

SPECTREM^{PLUS} AEM Survey details Lake Mackay, Area2, Priority 1

SPECTREM AIR conducted the survey following the line path in Figure 4. The survey was conducted with production lines in the north-south (N-S) direction. The production-line spacing was 300 m.

Table 1 shows the summary statistics of the SPECTREM^{PLUS} survey of the Lake Mackay Area2 block. The total line kilometres flown was approximately 1965 km. Detailed information is provided in Appendix 1.

Block	Line direction	Line spacing	Total line kilometres
Lake Mackay Area 2 Priority 1	N-S	300 m	1965 km

Table 1 SPECTREM^{PLUS} survey summary statistics over Lake Mackay Area2

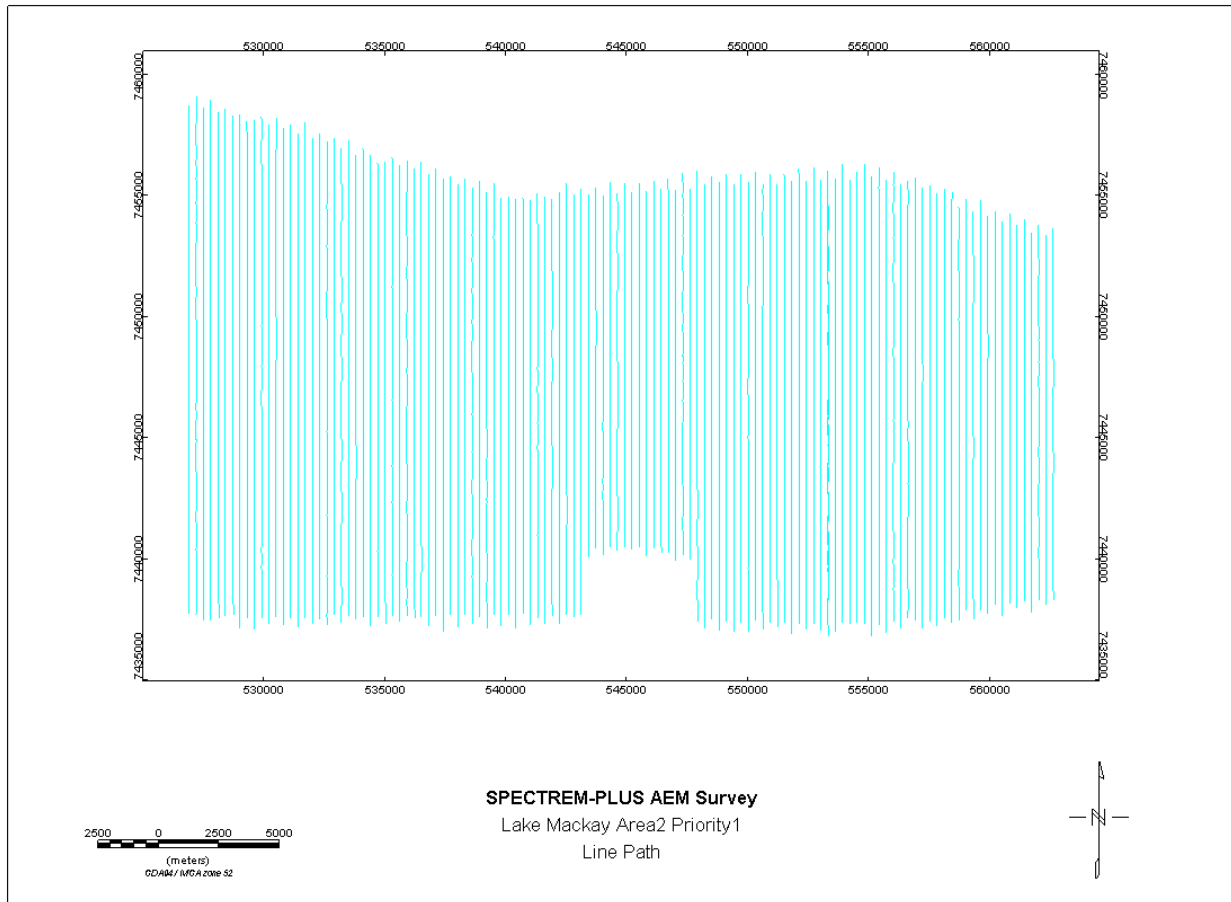


Figure 1 SPECTREM^{PLUS} survey line path over the Lake Mackay Area2 Block.

