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SUMMARY

The Bynoe Joint Venture carried out an extensive ground reconnaissance and aerial photointerpretation evaluation, which led to the discovery of eleven pegmatite intrusions originally worked by the Chinese, but unexplored since the turn of the century.

A total of 782.5 m of backhoe trenching was carried out as an initial method of evaluating the pegmatites discovered. These trenches were channel sampled and the trenches and surrounding outcrops mapped for each of the eleven pegmatites.

Exploration of Leviathan Creek continued with the analysis of samples from the 1986 programme being completed. A 6 m deep trench was cut on the north and south terraces of the Leviathan Creek for a total of 150 m.

1. INTRODUCTION

This report is submitted to the Northern Territory Department of Mines and Energy and details exploration carried out on EL 2088 during the period January 1987 - January 1988.

Exploration Licence 2088 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 2088 is located on the Finniss River Station Road south of Observation Hill and approximately 40 km SSE of Darwin. The licence originally covering an area of 38.65 sq km and 12 graticular blocks, was granted on 10th January 1983. In November 1986 application was made for renewal of the exploration licence with a reduction from 6 to 3 graticular blocks. On the 9th November 1987 application was made for the partial reduction of EL 2088 to 2 graticular blocks (Figure 1). This partial reduction was granted on 6th January 1988.
3. REGIONAL GEOLOGY

Primary cassiterite and tantalite mineralisation is associated with pegmatite intrusions into the Burrell Creek Formation on the Cox Peninsula of the Northern Territory. The pegmatite intrusions probably have their origins in the Litchfield Complex of granitic rock on the western portion of EL 2088.

Secondary cassiterite and tantalite deposits have formed from the erosion of pegmatites and deposition within broad shallow drainage systems.

3.1 BURRELL CREEK FORMATION

This formation is part of the Lower Proterozoic Finnis River Group. It consists of medium to fine grained greywackes and siltstones with lenses of sandstone, conglomerates and carbonaceous shales. In outcrop the unit is generally red or brown reflecting deep weathering. Flanking the Litchfield Complex the sediments have been altered to andalusite biotite schists and gneisses, and in contact zones with pegmatite, tourmaline and biotite schists are common.

3.2 LITCHFIELD COMPLEX

The Litchfield Complex is a large mass of granitic rock including granodiorite, tonalite, granite and minor metamorphosed basic rocks. Little detailed information is available on the complex, but it is assumed that granites within the complex are the source of the Finnis River Pegmatites. The pegmatites in the vicinity of the Leviathan Mine are only 3 - 4 km from the Litchfield Complex, which outcrops in the western portion of EL 2088.
3.3 FINNISS RIVER PEGMATITES

The Finnis River Pegmatite Belt is approximately 55 km long and up to 12 km wide. EL 2088 is on the western margin of the pegmatite belt. Within the belt are swarms of pegmatite veins and sills varying from a few metres to 350 x 25 m.

Weathering of bedrock associated with the development of the lateritic profile has kaolinized the feldspars and made interpretation of the internal structure of the pegmatites difficult. With the exception of the quartz cores, outcrop of pegmatite is negligible.

3.4 GENERAL

Vast areas of Cox Peninsula are covered by ferruginous laterite caprock up to 2 m thick. The caprock varies from massive to cemented pisolithic, and is best developed in the north and west of the region. Several separate periods of Tertiary Lateritisation are apparent in the region.

The Cainozoic geological and geomorphological history of the area is complex and requires evaluation as it may have implications in the alluvial and marine resource environment.

4. PREVIOUS MINING AND EXPLORATION

4.1 HISTORY

The Leviathan Mine is the largest mine in the Exploration Licence. Its history has been recorded in previous reports, but it was one of the most actively explored and developed mines in the entire Finnis River Pegmatite Belt. A total of 11 other mines rediscovered during 1987 and detailed in this report indicate that the Leviathan Tin Field was a major focus of mining activity in the early mining history of the Northern Territory.

Previous exploration in the region by Greenbushes Ltd has involved a lateritic geochemical sampling programme, detailed mapping and some trenching at the Leviathan Mine.
5. EXPLORATION PROCEDURES

5.1 SAMPLING PROCEDURES

Samples of weathered pegmatite were collected from backhoe trenches or auger drill holes. Samples were collected at approx. 1.5 m intervals from the trenches and holes and stored in plastic bags. Aluminium tags stapled to the bags designated the sample numbers.

The trenches were channel sampled and logged. Approximately 10 litres of sample was collected from each interval. Care was taken in digging and the sampling of the trenches to get below the enriched eluvial zone.

All samples were hauled to a central processing facility by the main camp site.

5.2 SAMPLE PREPARATION

Between 6 litres and 10 litres of sample was collected from each trench sample. A 6 litre volume of loosely compacted sample was measured in volume cylinders. The sample was mechanically mixed with calgon and water in a steel bucket. In this process the clay was dispersed and formed a slurry. Water was slowly injected into the sample bucket forcing the suspended clay to be decanted. Care was taken to avoid the overflow of 'fine heavies'. The de-slimed sample was fed through a trommel with 10 mm screen onto a 1.75 m diameter concentrating cone, the slope of the cone and the water velocity flowing against the slope caused the heavy minerals : cassiterite, tantalite, ilmenite, magnetite, rutile, zircon etc. to be separated from the light fraction, which was predominantly quartz and muscovite. Like any form of gravity concentration the recovery of heavy minerals will be dependent of their grainsize relative to that of the gangue minerals.

The plus 10 mm trommel oversize was rejected. At Leviathan the oversize appears to contain little 'locked' cassiterite and tantalite. No account has been taken of mineralised oversize in the evaluation of the Projects Mineralised Reserves. Any cassiterite or tantalite derived from oversize will be additional to that predicted by the projects reserve grade.
At the Greenbushes Mine Laboratory the entire concentrate sample was pulverized for 2 minutes in a 200 ml chrome steel bowl on a vibrating pulverizer. The pulverized sample was fused with lithium borate containing lanthanum oxide to make a suitable glass disc for X-ray spectrographic analysis. The following elements, Nb₂O₅, SnO₂ and Ta₂O₅ were determined on the disc.

