

GREENEX

1988 ANNUAL REPORT
EXPLORATION LICENCE 4849
COX PENINSULA N.T.

OPEN FILE

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GREENEX

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1. INTRODUCTION

This report is submitted to the Northern Territory Department of Mines and Energy and details exploration carried out on EL 4849 during 1988.

Exploration Licence 4849 is located on the Cox Peninsula south west of Darwin (Figure 1). It is one of a number of licences held by the Bynoe Joint Venture in the region, for the exploration and development of cassiterite and tantalite pegmatite and alluvial deposits.

The Bynoe Joint Venture partners are Greenbushes Ltd and Barbara Mining Corporation a subsidiary of Bayer A.G. of West Germany. Greenex the exploration division of Greenbushes Ltd is the operator of the joint venture.

2. LOCATION AND LEASING

EL 4849 is located north of the Darwin-Mandorah Road approximately 16 km south of Darwin. The licence covers an area of approximately 4 square km and 1 graticular block. It was granted on the 21st November 1985 to Top End Mineral Ventures Pty Ltd. The Licence Transfer from Top End Mineral Ventures Pty Ltd to 50% Greenbushes Ltd and 50% Barbara Mining Corporation was registered and approved by the N.T. Department of Mines and Energy on the 28th October 1986.

3. ACCESS, CLIMATE, TOPOGRAPHY AND VEGETATION\

The exploration licence is located 9.2 km north of the bitumen all-weather Mandorah Road. A track leading north from Observation Hill provides access to the exploration licence area only during the dry months.

The climate is tropical and monsoonal with a wet season extending from November to April and the dry from May to September. Average rainfall for the two seasons is 1608 mm and 50 mm respectively.

BYNOE JOINT VENTURE

TENEMENT SUMMARY PLAN

- LEGEND -

- EL (Granted).
- ELA (Application).

0 5 10
km

DATE: 2/7/88.

Figure. 1

PORT DARWIN

EAST ARM

MIDDLE

ARM

EL 5118

EL 4183

MLN 995

EL 4849

MLN 16

MLN 1035A

EL 3491

EL 4082

EL 3490

MLN 1061A

EL 2088

MLN 1061A

EL 5096

EL 2661

EL 2155

ERL 57

EL 5271

ELA 4451

Finniss

River



Within the licence area the topography is flat, the main feature being an extensive, lateritised peneplain (upland plain). Alluvial flats occupy broad, shallow depressions between the segmented upland plains. These flats are impassable in the 'wet' season.

Vegetation over the upland plains consists of scattered to medium density eucalypt forest with a sparse to medium understory. Spear grass grows abundantly on the alluvial flats and over the upland plains. On the coast dense mangrove swamps cover the tidal zone.

4. REGIONAL GEOLOGY

EL 4849 is on the northern extremity of swarm of complex zoned rare element (Li, Ta, Nb, Sn) pegmatites which intrude the 60 km long and 10 km wide West Arm - Mt Finniss Belt. The main pegmatites in this belt, eg. Mt Finniss, Picketts, Hang Gong, Bells Mona and Grants are up to 300 m long and 20 - 25 m wide. The pegmatites are commonly steeply dipping dykes or flat plunging sills.

The pegmatites have intruded (early Carpentarian) shales, siltstones and schists of the Burrell Creek Formation on the north-west margin of the Pine Creek Geosyncline. To the south and west are granitoid plutons and 'pegmatitic' granite stocks of the Litchfield Complex. Unconformably overlying the Burrell Creek Formation are outliers of flat lying Cretaceous sandstone, siltstone and basal conglomerate. The Kings Table mesa is an example.

Tantalite and cassiterite mineralisation occurs in the West-Arm - Mt Finniss Belt within pegmatites as primary deposits and within recent sediments as secondary occurrences. Cretaceous sediments also reportedly carry secondary occurrences of cassiterite and tantalite mineralisation.

Cassiterite is the only tin mineral recorded and tantalite the only tantalum-niobium mineral although future work will undoubtedly discover other tantalum minerals.

5. HISTORY OF MINING AND EXPLORATION

At the turn of the century the Jewellers pegmatite was worked with relatively shallow shafts and a small tonnage of ore processed. An area to the south of the pegmatite was worked for eluvial ore. The pegmatite workings were confined to the contacts of the pegmatite and shale. Top End Mineral Ventures Pty Ltd have carried out gridding of the exploration licence and cut a number of trenches across the Jewellers Pegmatite prior to the transfer of title to the Bynoe Joint Venture participants.

