607001 TCR 83 - 1942

D 56

ANNUAL REPORT

EXPLORATION LICENCE 47/71

QUEEN HILL

TASMANIA

For year ended December 21, 1982

Distribution: Hawthorn
Burnie
Zeehan
Gippsland
Dept. of Mines

M. J. Rombouts

Geologist

January 20, 1983.

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF PLANS

Plate No.	Title	Scale
QH183	Queen Hill Licence 47/71 - Summary Plan	1:10,000
Don 2a	Donnellys Prospect - Ground Magnetics	1:2,500
Don 2b	Donnellys Prospect - Ground Magnetics	1:2,500
Don 3	Donnellys Prospect - Soil Geochemistry Sheet 1	1:2,500
Don 3	Donnellys Prospect - Soil Geochemistry Sheet 2	1:2,500
Don 4	Donnellys Prospect - Geology	1:2,500
Don 5 (in text)	Donnellys Prospect - Line 4700N Costean	1:50
Don 6 (in text)	Donnellys Prospect - Line 4800N Costean	1:50
Don 7 (in text)	Donnellys Prospect - Line 4900N Costean	1.50
Don 8 (in text)	Donnellys Prospect - Line 5000N Costean	1:50
Don 9 (in text)	Donnellys Prospect - Line 5000N Costean	1:50
T.R.1	Tasman River Grid - Ground Magnetics	1:2,500
St. Diz. 44	Exploration Licence 47/71 - St. Dizier - Big 'H' Area	1:5,000

FIGS

SUMMARY

This report details exploration conducted on the Queen Hill Exploration Licence 47/71 during the year ended December 21, 1982. The Statement of Expenditure is for the 1982 Aberfoyle Exploration budget period, commencing November 17, 1981 and ending November 15, 1982.

Work on Exploration Licence 47/71 during the year has focused on the Donnellys Prospect. Grid cutting, ground magnetics, soil geochemistry and mapping have been undertaken. Follow-up costeaning of anomalous geochemistry revealed several areas of possibly structurally related skarn mineralisation.

A compilation of previous work on the licence was undertaken and the St. Dizier area is currently being mapped.

INTRODUCTION:

Exploration Licence 47/71 Queen Hill covering an area of 24 sq.km was granted to Gippsland Minerals N.L. (now Gippsland Oil and Minerals N.L.), on December 21, 1971. This licence, in conjunction with optioned Mineral Leases, gave Gippsland Minerals N.L. title to explore the Queen Hill area.

On March 27, 1972 Cominco Exploration Pty. Ltd. (C.E.P.L.) and Gippsland Minerals N.L. signed an agreement allowing C.E.P.L. to become the operating partner in a joint venture to continue exploration for cassiterite-sulphide mineralisation in the Queen Hill area.

On December 17,1983, Exploration Licence 22/73 St. Dizier of 76 sq.km. was granted to C.E.P.L. to be followed on April 26, 1976 by Exploration Licence 13/76 Heemskirk of 22 sq. km. Both these licences were amalgamated in late 1977 along with the Queen Hill Licence to form the current Exploration Licence 47/71 Queen Hill of 122 sq. km. The location of the Queen Hill Licence and the orientation of the enclosed Consolidated Mineral Lease 36M/81 of 564 hectares is shown on Plate QH183.

Revised conditions governing exploration licences defined by the Department of Mines from July 1, 1982, require that exploration be completed on the Queen Hill Licence within five years from December 21, 1982. However, since the current licence area of 122 sq.km. is less than the maximum area permitted for a five year old licence (125 sq.km), no reduction in area is required during this period.

The Queen Hill Licence currently attracts an annual expenditure rate of $500 per square kilometre and an annual licence fee fixed of $25 per square kilometre.

Since amalgamation Exploration Licence 47/71 has been subject to active mineral exploration culminating with the present drill target definition programme at Donnellys, St. Dizier-Central- Big H prospects and the follow-up of aeromagnetic anomalies, both of which are the subject of this report:-

DONNELLYS PROSPECT

Exploration on the licence has continued to concentrate on the Donnellys grid in order to bring this prospect to the drilling stage.

GRIDDING

In the first quarter of 1982 a further 5.6 line km of grid was cut to extend the 16.4 line km of grid cut during the previous year. This was to enable access in the forest-swamp area in which the main E.M. and magnetic responses are confined. Lines 5300N and 5400N have been extended to the northern licence boundary. Lines 4700N to 5400N have been extended to the south-west as far as the contact with the Heemskirk Granite.

On February 15, 1982 a bushfire destroyed approximately 3.9 line km of grid of which 7.7 km in the immediate area of interest was replaced and extended.

GROUND MAGNETICS (Plates Don 2a,2b)

Ground magnetic coverage has now been extended over much of the gridded area. Further coverage was completed in an area of outcropping calc-silicate and magnetite skarn mineralisation assaying up to 1.35% Sn located at approximately 4650N, 3000E adjacent to and within the Heemskirk Granite. This is on the edge of the current grid.

The ground magnetic coverage confirmed that several magnetic anomalies are confined to the forest-swamp area near the northern licence boundary.

GEOCHEMISTRY (Plate Don 3)

During January 1982, 774 C-horizon soil samples were collected from lines 4600N to 5400N using a hand auger. Areas covered by gravels were sampled by a hand held power auger (65 samples).

Several anomalous areas for tin, tungsten and coincident copper, lead and zinc were located at approximately the position of the ground magnetic anomalies and costeaning was carried out in these areas during the third quarter of the year.

GEOLOGY (Plate Don 4).

Mapping revealed at least two different skarn horizons in the sedimentary sequence. These are located at or near the contact between quartzite and mudstone.

Quartzite

The Pre-Cambrian Oonah Quartzite is one of the dominant rock types on the Queen Hill E.L. It is grey-white in colour and outcrops well. A strong foliation is present parallel to bedding so dip and strike measurements are easily taken. The quartzite is micaceous and quartz veinlets are common. Near the granite contact the rock has been reconstituted to a fine grained saccharoidal texture, e.g. grid ref. 4950N 3300E. Here quartz and granite veins up to 5 cms wide occur and rare garnet crystals are also present.

Interbedded mudstone and quartzite

The closer the quartzite is to the mudstone contact the more prevalent black tourmaline altered mudstone beds become. The appearance of mudstone beds is marked by a change in vegetation from button grass to scrub and sparse trees.

Although float is common in the south-west portion of the grid the occurrence of outcrops in place is rare.

Altered and tourmalinized chiastolitic mudstone.

Mudstone next to the quartzite units shows ubiquitous black sooty tourmaline alteration. In some places white prismatic crystals of andalusite are common. The rocks are massive to laminated, commonly with wispy discontinuous beds and lens shaped mud clasts. This rock type is referred to as a chiastolitic argillite on the St. Dizier grid (Young, 1980 - Plate St. Diz.44).

Mudstone

Although rarely outcropping and with only sparse float this map unit, where seen, is grey to dark grey in colour, massive to laminated, and shows no evidence of contact metamorphism. There is a vegetation change with the disappearance of quartzite beds from scrub and sparse trees to mature myrtle rain-forest, usually with an under-storey of ferns.

Skarn

(a) Ironstone capping

Occurring in the vicinity of grid references 4650N 3000E and 4800N 4200E iron oxides give the rocks a rusty brown to black colour. Samples from locality 4800N 4200E are described in thin section as a brown quartz-arsenopyrite rock. Only some of the rocks contain magnetite.

A few small pieces of magnetic skarn float were found at grid ref. 4880N, 3150E at the contact between quartzite and altered mudstone.

(b) Green-grey-white serpentinised mudstones

These rocks do not outcrop and are only known from the costeaning which was done mainly in an approximately north-south trending depression west of the 4200N base line.

Variable mica and sulphide content is present in the mudstones and they are partially siliceous. Limonite stained clay is common. A feature of the finely bedded to laminated mudstone is intense isoclinal folding and slump-like features.

The appearance of the rocks is similar to the skarn horizon on the St. Dizier grid. Here the conclusion was reached based on petrological work, that the original rocks were dolomitic limestones interbedded with magnesium-rich argillaceous sediments. Contact metamorphism with the nearby granite produced serpentine which was then partly replaced by magnetite and pyrrhotite with which the cassiterite is associated.

Skarn horizon on the Donnellys grid appears to occur in rocks gradational to tectonically deformed quartzite and mudstone.

(c) Calc-silicate

Calc-silicate float is present in a narrow valley north of the magnetite skarn near grid ref. 4650N, 3000E. The rock has irregular shaped grey, white and brown limonite stained patches with cavities which are commonly lined with crystals. Iron oxide cemented gravel is also common in this valley. The calc-silicate also has a similar appearance to rocks found along the St. Dizier skarn horizon.

Granite

The granite is medium grained and white to pinkish in colour. Biotite may become less common and disappear near the contact. Quartz-tourmaline rock occurs in some areas near the contact and the granite may be aplitic e.g. grid ref. 5000N, 3030E.

STRUCTURE

A number of folds occur in the quartzite plunging in a north to north-westerly direction.

A fault may be indicated at grid ref. 4870N, 3250E by the shifting to

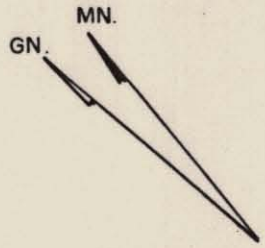
the north-west of the mudstone-quartzite contact which is marked approximately by the forest boundary.

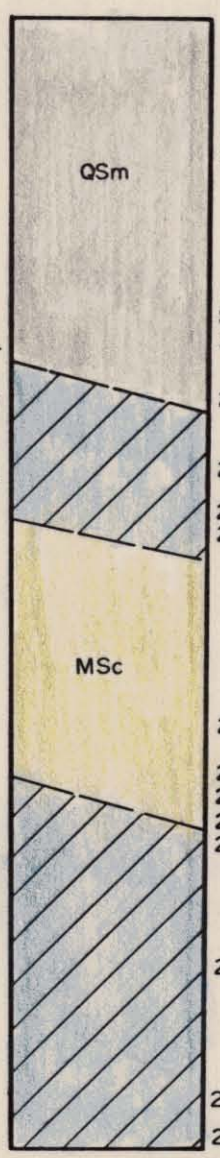
COSTEANING (Plates Don 5,6,7,8,9).

A number of costeans were placed parallel to the lines of the grid and approximately perpendicular to the trend of the tin geochemical contours. Results of the geochemical assaying of the costean samples, taken whenever there was a slight change in lithology, showed anomalous values were irregular in distribution confirming the results obtained from the soil geochemistry. Most rock chip samples from the trenches were anomalous in zinc and copper with up to 5.2%Zn and 0.71% Cu. Lead reported in trace amounts only. Tin values were generally weakly anomalous with one sample peaking at 1.05%Sn. The patchy distribution of the tin within the skarns is reflected by a sample within one metre of this peak value assaying only 80 ppm Sn. (Results are contained in Appendix 111

Retrograded skarn with an apparent thickness of 15-50 metres was revealed in all trenches between 4700E and 5000E. The skarn consists of talcose, chloritic assemblages at the contact of carbonaceous mudstone and quartzite. (See Appendix 11 for petrological descriptions).

607012





4013 E

grey - sl. brown more indurated mudstone than unit 2 to the west, white mudstone beds are minor, in part more siliceous and quartzitic; Py platelets present along bedding planes and joints.

