ANNUAL REPORT

FOR

EXPLORATION LICENCE NO. 5085

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ZAPOPAN N.L.
FEBRUARY, 1989

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1. SUMMARY

Exploration Licence 5085 is located most probably on the extension of the Fountain Head Anticline. Exploration, comprising geological mapping, rock chip and soil sampling, has been concluded in encouraging results. 35 rock chip and 65 soil samples were collected and assayed for gold and arsenic and some for silver and copper. As high as 1.4 ppm and 0.5 ppm gold values were recorded by few rock chip samples. All the soil samples were slightly anomalous in gold.

2. INTRODUCTION

Exploration licence 5085 is located approximately 60 km SE of Adelaide River Township, and 2 km north west of the Fountain Head gold mine (Fig. 1 and 2). The licence comprises an area of half a block which was granted for a term of 2 years and expired on the 28th of January, 1989.

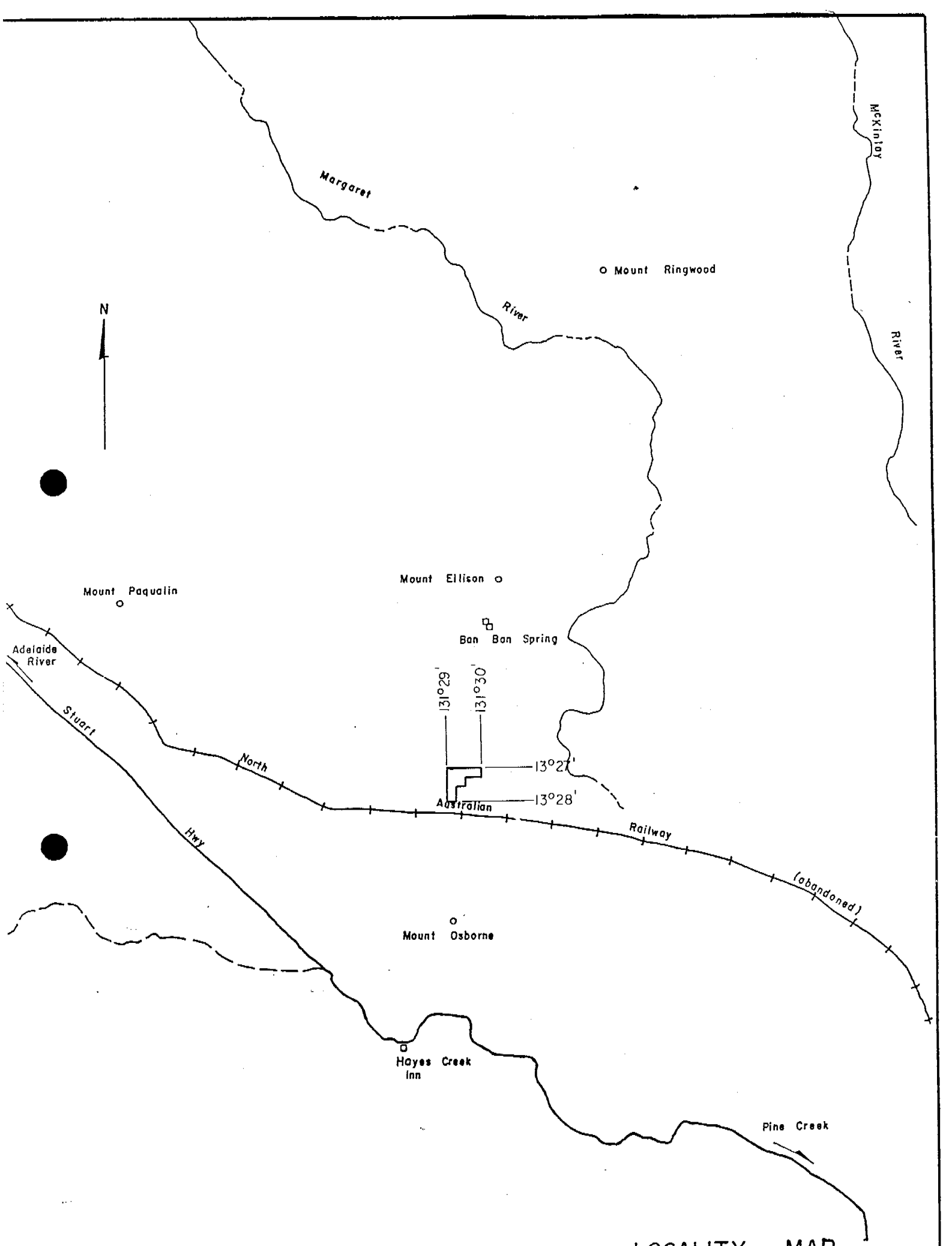
Exploration for gold and base metals, which comprise reconnaissance, mapping and rock chip / soil sampling, was carried out in the period of July 1988 - January 1989.

The area is located on a low lying plane where access is easily gained through Fountain Head road from the Stuart Highway even in the wet season.