5.1 1986 Work

The Bynoe Joint Venture has carried out reconnaissance of the lease and mapped the Jewellers Prospect in detail, during 1986. The trenches cut by Top End Mineral Ventures Pty Ltd were re-sampled. The samples were preconcentrated at the Observation Hill site and samples assayed in the company's laboratory in Greenbushes W.A.

5.2 1987 Work

During 1987 four pegmatites, namely: Jewellers, Jewellers Extended, Perseverance and Vicki's were trenched to approximately 1 m. Horizontal channel samples were collected across the pegmatite at 1.5 m intervals. A total of 2,593 m of trenching was carried out. Based on the results of the channel sampling three pegmatites were auger drilled to determine the depth extent of tin/tantalum mineralisation intersected in the trenches. A total of 404.5 m of drilling was completed.

1. Backhoe Trenching

Jewellers	1,116 m
Jewellers Extended	721 m
Perseverance	729 m
Vicki's	27 m

TOTAL	2,593 m
	=====

2. Auger Drilling

Jewellers	200 m
Jewellers Extended	54 m
Perserverance	105.5 m
Vicki's	-

TOTAL	404.5 m
	=====

6. 1988 EXPLORATION PROGRAMME

During 1988, the Bynoe Joint Venture undertook the exploration of three additional pegmatites, namely: Cooks, Jewellers South and Daves Perseverance Extended. These pegmatites were trenched to approximately 1 m, and horizontal channel samples were collected across the pegmatites at 1.5 m intervals. A total of 493.5 m of trenching was carried out. From the trenches a total of 110 samples were collected.

Backhoe Trenching

Cooks	126.5 m
Jewellers South	50 m
Daves Perseverance Extended	317 m

	493.5 m
	=====

Sampling

Cooks	55
Jewellers South	4
Daves Perseverance Extended	51

	110 samples
	=====

All samples collected were reduced to a volume of 6 litres. The samples were screened at 10 mm, with the minus 10 mm fraction being coned to produce approximately 50 gm of heavy mineral concentrate. This was sent to Greenbushes Mine for assay, for SnO_2 , Ta_2O_5 and Nb_2O_5 .

Additional work in EL 4849 during 1988 involved the extension of the main Bynoe Joint Venture survey grid to enable the tying in of prospects in EL 4849 to this grid.

7. PROSPECT GEOLOGY

7.1 Cooks Pegmatite

Location :

This prospect is located in EL 4849, approximately 4.0 km north of the all weather Darwin-Mandorah Road and approximately 5.5 km NNW of Observation Hill. The Darwin-Mandorah Road was upgraded and sealed past the turnoff to this prospect in late 1987, but the 4.0 km to the prospect from this road is on bush track accessible only in the dry season.

Cooks Pegmatite is 6.75 km in a direct line from the Project Camp and plantsite.

Topography :

Cooks pegmatite is located in gently sloping country, south east of a mangrove-lined tidal creek which flows into Port Darwin Harbour. To the north and west are tidal creeks and to the south and east low rises separated by broad drainages. The low rises are frequently topped with laterite caprock.

History :

There is no recorded production from the prospect nor is there any known record of its location. Only a few small test pits are in evidence suggesting that tin grades must have been low.

There is no evidence of mining since the turn of the century and Mines Department plans do not record the deposit.

1988 Work :

The prospect was rediscovered in 1988. A total of 126.5 m of backhoe trenching was carried out adjacent to old workings and to follow up an extensive area of quartz scree. A total of 55 samples were taken from the trench and processed.

