

OPEN FILE

AMAX

7

D of M	A.O.	C.G.	E.O.	D.S.M.E.
				Registrar
Received	10 JUN 1983			E & IL
Answered				
DEPT. OF MINES				
REF. No: 5222/83				

FIRST PROGRESS REPORT
ON ACTIVITIES IN
AMAX/CORNWALL COAL N.L. JOINT VENTURE
AREA - E.L. No. 7/78
FOR THE MONTH ENDING 3rd APRIL, 1983

AMAX

FIRST PROGRESS REPORT
ON ACTIVITIES IN
AMAX / CORNWALL COAL N.L. JOINT VENTURE
AREA - E.L. NO. 7/78
FOR THE MONTH ENDING 3RD APRIL, 1983

by : R.M. VIVIAN

4th April 1983

Copies: Director,
Tasmanian Mines Department
G.R. Day
A.I.A. Stewart
Perth File
Sydney File
Cornwall Coal N L

1. SUMMARY

Both the Glenair and Dyke Lode prospects have been geologically mapped on a 1:500 scale, and geochemically sampled.

At Glenair 5 discrete widely spaced vein/fracture systems of less than 1-2 metres width occur and trend east-west across the prospect area.

To-date geochemical sampling of one costeained vein system indicates it to contain weak (<0.38%) tin mineralisation over 1 metre wide sheeted quartz/cassiterite veining. The other vein/fracture systems have been sampled but assays are not yet available.

Geochemical soil sampling over a 25 x 50 metre sample interval has been also completed over the Glenair prospect area.

At Dyke Lode work completed includes testing of the two known siliceous lodes and determining the extent of tin mineralisation within the greisenised granodiorite that hosts the lodes. Results to hand down grade the potential of the Dyke Lode mine area.

Elsewhere within the joint venture area a reconnaissance geological/geochemical survey has been initiated with the aim of detecting possible leakage mineralisation reflecting hidden granite underlying the sediments. This programme in addition to follow-up work of results from the Glenair prospect will comprise the activities during the forthcoming month.

Expenditure for the month was \$1,719.00

2. INTRODUCTION

The Exploration Licence area lies east of the township of Avoca situated on the Esk Highway in N.E. Tasmania. Glenair and the Dyke Lode prospects lie about 15km east of Avoca in the S.W. portion of the licence area and are accessed by a sealed road.

The prospects are located on the northern and southern foot hills, respectively, of the St. Paul's River Valley, the alluvial flats of which are turned over to cattle and sheep grazing. Tin mining activity in the area is known from the early 1890's and was centred on the Royal George Mine and nearby Brookstead and Roy's Hill areas.

On March 3, 1983, Amax Australia Ltd. entered into a joint venture agreement with Cornwall Coal Company N.L., holders of Exploration Licence no. 7/78. The terms of the agreement commit Amax to an expenditure of \$20,000 over a three month option period, at the end of which time Amax would have an option to withdraw from the agreement.

The initial thrust of the exploration is to be directed at the Dyke Lode and Glenair prospect areas. Total expenditure of \$280,000 at the end of a two year period would earn Amax a 51% interest in the licence.

3. GEOLOGICAL MAPPING

3.1. GLENNAIR PROSPECT

The Glenair tin prospect was mapped over a 600 x 600 metre area on a 1 : 500 scale.

Five widely spaced vein/fracture systems trending east-west across the property are less than 1-2 metres wide and intermittent in outcrop. Host rocks are fine grained argillaceous sandstones of the Mathinna Beds.

One vein system was traced discontinuously over 220 metres. A second sheeted vein system exposed in costeaning extends 18 metres before pinching out to the west. Its continuity to the east is at present unknown.

The vein/fracture systems are characterised variously by intense parallel fracture (<2cm apart), sheeted quartz veinlets and by a multiple veined and brecciated quartz/tourmaline rock. All appear to be varieties of the other and can be seen in the same rock specimen.

The fracturing is best expressed in brittle sandstones. They are subparallel in form and are either 'clean' or lined by black tourmaline. Intense and local fracturing can produce a weak dice brecciation in which silicified angular and disorientated chunks of sandstone occur in a tourmaline matrix. Silicification and irregular white quartz veining (<1cm wide) generally accompanies the fracturing.

