

WESTERN MINING CORPORATION LIMITED
EXPLORATION DIVISION

OPEN FILE

ANNUAL REPORT

FOR E.L. 4833 - NORTH BROWNS RANGE
FOR YEAR ENDING 10TH DECEMBER, 1989

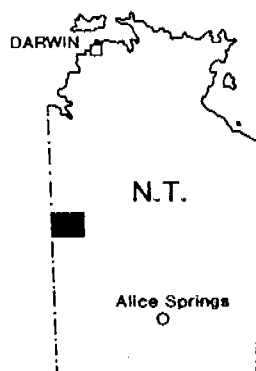
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EXPLORATION DIVISION

Title: ANNUAL REPORT FOR E.L. 4833 - NORTH BROWNS RANGE
Period: 1ST APRIL, 1989 - 10TH DECEMBER, 1989
Author: M. S. CONAN-DAVIES
Location: TANAMI 1:250,000 SHEET SE 52-15
Commodity: Au, (Pb, Zn, Ag)
Date: 9TH DECEMBER, 1989
Keywords: E.L. 4833, TANAMI, GEOLOGY, GEOPHYSICS, GEOCHEMISTRY,
GOLD, BASE METALS



ABSTRACT

In 1989 WMC entered into a joint venture agreement with PNC to explore for gold and base metals with PNC Exploration (Australia) Limited. This report summarises exploration results obtained by WMC on E.L. 4833 for the period ending 10th December, 1989. Exploration activities included detailed regional studies of available data and reconnaissance field checks.

Expenditure during the period was \$9,650.

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1. INTRODUCTION

Exploration Licence No. 4833 is one in a series of E.L.s operated under a joint venture agreement with PNC Exploration (Australia) Limited. It is located some 750 km north-west of Alice Springs adjacent to the Northern Territory - Western Australia border, see Figure 1. The nearest service town is Halls Creek, 430 km to the north-west. Access to the area is via the well maintained Tanami Highway, and sandy tracks installed by PNC during an earlier phase of exploration.

This is one in a series reports which presents the results of exploration by WMC on ground covered by a joint venture agreement between WMC and PNC known as the Western Desert Joint Venture. (WDJV). A summary of licences covered by the WDJV and additional licences held by WMC in its own right and being explored concurrently is included in Table 1. Each report covers work carried out for the period beginning 1st April, 1989 and ending 10th December, 1989, corresponding to the commencement of the J.V. and the anniversary date of the tenement respectively. PNC will report their activity separately.

Although the commencement date of the J.V. agreement is 1st April, 1989 it was not possible to start field work until July, which resulted in a limited but intense period of active exploration during the 1989 season.

