EVALUATION OF POTENTIAL OF BLUEYS SILVER PROSPECT EL 3316 ARLTUNGA AREA NORTHERN TERRITORY

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1. SUMMARY

EL 3316 held by Petrocarb Exploration NL expires on 17 June 1988.

A silver prospect located on the EL has resource potential but has not been fully investigated.

Evaluation of potential remaining was carried out by Clutha Ltd for Petrocarb Exploration NL.

Regional geology consists of a dominantly mafic basement complex overlain by Upper Proterozoic sediments.

Structures cutting the sedimentary sequence within the EL appear to have controlled hydrothermal activity and primary mineralization, Secondary mineralization is related to paleo water tables, probably related to a dissected paleosurface present in the EL area.

High grade mineralization is present within the ERL and MC but remains completely untested.

Mineralized areas can be recognised in areas of duricrust despite complete silica replacement of original lithologies.

Previous drilling carried out was not fully analysed in potential ore zones and some holes finished in anomalous zones.

Additional potential exists within the ERL application under colluvium and associated with a series of untested gossans related to major faults.

The future programme recommended includes mapping, costeaning and percussion drilling programme. This programme is estimated to cost approximately $45,000.

2. INTRODUCTION

This report is an assessment of mineral potential in part of EL 3316 held by Petrocarb Exploration NL.

A previously demonstrated resource exists at Blueys Silver Prospect within the EL area. Evaluation of previous work carried out and recommendations for future work will be made.

The EL expires on 17 June 1988. Location is shown on figure 1. This assessment has been carried out for Petrocarb by Clutha Ltd.

3. REGIONAL GEOLOGY

Regional geology in the EL area consists of a basement complex of mafic and subordinate felsic foliated rocks which are mapped as part of the Atnarpa Igneous Complex of Mid Proterozoic age on the Arltunga - Harts Range Region 1:100,000 geology sheet. These basement rocks consist of retrogressed coarse grained gabbros (?) intruded by diorite and dolerite dykes. Major quartzofeldspathic rocks with a strongly foliated granulitic texture are also present.

The basement complex is unconformably overlain by the Amadeus Basin sequence with a basal silicified sandstone unit, the Heavitree Quartzite which is overlain in the EL area by very fine sandstones and grades upwards into the Bitter Springs Formation; a siltstone and dolomite unit with frequent vertical facies changes. Figure 2 shows BMR mapping in the EL area.

4. LOCAL GEOLOGY

4.1 Stratigraphy

The sequences of particular interest are the Adelaidean age Heavitree Quartzite and overlying Bitter Springs Formation.

The Heavitree Quartzite consists of a typical sequence for the region of sand size quartzites grading into and overlain by a siltstone sequence that has thin lenses of sand size quartzite within it. The topmost sand size quartzite below the siltstones has cavities present that appear to be after an evaporitica mineral, possibly shortite. Mudcracks were observed in float boulders of Heavitree Quartzite adjacent to the EL.

The silty facies of the Heavitree Quartzite is gradational and interbedded with dolomites of the Bitter Springs Formation. These are bedded to massive and appear to vary from fine siltstones to mudstones in grainsize.

A prominent hill of Heavitree Quartzite just to the north of Blueys Silver Prospect appears to be domal in part with dips to the north. The quartzite is terminated southwards by a series of NE trending faults. South of these faults a near vertical to south dripping sequence of quartzose siltstone and dolomite is exposed, representing the top of the Heavitree Quartzite and the transitional zone into dolomites of the Bitter Springs Formation. Figure 4 shows the distribution of Heavitree Quartzite and photolinears thought to be major faults.

4.2 Structure

The major structures identifiable on air photos and in the field are a series of steep dipping NE trending faults cutting off the southern extent of the Heavitree Quartzite dome mentioned previously and a SE trending fault that cuts both Heavitree Quartzite and basement lithologies.

The areas of Heavitree Quartzite and Bitter Springs formation south of the NE trending faults do not have exposed contacts with dolermite and metagabbro basement but are thought to be in fault contact rather than an unconformable relationship. Other small remnants of Bitter Springs Formation further east outside EL 3316 were in fault contact with similar basement lithologies.