3. REGIONAL GEOLOGY

The area is situated in the Pine Creek Geosyncline which comprises a sedimentary sequence from the Lower Proterozoic to Mesozoic (Table 1). At about 2400 to 2100 m.y. arkoses, pelites, carbonates and iron formation of the Kakadu Group and Cahill Formation, outer Nanambu Complex, Fish Creek Schists, part of the Litchfield Complex and perhaps the outer Rum Jungle and Waterhouse complexes were deposited on crystalline Archean basement (Nicholson and Eupene, 1984). Amphibolite facies regional metamorphism and deformation followed at approximately 2100 to 2000 m.y. Following a hiatus, Early Proterozoic sedimentation continued.

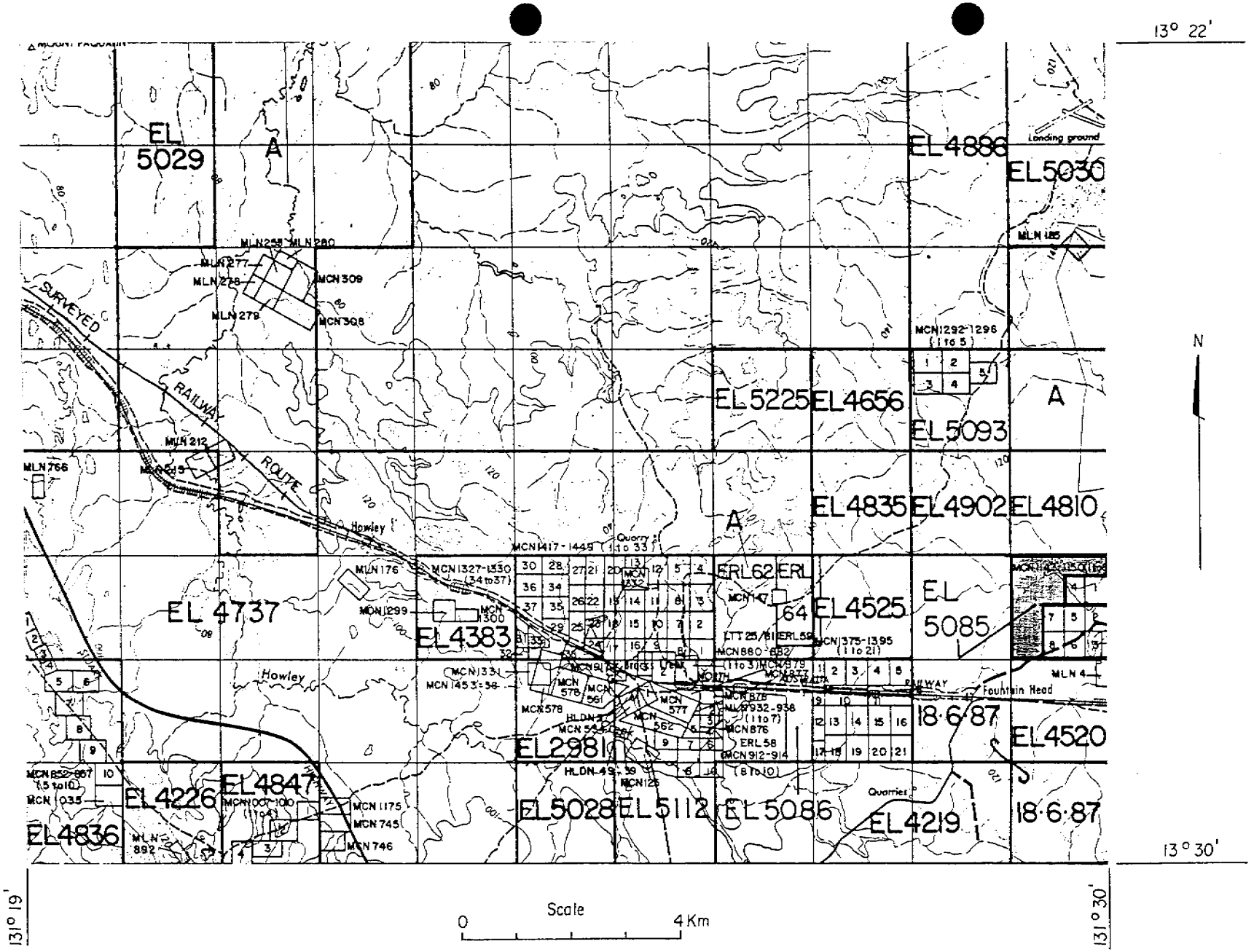
The oldest unit in the dome area is the South Alligator Group (Table 2) which consists of pyritic carbonaceous shale, siltstone chert, ironstone, mudstone and greywacke. The Finniss River Group is characterised by greywacke, conglomerate, siltstone and rare chert and ironstone.