Str. 150° dip 60° NE
Str. 168° dip 40° NE

Str. 135° dip 28° NE

Sample No.	Sn	Cu	Pb	Zn	in ppm.
261342	35,	70,	<10,	60	

grn.-brn. "serpentinous" clay mudstone; includes some unit 1 generally contorted and partially silicified.
3980 E - 3984 E dissem. Py & grey platey sulphide along joints and bedding.

261341	30,	80,	<10,	180
261340	90,	4900,	<10,	14000
261339	100,	90,	10,	100
261338	300,	850,	140,	180

sulphides, mostly Py as platelets parallel to bedding and joints also veinlets.

261337	10,	80,	<10,	120
261336	<10,	160,	<10,	160
261335	15,	240,	<10,	100
261334	20,	440,	<10,	90
261333,32,31	15,	360,	<10,	280 (33)
	10,	380,	<10,	240 (32)
	40,	3600,	<10,	220 (31)
261330	25,	3700,	<10,	240
261329	10,	5700,	<10,	50
261328	20,	2300,	<10,	300

lt. brn.- grn. "serpentinous" sl. mic.- mic. clay mudstone
3943E -3941E & 3940E towards west.
dk. grn.- black very mic. mudstone with abundant sulphide.

3940 E

5 cm

NB. Strike readings are taken from mag. north.

For Legend refer Don. 9

Aberfoyle Exploration Pty Ltd

Geology:	M.J.R.
Drawn:	M.J.R.
Traced:	R.J.E.
Checked:	
Revised by:	Date:

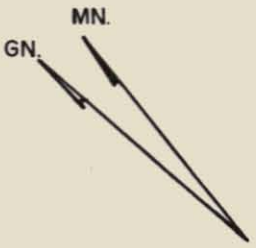
NORTH WEST TASMANIA
QUEEN HILL E.L. 47/71
DONNELLY'S PROSPECT
LINE 4700N COSTEAN

Location code:	K55/5
Date:	Sept. 1982
Scale:	1 : 50
Plate No	Don. 5

607013

(unit 1)

4082E – 4084E grey-white clay
4078E – 4082E grey grn.-white very contorted mudstone.
4065E – 4070E brn.-grn.-grey-white clay mudstone



lt. brn. to grn.-white mudstone with cherty & mic. beds
v. contorted partly carb. grn.-white clay
dk grn. serpentinite like sl. mic. clay mudstone

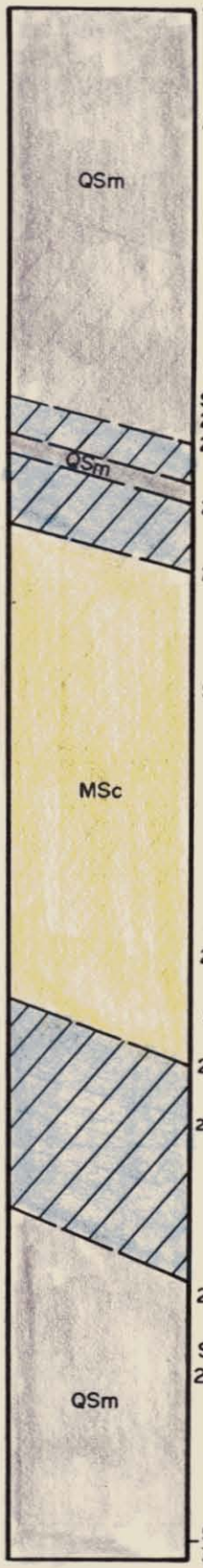
dissem. Py as platelets parallel to bedding.

lt. brn. clay mudstone; grn. black carb. "serpentinous" mic. mudstone clay with sulphides, partially silicified.
4010E – 4013E black carb. mudstone with abundant sulphides, contorted unit 1

3999E – 4000E dissem. sulphides more common.
3999E - towards west quartzitic component increases, micaceous.

5 cm

NB. Strike readings are taken from mag. north.



4095 E

Sample No.	Sn, Cu, Pb, Zn in ppm	
261324	<10, 30, <10, 10	
261323	<10, 20, <10, 5	
261322	<10, 15, <10, 5	
261321	15, 20, <10, 50	
	Str. 145° dip 40° NE	
261320	80, 220, <10, 240	
261319	90, 70, <10, 140	
261318	180, 850, <10, 380	
261317	35, 950, <10, 3400	
	Str. 163° dip. 27°NE	
261316	25, 400, <10, 25	
	Str. 143° dip 45°NE	
261315	35, 200, <10, 15	
261311	650, 35, <10, 440	
10	140, 80, <10, 80	
9	20, 5000, <10, 160	
8	20, 6800, <10, 460	
7	15, 4300, <10, 320	
6	35, 7100, <10, 400	
5 & 261375	25, 3000, <10, 940	20, 3900, <10, 320
4	3800, 220, <10, 360	
3	10500, 4700, <10, 500	
2	80, 180, <10, 160	
1	380, 90, <10, 100	
261325	<10, 200, <10, 100	
	Str. 55° dip 40° E	
261326	<10, 480, <10, 60	
	Str. 52° dip 45°SE	
3985 E 261327	15, 40, <10, 20	

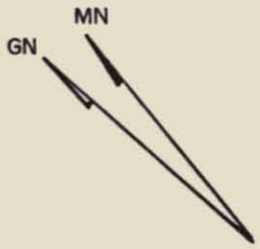
For Legend refer Don.9

Aberfoyle Exploration Pty Ltd

Geology: M.J.R.	NORTH WEST TASMANIA		Location code: K55/5
Drawn: M.J.R.	QUEEN HILL E.L. 47/71		Date: Sept. 1982
Traced: R.J.E.	DONNELLY'S PROSPECT		Scale: 1 : 50
Checked:	LINE 4800N COSTEAN		Plate No Don. 6
Revised by: Date:			

607014

Tr. aspy, py film along bedding planes and joints.



grn - grey "serpentinous" mudstone at base with dissem. py, cpy, aspy, becoming v. micaceous grn.-wh.-sl. grey bedded to lam. mudstone, variably micaceous, often contorted and partially silic. minor brown micaceous clay

qtzitic in part carb. and contorted

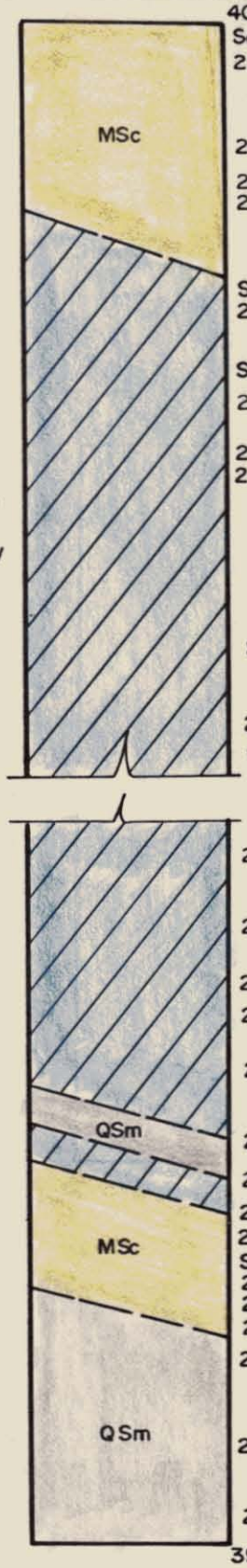
grey - wh. mic. and silic. py to 10%

dk. grey bk., partially silic. dissem. py variable tr. 25%. 3974·7 - 3975·2E grey grn. contorted unit 1, mic. ≈5-7% dissem. py

in part carb. near upper boundary, partially silic. and contorted, becomes more qtzitic and mic. to west, tr 12% py, aspy

5 cm

NB. Strike readings are taken from mag. north.



4087E

Sample No	Sn, Cu, Pb, Zn in ppm
261372	<10, 160, 140, 9300
261371	50, 90, <10, 90
261370	30, 100, 20, 35
261369	10, 240, 80, 1200
Str. 65° dip 62° SE	
261368	90, 120, 160, 3900
Str. 135° dip 20° NE	
261367	200, 60, <10, 140
261366	80, 70, 30, 120
261365	<10, 80, <10, 480
Str. 63° dip 80° NW	
261364	40, 30, <10, 30
Str. 48° dip 65° NW	
261363	120, 900, <10, 840
261362	240, 1200, <10, 860
261361	10, 280, <10, 70
261360	<10, 340, <10, 240
261359	<10, 2000, <10, 50
261357, 58	40, 45, 10, 80, – 60, 140, <10, 160
261356	45, 120, 10, 240
261355	70, 80, <10, 50
261354	25, 25, <10, 5
Str. 100° dip 17° SW	
261353	35, 50, <10, 15
261352	25, 160, <10, 80
261351	100, 140, <10, 30
261349, 50	25, 180, <10, 70 – 25, 50, <10, 280
261373	20, 240, <10, 30
261374	15, 340, <10, 80

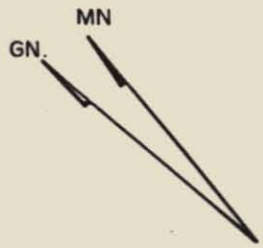
3958 E

For Legend refer Don. 9

Aberfoyle Exploration Pty Ltd

Geology: M.J.R.	NORTH WEST TASMANIA	Location code: K55/5
Drawn: M.J.R.	QUEEN HILL E.L. 47/71	Date: Sept, 1982
Traced: R.J.E.	DONNELLY'S PROSPECT	Scale: 1:50
Checked:	LINE 4900N COSTEAN	Plate No Don. 7
Revised by: Date:		

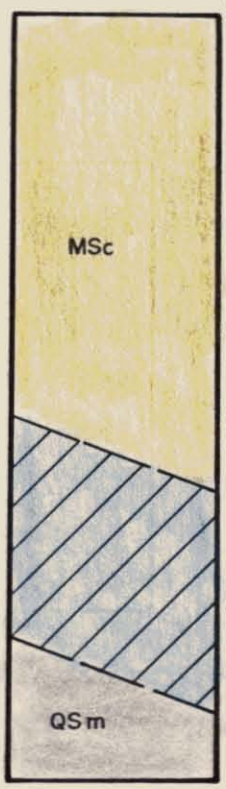
607015



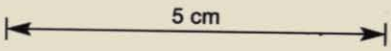
dk. grey – bk., massive with limonite staining along joints, f.g. disem. py common on west side.

grey - gm – wh. and at times purple finely bedded and lam. to contorted and intensely folded mudstone, py and grey platey sulphide common.

often contorted and intensely folded, becoming more silic. towards the west.