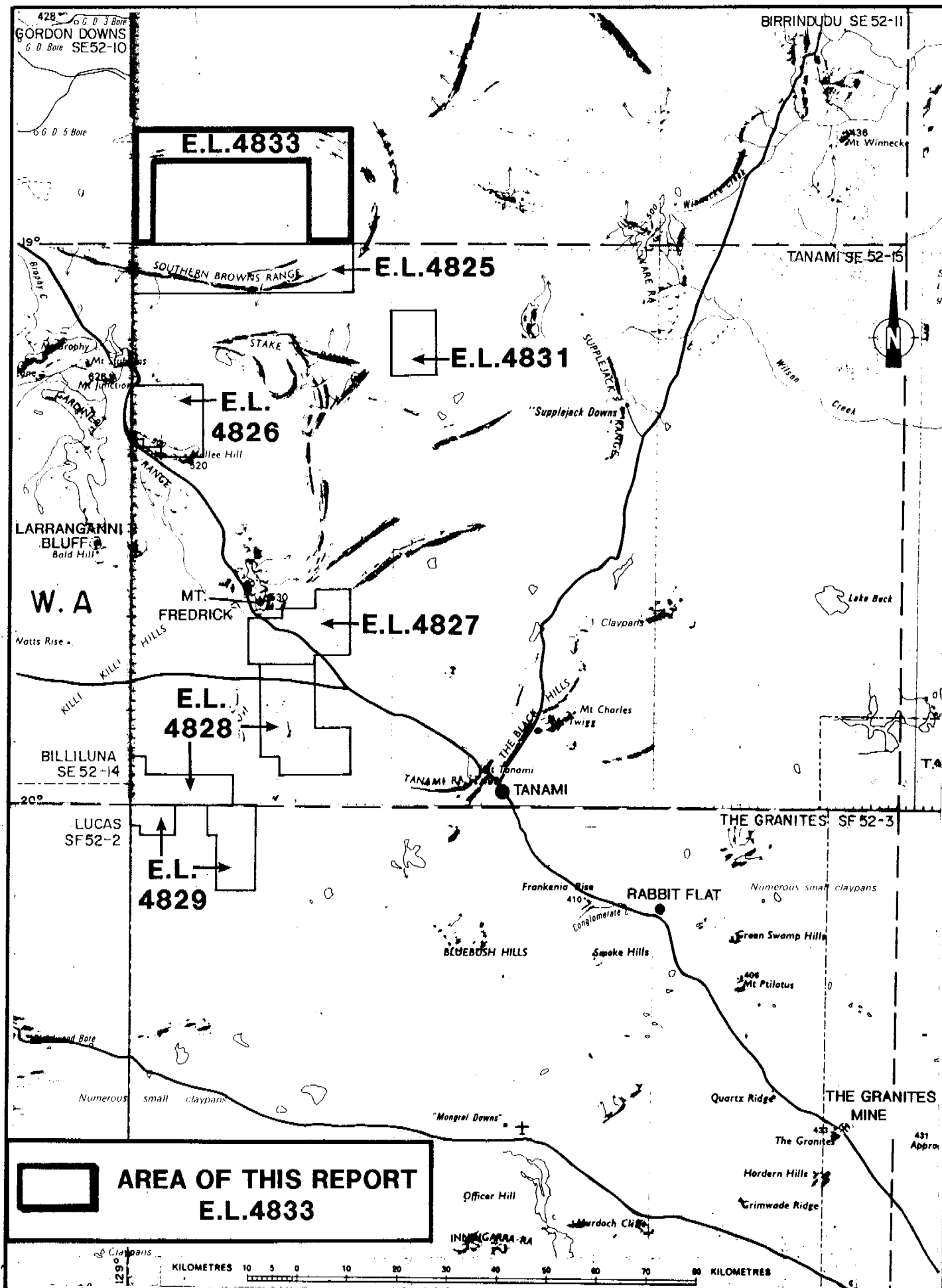
The aim of exploration is the search for stratabound and vein gold deposits in areas with similar geology to The Granites and Tanami gold mines. These mines occur in units of the early Proterozoic Granites-Tanami Complex.

Exploration activities conducted by WMC this year consisted of an assessment of currently available open file and published data, as well as data available from PNC. Following this review of data a programme of reconnaissance field checks were made and these are summarised in this report.

2. LOGISTICS

The location of the area necessitated a high cost for the establishment and servicing of an exploration program. Engaged in a joint venture project, many camp facilities were already established by PNC and these were shared, with WMC paying for supplies and the use of camp facilities.

Personnel were flown into the area by light aircraft from Alice Springs on a three weeks in, one week out roster. This was possible due to the availability of PNC's landing strip some 30 km from the PNC camp. Freight was transported by road via Halls Creek and Alice Springs.



WESTERN MINING CORPORATION LIMITED - EXPLORATION DIVISION			Scale 1:1 000 000
Map Ref.	SE/SF 52	LOCATION PLAN E.L.4833 WESTERN DESERT JOINT VENTURE — N.T.	Figure No. 1
Date	6.12.80		Plan No.
Author	D.A.B. M.C.D.		7048/56
Revised			

WMC TENEMENT STATUS SUMMARY

WESTERN DESERT J.V.

