

OPEN FILE CR 97 / 536

RELINQUISHMENT REPORT

EL 8388

EPENARRA PROJECT

1: 250,000 FREW RIVER

Licensee:	North Star Resources NL
Operator:	North Star Resources NL
Compiled by:	K Kappelle
Date Submitted:	August 1997
Distribution:	Northern Territory Department of Mines & Energy North Star Resources NL

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1. **Summary**

This report summarises exploration by North Star Resources N.L. on the relinquished portion of EL 8388, Epenarra up to June 1997.

Work carried out consisted of a detailed aeromagnetic survey. Previous work which prompted this program included:-

- Historical research and appraisal of previous exploration data.
- Compilation and computer reprocessing of public domain aeromagnetic data for the region, yielding visually enhanced aeromagnetic imagery.
- Interpretation of the aeromagnetic imagery and selection of specific exploration targets based on previously unrecognised structural and magnetic features.

BLEG soil sampling traverses over selected airmag anomalies was subsequently carried out.

2. **Tenement**

EL 8388 consists of 136 blocks totaling 149 sq kms, mainly located in the northwest corner of FREW RIVER, 1:250,000 sheet SF 53-5, Northern Territory.

3. **Location and Access**

The area lies 130 km southeast of the town of Tennant Creek, and 100 km east of the Stuart Highway. The tenement lies mainly within the Epenarra pastoral lease.

Access to the tenement from the Stuart Highway is by a formed gravel road that commences 1 km north of Bonney Well, leading past Kurundi homestead to Epenarra homestead.

4. **Exploration Model**

At Tennant Creek, gold occurs with iron and copper sulfides in magnetite or hematite-rich (ironstone) lodes, with or without quartz. The mineralised zones are generally found with chlorite alteration envelopes in shears within the Proterozoic Warramunga Group of sedimentary rocks, their distribution suggesting an association with major regional structures. The chloritic alteration indicates a hydrothermal origin.

Magnetite is a common accessory mineral in many of the known lodes, making these detectable by magnetic survey methods. Several significant ore deposits in the region were initially detected by aeromagnetic and ground magnetic surveys, though at least one deposit (Noble's Nob) was an essentially non-magnetic quartz-hematite lode.

The location of unknown non-magnetic bodies is being addressed in various ways, though magnetic survey methods remain an important exploration tool in the Tennant Creek region.

EL 8388 is one of a group of Exploration Licences taken up by North Star Resources N.L. over peripheral zones of the Tennant Creek field where Warramunga Group rocks have been inferred from regional mapping, but extensive quaternary soils of Phanerozoic cover have inhibited thorough appraisal by previous explorers.

5. **Regional Geological Setting**

The tenement area lies along the eastern margin of the Tennant Creek Inlier, an intensely folded, early Proterozoic intra-cratonic basin succession of mainly sedimentary and minor felsic volcanic rocks, intruded by younger granitoids. The inlier forms a north northwest trending belt some 700 km in length which is centered on the town of Tennant Creek. Three distinct sedimentary sub-provinces form the inlier, the oldest being the Tennant Creek Block in the centre of the belt, overlain by younger rocks of the Davenport Province to the south, and the Tomkinson Creek Province to the north.

EL 8388 lies in the northwest corner of the FREW RIVER sheet, an area enclosing the boundary between the southern extension of the Tennant Creek Block, and the northeastern part of the overlying Davenport Province. Flat-lying Cambrian sediments of the Georginia Basin lap onto the Proterozoic from the east.

The oldest rocks are poorly exposed, but have been assigned to the Warramunga Group of greywackes, silt-stones and felsic volcanic of the Tennant Creek Block.

The Warramunga Group is no longer recognised as a single unit, having been subdivided into an older, intensely deformed Warramunga Formation, overlain by a less deformed succession named the Flynn Subgroup. The ore bodies around Tennant Creek are associated with the older unit.

6. Tenement Geology

The bedrock geology of EL 8388 is largely masked by Quarternary soil cover, but on the basis of regional mapping, regional aeromagnetic data and limited outcrop has been interpreted by the NTGS as the southeast extension of the Warramunga Group of Tennant Creek. Measurements of magnetic susceptibilities have shown that Warramunga rocks are interpreted to occupy a northwest-southeast trending belt over which North Star Resources N.L. took out EL 8388 and other tenements to the west and northwest.

