

TANAMI JOINT VENTURE

ZAPOPAN N.L.

KUMAGAI GUMI CO LTD

KINTARO METALS PTY LTD

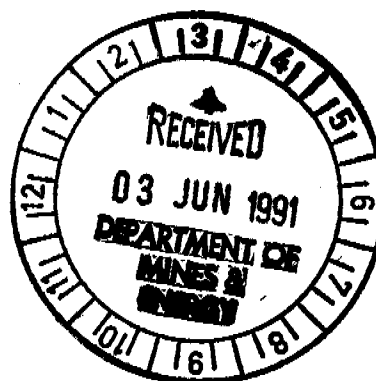
EXPLORATION LICENCE 5418

TANAMI REGION

NORTHERN TERRITORY

SECOND ANNUAL REPORT - 1991

CR 91 / 343



TANAMI  
THE GRANITES  
MT SOLITAIRE

1:250,000 SHEET SE 52-15  
1:250,000 SHEET SF 52-3  
1:250,000 SHEET SF 52-4

MAY 1991

## CONTENTS

1. Summary
2. Introduction
3. Previous Work
4. Exploration Completed in Year 2
  - 4.1 Geochemical sampling
5. Expenditure
6. Forward Programme

## FIGURES

- |          |                              |
|----------|------------------------------|
| Figure 1 | Location Map - EL 5418       |
| Figure 2 | EL 5418                      |
| Figure 3 | Sample Locations and Targets |

## APPENDICES

- |              |                              |
|--------------|------------------------------|
| Appendix I   | Sample descriptions          |
| Appendix II  | Geochemical Analysis results |
| Appendix III | Petrographic descriptions    |

1. SUMMARY

Reconnaissance geochemical sampling by helicopter of six target zones has highlighted the problems associated with exploration in a terrain which is largely covered by aeolian sand.

Only one target, which has abundant outcrop, was adequately sampled. A 0.63ppm Au value was returned from quartz veining in the nose of an anticline.

Elsewhere, poor laterite and soil development and extensive aeolian sand precluded good geochemical sampling.

## 2. INTRODUCTION

Exploration Licence 5418 was granted on 3 May 1989 to Harlock Pty Ltd. A 50% interest was subsequently transferred to Zapopan NL. Harlock holds its interest in trust on behalf of Kumagai Gumi Co. Ltd. (30%) and Kintaro Metals Pty Ltd (20%). Zapopan, Kumagai and Kintaro comprise the Tanami Joint Venture "TJV".

The EL is situated 40km - 80km east of Rabbit Flat and 20km-70km NNE of The Granites gold mine, and covers an area of 1594 sq km, equivalent to 495 blocks (Figures 1 and 2).

There are no access roads into the area, the nearest access being the roads from The Granites to Rabbit Flat or The Granites to Mt Davidson Outstation.

The area is generally covered by sandplains, with a monotonous cover of spinifex and small shrubs, with a few low rises and pediments covered by iron-rich rubble and weathered rock. Red earth plains comprising recent alluvial and colluvial material are often covered with thick mulga scrub. A large west trending floodout occurs to the south of the licence area and sand dunes are present along the northern boundary.

The EL lies totally on Aboriginal land within the Central Desert Land Trust area.

A brief outline of previous geological work, local geology and landforms is to be found in the first annual report. Year 1 exploration comprised data acquisition and interpretation.

This report details work carried out in the second year of the licence comprising laterite and rock chip sampling.

Prior to undertaking this sampling, the Central Land Council and Aboriginal Traditional Owners carried out a Sacred Site Clearance survey of the licence area.

### 3. PREVIOUS WORK

In the first year of EL 5418, the following exploration was completed:

- acquisition of colour aerial photography over the licence area.
- compilation and preliminary interpretation of available open-file reports, airborne magnetic data, aerial photography and Landsat imagery.

This work is detailed in the first annual report for EL 5418.

### 4. EXPLORATION COMPLETED IN YEAR 2

#### 4.1 Geochemical Sampling

A preliminary helicopter-borne geochemical sampling programme was completed in August 1990. Areas targetted for sampling were those which had magnetic anomalies. The airborne magnetic data (First Annual Report) show these cover a relatively small area.

Sample locations and targets are shown on figure 3. Sample descriptions and results are appended (Appendices I and II).

All samples were submitted to Analabs for "Gold +26" analyses by NAA and Cu, Pb, Zn and Ni by method 140.

Petrographic descriptions of samples 80083 and 80292 are appended (Appendix III).

#### Target 1 (7750000N, 660000E)

Comprises two prominent ridges of ferruginous quartzite and banded iron-formation. Fifteen (15) rock-chip samples were collected (80281-80295).

The western ridge shows a SSE-plunging anticlinal fold closure at the southern end with several small parasitic folds. Much scree obscures the hanging-wall sequence. The core of the anticline appears to be purple sediment.

The eastern ridge strikes 350° with ferruginous quartzite dipping steeply to the east. The quartzite has a number of small parasitic folds at its northern end. Purple sediment is poorly exposed in the footwall of the quartzite. A graphite-quartz-muscovite slate with sericitized andalusite porphyroblasts occurs in the hanging-wall of the quartzite. Sample 80292 was thin-sectioned and a description is appended (Appendix III).

The ferruginous quartzite generally carries Cu and Zn values up to 200ppm with a maximum of 346ppm Cu and 212ppm Zn. A sample from a 070° thin quartz vein in the nose of the anticline on the west ridge assayed 0.63ppm Au.

**Target 2 (7778000N, 672000E)**

This is a 4km x 2km dipole anomaly. Reconnaissance showed the area to be moderately covered with laterite of a coarse, nodular type, sometimes cemented, but usually as an extensive lag mixed with some fine quartz. Seven (7) samples (80091-92; 80361-65) were collected. They show no particular anomalism.

**Target 3 (7785000N, 680000E)**

This is a series of magnetic highs forming an acruate zone a bit like a flattened-U. The western side is predominantly alluvium and aeolian sand covered but the eastern end has minor outcrop of banded ferruginous quartzite (iron-formation) and some nodular laterite from near the base of the profile. Fifteen samples (80076-90) were collected in this area, 6 being lateritic and 9 rock chips.

