FINAL REPORT

EL 2155

COX PENINSULA, N.T.

REPORT ON RETAINED AREAS

DISTRIBUTION :

N.T. Department of Mines and Energy
Perth Office
Darwin Office

PREPARED BY :

Point Pty Ltd
for Bynoe Joint
Venture
December 1989

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FIGURES

1. INTRODUCTION

This report was prepared for the Bynoe Joint Venture (BJV) participants Greenbushes Ltd and Barbara Mining Corporation a subsidiary of Bayer AG of West Germany by Point Pty Ltd for the N.T. Department of Mines and Energy. The report summarises the exploration work carried out by the B.J.V. on those areas of the expired EL 2155 that are presently covered by other B.J.V. tenements (eg. ERL 57 and EL 5271). A second report under separate cover has been prepared for those areas of EL 2155 that are not covered by any current B.J.V. tenement.

The licence was located on the Cox Peninsula south-west of Darwin (Figure 1 and 2) and was one of a number of tenements held by the B.J.V. in this region (Figure 2) for the exploration and exploitation of tin and tantalum.

The B.J.V. has been active on Cox Peninsula for approximately 5 years and has spent in excess of A$5 million on exploration and development of the tin (cassiterite) and tantalum (tantalo-columbite) Resources. A 400,000 t.p.a. "softrock" processing plant has been constructed near Observation Hill and in excess of 120,000 tonnes of Sn/Ta "ore" has been processed in trial mining operations. However the continued low prices for both tin (A$10/kgm) and tantalite (US$32/lb contained Ta_2O_5) has meant that development of this resource has been deferred until tantalum prices in particular improve.

2. LOCATION AND LEASING

EL 2155 is located south of the Finniss River Station Road approximately 30 kms SSW of Darwin. Access is via the Mt Finniss Station Road to the Charlotte River Crossing and then immediately after crossing the Charlotte River Crossing a bush track south (Figure 2). The Finniss River Station Road is a formed all weather dirt road, but the access track is a bush track only passable in the dry season (May - December).

Exploration Licence 2155 was granted on the 17th October 1984 and expired in October 1989. Originally it was a 4 graticular block licence area centred on the Annie River and the Annie Pegmatite deposit (Figure 3). Two titles still held by the Bynoe Joint Venture participants ie. ERL 57 and EL 5271 now cover substantial proportions of the original tenement area (Figure 3). This report summarises work carried out on EL 2155, and now covered by these two tenements.