175 E

200 E

225 E

250 E

275 E

275 N

250 N

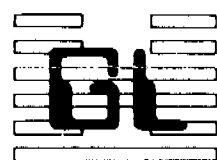
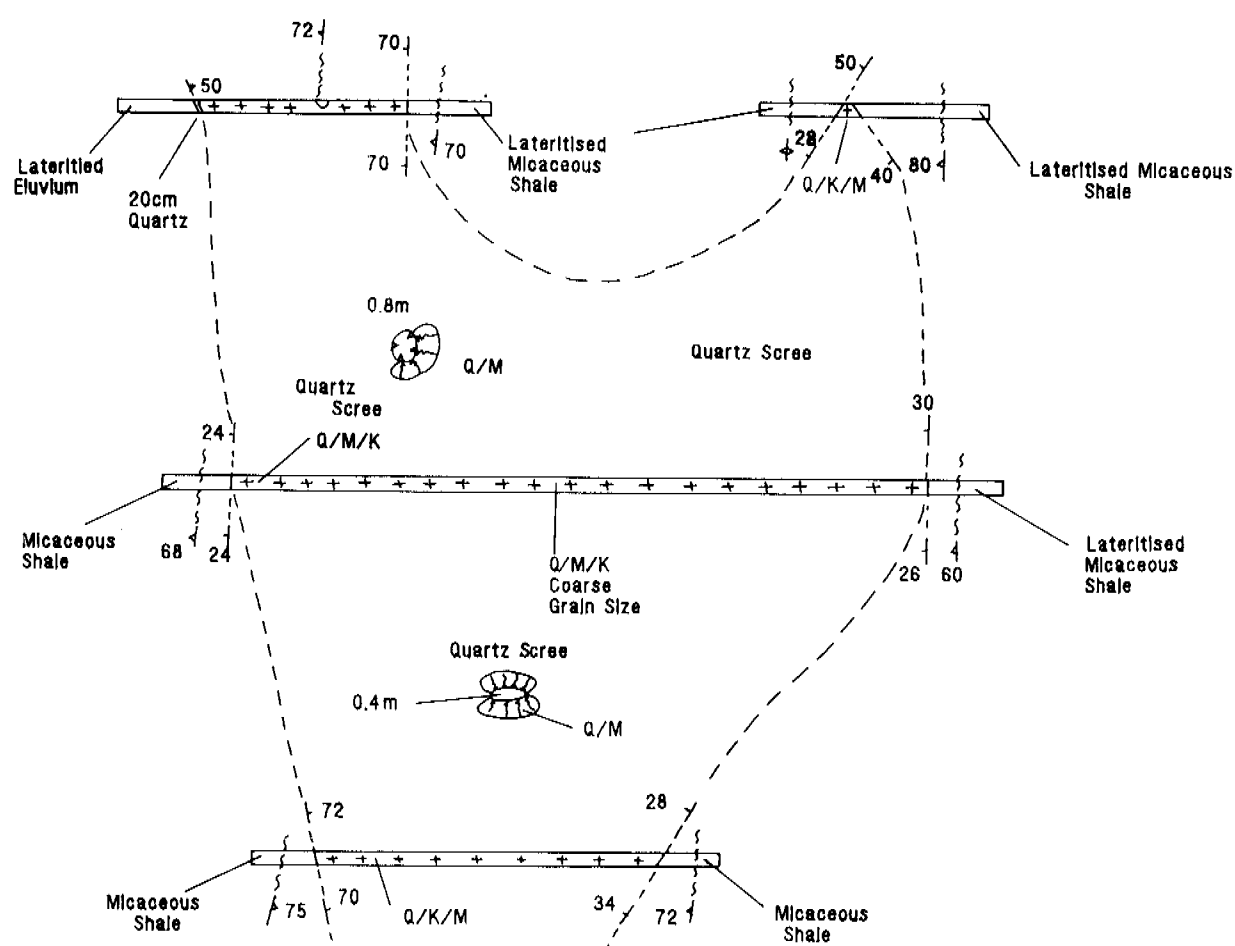
225 N

200 N

175 E

150 N

125 N

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EXPLORATION DIVISION OF GREENBUSHES LTD.

BYNOE JOINT VENTURE - N.T.

COOKS PROSPECT

GEOLOGY

0 10 20 30 40 50m

SCALE 1 : 500

FIGURE No 2

REPORT No

PROJECT No

DATE October, 1988

ORIGINATOR F.M.

DRAFTSPERSON H.P.H.

DRG No BJV-203

SHEET No

PLATE No

175 E

200 E

225 E

250 E

275 E

275 N

250 N

225 N

200 N

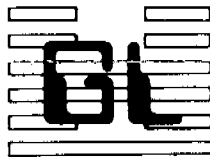
175 N

150 N

125 N

0.051 / 0.006
0.004 / 0.000

5.258 / 0.051
3.350 / 0.035
0.326 / 0.017
0.081 / 0.005
0.022 / 0.003
0.026 / 0.002
0.017 / 0.000
0.011 / 0.002
0.011 / 0.005
0.011 / 0.008
0.014 / 0.024
0.015 / 0.004
0.061 / 0.005
0.481 / 0.018
0.188 / 0.016



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BYNOE JOINT VENTURE - N.T.