5.3 SAMPLING SYSTEM CHECKS

A number of programmes were in operation to monitor the procedures adopted in concentrating and analysing exploration samples. Analysis was continuously re-checked by the Greenbushes Ltd Laboratory.

6. 1987 PROGRAMME COMPLETED

During 1987 further trenching was completed in the Leviathan area using the Komatsu PC 400 excavator. The object was to improve knowledge of the distribution of Sn-Ta within alluvials adjacent to and downstream of the Leviathan Mine. Additional trenching was completed south of Leviathan with the John Deere 310B backhoe to investigate 11 other pegmatite workings rediscovered during the 1987 field season (Figure 2).

A total of 1214 m of costeaining was completed and 160 samples (125 pegmatite, 35 alluvial) were collected for analysis. Auger drilling over the North Phoenix area totalled 49 m producing 31 drill samples for analysis.

6.1 PEGMATITE DEPOSITS

6.1.1 BURNETTS FIND PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 1 km west of the old Finniess Station boundary fence and 1.35 km SSE of the junction of the Finniess River Station Road and Leviathan Creek (Figure 2). The Finniess River Station Road provides all weather access to the area, but the 1.35 km to the prospect from this road is on bush track.
accessible only in the dry season.

Burnetts Find Pegmatite is 15 km in a direct line from the Project Camp and plant site.

TOPOGRAPHY

Burnetts Find pegmatite is located on relatively flat ground just south of the confluence of two tributaries of Leviathan Creek approximately 5 m above channel level. In a northerly direction are alluvial flats associated with Leviathan Creek and to the south and west is a gentle rise capped with laterite.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. The prospect is comprised of three relatively small open pits, the largest being 20 m long, 5 m wide and up to 2 m deep. A number of smaller pits are located variously along strike. This work suggests that grades were sufficient for a period of short term production.

No evidence was found to suggest mining since the turn of the century, and Mines Department plans do not record the deposit.

1987 WORK

The prospect was rediscovered in 1987. A total of 115 m of trenching was carried out adjacent to the old workings. Exposures of pegmatite in trenches were sampled. A total of 5 samples were taken from trenches and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

1) Burnetts Find (North)

Two prominent unconformable veins are evident in this area, both having a north-south orientation. There contacts dip from 74 degrees to 18 degrees east and the westernmost vein increases in width with depth. Near surface they are narrow 1.5 - 4 m and may be up to 25 m in length. The close en echelon relationship with a number of nearby pegmatite veins (Burnetts Find South, McBurns, Pandanus, Trojan, etc) suggests that these veins are the apex of a larger body at depth.
2. Burnetts Find (South)

One prominent unconformable vein is evident in this area. Contacts dip from 80 degrees west to 50 degrees east and the vein may increase in width with depth in the north. The vein is narrow 1.5 - 2 m, appears to be greater than 25 m in length, and lies on the eastern flank of a laterite capped rise.

GENERAL GEOLOGY

1. Burnetts Find (North)

Exposure on the flats is restricted to old workings, which in some measure have collapsed and trenches cut to expose pegmatite. The pegmatite is characterised by a prominence of greisen so quartz and mica gravel and remnant in-situ greisen are present. Where present feldspars are kaolinised.

Pegmatite contacts are sharp, although eluvium obscures the contact in the northern trench. Country rock is grey-green laminated micaceous shales. The main foliation strikes approximately 355 degrees and dips from 70 degrees west to 70 degrees east.

A second north-south foliation, parallel to the pegmatite intrusion direction is evident adjacent to the larger eastern pit (Figure 3).

2. Burnetts Find (South)

Exposure on the east flank of the laterite capped rise is restricted to old collapsed workings and trenches. The pegmatite is comprised of weathered greisen so gravelly quartz and mica is prominent with minor kaolin.

Pegmatite contacts are relatively sharp, although partially obscured by lateritisation. Country rock is lateritised grey-green micaceous shale. The main foliation strikes between north-south and 005 degrees and dips from 49 degrees to 82 degrees west. A further foliation striking 355 degrees parallels the pegmatite intrusion direction in the north (Figure 3).

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades are consistently low from these pegmatites (Figure 4). On the basis of the 5 samples collected the average SnO₂:Ta₂O₅ ratio was approximately 4.5:1. The Ta₂O₅:Nb₂O₅ ratio was about equal at 1.1:1.
MINERALISED RESERVE OUTLINE

Limited drilling is possible due to the narrow nature of the veins, but is not justified because of the consistently low grades so far returned.

POTENTIAL RESERVES

One sample from pegmatite in pisolitic gravel eluvium in the north of Burnetts Find (North) returned a sub-economic grade indicating the potential for a concentration of mineralisation in eluvium down slope from this area. Additional mineralisation may also have been concentrated in alluvium of Leviathan Creek. Also, the pegmatites may have possible extensions in the north and south which could produce better grades. For these reasons the Burnetts Find is worthy of further investigation, but the work is of moderate to low priority relative to other deposits of higher grade mineralisation.

6.1.2 FRILLED LIZARD PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 900 m west of the old Finniss Station boundary fence approximately 1.0 km south east of the junction of Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 1.0 km to the prospect from this road in on bush track accessible only in the dry season.

Frilled Lizard Pegmatite is 14.5 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Frilled Lizard Pegmatite is located on the SW end of a narrow ridge rising to about 5 m above the surrounding area. To the north and south are narrow alluvial flats. The ridge has a partial cover of quartz outcrop and scree, and there is a narrow band of scree extending 50 m NNW of the prospect, which may indicate the subsurface extent of the upper reaches of the Frilled Lizard Pegmatite.
HISTORY

There is no recorded production from the prospect nor is there any known record of its location. The minimal work carried out suggests that the prospect was tested for grade, returned poor results, so the prospect was abandoned.

There is no evidence of further activity at the prospect since the turn of the century, and Mines Department plans do not record the deposit.