4.3 Geomorphology

Figure 4 shows the distribution of remnants of duricrusted draped surface, probably all of one age, which occurs at widely varying elevations on a variety of substrates. Small remnants are left on the Heavitree Quartzite throughout the region, and parts of duricrusted talus slopes shapes and paleochannels at elevations of 5 - 10 m above modern drainage are present immediately east of the boundary of EL 3316.

Remnants of duricrusts on dolomites of the Bitter Springs Formation are represented by massive silcretes with variable iron content and by chalcedonic silica veining below the massive silcretes. The complete weathered profile can be seen in the vicinity of Blueys Silver Prospect.

Drainage is principally controlled by the location of the Heavitree Quartzite and to a lesser degree by strike of the Bitter Springs Formation and by faulting (figures 3 and 4).

Modern drainage is actively eroding the area, apparently due to base level changes caused by uplift of the Arunta Block in possibly the mid to late Tertiary.

4.4 Mineralization

The principal mineralized body is present at Blueys Silver Prospect in the eastern part of the EL. This area is now under Mineral Claim application and is also included in the Exploration Retention Lease (ERL) application lodged on 25 May 1988 to cover the area of interest (figure 3).

Mineralization at Blueys consists of secondary lead, copper and silver minerals with associated barite and quartz veining and replacement. Host rocks are dolomites and dolomitic siltstones. Textures in the dolomite suggest acid solutions carrying the metals caused opened spaces with collapse breccias being formed. Exposures at the eastern boundary of the EL (approximately 10,000 N, 10,025 E) show at least 1 m of substantially mineralized rock is present. Sample 9137 represents about 30 cm of that interval but was taken to estimate tenor of mineralization rather than determine an accurate grade.

The preliminary results indicate clearly that none of the drill hole samples analysed intersected mineralization of the tenor of that exposed within the MC application where sample 9137 was taken.

Due to high Sb and silver values in excess of the limits of the method used for analysis, a partial Au value only has probably been obtained. This sample is now being re-analysed by fire assay for both Au and Ag.

Associated with mineralization are probable collapse breccias and also brecciated quartz veins. Figure shows the distribution of zones of surface Cu-Pb-Zn mineralization, all of which is thought to lie within EL 3316. (The EL boundary is thought to pass through 10,000 N, 10,025 E approximately.)

These surface mineralization zones all lie below the level of mapped silicified dolomite, which consists of massive silcrete with zones of silicified collapse breccias and brecciated quartz veins. It is reasonable to assume that substantial areas of mineralization may be present in the areas to the north of the currently known mineralization. This areas shows up on air photos as a large red brown area, different in character to silcrete caps on dolomites a few hundred metres to the SW. The silcretes to the SW contain less iron and do not show evidence of collapse breccias or brecciated quartz veining.

Remaining potential at Blueys Silver Prospect is therefore considered to be substantial but would be partially present under a cap of silcrete. A broad near flat lying zone of mineralization is expected to be present.

Approximately 600 metres to the north of Blueys Silver Prospect adjacent to the faulted dome of Heavitree Quartzite is a prominent gossan bearing zone (figure 4) with individual gossan zones up to several metres wide with leached siltstone zones between the two principal subparallel gossan zones.

A total of four and possibly five parallel gossan zones are present over an interval of about 70 metres. Some flint clay veining occurs near the principal gossan zone. This was sampled for gold as it bore close similarities to highly auriferous flint clay veins found on the Winnecke goldfield. No gold was present in the sample. However, silver values are anomalous and suggest the gossan zone is mineralized.

Minor gossans and a copper prospect 1.8 km NW of Blueys Silver Prospect, on the north side of the dome were also inspected. These were narrow, generally less than half a metre, and had strike lengths from 10-50 metres long. They appeared to have little economic potential.

5. EVALUATION OF PREVIOUS WORK ON BLUEYS SILVER PROSPECT

The size of the plotted exposed base metal mineralization (figure 5) suggests that a narrower grid interval should be used to determine the shape of mineralization present. The ten metre interval used on lines was appropriate. However, the 25 m line spacing appears to have been too wide to assess geochemical trends sufficiently accurately.

Drill holes on the two lines drilled, 9900 E and 9925 E, were not drilled to sufficient depth in about half the holes drilled, this is particularly so on line 9900 E. (See Carthew 1986.)