7. Geophysics

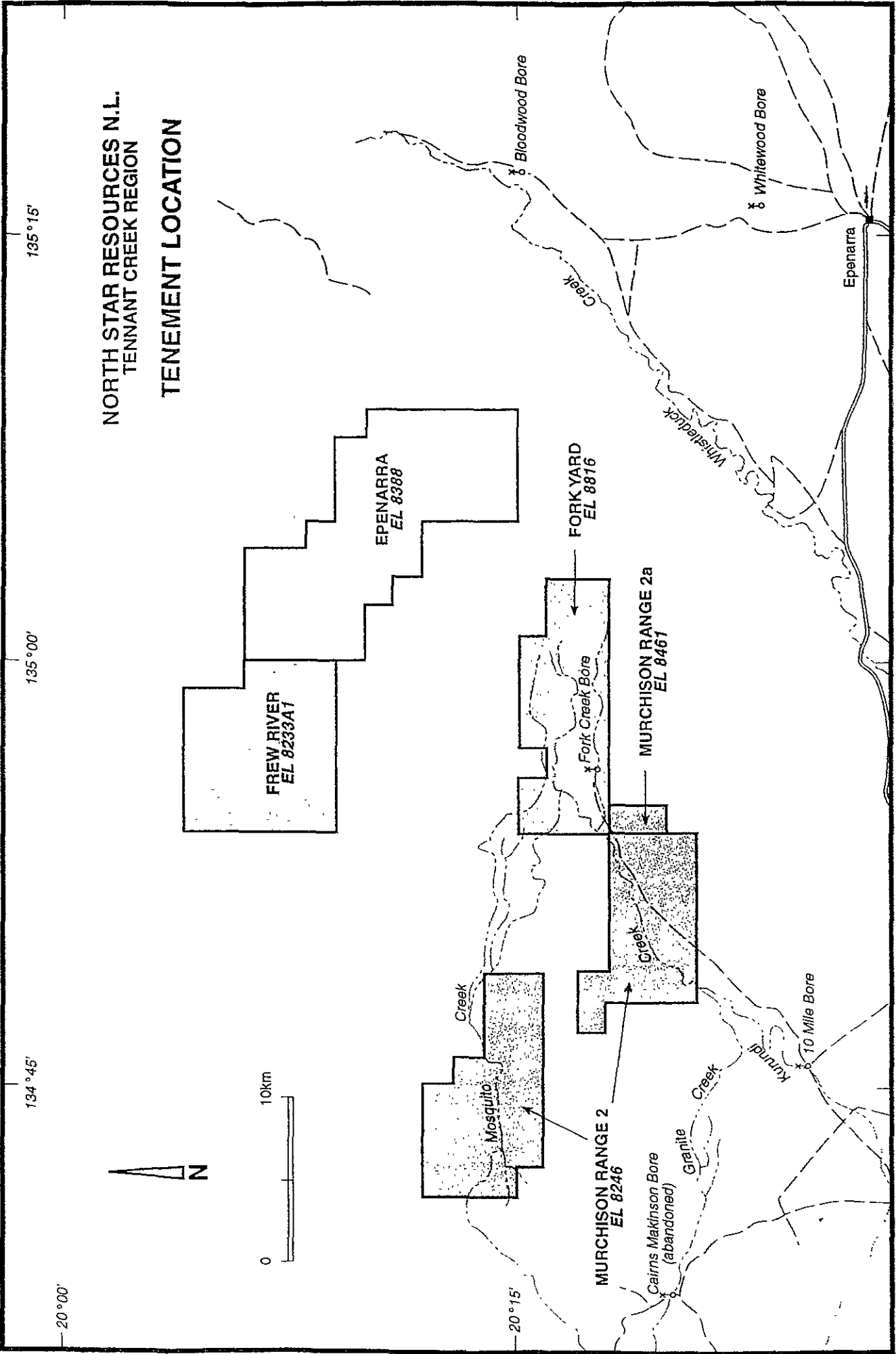
A detailed aeromagnetic survey was flown at a height of 50m, line spacing 150m in October-November 1996 by Tesla Airborne Geoscience. Several airmag anomalies were selected for ground follow-up.