1987 WORK

The prospect was rediscovered in 1987. Two trenches totalling 8 m were cut adjacent to the old working. One sample was taken in the diagonal trench almost abutting the working and processed.

NUMBER, DIMENSION AND ATTITUDE OF PEGMATITES

At present only one apparent vein of pegmatite is exposed and although details are obscure it appears to strike SW-NE. From the measured north-south foliation of the micaceous shale country rock in the adjacent trench, this would suggest an unconformable relationship between pegmatite and country rock. However, the 50 m extent of quartz scree extending NNW of the prospect suggests that the deposit extends in this direction. Further work is therefore required to confirm the strike direction of the pegmatite.

Rain induced cave-in of the trench prevented measurement of dip, and further work is also required to establish the dimensions of the deposit. Like other pegmatites in the immediate vicinity this deposit may be related to a larger body at depth.

GENERAL GEOLOGY

Exposure on the SW end of the ridge is restricted to the one working and the trenches cut to expose the pegmatite. The pegmatite is kaolinised and of buff colouration. Country rock is yellow-green laminated micaceous shales.

The main foliation strikes north-south and dips 80 degrees east (Figure 5).
CASSITERITE AND TANTALITE MINERALISATION

The one cassiterite and tantalite grade is poor and on this basis the Sn\textsubscript{2}O\textsubscript{3}:Ta\textsubscript{2}O\textsubscript{5} ratios is 1:4.5, the Ta\textsubscript{2}O\textsubscript{5}:Nb\textsubscript{2}O\textsubscript{5} ratio 1:1. However, additional samples should be obtained to provide a more reliable result.

POTENTIAL RESERVES

Additional data are required to enable an estimate of the mineralised reserves. However, due to the very poor grade obtained to-date this work must be considered of low priority.

6.1.3 JIM JIM PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 930 m from the old Finnis Station boundary fence and 1.1 km south east of the junction of the Finnis River Station Road and Leviathan Creek (Figure 2). The Finnis River Station Road provides all weather access to the area, but the 1.1 km to the prospect from this road is on bush track accessible only in the dry season.

Jim Jim Pegmatite is 14.75 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Jim Jim pegmatite is located on the SW end of quartz boulder covered ridge with which it is continuous. To the south and west are alluvial flats which about Leviathan Creek. The ridge of boulder quartz is up to 9 m wide, and extends in a NE direction for 55 m.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. The small size of the open pits, up to 10 m long, 5 m wide and up to 2 m deep, and associated workings suggests grades sufficient to maintain interest for an extended period. However, this work subsequently ceased suggesting that returns of subeconimic grade then ensued.
There is no evidence of mining since the turn of the century, and Mines Department plans do not record the deposit.

1987 WORK

The prospect was rediscovered in 1987. A total of 25 m of trenching was carried out adjacent to the old workings. Open pits and the one trench were entered and sampled. Two samples were taken and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

There appears to be one main direction of pegmatite intrusion. This deposit may parallel the Frilled Lizard Pegmatite in having a SW-NE strike. The single vein is narrow 1.5 - 5 m wide but may extend for up to 110 m along strike.

GENERAL GEOLOGY

Exposure on the SW end of the ridge is restricted to old workings which in places have collapsed and the trench cut to expose the pegmatite. The pegmatite is kaolinised with fine to medium grained kaolin, mica and quartz in the trench which becomes harder and coarser towards the northern extent of the 2 m deep open pit (Figure 6).

Pegmatite contacts are relatively poorly exposed and virtually obscured in the trench due to the depth of eluvium/alluvium. The host rocks are grey-green micaceous shales as seen in outcrop nearby.

The 55 m boulder quartz capped ridge extending NW of the workings, which probably indicates the extent of underlying pegmatite, is comprised of massive milky quartz within which mica is evident. A single quartz vein has intruded the pegmatite in the open pit.

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades appear to be low in this pegmatite. On the basis of the 2 samples collected the average SnO₂:Ta₂O₅ ratio was approximately 5.5:1. The Ta₂O₅:Nb₂O₅ ratio was low at 1.5:1.
POTENTIAL RESERVES

The limited investigation of the prospect to-date does not avail itself to an estimate of reserves. Grades appear to be subecononic, but with only 2 samples processed further sampling is required to properly access the potential of the deposit. The elevation of the boulder quartz capped ridge and associated workings indicates a good potential for mineralised eluvium/alluvium in the vicinity of this pegmatite. But with the subecononic grades returned to-date any assessment of this potential must be considered of moderate to low priority.

6.1.4 KRISTIES PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 930 m from the old Finniss Station boundary fence approximately 700 m south east of the junction of the Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 700 m to the prospect from this road is on bush track accessible only in the dry season.

Kristies Pegmatite is 14.25 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Kristies pegmatite is located on the south-west fringe of a broad, low partially laterite capped rise elevated 5 m above the surrounding area. To the east and south are alluvial flats which are contiguous with Leviathan Creek. The rise is partially capped with boulder laterite with additional areas of laterite bulkshot gravels and a few exposures of fractured narrow milky quartz reefs.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. Workings are not extensive, with open pits generally small to 10 m long, narrow to 6 m wide and shallow to 1 m deep. This suggests grades were not exceptional, although sufficient grade was gained to maintain interest for a time.

There is no evidence of mining since the turn of the century and Mines Department plans do not record deposit.
1987 WORK

The prospect was rediscovered in 1987. A total of 168 m of trenching was carried out adjacent to the old workings. A total of 12 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 an unconformable set of 3 to 4 veins striking 020 degrees with contacts which dip from 88 degrees west to 50 degrees east. The veins are narrow 1 - 7 m and appear to be up to 50 m in length.

There are a number of prospects located in the near vicinity to Kristies pegmatite. On the basis of :-

* the large number of pegmatite veins in a relatively small area with no apparent lateral connection

* the divergent nature of the dips of the contacts of individual pegmatites

it is possible that these veins may emanate from a larger body at depth.

GENERAL GEOLOGY

Exposure on the south-west fringe of the rise is restricted to back-filled and partially collapsed workings, and the trenches cut to expose the pegmatite. The pegmatite is partially kaolinized with a hard greisen selvedge preserved on some of the contacts.

