10	TF	Comp Box, 2 Hz noise on current. Tec replacing current
Wednesday																
									83.7	31.4		1545.483				
Date 24-Jan														0.80	E	new current stabiliser installed it in AC
Julian Day 24	6	LA	MB			14:00:00	15:35:00	1.6						0.20	TF	Compbox and checkbox
Thursday																
									82.1	33.0		1545.483				
Date 25-Jan	7	LA	JB		382.517	6:19:00	7:30:00	1.2						0.30	P & S	Survey suspended due to compensation problems.
Julian Day 25														0.30	Comment	Data sent to office, awaiting advice from processing.
	8	TM	MB		128.855	15:00:00	15:55:00	0.9						0.20	P & S	Test flight to check current stabiliser as directed.
Friday														0.20	Comment	Data sent to office, awaiting advice from processing.
									80.0	35.1		2056.855				
Date 26-Jan														0.20	Comment	Technician changes orientation of mag sensor.
Julian Day 26	9	TM	JB			11:00:00	12:25:00	1.4						0.20	TF	Successful comp box,check box and test flight of new sensor
														0.60	A	Engineer replacing teflon hoses on left engine.
Saturday															PDO	Pilot day off, L. Anderson.
									78.6	36.5		2056.855				
Date 27-Jan													1.00	1.00	W	Strong winds and low cloud
Julian Day 27															Comment	Teflon hose replacement by engineer due to weather
Sunday																
									78.6	36.5		2056.855				
Totals This Week: ►					**2056.855**	Week Hours:►		**17.2**	▲: A/C Hrs to Next Service				**1.00**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 36595.053 Kms
% Complete: 16.505 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
28-January-2008														0.20	Comment	Master switch left on overnight - battery flat - needed
Julian Day 28	10	TM	MB	636.991		9:30:00	13:35:00	4.1						0.40	P	Strong west winds very large swell
Monday	11	LA	JB	632.641		14:35:00	18:41:00	4.1						0.40	P	Very strong west winds very large swell
									70.4	44.7	1269.632	2056.855				
Date 29-Jan		LA	JB			6:29:00	6:47:00	0.3					0.50	0.10	W	No lines flown. Survey suspended due to weather.
Julian Day 29														0.40	Comment	Crew on standby waiting for weather to clear
Tuesday	12	TM	MB	950.390	33.992	12:30:00	17:50:00	5.3						0.50	P & S	Scrubs called by processing due to diurnal
															Comment	Adam Frew left for Perth
									64.8	50.3	2220.022	2090.847				
Date 30-Jan	13	TM	MB	972.013		6:25:00	11:35:00	5.2						0.50	P	
Julian Day 30	14	LA	JB	915.416		12:15:00	17:10:00	4.9						0.50	P	
Wednesday																
									54.7	60.4	4107.451	2090.847				
Date 31-Jan													0.50	0.60	W	large front in survey area then over aerodrome
Julian Day 31															Comment	60 hourly oil and filter change while waiting for weather to
	15	LA	MB	395.360		15:25:00	18:55:00	3.5						0.40	P	
Thursday															PDO	TM
									51.2	63.9	4502.811	2090.847				
Date 1-Feb	16	TM	MB	991.352		6:25:00	11:35:00	5.2						0.50	P	
Julian Day 32	17	LA	JB	86.040		12:25:00	15:00:00	2.6						0.30	P	test to investigate swell noise -returned early to look at data
														0.20	Comment	Investigating swell noise in data
Friday																
									43.4	71.7	5580.203	2090.847				
Date 2-Feb	18	LA	JB	892.047	181.573	6:31:00	12:19:00	5.8						0.50	P & S	Scrubs called by processing due to diurnal
Julian Day 33	19	TM	MB	664.042	93.956	13:00:00	17:40:00	4.7						0.50	P & S	Scrubs called by processing due to diurnal
Saturday																
									32.9	82.2	7136.292	2366.376				
Date 3-Feb		TM	JB			8:35:00	9:45:00	1.2						0.10	A	AC returned to base, left hand alt. U/S pilots not happy to fly
Julian Day 34														0.20	A	offshore without electrical B/up Engineer fixed alternator
	20	TM	JB	97.655		13:50:00	15:55:00	2.1						0.20	P	AC returned early due to Alternator problems - new alt
Sunday														0.50	Comment	Crew on standby waiting for alt.