LOCALITY MAP
EL 5085

Scale 1 : 250 000

FIGURE 1



TENEMENT MAP
EL 5085

FIGURE 2

TABLE 1

Stratigraphy of the Katherine-Darwin Area

Age	Stratigraphic Unit	Lithologies	Approximate Thickness (metres)
Mesozoic	Bathurst Island Group	Sandstone, siltstone	1300
Cambrian/ Ordovician	Daly River Group	Limestone, sandstone	300
Adelaidean	Tolmer Group	Sandstone, dolomite siltstone	1000
Carpentarian	Katherine River Group	Sandstone, minor volcanics	2000
Early Proterozoic	El Sherana/Edith River Groups	Acid volcanics, volcaniclastics, sandstone.	700
	Finniss River Group	Greywacke, sandstone, mudstone, minor volcanics	>3000
	South Alligator Group	Mudstone, carbonaceous mudstone, iron formation, greywacke, siltstone, tuff	1000
	Mount Partridge Group	Sandstone, arkose, conglomerate, mudstone	2000
	Namoona Group	Carbonaceous mudstone, limestone, minor volcanics	2000
	Batchelor Group	Dolomite, conglomerate arkose, sandstone	1000
	Kakadu Group, Cahill Formation, Litchfield Complex, Fish Creek Schists, ?outer Rum Jungle and Waterhouse Complexes	Meta-arkose, quartzite, feldspar quartz gneiss, mica quartz schist, graphitic in places, para-amphibolite crystalline dolomite-magnesite	3000
Archaean	Rum Jungle Complex, Waterhouse Complex, Nanambu Complex, Woolner Granite, Litchfield Complex	Granite, foliated granite	unknown

TABLE 2

Early Proterozoic Stratigraphy of
Adelaide River - Pine Creek Area

Group	Formation	Member	Lithologies	Thickness (metres)
Finniss River	Burrell Creek		Greywacke, siltstone, mudstone, rare chert, iron formation and conglomerate	>3000
South Alligator	Mount Bonnie	Upper	Mudstone, siltstone, chert, iron formation	100–250
		Lower	Greywacke, mudstone, siltstone, chert, carbonaceous mudstone, rare conglomerate	50–150
	Gerowie Tuff		Chert, mudstone, siltstone	200–400
	Koolpin	Upper	Carbonaceous mudstone, mudstone, siltstone	50–150
		Middle	Iron formation, mudstone, carbonaceous mudstone, siltstone	30–100
		Lower	Carbonacous mudstone, mudstone, siltstone, limestone	0–250
Mount Partridge	Wildman Siltstone		Mudstone, phyllite, siltstone, carbonaceous mudstone, sandstone,	200–400
	Mundogie Sandstone		quartzite, arkose, pebble conglomerate, mudstone, siltstone	>500

The Zamu Dolerite intruded into this sequence prior to greenschist facies metamorphism and the major phase of deformation (Stuart-Smith, et. al., 1984).

Granite intrusion occurred during Early Carpentarian or Late-Early Proterozoic times. the granites produced hornblende hornfels facies contact metamorphic assemblages within 100-200 m of their contacts. Irregular refolding of first deformation folds occurs around granite intrusions.

The Early Proterozoic Pine Creek Geosyncline hosts a large number of gold workings. Mineralisation types include stratiform, sedimentary deposits within iron formation and carbonaceous mudstone, disseminations in granophyric intrusives, and quartz vein related concentrations in the form of shear fillings, saddle reefs and stockworks (Nicholson and Eupene, 1984).