Sample 80082 of banded ironstone returned a value of 8ppb Au.

Sample 80083, a graphitic quartz-mica schist (thin-section description in Appendix III) returned slightly elevated Ni, Ba, La, Ce, Sm, Yb in comparison with other samples in the area. However, these values are not anomalous for those elements.

**Target 4 (7760000N, 655000E)**

Comprises a 2km x 2km 'bulls-eye' magnetic anomaly. The area is largely covered with aeolian sand and sampling was not effective. Four samples of float from areas of lag were collected (80296-99). These comprise lateritic gravel, lateritized phyllite, and ferruginous quartzite.

**Target 5 (7785000N, 654000E)**

Comprises a 3km x 1km north-south trending magnetic anomaly lying to the north of a NE-trending quartz-filled fault zone. Due to poor photography cover of this area only one sample was collected (80366). This comprised good pisolitic laterite and is slightly anomalous in Eu, Yb and very anomalous in Hf, suggesting a possible zircon source.

**Target 6 (7790000N, 656000E)**

Comprises a 3km x 5km area of magnetic anomalies in the north of EL 5418 in the south-east corner of the Tanami 1:250,000 sheet. The whole area is covered by aeolian sand and no sampling was carried out.

5. EXPENDITURE

\$

Aerial Photography	681.00
Assaying	1568.96
Consumables	338.35
Drafting/Printing	247.55
Geological Consultants	384.17
Helicopter Hire	3150.00
Land Councils	4573.76
Report Preparation	500.00
Salaries and Wages	6846.25
Surveying/Griding	2106.00
Travel and Accommodation	3050.00
Vehicle Expenses	2747.43
Administration Costs	2619.35

---

28812.82

---

6. FORWARD PROGRAMME

The proposed exploration programme for year 3 comprises follow-up geochemical sampling of selected targets. A budget of \$22,000 has been allocated for this work.

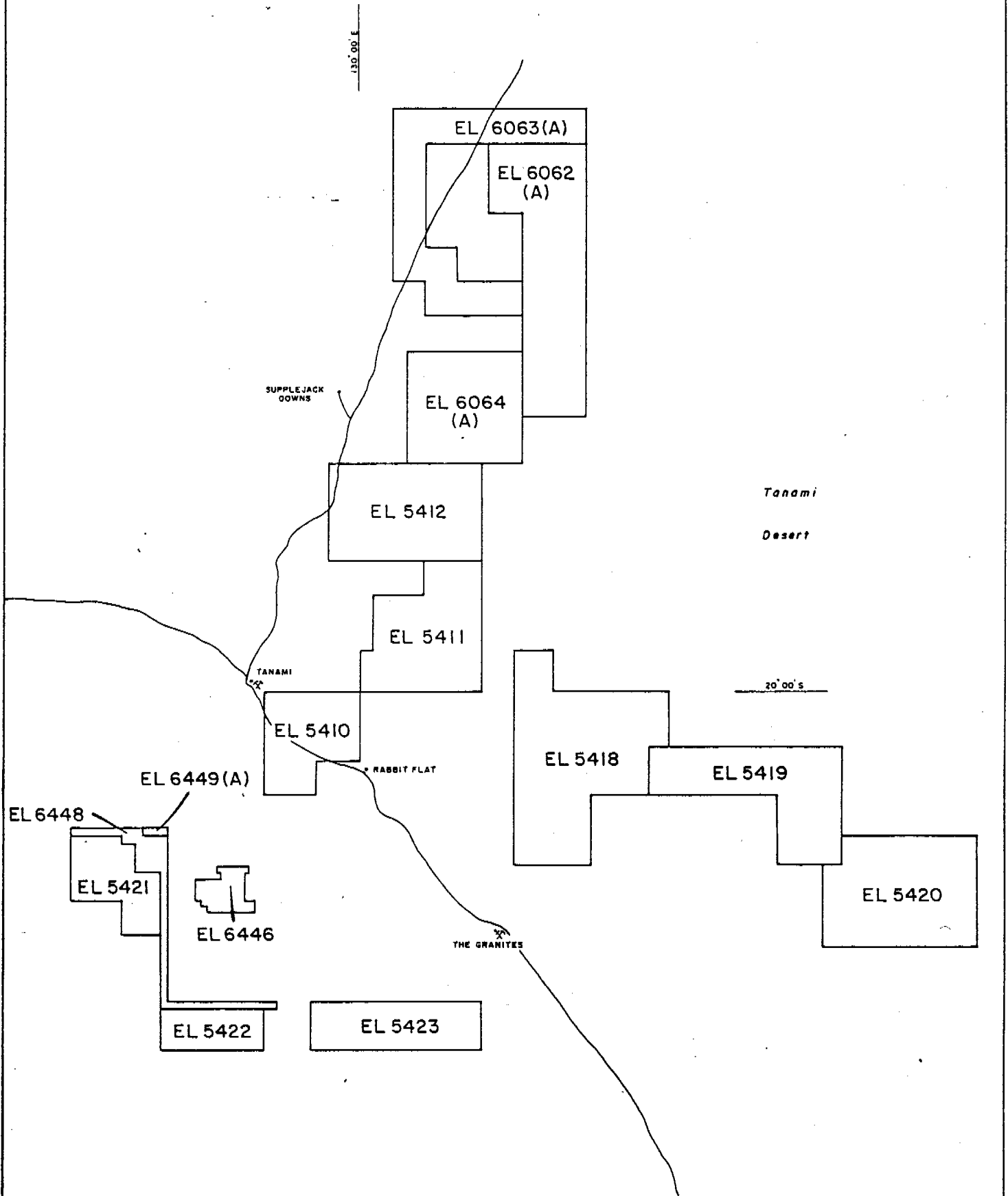
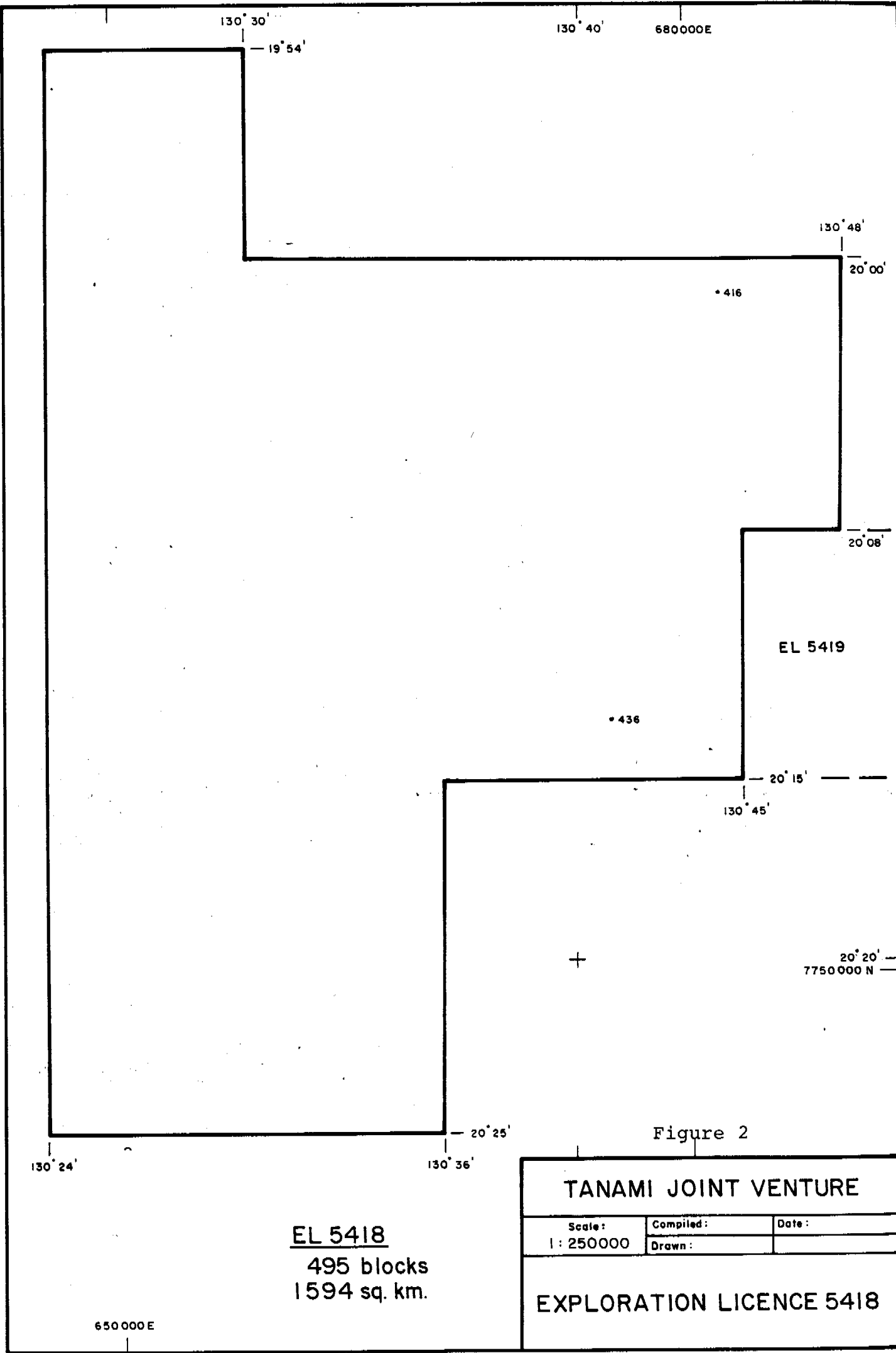