									29.6	85.5	7233.947	2366.376			PDO	LA
Totals This Week: ►				**7233.947**	**309.521**	Week Hours:►		**49.0**	▲: A/C Hrs to Next Service				**1.00**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 36399.744 Kms
% Complete: 16.950 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
04-February-2008														1.00	A	Alternator issues
Julian Day 35																
Monday																
									29.6	85.5	7233.947	2366.376				
Date 5-Feb														1.00	A	Alternator issues
Julian Day 36																
Tuesday																
									29.6	85.5	7233.947	2366.376				
Date 6-Feb														1.00	A	Alternator issues
Julian Day 37																
Wednesday																
									29.6	85.5	7233.947	2366.376				
Date 7-Feb														1.00	A	Alternator issues
Julian Day 38																
Thursday																
									29.6	85.5	7233.947	2366.376				
Date 8-Feb														0.70	A	Electrical issues being resolved
Julian Day 39	21	TM	MB			10:55:00	11:50:00	0.9						0.10	TF	successful compbox and checkbox
	22	TM	MB	195.309		14:05:00	16:10:00	2.1						0.20	P	Flight returned early due to sea state
Friday															Comment	John Black replaced by Michael Walker
									26.6	88.5	7429.256	2366.376				
Date 9-Feb		LA	MB			6:45:00	7:40:00	0.9						0.10	A	Flight returned early due to oil temp gauge problems
Julian Day 40														0.90	A	LAME diagnosed and oil temp prob as faulty gauge
															Comment	Mark Harradance joined cvrew for check flights for all
Saturday																
									25.7	89.4	7429.256	2366.376				
Date 10-Feb														0.90	A	Waiting on AC part, AR installed new gauge on arrival
Julian Day 41		LA	AR			16:45:00	17:45:00	1.0						0.10	TF	Check new oil temp gauge
															Comment	TM and TW returned to base after check flights
Sunday																
									24.7	90.4	7429.256	2366.376				
Totals This Week: ►				**195.309**		Week Hours:►		**4.9**	▲: A/C Hrs to Next Service					**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 35257.683 Kms
% Complete: 19.556 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
11-February-2008	23	TM	MB	1142.061	715.578	6:20:00	11:50:00	5.5						0.50	P & S	Scrubs called by processing due to diurnal
Julian Day 42	23	LA	MW			12:50:00	17:40:00	4.8						0.50	P	
Monday																
									14.4	100.7	8571.317	3081.954				
Date 12-Feb		LA	AR											0.10	MA	AC mobed to Melbourne for check 2 inspection
Julian Day 43														0.90	MA	check 2 inspection
Tuesday															Comment	Murray Johnston Arrives Wynyard
									14.4	100.7	8571.317	3081.954				
Date 13-Feb														1.00	MA	check 2 inspection
Julian Day 44															Comment	Matt Blomfield Departs Wynyard for Perth
Wednesday																
									14.4	100.7	8571.317	3081.954				
Date 14-Feb														1.00	MA	check 2 inspection
Julian Day 45																
Thursday																
									14.4	100.7	8571.317	3081.954				
Date 15-Feb														1.00	MA	check 2 inspection
Julian Day 46																
Friday																
									14.4	100.7	8571.317	3081.954				
Date 16-Feb														1.00	MA	check 2 inspection
Julian Day 47																
Saturday																
									14.4	100.7	8571.317	3081.954				
Date 17-Feb														1.00	MA	check 2 inspection
Julian Day 48																
Sunday																
									14.4	100.7	8571.317	3081.954				
Totals This Week: ►				**1142.061**	**715.578**	Week Hours:►		**10.3**	▲: A/C Hrs to Next Service					**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 34248.013 Kms
% Complete: 21.860 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
18-February-2008														1.00	MA	check 2 inspection
Julian Day 49															Comment	Lines from Flights 1-8 Scrubbed (Called by processing)
Monday																
									14.4	100.7	8571.317	3081.954				
Date 19-Feb		LA				7:30:00	7:48:00	0.3						0.10	MA	test flight
Julian Day 50						8:21:00	9:45:00	1.4						0.30	MA	AC returns to Wynyard AM
	24	LA	MJ/MW			11:20:00	12:44:00	1.4						0.30	TF	Comp Box and Check Box
Tuesday														0.30	Comment	Processing Comp Box
									118.6	103.8	8571.317	3081.954				
Date 20-Feb	25	TM	MJ			9:21:00	9:57:00	0.6						0.10	P	Rain Early AM Delayed departure. Right Alt failed to
Julian Day 51														0.90	A	EXS awaiting repair of Right Alternator.
Wednesday																
									118.0	104.4	8571.317	3081.954				
Date 21-Feb														0.50	A	Right alternator inspected and repaired. Production Flt
Julian Day 52	26	TM	MJ	657.256	195.310	11:25:00	16:31:00	5.1						0.50	P & S	Sea State marginal at eastern end of survey area.
Thursday																
									112.9	109.5	9228.573	3277.264				
Date 22-Feb	27	LA	MW	352.414		6:45:00	10:15:00	3.5					0.50	0.40	P	Flight returned early due to storm front approaching.
Julian Day 53													0.50	0.60	W	Excessive wind and poor sea state. Poor diurnal
Friday																
									109.4	113.0	9580.987	3277.264				
Date 23-Feb													1.00	1.00	W	Excessive winds and seas state unsuitable for survey.
Julian Day 54															Comment	Adam Ray returns from WAM service in Melbourne
Saturday																
									109.4	113.0	9580.987	3277.264				
Date 24-Feb													1.00	1.00	W	Excessive winds and seas state unsuitable for survey.