Pegmatite contacts are sharp. The host rocks are grey-green to silver micaceous shales. The main foliation strikes north-south and dips from 70 degrees west to 68 degrees east. A second foliation, parallel to the pegmatite intrusion direction was apparent in some places (Figure 7).

Some massive milky quartz veins lie to the west and east of the pegmatite. To the south the pegmatite is segregated to a quartz core.

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades are generally poor (Figure 8). However two samples returned reasonable tin grades, giving an average SnO₂:Ta₂O₅ ratio of approximately 25:1.
MINERALISED RESERVE OUTLINER

Limited drilling is possible on this prospect, and is warranted to determine whether grades increase to economic levels with depth.

POTENTIAL RESERVES

The elevated location of this pegmatite suggests a likelihood of a small reserve of mineralised eluvium which should have higher grades due to near surface concentration.

As already suggested these veins may emanate from a larger body at depth. Further investigation is therefore indicated, however, due to the generally poor grades obtained to-date this work must be considered of low priority.

6.1.5 KRISTIES SOUTH PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 890 m from the old Finniss River Station boundary fence and approximately 900 m south east of the junction between the Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 900 m to the prospect from this road is on bush track accessible only in the dry season.

Kristies South Pegmatite is 14.75 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Kristies South pegmatite is located at the margin of a low partially laterite capped rise, and has been exposed in geological time by dissection and erosion of the rise. To the east are alluvial flats contiguous with Leviathan Creek. A diverse cover of grasses and shrubs obscured other ground detail in the local area.
HISTORY

There is no record production from the prospect nor is there any known record of its location. The one v-shaped open pit has dimensions of 5 m width and length, with a depth of 0.8 m. It appears that a parcel or ore was extracted to test the potential of the deposit, poor grades resulted so the prospect was abandoned.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 25 m of trenching was carried out adjacent to the old workings. A total of two samples were taken from the trench and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITE

There is one pegmatite vein which has intruded in a direction of 300 degrees. The vein is unconformable with contacts which dip from 78 degrees west to 50 degrees east, and has a width of 3 m. It has a length of at least 5 m and may be continuous with Kristies Prospect in sub-surface.

GENERAL GEOLOGY

Exposure is restricted to the old partially caved-in open pit and the trench cut to expose the pegmatite. The pegmatite is comprised of a hard kaolinized zone in the west with a greisen selvedge in the east.

Pegmatite contacts are sharp, in country rock of grey-green laminated micaceous shales. There is one main foliation which strikes north-south or nearly-so (Figure 9).

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades are extremely low. On the basis of the 2 samples collected the average SnO₂/Ta₂O₅ grades are very low at 0.003/0.005 kg/tonne (1.5 tonnes$/LGM). The pegmatite appears to diverge in dip with depth so lends support to the hypothesis of a larger body at depth being connected with a number of pegmatites in this area. Grades obtained from this prospect suggest
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EXPLORATION DIVISION OF GREENBUSHES LTD.

BYNOE JOINT VENTURE — N.T.

KIRSTIES SOUTH PROSPECT
GEOLOGY & GRADE PLAN

SCALE 1:500

FIGURE No 9  DATE  3/28/97
REPORT No  ORIGINATOR F.M.
PROJECT No  DRAFTSPERSON H.P.W.
ORG No  SHEET No
PLATE No
that its further investigation should be of very low priority.

6.1.6 McBURNS PEGMATITE

LOCATION

This prospect is located on EL 2088, approximately 820 m from the old Finnis Station boundary fence approximately 1.5 km south east of the junction of the Finnis River Station Road and Leviathan Creek (Figure 2). The Finnis River Station Road provides all weather access to the area, but the 1.5 km to the prospect from this road in on bush track accessible only in the dry season.

McBURNS Pegmatite is 15.1 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

McBURNS Pegmatite is located on gently sloping ground on the north east fringe of gentle rise capped with laterite. To the north and east are alluvial flats associated with Leviathan Creek. The rise has a covering of areas of boulder laterite caprock, backshot gravels and quartz dykes and scree.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. The one elongate open pit has dimensions of 10 m length by 3 m width, with a depth of 1 m. This prospect appears to have been virtually worked out apart from a relatively hard greisenised selvedge in the south east corner of the open pit. Grades must therefore have been high.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 43.5 m of trenching was carried out adjacent to the old workings. One sample was obtained from a trench dug at the southern end of the open pit and processed.
NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITE

There is one pegmatite vein which has intruded in a direction of 021 degrees. The vein is conformable with the eastern contact dipping west at 80 degrees, the western contact was not exposed in trenches. The vein appears to be narrow 2 - 3 m and appears to have been up to 10 m in length.

A number of pegmatites are exposed in the local area (Burnetts Find, Jim Jim, McBurns, Pandanus, etc). These close proximity and the frequency of divergence of dips of contacts suggests that they emanated from a single, larger body at depth.

GENERAL GEOLOGY

Exposure is restricted to the old partially collapsed open pit and the trench cut to expose the pegmatite. The pegmatite appears to be both lateritised (in the west) and greisenoid (in the east).

The one pegmatite contact is sharp, although in partially lateritised country rock of laminated to sometimes massive micaceous shales. There is one main foliation approximately parallel to the direction of pegmatite intrusion (Figure 10).

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades obtained from the one sample are of relatively high value. This sample was taken from the southern end of the open pit and gave a ratio of SnO₂:Ta₂O₅ of 6:1. Similarly the Ta₂O₅:Nb₂O₅ ratio was relatively high at approximately 2.5:1.

POTENTIAL RESERVES

Although the prospect appears to be virtually worked out the relatively high grade warrants a further assessment of the prospects potential. It is somewhat elevated in its location and eluvium as seen in trenches is deep (to 1+ m) so there is a likelihood of perhaps 1 - 200 tonnes of mineralised eluvium present. Expansion of the pegmatite vein at depth as part of a much larger body is indicated, and due to the relatively high grades obtained the body is worthy of further investigation. There is, however, limited potential for a significant increase in reserves so this work must be considered of moderate to low priority.
6.1.7 NORTH PHOENIX PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 860 m from the old Finniss Station boundary fence and approximately 520 m south east of the junction of the Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 520 m to the prospect from this road is on bush track accessible only in the dry season.