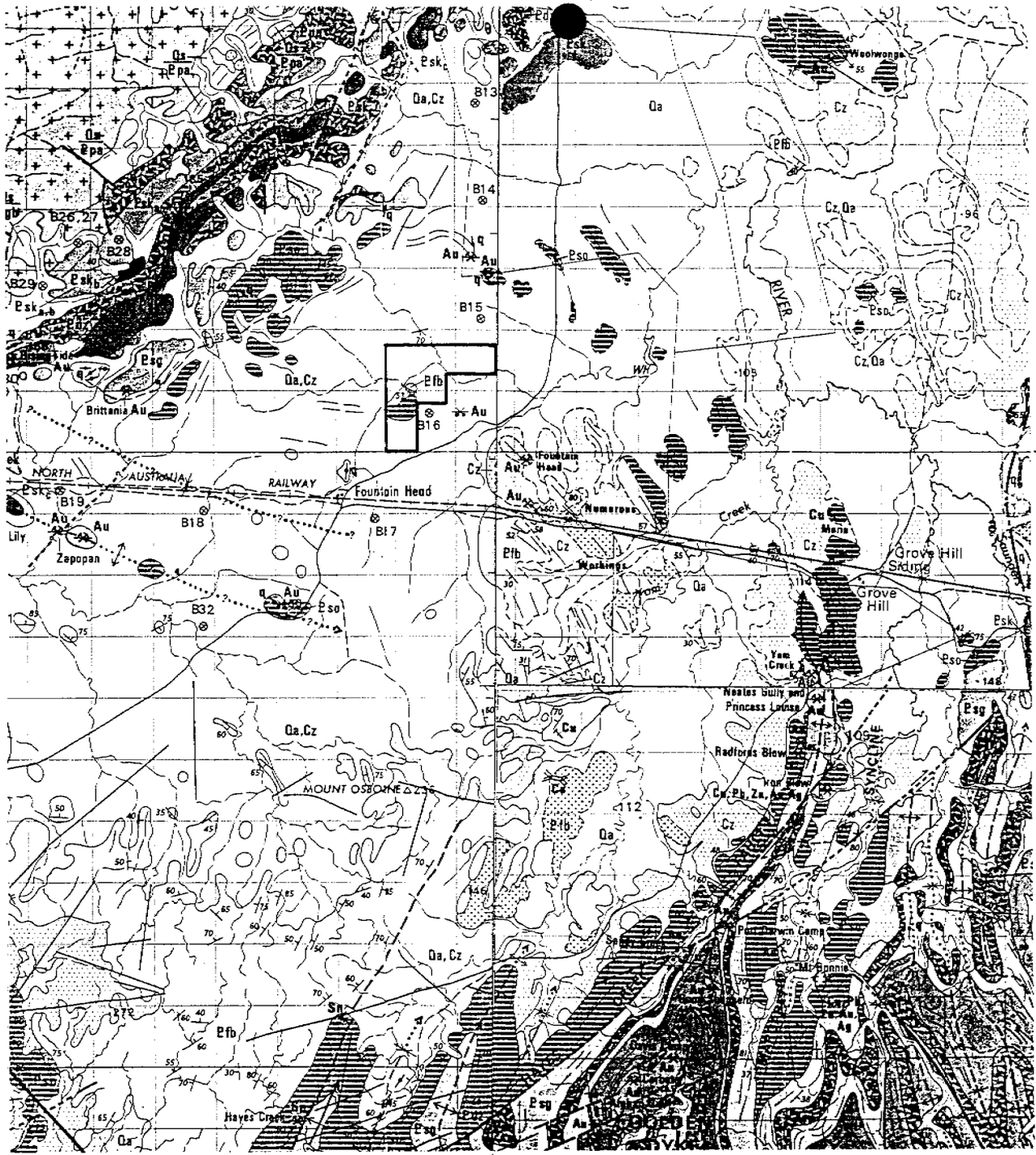
4. LOCAL GEOLOGY AND MINERALISATION

The area lies on the south-eastern outskirts of a symmetrical and concentric dome structure around the core of the Burnside Granite (Fig. 3). The Burnside Granite is almost concordant to the sediments and is thought to be synkinematic (Sakurai, 1981).

The licence area is almost wholly covered by soil and alluvium on a plane. Small patchy rock outcrops belong to the Burrell Creek Formation, Mt. Bonnie Formation and the Zamu Dolerite (Fig. 4). Rocks of the Burrell Creek formation consists of well cemented greywackes which form low outcrops up to one meter and exposed in two individual localities, one is in the south and the other is in the central portion. The Mt. Bonnie Formation is composed of brown shales and siltstones, and exposed in the southern central part. The deposits of the Mt. Bonnie Formation was described by Crick (1975) on drill cuttings and cores taken from a shallow stratigraphic hole B16 (Fig. 4) in the vicinity of the licence area, as mica-quartz feldspar lutite and quartz-mica-feldspar arenite and phyllitic spotty shale.

The outcropsd of the Mt. Bonnie formation gently make an elevation on the flat area. The Zamu Dolerite occurs only as a tiny outcrop, a few metres in size in the southern portion of the licence. It makes contact to the greywacke and associated with ferruginous gossan and quartz veins. The northwestern and northern portions of the area are covered by alluvium.

The structural trend lines are oriented 280^{O} . An overturned anticline has been inferred having hinge line oriented 280^{O} which is interpreted as the extension of the Fountain Head anticline. A fault with the same orientation is also located adjacent to the hinge line, which displaces the deposits of the Mt. Bonnie Formation. The fault zone is marked by massive brecciation which