Sample No	Sn, Cu, Pb, Zn in ppm
Str. 102° dip 60° NE	
Str. 125° dip 35° NE 261343	15, 140, <10, 80
Str. 152° dip 62° NE 261344	30, 180, <10, 180
261345	25, 800, 10, 52000
261346	45, 80, 60, 500
261347	30, 60, 20, 1500
261348	<10, 45, 10, 100



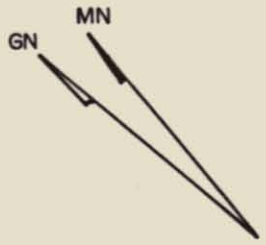
For Legend refer Don. 9

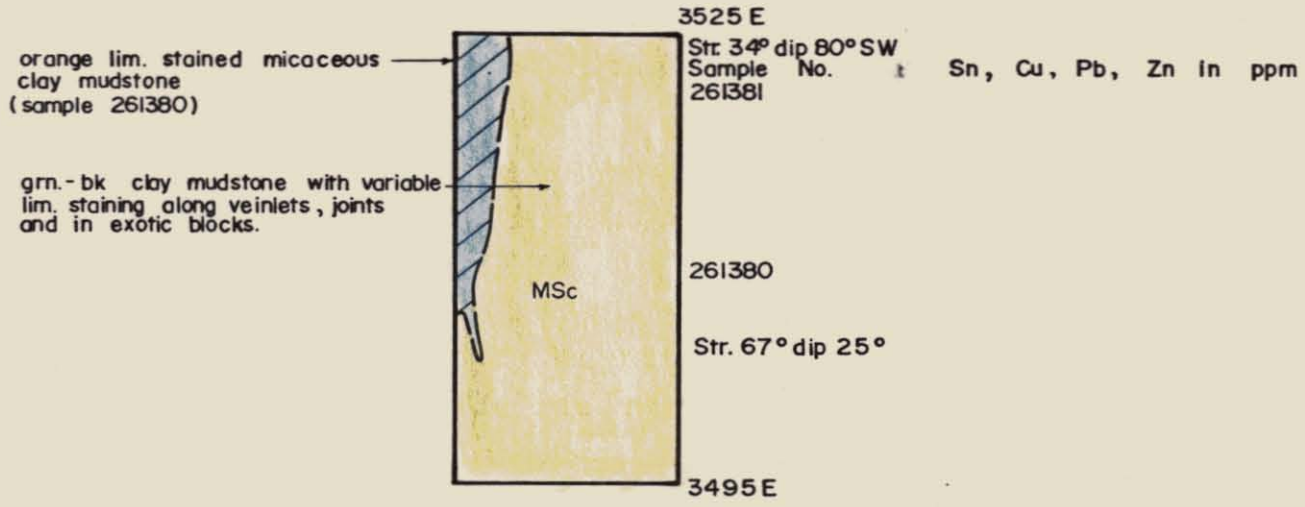
NB. Strike readings are taken from mag. north.

Aberfoyle Exploration Pty Ltd

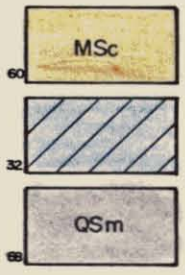
Geology: M.J.R.	NORTH WEST TASMANIA	Location code: K55/5
Drawn: M.J.R.	QUEEN HILL E.L. 47/71	Date: Sept. 1982
Traced: R.J.E.	DONNELLY'S PROSPECT	Scale: 1 : 50
Checked:	LINE 5000N COSTEAN	Plate No Don. 8
Revised by: Date:		

607016





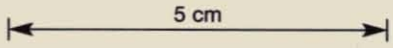
— LEGEND —



Carbonaceous "tourmaline altered" mudstone : black massive to laminated

Skarn : green "serpentinised" white grey laminated to contorted and isoclinally folded micaceous clay mudstone ; limonite staining is common, disseminated sulphides common, partially silicified.

Quartzitic mudstone : grey mudstone with white mudstone quartzite beds ; laminated to contorted, white quartzitic beds are destroyed with remnants existing as lens shaped fold hinges, micaceous where more quartzitic and siliceous.



NB. Strike readings are taken from mag. north.

Aberfoyle Exploration Pty Ltd

Geology: M. J. R.	NORTH WEST TASMANIA	Location code: K55/5
Drawn: M. J. R.	QUEEN HILL E.L.47/71	Date: Sept. 1982
Traced: R. J. E.	DONNELLY'S PROSPECT	Scale: 1 : 50
Checked:	LINE 5000N COSTEAN	Plate No. Don. 9
Revised by: Date:		

TASMAN RIVER ZONE

A north-west trending zone of airborne DIGHEM and magnetic anomalies (Figure 1) was covered by 3.8 km. of grid over which a ground magnetic survey was conducted (Plate T.R.1). No further work has taken place since the entire grid was destroyed by fire on February 15, 1982.

ST. DIZIER AREA

All existing data on the St. Dizier-Central-Big H trend was reviewed and a subsequent programme of more detailed surface geological mapping of the area at 1:2,500 scale is partially complete.

REVIEW OF PREVIOUS WORK

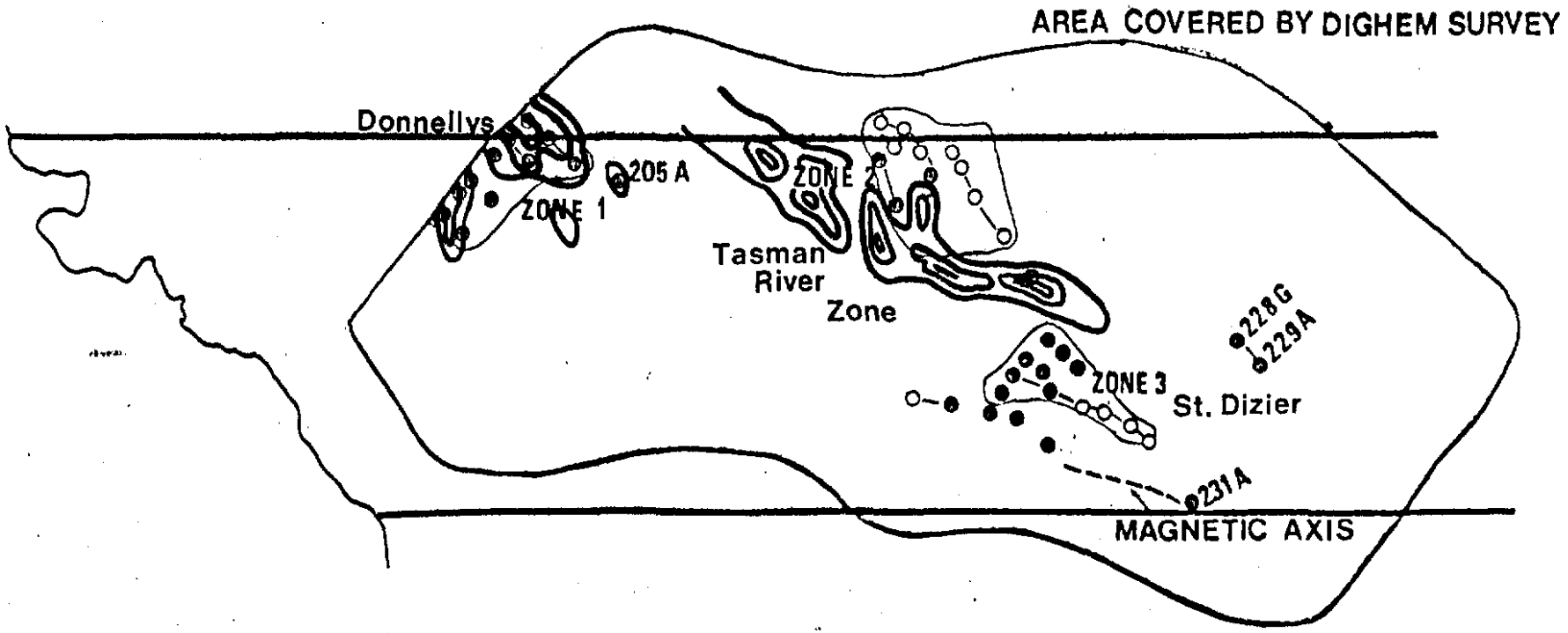
Basic Stratrgraphy

The area between St. Dizier and Big H was mapped in 1967 at a scale of 400 feet to the inch by Pickands Mather International (P.M.I.). They showed a magnetite-pyrrhotite zone bounded to the north by banded tourmalinized sediments and quartzites and to the south by chiastolitic argillite.

All later work was by Aberfoyle Exploration Pty. Ltd. and the following features were noted:-

The Oonah Quartzite and Slate in the vicinity of St. Dizier and Big H prospects contains a lower percentage of quartzite than observed elsewhere in the licence. Shale, as well as occurring in a band up to 150 metres wide south of a prominent dolomite horizon, also occurs interbedded with quartzitic siltstones. The shales are often tourmalinized and andalusite is commonly developed close to the granite contact.

The depth of the granite basement beneath the dolomite unit is probably not greater than 100-150 metres at St. Dizier. The contact is concave with the angle of the contact less than 10 degrees. At the Central Anomaly the granite contact is over 500 m away and convex.



AEROMAG. CONTOURS

● DIGHEM ANOMALIES FOR FOLLOW UP

○ NO FOLLOW UP

Figure 1.

607018

Nature of Carbonate horizons and Mineralization

Prior to metamorphism the host rock is interpreted to have been dolomite limestone interbedded with magnesium-rich argillaceous sediments. Where it can be observed, this unit is less than 50 metres thick.

Contact metamorphism ranges from albite-epidote-amphibolite facies (characterised by the assemblages forsterite-dolomite and talc-dolomite) to pyroxene hornfels facies (characterised by the assemblages calcite-forsterite-diopside and calcite-forsterite-periclase (MgO) which is usually altered to brucite (Mg (OH)2). The intermediate facies, hornblende-hornfels, is developed also (Simpson, 1977).

Late stage alteration by magmatic fluids has produced serpentine and brucite from forsterite to give, along with carbonates, ophicalcite, probably the most common skarn rock present. Banding of magnetite and pyrrhotite is the result of replacement of serpentine by magnetite and pyrrhotite. Thus the dolomitic phases give rise successively to forsterite, serpentine, then magnetite and pyrrhotite (Simpson, 1977).

The higher tin values correspond with the outcropping zone of serpentinized skarn rocks containing strongest concentrations of magnetite, pyrrhotite and pyrite. Cassiterite is observed in thin section to be closely associated with antigorite and pyrrhotite, often being enclosed by them. Magnetite has a close spacial relationship to cassiterite but does not enclose it. Polished section studies indicate that cassiterite size is in the range 2-200 microns with an average of 50 microns (Simpson, 1975).

Low levels of tin mineralisation commonly 300-500 ppm Sn with local values of 10,000 ppm Sn observed in a patchy

distribution in the shale sequence between the granite contact and skarn rocks is attributed to the fact that these shales are often limey. Patchy development of pyrite nodules within the shales gives rise to tin and associated copper and zinc values.

Sphalerite is probably the most abundant economic sulphide at St. Dizier. Chalcopyrite is a minor constituent in the mineralisation.

Central Anomaly

Geological mapping and airborne magnetics suggest that an area with potential for producing a significant sized body of mineralisation is located approximately midway between St. Dizier and Big H . As the granite contact is convex, unlike that at St. Dizier, it is more likely that the contact is considerably steeper. The area of interest is over 500m from the granite. Against this, the ore grade mineralisation at St. Dizier is confined to less than 100 metres from the granite contact.

The depth to the top of the anomaly is interpreted to be about 130 metres (Yates,1978).

The central anomaly was poorly tested by P.M.I., by a hole, H101, drilled almost parallel to strike. Drill hole H101 intersected 4 feet of 0.45% Sn with the highest tin value being 6400 ppm.

Big H Anomaly

The results of the ground magnetic survey suggest that a shallow body exists at Big H but because of rapid reversals in polarization its shape cannot be calculated. The ground data mirrorsthe airborne results. However, it more clearly defines a lobe extending north-west along the granite contact from Big H.

At Big H there is magnetite-rich skarn cropping out adjacent to weathered granitic rocks, giving every indication that the depth of the skarn is very limited. This conclusion should be evident by examining the P.M.I. cross-sections of H102 (91.4m), H103(58.8m), H104 (124.0m).