Julian Day 55															Comment	Gary Brooks arrives Wynyard. Terry Miller departs
Sunday																
									109.4	113.0	9580.987	3277.264				
Totals This Week: ►				**1009.670**	**195.310**	Week Hours:►		**12.3**	▲: A/C Hrs to Next Service				**3.00**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 29398.437 Kms
% Complete: 32.925 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
25-February-2008													0.50	0.50	W	Excessive Winds
Julian Day 56		GB	LA			7:00:00	7:54:00	0.9						0.10	Comment	Leigh Anderson and Gary Brooks Recce
		GB	MW			13:30:00	14:54:00	1.4					0.50	0.40	W	Attempted survey aborted. Return due to excessive
Monday																
									107.1	115.3	9580.987	3277.264				
Date 26-Feb	28	GB	MJ	1476.798		7:22:00	12:10:00	4.8						0.50	P	CAVOK
Julian Day 57	28	LA	MW			13:00:00	17:42:00	4.7						0.50	P	CAVOK
Tuesday																
									97.6	124.8	11057.785	3277.264				
Date 27-Feb														0.50	A	Poss oil leak in Port Engine. Awaiting Adam R. to
Julian Day 58	29	GB	MW	548.582		13:30:00	18:12:00	4.7						0.50	P	CAVOK
Wednesday																
									92.9	129.5	11606.367	3277.264				
Date 28-Feb	30	LA	MJ	226.492		7:40:00	10:16:00	2.6						0.30	P	
Julian Day 59		GB	MW			13:30:00	14:30:00	1.0						0.20	P	Attempted survey flight but returned due to sea state
													0.50	0.50	W	Excessive Winds and high seas
Thursday																
									89.3	133.1	11832.859	3277.264				
Date 29-Feb	31	LA	MJ	1290.826	118.789	7:00:00	11:24:00	4.4						0.50	P & S	CAVOK - Some Diurnal Activity. Scrubs due to diurnal.
Julian Day 60		GB	MW			12:20:00	16:56:00	4.6						0.50	P	CAVOK - Significant Diurnal Activity
															Comment	Leigh A. Departs Wynyard to Melb. Helen M. in
Friday																
									80.3	142.1	13123.685	3396.053				
Date 1-Mar	32	GB	HM	542.893	690.963	8:28:00	13:04:00	4.6						0.50	P & S	CAVOK - Some Diurnal Activity. Scrubs due to diurnal.
Julian Day 61		HM	GB			13:50:00	18:14:00	4.4						0.50	P	Some Diurnal Activity. several circuits at end of flight.
Saturday																
									71.3	151.1	13666.578	4087.016				
Date 2-Mar		GB												0.50	PDO	Gary Brooks PDO
Julian Day 62	33	HM	MW	763.985		13:00:00	17:54:00	4.9						0.50	P	CAVOK
Sunday																
									66.4	156.0	14430.563	4087.016				
Totals This Week: ►				**4849.576**	**809.752**	Week Hours:►		**43.0**	▲: A/C Hrs to Next Service				**1.50**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 23640.583 Kms
% Complete: 46.062 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
03-March-2008	34	GB	MJ	784.063		6:57:00	11:57:00	5.0						0.50	P	CAVOK - Scattered Cloud
Julian Day 63		HM	MW			12:43:00	13:25:00	0.7					0.50	0.50	W	Flight called back due to approaching storm front
Monday																
									60.7	161.7	15214.626	4087.016				
Date 4-Mar	35	GB	MW	1625.189		7:04:00	11:52:00	4.8						0.50	P	CAVOK
Julian Day 64		HM	MJ			12:31:00	17:31:00	5.0						0.50	P	CAVOK
Tuesday																
									50.9	171.5	16839.815	4087.016				
Date 5-Mar														0.50	A	R Engine Failure Prior to take off for Base Move Ferry.
Julian Day 65		GB				13:00:00	15:36:00	2.6						0.50	MO	2 Fts to mobilise from Wynyard base to King Island Base
Wednesday																
									48.3	174.1	16839.815	4087.016				
Date 6-Mar														0.30	Comment	Setup after Base Move
Julian Day 66	36	GB	HM	1412.443		11:28:00	13:10:00	1.7						0.20	P	CAVOK
		HM	MJ			13:56:00	18:32:00	4.6						0.50	P	CAVOK
Thursday																
									42.0	180.4	18252.258	4087.016				
Date 7-Mar	37	HM	MJ	1186.067		8:41:00	13:39:00	5.0						0.50	P	CAVOK
Julian Day 67		GB												0.50	PDO	Pilot Day Off 2 days early due to only 1 operator on site.
Friday																
									37.0	185.4	19438.325	4087.016				
Date 8-Mar	38	HM	MJ	750.092		7:27:00	11:21:00	3.9						0.50	P	Returned early due to LH Engine Oil Temp Gauge reading
Julian Day 68														0.50	A	EXS Grounded until new part arrives and is installed
Saturday																
									33.1	189.3	20188.417	4087.016				
Date 9-Mar														1.00	A	Awaiting arrival of aircraft part.
Julian Day 69															Comment	New Base GPS equipment installed and setup.