Figure 1

TANAMI JOINT VENTURE		
Scale:	Compiled:	Date:
1:1000000	Drawn: C.S.M.	
TENEMENTS		

Original reduced to A4





130° 24'

130° 30'

130° 40'

680000E

19° 54'

130° 48'

20° 00'

• 416

20° 08'

EL 5419

• 436

20° 15'

130° 45'

+

20° 20'  
7750000 N

20° 25'

130° 36'

Figure 2

EL 5418

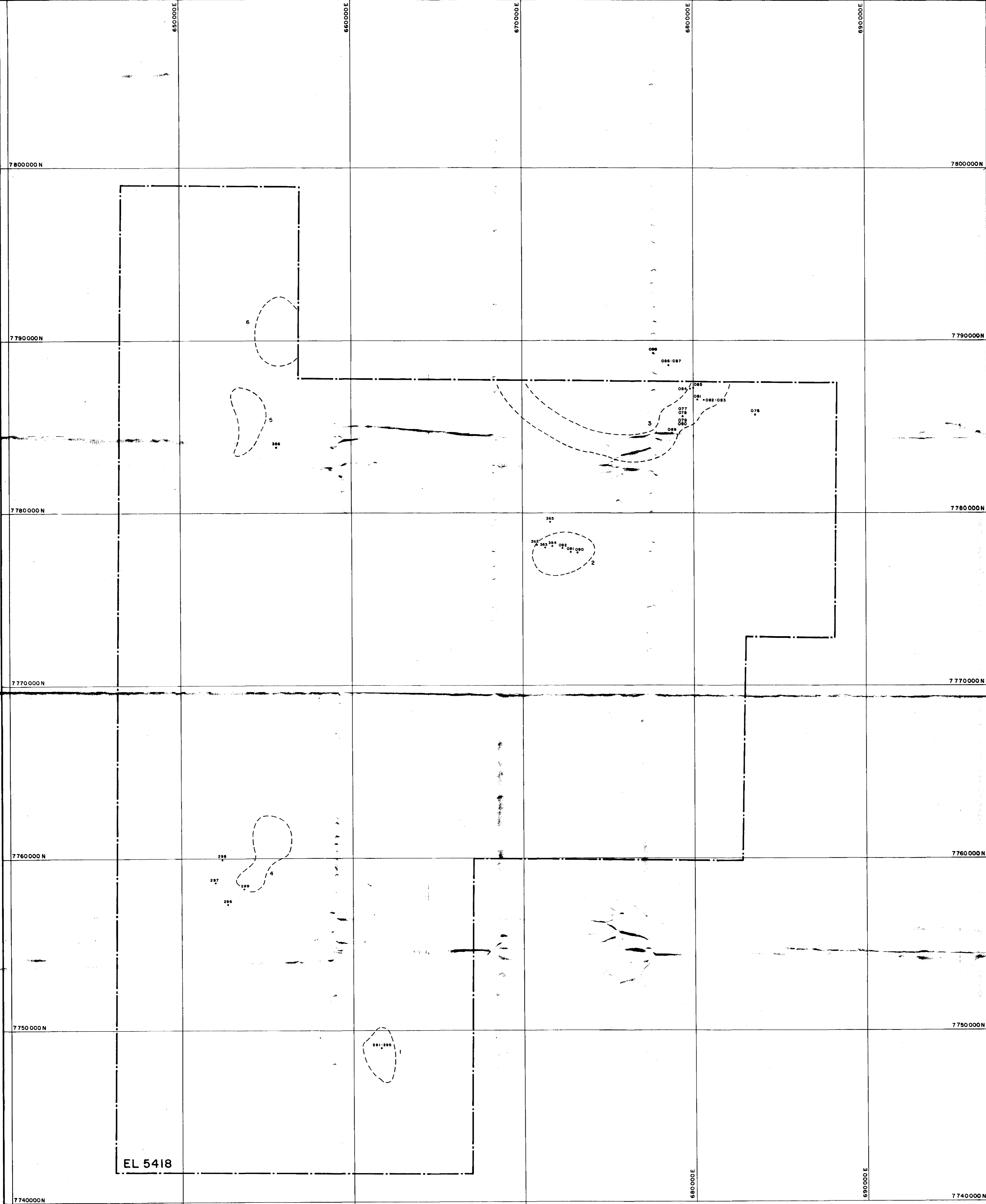
495 blocks  
1594 sq. km.

650000E

**TANAMI JOINT VENTURE**

Scale: 1 : 250000	Compiled: Drawn:	Date:
----------------------	---------------------	-------

**EXPLORATION LICENCE 5418**



EL 5418

**LEGEND**

- Sample location
- OB (prefix)
- ( ) Target zones

CRP1/343

<b>TANAMI JOINT VENTURE</b>		
Scale:	Compiled: S.A.M.	Date: MAY 1991
1 : 100000	Drawn: C.S.M.	

EL 5418

APPENDIX I

EL 5418 - Sample Descriptions

# EL 5418

Sample Number	Type	Run No. Photo No	Co-ordinates	Description	Comments
80076	LAT	12/146		lateritized ferruginous quartzite.	
77	RC	12/146		ferrug; sugary quartzite	
78	LAT	12/146		m-c; incl. goethite + ferrug. quartzite	
79	LAT	12/146		m-c; incl. goethitic quartzite	
80080	LAT	12/146		s-m-c;	
81	RC	12/146		white -pk-pu; quartz breccia	
82	RC	12/146		banded ironstone	Strike 290° dip 75-80° N
83	RC	12/146		red-green quartz-rich sediment?	
84	RC	13/162		quartz breccia	fault breccia
80085	RC	13/162		quartz breccia ; 10% lat. ?	fault breccia
86	RC	13/162		quartz breccia on large ridge	fault breccia
87	RC	13/162		quartz breccia on large ridge	fault breccia
88	RC	13/162		quartz breccia	fault breccia
89	LAT	13/164		m-c; incl. some lat. ferrug. quartzite.	
80090	LAT	13/164		coarse; some cemented.	
91	LAT	13/164	20° 05' 22" S / 130° 39' 12" E 777756N / 672868E	nodular lat; m-c;	Small 105° qz-vein nearby.
92	LAT	13/164	20° 05' 15" S / 130° 38' 54" E 777977N / 672348E	m-c.	

EL 5418

Sample Number	Type	Run No. Photo No	Co-ordinates	Description	Comments
80298	RC	16/009	20° 15' 30" / 130° 27' 11" 7759989N/652406E	siliceous, goethitic quartzite + quartz gravel	
80299	RC	16/009	20° 16' 02" S / 130° 28' 17" E 7758256N/653667E	lateritized ferruginous phyllite	
80357	RC	15/192		Duplicate of 80294	
80361	LAT	14/174		large cemented frags;	outcrop; west side of target.
362	LAT	14/174	20° 05' 09" S / 130° 38' 03" E 7778176N/670868E	m-c; good sample	
363	LAT	14/174	20° 05' 14" S / 130° 38' 19" E 7778014N/671331E	m-c; good sample	
364	LAT	14/174	20° 05' 11" S / 130° 38' 34" E 7778105N/671768E	m-c; "gritty"	
365	LAT	14/174	20° 04' 26" S / 130° 38' 29" E 7779490N/671636E	m-c; "gritty"	duplicate = 80374
80366	LAT	?	20° 02' 09" S / 130° 29' 17" E 7783853N/655637E	v. good sample : pisolites	North end of 250° quartz-fault.
80374	LAT	14/174	20° 04' 26" S / 130° 38' 29" E	Duplicate of 80365.	