REGIONAL GEOLOGY
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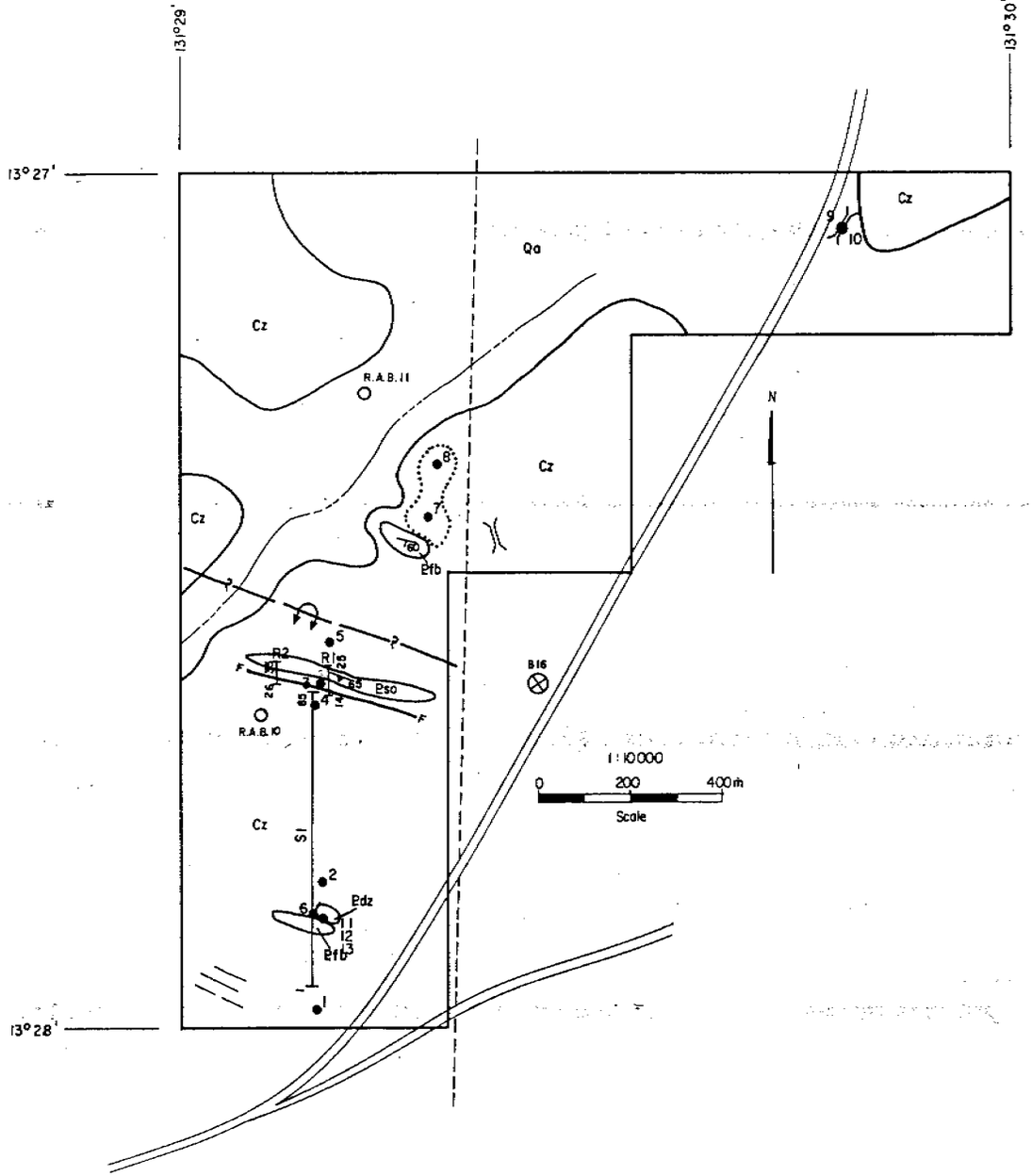
FIGURE 3



LEGEND

- Qa — Alluvium
- Cz — Soil
- Edz — Zamu Dolerite
- Efb — Burrell Creek Formation
- Eso — Mount Bonnie Formation
- Quartz float
- Fault
- Overturned anticline, inferred
- Post trench site
- Rock chip / soil sample lines
- Trend lines
- Geological boundary
- Bedding plane strike and dip
- Cleavage strike and dip
- Stratigraphic drill hole — BMR
- Sample location and number
- R.A.B. sample holes
- Creek
- Road / track

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GEOLOGY AND SAMPLE LOCATION

GEOLOGIST C. KOSE.

FIGURE 4

lacks of quartz veins. Sporadic ferruginous gossan is associated with along the fault zone traced about 300 m. Cleavages on the shales of the Mt. Bonnie Formation were measured as dipping 65°-190°, and bedding plane of greywackes (Burrell Creek Formation) 60° - 195°.

5. GEOCHEMISTRY

5.1 Rock Chip Sampling:

To detect any possible mineralisation, ten rock chip samples from rock outcrops and quartz veins were collected at first stage, and assayed for Au by fire assay, As by XRF, Ag and Cu by AAS techniques. Sample no. 6 taken from the contact rocks between dolerite and greywackes returned highest Au and As values of 0.5 and 66 ppm respectively (Fig. 5). No other significant Au mineralisation was detected. The Ag values were recorded below detection limit, 1 ppm, and Cu values less than 38 ppm.

At the second stage three more sample nos. 11-13 collected at the above mentioned locality returned slightly anomalous Au values of 0.02 - 0.04 ppm. Sample nos. 14-35 were collected over 5 months spacing on the fault zone on two separate lines R1 and R2 having lengths 60m and 50m respectively; and assayed for Au by fire assay and As by AAS techniques. One sample on line R2 returned 1.40 ppm Au value (Fig. 6). All the As values were about detection limit, 50 ppm, and no other Au anomaly was detected.