COOKS PROSPECT

GRADE PLAN

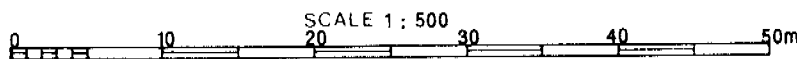


FIGURE No 3

REPORT No

PROJECT No

DATE November, 1988

ORIGINATOR F.M.

DRAFTSPERSON H.P.H.

DRG No BJV-064

SHEET No

PLATE No

Number, Dimensions and Attitude of the Pegmatite :

There appears to be one dominant direction of pegmatite intrusion. It is comprised of a single broad pegmatite body striking approximately 350 degrees with contacts which dip from 24 degrees west to 72 degrees east. At its widest the pegmatite measures 55 m, but it narrows to 14 m in the northern most trench (Figure 2). On the basis of present trenching the strike-length of this pegmatite is 75 m, however, additional trenching next season should expose further pegmatite along strike.

General Geology :

Exposures of this pegmatite are confined to old workings and trenches. Its approximate limits are indicated by the extensive area of white quartz scree evident in the area. The pegmatite is kaolinised with quartz the dominant mineral, followed by mica and the kaolin.

Pegmatite contacts are sharp with the associated country rock exhibiting minor alteration in the contact zone. Host rocks are micaceous shales, which have been lateritised to a mottled red yellow colouration.

The main foliation strikes north-south and dips from 60 degrees west to 75 degrees east. Narrow quartz veins up to 20 m wide have intruded the pegmatite contacts and associated country rock.

Cassiterite and Tantalite Mineralisation :

At the time of writing this report assay results had not yet been received. However, a grade plan for the prospect (Figure 3) should be available for submission at the time of sending off this report.

7.2 Jewellers South Pegmatite

Location :

This prospect is located in EL 4849, approximately 6.0 km north of the Mandorah Road, and approximately 6.0 km south of Kings Table. The Mandorah Road was upgraded and sealed in late 1987 so provides all weather access, but the 6.0 km to the prospect from this road is on bush track accessible only in the dry season.

Jewellers South Pegmatite is 7.5 km in a direct line from the Project Camp and Plantsite.

Topography :

Jewellers South Pegmatite is located on the southern slope of a small tributary creek of a tidal creek flowing into Port Darwin Harbour. To the north and west are tidal creeks, to the south a laterite capped rise and to the east dissected uplands separated by broad drainages.

History :