<u>E.L. No.</u>	<u>Area km²</u>	<u>State</u>	<u>Grant Date</u>	<u>Expiry</u>
4825	438	N.T.	10.12.85	09.12.91
4826	213	N.T.	10.12.85	09.12.91
4827	231	N.T.	10.12.85	09.12.91
4828	422	N.T.	10.12.85	09.12.91
4829	177	N.T.	10.12.85	09.12.91
4831	113	N.T.	10.12.85	09.12.91
4833	483	N.T.	10.12.85	09.12.91
80/693	110	W.A.	20.01.87	19.01.92
80/694	120	W.A.	20.01.87	19.01.92
80/851	70	W.A.	06.10.87	05.10.92
80/852	100	W.A.	06.10.87	05.10.92

TANAMI 100% WMC

<u>E.L. No.</u>				
6457 (Killi Killi)	467	N.T.	23.05.89	22.05.95
6458 (Pargee)	64	N.T.	23.05.89	22.05.95
6459 (Claypan Well)	103	N.T.	22.05.89	21.05.95
6567 (Nongra)	46	N.T.	06.11.89	05.11.95

TABLE 1

Punctures to field vehicles was a serious problem and considerable field time was lost due to changing and repairing tyres. Some 200 punctures were encountered in three months. The use of specialised tyres is being investigated for use in the 1990 field season.

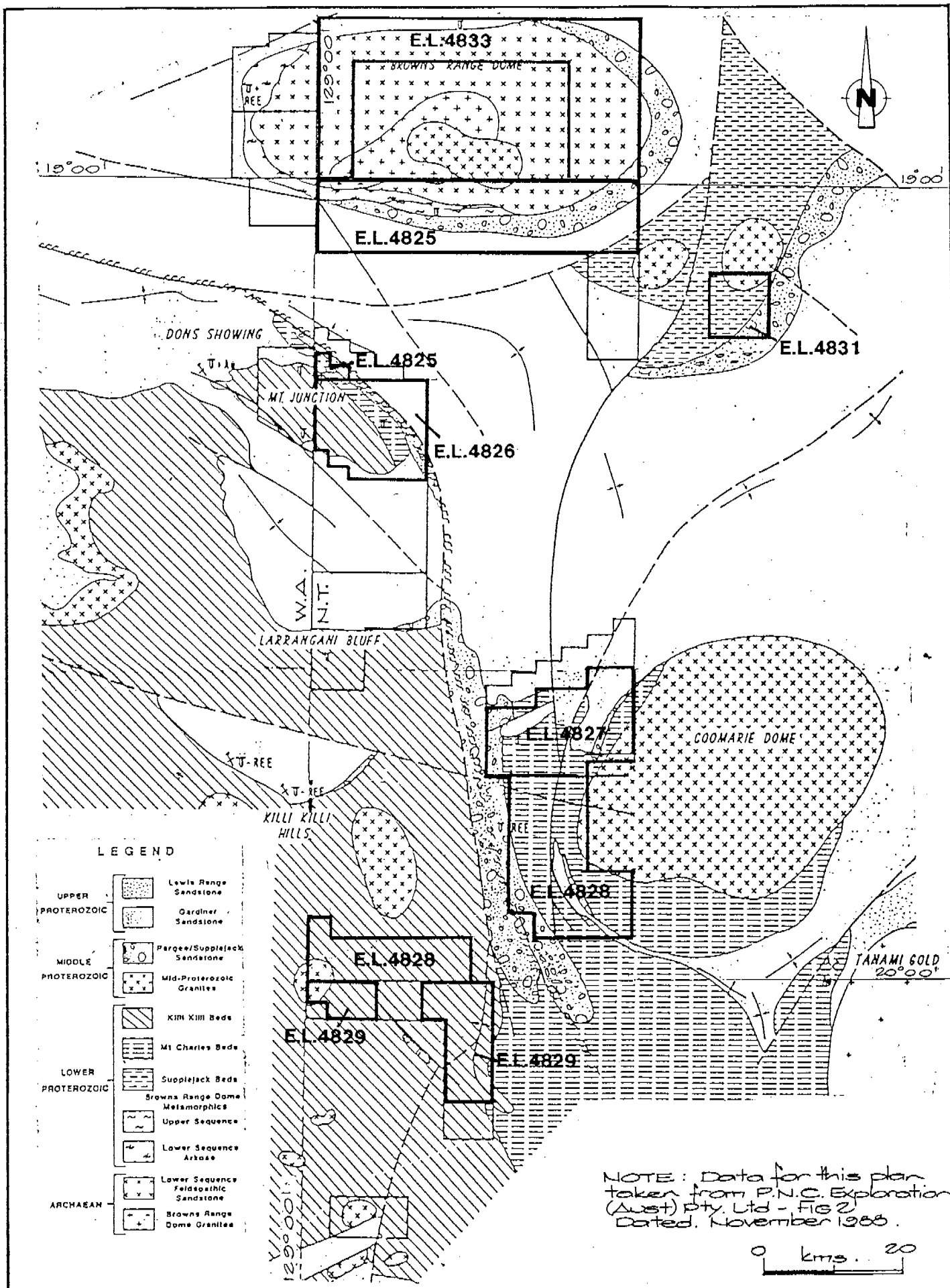
Satellite position-fixing, using a GPS receiver, was utilised for obtaining AMG control of grids and airphoto interpretations. This was necessary due to the lack of topographic or cultural features in the Tanami from which AMG location could be determined accurately.