P.M.I. drill hole No. H102 tested beneath one of the strongest tin anomalies defined by the 1980 bed-rock sampling programme but no tin was reported in the hole. Current interpretation of structure suggests H102 was drilled down dip. The other P.M.I. holes did not test beneath significant tin anomalies. The highest tin anomaly obtained from RAB drilling was 1200 ppm Sn. Fifteen grab samples of core from P.M.I. holes H101 to H104 showed tin values in the range 4 to 6400 ppm. Five values exceeded 100 ppm and the best values were in DDH 101 from the Central Anomaly (Simpson, 1976).

Granite Anomalies

Vein tin is common within the body of the granite.

A second type of tin mineralisation is observed close to the granite contact. This rock consists of a granoblastic quartz mosaic with scattered irregular patches and grains of sulphides. Minor fine sericite, biotite and groups of fine tourmaline crystals are inter-grown with, and/or intergranular to, the quartz mosaic. Autometasomatism of the granite margin in the St.Dizier area is a common feature. Pyrite and sericite are associated with a halo of low level tin mineralisation, commonly 300-500 ppm Sn, with local values to 10,000 ppm Sn.

Anomalous tin occurs in fine grained granite associated with tourmaline nodules, generally in the range of 400-500 ppm Sn. Outcrop is widespread at granite margins.

Inferences from review of previous data

A number of anomalies were not closed off by the initial

bed-rock sampling programme (Plate St. Diz 44), due to the requirement to complete the work within a set period.

In the area of the Central Anomaly further RAB drilling is required to the north along lines 21000E to 21300E. An open anomaly, and the trend of the skarn horizon on adjacent lines, suggests that the skarn horizon occurs to the north along the shale-quartzite contact.

North of previous sampling on line 21900E there is an open anomaly with skarn immediately to the west on the next line.

East of Big H Anomaly and to the north of samples on line 22800E, the trend of the skarn horizon and geochemical results on the lines to the west, indicate that there is continuation of the skarn to the north along this line.

COMPILATION OF PREVIOUS WORK

The aeromagnetic anomalies on the licence were tabulated (Table 1), reassessed and rated (Figure 2) in proposed order of priority for further follow-up work during the first half of 1983.

MAGNETIC ANOMALIES (IN PROPOSED ORDER OF PRIORITY)

1. Central Anomaly (and Dighem anomalies 220C and 222E)

   Situated at the contact between quartzite and mudstone with a carbonate horizon near the base of the mudstone. Anomalous tin geochemistry from RAB drilling, diamond drill hole (4 feet of 0.45%), and rock chip sampling. DIGHEM anomalies 222D and 222E not explained.

2. Donnellys

   Occurs at the contact between quartzite and mudstone with a carbonate horizon near the base of the mudstone. Anomalous tin values from soil geochemistry and rock chip sampling (one sample of 1.05%Sn).

3. Manganese Hill

   This magnetic anomaly was originally thought to be due to magnetite within the laterite profile. This may not necessarily be the case. The anomaly is located in the Crimson Creek Formation with Ag-Pb mines in the vicinity. A stream sediment anomaly of 700ppm Sn occurs in the district.

   However, the Tramway anomaly 1 km to the west is definitely due to magnetite in ultramafics. Both Tramway and Manganese Hill anomalies occur near major faults.

TABLE 1

QUEEN HILL EXPLORATION LICENCE 47/71 - PRINCIPAL AEROMAGNETIC ANOMALIES

MAGNETIC ANOMALY	AMPLITUDE IN GAMMAS	DEPTH	SHAPE	SN PPM HIGHEST VALUE	EXPLANATION
St. Dizier				142,000 tons 0.96% (Report Dec.78)	Tin associated with pyrrhotite and magnetite in skarn
Big H		Shallow body		360ppm (RAB drilling)	Tin occurs in magnetite oxidized capping. Skarn below with pyrrhotite?
Central Anomaly				6400ppm (DDH101) 4 ft of 0.45% (DDH101)	Magnetite and pyrrhotite in skarn
Donnellys: 202E	140		Flat lying		Salt water in gravels?
203A (2 anomalies)	400 & 500		Flat lying moderately conducting > 10m		
205X	50	65m to top providing source not broad e.g. 100 m.			
205A	50		Flat lying thin ≈ 10m		
202D	See 202E		Steeply dipping	1.05% (costean 300m to S.E.)	Magnetite & ? pyrrhotite in skarn
Magnetite skarn not covered by ground magnetics				1.35% (rock chip)	Magnetite & ? pyrrhotite in skarn

contd....

MAGNETIC ANOMALY	AMPLITUDE IN GAMMAS	DEPTH	SHAPE	SN PPM HIGHEST VALUE	EXPLANATION
221A, 222A, 223X & 222B?	40		Width > 10m 400 m of Strike		Second skarn horizon?
228C & 229A	120				Possible contact between quartzite and blk, shale with skarn at the contact?
Twelve Mile Ck. 220C				260ppm in trench	Probable skarn; originally thought to be graphitic slates, but these are widespread.
Tasman River	Not closed off			150ppm stream sediment anomaly	Originally explained by Tertiary basalts.
Manganese Hill	Present data too noisy to interpret			700ppm stream sediment anomaly	Originally explained by magnetite within laterite profile. Possibly not now the case.
Tramway					Ultrabasics with dissem. magnetite (DDH's).
Big One	1400	>400m			Intensity and depth suggests ultrabasic body.
Silver Stream	200			80ppm stream sediment anomaly near Doric Mine	Partly magnetic Feox rock at contact between quartzite and minor mudstone.
North West				3,400ppm stream anomaly 1 km away in granite	"Clearly related to Jurassic Dolerite" A subsidiary anomaly underlain by quartzite.
Junction		> 300m			Note: Situated on magnetic linear.

Figure 2.

4. Digham Anomalies 228C and 229A

Ground magnetics have defined an anomaly of 120 gammas. A single I.P. Survey detected a weak chargeability high. Outcropping black shales and quartzites occur in the vicinity. The anomalies are situated approximately 1 km NE of Big H. There is a possibility of a continuation of the skarn horizon.

5. Silver Stream.

Anomaly of 200 gammas. Rocks consist of Oonah Quartzite and Slate Formation and are often stained orange-brown, apparently due to the presence of siderite. Anomaly was thought to indicate the contact of two rock types of differing magnetic susceptibility. There is a sub-outcrop of tourmaline-rich sediments half a kilometre to the east. The Doric mine, 2 kms to the east, is in massive sulphides at the contact between quartzite and black carbonaceous mudstone. The mudstone appears to be confined to a large creek and its tributaries. The Doric mine and the Silver Stream anomaly are both tributaries of this creek. The highest stream sediment value in the vicinity is 80 ppm Sn at the Doric mine.

6. Junction

A ground magnetic traverse indicated that the depth-to-top of the source is in excess of 300 m. The anomaly is located in Oonah quartzite at the crest of a ridge. It is situated on a magnetic linear which includes Severn. There were no anomalous stream sediment samples.

7. Big One (On an M.L. held by E.Z.)

Anomaly of 1400 gammas. A ground magnetic traverse gives a depth-to-top of the source in excess of 400 metres. The intensity of the anomaly and the depth was interpreted as indicating an ultramafic source. The anomaly occurs in the vicinity of the Comstock-Ag-Pb workings which are situated at the contact between the Crimson Creek

and Oonah Quartzite and Slate Formations with limestone also recorded as being present. Mine dump sampling gave no anomalous tin values.

8. Tasman River

This Magnetic anomaly was originally attributed to Tertiary basalts. In the light of the Donnellys discovery a grid was cut but later destroyed by fire. A ground magnetic survey was carried out. A stream sediment anomaly of 150 ppm Sn occurs on the grid in Quaternary alluvium.

9. North-West

The major airborne anomaly was thought to clearly relate to the outcrop of Jurassic dolerite. A subsidiary magnetic anomaly underlain by quartzite and apparently formational in origin was detailed by the ground traverse. Rock chip samples of banded tourmaline-quartzite sediments were not anomalous. Stream sediment samples taken from within the granite over 1 kilometre away have up to 340 ppm Sn.

10. Granite Anomalies

Except for the St. Dizier area where there is auto-metasomatism of the adamellite margin, the anomalous tin in creek samples has been explained by vein tin and tourmaline nodules in the granite.

CONCLUSIONS

A recently completed review of the St. Dizier-Central-Big H skarn horizon, situated 5 km south-east of Donnellys, revealed that the 1980 RAB drilling programme had not closed off all geochemical anomalies, that previous diamond drilling by Pickands Mather had

been ineffective, and that there are geophysical indications (DIGHEM) of a further untested skarn horizon which offers good potential for the style of near surface mineralisation sought, and may represent a more attractive target than Donnellys for initial sub-surface evaluation.

Elsewhere on the licence other geological, geochemical and geophysical targets exist, some of which have attracted limited follow-up work in previous seasons. It is now required that these targets be evaluated on existing data, supplemented by additional geophysics and geochemistry where necessary, in order that a rating may be applied for subsequent target drilling.

WORK PROPOSED

- Complete target definition on the St. Dizier-Central-Big H skarn horizon by detailed mapping and RAB drilling.

- Evaluate and rate all known targets on the licence.

- Select targets for future drilling.

REFERENCES

Simpson, D.C.	1975	Report to R.S. Laffer on St. Dizier M.L.S. 16M/62, 17M/62, 13M/59. Aberfoyle Exploration Report 1975/7 Progress.
Simpson, D.C.	1976	Progress Report on E.L. 22/73 St. Dizier for the six months ending June 17, 1976 Aberfoyle Exploration Report 1976/23
Simpson, D.C.	1977	Report on St. Dizier E.L. 22/73 Aberfoyle Exploration Report 1977/53.
Yates, K.R.	1978	Status of St. Dizier Tin Prospect.
Young, C.H.	1980	Queen Hill Joint Venture Progress Report, Quarter to June 30, 1980.

Prepared by: M. Rombouts

M. J. Rombouts
Geologist.

Issued by: J. R. Sise 9.2.83

J. R. Sise
Supervising Geologist.

APPENDIX 1

STATEMENT OF EXPENDITURE

The Statement of Expenditure for the Queen Hill Licence 47/71 pertains to the 1982 Aberfoyle Exploration budget year, commencing November 17, 1981 and ending November 15, 1982.