North Phoenix Pegmatite is 14.2 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

North Phoenix pegmatite is located on the northern slope of a gently sloping, low, partially laterite capped rise. To the north are alluvial flats contiguous with Leviathan Creek. The rise is partially capped with boulder laterite with additional areas of laterite buckshot gravels and a few exposures of fractured narrow milky quartz reefs.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. Workings are limited to a single, large open pit measuring 15 m long by 8 m wide by 0.5 m deep, and a few smaller pits. All surface exposures appear to be substantially worked suggesting that reasonable grades were returned. However it appears that there was a substantial decrease in grade with depth as there has been no further exploitation of the prospect by means of shafts.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 133 m of trenching was carried out adjacent to the old workings, and a total of 14 samples were taken from trenches and processed. Four auger drill holes were driven down to a total depth of 49 m, and a total of 31 drill samples were taken and processed. More auger drilling was planned to follow up this work, but boggy conditions brought on by early rains prevented this work from taking place.
NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

There is one prominent direction of pegmatite intrusion towards 350 degrees. Eluvium is deep, so the relationship between the pegmatite contacts and the country rock is obscure. The western contact appears to have a subvertical dip. The vein varies from 2 - 20 m in width, and may be up to 40 m in length. It contains a near surface inlier of micaceous shale 5 m wide and 3 m deep centred on 1800 E. This pegmatite has been drilled to 15 m and is still open at depth, suggesting that it may be a relatively large body with most detail obscured by the deep cover of eluvium. Due to the close proximity of other nearby pegmatites (Centaur, Kristies, Phoenix, etc) it is possible that these veins are the apex of a larger interconnecting body at depth.

GENERAL GEOLOGY

Exposure on the northern slope of the partially laterite capped rise is restricted to old workings which in some instances have collapsed and the trenches cut to expose the pegmatite. The pegmatite is kaolinised and in most instances was very friable due to the high content of coarse muscovite.

As already mentioned contacts were obscured by deep eluvium, and there was a near surface inlier of micaceous shale within the pegmatite vein. Further details of the host rocks are unavailable from this prospect, although regionally they are comprised of grey-green laminated micaceous shales with a strike of north-south or nearly so and dips of high angle (Figure 11).

Adjacent and north of the pegmatite the eluvium grades into alluvium of a tributary of Leviathan Creek.

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades are uniformly high in the near surface 1.5 m of eluvium and pegmatite, and range from poor to moderate at depth within the pegmatite (Figures 12 and 13). This suggests two separate zones of mineralisation within the pegmatite, a near surface tin rich zone with an average SnO₂:Ta₂O₅ ratio of 14:1, and a deeper seated zone of poor mineralisation with an average ratio of approximately 2.6:1. The Ta₂O₅:Nb₂O₅ ratio for the near surface zone was high at 7.2:1.
GREENEX EXPLORATION DIVISION OF GREENBUSHES LTD.

BYNOE JOINT VENTURE — N.T.

NORTH PHOENIX PROSPECT

GRADE PLAN

SCALE 1:500

FIGURE No. 12
REPORT No.
PROJECT No.

DATE 14/10/87
ORIGINATOR F.M.
DRAFTSPERSON M.P.W.

DRC No
SHEET No
PLATE No
MINERALISED RESERVE OUTLINED

The near surface tin rich zone, to a depth of 1.5 m, contains an estimated reserve of 1160 tonnes at 0.405 kg/tonne SnO₂ and 0.031 kg/tonne Ta₂O₅. A blocked out section of the deeper mineralised zone contains an estimated reserve of 4440 tonnes at 0.033 kg/tonne SnO₂ and 0.017 kg/tonne Ta₂O₅.

POTENTIAL RESERVES

With the high near surface grades in the eluvium and pegmatite and elevated location of the prospect on a gentle slope there is a possibility of a limited tonnage of mineralised eluvium associated with this deposit.

As previously stated there is also a possibility that this vein is the apex of a much larger body, and in view of the high grades obtained from a number of samples this deposit is worthy of further investigation.

6.1.8 PANDANUS PEGMATITE

LOCATION

This prospect is located on EL 2088, approximately 860 m from the old Finniess River Station boundary fence approximately 1.25 km south east of the junction of the Finniess River Station Road and Leviathan Creek (Figure 2). The Finniess River Station Road provides all weather access to the area, but the 1.25 km to the prospect from this road is on bush track accessible only in the dry season.

Pandanus Pegmatite is 15.0 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Pandanus pegmatite is located immediately to the north of Leviathan Creek, partly on an elevated rise and partly on the gentle slope that leads down to the creek. To the east, west and north are alluvial flats. The ridge is scree covered and fringed to the east and west with outcropping shales.
HISTORY

There is no recorded production from the prospect nor is there any known record of its location. Workings are limited to a shallow, 3 m by 12 m open pit and an associated channel immediately adjacent to Leviathan Creek and a few small pits on the elevated rise. This limited work suggests that tin grades returned by initial work were poor.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 204 m of trenching was carried out adjacent to the old workings. A total of 52 samples were taken from trenches and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

There appears to be one prominent direction of pegmatite intrusion. Although the pegmatite is somewhat complex in orientation at different points, overall the body appears to have been intruded at an angle between north-south and 005 degrees. It is unconformable with contacts which dip from 58 degrees west to 50 degrees east along the length of the body. The body varies in width from 1.5 - 28.5 m and appears to be up to 160 m in length.

The close proximity of other pegmatites in the surrounding area (Burnetts Find, Jim Jim, McBurns, Trojan etc), are indicative of a connection between these bodies. It is possible that they are all interconnected with a larger deep seated body.