3. REGIONAL GEOLOGY

The exploration conducted by the Western Desert Joint Venture are directed at the Archean to Middle Proterozoic Granites-Tanami block. The reader is referred to a comprehensive report by Blake, Hodgson and Muhling (1979) and the extensive open file reports by PNC. These works have provided the bulk of background data from which the regional exploration by PNC has been based. A brief summary of the report by Blake *et al.* with modifications based on PNC work is set out below. A schematic regional geology map provided by PNC is illustrated by Figure 2, and a stratigraphic column is illustrated in Figure 3.

Stratigraphic drilling by PNC in 1988 has indicated the presence of Archean rocks within the Tanami Complex. The oldest rocks were obtained from the centre of the Browns Range Dome and have been dated by the BMR at 3.2-3.4 b.y. Rocks which form the Archean core have been informally named the Jilla Jilla Complex by PNC. Principal rock types of the Jilla Jilla complex include; granites, gneisses, mafic intrusives and amphibolite facies meta sandstones.

The Tanami Complex is a series of very poorly exposed meta-sedimentary and meta-volcanic rocks of greenschist facies metamorphism. Areas of outcrop are usually pervasively weathered, lateritized or silicified making geological mapping difficult. The complex is divided by the BMR into five units based on the differences in interpreted depositional environment of each unit, and their geographical separation. The lack of recognised marker beds makes stratigraphic correlation of these subdivisions difficult. PNC has reported an unconformable contact between Mt. Charles beds and younger Killi Killi beds. Of these units the Mt. Charles beds, Killi Killi and Nongra beds occur on tenements under investigation. The most important of these units is the Mt. Charles beds which is host to all the known gold mineralisation including The Granites and Tanami gold mines. It is in this unit that exploration has concentrated.



WESTERN MINING CORPORATION LIMITED - EXPLORATION DIVISION			Scale
Map Ref.		GEOLOGICAL INTERPRETATION PLAN TANAMI AREA. (After P.N.C. 1988) WESTERN DESERT JOINT VENTURE.	Figure No. 2.
Date	11.12.88		Plan No.
Author	M.C.D. D.A.B.		
Revised			

