BYNOE JOINT VENTURE

EL 2088

- RELINQUISHED AREAS REPORT -

(REPORT ON THE LICENCE AREA THAT
IS NOT THE SUBJECT OF THE APPLIED
FOR MINING TENEMENT - MLN 1061)

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Darwin Office
Perth Office

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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 2088 during the period January 1983 - January 1989. It is also the report for the licence that documents the results of exploration in those areas relinquished over the term of the licence.

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 77.3 sq km and 24 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. This partial reduction was granted on 6th January, 1988.

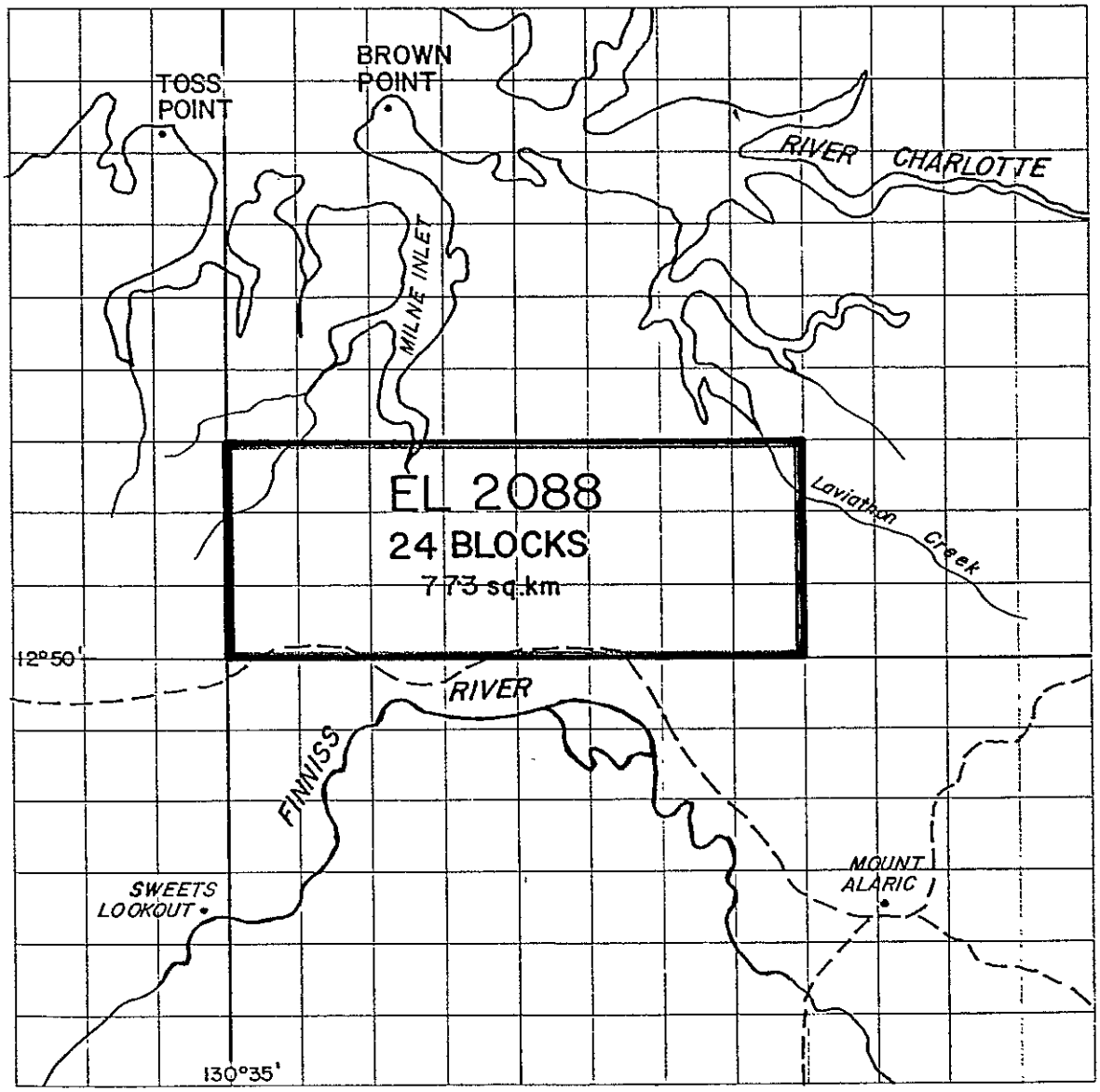
3. REGIONAL GEOLOGY

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.