Failure to assay the complete hole was a serious error, highlighted by the fact that the best intersection of 55g Ag/t in hole BSA4 was adjacent to an interval of 5 metres that was not analysed. The equivalent interval in hole BSA2 was analysed with an anomalous zone being present. A zone 100m long that was drilled but not analysed remains to be assessed and is inferred to contain a silver resource.

The groundwater related nature of secondary mineralization can be inferred from the results, with a surface enriched zone 2-3 m thick, then two probably paleo water table related zones, each of which is 1-3 m thick and subhorizontal.

Evaluation of zones to be analysed appears to have relied on the presence of secondary copper minerals. Secondary silver minerals are notoriously difficult to recognize and, if spatial separation of Cu and Ag occurs, as may be happening in BSA6, then no obvious mineralization may be present in some silver bearing zones.

Evaluation was restrictured in its extent and value and three known zones of surface mineralization were not tested. The conclusion that secondary mineralization is restricted to an anticlinal zone on the baseline is premature as the orientation of mineralization is not known.

6. DISCUSSION

Blueys Silver prospect is a blanket of supergene base metal and silver mineralization that appears to be proximal to the conduits that introduced primary mineralization. The attitude of these conduits has not yet been determined although these may be the inferred thrust planes discussed by Carthew (1987). The brecciated quartz vein zones are inferred to be the surface expression of the fluid flow zones responsible for primary mineralization and are widespread in the silcrete cap to the north of the area previously gridded. No surface geochemical expression of mineralization would be expected in these areas due to extreme leaching and silica replacement of original lithologies. Further evaluation would require drilling through the silcrete cap.

The silcrete cap, which shows evidence of mineralization, disappears northwards under a cover of colluvium derived from the erosion of the fault scarp in the northern part of the ERL. This area appears to have potential, however, the thickness of cover is unknown.

Gossanous and bleached zones 600 m north of the Blueys Silver Prospect lie on the photo interpreted fault cutting off the southern part of the dome of Heavitree Quartzite. The faults appear to be major structures which focussed water flow into the gossan areas. These zones are thought to be feeder zones similar to the vein zones at Blueys and may have substantial tonnages of primary mineralization present. The bleaching of the siltstones may be either hydrothermal or due to weathering. If it is principally due to weathering, then good potential exists for supergene enrichments at paleo water tables.

7. FUTURE PROGRAMME

Blueys Silver Prospect is covered by an MC application of 400 x 250 m which has been included in an ERL application of 1015 x 700 m.

Initial work on the ERL would be to recover the previous grid and extend it to cover all areas showing any signs of mineralization. A map of the ERL must also be produced to delineate the extent of various lithologies, zones of quartz veining and collapse breccias and extent of duricrusts. Elevation of all known mineralization must also be determined to plot the mineralization surfaces.

Concurrent with the mapping programme, analysis of drill hole intervals not previously submitted would be undertaken.

At the completion of mapping, permission would be sought to excavate a number of costeams to determine the attitude of possible feeder zones, the actual grade of the secondary zones, to check on drill hole data and improve the general understanding of the relationship between structure and mineralization.

Evaluation of the data gained from the above programme would be undertaken prior to a shallow percussion programme to test the sub silcrete potential and also to test the gossan zones in the northern part of the ERL. Redrilling of some previous holes may be required as well as testing of other areas of surface mineralization.

The above programme is expected to include approximately 400 m of drilling and is estimated to cost approximately $45,000.

8. LOCATION

Alice Springs	SF53.14	1:250,000
Riddoch	5851	1:100,000
Fergusson Range	5850	1:100,000

9. REFERENCES

Carthew S	1984	Progress report of exploration during 1986 on Exploration Licence 3316 (White Range area) Northern Territory)
Shaw R D Stewart A J Rickard M J	1984	1:100,000 Geological Map Commentary Arltunga - Harts Range Region Northern Territory, Bureau of Mineral Resources, Australia.