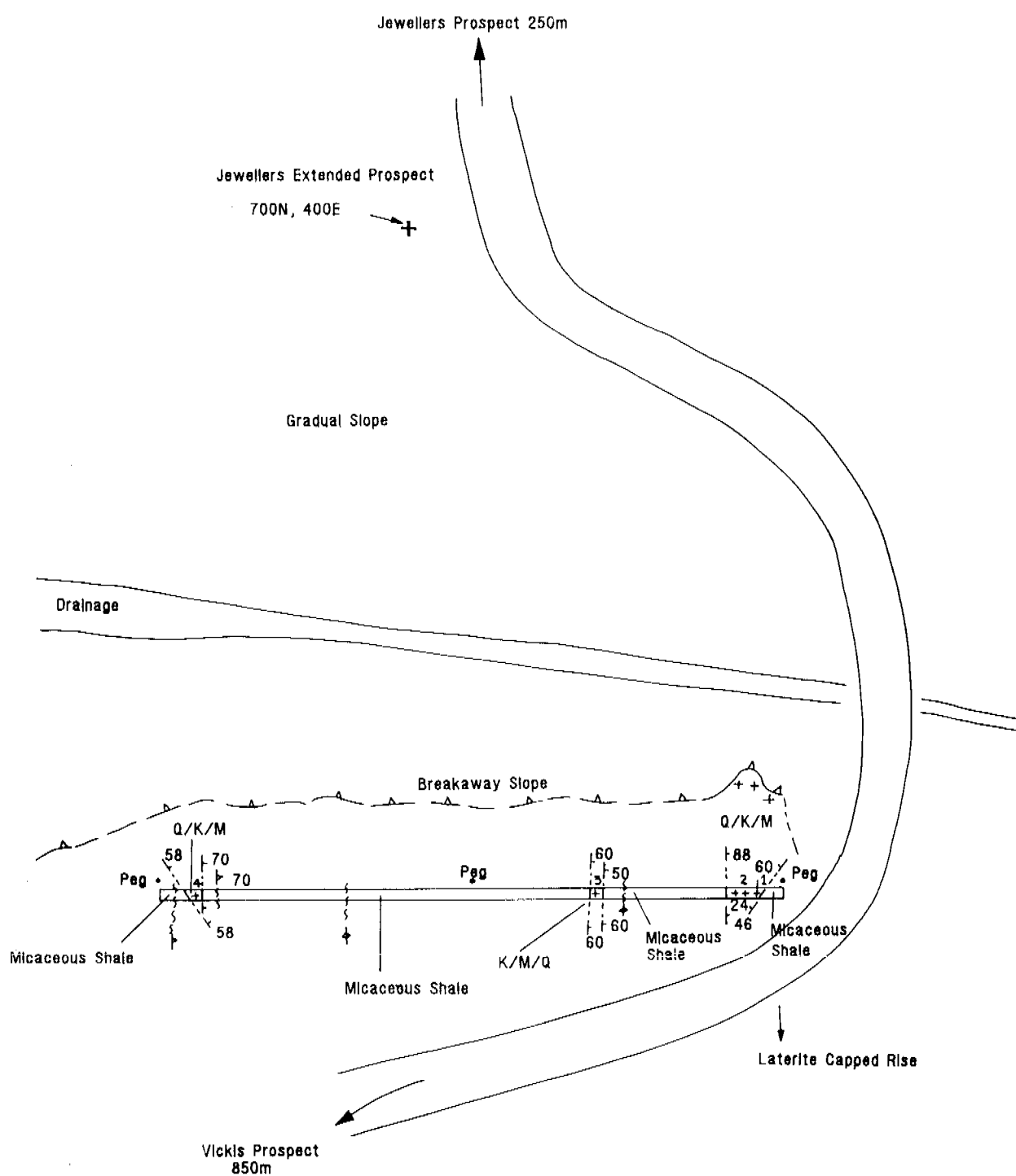
No previous work has been carried out at this prospect, and it was located by further exploration in the area of the well known Jewellers/Jewellers Extended prospects.

1988 Work :

This prospect was located in 1988, and trenched on a temporary grid extension from the Jewellers Extended Prospect (see 1987 Annual Report for further details). A total of 50 m of backhoe trenching was completed, and as a result of this work 4 samples were taken and processed.

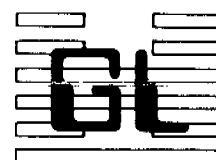
Number, Dimensions and Attitude of Pegmatites :

There are three main pegmatite veins with the widest of these measuring 3 m across (Figure 4). They appear to have a general orientation of north-south, but the two outer veins appear to be converging towards the central one as if the body



SAMPLES

1.	5754	0.007/0.001
2.	5755	0.004/0.004
3.	5756	0.006/0.007
4.	5757	0.030/0.000



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BYNOE JOINT VENTURE - N.T.

JEWELLERS SOUTH PROSPECT

GEOLOGY

0 10 20 30 40 50m
SCALE 1:500

FIGURE No 4	DATE October, 1988	DRG No BJV-205
REPORT No	ORIGINATOR F.M.	SHEET No
PROJECT No	DRAFTSPERSON H.P.H.	PLATE No

is lensing out or plunging in a southerly direction. Dips of contacts range from 46 degrees west to 24 degrees east. In the south the pegmatite veins disappear under a ridge capped with laterite, so that about 25 m of strike-length has been exposed between the tributary creek (in the north) and the laterite ridge.

General Geology :

Exposure of the pegmatites are restricted to the trenched sections and minor outcrop on the banks of the tributary creek. The pegmatites are partially kaolinised, but also contain harder quartz sections.

Pegmatite contacts are sharp, and host rocks are micaceous shales. Host rock foliation strikes north-south and for the most part was subvertical where measured.

7.3 Daves Perseverance Extended

Location :

This prospect is located in EL 4849, approximately 5.5 km north of all weather Darwin-Mandorah Road and approximately 6.25 km north of Observation Hill. The Darwin-Mandorah Road was upgraded and sealed past the turnoff to this prospect in late 1987, but the 5.5 km to the prospect from this road is on bush track accessible only in the dry season.