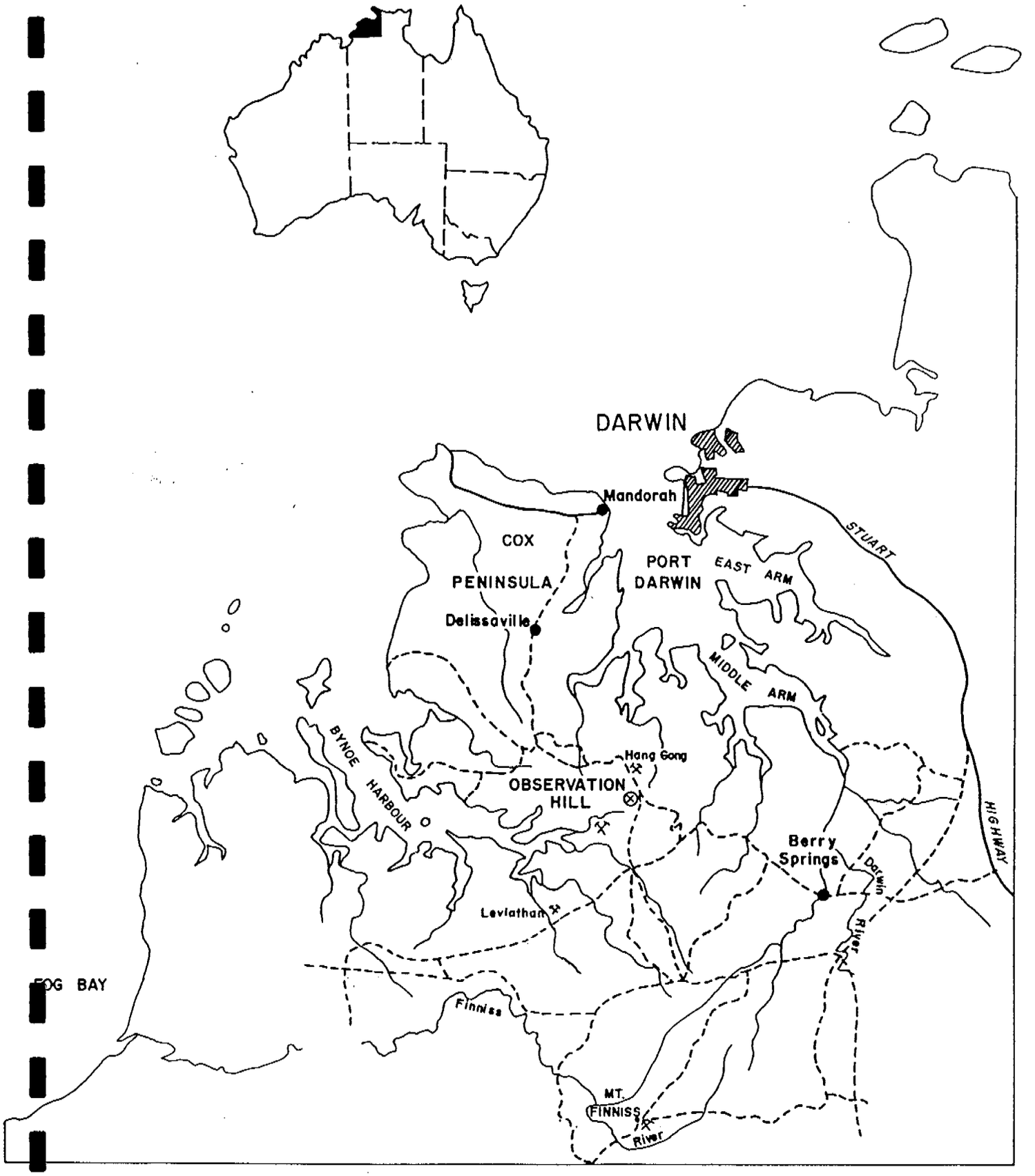