Sunday																
									33.1	189.3	20188.417	4087.016				
Totals This Week: ►				**5757.854**		Week Hours:►		**33.3**	▲: A/C Hrs to Next Service				**0.50**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 18954.629 Kms
% Complete: 56.753 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
10-March-2008														0.50	A	Waiting for Part to arrive and be installed. Also Spar
Julian Day 70	39	GB	MW	1029.927		12:34:00	17:50:00	5.3						0.50	P	CAVOK
Monday																
									27.8	194.6	21218.344	4087.016				
Date 11-Mar	40	HM	MJ	1888.587		7:12:00	12:12:00	5.0						0.50	P	
Julian Day 71		GB	HM			13:30:00	17:42:00	4.2						0.50	P	
Tuesday																
									18.6	203.8	23106.931	4087.016				
Date 12-Mar	41	GB	MJ	1767.440	108.750	8:55:00	12:49:00	3.9						0.50	P & S	Heavy Fog in AM. : Scrubs called by processing due to
Julian Day 72		HM	MW			13:22:00	17:20:00	4.0						0.40	P	CAVOK
		GB				17:45:00	18:57:00	1.2						0.10	Comment	EXS ferry to Essendon for 100hrly service
Wednesday																
									9.5	212.9	24874.371	4195.766				
Date 13-Mar														1.00	MA	EXS in Essendon for Service
Julian Day 73																
Thursday																
									9.5	212.9	24874.371	4195.766				
Date 14-Mar														1.00	MA	EXS in Essendon for Service
Julian Day 74																
Friday																
									9.5	212.9	24874.371	4195.766				
Date 15-Mar														1.00	MA	EXS in Essendon for Service
Julian Day 75																
Saturday																
									9.5	212.9	24874.371	4195.766				
Date 16-Mar														0.50	MA	EXS in Essendon for Service
Julian Day 76		GB				15:24:00	16:30:00	1.1						0.20	Comment	Ferry from Essendon to King Island
	42	GB	MW			17:00:00	18:18:00	1.3						0.30	TF	Comp Box
Sunday																
									127.1	215.3	24874.371	4195.766				
Totals This Week: ►				**4685.954**	**108.750**	Week Hours:►		**26.0**	▲: A/C Hrs to Next Service					**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 9035.610 Kms
% Complete: 79.384 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
17-March-2008	43	HM	MJ	2157.915		7:23:00	12:11:00	4.8						0.50	P	CAVOK. Strong cross wind throughout flight.
Julian Day 77		GB	MW			13:08:00	18:14:00	5.1						0.50	P	CAVOK. Strong cross wind throughout flight.
Monday																
									117.2	225.2	27032.286	4195.766				
Date 18-Mar	44	HM	MW	750.222		10:32:00	14:20:00	3.8						0.50	P	
Julian Day 78													0.50	0.50	W	No afternoon flight due to storm front in survey area.
Tuesday																
									113.4	229.0	27782.508	4195.766				
Date 19-Mar	45	GB	MJ	2288.669		7:19:00	12:48:00	5.5						0.50	P	CAVOK
Julian Day 79		HM	MW			13:42:00	18:37:00	4.9						0.50	P	CAVOK
Wednesday																
									103.0	239.4	30071.177	4195.766				
Date 20-Mar	46	GB	MW	194.456		7:13:00	8:50:00	1.6						0.50	P	Strong cold front approaching. Flight returned.
Julian Day 80													0.50	0.50	W	Excessive winds, and unsuitable sea state.
Thursday																
									101.4	241.0	30265.633	4195.766				
Date 21-Mar	47	GB	MW	390.721		7:14:00	9:20:00	2.1						0.20	P	Very High Seas (to 10m) Returned early due to sea state
Julian Day 81													0.50	0.80	W	Still in excess of survey and safety tolerances.
Friday																
									99.3	243.1	30656.354	4195.766				
Date 22-Mar	48	HM	MJ	2233.891		7:20:00	12:27:00	5.1						0.50	P	CAVOK - Swell level marginal.
Julian Day 82		GB	MW			13:13:00	18:30:00	5.3						0.50	P	CAVOK
Saturday																
									88.9	253.5	32890.245	4195.766				
Date 23-Mar	49	HM	MW	1903.145		8:10:00	13:05:00	4.9						0.50	P	Loose screw found in Right engine cowl.
Julian Day 83		GB	MJ			13:50:00	18:29:00	4.7						0.50	P	CAVOK - Some scattered showers at eastern end of
Sunday																
									79.3	263.1	34793.390	4195.766				
Totals This Week: ►				**9919.019**		Week Hours:►		**47.8**	▲: A/C Hrs to Next Service				**1.50**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 5868.240 Kms
% Complete: 86.611 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
24-March-2008	50	GB	MJ	379.766		7:15:00	9:56:00	2.7						0.30	P	Flight returned early due to thunderstorms in survey area.
Julian Day 84													0.50	0.70	W	Heavy rain and thunderstorms all day.
Monday																
									76.6	265.8	35173.156	4195.766				
Date 25-Mar	51	HM	MW	925.476		9:28:00	13:47:00	4.3						0.50	P	Heavy rain at Western end of Block Returned early due to
Julian Day 85			GB											0.50	PDO	Gary Brooks - PDO
Tuesday															Comment	0.75 drum of fuel showed signs of some water contamination.
									72.3	270.1	36098.632	4195.766				
Date 26-Mar													1.00	1.00	W	Storms in Survey area
Julian Day 86															Comment	1634.95km of lines scrubbed by processing due to diurnal.
Wednesday															Comment	308.651km of patches called by procesasing due to diurnal.
									72.3	270.1	36098.632	4195.766				
Date 27-Mar													1.00	1.00	W	Storms in Survey area
Julian Day 87																
Thursday																
									72.3	270.1	36098.632	4195.766				
Date 28-Mar	52	GB	MW	1862.128		7:23:00	13:08:00	5.7						0.50	P	Scattered showers in Survey area. Production OK
Julian Day 88		HM	MJ			13:58:00	18:18:00	4.3						0.50	P	Increasing Showers and turbulence in area. Production OK.