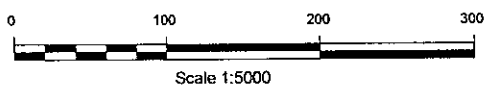
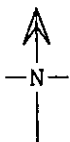
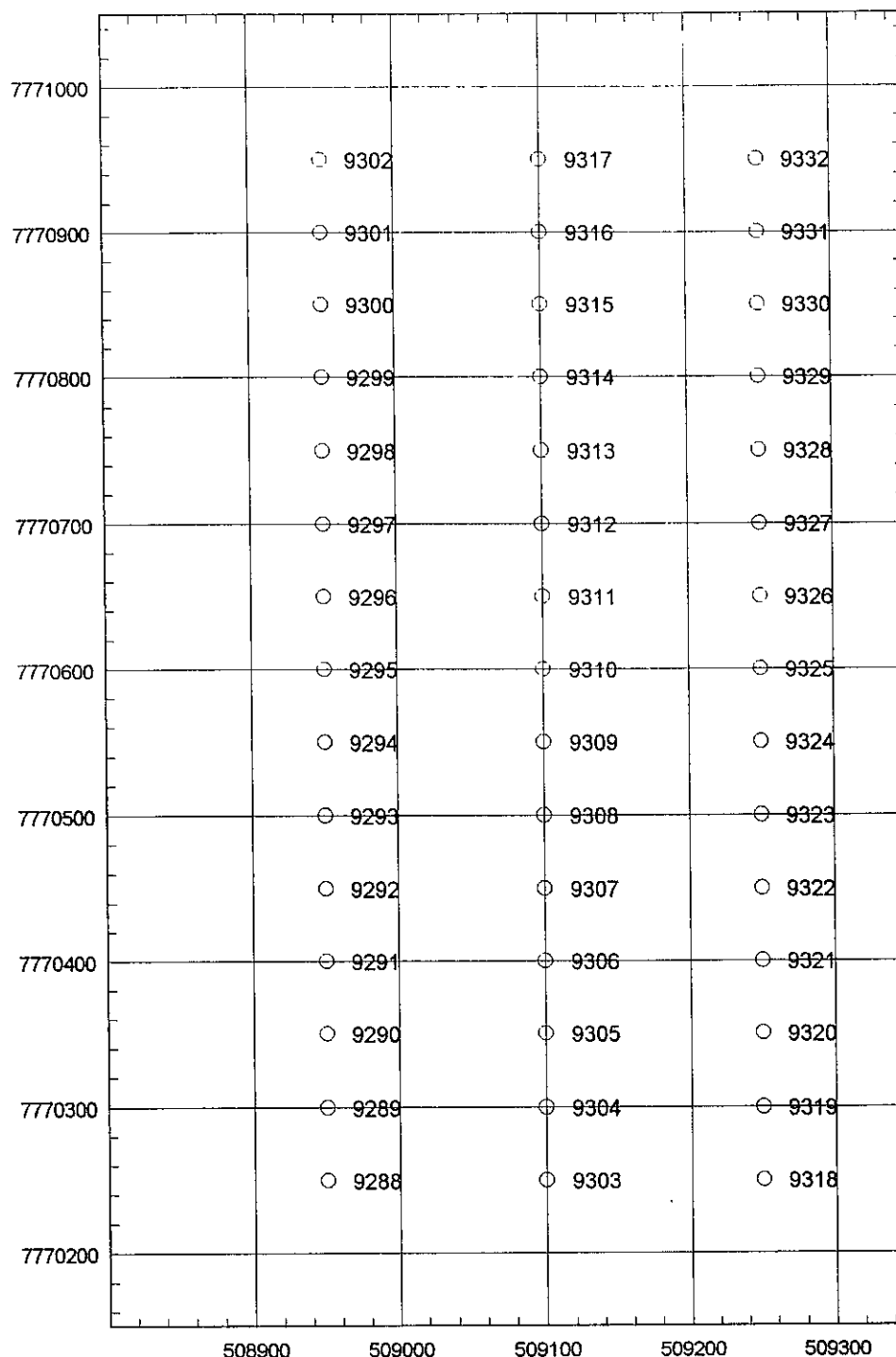
8. Geochemistry

The aeromagnetic anomalies were soil sampled at 20cm depth, 2kg-2mm and sent for bleg analysis. The coordinates of the anomalies and sample points are annexed. A description of the sampling and the assay results are also annexed. Soil sampling was carried out by Arnhem Geological and Exploration Services, Tennant Creek, with navigation using a single unit GPS to establish an origin for each grid. Analysis were carried out by Assaycorps laboratories, Tennant Creek, for ppb Au, detection limit, 0.1 ppb precision + 15%.

9. Conclusion

The area relinquished is considered to have lower exploration potential than the area retained.



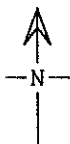
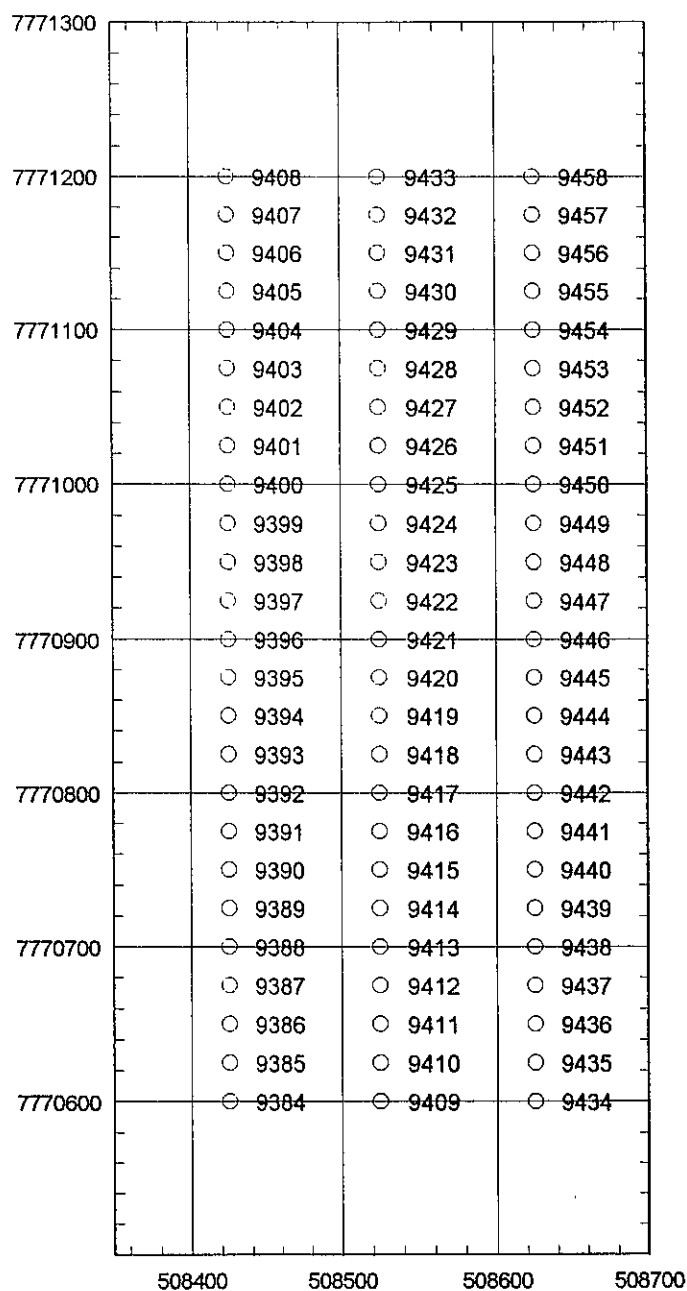