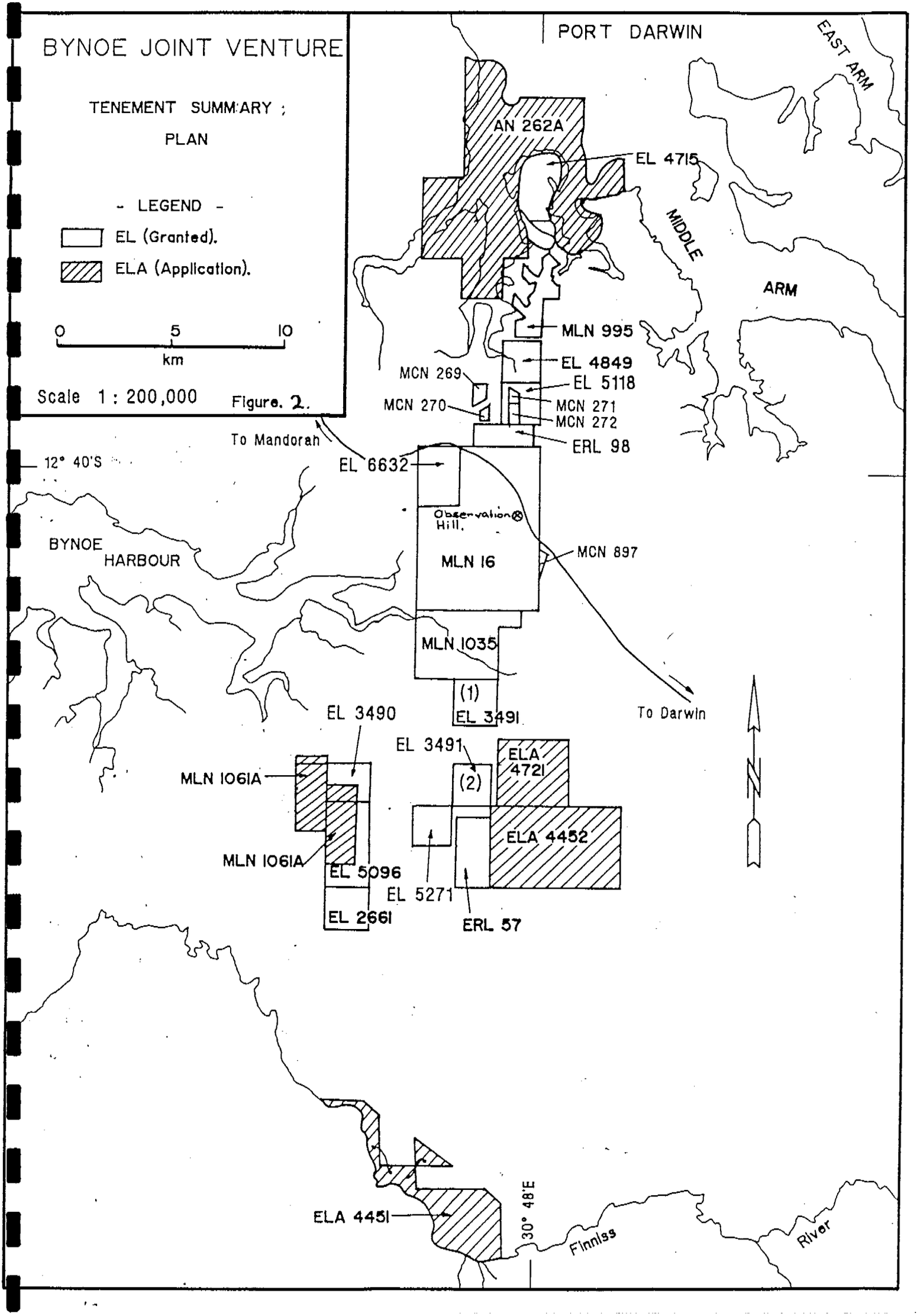