Emplacement of abundant silica and tourmaline along strong east-west fractures has produced the sheeted quartz/cassiterite vein breccia. The sheeted quartz/cassiterite veins exposed in the costeans are approximately 0.50 metres wide and extends over 18 metres. Strike is 087° MAG. and dip is vertical. They occur as numerous parallel, white quartz veinlets to 3mm in width in a fine grained quartz sandstone.

The sandstone has undergone silicification to produce a grey to dark grey dense quartzite. The cassiterite is brown to amber coloured and is less than 1.5mm in grain size. It is distributed throughout the quartz veinlets and to a smaller extent occurs in the wall rock adjacent to the veining. Costean No. 1 (plan. 1) illustrates the features of this sheeted veining.

Another variety consists of 2cm wide white opaque quartz veins in a white-pinkish saccharoidal silicified sandstone. Vein density is variable but can be 2cm apart or an average of 6 veins per 60 cm. Orientation of the veins is 070° strike and dip 70° N. Tourmaline lined joint planes are noticeably absent in the more silicified parts of the sandstone.

The quartz/tourmaline breccia rock consists of large massive, angular black tourmaline clasts in a coarsely crystalline and vughy quartz matrix. The host rock is a light grey-dark sandstone which was initially silicified fractured and intruded by tourmaline to produce tourmaline lined fractures and massive tourmaline veins. This latter rock was fragmented and infilled by multiple injection of quartz. Additional quartz veining to 2cm in width postdates the above events and cuts the tourmaline joints and fractures at high angles and shallow dips to produce weak stockwork veining. The quartz/tourmaline brecciation is essentially structurally controlled and confined to the east-west fracture set. The degree of control of this set upon veining and brecciation direction is seen by the development of elongated silicified slabs or slivers in a tourmaline matrix in breccia rock float.

Silicification accompanies the areas of stronger fracturing and quartz/tourmaline vein brecciation. It forms either a brittle rock or where silicification is more intense - a hard dense, vitreous and siliceous rock. Colouration of this rock immediately adjacent to quartz/tourmaline breccias by disseminated tourmaline produces a dark grey to black rock.

Tourmaline is ubiquitous and is common as joint plane linings throughout the Glenair prospect area. Adjacent to the vein fracture systems where jointing is stronger (<2cm apart), tourmaline has invaded the interjoint sandstone and occurs as 2mm wide spotting. A characteristic 'leopard' spotting or large spots to 5mm typifies intensely tourmalinized sandstone. In other rocks selective replacement of argillaceous laminae in the sandstone has delineated bedding planes that display current bedding and microfold features.

Tin mineralisation, as cassiterite, occurs in the sheet vein occurrence as previously described. Elsewhere it is seen in rock float as fine discrete crystals associated with green-black tourmaline in fractured quartz. And, though not visible in handspecimen, cassiterite has been detected (0.26% Sn) in quartz/tourmaline breccia rock.

3.2. DYKE LODGE PROSPECT

The Dyke Lode tin prospect was mapped over a 250 x 250 metre grid area. Evidence of former mining activity comprise a collapsed shaft, an old trench, a shallow costean excavated by BHP in 1958, and a few pits.

A superficial cover of coarse granular white quartz sand overlies much of the area and is presumably derived from insitu weathering of greisenized porphyritic granodiorite. Outcrop is poor and mapping and rock chip sampling was confined to mine dump material; a few scattered outcrops and a low outcropping ridge line.

Two siliceous lodes trend 279 and 288⁰M and occur 65 metres apart. Dip is steep to the south. Maximum width of the lodes is approximately one metre. The orebodies consist of quartz veins and silicified greisenized quartz porphyry which contains rosettes of green and black tourmaline. The quartz greisen is also cut by minor quartz veining in which weak tin mineralisation can be seen to occur in the centre of the quartz veining.

Quartz greisen lies between the lodes and appears to be extensive throughout the mine area. Rock float suggests that a mica greisen variety is also present.

Geological Survey Bulletin no. 40 (1929) states that tin ore is distributed through the body of the greisen rock and evidently BHP costeaned between the lodes to test this thesis. Results are unknown.

The southern lode or Dyke Lode proper has been opened up by a trench and a shaft over a length of 68 metres. The northern lode is apparently unmineralised as evidenced by the lack of workings put down on it and forms a low ridge line some 105 metres in length. Weak unmineralised quartz veining is prominent adjacent to the ridge line in one locality.