EL 5418

Sample Number	Type	Run No. Photo No	Co-ordinates	Description	Comments
80281	RC	15/192	20° 21' 56" S 130° 32' 55" E	Sheared, goethitic quartzite	N. end of W. ridge in HW of 80282
82	RC	"	7147297N 661631E.	clean, white, sugary quartzite	Strike 160° dip 60°W
83	RC	"		grey quartzite 15% Fe ox.	cut by 0.70% Q <sub>2</sub> vein dip 85°N Strike 160° dip 60°W
84	RC	"		goethitic, brecciated quartzite	80281-80288 western ridge 80289-80295 eastern ridge
85	RC	"		goethitic, brecciated quartzite	
86	RC	"		white, bedded quartzite; 25% Fe ox	Southern end of W. ridge in a/c nose.
87	RC	"		white, quartzite; 25% Fe ox	around anticlinal fold closure.
88	RC	"		Quartz; 15% Fe ox. S070°	Southern end of W. ridge.
89	RC	"		Quartzite	Strike 180° dip 60°E.
80290	RC	"		graphitic, ferrug. sediment	in HW of quartzite
91	RC	"		brown, cherty, Fe ox; quartzite.	
92	RC	"		graphitic shale +	in HW of quartzite
93	RC	"		banded ironstone/quartzite	folded o/c dip E. N. end of E. ridge
94	RC	"		- ditto -	100m south of 80293
95	RC	15/192		- ditto -	folded in small a/c + s/c's. 100m south of 80294
96	LAT	16/009	20° 16' 32" S / 130° 27' 44" E 7157342N / 652701E	Small-med; poor sample; 10% quartz	
97	RC	16/009	20° 15' 50" S / 130° 27' 19" E 7158640N / 651987E	calicitized phyllite + quartz gravel	

APPENDIX II

EL 5418 - Geochemical analysis results



# ANALABS

A Division of Inchcape Inspection and Testing Services, Australia Pty. Ltd.  
Division of Inchcape Inspection and Testing Services Pty Ltd

(089) 47 2355

Cnr Coonawarra & Mataran Rds, Winnellie

Fax: (089) 84 3984

## ANALYTICAL REPORT No.

999.16.21.04531

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:

TANAMI JOINT VENTURE  
P.O. BOX 625  
DARWIN NT 0801

RECEIVED  
28 SEP 1990

ORDER No.

PROJECT

DN 50388

DATE RECEIVED

RESULTS REQUIRED

04/09/90

ASAF

No. OF PAGES OF RESULTS

DATE REPORTED

No. OF COPIES

TOTAL No. OF SAMPLES

8

26/09/90

1

44

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
Various	RC Prep: 019	Cu, Pb, Zn, Ni/140
Various	RC	Au, Ag, As, BaBr, Ce, Co, Cr, Cs, Eu, Fe, Hf, Ir, La, Lu, Mo,
Various <i>ELS418</i>	RC	Br/1001

REMARKS

RESULTS

TO

STEVE MILNER  
TANAMI JOINT VENTURE  
GPO BOX 625  
DARWIN NT 0801

RESULTS

TO

[Empty box for results]

RESULTS

TO

[Empty box for results]

AUTHORISED OFFICER



# ANALABS

A Division of Incharge Inspection and Testing Services Australia Pty. Ltd

## ANALYTICAL DATA

SAMPLE PREFIX                      REPORT NUMBER                      REPORT DATE                      CLIENT ORDER No.                      PAGE

999.16.21.04531                      26/09/90                      DN 50368                      1 OF 8

TUBE No.	SAMPLE No.	Sc	Cr	Fe	Co	Ni	Cu	Zn	Zn	As
1	80076	20.3	300	21.50	6	10	12	6	<100	39
2	80077	3.9	440	3.00	1	5	24	2	<100	4
3	80078	63.7	340	29.90	5	10	104	14	<100	23
4	80079	46.2	490	28.60	4	5	72	10	<100	17
5	80080	67.5	420	31.60	6	10	192	18	<100	15
6	80081	1.6	350	0.92	<1	5	2	<2	<100	<2
7	80082	4.0	260	20.00	9	10	76	92	100	14
8	80083	10.5	150	3.10	5	55	84	70	<100	3
9	80084	1.5	340	0.92	<1	.5	2	<2	<100	<2
10	80085	2.1	370	3.30	3	5	6	<2	<100	7
11	80086	2.2	240	1.60	2	<5	4	<2	<100	<2
12	80087	2.6	270	1.70	3	<5	4	<2	<100	4
13	80088	1.0	330	2.10	3	<5	4	<2	<100	47
14	80089	86.4	3310	38.00	18	45	154	42	100	150
15	80090	33.5	480	34.10	6	10	12	2	<100	48
16	80091	34.1	501	36.50	7	<5	10	2	<100	32
17	80092	36.2	420	39.90	9	5	8	2	<100	19
18	80281	8.9	140	31.90	<1	10	160	182	210	190
19	80282	1.1	370	2.40	<1	<5	10	4	<100	10
20	80283	0.8	300	3.10	<1	<5	12	<2	<100	140
21	80284	15.2	88	36.90	3	10	108	174	210	26
22	80285	9.4	200	20.40	2	10	198	212	280	130
23	80286	1.7	240	6.65	2	10	66	106	120	34
24	80287	2.5	230	11.50	2	<5	145	18	<100	41
25	80288	2.1	250	17.70	3	5	92	10	<100	281

Results in ppm unless otherwise specified  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 — = element not determined

AUTHORISED OFFICER

# ANALABS

A Division of Inchoape Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

		999.16.21.04531				26/09/90		DN 50388		2 OF 8	
TUBE No.	SAMPLE No.	Sc	Cr	Fe	Co	Ni	Cu	Zn	Zn	As	
1	80289	2.5	260	11.10	1	<5	86	8	<100	34	
2	80290	15.4	150	11.80	1	<5	50	<2	<100	80	
3	80291	3.7	150	24.10	8	15	40	120	140	34	
4	80292	30.2	160	5.00	2	10	48	14	<100	11	
5	80293	4.9	210	16.40	2	<5	92	68	<100	42	
6	80294	4.2	260	38.90	3	<5	346	78	<100	140	
7	80295	3.6	130	34.40	2	<5	62	40	<100	63	
8	80296	17.5	450	23.70	8	10	22	10	<100	36	
9	80297	4.9	290	11.60	2	5	12	2	<100	9	
10	80298	10.5	150	32.40	10	35	48	108	120	120	
11	80299	16.8	470	28.20	12	15	20	12	<100	58	
12	80357	4.1	220	27.90	3	<5	270	46	<100	78	
13	80361	13.6	380	26.50	11	15	20	4	<100	32	
14	80362	30.1	589	41.80	5	<5	10	<2	<100	35	
15	80363	38.9	756	34.20	7	20	12	<2	<100	29	
16	80364	31.0	625	39.00	7	5	8	<2	<100	37	
17	80365	34.2	270	36.80	4	5	12	<2	<100	18	
18	80366	11.0	260	53.60	<1	<5	6	<2	<100	61	
19	80374	33.7	290	37.20	4	5	20	2	<100	28	
20											
21											
22											
23	DETECTION	0.1	5	0.05	1	5	2	2	100	2	
24	UNITS	ppm	ppm	%	ppm	PPM	PPM	PPM	ppm	ppm	
25	METHOD	1801	1801	1801	1801	140	140	140	1801	1801	