FIGURE 1

Location of EL 2088 on Cox Peninsula N.T. as granted on 10 January 1983.



3.1 Burrell Creek Formation

This formation is part of the Lower Proterozoic Finniss 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 Finniss River Pegmatites. The pegmatites in the vicinity of the Leviathan Mine are only 3-4 km from the Litchfield Complex, which outcrops to the west of EL 2088.

3.3 Finniss River Pegmatites

The Finniss 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 pisolitic, and is best developed in the north and west of the region. Several separate periods of Tertiary Lateritisation are apparent.

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 HISTORY

Within Exploration Licence 2088 the Leviathan is the only mine on which production data is available, although several other outcrops of pegmatite are known. The Leviathan was discovered in 1886 by C. Clarke. By 1890, 400 tonnes of ore had been mined for two tonnes of cassiterite (ie 0.5% Cassiterite recovered). In 1900, the Bynoe Harbour Tin Mining Company was formed to work the Leviathan. The lode was 15 feet (4.6 metres) wide at the surface, but narrowed to six feet (1.83 metres). The lease was abandoned in 1909, with a recorded production of 170 tonnes of concentrate. Although production records were sketchy, the Leviathan was second to Hang Gong (189.5 tonnes) in the mineral field. No tantalite was recorded.

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. 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, illmenite, 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, Nb_2O_5, SnO_2 and Ta_2O_5 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. PREVIOUS EXPLORATION

6.1 1983 - 84 Exploration Programme

During 1983 - 84 a report was submitted detailing proposed exploration of Cox Peninsula tenements including EL 2088 during the period to 9th January 1984. This report indicated intensions to establish a base camp within 1 km of the then Darwin/Mandorah Road for up to 14 men with major occupation from April - November. It also included plans to develop surveyed grid lines, for planned auger drilling of significant mineral discoveries, along with access road building to prospects and deep infill trenching to follow-up mineralised deposits to depth. The main purpose of the report was to indicate that these activities would be carried out with minimal disturbance to the environment.

Initial exploration of the licence area comprised base map production using helicopter and 4WD ground survey, photogeological interpretation and literature search of Department of Mines and Energy files for the area to assist in these endeavours. Additional work involved a chain and compass mapping programme of Leviathan Mine.

6.2 1984 - 85 Exploration Programme

Work in this season involved discussions initially with Department of Mines and Energy regional mapping staff, particular Mr B. Pietch, in an overall evaluation of the potential of EL 2088 with the view to the 50% reduction of the licence area at the end of the 1984 - 85 season.

A major part of this work focused on analysis of photogeological information particularly on the western granite terrain. Within the EL's originally granted area the Litchfield Complex granites and granodiorites comprised approximately 80%. The aim of the current seasons work was to confirm the contact between the Litchfield Complex and the metasediments of the Burrell Creek Formation west of Leviathan Mine. Additional work was aimed at identifying possible country rock rafts within the batholythic granite in the west of the licence area.

This work indicated a relatively sharp granite - metasediment contact, so efforts were then concentrated in the eastern half of the licence area with the western half being nominated for relinquishment at the end of the season (see Figure 2).

6.3 1985 - 86 Exploration Programme

During 1985 - 86 exploration was concentrated on investigation of Leviathan Mine and its immediate surrounds. Additional ground reconnaissance activities were carried out in the remainder of the tenement, with a view to relinquishment of 50% of the area at the next anniversary date. No additional pegmatites were located in this area. As a result of this work those blocks indicated by cross-hatching in Figure 3 were relinquished.