Figure. 1

LOCALITY MAP
COX PENINSULA


BYNOE JOINT VENTURE
TENEMENT SUMMARY ;
PLAN
- LEGEND -
EL (Granted).
ELA (Application).
0
5
10
km
Scale 1 : 200,000
Figure. 2.
PORT DARWIN
EAST ARM
MIDDLE
ARM
AN 262A
EL 4715
MLN 995
EL 4849
EL 5118
MCN 269
MCN 270
MCN 271
MCN 272
ERL 98
To Mandorah
12° 40'S
EL 6632
Observation Hill.
BYNOE
HARBOUR
MLN 16
MCN 897
MLN 1035
(1)
EL 3491
To Darwin
EL 3490
EL 3491
ELA 4721
(2)
MLN 1061A
MLN 1061A
ELA 4452
EL 5096
EL 5271
EL 2661
ERL 57
ELA 4451
30° 48'E
Finniss
River

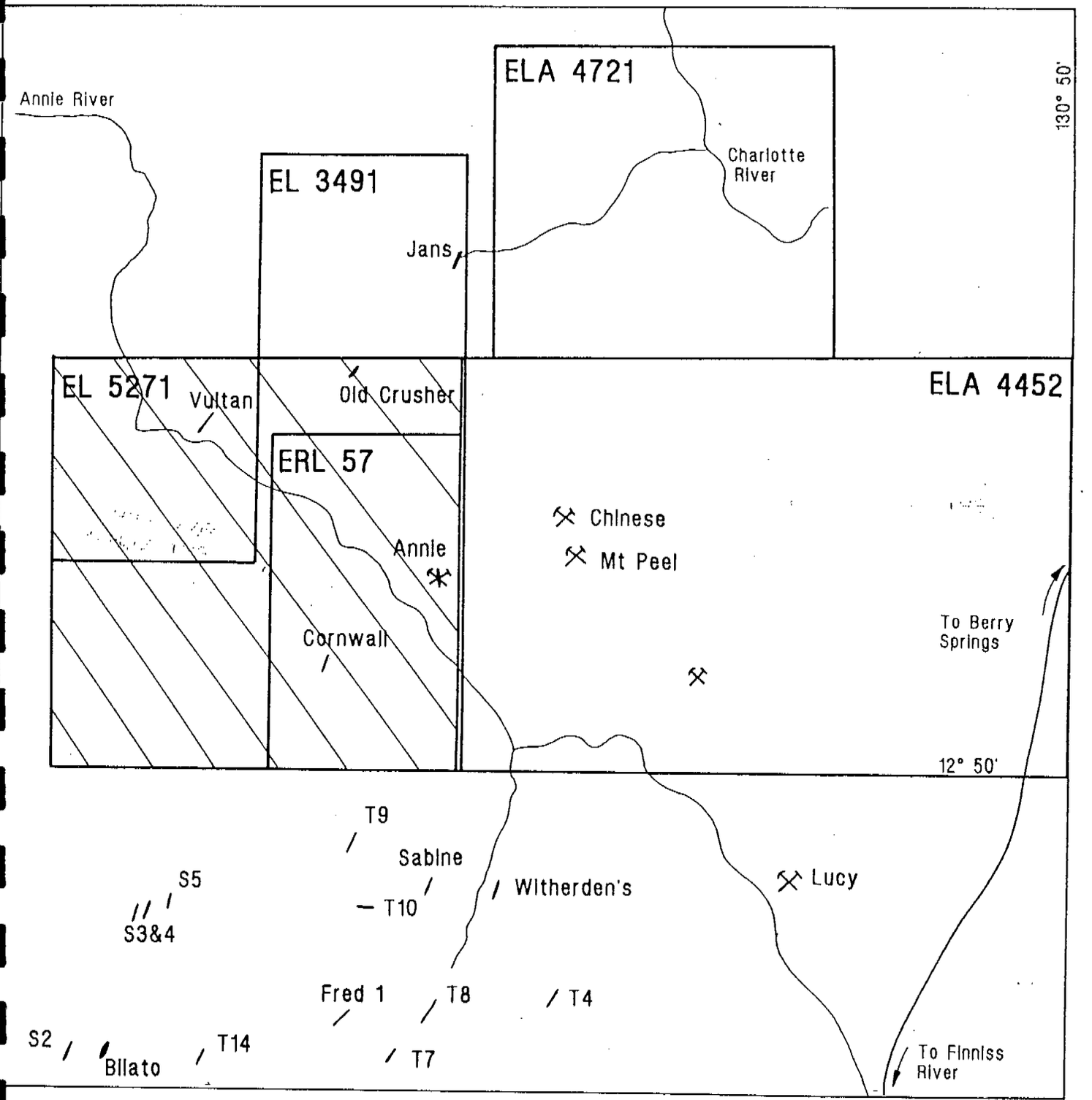


FIGURE. 3

BYNOE JOINT VENTURE - N.T.

EL 2155

Scale 1 : 50,000

TN

Origional Area
EL 2155.

/ pegmatite Deposits.

⚒ old. mines.

3. REGIONAL GEOLOGY

The Bynoe Joint Ventures target for exploration has been tantalum mineralisation (with associated cassiterite) within pegmatites, which intrude Burrell Creek Formation sediments in the region. These pegmatites collectively known as the Finniss River Pegmatite Belt intrude a belt up to 50 kms long and 5 - 10 kms wide from Darwin Harbour in the north to the Finniss River in the south. Within the Belt pegmatite swarms are concentrated in various locations probably reflecting the proximity of the basement Litchfield Complex. The Litchfield Complex is a poorly explored and mapped mass of granitoids west of the Finniss River Pegmatite Belt.