ARNHEM GEOLOGICAL & EXPLORATION SERVICES

MURCHISON RANGE GEOCHEM 1996/7

AREA ET1

GEO:	SCALE 1:5000	CLIENT: NORTH STAR
DRAWN: PM	DATE: 04-04-1997	

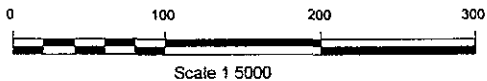
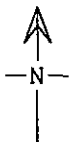
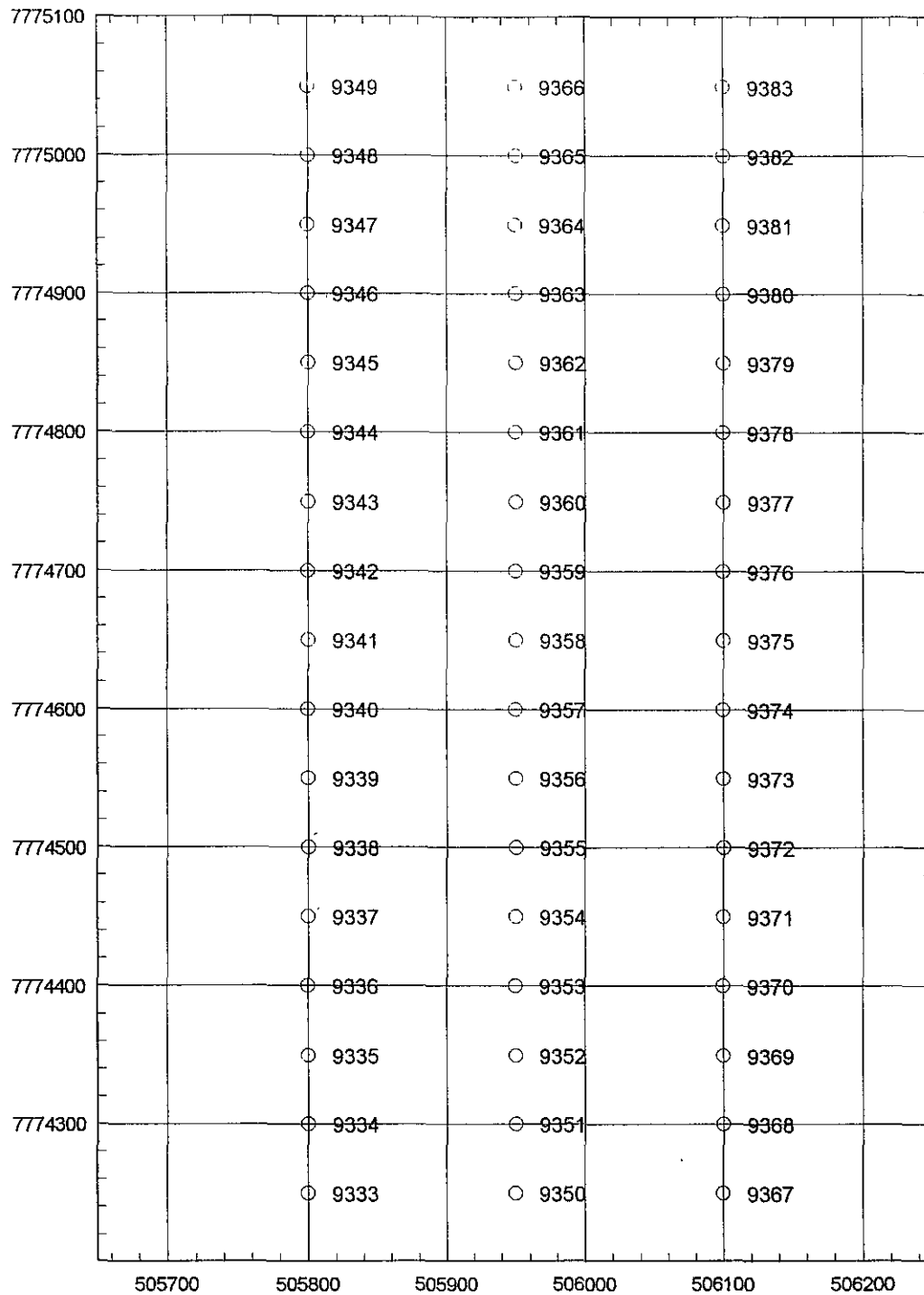