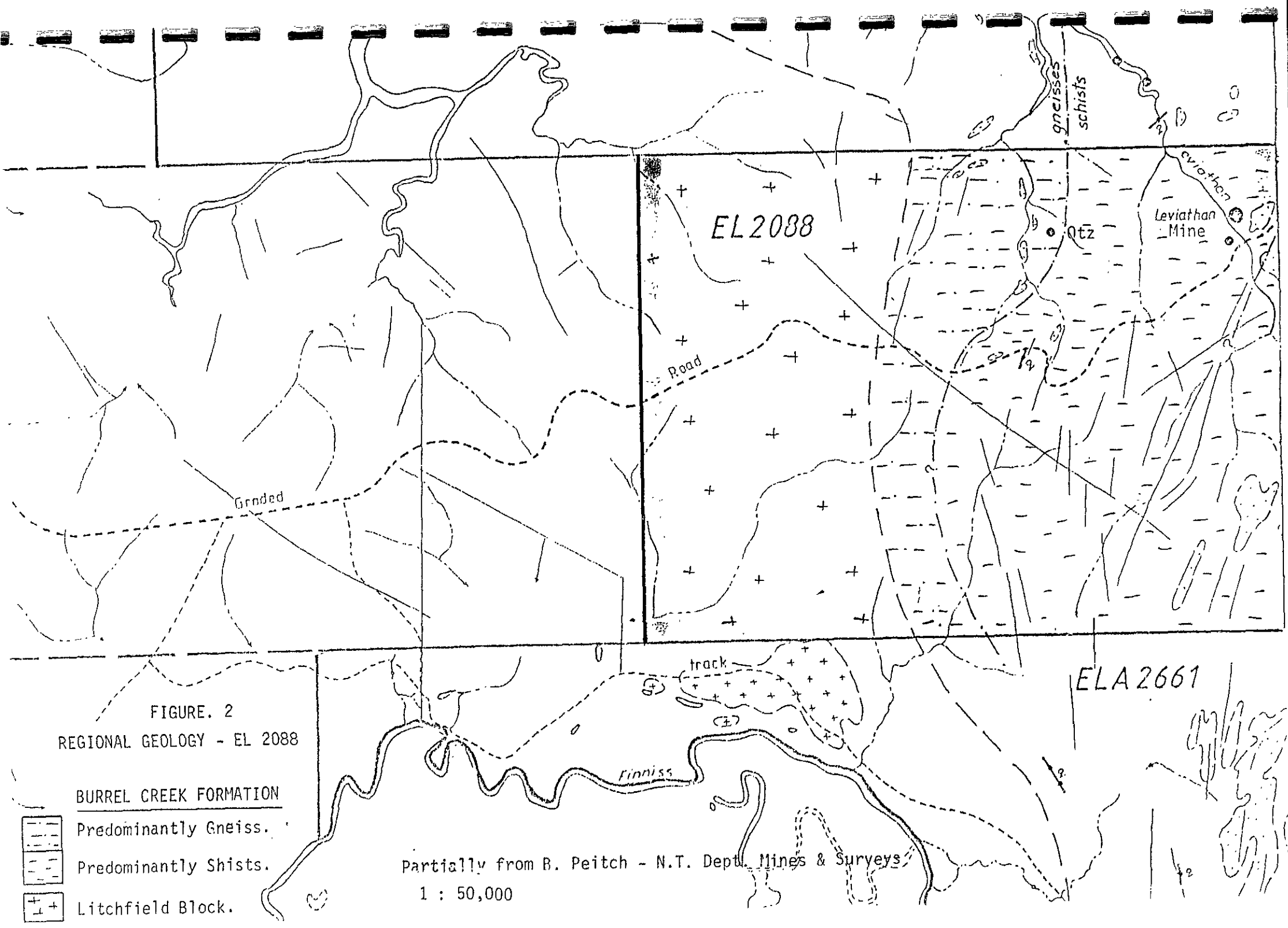


FIGURE. 2

REGIONAL GEOLOGY - EL 2088

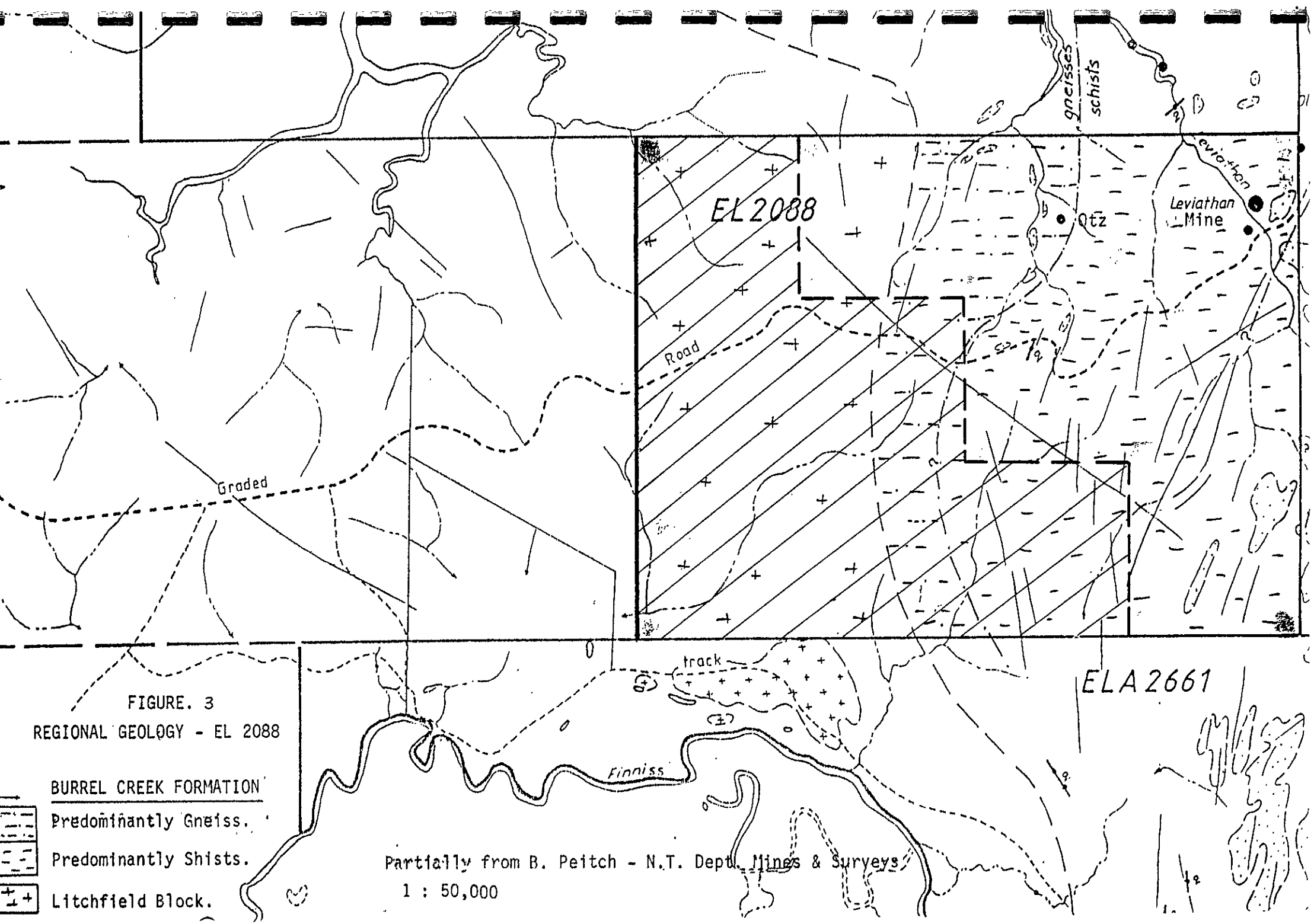


FIGURE. 3
REGIONAL GEOLOGY - EL 2088

BURREL CREEK FORMATION

Predominantly Gneiss.

Predominantly Shists.

Litchfield Block.

Partially from B. Peitch - N.T. Dept. Mines & Surveys
1 : 50,000

6.4 1986 - 87 Exploration Programme

During 1986 - 87 exploration was again centred in the Leviathan area, including the assessment of both pegmatite and alluvial potential. Ground reconnaissance continued in the remainder of the ground with major emphasis on areas to the west with a view to relinquishment of a further 50% at the next anniversary date. Those blocks stippled in Figure 4 were subsequently relinquished.

6.5 1987 - 88 Exploration Programme

During 1987 - 88 exploration included further evaluation of the alluvial potential of Leviathan Creek. In addition, a regional programme of airphoto interpretation resulted in the discovery of a significant number of exploration targets in the remaining blocks of the licence. As these targets were all located within the eastern two blocks of the licence (Figure 5), application was made for partial reduction of the licence, so these two blocks could be examined in further detail in 1988 - 89. The relinquishment block contained a significant degree of laterite caprock and pisolitic gravel cover through a large part of its extent with occasional outcrops of milky quartz dykes.

7. 1988 - 89 PROGRAMME COMPLETED

During the 1988 - 89 exploration targets identified in the previous season and upon which exploration trenching and sampling had commenced, were subject to follow-up exploration effort as indicated by the previous seasons results. This area is now included in a mining lease application shown in Figure 5. No additional potential was considered to exist in the remaining areas of EL 2088 outside the MLN application area, after additional ground reconnaissance was completed.