Dave's Perseverance Extended Pegmatite is 7.5 km in a direct line from the Project Camp and Plantsite.

Topography :

Dave's Perseverance Extended pegmatite is located on slightly undulating country within 600 m of a mangrove fringed tidal creek. To the north and west are tidal creeks and to the south and east low rises separated by broad drainages. The low rises are frequently topped with laterite caprock.

History :

There is no recorded production from the prospect nor is there any known record of production. The limited amount of work carried out on the prospect relative to its large size suggests that grades must have been low.

There is no evidence of mining since the turn of the century, and Mines Department plans do not record the deposit.

1987/88 Work :

The prospect was rediscovered in 1987/88. A total of 317 m of trenching was carried out adjacent to old workings and to follow up exposures of quartz outcrop and associated scree. A total of 51 samples were taken from trenches and processed.

Number, Dimensions and Attitude of Pegmatites :

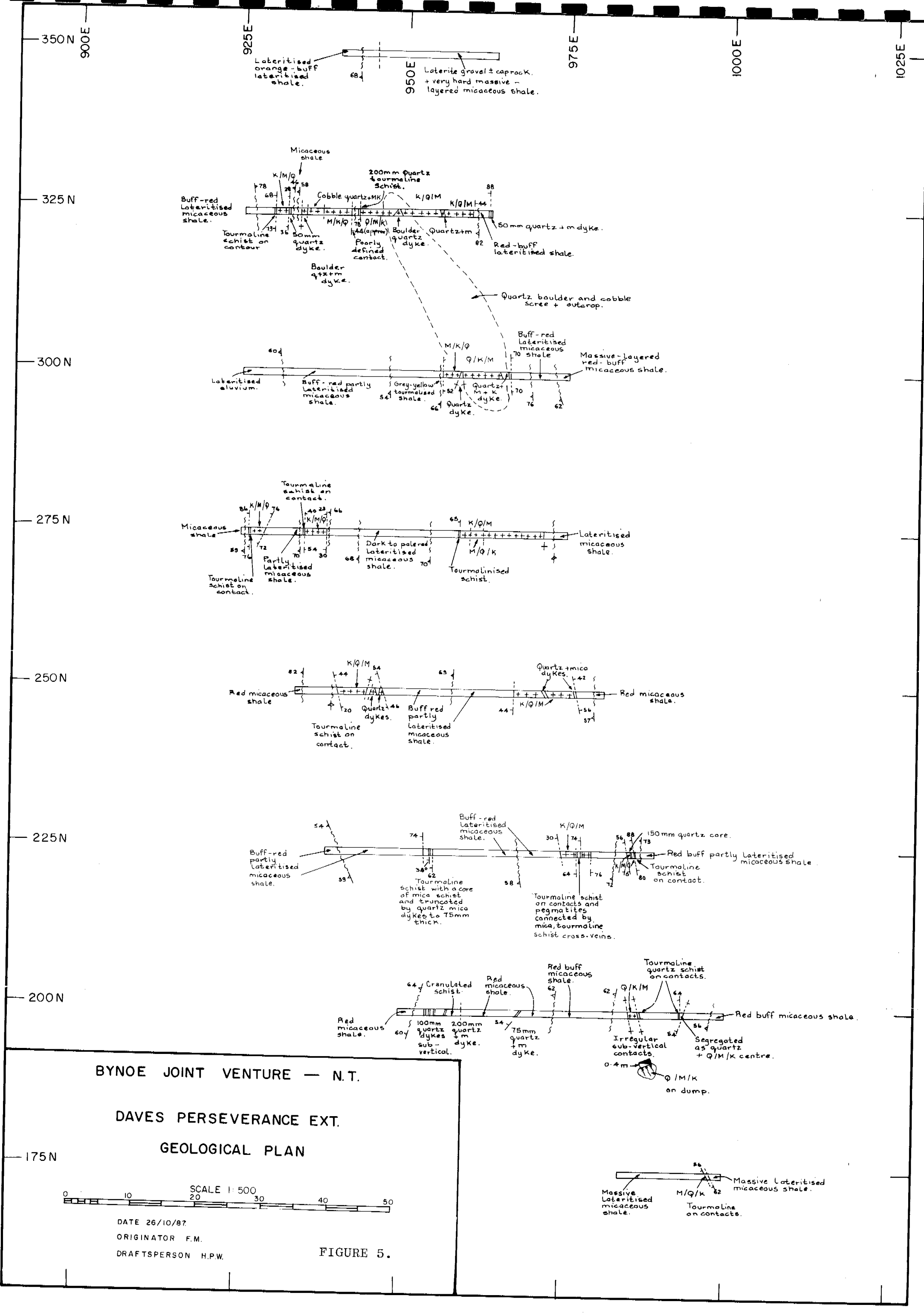
There appears to be one prominent direction of pegmatite intrusion. It is comprised of a conformable set of veins striking 345 degrees with contacts which dip from 28 degrees west to 20 degrees east. These veins may all be offshoots from a single broader body in the north. They are relatively narrow ranging in width from 3 - 17 m in the north of the prospect, narrowing to 0.5 m in the SSW, and have been exposed over a 150 m strike-length. The pegmatite appears to plunge at a shallow angle to the SSW.