ARNHEM GEOLOGICAL & EXPLORATION SERVICES

MURCHISON RANGE GEOCHEM 1996/7

AREA ET2

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DRAWN: PM	DATE: 04-04-1997	

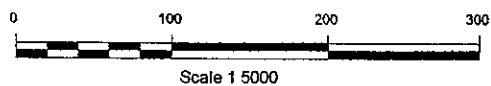
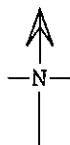
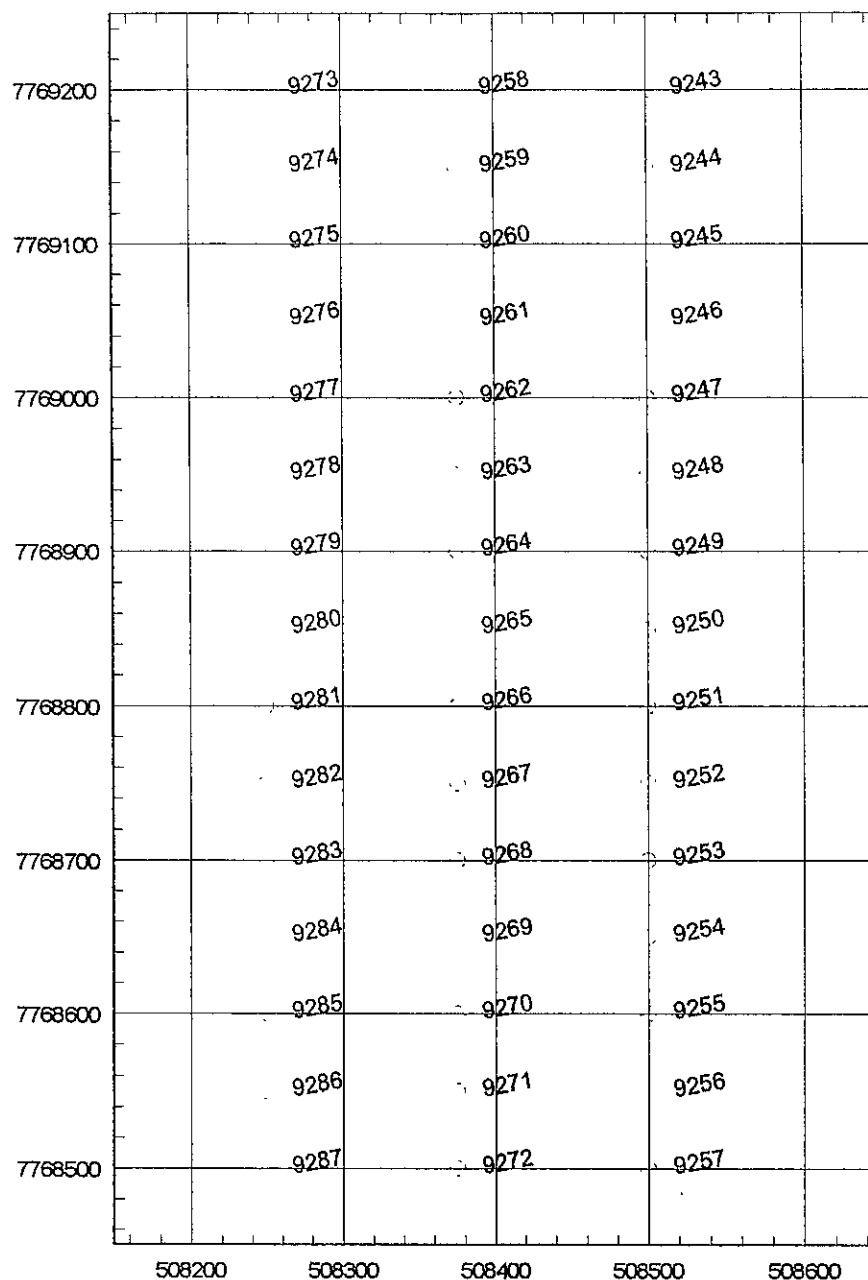


ARNHEM GEOLOGICAL & EXPLORATION SERVICES

MURCHISON RANGE GEOCHEM 1996/7

AREA ET5

GEO:	SCALE 1:5000	CLIENT: NORTH STAR
DRAWN: PM	DATE: 04-04-1997	



ARNHEM GEOLOGICAL & EXPLORATION SERVICES

MURCHISON RANGE GEOCHEM 1996/7

AREA ET6

GEO:	SCALE 1 5000	CLIENT NORTH STAR
DRAWN PM	DATE 25-03-1997	



ASSAYCORP

ASSAY CODE: AC 35551

Page 6 of 8

Sample	Au (ppb)	
9232	<0.1	
9233	<0.1	
9234	<0.1	
9235	<0.1	
9236	<0.1	
9237	<0.1	
9238	<0.1	
9239	<0.1	
9240	<0.1	
9241	<0.1	
9242	<0.1	↓ ET 6
9243	<0.1	
9244	<0.1	
9245	<0.1	
9246	<0.1	
9247	<0.1	
9248	<0.1	
9249	<0.1	
9250	<0.1	
9251	<0.1	
9252	<0.1	
9253	<0.1	
9254	<0.1	
9255	<0.1	
9256	<0.1	
Method	BLEG	