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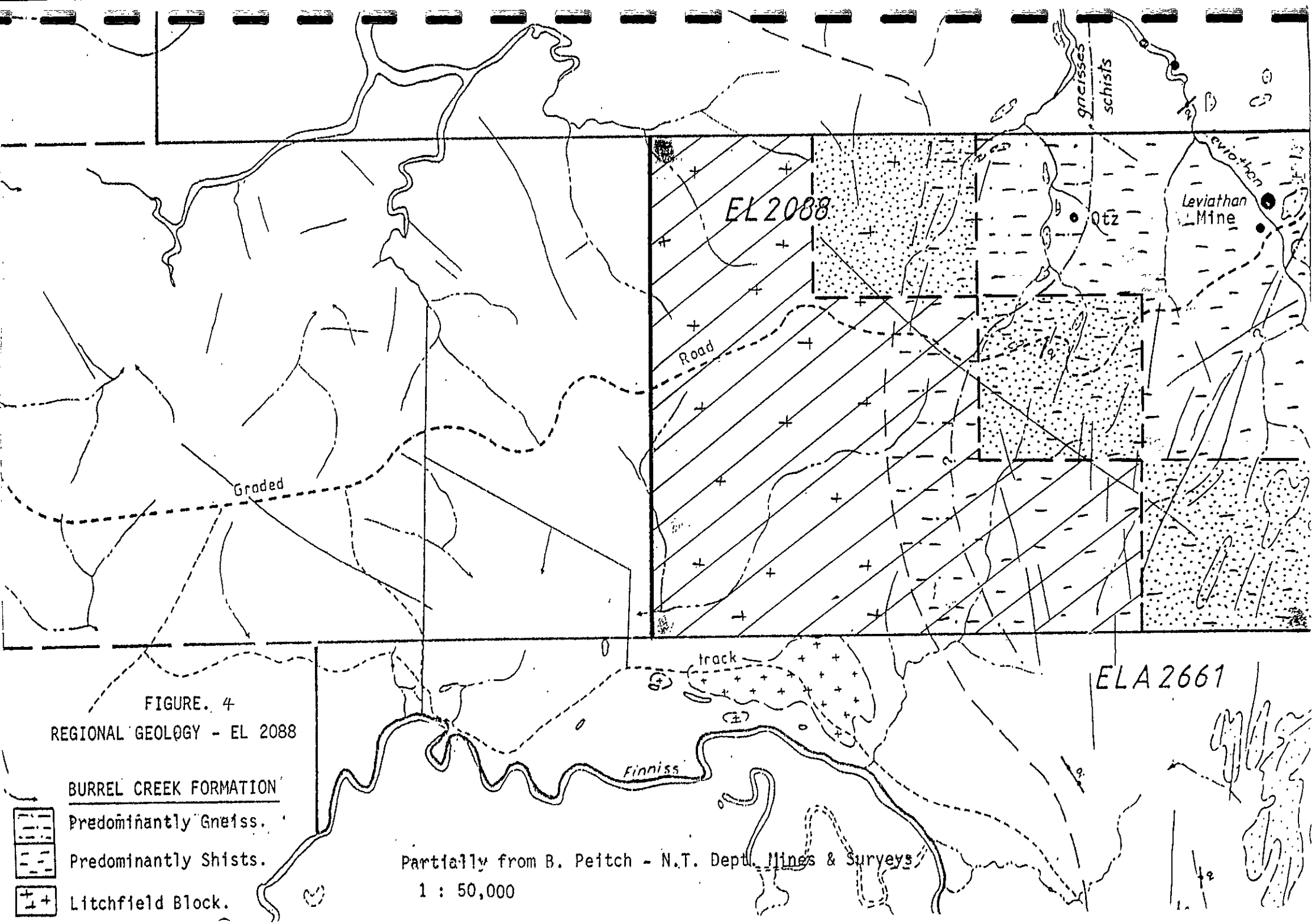

FIGURE. 4
REGIONAL GEOLOGY - EL 2088

BYNOE JOINT VENTURE

TENEMENT SUMMARY PLAN

- LEGEND -

EL (Granted).

ELA (Application).

0 5 10 km

DATE: 21/7/88.

Figure. 5