The close proximity to similarly mineralised pegmatites (Jewellers, Jewellers Extended, Perseverance) suggests a common origin between these pegmatites.

General Geology :

Exposures of this pegmatite are confined to old workings, quartz outcrop and associated scree and the trenches cut to the pegmatite. The pegmatite is kaolinised and exhibits segregation to a quartz core and associated pegmatite in some places (Figure 5).

Pegmatite contacts are sharp with associated country rock frequently altered to tourmaline schist. Host rocks are grey-green laminated to massive micaceous shales, but in the near surface have been lateritised to a buff-red colouration.



The main foliation strikes approximately north-south and dips from 46 degrees west to 78 degrees east. A second set of foliations strike 337 - 015 degrees, in some instances parallel to the pegmatite intrusion direction, and in others parallel to associated quartz dykes.

Several quartz veins from 50 - 200 mm wide have intruded the pegmatite contacts and associated shales. These quartz veins frequently carry mica as a subsidiary mineral suggesting that they were intruded about the same time as the pegmatite.

Cassiterite and Tantalite Mineralisation :

The cassiterite and tantalite grades are generally low throughout the pegmatite apart from a few areas of contact mineralisation and an enhanced tantalite grade adjacent to a quartz core in the north (Figure 6). On the basis of the 51 samples collected the average $\text{SnO}_2:\text{Ta}_2\text{O}_5$ ratio was approximately 3:1.

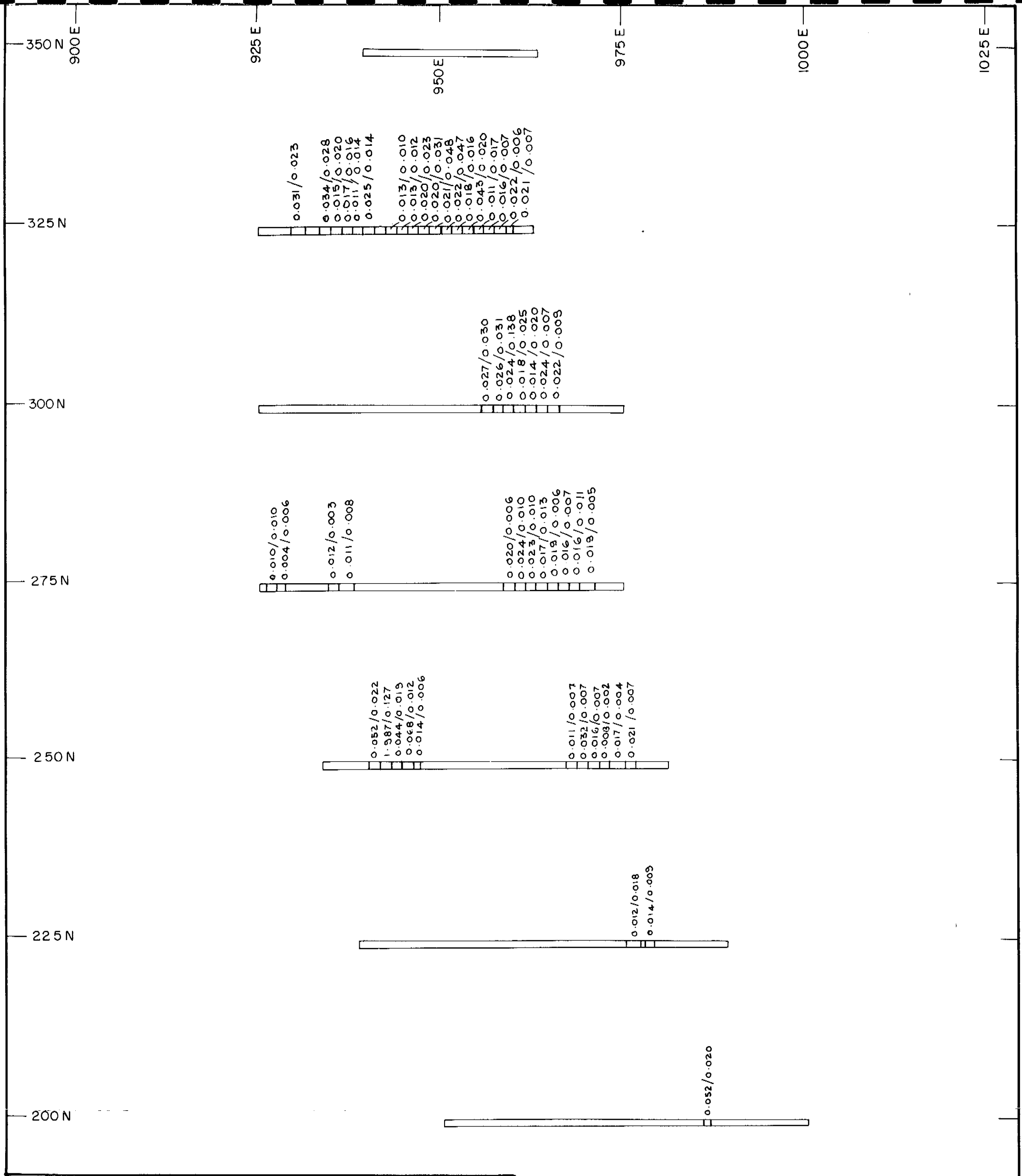
Mineralised Reserve Outlined :