Results in ppm unless otherwise specified  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 — = element not determined

  
 AUTHORIZED OFFICER

# ANALABS

A Division of Inchope Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

999.16.21.04531

26/09/90

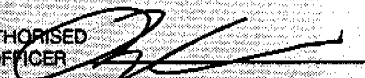
DN 50388

3 OF 8

TUBE No.	SAMPLE No.	Se	Br	Rb	Mo	Ag	Sb	Cs	Ba	La
1	80076	<5	<2	65	<5	<5	1.3	2	<100	6.0
2	80077	<5	<2	<20	<5	<5	<0.5	<1	110	1.4
3	80078	<5	<2	67	<10	<10	0.7	<1	<100	3.1
4	80079	<5	<2	56	<5	<5	1.0	1	210	5.5
5	80080	<5	3	78	<10	<10	0.8	<1	<100	3.6
6	80081	<5	<2	<20	<5	<5	0.5	<1	<100	6.3
7	80082	<5	<2	59	<5	<5	1.1	<1	580	28.0
8	80083	<5	<2	95	<5	<5	<0.5	<1	950	48.0
9	80084	<5	<2	<20	<5	<5	<0.5	<1	110	10.0
10	80085	<5	<2	<20	<5	<5	0.8	<1	<100	15.0
11	80086	<5	<2	<20	<5	<5	3.8	<1	<100	9.2
12	80087	<5	<2	<20	<5	<5	6.5	<1	120	17.0
13	80088	<5	<2	<20	<5	<5	3.0	<1	<100	24.0
14	80089	<5	3	71	<10	<10	1.9	<1	150	6.3
15	80090	<5	3	88	<5	<5	5.8	<1	<100	11.0
16	80091	<5	4	100	<5	<5	4.4	2	300	40.0
17	80092	<5	4	75	<5	<5	1.5	<1	340	4.1
18	80281	<5	<2	110	<5	<5	<0.2	2	280	43.0
19	80282	<5	<2	<20	<5	<5	<0.2	<1	<100	3.6
20	80283	<5	<2	<20	<5	<5	0.9	<1	<100	15.0
21	80284	<5	<2	72	<5	<5	<0.5	<1	990	14.0
22	80285	<5	<2	67	<5	<5	2.6	1	<100	9.1
23	80286	<5	<2	<20	<5	<5	0.6	<1	<100	2.7
24	80287	12	<2	30	<5	<5	0.6	1	410	8.8
25	80288	10	2	40	<5	<5	0.8	<1	140	8.4

Results in ppm unless otherwise specified  
 T = element present, but concentration too low to measure  
 X = element concentration is below detection limit  
 — = element not determined

AUTHORISED OFFICER



# ANALABS

A Division of Incoape Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

999.16.21.04531

26/09/90

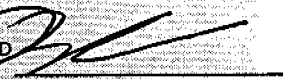
DN 50388

4 OF 8

TUBE No.	SAMPLE No.	Se	Br	Rb	Mo	Ag	Sb	Cs	Ba	La
1	80289	7	<2	<20	<5	<5	1.1	<1	370	19.0
2	80290	<5	<2	94	30	<5	1.9	4	700	13.0
3	80291	<5	<2	49	<5	<5	1.3	<1	280	3.5
4	80292	<5	<2	130	<10	<5	0.6	4	910	22.0
5	80293	7	2	64	<5	<5	0.7	2	190	14.0
6	80294	10	3	71	<5	<5	<0.5	<1	560	4.3
7	80295	<5	<2	66	<5	<5	0.7	<1	220	4.0
8	80296	<5	<2	90	<5	<5	1.6	3	240	26.0
9	80297	<5	2	43	<5	<5	<0.5	1	150	13.0
10	80298	<5	2	100	<14	<5	<0.2	2	220	60.5
11	80299	<5	<2	98	<5	<5	1.9	2	420	22.0
12	80357	6	3	49	<5	<5	<0.5	1	310	10.0
13	80361	<5	<2	58	<5	<5	1.4	3	490	16.0
14	80362	<5	<2	30	<5	<5	1.2	<1	200	4.5
15	80363	<5	<2	<20	<5	<5	1.6	<1	130	4.8
16	80364	<5	4	<20	<5	<5	2.6	<1	430	6.0
17	80365	<5	<2	81	<5	<5	1.2	<1	210	9.2
18	80366	<5	<2	22	<5	<5	2.4	1	260	5.6
19	80374	<5	2	63	<5	<5	1.1	2	230	10.0
20										
21										
22										
23	DETECTION	5	2	20	10	5	0.5	1	100	0.5
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	1801	1801	1801	1801	1801	1801	1801	1801	1801

Results in ppm unless otherwise specified  
 T = element present, but concentration too low to measure  
 X = element concentration is below detection limit  
 — = element not determined