To test the northern lode a single costean 27m in length was excavated to expose the known mineralisation and the greisenised area adjacent to it. (Plan 2).

The geology consists of a granodiorite porphyritic in coarse feldspar and embayed quartz phenocrysts. The granodiorite is extensively silicified and greisenised. The greisen is irregularly distributed throughout the rock and consists of a quartz-mica-tourmaline assemblage; nowhere is the traditional quartz-mica greisen strongly developed. Tourmaline clots and nodules are prominent. Quartz and tourmaline veining (<2mm width) are weakly developed in the porphyritic greisen. Minor topaz as white dull broken grain accompanies the quartz veining.

Silicification is more intense approximately 16 metres from the lode and veining is stronger at a density of 5 veins/10cms (an average of 3cm apart). It appears as a glassy, waxy rock to which disseminated tourmaline imparts a dark-grey hue. Uncommon open spaces textures and vughs lines with chalcedonic quartz are present. The lodes itself is a highly silicified porphyritic rock with an hornfelsic texture. It is 1.40 metres in width. No tin mineralisation is evident.

4. GEOCHEMICAL SURVEY

4.1. GLENAIR PROSPECT

One hundred and nine soil geochemical samples were taken at the Glenair prospect along 25m centres on 50m spaced grid lines. In addition samples were taken on 12.5m centres along two lines which bound the costeamed sheeted vein system. These and further rock chip samples have been submitted for Sn, Zn, Cu, F analysis.

This sampling is considered to adequately test the extent and distribution of mineralisation over the areas encompassing the vein/fracture systems.

4.2. DYKE LODGE PROSPECT

At the Dyke Lode the costean was rock chip sampled on two metre intervals. In addition a line extending perpendicular to the strike line of the two lodes over 170 metres was soil sampled on 10 metre centres. This line was considered to adequately test the extent of tin mineralisation adjacent to the known lodes and the presence of any significant values in the widespread area of greisenisation. A power auger was used to reach the 'C' horizon in each case rock fragments recovered showed coarse feldspar phenocrysts and quartz eyes. All samples were greisenised.

Pertinent results for both the Glenair and Dyke Lode prospects are detailed in section 5.

5. ANALYTICAL RESULTS

Tin values from rock chip sampling of the three costeans at Glenair prospect are disappointing. All values greater than 1000 ppm Sn are reproduced below.

	<u>Interval (metres)</u>	<u>Sn value ppm</u>	<u>Fluorine value ppm</u>
<u>Costean no. 1</u>	11 - 12	1950	1600
	12 - 13	3800	2700
<u>Costean no. 2</u>	6 - 8	2800	2800

Complete Sn, F results for costean no. 1 are shown on the attached geology/geochemistry plan of the costean. No other values greater than 85 ppm Sn were recorded in costeans nos. 2 and 3. Of the other elements analysed (Cu, Pb, Zn, As) copper and arsenic values were all less than 90 ppm and 65 ppm, respectively and show no relation to the Sn mineralisation. The relation of Zn to Sn values is not clear at this stage but it maybe that higher Zn values are located along strike from tin vein mineralisation.

The costean rock chip results from the Dyke Lode show an increase in Sn values towards the lode (from 140 ppm to 970 ppm Sn). The highest value and only significant value is 5250 ppm taken across two metres of the quartz lode exposure. All other sample values are less than 970 ppm Sn. High fluorine values (1-2%) are recorded for 8 samples, the highest value (2.00%) is associated with the known lode. Cu, As, Pb and Zn values appear to decrease towards the lode. Bismuth trend is unclear, but is noticeably reduced in value as the fluorine values increase.