Some limited drilling is required on this prospect to confirm the assumed depth of exposed pegmatites based on contact dips. Within the prospect two small pods of mineralisation have been delineated.

One of these pods has a depth of only 1.8 m so the ore:waste ratio is nil and contains 130 tonnes at an average grade of 0.679 kg/tonne SnO_2 and 0.05 kg/tonne Ta_2O_5 . The other pod to a depth of 10 m has an estimated reserve of 5,850 tonnes at an average grade of 0.015 kg/tonne SnO_2 and 0.031 kg/tonne Ta_2O_5 , with an ore:waste ratio of 1.22:1.

Potential Reserves :

There may be an additional 500 - 1,000 tonnes of mineralised eluvium associated with this deposit. Drilling should attempt to follow up the higher grade areas of the deposit to determine whether these expand in width with depth.

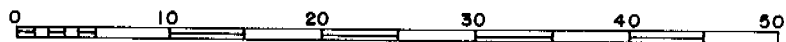


BYNOE JOINT VENTURE — N.T.

DAVES PERSEVERANCE EXTENDED

GRADE PLAN

SCALE 1:500



DATE 17 / 10 / 87
ORIGINATOR F.M.
DRAFTSPERSON H.P.W.

FIGURE. 6

175 N

8. ESTIMATED EXPENDITURE

The Bynoe Joint Venture has spent approximately \$A4.7 m on exploration of pegmatite and alluvial deposits of cassiterite and tantalite on Cox Peninsula N.T. to date. This section contains an estimate of the expenditure on EL 4849 during 1988.

Mobile Fleet (incl Fuel & Oil)

Land Cruiser - hire vehicles	\$ 1,000
530 International Load (Roads & Backfill Trenches)	\$ 1,000
John Deer 310B Backhoe	\$ 2,800

Camp Canteen

Food and Accommodation	\$ 500
Power and Water	\$ 150

Workshop

General	\$ 500
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Laboratory

Assay	\$ 1,320
Sample Prep. (Coning etc)	\$ 1,690

Administration

Accommodation	\$ 100
Communication	\$ 50
Travel & Food	\$ 250
Insurance	\$ 50
Technical Materials	\$ 100
Tenement Administration	\$ 200
Head Office Overheads	\$ 1,500

Exploration

Surveying	\$ 1,000
Geological	\$ 2,000
Drafting	\$ 100
Reports	\$ 250

TOTAL ESTIMATE

\$ 14,560
=====