ACCOUNT	PAYMENTS YTD
QUEEN HILL EL CONTROL	
SUNDRIES	
... SALARIES	52.00
... ACCOMMODATION/TRAVEL	30.00
SUNDRIES	82.00
GEOLOGY	
... SALARIES	10839.52
... WAGES	500.00
... CONTRACTORS	1073.00
... MATERIALS	381.70
... ACCOMMODATION/TRAVEL	1684.67
... FUEL	731.94
... COMMUNICATIONS	246.81
... EQUIPMENT USE	599.20
... SUNDRIES	15.75
... VEHICLE EXPENSES	1215.50
.... BUDGET	0.00
GEOLOGY	17288.09
SURVEY	
... SALARIES	1801.00
... WAGES	1795.00
... ACCOMMODATION/TRAVEL	(571.47)
... FUEL	(16.74)
... VEHICLE EXPENSES	200.00
... RECOVERIES	(977.87)
... BUDGET	0.00
SURVEY	2229.92
GEOPHYSICS	
... SALARIES	1316.00
... WAGES	86.00
... CONTRACTORS	3150.00
... MATERIALS	224.60
... ACCOMMODATION/TRAVEL	2093.24
... FUEL	9.50
... FREIGHT	736.66
... VEHICLE EXPENSES	62.12
... BUDGET	0.00

ABERFOYLE EXPLORATION PTY LTD - CAMBERWELL
33 QUEEN HILL EL CONTROL

ACCOUNT	PAYMENTS YTD
GEOPHYSICS	**7678.12**
GEOCHEMISTRY	
... SALARIES	2154.00
... WAGES	7732.00
... MATERIALS	399.95
... ACCOMMODATION/TRAVEL	286.16
... FUEL	54.50
... VEHICLE EXPENSES	975.00
... BUDGET	0.00
GEOCHEMISTRY	11501.61
TRENCHING	
... SALARIES	685.00
... WAGES	655.00
... CONTRACTORS	1480.00
... MATERIALS	9.80
... ACCOMMODATION/TRAVEL	150.03
... FUEL	196.96
... VEHICLE EXPENSES	300.00
... BUDGET	0.00
TRENCHING	3476.79
DIAMOND DRILLING	
... MATERIALS	273.00
DIAMOND DRILLING	273.00
ASSAYS	
... CONTRACTORS	10093.50
... BUDGET	0.00

ABERFOYLE EXPLORATION PTY LTD - CAMBERWELL 33 QUEEN HILL EL CONTROL

ACCOUNT	PAYMENTS YTD
ASSAYS	10093.50
ACCESS	
... WAGES	1327.00
... FREIGHT	106.11
... VEHICLE EXPENSES	13.55
... BUDGET	0.00
ACCESS	1446.66
TENURE	
... SALARIES	846.00
... TENEMENT COSTS	2189.20
... BUDGET	0.00
TENURE	3035.20
... IRECT COSTS	57104.89
INDIRECT COSTS	
... ADMINISTRATION	8565.75
... BUDGET	0.00
INDIRECT COSTS	8565.75
QUEEN HILL EL CONTROL	65670.64

APPENDIX 11

Petrology : Donnellys and St. Dizier Prospects

Petrology

[redacted] Exploration — GEOCHEMICAL SAMPLE LEDGER

PROJECT: Donnellys Gold & Costeans St. Dizier Gold

PSS SIEVE SIZE CODE - MESH NUMBER: A 200 D 80 G 30 | B 150 E 60 H 20 | C 100 F 40 T = TOTAL

SAMPLE TYPE CODE: ☐ OXIDIZED PRODUCTS O | ☐ FRESH ROCK R | ☐ STREAM SEDIMENTS S | ☐ WEATHERED BEDROCK W | ☐ SURFACE TRANSPORTED T | ☐ RESIDUAL SOIL E | ☐ MINE DUMP M

CARD PUNCH: YES ☐ NO ☐ | PRINT: YES ☐ NO ☐ | VERIFY

DATE: -11-82 | SHEET: 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM	GEOLOGICAL LOG
21100	20544	261393			R		St. Dizier, "chiastolite" mudstone.
3175	49502	261396			R		Donnellys, as above
21670	20780	261397			R		St. Dizier, banded qtzite & tourmaline? altd mudstone
4000	48002	261326			R		Donnellys, as above, assayed Sn <10, Cu 480, Pb <10, Zn 60 ppm
3150	49752	261398			R		Altered dk grey mud-stone, Donnellys
3200	48002	261399			W		Donnellys calc-silicate, skarn?
4008	48002	261303			R		Donnellys skarn, assayed Sn 10500, Cu 4700, Pb <10, Zn 500 ppm
3951	47002	261330			R		Donnellys skarn, assayed Sn 25, Cu 3700, Pb <10, Zn 240 ppm
4015	48002	261400			R		Serpentinized skarn rock Donnellys
3250	49502	264508			R		Donnellys, altered quartzite?

OPERATOR | COMPUTER | CHECK | PLOTTER | DATE

60703

607037

Central Mineralogical Services

39 Beulah Road
Norwood, S A 5067
Telephone 42 5659

Mr. M. Rombouts
Geologist
Aberfoyle Exploration Pty. Ltd.
P.O. Box 277
ZEEHAN / TAS. 7469

14th December, 1982

REPORT CMS 82/11/24

YOUR REFERENCE:	Note
DATE RECEIVED:	16th November, 1982
SAMPLE NOS.:	10 Samples
SUBMITTED BY:	M. Rombouts
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

Copy & Invoice to:
The Chief Geologist
Aberfoyle Exploration Pty. Ltd.
144, Camberwell Road
HAWTHORN EAST / VIC. 3123

REPORT CMS 82/11/24

Ten rock samples were received for petrographic examination; thin-sections were prepared and K-stain tests were carried out on offcuts, where appropriate.

Summary

Most of the rocks are relatively low-grade metasediments resulting from regional metamorphism, and metasomatised sediments indicating nearby igneous activity. Retrograded skarns are also represented, as well as a microgranite or fine-grained granophyre.

The altered skarns were apparently originally high-grade calc-magnesian silicates, but have been retrograded to talcose, chloritic assemblages with some relict primary minerals. Due to this retrograde process, any Sn in silicate form was exsolved and redeposited as ultrafine cloudy cassiterite (or hydrocassiterite), as seen in 261303. There is no evidence that primary cassiterite was present in the samples examined; the occurrence of degraded ilvaite or paigeite is in itself an indication of the probable presence of complex Sn minerals. Because of the chemical activity and the energy involved in the formation of high-grade metasomatic assemblages, Sn is much more likely to occur in complex silicate or borate form than in simple oxide form. Subsequent retrogressionof such rocks causes hydrous Sn oxides to form which may or may not dehydrate to cassiterite.

H.W. Fander, M. Sc.

ple	[redacted] T[redacted] - [redacted]pos[redacted]on	[redacted]ric[redacted]	Min[redacted]ine[redacted]	[redacted]men[redacted]
393 S. 21)	Chiastolite Schist. Random andalusite (chiastolite) porphyroblasts in fine-grained mass of quartz, carbon (?graphite), parallel mica flakes, and pyrite.	Rock has fine schistose fabric, but chiastolite is randomly orientated.	Chiastolite extensively replaced by sericite. Altered ?phlogopite flakes.	Lack of orientation of chiastolite indicates late-stage thermal metamorphism. Rock was carbonaceous, pyritic siltstone/shale.
396	Spotted Schist. Fine graphite, interstitial quartz and muscovite, small muscovite spots (?altered cordierite), many dravite crystals, interspersed pyrite.	Finely crenulated schistose fabric. Muscovite spots are vague shapes, more like cordierite than chiastolite.	Shreds of altered ?phlogopite.	Lithology of original rock similar to that of 261393, and metamorphic grade is equivalent. Retrograded.
397	Tourmaline Metaquartzite. Alternating, generally thin bands of fine mosaic quartz and of dense aggregates of stubby prismatic dravite crystals.	Excellent, sharply-defined banding reflecting original, sedimentary features.	Pre-metasomatic quartz veins preserved.	Excellent example of selective replacement; original rock was laminated argillaceous siltstone (or similar rock) with quartz veins.
326	Quartz-Mica "Schist". Thin bands of biotite intergrown with fine sericite, alternating with fine quartz-sericite bands; mica bands probably replacive.	Finely banded, but not strictly schistose. Fine-grained minerals.	Quartz veins. Pyrite occurs as patches in rock and in veins.	Fabric is misleading; mica bands appear to be retrogressive, possibly originally biotite-feldspar, representing argillic layers.
398	Spotted Metaquartzite. Dominantly mosaic quartz pigmented with ultrafine black opaque grains. Subspherical radiating-acicular tremolite spots.	Structureless, uniform, with haphazard distribution of tremolite rosettes. Vague relict clastic textures.	Isolated subspherical diopside aggregates.	Thought to have been an orthoquartzite. Diopside and tremolite masses are metasomatic, perhaps indicating former carbonate nodules.
399	Quartz-Talc Rock. Large shapeless masses of fine talc, pseudomorphous after calc-silicate, interstitial fine mosaic quartz, a few tremolite crystals.	Structureless; components fine-grained, but fabric is coarse.	Goethite patches. Quartz-chalcedony veins.	Probably a retrograded calc-silicate rock originally containing ?diopside or similar mineral.
303	Altered Skarn. Radiating-acicular masses of argillised silicate, abundant fine magnetite and pyrite (?altered pyrrhotite); ultrafine cassiterite.	Structureless. Most minerals fine-grained; larger pseudomorphs.	Patches of fibrous degraded ?ilvaite. Pyrite-fluorite veins. Siderite.	Ultrafine (< 10 μ) cassiterite, believed secondary, released from Sn-bearing silicates. ?Ilvaite could be stanniferous.
330	Phlogopite-Sulphide Rock. Mostly a matted mass of degraded phlogopite, with dispersed small patches of pyritised pyrrhotite.	Some pseudomorphous textures after ?tremolite. Medium-grained.	Other sulphides include arsenopyrite crystals, chalcopyrite patches.	A metasomatic rock of unknown origin; Mg-rich composition suggests possible carbonate.

mple [redacted]	[redacted]k T[redacted] - [redacted]mpo[redacted]on [redacted]	[redacted]ri[redacted]	Mi[redacted]Min[redacted]s [redacted]	[redacted]mme[redacted]
1400	Talc Rock. Small aggregates, lenses of fine talc, set in foliated coarser talc and colourless Mg-chlorite forming bands.	Vaguely schistose, but structure is largely inherited.	A few phlogopite flakes. Ultrafine ?leucoxene in some bands.	Talc lenses appear to be pseudomorphous after another Mg-silicate. Metasomatic rock, steatitised.
1508 .S. 630)	Biotite-Microgranite. A few quartz, orthoclase phenocrysts set in granular mass of quartz, orthoclase, albite, with scattered biotite flakes.	Medium-grained, weakly porphyritic. Micrographic textures.	Traces of muscovite. Small intense pleochroic haloes in biotite.	Minor intrusion or perhaps a vein; aplitic in some respects. Could also be regarded as a granophyre.

APPENDIX 111.

Rock Chip Assay Results for Magnetite Skarn Outcrops - Donnellys Prospect

PROJECT [redacted] DONNELLY'S

USS SIEVE SIZE CODE - MESH NUMBER
[redacted] 00 [redacted] 5 [redacted]
B 150 E 80 H 120
C 100 F 40 T = TOTAL

SAMPLE TYPE CODE
[redacted] DUCT [redacted]
MESH ROCK R
STREAM SEDIMENTS S
WEATHERED BEDROCK W
SURF[redacted] T
RESIDUAL SOIL E
MINE DUMP M

CARD PUNCH PRINT [redacted] VERIFY [redacted] YES [redacted] NO [redacted] DATE 5-[redacted]

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM Sn	W	GEOLOGICAL LOG
	4700N 395DE	264295				100	X	MAGNETITE SKARN
		264296				280	40	
		264297				340	25	
		264298				4150	50	
		264299				490	15	
		264300				13500	90	

N

264298
264297
264300
264299
264296
264295

MAGNETITE OUTCROP

COMPUTER CHECK PLOTTED DATE

6070042

GEOCHEMICAL SAMPLE LOGGER

DONNELLY 5

5-8-82 1 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH cm	SIZE FRACTION	Sample Type	Sn	Cu	Pb	Zn	GEOLOGY
4006	4800	26|301			W	380	90	<10	100	DK grey mudstone dissem py & py blebs.
4007	"	26|302			W	80	180	<10	160	As above
4008	"	26|303			W	10500	4700	<10	500	As above
4009	"	26|304			W	3800	220	<10	360	As above
4010	"	26|305			W	25	3000	<10	940	As above
4011	"	26|306			W	35	7100	<10	400	As above
4012	"	26|307			W	15	4300	<10	320	Blk mudstone & abundant sulphides
4013	"	26|308			W	20	6800	<10	460	Carb clays, pug like
4014	"	26|309			W	20	5000	<10	160	As above
4015	"	26|310			W	140	80	<10	80	As above
4016	"	26|311			W	650	35	<10	440	DK grey/blk silicaceous mudstone
4055	"	26|315			W	35	200	<10	15	Blk carbonaceous mudstone, py filmy & blebby