Friday															Comment	3 drums of fuel found to contain traces of water.
															Comment	Oil and Filter Change performed.
									62.3	280.1	37960.760	4195.766				
Date 29-Mar													1.00	1.00	W	Excessive winds and showers throughout survey area.
Julian Day 89															Comment	SPAR inspection performed.
Saturday																
									62.3	280.1	37960.760	4195.766				
Date 30-Mar													1.00	1.00	W	Excessive winds, showers and sea state in survey area.
Julian Day 90																
Sunday																
									62.3	280.1	37960.760	4195.766				
Totals This Week: ►				**3167.370**		Week Hours:►		**17.0**	▲: A/C Hrs to Next Service				**4.50**	**7.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 2048.290 Kms
% Complete: 95.327 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
31-March-2008													1.00	1.00	W	Excessive winds, showers and high sea state in survey
Julian Day 91																
Monday																
									62.3	280.1	37960.760	4195.766				
Date 1-Apr	53	HM	MJ	1083.955		7:27:00	11:57:00	4.5						0.40	P & R	Returned early due to heavy showers in survey area
Julian Day 92		GB	MW			13:00:00	14:00:00	1.0						0.10	R	Attempt second sortie, showers still too heavy for survey.
													0.50	0.50	W	Heavy showers throughout survey area.
Tuesday																
									56.8	285.6	39044.715	4195.766				
Date 2-Apr																
Julian Day 93																
Wednesday																
									56.8	285.6	39044.715	4195.766				
Date 3-Apr																
Julian Day 94																
Thursday																
									56.8	285.6	39044.715	4195.766				
Date 4-Apr																
Julian Day 95																
Friday																
									56.8	285.6	39044.715	4195.766				
Date 5-Apr													0.50	0.40	W	Rain early AM.
Julian Day 96	54	HM	MJ	1216.933		11:20:00	17:00:00	5.7						0.60	P	CAVOK
Saturday																
									51.1	291.3	40261.648	4195.766				
Date 6-Apr	55	HM	MJ	1519.062		7:11:00	11:41:00	4.5						0.50	P	Morning departure delayed by large swell. Rain in south.
Julian Day 97		GB	MJ			12:38:00	13:20:00	0.7						0.10	Comment	Flight aborted due to fuel concerns - guage reading low
		GB	MJ			13:47:00	17:47:00	4.0						0.40	P	Refuelled in Wynyard at EOF to conserve drum fuel at
Sunday															Comment	1 drum of fuel not to be used due to water contamination.
									41.9	300.5	41780.710	4195.766				
Totals This Week: ►				**3819.950**		Week Hours:►		**20.4**	▲: A/C Hrs to Next Service				**2.00**	**4.00**		

System: FASDAS
Aircraft: VH-EXS

Total Job kms: 43829.000 Kms

Plan Kms Remain: 0.000 Kms
% Complete: 100.000 %

31246.6 Hrs - Progressive M/R Hrs at the start of job, prior to mobilisation

31361.7 Hrs - The hours the Periodic Inspection is actally due at start of the job

Job Number: 1968
Contract Number: CM5863
Job Name: King Island Offshore
Area Names: King Island Offshore
Client: Geoscience Australia

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights / Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
07-April-2008	56	HM	MJ	804.000	240.000	6:40:00	13:00:00	6.3						0.70	P & S	Refuelled in Wynyard. Diurnal disturbed by nearby fence
Julian Day 98														0.30	Comment	P< flight cancelled due fence work. Base Mags relocated.
Monday																
									35.6	306.8	42584.710	4435.766				
Date 8-Apr	57	HM	MJ	1476.000		6:27:00	11:39:00	5.2						0.50	P	CAVOK. Refuelled in Wynyard
Julian Day 99		GB	MJ			12:41:00	17:17:00	4.6						0.50	P	CAVOK - Last Production KM's flown.
Tuesday																
									25.8	316.6	44060.710	4435.766				
Date 9-Apr														1.00	Comment	Waiting for de-mob. Most equipment packed.
Julian Day 100																
Wednesday																
									25.8	316.6	44060.710	4435.766				
Date 10-Apr		HM	AR			10:00:00	11:00:00	1.0						0.50	F	EXS Ferry to Essendon
Julian Day 101		HM	AR			15:00:00	16:00:00	1.0						0.50	F	EXS return to King Island as more flying required.
Thursday																
									23.8	318.6	44060.710	4435.766				
Date 11-Apr	58	HM	MJ	220.000		8:35:00	10:12:00	1.6						0.20	R	Line 10085 reflown.
Julian Day 102														0.30	MO	Checked flight. De-mobed.
														0.10	F	EXS Ferry to Essendon for crystal pack fit.
Friday														0.40	Comment	Fitted Crystal Packs to EXS.