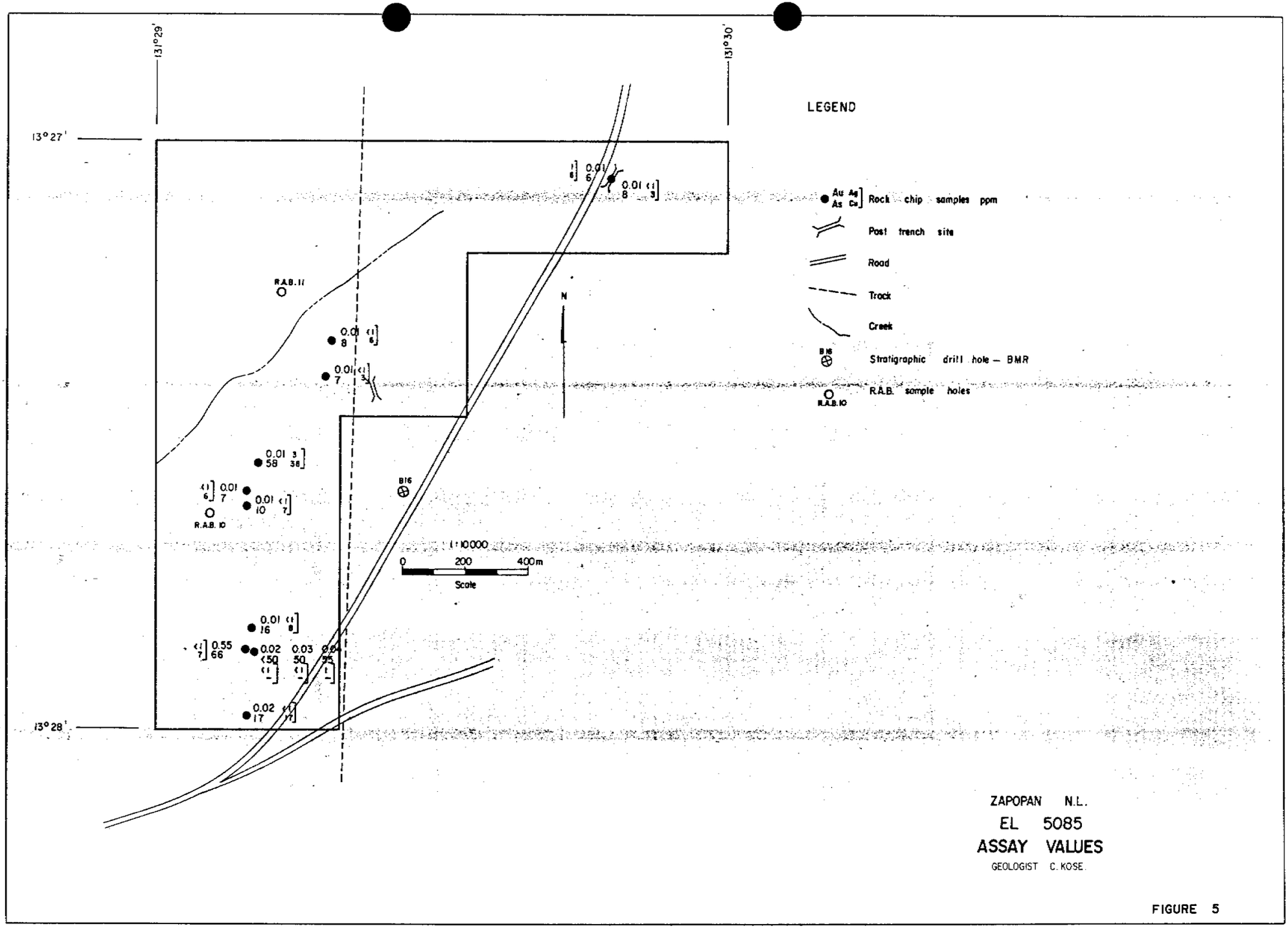
5.2 Soil Sampling:

Complementary to rock chip sampling, 65 soil samples over 10m spacings were also collected on a line of 640m and assayed for Au by fire assay and As by AAS techniques. Anomalous Au values as high as 0.18 ppm were recorded close to the northern end of the sampling line where the basement rocks are at shallower depths. Rest of the samples, almost all returned slightly anomalous Au values ranging between 0.02 - 0.08 ppm with As about detection limit of 50 ppm.

6. CONCLUSION AND RECOMMENDATIONS

incorrect, there is no such result in the Lab. assay results. CAM 09/03/87.

Assay results, as high as 1.40 and 0.5 ppm Au returned by certain rock chip samples, indicated possibility of gold occurrence. Slightly anomalous gold distribution as reflected by soil assays seem also encouraging. It is recommended that the licence area be retained under mining tenure to permit further investigations.