Within the relinquished portion of EL 2155 the Old Crusher pegmatite is the only pegmatite to be discovered.

Secondary accumulations of cassiterite and tantalite occur in braided stream systems within the broad mature drainages in the region. Within the relinquished portion of EL 2155 there is a 100 m wide section of the Annie River that has been relinquished.

Tantalite (Tantalite-columbite) is the major tantalum mineral recognised in the region although tapiolite has been recorded.

The Burrell Creek Formation is part of the Lower Proterozoic Finniss River Group and consists of predominantly siltstones and shales, with lenses of coarser grained sandstones and conglomerates. Black carbonaceous shales have been noted in the south of the Finniss River Pegmatite Belt.

Laterite caprock has been well developed throughout the region particularly in the north. The Annie Pegmatite has a thick ferruginous laterite cap in the east. The weathering and kaolinisation of the pegmatite feldspars mean these deposits are soft to dig up to 10 m from the surface. This is an important factor in the economic exploitation of these deposits.

Locally the Annie Pegmatite is one of the largest known deposits with a strikelength of approximately 300 m and widths up to 25 m. The pegmatite has two prominent massive quartz "cores". There is every indication these deposits are complex segregated rare element pegmatites.

4. EXPLORATION COMPLETED 1984 - 1985

This report relates only to work carried out on those areas of EL 2155 that are now incorporated in B.J.V. tenements ERL 57 and EL 5271.

4.1 1984 - 1985

An extensive ground reconnaissance survey was carried out south and east of the Annie Pegmatite. The Vulcan and Cornwall pegmatites were discovered.

Exploration grids were established over each of the pegmatite deposits, and they were geologically mapped.

A trenching programme using a rubber tyre backhoe was undertaken at each of the pegmatite prospects. The trenches were mapped, channel sampled and assayed for tin and tantalum.

Prospect	Trenching (metres)	Samples
Annie	274	23
Cornwall	230.2	11
Vulcan	175.9	2
Total	**680.1**	**36**

As a result of this work it was possible to conclude the Annie Pegmatite had the greatest potential for significant primary tantalum reserves.

In view of the success in exploration for tantalite/cassiterite mineralised alluvials within MLN 16 to the north (Figure 2) the Annie River downstream from the Annie Pegmatite was explored with a rubber tyred backhoe, for mineralised wash horizons. Initially 30 pits were excavated and 47 channel samples were collected. However the testwork failed to locate any significant mineralisation because :

i) The pits failed to reach the target depth, because the backhoe had an inadequit reach.

ii) Where wash was encountered, the water flows were so great as to make safe sampling of the complete wash horizon impossible.

The results of the 1984 - 1985 programme are fully reported in Annual Report 1985 EL 2155, dated 6th November 1985.

4.2 1985 - 1986

The 1986 field season concentrated on the Annie Pegmatite and Annie River alluvials.

A total of 105 m of backhoe trenching at the Annie Pegmatite was carried out to follow up extensions of mineralised zones outlined by the 1985 exploration programme. However the work was largely unsuccessful with only 12 m of pegmatite intersected and sampled.

The Annie pegmatite was auger drilled on lines 20 m apart and drill holes 5 m apart on each line. The holes were drilled to the base of the weathered zone. A total of 584.6 m of drilling was completed and 334.5 m of pegmatite intersected. The pegmatite zones were sampled over 1.5 m intervals, processed and the concentrate assayed for SnO_2, Ta_2O_5 and Nb_2O_5.

Details of the results of this evaluation of the Annie Pegmatite are included in the 1986 Annual Report EL 2155 dated 5th November 1986 by W. Clayton and M. Hatcher

4.3 1986 - 1987

With the competion of the evaluation of the soft rock potential of the Annie Pegmatite exploration in EL 2155 returned to the potentially mineralised alluvium in the Annie River. Two excavator trenches, this time using a 30 tonne excavator capable of reaching to the bottom of the wash were cut. The first trench was 100 m downstream from the Annie pegmatite, the second 500 m downstream from the Annie pegmatite.