APPENDIX

Rock Chip Sample Ledger

GEOCHEMICAL SAMPLE LEDGER

LOCATION: EL 3316 Arltunga N.T. SAMPLE TYPE: Rock Chip SAMPLED BY: P A Temby

DATE: 26/5/88 PREPARATION: ASP21, 33, 41 ANALYSED BY: Fox Anamet APM1, AGP1, AGA7,

Sample No.	Grid Ref.	Description	Au	Ag	As	Cu	Pb	Zn	Sb	Ba	
9137	Petrocarb Grid 10000N 10025E	6kg rock chip sample of barite bearing silicified secondary copper-silver mineralization representative of better mineralization and equivalent to 0.5m vertical interval of best exposed mineralization.	0·26	>500	4370	4·04%	71%	2840	1·18%		*
9138	Adjacent to gossan NE corner ERL	flint clay and chalcedonic veins in slst. Aggregate of ~30cm of veins in 1.5m of slst. Veins only sampled – 2kg.	<	10	30	215	115	25	100		
Detection Limits			m 0·004	m 0·5	m 10	m 5	m 5	m 5	m 5	% ·001	

* Due to high Sb, Au may be low
Sample being re analysed
for Au Ag Pb

JM

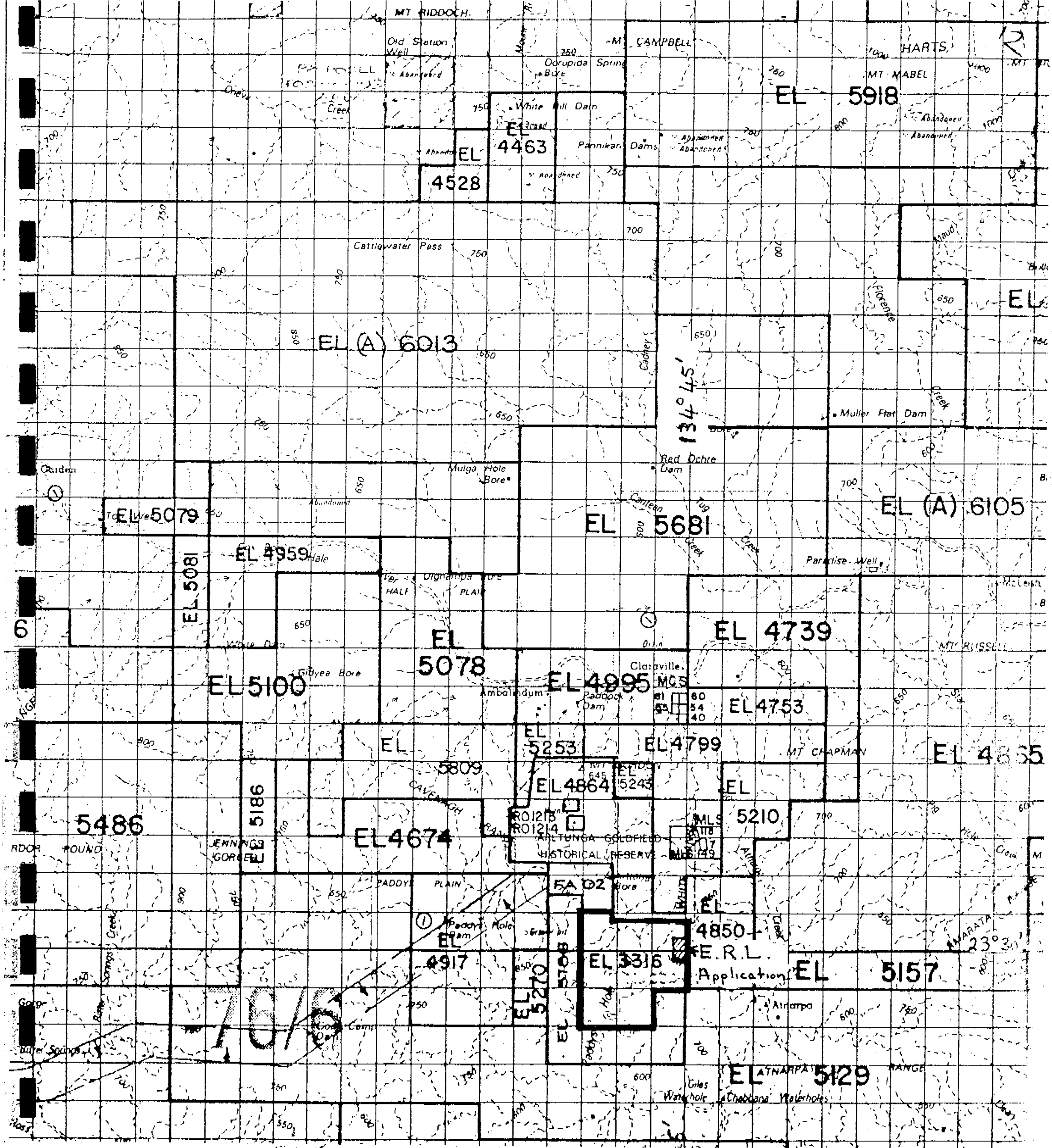
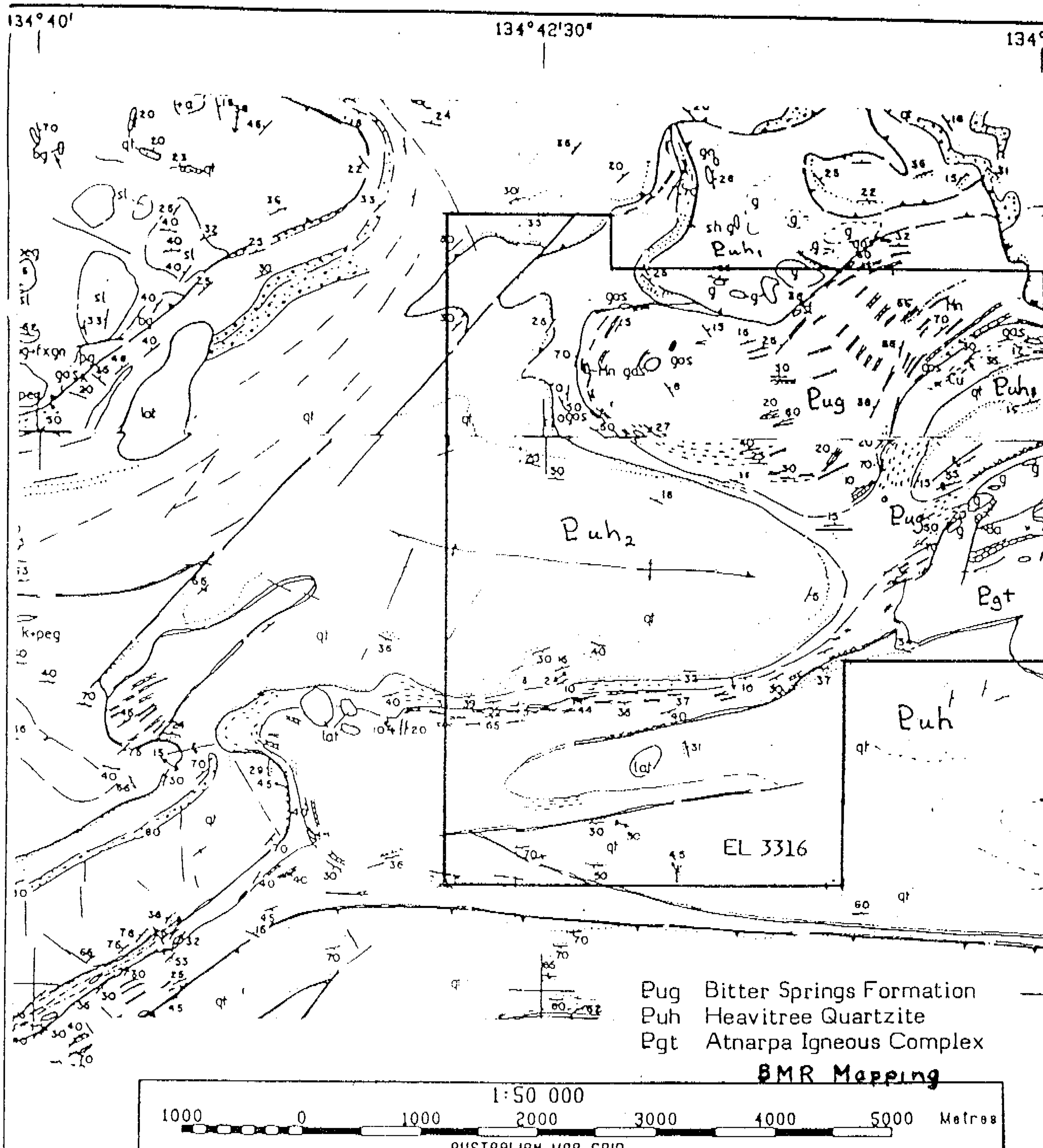