ASSAYCORP

ASSAY CODE: AC 35551

Page 7 of 8

Sample	Au (ppb)
9257	<0.1
9258	<0.1
9259	<0.1
9260	0.2
9261	<0.1
9262	<0.1
9263	0.1
9264	<0.1
9265	<0.1
9266	<0.1
9267	<0.1
9268	0.4
9269	0.1
9270	<0.1
9271	<0.1
9272	<0.1
9273	<0.1
9274	<0.1
9275	<0.1
9276	<0.1
9277	<0.1
9278	<0.1
9279	<0.1
9280	<0.1
9281	<0.1
Method	BLEG



ASSAYCORP

ASSAY CODE: AC 35551

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Sample	Au (ppb)
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9282	<0.1
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9283	<0.1
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9284	<0.1
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9285	<0.1
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9286	<0.1
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9287	<0.1
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Method	BLEG
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ASSAYCORP

ASSAY CODE: AC 35709

Page 2 of 8

Sample	Au (ppb)
9288	<0.1
9289	<0.1
9290	0.2
9291	<0.1
9292	<0.1
9293	<0.1
9294	<0.1
9295	0.2
9296	0.1
9297	0.2
9298	<0.1
9299	<0.1
9300	0.2
9301	0.2
9302	0.1
9303	<0.1
9304	0.1
9305	0.2
9306	0.1
9307	<0.1
9308	0.1
9309	<0.1
9310	0.1
9311	0.1
9312	0.2
Method	BLEG



ASSAYCORP

ASSAY CODE: AC 35709

Page 3 of 8

Sample	Au (ppb)	
9313	<0.1	↓ ETI
9314	0.2	
9315	0.1	
9316	0.2	
9317	0.2	
9318	<0.1	
9319	<0.1	
9320	<0.1	
9321	0.2	
9322	0.1	
9323	<0.1	
9324	0.1	
9325	0.1	
9326	0.2	
9327	<0.1	
9328	<0.1	
9329	0.2	
9330	0.1	
9331	0.2	
9332	0.1	↑ ETI
9333	<0.1	↓ ET5
9334	<0.1	
9335	<0.1	
9336	<0.1	
9337	<0.1	
Method	BLEG	



ASSAYCORP

ASSAY CODE: AC 35709

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Sample	Au (ppb)
9338	<0.1
9339	<0.1
9340	<0.1
9341	<0.1
9342	<0.1
9343	<0.1
9344	<0.1
9345	<0.1
9346	<0.1
9347	<0.1
9348	<0.1
9349	<0.1
9350	<0.1
9351	<0.1
9352	<0.1
9353	<0.1
9354	<0.1
9355	<0.1
9356	<0.1
9357	<0.1
9358	<0.1
9359	<0.1
9360	<0.1
9361	0.1
9362	<0.1
Method	BLEG



ASSAYCORP

ASSAY CODE: AC 35709

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Sample	Au (ppb)	
9363	<0.1	↓ ETS
9364	<0.1	
9365	<0.1	
9366	<0.1	
9367	<0.1	
9368	0.1	
9369	<0.1	
9370	0.1	
9371	<0.1	
9372	0.2	
9373	<0.1	
9374	0.1	
9375	<0.1	
9376	<0.1	
9377	0.1	
9378	0.1	
9379	<0.1	
9380	<0.1	
9381	<0.1	
9382	<0.1	
9383	<0.1	↑ ETS ↓ GT 2
9384	<0.1	
9385	<0.1	
9386	0.1	
9387	<0.1	
Method	BLEG	



ASSAYCORP

ASSAY CODE: AC 35709

Page 6 of 8

Sample	Au (ppb)
9388	<0.1
9389	<0.1
9390	<0.1
9391	<0.1
9392	<0.1
9393	<0.1
9394	<0.1
9395	<0.1
9396	<0.1
9397	<0.1
9398	<0.1
9399	<0.1
9400	<0.1
9401	<0.1
9402	<0.1
9403	<0.1
9404	<0.1
9405	<0.1
9406	<0.1
9407	<0.1
9408	<0.1
9409	<0.1
9410	<0.1
9411	<0.1
9412	<0.1
Method	BLEG



ASSAYCORP

ASSAY CODE: AC 35709

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Sample	Au (ppb)
9413	<0.1
9414	<0.1
9415	<0.1
9416	<0.1
9417	<0.1
9418	<0.1
9419	<0.1
9420	<0.1
9421	<0.1
9422	<0.1
9423	<0.1
9424	<0.1
9425	<0.1
9426	<0.1
9427	<0.1
9428	<0.1
9429	<0.1
9430	<0.1
9431	0.1
9432	0.2
9433	<0.1
9434	<0.1
9435	<0.1
9436	<0.1
9437	<0.1
Method	BLEG



ASSAYCORP

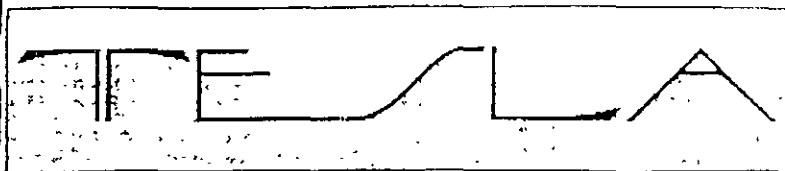
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Page 8 of 8