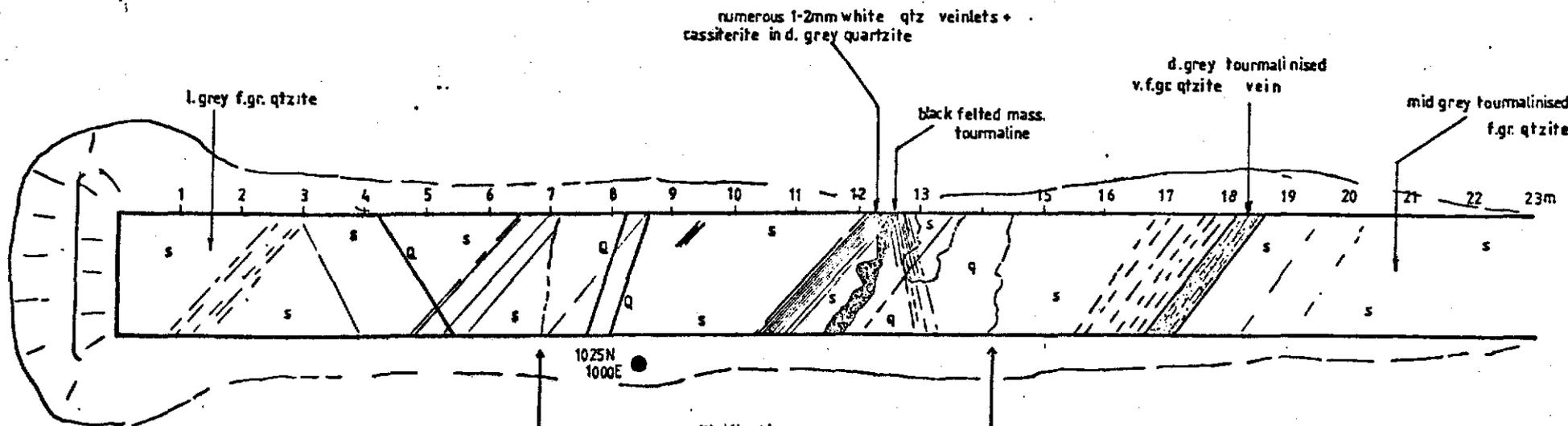
Soil sampling results indicate the southern (and main) lode is defined by elevated Sn, F values as the lode is approached. The lode is characterised by 1850 ppm Sn and 7600 ppm F.

On the basis of the above, the potential of the Dyke Lode area is downgraded considerably.

6. FINANCIAL EXPENDITURE

The following table is a breakdown of expenditures incurred during March, 1983.

Fuel & Vehicle Maintenance	\$ 150.00
Office Rent	\$ 168.00
Telephone, Telex, Postage etc.	\$ 112.00
Meals and lodging	\$ 30.00
Field materials	\$ 151.00
Assays	\$ 521.00
Salaries plus fringe	\$1,367.00
Allocated overheads	\$ 220.00
	<hr/>
TOTAL	\$1,719.00
	<hr/>



numerous 1-2mm white qtz veinlets +
cassiterite ind. grey quartzite

d. grey tourmalinised
v.f.g. quartzite vein

mid grey tourmalinised
f.g. quartzite

l. grey f.g. quartzite

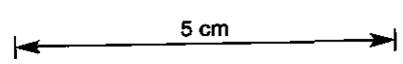
black felted mass.
tourmaline

minor moderate moderate-intensive moderate spotting minor
spotting spotting spotting spotting

10/1m	15/6cm	6/33cm 15/60cm	3/10cm	29/26cm 41/22cm	9/50cm							
tourm. none -1 FeOx	qtz clay -1	tourm. -1	qtz, tourm. 1	qtz, qtz/tourm 7, 5	qtz -1	qtz 1-15	qtz, qtz/tourm. 1-3	vminor tourm.	: Tourmaline spotting	: Veinlets/joints per cm	: Veinlet/joint filling & width (mm)	: Mineralisation

Sn	85	55	40	60	70	310	1950	3800	130	80	70	70	35
P	900	1100	700	600	700	600	1600	2700	1000	900	1200	1100	900

discrete cassiterite
xstls ≈ 1mm



q — quartz
Q — quartz vein
s — sediments (qtzite)