607043

OPERATOR COMPUTER CHECK PLOTTER DATE

[redacted]

GEOCHEMICAL SAMPLE LEDGER

GRID: DONNELLYS

FSS SIEVE SIZE CODE — FINISH NUMBER: A 200 B 80 C 100 D 40 E 150 F 120 T = FINISH

SAMPLE TYPE CODE: O ORGANIC PRODUCTS; R STREAM ROCK; S STREAM SEDIMENTS; T STAINED BEDROCK; U HISTORIC TRANSPORTED; V ORIGINAL SOIL; W HEAVY MINERAL

CARD PUNCH: YES ☐ NO ☐ — VERIFY: YES ☐ NO ☐

DATE: 5-8-82

SHEET: 2 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH cms	SIZE FRACTION	Type	METAL VALUES PPM Sn	Cu	Pb	Zn	GEOLOGY
4028	4800	26316			W	25	400	<10	25	Black "carbonaceous" mud-stone, dissem Py aggregates
4055	"	26317			W	35	950	<10	3400	Micaceous grey-white mudstone
4060	"	26318			W	180	850	<10	380	Cream-white pyritic rock
4064	"	26319			W	90	70	<10	140	Finely bedded grey-white micaceous qtzite
4067	"	26320			W	80	220	<10	240	As above also green
4071	"	26321			W	15	20	<10	50	Brn grey-white lam mudstone
4073	"	26322			W	<10	15	<10	5	Grey white mudstone, white nodular lenses.
4078	"	26323			W	<10	20	<10	5	Grey green & white mud-stone
4086	"	26324			W	<10	30	<10	10	Micaceous (minor) green white mudstone-clay
4005	"	26325			W	<10	200	<10	100	Lt. grey green-white qtzite minor dissem Py
4000	"	26326			W	<10	480	<10	60	Green-grey silic mudstone, micaceous,
3987	"	26327			W	15	40	<10	20	Qtzitic green-grey mic-aceous mudstone

OPERATOR | COMPUTER | CHECK | PLOTTER | DATE

60-0044

[redacted] GEOCHEMICAL SAMPLE RECORD

DONNELLYS

5-3-82 3 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH FT. CM.	SIZE FRACTION	Type	METAL VALUES PPM Sn	Cu	Pb	Zn	GEOLOGICAL
3940	4700	261328			W	20	2300	<10	300	Brn-grn micaceous mudstone.
3943	"	261329			W	10	5700	<10	50	Dk grn-blk v. micaceous mudstone, Py common
3951	"	261330			W	25	3700	<10	240	Brn-sl. grn micaceous clayy-mudstone
3952	"	261331			W	40	3600	<10	220	Lt brn-grn micaceous clay, Py, BaSO4 common
3957	"	261332			W	<10	380	<10	240	As above
3960	"	261333			W	15	360	<10	280	As above
3961	"	261334			W	20	440	<10	90	Black "carbonaceous" mudstone
3963	"	261335			W	15	240	<10	100	As above Py, BaSO4 ++ in bedding
3964	"	261336			W	<10	160	<10	160	As above, Py staining
3967	"	261337			W	10	80	<10	120	Carbonaceous blk pyritic mudstone
3980	"	261338			W	300	850	140	180	Grn-white mudstone Py along joints & bedding
3981	"	261339			W	100	90	10	100	Grey-white pyritic mudstone

60045

OPERATOR COMPUTER CHECK PLOTTER DATE

[redacted] Exploration — GEOCHEMICAL SURVEY RECORD

PROJECT: DONNELLYS

ASS SIEVE SIZE CODE — FRESH AGATE
A 200 D 80 G 30
B 150 E 60 H 10
C 100 F 40

CODES: 1 CRUSHED PRODUCTS; 2 PANNED ROCK; 3 STREAM SEDIMENTS; 4 SOIL; 5 HEAVY MINERAL CONCENTRATES; 6 ROCK CHIPS; 7 OTHER

DATE: 5-8-82 PAGE: 4 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH IN CMS	SIZE FRACTION	TYPE	Sn	Cu	Pb	Zn	GEOLOGICAL LOG
3984	4700	26134 0			W	90	4900	<10	14,000	Blk-sl. gy/brn micaceous mudstone, common sulphide?
3989	4700	26134 1			W	30	80	<10	180	Sl. micaceous gy/brn mudstone, Py film along joints
3996	4700	26134 2			W	35	70	<10	60	Lt. grey qtzitic mudstone common disseminated Py
4007.9	5000	26134 3			W	15	140	<10	80	DK grey mudstone, disseminated Py common
4002.4	"	26134 4			W	30	180	<10	180	DK grey mudstone, Py content variable (common)
3998.8	"	26134 5			W	25	800	10	52,000	White-grn micaceous mudstone Py Asp?
3995.3	"	26134 6			W	45	80	60	500	Cream-grn-white v. micaceous mudstone
3992.2	"	26134 7			W	30	60	20	1500	Grey-white mudstone, sl. Py, Asp common
3984.3	"	26134 8			W	<10	45	10	100	Grey-grn white finely bedded mudstone
3971	4900	26134 9			W	25	180	<10	70	DK grey-Blk silic. mudstone Py as buggy vns? 7-10%.
3971	"	26135 0			W	25	50	<10	280	Grey-white finely bedded silic. mudstone Py films
39735	"	26135 1			W	100	140	<10	30	Black mudstone, silicified 20-25% disseminated Py

60046

OPERATOR | COMPUTER | CHECK | PLOTTER | DATE

Asmincó Exploration — GEOCHEMICAL SAMPLE LEDGER

PROJECT: DONNELLYS

BSS SIEVE SIZE CODE - MESH NUMBER: A 200, B 150, C 100, D 80, E 60, F 40, G 30, H 20, T = TOTAL

SAMPLE TYPE CODE: OXIDIZED PRODUCTS O; FRESH ROCK R; STREAM SEDIMENTS S; WEATHERED BEDROCK L; SURFACE TRANSPORTED T; RESIDUAL SOIL E; MINE DUMP M

CARD PUNCH: YES ☐ NO ☐ PRINT: YES ☐ NO ☐ VERIFY

DATE: 5-6-82

SHEET: 5 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	METAL VALUES PPM Sn	Cu	Pb	Zn	GEOLOGICAL LOG
39747	4900	261352			W	25	160	<10	80	Grey-green micaceous mudstone
39758	"	261353			W	35	50	<10	15	DK grey mudstone, Py Tr - minor
39795	"	261354			W	25	25	<10	5	DK grey pyritic mudstone
3981	"	261355			W	70	80	<10	50	Grey-white quartzite silicified pyritic mudstone
39835	"	261356			W	45	120	10	240	Very micaceous Pyritic mudstone
39861	"	261357			W	40	45	10	80	Quartzite mudstone Py Tr - Zn.
39861	"	261358			W	60	140	<10	160	Grn-DK grey mudstone, disem cpy, sph
3991	"	261359			W	<10	2000	<10	50	Grn-Dk grey mudstone E common disem. Py
3995	"	261360			W	<10	340	<10	240	DK grey dark mudstone
3997	"	261361			W	10	280	<10	70	DK grey-grn mudstone
4001	"	261362			W	240	1200	<10	860	Very micaceous grn-grey clay
4006	"	261363			W	120	900	<10	840	Silic micaceous grey-grn mudstone

OPERATOR | COMPUTER | CHECK | PLOTTER | DATE

60704

GEOCHEMICAL

DONDELLYS

5-8-82 6 of 6

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH	SIZE FRACTION	Sn	Cu	Pb	Zn	GEOLOGICAL
40373	4900	26136 4		W	40	30	<10	30	Grey gyn - white finely bedded mudstone
40548	"	26136 5		W	<10	80	<10	480	Grn - grey mudstone
40566	"	26136 6		W	80	70	30	120	Dark grey micaceous lam shale
40603	"	26136 7		W	200	60	<10	140	Speckled gyn - white silica mudstone? Aspy
40663	"	26136 8		W	90	120	160	3900	Grey siliceous pyritic mudstone
40742	"	26136 9		W	10	240	80	1200	Grey mudstone stained gyn w. fine Py ≈ 15%.
40752	"	26137 0		W	30	100	20	35	Grey mudstone & common fine white beds siliceous
4078	"	26137 1		W	50	90	<10	90	Lt. grey quartzite, Tr Py Aspy common
4084	"	26137 2		W	<10	160	140	9300	Grey white laminated mudstone, Pyrite along beds & joints
3965	"	26137 3		W	20	240	<10	30	Blk quartzitic mudstone Py=12%. Aspy common
3960	"	26137 4		W	15	340	<10	80	Grey-white micaceous siliceous mudstone, pyritic
4006	4800	26137 5		W	20	3900	<10	320	Dk grey mudstone, Abundant Py ≈ 60%

60048

OPERATOR COMPUTER CHECK PLOTTER DATE

[redacted] GEOCHEMICAL SAMPLE LOGGER

PROJECT: DONNELLYS

PSS SIEVE SIZE CODE: A 200, B 150, C 100, D 80, E 60, F 40, G 30, H 20, T = TOTAL

KIND OF SAMPLE CODE: MINERALIZED PRODUCTS O, FRESH ROCK R, STREAM SEDIMENTS S, [redacted] W, SURFACE TRANSPORTED T, RESIDUAL SOIL E, MINE DUMP M

CARD PUNCH COMPLETE VERIFIED: YES ☐ NO ☐ YES ☐ NO ☐

DATE: 9-9-82

PAGE: 1 of 1

EASTINGS	NORTHINGS	SAMPLE NUMBER	DEPTH in CMS	SIZE FRACTION	Sample Type	(KCF) Sn	METAL VALUES PPM Cu	Pb	Zn	GEOLOGICAL LOG
4020	5000	26\376			W	10	20	<10	15	Blk carbonaceous mudstone
3328	5000	26\377			W	25	180	<10	20	Silicd qtzite dissem. sulphides (As? Pb?)
3311	5000	26\378			W	80	60	<10	80	Silicd grey mudstone
3330	5000	26\379			W	60	120	<10	20	Varn. qtzite + dissem. sulphides (As? Pb?)
3509.4	5000	26\380			W	160	200	<10	90	Micaceous orange lim. stained clay
3520.4	5000	26\381			W	15	60	<10	10	Black-green mudstone
3150	4870	26\382			O	30	30	<10	140	Magnetite skarn float

OPERATOR | COMPUTER | CHECK | PLOTTER | DATE

60 70 49

GN

C.R.A. EXP. P/L

E.L. 1/77

E.L. 47/71

Aberfoyle - Gippsland J.V.

RENISON LTD.

E. L. 11/76

DONNELLYS GRID

SKARN LOCATED CONTAINING 1·35 % Sn

Skarn

Sn 20
WO_3 185
Pb 100
Zn 26000
Galena

Undifferentiated Mudstone

Quartzite

Calc / silicate

Big Rocky Creek

HEEMSKIRK GRANITE

OONAH QUARTZITE & SLATE

Granite Contact

1982 WORK

GROUND MAGNETICS AT 10m SPACING COMPLETED 1982

WESTERN HALF OF GRID SOIL SAMPLED ONLY AT 10m SPACING
ASSAYED FOR Sn, WO_3, Cu, Pb, Zn.