Sample	Au (ppb)
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9439	<0.1
9440	<0.1
9441	<0.1
9442	<0.1
9443	<0.1
9444	0.1
9445	<0.1
9446	<0.1
9447	<0.1
9448	<0.1
9449	<0.1
9450	<0.1
9451	<0.1
9452	<0.1
9453	<0.1
9454	<0.1
9455	<0.1
9456	<0.1
9457	<0.1
9458	<0.1
Method	BLEG

	AREA EASTING	NORTHING FROM	TO	BASELINE NOTES @ 50m
MT1	476300 476400 476500	7762800 7762800 7762800	7763500 7763500 7763500	7762800 Flat, open, clay.
MT2	474425 474550 474675	7762800 7762800 7762800	7763600 7763600 7763600	7762800 Undulating, siltstone scree. E/W ridge to the south.
MT3	472225 472325 472425	7762750 7762750 7762750	7763350 7763350 7763350	7762750 Flat, scrubby.
MT4	468800 468875 468950	7759850 7759850 7759850	7760350 7760350 7760350	7759850 Flat, scrubby. Granite o/c to the south. Central claypan
MT5	471775 471875 471975	7759950 7759950 7759950	7760450 7760450 7760450	7759950 Flat, scrubby. Compacted clays and pans.
MT6	478400 478500 478600	7759500 7759500 7759500	7760100 7760100 7760100	7760100 Undulating, open. Wide E/W central drainage.
MT7	473150 473250 473350	7764550 7764550 7764550	7765200 7765200 7765200	7764700 Flat, scrubby. Patches of siltstone o/c and weathered granite.
MT8	474625 474725 474825	7763850 7763850 7763850	7764550 7764550 7764550	7764250 Flat, moderate scrub, sand.
MT9	481550 481650 481750	7753700 7753700 7753700	7754200 7754200 7754200	7753700 Flat, moderate scrub, sand.
MT10	481025 481175 481325	7752500 7752500 7752500	7753200 7753200 7753200	7752500 Flat, moderate scrub, sand.
MT11	479750 479850 479950	7754450 7754450 7754450	7755050 7755050 7755050	7754450 Flat, moderate scrub, sand. Low E/W ridge.
FT1	488375 488475 488575	7752600 7752600 7752600	7753200 7753200 7753200	7752600 Flat, moderate scrub, sand.

FT2	489000	7752450	7752850	7752850 Flat, moderate scrub, sand.
	489100	7752450	7752850	
	489200	7752450	7752850	
FT3	491250	7755700	7756400	7755700 Flat, open, sand. Major E/W
	491400	7755700	7756400	creek immediately to the
	491550	7755700	7756400	south of the grid.
FT4	501825	7760950	7761650	7760950 Flat, scrubby, sand. Granite
	501900	7760950	7761650	gravels on eastern line.
	501975	7760950	7761650	
ET1	508950	7770250	7770950	7770250 Flat, light scrub and spinifex,
	509100	7770250	7770950	sand.
	509250	7770250	7770950	
ET2	508425	7770600	7771200	7770600 Flat, light to moderate scrub
	508525	7770600	7771200	and spinifex, sand.
	508625	7770600	7771200	
ET3	501775	7771850	7772450	7771850 Flat, scrubby, sand. Some
	501875	7771850	7772450	quartz.
	501975	7771850	7772450	
ET4	504575	7770300	7771100	7770300 Flat, scrubby, sand.
	504650	7770300	7771100	
	504725	7770300	7771100	
ET5	505800	7774250	7775050	7774250 Moderate scrub and sand
	505950	7774250	7775050	to the south, low E-W ridge
	506100	7774250	7775050	with chert and laterite to th north.
ET6	508250	7768500	7769200	7769200 Flat, scrubby, sand.
	508375	7768500	7769200	
	508500	7768500	7769200	
ET7	501500	7773600	7774300	7773600 Flat, scrubby, sand.
	501650	7773600	7774300	
	501800	7773600	7774300	



AIRBORNE GEOSCIENCE

A.C.N. 009 183 082

REF:RP/SR

October 14, 1996

North Star Resources NL
First Floor
34 Colin Street
WEST PERTH WA 6005

SQ2710

Att: George Sakalidis

Dear George

RE: AIRBORNE GEOPHYSICAL SURVEY
Tennant Creek, Northern Territory

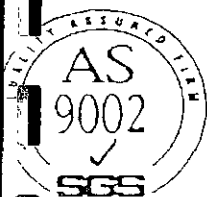
Thank you for inviting us to quote on the above survey as outlined in your fax of 9th October.

Tesla Airborne Geoscience will supply the following equipment to carry out the survey:

Aircraft	:	Cessna 210N
Magnetometer	:	Scintrex Cesium Vapour Magnetometer RMS Automatic Aeromagnetic Digital Compensator (AADC) Cycle Time - 0.1 seconds.
Spectrometer	:	Exploranium GR-820 Self Calibration with 33.6 Litre Crystal Volume mounted side by side in the floor of the aircraft. All crystals are less than three years old. Cycle Time - 1.0 seconds.
Global Positioning System	:	Novatel 12 Channel Receivers in aircraft and base systems. Updating once per second.
Radar Altimeter	:	Bendix King KRA-10A. Recording 10 times per second.