AUTHORISED OFFICER



# ANALABS

A Division of Inchoape Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

999.16.21.04531

26/09/90

DN 50388

5 OF 8

TUBE No.	SAMPLE No.	Ca	Sm	Eu	Yb	Lu	Hf	Ta	W	Ir
1	B0076	15	1.4	<0.5	1.7	0.3	10	2	<2	<20
2	B0077	<2	0.3	<0.5	<0.5	<0.2	<1	<1	<2	<20
3	B0078	<10	1.5	<0.5	0.9	<0.2	6	1	<2	<20
4	B0079	<10	1.4	<0.5	1.3	<0.2	5	1	6	<20
5	B0080	<10	1.8	<0.5	1.0	<0.2	6	2	<2	<20
6	B0081	<10	0.9	<0.5	<0.5	<0.2	<1	<1	<2	<20
7	B0082	24	3.0	<0.5	1.8	0.3	2	<1	<2	<20
8	B0083	77	6.5	0.8	3.7	0.7	5	<1	4	<20
9	B0084	14	1.3	<0.5	<0.5	<0.2	<1	<1	<2	<20
10	B0085	18	1.1	<0.5	<0.5	<0.2	1	<1	<2	<20
11	B0086	26	1.5	<0.5	<0.5	<0.2	1	<1	3	<20
12	B0087	24	2.3	<0.5	0.6	<0.2	2	<1	3	<20
13	B0088	28	1.9	<0.5	<0.5	<0.2	<1	<1	2	<20
14	B0089	25	3.4	0.6	1.6	0.2	6	2	<2	<20
15	B0090	17	2.2	<0.5	1.9	0.3	8	1	<2	<20
16	B0091	57	3.8	0.8	1.8	0.2	7	2	<2	<20
17	B0092	<10	1.3	<0.5	0.8	<0.2	5	2	<2	<20
18	B0281	47	2.0	<0.5	3.5	0.7	2	<1	3	<20
19	B0282	<10	0.3	<0.5	<0.5	<0.2	<1	<1	4	<20
20	B0283	18	0.8	<0.5	<0.5	<0.2	1	<1	<2	<20
21	B0284	20	1.4	<0.5	0.7	<0.2	1	<1	15	<20
22	B0285	<10	1.1	<0.5	0.5	<0.2	1	<1	<2	<20
23	B0286	<10	0.5	<0.5	<0.5	<0.2	<1	<1	4	<20
24	B0287	<10	0.8	<0.5	<0.5	<0.2	<1	<1	14	<20
25	B0288	<10	0.8	<0.5	<0.5	<0.2	<1	<1	15	<20

Results in ppm unless otherwise specified

T = element present, but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

AUTHORISED  
OFFICER



# ANALABS

A Division of Inchope Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No

PAGE

999.16.21.04531

26/09/90

DN 50388

6 OF 8

TUBE No	SAMPLE No	Ce	Sm	Eu	Yb	Lu	Hf	Ta	W	Ir
1	80289	22	2.1	<0.5	<0.5	<0.2	<1	<1	<2	<20
2	80290	17	1.7	<0.5	2.0	0.3	5	1	7	<20
3	80291	<10	0.9	<0.5	<0.5	<0.2	<1	<1	<2	<20
4	80292	25	1.5	<0.5	1.9	0.4	4	2	<2	<20
5	80293	20	1.5	<0.5	0.5	<0.2	2	<1	<2	<20
6	80294	<10	0.8	<0.5	<0.5	<0.2	1	<1	11	<20
7	80295	<10	1.3	<0.5	0.9	<0.2	1	<1	<2	<20
8	80296	67	2.8	<0.5	2.0	0.3	9	<1	<2	<20
9	80297	14	1.1	<0.5	0.7	<0.2	2	<1	<2	<20
10	80298	52	4.5	0.7	2.1	0.3	6	1	<2	<20
11	80299	38	2.4	<0.5	1.9	0.2	8	1	<2	<20
12	80357	16	1.0	<0.5	<0.5	<0.2	1	<1	20	<20
13	80361	19	2.5	0.5	1.7	0.2	7	1	<2	<20
14	80362	<2	1.0	<0.5	0.7	<0.2	5	<1	<2	<20
15	80363	17	1.2	<0.5	0.9	<0.2	7	1	<2	<20
16	80364	<2	1.4	<0.5	0.9	<0.2	4	<1	<2	<20
17	80365	11	1.7	<0.5	0.8	<0.2	7	<1	<2	<20
18	80366	<2	2.1	1.1	3.4	0.6	28	10	14	<20
19	80374	13	1.6	<0.5	1.0	<0.2	7	1	<2	<20
20										
21										
22										
23	DETECTION	10	0.2	0.5	0.5	0.2	1	1	2	20
24	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb
25	METHOD	1801	1801	1801	1801	1801	1801	1801	1801	1801

Results in ppm unless otherwise specified  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 -- = element not determined

AUTHORISED OFFICER 

# ANALABS

A Division of Inchope Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

999.16.21.04531

26/09/90

DN 50388

7 OF 8

TUBE No.	SAMPLE No.	Al	Pb	Th	U					
1	80076	<5	25	57.1	4					
2	80077	<5	5	6.1	<2					
3	80078	<5	30	25.0	9					
4	80079	<5	20	29.0	4					
5	80080	<5	25	37.0	8					
6	80081	<5	<5	1.7	<2					
7	80082	8	15	4.4	3					
8	80083	<5	15	10.0	2					
9	80084	<5	<5	1.5	<2					
10	80085	<5	10	2.7	<2					
11	80086	<5	5	4.9	<2					
12	80087	<5	5	6.2	<2					
13	80088	<5	5	1.1	<2					
14	80089	<5	35	27.0	10					
15	80090	<5	25	44.0	<2					
16	80091	<5	20	28.0	<2					
17	80092	<5	15	10.0	<2					
18	80281	<5	55	16.0	3					
19	80282	<5	5	1.5	<2					
20	80283	<5	10	1.0	<2					
21	80284	<5	40	15.0	<2					
22	80285	<5	25	8.6	3					
23	80286	<5	10	1.8	<2					
24	80287	<5	20	4.9	<2					
25	80288	632	15	1.4	<2					

Results in ppm unless otherwise specified  
 T = element present; but concentration too low to measure  
 X = element concentration is below detection limit  
 - = element not determined

AUTHORISED OFFICER 

# ANALABS

A Division of Inscope Inspection and Testing Services Australia Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No