SOIL GEOCHEM. VERY ERRATIC, MAX. Sn 650, WO_3 100, Cu 810, Pb 400, Zn 1950

73 SAMPLES TAKEN AT VARIOUS LOCATIONS USING HAND HELD POWER AUGER.

DIGHEM ANOMS. 202D, 203A, 205A, 205 X FOLLOWED UP WITH E.M. (MAX-MIN II) 1981

GROUND MAGNETICS AT 10m SPACING COMPLETED 1982

TASMAN RIVER GRID

TASMAN RIVER

TWELVE MILE CREEK GRID

Sirotem coverage

Sirotem anomaly

Bedrock sampling

Trench

1980 WORK

- Sirotem Survey
- Bedrock Geochem. 7 holes Max. Sn 30, WO_3 30, Cu 60, Pb 40, Zn 90, As 20
- Trench sampling. Max Sn 260, WO_3 20, Cu 160, Pb 20, Zn 25

1983 WORK PROPOSED

- Evaluated Dighem zone, suggestive of a further Skarn horizon.

Twelve Mile Creek

DDH H101
1·13m / 0·45% Sn

ST. DIZIER LEASES
(RENISON - APOLLO)
5·0mt at 0·5% Sn indicated

RENISON DDH 20
5m at 0·33% Sn

Dolomite (locally skarn)

Lines bedrock sampled

Pickands Mather & Co
1967 Diamond drill holes

Area covered by Ground Mag 1981

ST. DIZIER GRID

1980 WORK

Bedrock geochem. sampled using Jackro R.C. drill rig
297 samples taken at av. depth 3·5m
Assayed for Sn, WO_3, Cu, Pb, Zn, As (High Sn 1200 ppm)

1983 WORK PROPOSED

To close off anomalies by RAB Drilling

Lines covered by Ground Mag 1981

2000N Bearing

HEEMSKIRK GRANITE

RIVER TASMAN

Dismal River Creek

5370000 N

9000 N

8000 N

7000 N

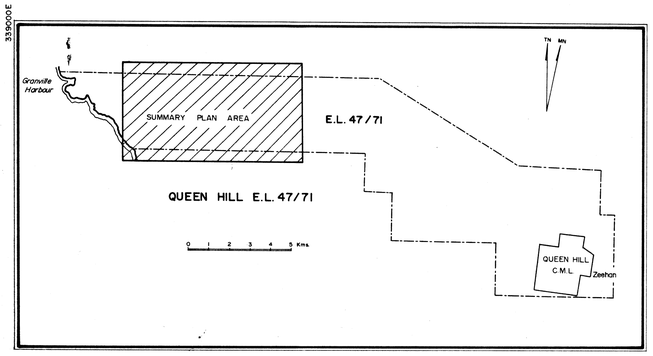
5366000 N

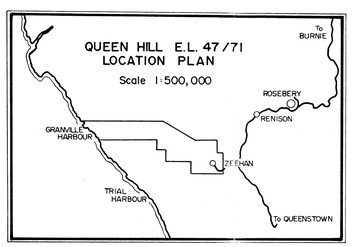
339000E 342000E 343000E 344000E 345000E 346000E 347000E 348000E

5400N 5000N 4600N

222C 222D 222E 223B 224B 224A 222B 222A 223X 225B 227B 228D 228C 229A 231A

H101 H102 H103 H104 H105





— LEGEND —

- 223 X — Dighem anomaly (Flown 1980)
- 62400 — Ground magnetic contour in gammas
- Sirotem coverage
- Sirotem anomaly
- Bedrock sampling
- Diamond drill hole
- Exploration Licence boundary

607050

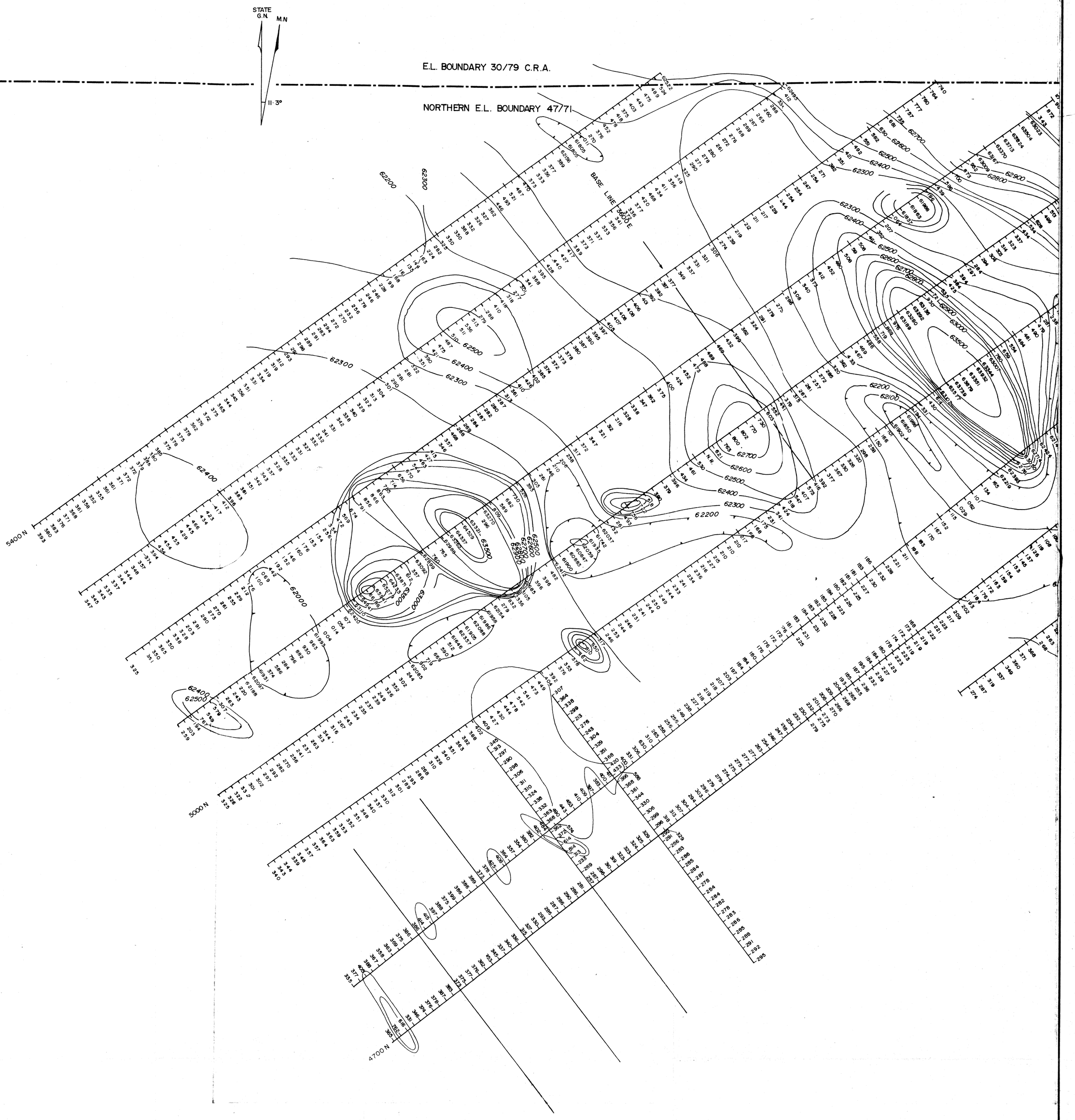
0 500 1000 metres

5 cm

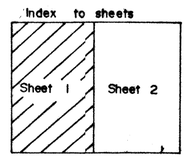
Aberfoyle Exploration Pty Ltd

Geology:	NORTH WEST TASMANIA	Location code:
Drawn: R.J.E.	QUEEN HILL LICENCE 47/71	Date: March, 1982
Traced:	SUMMARY PLAN	Scale: 1:10,000
Checked:		Plate No: QH 183
Revised by: Date:		

83-1942



Index to sheets



0 100 200m

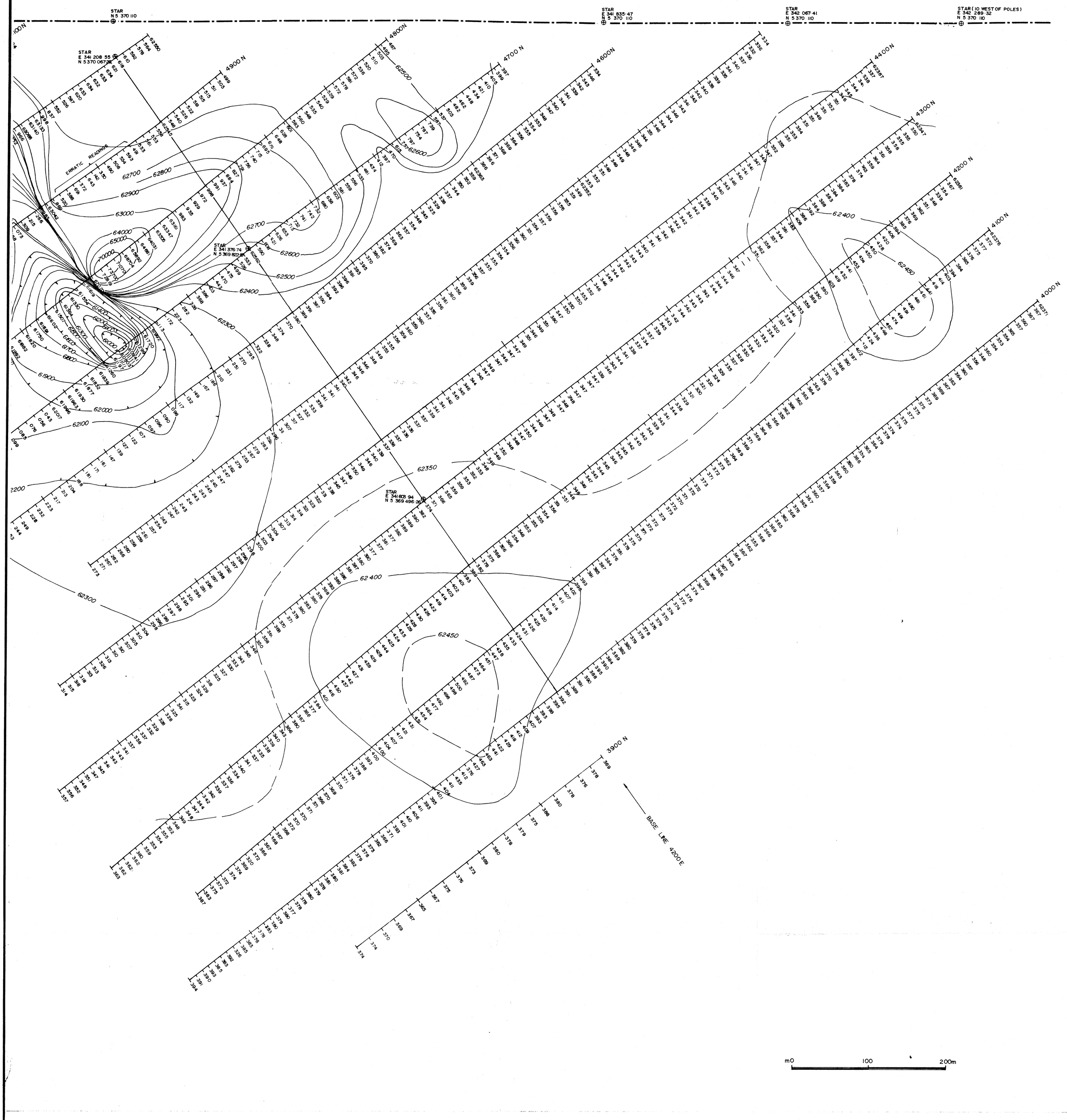
607051

5 cm

Aberfoyle Exploration Pty Ltd

Geology:	NORTH WEST TASMANIA	Location code:
Drawn: S.M.R.	QUEEN HILL E.L. 47/71	Date: December, 1981
Traced: J.L.R.	DONNELLY'S PROSPECT	Scale: 1: 2500
Checked:	GROUND MAGNETICS	Plate No DON. 2a
Revised by: E.S. Date: Feb '82		