Appendix 1: Survey Details

Logistics

The specific details of the survey were as follows:

Base of operations	Ayers Rock. Western Australia
Flying Dates	13 th – 22 nd June 2018
Survey type	Electromagnetic, magnetic, terrain
Aircraft type	DC3 – ASN
EM Base Frequency	25 Hz
Nominal aircraft altitude	90 m
Nominal aircraft speed	60 m/s
Acceptable Kilometers flown (Production lines)	1965 km
(Tie-lines)	N/A
Nominal flight-line spacing	300 m
Nominal flight-line direction	NS

Datum

Data were collected in WGS84 datum and UTM52S projection

Datum	WGS84
Projection	UTM52S

The deliverables are supplied in GDA94 datum MGA Zone 52 projection

Appendix 2: System specifications

SPECTREM^{PLUS} simultaneously takes electromagnetic and total field magnetic. Both the electromagnetic and magnetic sensors are towed behind the aircraft in “birds”. The geometry of the system is described below. Other system specifications are listed below.

EM system	
Transmitter height above ground	90 m
Tx – Rx vertical separation	38.3 m
Tx – Rx horizontal separation	125 m
Transmitter coil axis	Vertical
Receiver coil axes	X : horizontal, parallel to flight direction Z : vertical
Current waveform	Square wave (100% duty cycles; no off-time) 430 microsecond rise time
Base frequencies	25 Hz
Transmitter loop area	420 m ²
RMS current	1600 amperes
RMS dipole moment	672 000 A.m ²
Digitising rate/sampling frequency (25 Hz base frequency)	76800 Hz / component
Processing Clock Time	5 Hz
Number of windows	10 per component

Window distribution	Pseudo-binary																																																
	<table border="1"> <thead> <tr> <th>Start (ms)</th> <th>End (ms)</th> <th>Centre (ms)</th> <th>Width (ms)</th> </tr> </thead> <tbody> <tr> <td>0.0065</td> <td>0.0195</td> <td>0.013</td> <td>0.013</td> </tr> <tr> <td>0.026</td> <td>0.0391</td> <td>0.03255</td> <td>0.0131</td> </tr> <tr> <td>0.0521</td> <td>0.0911</td> <td>0.0716</td> <td>0.039</td> </tr> <tr> <td>0.1042</td> <td>0.1953</td> <td>0.1563</td> <td>0.0911</td> </tr> <tr> <td>0.2083</td> <td>0.4036</td> <td>0.31245</td> <td>0.1953</td> </tr> <tr> <td>0.4167</td> <td>0.8203</td> <td>0.62505</td> <td>0.4036</td> </tr> <tr> <td>0.8333</td> <td>1.6536</td> <td>1.24995</td> <td>0.8203</td> </tr> <tr> <td>1.6667</td> <td>3.3203</td> <td>2.50005</td> <td>1.6536</td> </tr> <tr> <td>3.3333</td> <td>6.6536</td> <td>4.99995</td> <td>3.3203</td> </tr> <tr> <td>6.6667</td> <td>13.3203</td> <td>10.00005</td> <td>6.6536</td> </tr> <tr> <td>13.3333</td> <td>19.974</td> <td>16.6536</td> <td>6.6667</td> </tr> </tbody> </table> <p>(Coupling channel, X_prim & Z_prim in the database)</p>	Start (ms)	End (ms)	Centre (ms)	Width (ms)	0.0065	0.0195	0.013	0.013	0.026	0.0391	0.03255	0.0131	0.0521	0.0911	0.0716	0.039	0.1042	0.1953	0.1563	0.0911	0.2083	0.4036	0.31245	0.1953	0.4167	0.8203	0.62505	0.4036	0.8333	1.6536	1.24995	0.8203	1.6667	3.3203	2.50005	1.6536	3.3333	6.6536	4.99995	3.3203	6.6667	13.3203	10.00005	6.6536	13.3333	19.974	16.6536	6.6667
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Magnetic system																																																	
Bird height above ground	72 m																																																
Bird location	19 m below and 41 m behind centre of aircraft																																																
Sensor	Scintrex CS-2 Sensor with SPECTREM Counter/Sync System																																																
Recording Rate	5 Hz																																																
Sensitivity	0.01 nT																																																
Resolution	0.1 nT																																																
Positioning system																																																	
Sensor	Novatel RT-20 GPS receiver with Fugro Omnistar differential corrections																																																
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Other sensors

Radar Altitude	Collins with 5 Hz sampling with 0.3 m resolution
Laser Altitude	Riegl with 5 Hz sampling with 0.03 m resolution
Barometric Pressure	Rose Mount with 1 Hz sampling
Temperature (OAT)	PT-100 RTD with 1 Hz sampling
Analogue Chart Recorder	RMS GR-33