GLENAIR COSTEAN no.1

GEOLOGY and GEOCHEMISTRY

Scale 1 : 100

16-3-83 RV

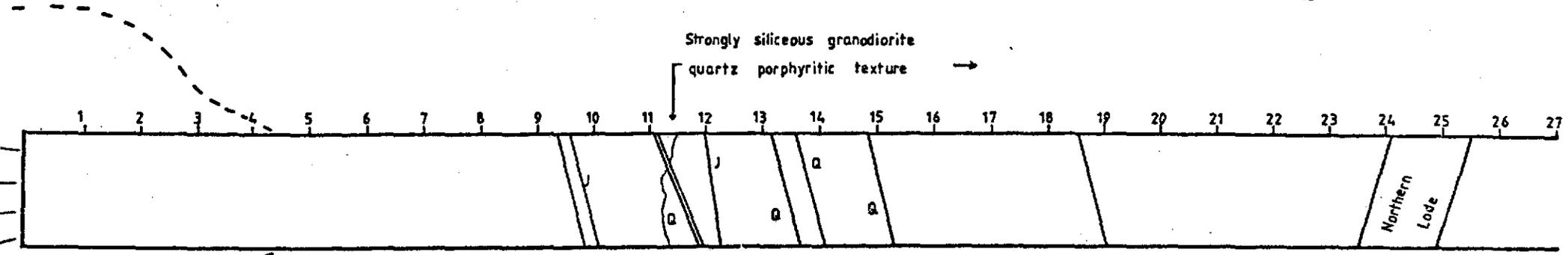
PLAN 1

527014

MN ←

Host rock across entire costean exposure

Siliceous grey granodiorite porphyritic in large feldspar and indistinct Qtz phenocrysts + tourmaline rosettes.



<K weak silicification <K Strong SilicD : alteration
 weak jointing >K minor mica lined joints, moderate silicification ± clay : Veinlets Joints filling & width, b
 qtz / mica <1 qtz 120 qtz/mica tourm qtz <1 chalcadonic qtz vugs qtz|Tourm tourm <1 : Veinlet joints per cm
 minor 5 /cm 7/10 cm minor

Sn	300	180	65	110	140	180	370	400	380	850	780	970	5250	670
F	2800	3800	2800	4900	6100	6400	1.19%	1.45%	1.35%	1.75%	1.30%	1.95%	2.00%	1.35%

5 cm

DYKE LODE COSTEAN GEOLOGY AND GEOCHEMISTRY

Q - quartz veins
 J - Joints
 Scale 1:100
 16.3.83 R.M.W.

S57015

D of M	A.O.	C.G.	E.O.	D.S.M.E.
Received Answered				Registrar
10 JUN 1983				E & IL
DEPT. OF MINES				
REF. No: 5222/83				

T.C.R.83-1994

SECOND PROGRESS REPORT
ON ACTIVITIES IN
AMAX / CORNWALL COAL N.L. JOINT VENTURE AREA
E.L. NO. 7/78
FOR THE MONTH ENDING 3RD MAY, 1983

by : R.M. VIVIAN
3rd May 1983

Copies : Director, Tasmanian Mines Dept. ✓
G.R. Day
A.I.A. Stewart
Perth File
Sydney File
Cornwall Coal N.L.

C O N T E N T S

	<u>Page</u>
1. SUMMARY	1
2. GEOLOGICAL MAPPING	1
3. GEOCHEMICAL SURVEY	3
4. ANALYTICAL RESULTS	3
5. FINANCIAL EXPENDITURE	4

1.

1. SUMMARY

Geological exploration is continuing and has concentrated over the area east of Glenair prospect to the Brookstead area. Granite shallowly underlies the sediment in much of the latter area and the possibility of tin mineralisation here is being investigated by means of stream sediment and rock chip sampling.

Geochemical assay results to hand from the Glenair grid area indicate elevated Sn and F values from the costeamed quartz/cassiterite sheeted vein system and support the geological map findings that it is perhaps the only strongly mineralised system in the Glenair prospect area. Anomalous Cu and Zn values show a good correlation between each other but show no relationship to Sn or F values.

2. GEOLOGICAL MAPPING

Geological mapping is continuing and during the month was concerned with the area east of the Glenair prospect.

Within this area additional quartz/tourmaline vein systems trending east-west have been located. Their lateral continuity is confused by poor outcrop, however one vein system may be continuous into the Glenair prospect. These systems display the same geological characteristics as known at Glenair viz. fractures filled by tourmaline and/or quartz veining + breccia textures in a silicified to tourmalinised fine grained sandstone. No visible tin or sulphide mineralisation accompanies these systems. Composite samples from each system have been submitted for geochemical analysis.

Adjacent to Long Marsh Creek are located the Blue Lode workings. They comprise of 4, 2 metre wide trenches which were put down on east-westerly trending tourmaline (? quartz) fissures spaced at approximately 200m intervals that cut across an elongate body of tourmalinised granite. This body is about 450m long by 100m wide and is tourmalinite.