THE GRANITES-TANAMI BLOCK

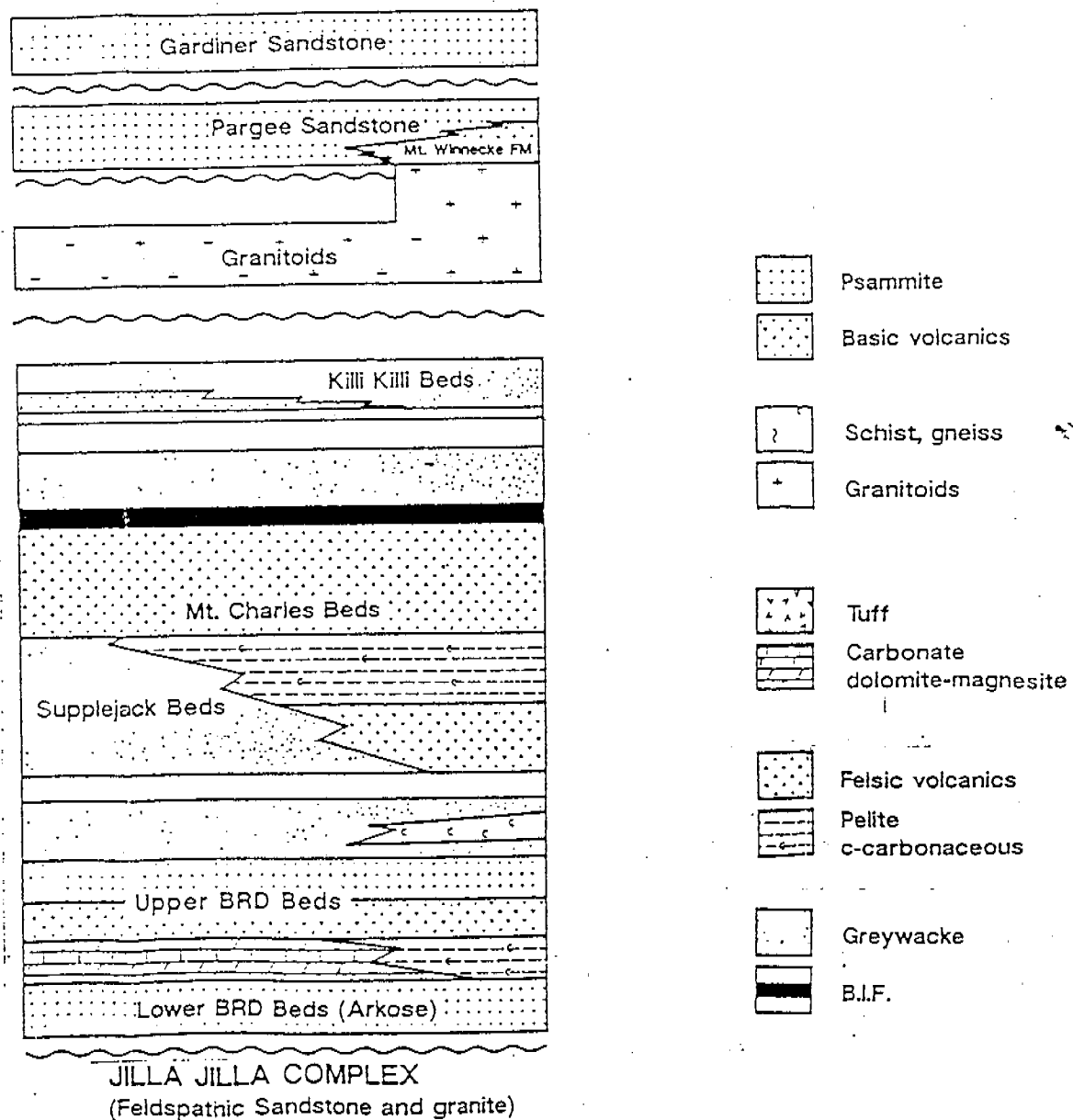


Figure 3: The Granites-Tanami Block Stratigraphy

(modified after PNC, 1987)

The Mt. Charles beds are characterised by thin bedded laminated silicified and cherty siltstones and phyllitic siltstones. These vary widely in colour from black to red, green and white. The sediments are often well banded and in certain cases contain sufficient magnetite, hematite or unspecified iron oxides to be termed as Banded Iron Formation. The high proportion of fine grained sediments in the Mt. Charles beds leads to the interpretation that they were deposited in a quiescent shallow water environment free of large influxes of terrigenous material. Restricted circulation of basin waters may have resulted in the deposition of carbonaceous and pyritic shales.

The Killi Killi beds are best exposed in the western portion of The Granites-Tanami block. These rocks consist of medium to fine grained greywackes forming beds about 1 m thick. Cross-bedding, graded beds and coarse gritty intervals are also present.

In contrast to the Mt. Charles beds the Killi Killi beds are interpreted to have been deposited by turbidity currents, in water deeper than those which deposited the Mt. Charles beds. Clasts within the sediments suggest a mixed igneous-metamorphic provenance.

The Pargee Sandstone is a transitional tectonic domain clastic sediment of intermediate age between the older Tanami complex and the younger Birrindudu Group sediments. The Pargee is a possible lateral equivalent of the volcano-sedimentary Mt. Winneke Formation and the Suplejack Downs Sandstones. Poorly sorted, medium grained lithic, sub-lithic and quartz arenites are the principal lithologies of the Pargee Sandstone. These are tentatively interpreted as being of shallow marine origin. The rocks are steeply dipping to overturned with tight folds. The formation is often intensely silicified with abundant quartz veins.