									22.2	320.2	44280.710	4435.766				
Date 12-Apr													1.00	1.00	F	EXS Ferry to Perth: Engine hours for ferry not yet known
Julian Day 103																
Saturday																
									22.2	320.2	44280.710	4435.766				
Date 13-Apr													1.00	1.00	F	EXS Ferry to Perth: Engine hours for ferry not yet known
Julian Day 104																
Sunday																
									22.2	320.2	44280.710	4435.766				
Totals This Week: ►				**2500.000**	**240.000**	Week Hours:►		**19.7**	▲: A/C Hrs to Next Service				**2.00**	**7.00**		

APPENDIX C

RAW LOCATED DATA FORMATS

MAGNETICS – RAW

```
COMM RAW POINT LOCATED DATA
COMM GEOSCIENCE AUSTRALIA PROJECT NUMBER:                          1181
COMM JOB NUMBER:                                                   1968
COMM AREA NUMBER:                                                     1
COMM SURVEY COMPANY:                          Fugro Airborne Surveys
COMM CLIENT:                                    Geoscience Australia
COMM SURVEY TYPE:                                    Magnetic Survey
COMM AREA NAME:                                              NWTOAMS
COMM STATE:                                                      Tas
COMM COUNTRY:                                              Australia
COMM SURVEY FLOWN:                              January - April 2008
COMM LOCATED DATA CREATED:                 Wed Apr 16 15:58:52 2008
COMM
COMM SURVEY SPECIFICATIONS:
COMM
COMM TRAVERSE LINE SPACING:                                    800 m
COMM TRAVERSE LINE DIRECTION:                          090 - 270 deg
COMM TIE LINE SPACING:                                        4000 m
COMM TIE LINE DIRECTION:                               000 - 180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                90 m
COMM RAW LINE KILOMETRES:                                  44,224
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                            10001 - 10350
COMM TIE LINE NUMBERS:                                 19001 - 19053
COMM
COMM AREA BOUNDARY
COMM DATUM                                                    GDA94
COMM PROJECTION                                                 MGA
COMM ZONE                                                        55
COMM
COMM easting northing
COMM 37850  5670966
COMM 86357  5673886
COMM 112288  5653689
COMM 248564  5657907
COMM 247601  5616119
COMM 245483  5614964
COMM 227766  5615157
COMM 226361  5614002
COMM 226139  5585934
COMM 225612  5504896
COMM 225302  5445435
COMM 225111  5400576
COMM 206060  5400519
COMM 79970  5593332
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                              VH-EXS Aerocommander 500S
COMM
COMM MAGNETOMETER:                       Scintrex CS-2 CV Magnetometer
COMM INSTALLATION:                           Tail stinger installation
COMM RESOLUTION:                                           0.001 nT
COMM RECORDING INTERVAL:                                     0.1 s
COMM
```

```
COMM BASE MAGNETOMETER:                                    Scintrex Envi-mag
COMM RECORDING INTERVAL:                                                 2 s
COMM LOCATION:                                             Wynyard Airport
COMM
COMM THERMOMETER:           Vaisala HMT 100 Temperature and Humidity sensor
COMM RECORDING INTERVAL:                                               1.0 s
COMM
COMM BAROMETER:                              Vaisala PMB100 Pressure sensor
COMM RECORDING INTERVAL:                                               1.0 s
COMM
COMM RADAR ALTIMETER:                         Collins ALT55 Radio Altimeter
COMM RECORDING INTERVAL:                                               0.1 s
COMM
COMM NAVIGATION:                                 real-time differential GPS
COMM RECORDING INTERVAL:                                               1.0 s
COMM
COMM ACQUISITION SYSTEM:                                          Fugro DAS
COMM
COMM DATA PROCESSING
COMM
COMM CO-ORDINATES
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                      -0.5 s
COMM
COMM RADAR ALTIMETER DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        0 s
COMM
COMM MAGNETIC DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        0 s
COMM
COMM TEMPERATURE DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        0 s
COMM
COMM PRESSURE DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                      0.3 s
COMM
COMM LINE DATA FORMAT
COMM A space is left between fixed fields so that a field of, for example,
COMM A8 should only ever have a maximum of 7 characters in it, even when it
COMM is a null, thus:
COMM
COMM GA Project number                              -999               I4
COMM Flight number                                  -99                I4
COMM Line number                                    -99999             I7
COMM Fiducial number                                -999999            I8
COMM Date (YYYYMMDD)                                -9999999           I9
COMM Bearing                        deg             -99                I4
COMM Raw longitude                  deg             -999.99999999      F14.8
COMM Raw latitude                   deg             -99.99999999       F13.8
COMM Raw easting                    m               -99999.99          F10.2
COMM Raw northing                   m               -999999.99         F11.2
COMM Raw altimeter                  m               -999.99            F8.2
COMM Raw pressure                   hPa             -999.99            F8.2
COMM Raw temperature                deg C           -9.9               F5.1
COMM Fluxgate X component           nT              -99999.999         F11.3
COMM Fluxgate Y component           nT              -99999.999         F11.3
COMM Fluxgate Z component           nT              -99999.999         F11.3
COMM Uncompensated TMI              nT              -99999.999         F11.3
COMM Compensated TMI                nT              -99999.999         F11.3