A typical rock is a hard, blue hued rock, in which quartz and tourmaline are represented in equal proportions. An igneous texture characterises the rock. End member variations to a mostly siliceous and tourmaline rich varieties occur and evidently represent varying degrees of tourmalinization of a coarse grained granite. Unaltered coarse grained granite and porphyritic granite lie adjacent to and in one instance separates parts of the tourmalinized granite. The tourmalinized granite has been composite rock chip samples for its tin content.

Scattered granular greisen rock float is found to the immediate west of the Blue Lode. Alteration of the surrounding sediments appears to be limited to spotting of the argillaceous sandstones and tourmaline fracture lining of the more pure sandstones.

Approximately 500m north-west of the Blue Lode lies an extensive altered area of sandstones. These are characterised by a beige coloured sugary rock traversed by white opaque irregular and vague quartz veinlets. This rock is reminiscent of a rock petrographically examined and recorded in Geol. Surv. Bull. No. 40 and identified as a greisen. Similar rock is found east of the Blue Lode adjacent to the main granite contact outcrop near Brookstead.

The above features strongly suggest that granite underlies at shallow depth the sediments between Brookstead and Blue Lode environs. As this area is along the north-west strike extension of lodes at the Royal George Mine, more detailed rock chip and stream sediment geochemistry will be employed to detect possible similar tin mineralisation in this area.

A rock suite of the more obscure rock types from the area has been submitted for petrological examination.

3. GEOCHEMICAL SURVEY

Additional stream sediment and rock chip samples have been taken in the Blue Lode to Brookstead area so as to detect any tin mineralisation leaking out from the greisenous area and underlying granite. Results are not yet available.

4. ANALYTICAL RESULTS

Soil geochemistry assay results for the Glenair grid area indicate Sn and F value to define the quartz/cassiterite sheeted veins in the costeamed area. A strike elongate contoured area lies over the sheet veins and broadens out downslope. This latter feature is a secondary dispersion pattern. Apart from individual isolated values no other anomalous Sn areas are apparent in the Glenair property.

Fluorine values are anomalous in two areas. One area is located approximately 100m to the south of the costeamed area and is characterised by an area of widespread F influence (defined by the ≥ 500 ppm F contour line) which is centred on a weakly Sn anomalous area (≥ 130 ppm Sn contour line) and overlaps to some extent the sheeted veins to the north. Outcrop exposure is poor over this area.

A second area situated about 350m NW of the costeams shows F values ≥ 500 ppm over 75 metres of grid-line. This anomalous area is coincident with sub-outcrop consisting of intensely tourmalinised argillaceous sandstones.

All Zn, Cu anomalous values are located adjacent to the costeamed area and lie within a broad zone defined by the ≥ 50 ppm Zn contour. Copper values (≥ 20 ppm) show good coincidence with the Zn values.

Both Cu and Zn values show no correlation with the tin mineralised veins exposed in the costeams. There is however some coincidence between elevated Zn values and elevated Sn values approximately 75m south of the costeams.

4.

5. FINANCIAL EXPENDITURE

The following itemised expenditures were incurred during April 1983:

Fuel and Vehicle Maintenance	\$ 528
Office Rent	\$ 655
Telephone, Telex, Postage, etc.	\$ 388
Meals and Lodging	\$ 115
Field Materials	\$ 321
Assays	\$2,090
Salaries plus fringe	\$2,901
Bulldozer Contractor	\$ 429
Allocated overheads	<u>\$1,485</u>
<u>TOTAL</u>	<u>\$8,912</u>

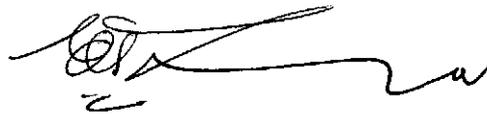
The Cornwall Coal Company No Liability ⁵⁵⁷⁰²²

93 YORK STREET, LAUNCESTON, TASMANIA 7250
TELEPHONE: 31 9522
P.O. BOX 62
CABLE ADDRESS: "CORNCOAL", LAUNCESTON.

Programme of exploration on E/L 7/78

1. analysis of stream sediments within the licence area for detection of anomolous values for Sn, F, Zn and Cu.
2. Continuation of geological and geochemical mapping of Glenair as previously reported in Nos. 1 and 2.

Dated this 14th June 1983



C.E. PECK,
Commercial Manager.