As might be expected the northern end of trench 1,100 m from the Annie pegmatite encountered some strong cassiterite grades with relatively low tantalite values.

A 50 m section in the centre of the trench could not be sampled due to the influx of water and the instability of the trench walls. Although trench 1 results did not get material from the central most portion of the drainage, the results elsewhere were poor and did not indicate extensive zones of mineralisation alluvium associated with this drainage. Rather they suggested localised zones intimately associated with the Annie pegmatite.

Trench 2, 500 m downstream from the Annie pegmatite produced results with more encouragement than Trench 1.

Although major sections of the drainage could not be sampled due to water influx several sections of mineralisation, both cassiterite and tantalite rich were encountered. Whether this mineralisation came from the local Annie Pegmatite, or came from the many deposits scattered in the Annie catchment is not known.

Full details of this exploration programme are in the report to the N.T. Department of Mines and Energy titled 1987 Annual Report - Exploration Licence 2155 by M. Hatcher and F. Mollemans dated November 1987.

4.4 1987 - 1988

During 1988 exploration concentrated on the Annie River alluvials again. To clarify the results from the 1986 - 87 programme a trench between Trench 1 and 2 of this programme was cut (ie. 250 m downstream from Trench 1). After only 30 m of trenching there was a major machine breakdown and the excavator could not complete the work.

An auger drilling rig was used to complete the programme. Auger drilling at best will give an indicative result, particularly where the alluvium is wet. A substantial increase in grade can be expected when the alluvium is trenched or mined. There are several local examples where alluvial drill results were negative, but subsequent trenching indicated potentially viable grades. The results of the drilling were as expected, some interesting weak zones of mineralisation, but no indication of potentially economic concentrations. This may well have been a function of the method employed rather than the potential of the alluvial wash horizon.

The complete results of this programme are included in the report 1988 Annual Report - Exploration Licence 2155 by F. Mollemans November 1988.

4.5 1988 - 1989

After the initial evaluation period exploration concentrated first on the Annie pegmatite with a trenching and auger drilling programme and then on the mineralised alluvial potential of the Annie River. During 1988 - 1989 the exploration programme involved reconnaissance of the tenement to ensure that no mineralised deposits were relinquished when EL 2155 expired towards the end of 1989. Only the Old Crusher pegmatite was discovered. This deposit was geologically mapped, trenched and channel sampled. However, the size of the deposit and its remoteness from the projects region plantsite, led to the relinquishment of the tenement. Details of the results of this work are given in the report 1989 Final Report - Relinquished Area - EL 2155 prepared by M. Hatcher and dated December 1989.

5. CONCLUSION

This report refers to that portion of EL 2155, still retained by the Bynoe Joint Venture after the expiry of EL 2155. The report summarises the exploration carried out and refers to individual annual reports for details and plans.

Initially applied for because of the known mineralised pegmatite called the Annie, year 1 exploration discovered two other pegmatites the Cornwall and Vulcan. Backhoe trenching, mapping and channel sampling was carried out on the Annie, Cornwall and Vulcan pegmatites. The Annie was by far the largest deposit and the one most likely to have substantial tantalite reserves.

Year 2 exploration involved further backhoe trenching and auger drilling of the Annie pegmatite to a stage where a mineralised resource could be measured.

Year 3 and 4 were directed at the Annie River cassiterite/tantalite alluvial potential. Both backhoe and excavator trenching were employed with auger drilling to test the alluvium. Work was hampered by strong waterflows, but some positive results were achieved. At this stage results are considered inconclusive.

In the last year of the licence reconnaissance exploration for additional pegmatites was undertaken. One new pegmatite deposit the Old Crusher was discovered. The pegmatite was mapped, trenched and sampled, but failed to show sufficient economic potential to warrent retention.