131°29'
131°30'
13°27'
13°28'
LEGEND
Au Ag / As Cu Rock chip samples ppm
Post trench site
Road
Track
Creek
B16 Stratigraphic drill hole — BMR
R.A.B. sample holes
R.A.B. 10
R.A.B. 11
B16
N
1:10000
0 200 400m
Scale
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ASSAY VALUES
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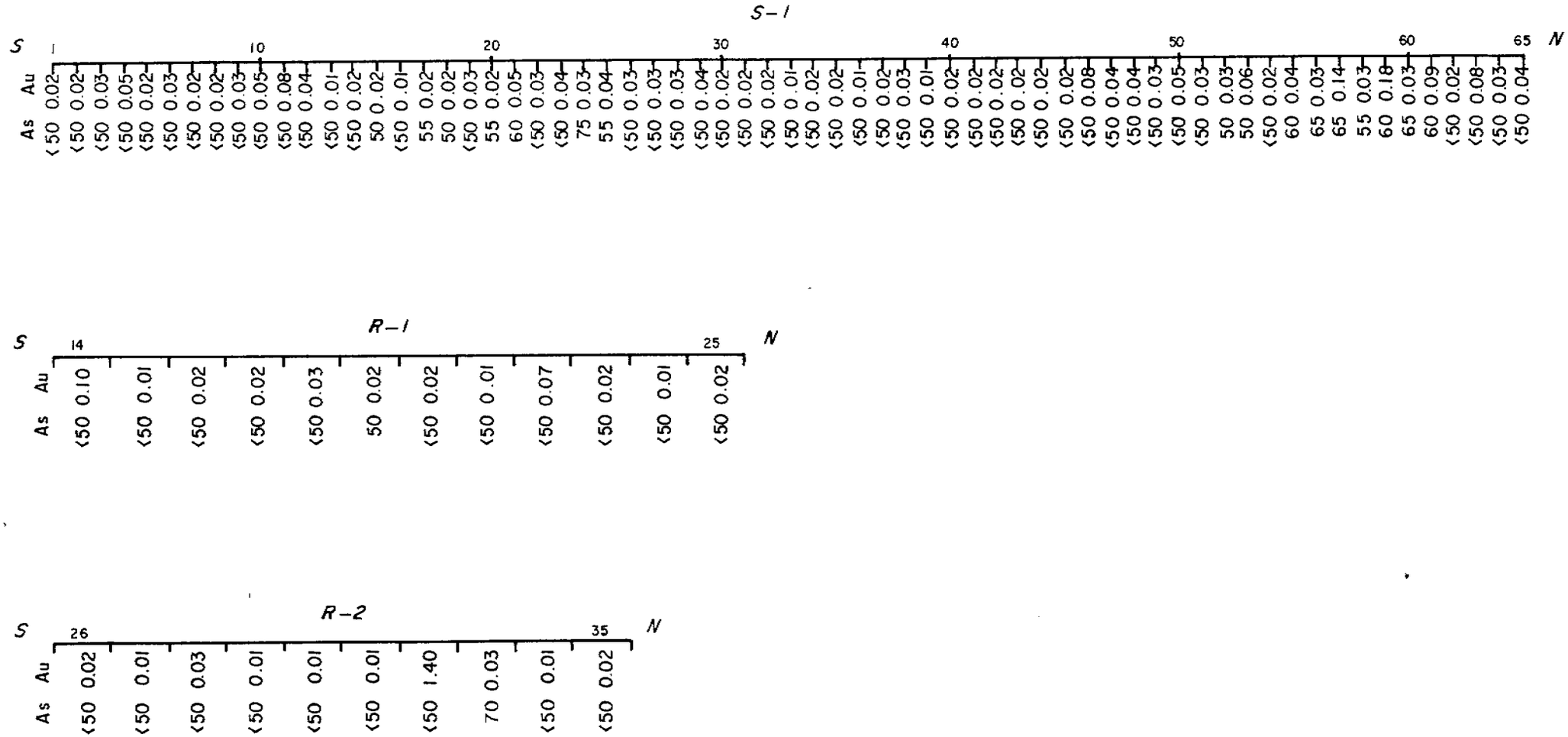
FIGURE 5



S: soil sample line, 10m spacing
R: rock chip sample lines, 5m spacing
Results in ppm

ASSAY RESULTS OF SOIL/ROCK CHIP LINE SAMPLES

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FIGURE 6

7. REFERENCES

Crick, I.M., (1975),

Shallow Stratigraphic Drilling in the Burnside Granite Area, Batchelor 1:100,000 Sheet, Northern Territory, record no. BMR 1976/101.

Nicholson, P.M., Eupene, G.S., (1984),

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Sakurai, M., (1981),

Zapopan Gold Mine of Northern Territory-Exploration and Development Plans: Zapopan Consolidated Pty Ltd - N.T.

Stuart-Smith, P.G, Wills, K., Crick, I.M., Needham, R.S., (1984)

Evolution of the Pine Creek Geosyncline, in Proceedings of the Int. Symp., Sydney, 1979, eds. Ferguson J., and Goleby A.B., Int. Atomic Energy Agency, vienna.