GENERAL GEOLOGY

Exposure on the elevated rise and the slope down to Leviathan Creek is restricted to a few old workings and the trenches cut to expose the pegmatite. The outline of the pegmatite body was delimited by quartz scree. It is kaolinised with some segregation into quartz rich and quartz poor zones, and a greisenised pod is exposed in the south in the open pit adjacent to the creek.

Pegmatite contacts are sharp, with adjacent shales tourmalinised or altered partly or completely to schist or gneiss in some instances. The host rocks are generally
grey-green laminated micaceous shales, which have altered to mica schist, crenulated schist, and hard massive boulder gneiss rock on some contacts.

The main foliation strikes 350 degrees and dips from 78 degrees west to 74 degrees east. A second set of foliations parallels the pegmatite intrusion direction in some places (Figure 14).

CASSITERITE AND TANTALITE MINERALISATION

Cassiterite grades are uniformly poor throughout the pegmatite, whereas the majority of tantalite grades are of moderate value (Figure 15). On the basis of the 52 samples collected the average SnO₂:Ta₂O₅ ratio was approximately 1:5.5, whilst the Ta₂O₅:Nb₂O₅ ratio was 1.5:1.

MINERALISED RESERVE OUTLINED

The prospect should be amenable to drilling next field season, but in view of the relatively consistent tantalite grades some assessment of the prospects potential was justified.

Two separate mineralised pods within the pegmatite were delineated. To a depth of 10 m the estimated reserves from these two pods totals 22,830 tonnes at 0.006 kg/tonne SnO₂ and 0.055 kg/tonne Ta₂O₅.

POTENTIAL RESERVES

With the reasonable tantalite grades in this pegmatite and with its elevated location there is a likelihood of perhaps 3 - 5,000 tonnes of mineralised eluvium associated with this deposit. The pegmatite would have shed material directly into Leviathan Creek, and as such there is a potential for an upgraded alluvial resource downstream from the prospect. Such a resource would be further enlarged by additions from adjacent pegmatites (Jim Jim, McBurns, Trojan etc).

As previously reported there is a possibility that a number of pegmatites in the local area may be interconnected with a larger body at depth and drilling is required on this prospect. With the encouraging tantalite grades returned to-date the deposit is worthy of further investigation.
GREENEX
EXPLORATION DIVISION OF GREENBUSHES LTD.

BYNOE JOINT VENTURE — N.T.

PANDANUS
GRADE PLAN

SCALE 1:500

FIGURE No 15   DATE 10/11/87   ORG No
REPORT No     ORIGINATOR P.M.      SHEET No
PROJECT No     DRAFTSPERSON M.P.W.  PLATE No
6.1.9 PHOENIX PEGMATITE

LOCATION

This prospect is located on E1 2088, approximately 1.1 km from the old Finniss Station boundary fence approximately 500 m south east of the junction of the Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 500 m to the prospect from this road is on bush track accessible only in the dry season.

Phoenix pegmatite is 14.25 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Phoenix pegmatite is located partly on the north west limits of a low laterite capped rise, and partly on the adjacent alluvial flats. To the north and west are alluvial flats contiguous with Leviathan Creek. The rise is partly scree covered with boulder, cobble and pebble quartz in the vicinity of the prospect.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. Workings are quite limited suggesting that the prospect was tested for grade, proved to be of low value and was abandoned.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 163 m of trenching was carried out adjacent to the old workings. Trenches were entered and sampled where appropriate. A total of 9 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 set of veins striking 020 - 030 degrees with contacts which dip 68 degrees west to vertical. The veins are narrow 1.5 - 4 m and are over 10 m in length.
Due to the close proximity of a number of pegmatite veins in the local area (Centaur, Kristies, North Phoenix, etc) it appears that there is a close association between them. This association may be in the form of the veins being the apex of a larger interconnecting body at depth.

GENERAL GEOLOGY

Exposure on the rise and adjacent alluvial flats is restricted to old workings and the trenches cut to determine the near surface limits of the pegmatite. The pegmatite is kaolinised with some degree of segregation to a quartz core and adjacent quartz rich pegmatite in the north.

Pegmatite contacts are sharp. Host rocks are grey-green laminated micaceous shales, which are in part lateritised. The main foliation strikes 010 - 020 degrees and dips from 68 degrees west to 81 degrees east. A second north-south foliation is also apparent, however, the overall view of strike of foliation is made somewhat complex by the intrusion of a number of quartz veins into the host rock about the pegmatite veins. These quartz veins have influenced foliation direction in some measure in their near vicinity (Figure 16).

Quartz dykes adjacent to the pegmatite veins are generally of the massive milky variety and vary from 50 - 250 mm in width. Only where quartz veins were directly associated with pegmatite veins did they contain muscovite or other evidence of mineralisation. Otherwise they were barren.

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite and tantalite grades are uniformly poor throughout the pegmatite (Figure 17). Of the 19 samples collected the average grade is 0.008 kg/tonne SnO₂ and 0.009 kg/tonne Ta₂O₅(1.5 tonne/LCM), which gives an average SnO₂:Ta₂O₅ ratio of 0.88:1.

POTENTIAL RESERVES

This pegmatite is small hence the volume is low and the grades are poor. Drilling may encounter enhanced mineralisation at depth, so the prospect is worthy of further investigation, but this work must be considered of low priority due to the likelihood that any increase in reserves will be small.
6.1.10 RIVERSIDE PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 1.25 km from the old FinniSS Station boundary fence approximately 150 m south east of the junction of the FinniSS River Station Road and Leviathan Creek (Figure 2). The FinniSS River Station Road provides all weather access to the area, but the 150 m to the prospect from this road is on bush track accessible only in the dry season.

Riverside Pegmatite is 14.25 km in a direct line from the Project Camp and Plantsite.

TOPOGRAPHY

Riverside pegmatite is located on the east bank of Leviathan Creek on an elevated rise. There are two separate pegmatite veins, which are both exposed in the creek bank by erosion to a depth of 2 - 3 m within the creek. On the west side of the creek is an extensive area of eluvium/alluvium of low relief which masks any continuation of the pegmatite in this area.