83-1942



Index to sheets

Sheet 1 | Sheet 2

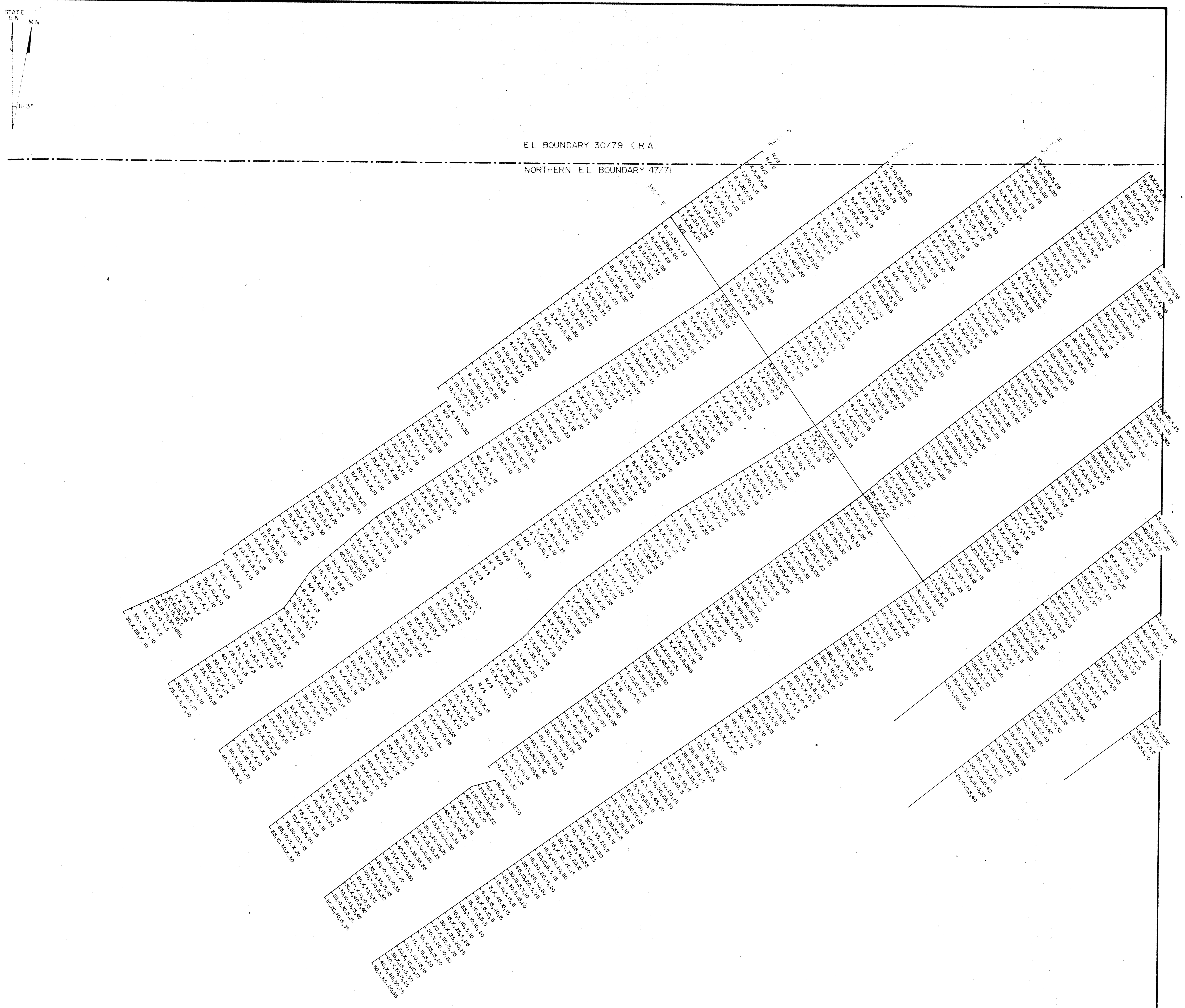
607052

5 cm

Aberfoyle Exploration Pty Ltd

Geology:	NORTH WEST TASMANIA	Location code:
Drawn: S.M.R.	QUEEN HILL E.L. 47/71	Date: December, 1981
Traced: J.L.R.	DONNELLY'S PROSPECT	Scale: 1: 2 500
Checked:	GROUND MAGNETICS	Plate No DON. 2b
Revised by: E.S Date: Feb '82		

83-1942



– LEGEND –

Soil sample location and assay results Sn, W, Cu, Pb, Zn in ppm

N/S No sample

X Below limit of detection

607053

5 cm

Aberfoyle Exploration Pty Ltd

NORTH WEST TASMANIA

QUEEN HILL EL 47/71

DONNELLY'S PROSPECT

Soil Geochemistry

Drawn	S.M.R.
Traced	R.J.E., J.A.
Checked	
Revised by	Date
Date	January, 1982
Scale	1 : 2500
Plate No	DON 3 Sheet 1

83-1942

STATE
G.N. M.N.

E.L. BOUNDARY 30/79 C.R.A.

NORTHERN BOUNDARY E.L. 47/71

STAR
E 341 208.55
N 5 370 067.26

STAR
N 5 370 110

STAR
E 341 835.47
N 5 370 110

STAR
E 342 067.41
N 5370 110

STAR 10 WEST OF PEGGS
E 342 289.32
N 5 370 110

STAR
E 341 376.74
N 5 369 822.81

STAR
E 341 603.94
N 5 369 496.26

4900 N
4800 N
4700 N
4600 N
4500 N
4400 N
4300 N
4200 N
4100 N
4000 N
3900 N

BASE LINE 4200 E

Index to sheets

Sheet 1 | Sheet 2

0 100 200 m

607054

5 cm

Aberfoyle Exploration Pty Ltd

Geology	NORTH WEST TASMANIA	Location code
Drawn S.M.R.	QUEEN HILL E.L. 47/71	Date January, 1982
Traced R.J.E. J.C.R.	DONNELLY'S PROSPECT	Scale 1:500
Checked	Soil Geochemistry	Plate No. Sheet 2)
Approved Date		

83-1942

— LEGEND —

	Dg	Heemskirk granite
	CS	Calc silicate
	(hatched)	Skarn (A) Ironstone capping (B) Micaceous brown white green (serpentinised) mudstone
	MS	Mudstone : dark grey, laminated to massive
	MSc	Mudstone : black, carbonaceous (tourmaline ?) variable "chiastolite" spotting
OONAH QUARTZITE & SLATE FORMATION.	QS m	Mudstone : with subordinate quartzitic beds : grey-white laminated to finely bedded, microfolding
	QSq	Quartzite with subordinate mudstone beds : white-black mudstone beds tourmalinised ? laminated to finely bedded microfolding
	Q	Quartzite : white, foliated

Abbreviations

aspy	arsenopyrite
mic	micaceous
silic	silicified
lam	laminated
sacch	saccharoidal
leuco	leucocratic

Outcrop boundary
Float boundary
Float
Approximate geological boundary
Vegetation boundary
Creek
Trench
Track

Strike & dip of beds
Plunge of fold axis
x 21200 N 15500E St. Dizier grid extension pegs
Grid lines
Exploration licence boundary

0 100 200m

607055

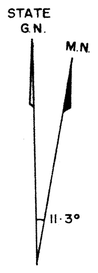
5 cm

Aberfoyle Exploration Pty Ltd

Geology: M.J.R.	NORTH WEST TASMANIA	Location code: K 55 /5
Drawn: M.J.R.	QUEEN HILL E.L. 47/71	Date: October, 1982
Traced: R.J.E.	DONNELLY'S PROSPECT	Scale: 1 : 2500
Checked:	GEOLOGY	Plate Nº Don 4.
Revised by: Date:		

83-1942

607056



E.L. BOUNDARY 30/79 C.R.A.

NORTHERN E.L. BOUNDARY 47/71

600

500

400

6600 E
6700 E
6800 E
6900 E
6770 E
6100 E
3200 N
2800 N
2400 N
6100 E

62385 62387 62358 62303 62313 62315 62329 62339 62342 62343 62344 62351 62301

5 cm

Aberfoyle Exploration Pty Ltd

Geology:	NORTH WEST TASMANIA	Location code:
Drawn: E. S.	QUEEN HILL E.L. 47/71	Date: February, 1982
Traced: J. L. R.	TASMAN RIVER GRID	Scale: 1: 2500
Checked:	GROUND MAGNETICS	Plate Nº TR 1
Revised by: Date:		

— LEGEND —

Centre of Anomaly Sirotem Coverage

Bedrock geochemical sample

Trench

True North

Local Grid North
Magnetic North

Grid Surveyed, Fisher 1973
Datum assumed 20,000N, 20,000E

Tertiary Basalt

Tertiary Basalt

Trench 1

Trench 2

Oonah quartzite & slate

10,150N

10,000N

9900N

12 MILE CREEK GRID

Jurassic Dolerite

Twelve Mile Creek

222E

223B

224B

222D

222C

H101

sulph. veining

CENTRAL ANOMALY

223A

224A

Quartzite Ridge

Quartzite Ridge

Tourm. banded Quartzite ridge

Trench in black shale

Trenched gossan

Gossan

ST. DIZIER

Bulldozed Exposure

22A

BASELINE 20000 N 13M/59

17M/62

16M/62

222B

222A

223X

ST. DIZIER — BIG H GRID

225B

H104

H102

BIG H PROSPECT

226A

227B

228B

21500N
21400N
21300N
21200N
21100N
21000N
20900N
20800N
20700N
20600N
20500N
20400N
20300N
20200N
20100N
20000N
19900N
19800N
19700N
19600N

20000E 20100E 20200E 20300E 20400E 20500E 20600E 20700E 20800E 20900E 21000E 21100E 21200E 21300E 21400E 21500E 21600E 21700E 21800E 21900E 22000E 22100E 22200E 22300E 22400E 22500E 22600E 22700E 22800E 22900E 23000E

— LEGEND —

DEVONIAN — Heemskirk Granite

PRE CAMBRIAN — Quartzite - Buff to grey qtz rich sandstone occasionally dolomitic. Tourmalinization common. Interbeds of shale & siltstone.

Black Shale - Contact metamorphic porphyroblasts of Andalusite.

Dolomite (locally Skarn)

Location of bedrock drill hole

Location of DDH. (Pickands Mather & Co., 1967)

Trench or costean

Interpreted geological contact

Dighem Anomaly

607057

100 0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900 10000

5 cm

Aberfoyle Exploration Pty Ltd

Geology	R.M.J.
Drawn	R.M.J.
Traced	R.J.E.
Checked	
Revised by:	Date

NORTH WEST TASMANIA
EXPLORATION LICENCE 47/71
ST. DIZIER - BIG 'H' AREA
Geological Interpretation - Skarn Horizon

Duration: ode
Date: July, 1980
Scale: 1:5000
Plate No: ST. DIZ. 44