APPENDIX ONE

EXPENDITURE

Geologist (7 days)	$ 1,400.00
Consultant Geologist	$ 360.00
Field Assistant	$ 300.00
Vehicle & Accommodation	$ 750.00
Fuel & Servicing	$ 470.00
Assay	$ 1,500.00
Consumables	$ 250.00
Air photos	$ 138.00
Overheads (15%)	$ 775.00
TOTAL EXPENDITURE:	**$ 5,943.00**

APPENDIX TWO

LABORATORY ASSAY RESULTS

CLASSIC COMLABS LTD

Analysis code AAS1/2 Report 8DN0178 Page G2

Order No. 609 Results in ppm

Sample	Ag	Cu
ECR 1	<1	17
ECR 2	<1	8
ECR 3	<1	6
ECR 4	<1	7
ECR 5	3	38
ECR 6	<1	7
ECR 7	<1	3
ECR 8	<1	6
ECR 9	<1	<2
ECR 10	<1	3

CLASSIC COMLABS LTD

ANALYSIS

SAMPLE MARK	Au ppm	As ppm
ECR1	0.02	17
ECR2	<0.01	16
ECR3	<0.01	7
ECR4	<0.01	10
ECR5	<0.01	58
ECR6	0.55	66
ECR7	<0.01	5
ECR8	<0.01	9
ECR9	<0.01	6
ECR10	<0.01	8

METHOD : FA1; XRF1

CLASSIC COMLABS LTD

Analysis code FA1,AAS2 Report 9DN0025 Page G1

Order No. 628 Results in ppm

Sample	Au	As
ECS1	0.02	<50
ECS2	0.02	<50
ECS3	0.03	<50
ECS4	0.05	<50
ECS5	0.02	<50
ECS6	0.03	<50
ECS7	0.02	<50
ECS8	0.02	<50
ECS9	0.03	<50
ECS10	0.05	<50
Detn limit	(0.01)	(50)

Analysis code AAS2 Report 9DN0025 Page G5

Order No. 628 Results in ppm

Sample	Ag
ECR11	<1
ECR12	<1
ECR13	1
ECR14	1
Detn limit	(1)

Analysis code FA1,AAS2 Report 9DN0025 Page G3

Order No. 628 Results in ppm

Sample	Au	As
ECS11	0.08	<50
ECS12	0.06,0.02	<50
ECS13	0.01	<50
ECS14	0.02	<50
ECS15	0.02	50
ECS16	0.01	<50
ECS17	0.02	55
ECS18	0.02	50
ECS19	0.03	<50
ECS20	0.02	55
ECS21	0.05,0.05	60
ECS22	0.03	<50
ECS23	0.04	<50
ECS24	0.03	75
ECS25	0.04	55
ECS26	0.03	<50
ECS27	0.03	<50
ECS28	0.03	<50
ECS29	0.04	<50
ECS30	0.02	<50
ECS31	0.02,0.02	<50
ECS32	0.02	<50
ECS33	0.01	<50
ECS34	0.02	<50
ECS35	0.02	<50
ECS36	0.01	<50
ECS37	0.02	<50
ECS38	0.03	<50
ECS39	0.01	<50
ECS40	0.02	<50
ECS41	0.02,0.02	<50
ECS42	0.02	<50
ECS43	0.02	<50
ECS44	0.02	<50
ECS45	0.02	<50
ECS46	0.08	<50
ECS47	0.04	<50
ECS48	0.04	<50
ECS49	0.03	<50
ECS50	0.05	<50
Detn limit	(0.01)	(50)

Analysis code FA1,AAS2 Report 9DN0025 Page G4

Order No. 628 Results in ppm

Sample	Au	As
ECS51	0.03,0.04	<50
ECS52	0.03	50
ECS53	0.06	50
ECS54	0.02	<50
ECS55	0.04	60
ECS56	0.03	65
ECS57	0.14	65
ECS58	0.03	55
ECS59	0.18	60
ECS60	0.03	65
ECS61	0.11,0.09	60
ECS62	0.02	<50
ECS63	0.08	<50
ECS64	0.03	<50
ECS65	0.04	<50
ECR11	0.01,0.02	<50
ECR12	0.03	50
ECR13	0.04	55
ECR14	0.10	<50
ECR15	0.01	<50
ECR16	0.02	<50
ECR17	0.02	<50
ECR18	0.03	<50
ECR19	0.02	50
ECR20	0.02	<50
ECR21	0.01	<50
ECR22	0.07	<50
ECR23	0.02	<50
ECR24	0.01	<50
ECR25	0.02	<50
ECR26	0.02	<50
ECR27	0.01	<50
ECR28	0.03	<50
ECR29	0.01	<50
ECR30	0.01	<50
ECR31	0.01	<50
ECR32	1.40	<50
ECR33	0.03	70
ECR34	0.01	<50
ECR35	0.02	<50
Detn limit	(0.01)	(50)