COMM Magnetic Diurnal               nT              -9999.999          F10.3
```

DIGITAL ELEVATION MODEL – RAW

```
COMM RAW POINT LOCATED DATA
COMM
COMM GEOSCIENCE AUSTRALIA PROJECT NUMBER:                          1181
COMM
COMM JOB NUMBER:                                                   1968
COMM AREA NUMBER:                                                     1
COMM SURVEY COMPANY:                          Fugro Airborne Surveys
COMM CLIENT:                                    Geoscience Australia
COMM SURVEY TYPE:                                    Magnetic Survey
COMM AREA NAME:                                              NWTOAMS
COMM STATE:                                                      Tas
COMM COUNTRY:                                              Australia
COMM SURVEY FLOWN:                              January - April 2008
COMM LOCATED DATA CREATED:                 Wed Apr 16 16:25:14 2008
COMM
COMM SURVEY SPECIFICATIONS:
COMM
COMM TRAVERSE LINE SPACING:                                    800 m
COMM TRAVERSE LINE DIRECTION:                          090 - 270 deg
COMM TIE LINE SPACING:                                        4000 m
COMM TIE LINE DIRECTION:                               000 - 180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                90 m
COMM RAW LINE KILOMETRES:                                  44,224
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                            10001 - 10350
COMM TIE LINE NUMBERS:                                 19001 - 19053
COMM
COMM AREA BOUNDARY
COMM DATUM                                                    GDA94
COMM PROJECTION                                                 MGA
COMM ZONE                                                        55
COMM
COMM easting northing
COMM 37850  5670966
COMM 86357  5673886
COMM 112288  5653689
COMM 248564  5657907
COMM 247601  5616119
COMM 245483  5614964
COMM 227766  5615157
COMM 226361  5614002
COMM 226139  5585934
COMM 225612  5504896
COMM 225302  5445435
COMM 225111  5400576
COMM 206060  5400519
COMM 79970  5593332
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                                VH-EXS Aerocommander 500S
COMM
COMM THERMOMETER:           Vaisala HMT 100 Temperature and Humidity sensor
COMM RECORDING INTERVAL:                                         1.0 s
```

```
COMM
COMM BAROMETER:                                  Vaisala PMB100 Pressure sensor
COMM RECORDING INTERVAL:                                                 1.0 s
COMM
COMM RADAR ALTIMETER:                             Collins ALT55 Radio Altimeter
COMM RECORDING INTERVAL:                                                 0.1 s
COMM
COMM NAVIGATION:                                     real-time differential GPS
COMM RECORDING INTERVAL:                                                 1.0 s
COMM
COMM ACQUISITION SYSTEM:                                              Fugro DAS
COMM
COMM DATA PROCESSING
COMM
COMM CO-ORDINATES
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        -0.5 s
COMM
COMM GPS HEIGHT DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        -0.5 s
COMM
COMM RADAR ALTIMETER DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                          0 s
COMM
COMM TEMPERATURE DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                          0 s
COMM
COMM PRESSURE DATA
COMM PARALLAX CORRECTION (RAW DATA, NOT APPLIED):                        0.3 s
COMM
COMM LINE DATA FORMAT
COMM A space is left between fixed fields so that a field of, for example,
COMM A8 should only ever have a maximum of 7 characters in it, even when it
COMM is a null, thus:
COMM
COMM GA Project number                          -999                 I4
COMM Flight number                              -99                  I4
COMM Line number                                -99999               I7
COMM Fiducial number                            -999999              I8
COMM Date (YYYYMMDD)                            -9999999             I9
COMM Bearing                        deg         -99                  I4
COMM Raw longitude                  deg         -999.99999999        F14.8
COMM Raw latitude                   deg         -99.99999999         F13.8
COMM Raw easting                    m           -99999.99            F10.2
COMM Raw northing                   m           -999999.99           F11.2
COMM Raw altimeter                  m           -999.99              F8.2
COMM Raw pressure                   hPa         -999.99              F8.2
COMM Raw temperature                deg C       -9.9                 F5.1
COMM Time (GPS)                     s           -99999.9             F9.1
COMM Raw GPS height                 m           -999.99              F8.2
```

APPENDIX D

FINAL LOCATED DATA FORMATS

MAGNETICS – FINAL

```
COMM FINAL POINT LOCATED DATA
COMM
COMM GEOSCIENCE AUSTRALIA PROJECT NUMBER:                          1181
COMM
COMM JOB NUMBER:                                                   1968
COMM AREA NUMBER:                                                     1
COMM SURVEY COMPANY:                          Fugro Airborne Surveys
COMM CLIENT:                                    Geoscience Australia
COMM SURVEY TYPE:                                    Magnetic Survey
COMM AREA NAME:                                              NWTOAMS
COMM STATE:                                                      Tas
COMM COUNTRY:                                              Australia
COMM SURVEY FLOWN:                              January - April 2008
COMM LOCATED DATA CREATED:                  Tue May 20 09:36:59 2008
COMM
COMM SURVEY SPECIFICATIONS:
COMM
COMM TRAVERSE LINE SPACING:                                    800 m
COMM TRAVERSE LINE DIRECTION:                          090 - 270 deg
COMM TIE LINE SPACING:                                        4000 m
COMM TIE LINE DIRECTION:                               000 - 180 deg
COMM NOMINAL TERRAIN CLEARANCE:                               90 m