HISTORY

There is no recorded production from this prospect nor is there any record of its location. The limited amount of work in evidence suggests that work was undertaken to test the potential of the deposit, returned grades were not encouraging, so the prospect was abandoned.

There is no evidence of further mining activity since the turn of the century, and Mines Department plans do not record the deposit, although it is only 300 m from Leviathan Mine.

1987 WORK

The prospect was rediscovered in 1987. A total of 98 m of trenching was carried out adjacent to the old workings. The open pit and exposures of pegmatite in the banks and floor of the creek were examined and a total of 22 samples were taken from trenches and processed. An additional sample was taken of alluvium from within Leviathan Creek and similarly processed.
NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

1) West Riverside

Two prominent, broad veins, which appear to converge in the north, have been exposed by trenching in this area; the westernmost is unconformable. Contacts dip from 64 degrees west to 46 degrees east. The veins are relatively broad 13.5 - 17 m and appear to be greater than 25 m in length. West Riverside pegmatite appears to have been intruded in the same direction as Leviathan North and Central pegmatites suggesting that the pegmatite is a continuation of these latter bodies. As will be seen below mineralisation grades are also of comparable levels, further supporting this argument.

2) East Riverside

One pegmatite vein is exposed on the bank of the creek in this area. Standard trenching to a depth of 1 m failed to further expose the vein due to the significant depth of eluvial cover. The one exposed contact had a vertical dip and appears to have been intruded in a NE direction.

A 3 m width of pegmatite was exposed in the creek bank. This pegmatite may be related to West Riverside and the Leviathan pegmatites in the subsurface but additional work is required to confirm this suggestion.

GENERAL GEOLOGY

1) West Riverside

Exposures of this pegmatite are restricted to old workings, trenches cut to expose the pegmatite, and outcrop in the east bank of Leviathan Creek. The pegmatite is kaolinised and due to the high quartz and mica content and relatively low content of kaolin, the rock is generally soft and friable. This is apart from the hard partially weathered pegmatite which comprises the outcrop in Leviathan Creek.

Pegmatite contacts are sharp and host rocks are grey-green laminated micaceous shales. There is only one evident foliation which strikes 350 degrees and dips from 62 degrees west to 54 degrees east (Figure 18).

The pegmatite is fringed on its eastern and western contacts by narrow quartz veins. Concomitantly the western vein has segregated into a quartz core and associated pegmatite. Tantalite mineralisation is marginally enhanced at the contacts between the quartz core and this adjacent pegmatite.
2. East Riverside

Exposure is restricted to a 3 m width of hard pegmatite in the east bank of Leviathan Creek. The exposed pegmatite is only partly kaolinised.

The one contact is sharp, although the micaceous shale host rock is virtually obscured by deep eluvium (Figure 18).

CASSITERITE AND TANTALITE MINERALISATION

The East and West Riverside pegmatites both contained no tin. Tantalite grades were uniformly low with an average grade of 0.002 kg/tonne Ta₂O₅ (Figure 19).

Grades of mineralisation in the surface 1.0 m of alluvial wash adjacent to East Riverside in Leviathan Creek were 0.049 kg/tonne SnO₂ and 0.007 kg/tonne Ta₂O₅. The presence of cassiterite is due to concentration of cassiterite mineralisation from upstream pegmatites as is the enhanced tantalite grade which may have been increased marginally by material shed from East Riverside.

POTENTIAL RESERVES

The absence of cassiterite from the deposit and the exceptionally low tantalite grades do not justify a reserve estimate. Further work is warranted to determine if enhanced contact or other mineralisation is present on hitherto unearthed sections of the pegmatite. But, this work must be considered of low priority due to the low grades obtained to-date.

6.1.11 TROJAN PEGMATITE

LOCATION

This prospect is located in EL 2088, approximately 1.05 km from the old Finniss Station boundary fence approximately 1.2 km SSE of the junction of the Finniss River Station Road and Leviathan Creek (Figure 2). The Finniss River Station Road provides all weather access to the area, but the 1.2 km to the prospect from this road is on bush track accessible only in the dry season.

Trojan pegmatite is 15 km in a direct line from the Project Camp and Plantsite.
TOPOGRAPHY

Trojan pegmatite is located on relatively flat ground immediately south of the confluence of two tributaries of Leviathan Creek approximately 3 m above channel level. To the north are alluvial flats contiguous with Leviathan Creek and to the south a gentle rise capped with laterite.

HISTORY

There is no recorded production from the prospect nor is there any known record of its location. The limited amount of work on the prospect would suggest that a reasonable parcel of ore was extracted, which returned poor grades, so the prospect was abandoned.

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

1987 WORK

The prospect was rediscovered in 1987. A total of 75 m of trenching was carried out adjacent to the old workings. The old workings were inspected, and pegmatite exposed in the trenches was sampled. A total of 4 samples were taken from trenches and processed.

NUMBER, DIMENSIONS AND ATTITUDE OF PEGMATITES

There appears to be one prominent direction of pegmatite intrusion, between north-south and 010 degrees. The veins are conformable with contacts which dip from 45 - 82 degrees west. This pegmatite has narrow veins 3.5 - 6 m which appear to be up to 15 m in length.

On the basis of the large number of pegmatite veins in the local area (Burnetts Find, Jim Jim, Pandanus, etc) it is possible that these veins are the apex of a larger interconnecting body at depth.

GENERAL GEOLOGY

Exposure on the flat north of the gentle laterite capped rise is comprised of partially collapsed old workings and the trenches cut to expose the pegmatite. The pegmatite is kaolinised and is segregated into a boulder quartz core with adjacent quartz rich pegmatite.
Pegmatite contacts are sharp, with host rocks comprised of grey-green laminated micaceous shales. The foliation strikes north-south and dips from 47 - 86 degrees west (Figure 20).

CASSITERITE AND TANTALITE MINERALISATION

The cassiterite grades are poor from this pegmatite. Tantalite grades are generally low, however an exceptional grade obtained from a sample taken in the vicinity of the quartz core takes the overall average into economic levels of 0.067 kg/tonne Ta O (Figure 21). On the basis of the 14 samples collected the average SnO₂:Ta₂O₅ ratio is 1:8.3 and the Ta₂O₅:Nb₂O₅ ratio is 2.3:1.