PAGE

999.16.21.04531

26/09/90

DN 50388

8 OF 8

TUBE No	SAMPLE No	Au	Pb	Th	U					
1	80289	<5	35	6.8	<2					
2	80290	<5	25	16.0	3					
3	80291	<5	5	1.4	<2					
4	80292	<5	5	17.0	3					
5	80293	5	40	7.9	<2					
6	80294	<5	25	12.0	<2					
7	80295	<5	20	13.0	2					
8	80296	<5	40	45.0	3					
9	80297	<5	10	10.0	<2					
10	80298	<5	20	18.0	7					
11	80299	<5	35	40.0	<2					
12	80357	8	25	10.0	<2					
13	80361	<5	20	14.0	<2					
14	80362	<5	25	14.0	<2					
15	80363	<5	20	22.0	<2					
16	80364	<5	15	17.0	<2					
17	80365	<5	15	12.0	<2					
18	80366	<5	25	36.0	4					
19	80374	<5	15	13.0	3					
20										
21										
22										
23	DETECTION	5	5	0.5	2					
24	UNITS	ppb	PPM	ppm	ppm					
25	METHOD	1801	140	1801	1801					

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

— = element not determined

AUTHORISED  
OFFICER



APPENDIX III

EL 5418 - Petrographic descriptions

# Pontifex & Associates Pty. Ltd.

TEL. (08) 332 6744  
A.H. (08) 31 3816  
FAX (08) 332 5062

26 KENSINGTON ROAD, ROSE PARK  
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD  
SOUTH AUSTRALIA 5067

## MINERALOGICAL REPORT NO. 5734

by A.C. Purvis, PhD  
and I.R. Pontifex, MSc.

EL5422

closed file

CRAM 16/7/91

October 16th, 1990

TO : Mr S. Milner  
Senior Geologist  
Tanami Joint Venture  
Level 1  
48 Woods St  
DARWIN NT 0800

YOUR REFERENCE : Your letter SAM:NA:90.66

MATERIAL : Rock samples

IDENTIFICATION : 80021 to 80095

WORK REQUESTED : Section preparation,  
petrographic description

SAMPLES & SECTIONS : Returned to you with this report.



I.R. Pontifex  
Pontifex & Associates Pty Ltd

## INTRODUCTION

This report covers 12 rock samples from the Tanami Complex, Northern Territory. [Note that sample 80095 was received but not included in your list of comments.]

Of these samples, nine were made into thin sections and three, with significant secondary iron oxides, (which were possibly gossanous), were examined in polished thin sections. The transmitted light study of the thin sections was augmented by examination in low angle incident light to discriminate minor graphite in some samples; and one sample (No. 80021) was stained for potassium feldspar.

Six of the rocks appear to be of regional amphibolite facies, with quartz, mica and graphite variably present. Silver-grey crystalline graphite occurs in 80021, 42, and 83. Possible andalusite is present in 80021 and 83, although this andalusite differs from the contact metamorphic andalusite in 80292. Garnet occurred within boudinaged layers in 80154.

Two of the rocks were initially low grade metasediments rich in graphite (80095, 80292), but have abundant tourmaline (80095), or randomly oriented 'matchstick-like' andalusite crystals (80292), altered to sericite. The sample 80095, a very fine, folded and laminated graphitic quartz tourmaline schist, is an unusual rock, which may be a primary chemical facies or a pervasively metasomatised slate, originally similar to 800292. Sample 80292 formed by contact metamorphism.

One of the rocks (80248) was a quartz-poor, granitoid gneiss.

The three samples with relatively abundant and concentrated limonite examined in polished thin section, are (rather tentatively) interpreted as:

- 80153 quartzose, biotite-bearing skarn, (with patches of 'gel-limonite' of broadly lateritic genesis).
- 80155 (?feldspar)-quartz-mica schist, altered and limonitised (meta sediment or possible meta fine granitoid)
- 80279 original BIF, with minor (oxidised) magnetite, abundant quartz (with minute inclusions) and abundant, leached and oxidised silicate minerals.

**Introduction continued :**

The possible skarn, as well as the BIF, represent iron rich sediments, and as recorded in the literature, iron-rich sediments, particularly in a graphitic sequence, can react with dissolved AuHS complexes to precipitate gold and sulphide.

The anomalous zinc values reported in Nos 80021, 42, are common in graphitic sediments and may be accompanied by Ni and Cu, as in No. 80042. The zinc in No. 80031 is less easily accounted for, but could possibly derive from a spinel phase or from biotite. The zinc in 80155 could also be in biotite.

80083

500 8  
Weathered, layered, graphitic quartz-mica schist, with minor altered porphyroblasts (?andalusite).

[Also possible ex-sillimanite in one layer.]

**Field Note :** Vari-coloured fine-grained quartz-mica sediment.  
Origin of colours ?

The yellowish band in this rock indicates a more micaceous layer 4 to 8mm thick, within a sequence of more quartz-rich layers, some of which incorporated whitish 'spots', representing altered porphyroblasts. Fine graphite and muscovite are common throughout, more abundant in some layers than in others, and producing a silver grey micaceous sheen on fractured surfaces.

The quartzitic layers are composed of quartz grains about 0.4mm in size, incorporating 10 to 15% of each of the muscovite and graphite. The sericitised porphyroblasts, possibly of andalusite, vary from 1mm long in some layers to about 8mm long in others. The yellowish micaceous layer mentioned above also contains sparse altered porphyroblasts about 2mm in size, and may have contained some sillimanite. It is coloured yellow-orange by diffuse limonite staining.

Patches of supergene chalcedony are common and locally rim cavities.

Quartz-muscovite-graphite slate with sericitised andalusite porphyroblasts; minor limonite spots possibly after siderite.

Field Note : Graphitic shale.

What is white, acicular mineral? Due to alteration or thermal metamorphism.

The abundant white acicular crystals with a cross section of about 1mm, scattered throughout to form about 30% of this rock, are sericite pseudomorphs of andalusite crystals. They are commonly more than 4mm long with a random orientation.

The host rock is a strongly graphitic-fine quartz-sericite-schist (or slate) with the schistosity deflected around the andalusite crystals. Irregular patches of limonite to 10mm in size occur throughout and may represent oxidised siderite grains.

The andalusite in this rock most probably formed by thermal (contact) metamorphism.