COMM FINAL LINE KILOMETRES:                                43,829
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                            10001 - 10350
COMM TIE LINE NUMBERS:                                 19001 - 19053
COMM
COMM AREA BOUNDARY
COMM DATUM                                                     GDA94
COMM PROJECTION                                                  MGA
COMM ZONE                                                         55
COMM
COMM easting northing
COMM 37850  5670966
COMM 86357  5673886
COMM 112288  5653689
COMM 248564  5657907
COMM 247601  5616119
COMM 245483  5614964
COMM 227766  5615157
COMM 226361  5614002
COMM 226139  5585934
COMM 225612  5504896
COMM 225302  5445435
COMM 225111  5400576
COMM 206060  5400519
COMM 79970  5593332
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                              VH-EXS Aerocommander 500S
COMM
COMM MAGNETOMETER:                       Scintrex CS-2 CV Magnetometer
COMM INSTALLATION:                          Tail stinger installation
COMM RESOLUTION:                                            0.001 nT
```

```
COMM RECORDING INTERVAL:                                              0.1 s
COMM
COMM BASE MAGNETOMETER:                                  Scintrex Envi-mag
COMM RECORDING INTERVAL:                                              2 s
COMM LOCATION:                                             Wynyard Airport
COMM
COMM THERMOMETER:           Vaisala HMT 100 Temperature and Humidity sensor
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM BAROMETER:                                Vaisala PMB100 Pressure sensor
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM RADAR ALTIMETER:                           Collins ALT55 Radio Altimeter
COMM RECORDING INTERVAL:                                            0.1 s
COMM
COMM NAVIGATION:                                real-time differential GPS
COMM RECORDING INTERVAL:                                            1.0 s
COMM
COMM ACQUISITION SYSTEM:                                         Fugro DAS
COMM
COMM DATA PROCESSING
COMM
COMM CO-ORDINATES
COMM PARALLAX CORRECTION APPLIED:                                   -0.5 s
COMM
COMM RADAR ALTIMETER DATA
COMM PARALLAX CORRECTION APPLIED:                                     0 s
COMM
COMM MAGNETIC DATA
COMM DIURNAL CORRECTION APPLIED:                       base value 61600 nT
COMM PARALLAX CORRECTION APPLIED:                                     0 s
COMM IGRF CORRECTION APPLIED:                             base value 0 nT
COMM IGRF MODEL 2005 extrapolated to:                          2008/01/20
COMM DATA HAVE BEEN TIE LINE LEVELLED
COMM DATA HAVE BEEN MICROLEVELLED
COMM THE MI (smoothed) DATA HAVE HAD A LOW PASS FILTER
COMM APPLIED TO SELECTED PARTS OF THE AREA
COMM
COMM TEMPERATURE DATA
COMM PARALLAX CORRECTION APPLIED:                                     0 s
COMM
COMM PRESSURE DATA
COMM PARALLAX CORRECTION APPLIED:                                   0.3 s
COMM
COMM
COMM ---------------------------------------------------------------------
COMM DISCLAIMER
COMM ---------------------------------------------------------------------
COMM It is Fugro Airborne Survey's understanding that the data provided to
COMM the client is to be used for the purpose agreed between the parties.
COMM That purpose was a significant factor in determining the scope and
COMM level of the Services being offered to the Client. Should the purpose
COMM for which the data is used change, the data may no longer be valid or
COMM appropriate and any further use of, or reliance upon, the data in
COMM those circumstances by the Client without Fugro Airborne Survey's
COMM review and advice shall be at the Client's own or sole risk.
COMM
COMM The Services were performed by Fugro Airborne Survey exclusively for
COMM the purposes of the Client. Should the data be made available in whole
```

```
COMM or part to any third party, and such party relies thereon, that party
COMM does so wholly at its own and sole risk and Fugro Airborne Survey
COMM disclaims any liability to such party.
COMM
COMM Where the Services have involved Fugro Airborne Survey's use of any
COMM information provided by the Client or third parties, upon which
COMM Fugro Airborne Survey was reasonably entitled to rely, then the
COMM Services are limited by the accuracy of such information. Fugro
COMM Airborne Survey is not liable for any inaccuracies (including any
COMM incompleteness) in the said information, save as otherwise provided
COMM in the terms of the contract between the Client and Fugro Airborne
COMM Survey.
COMM ------------------------------------------------------------------------
COMM
COMM
COMM LINE DATA FORMAT
COMM A space is left between fixed fields so that a field of, for example,
COMM A8 should only ever have a maximum of 7 characters in it, even when it
COMM is a null, thus:
COMM
COMM GA Project number                          -999               I4
COMM Flight number                              -99                I4
COMM Line number                                -99999             I7
COMM Fiducial number                            -999999            I8
COMM Date (YYYYMMDD)                            -9999999           I9
COMM Bearing                    deg             -99                I4
COMM Longitude                  deg             -999.99999999      F14.8
COMM Latitude                   deg             -99.99999999       F13.8
COMM Easting                    m               -99999.99          F10.2
COMM Northing                   m               -999999.99         F11.2
COMM Altimeter                  m               -999.99            F8.2
COMM Barometric Pressure        hPa             -999.99            F8.2
COMM Temperature                deg C           -9.9               F5.1
COMM Final MI (unsmoothed)      nT              -99999.999         F11.3
COMM Final MI (smoothed)        nT              -99999.999         F11.3
```