POTENTIAL RESERVES

At present there is a potential for only a limited reserve from this prospect. The pegmatite is, however, open to the south, and the encouraging tantalite grade should be followed up to identify any additional potential for contact or other mineralisation in this area. This work should be considered of moderate to low priority.

6.2 ALLUVIAL DEPOSITS

During the 1986 field season large sections of Booths, Hang Gong, Johnsons, Lees and Little Alluvial drainages were tested by costeanning on 100 m grid lines.

The drainages are long, broad, shallow, mature systems varying up to several kilometres in length and 200 m to 300 m in width. At their deepest they rarely contain more than 4 m of alluvium although the southern sections of Booths drainage sometimes exceeded 6 m. In profile the drainages are virtually the same and consist of a surficial black soil horizon 100 mm to 200 mm thick, underlain by a mottled ferruginous clay which grades into a sandy clay to clayey gravel wash containing significant cassiterite and tantalite concentrations.

Within the alluvial sediments at least three sedimentary cycles are recognised, the earliest produced the basal clayey sand or clayey gravel wash which is up to 2.5 m thick and usually contains subangular quartz and siltstone clasts of up to 200 mm in length. This basal, or C horizon, contains the major portion of tin tantalum reserves. Directly overlying the C horizon, and usually combined within it or separated by thin bands of clayey
sand is a second minor gravel horizon (B horizon) which is up to 1 m thick. The B horizon contains minor concentrations of cassiterite and tantalite and may be absent due to reworking or unrecognised if it is represented by the A horizon, a thin, rarely observed band of small 5 - 10 m pebbles which usually occurs about 0.5 m below the organic clay layer. The A horizon is generally no more than 0.5 m thick and is essentially unmineralised.

In places all horizons have been subjected to recent reworking and resultant in-filling with black organic clays.

The underlying bedrock is usually weathered to clay directly beneath the C horizon, weathering becomes less intense towards the margins of the drainage channel which are usually marked by an abrupt increase in bedrock elevation.

Costeaming has been selected as the method of appraisal of alluvial reserves. The Komatsu PC 400 excavator was used to costean the width of the alluvial channels on lines 100 m apart, it is usual for the trench to begin within a section of wash and proceed outwards until the limits of the channel are reached.

After a short period of familiarization competent field crew are able to recognise the channel margins and the alluvial horizons of interest.

Vertical channel samples are collected from the B and C horizons (if present) at 5 m intervals, the depth and thickness of individual horizons are noted and the samples processed according to standard practice.

6.2.1 1986 Work at Leviathan Creek

In 1986 costeaming of Leviathan Creek was carried out in conjunction with exploration of Leviathan pegmatite. A 95 m costean was dug immediately south of Leviathan north, at the tidal limit of the creek. Sampling was limited by excessive overburden on the northern bank (5 m) and wet ground conditions prevented sampling over a 25 m section of the southern bank. The extent of the alluvial horizon is therefore probably greater than indicated. Grades tend to be low, reflecting the largely low grades within Leviathan pegmatite itself and of 16 samples only four returned grades of greater than 0.33 kg/tonne SnO₂ equivalent (1.5 tonne/LCM). The location of higher grade samples suggests that the central area and the deeply buried northern extensions should be followed up to
confirm the presence of mineralised zones (Figure 22).

6.2.2 1987 WORK AT LEVIATHAN CREEK

In 1987 costeaning of Leviathan Creek was carried out in conjunction with exploration of pegmatites south of Leviathan pegmatite. A 70 m costean was dug on the north bank of the creek and an 80 m costean on the south bank of the creek. Both costeans were dug 100 m downstream of the tidal limit of the creek at which point 95 m of costeans were dug during the 1986 field season. The northern and southern costeans are in a line perpendicular to the flow direction of the creek.

Wet ground conditions and a water filled channel prevented sampling over a 35 m section between these costeans in an area of probably highly mineralised alluvium. The results of this work were not available at the time of writing.

A small tributary drainage of Leviathan Creek begins beyond the northern limits of Leviathan North pegmatite and joins Leviathan Creek approximately 150 m downstream from the 1987 trench. This area could be the focus of work on alluvials in the 1988 field season.

Additional work is warranted to assess the alluvial potential upstream of the junction of the Finniss River Station Road and Leviathan Creek. This area should contain a substantial mineralised reserve shed from adjacent pegmatites, found during 1987 field season and concentrated by stream action.

7. 1986 - 1987 ESTIMATED EXPENDITURE

EL 2088 is one of a number of exploration licences, mineral claims and leases held by the Bynoe Joint Venture on the Cox Peninsula. To date in excess of A$4.5 m has been spent on exploration of the regions tin and tantalum resources. The table below contains an estimate of the expenditure on EL 2088:
### ITEM | ESTIMATED EXPENDITURE
--- | ---
Accommodation & Messing | $1,850
Geological | 2,800
Technical Material | 150
Communications/Transport | 200
Tenement Administration | 450
Trenching - Machine Maintenance Backhoe | 3,200
Trenching - PC400 & Transport of Machine | 1,800
Vehicles | 1,750
Fuel, Oil, Tyres | 800
Field Hands - Wages | 2,900
Sample Preparation | 1,250
Drafting | 550
Sample Analyses | 1,700
Field and Office Supplies | 250
Travel (Perth - Darwin) | 1,000
Administration | 2,600
Clerical and Secretarial | 350
Project Management | 1,300
Gridding | 1,500
Reports | 250

$26,650

8. **1988 PROGRAMME**

Further work on the pegmatites located south east of Leviathan pegmatite and the surrounding area will consist of:

i) additional drilling of the contact zones of these pegmatites in an effort to identify significant ore zones.

ii) further investigation of the alluvial horizon, as discussed previously in this report.

iii) trenching of quartz outcrops south and east of the Leviathan pegmatites.

iv) additional ground reconnaissance to locate pegmatite deposits as yet undiscovered.