The Birrindudu Group is a platform sequence of sediments which overlie unconformably the Pargee Sandstone and older units. It is the most extensive pre-Cainozoic sedimentary package within the exploration area. It forms most of the prominent hills ridges and buffs. The rocks consist of relatively undeformed and unmetamorphosed sandstones. Dating by K-Ar and Rb-Sr of glauconite give an age of 1560 ± 20 my (Page *et al.* 1976) for the top of the Gardiner Sandstone. The presence of glauconite and stromatolites is indicative of a shallow marine depositional environment.

Granitic intrusions of the late Early Proterozoic are widespread throughout the Granites-Tanami block. Isotopic ages for the granitic intrusions are in the 1820 to 1700 m.y. time span (Page *et al.* 1978). The outcrop distribution underscores the widespread nature of granite intrusions within the block. Many of the intrusions are covered by Cainozoic sediments and their existence is only inferred from aeromagnetism, or dome structures in platform rocks. The exposed granites form a lithologically consistent suite of biotite adamellites.

Minor mafic and ultramafics have been recorded on the margins of Coomarie Domes within Mt. Charles and Killi Killi units of the Tanami Complex. Gabbroic sills are also noted in Killi Killi beds in southern areas of the Billiluna sheet area.

4. EXPLORATION RESULTS

4.1 Regional Investigations

Initial interest in the Tanami Block was generated from a review of published geological and geophysical data. Through our past experience in Proterozoic terrains both in Australia and overseas it became apparent that a large part of the Granites-Tanami block was prospective for gold mineralisation. It was determined that a more thorough appraisal of all available data was necessary. Various sources of data were reviewed and are discussed below.

(i) Open File Data Review

Open file reports have been reviewed and the relevant data collated. The open file reports provide a valuable supplement to published geological maps. Additional exploration data on current tenements was made available to us by PNC upon commencement of the W.D.J.V.

(ii) Mine Visits

Visits were arranged to the two currently producing mines in the Tanami block located at The Granites and Tanami.

(iii) TM Imagery

TM Imagery covering the Tanami block has been purchased and processed by WMC. Images were generated using various band combinations and digital filters. Interpretation of the images compliments regional geological maps.

(iv) Geophysics

The major regional geophysical data base has been image-processed BMR aeromagnetics. This has been superseded in selected areas by open file magnetic surveys, PNC aeromagnetic surveys, and recently released NTDME 1:100,000 coverage of The Granites 1:250,000 sheet. This data is currently being processed and enhanced using WMC facilities.

4.2 Geology

E.L. 4833 is within the northern margin of the Browns Range Dome. With exception of prominent ridge forming outcrops of Gardiner Sandstone the area contains only scarce outcrop sand, black soils and clay obscures the outcrop. In the N-E corner of the lease are outcrops of probable lower proterozoic granite forming the core to the Browns Range Dome.

Interest in E.L. 4833 stems from its similarity in structural and tectonic style to that of E.L. 4825 which occurs on the southern margin of the Browns Range Dome. Both areas have similar lithologic and geophysical characters as the Granites and Tanami gold fields. A reconnaissance ground survey was undertaken to provide familiarisation with the lithologies and structural styles within the J.V. area.

5. PROPOSED PROGRAMME

This area has received little attention from WMC during 1989. Activity on the E.L. will depend on further encouragement received from E.L. 4825. Reconnaissance geological and geochemical traversing using aeromagnetic surveys for initial targeting will be undertaken. Some ground magnetic profiling may be required.

6. EXPENDITURE

Expenditure incurred from the inception of WMC involvement in the area to October 31, 1989 is summarised below. These figures reflect mainly the regional studies described above, which have been distributed between the various tenements in the overall project.

	<u>Total</u>
Geology	5,619
Geophysics	911
Geochemistry	599
Drafting	379
Analysis	125
Leasing	260
Administration	475
Overheads	1,282

	\$9,650
	=====

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