Perth Office: 41 Kishorn Road, Applecross, Western Australia 6153
Telephone 61 9 364 8444 Fax 61 9 364 6575
email: tesla10@wt.com.au

Eastern Office: 3 Fox Close, Karong, New South Wales 2250
Telephone: 61 043 400 122 Fax 61 043 400 155
email: tesla10@ozemail.com.au



Barometric Pressure : Air Digital Barometer.
Recording at one second intervals.

Temperature : Digitron R500 Temperature Probe.
Recording at one second intervals.

Humidity : Digitron R500 Humidity Sensor.
Recording at one second intervals.

Data Acquisition : TAG-3 486 Based Data Acquisition System synchronised to
System GPS time. Data is recorded to hard disk and backed onto tape
at the completion of each flight for processing.

Base Magnetometers : Two Geometrics G856AX Magnetometers.
Cycle Times - 5.0 seconds.

Radiometric data will be collected but only processed if required.

All equipment is detailed in our "Airborne System Specifications" manual which is available on request.

In-flight navigation and data co-ordination utilises high performance GPS cards with Real Time Differential Corrections via Fugro Surveys Omni Star Link. This combination enables highly accurate close line surveys to be flown.

We have recently taken delivery of new post processing software which produces improved height information resulting in superior digital terrain models.

BASE STATION MONITORS

Tesla Airborne Geoscience will situate two G856 Magnetometers at its base of operations (Tennant Creek). The magnetometers will cycle at five second intervals. They will be located in low gradient areas, and away from man-made influences. This functions as a backup and check of diurnal activity.

A Base 12 Channel GPS will be situated on a known point with data recorded to enable post processing to further refine aircraft positional and height information. Real time corrections will be via Fugro Surveys Omni Star Link.

- Speed Check Profiles in metres per second.
- Radiometric Summed Spectra Plots for each line.
- Thorium Source Check Peak Position and Resolution Plots indicating spectrometer stability.

TIMING

We will be commencing another job in the Northern Territory next week and would be available to fly this job before then.

Preliminary data and quality control plots would be available 10 days after the completion of flying. Final data will be available five days after acceptance of preliminaries.

RATES (*Optional)

1.	Mobilisation	\$ 3,000.00
2.	Data Acquisition	\$ 8.00/km
3.	Standby (weather, diurnal activity, client request)	\$ 1,850.00/day
4.	Data Processing	
	a) Correct and Level Magnetic Data and Write Located and Gridded Data to CD-Rom	\$ 1.30/km
*	b) Correct and Level Radiometric Data and Write Located and Gridded Data to CD-Rom	\$ 1.90/km
*	c) Calculate and Level Digital Terrain Model and Write Located and Gridded Data to CD-Rom	\$ 0.50/km
*	d) Black and White Contours	\$ 220.00/sheet
*	e) Colour Contours	\$ 340.00/sheet
*	f) Images on Laminated Paper	\$ 350.00/image
*	g) Calculation of Vertical Derivatives	\$ 0.10/km/derivative

AREA LINE KILOMETRAGE

EL8388/8816	150 metres	1,960 kilometres
	200 metres	1,500 kilometres
EL8246/8388/8816	150 metres	3,190 kilometres
	200 metres	2,450 kilometres

IN-FIELD PROCESSING AND QUALITY CONTROL

Tesla Airborne Geoscience place high emphasis on quality control and early detection of problems to ensure high quality data acquisition.

To achieve this goal, an extensive range of in-field processing software has been developed to enable rigorous examination of collected data. Calibration and monitoring procedures are strictly followed and documented.

In flight the operator can view profiles of all incoming data at operator selectable scales. Statistics can be produced in flight of completed survey lines.

At the completion of each flight, the data is downloaded to an in-field processing computer. Hard copy statistics are produced for each line of every parameter collected. Line profiles are viewed at every line at operator selectable scales (both vertically and horizontally) to ensure noise parameters are being met. Positional data is post processed and the flight path viewed and zoomed to identify navigation reflights. AMG positions are also displayed along the line. Hard copy analogues, stacked profile and flight path plots can be produced for on-the-spot decisions.

Located x, y, z data is available at the completion of each days acquisition for inputting into imaging software.

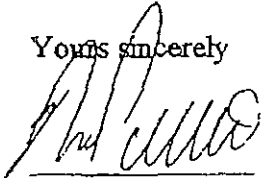
QUALITY ASSURANCE AND SAFETY

Tesla Airborne Geoscience has recently become a Quality Assured Company conforming to ISO Standard 9002 - Certificate Number 648/96. This makes us Australia's only Quality Assured Airborne Survey Company. The following quality control products will be produced:

- Flight Path and Altitude map showing where the altitude envelope is outside of specifications.
- Flight Path and Line Specification map showing where actual flight path deviates from planned flight path.
- Stacked Profile Noise map showing magnetometer noise envelope.
- Diurnal Monitor Plots showing TMI and time derivative of diurnal plotted as a multiplot showing all base stations.

Please do not hesitate to contact me if you have any queries. Your early response would be appreciated to enable planning to commence.

Yours sincerely



Rod Pullin
OPERATIONS MANAGER