Figure 1 EL 3316 Location Plan
1:250 000



ALICE SPRINGS SF53-14

Figure 2
GEOLOGY – Fact – Interpretative

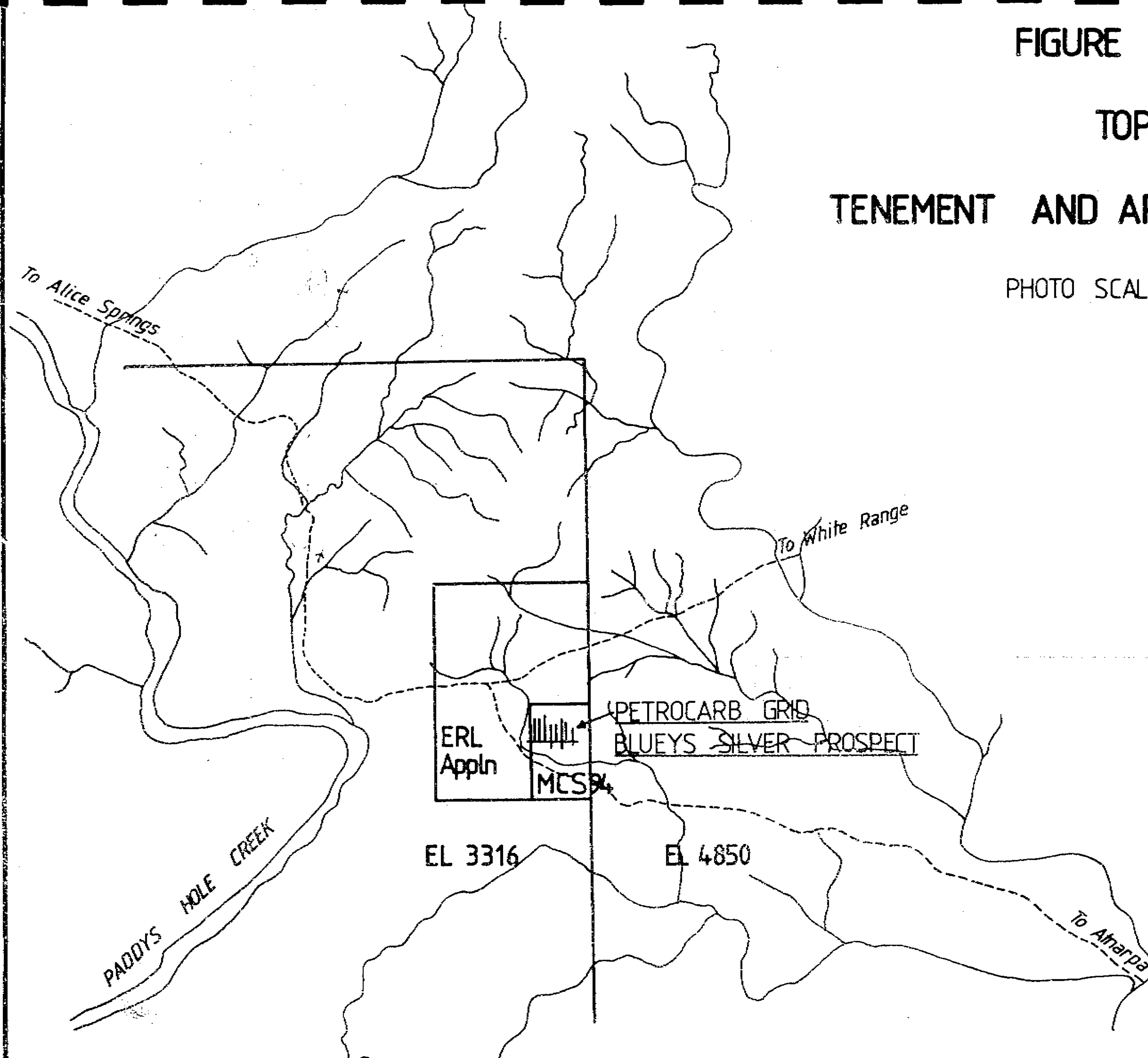
EL 3316

FIGURE 3 EL 3316

TOPO BASE

TENEMENT AND APPLICATION BOUNDARIES

PHOTO SCALE APPROX 1: 25000



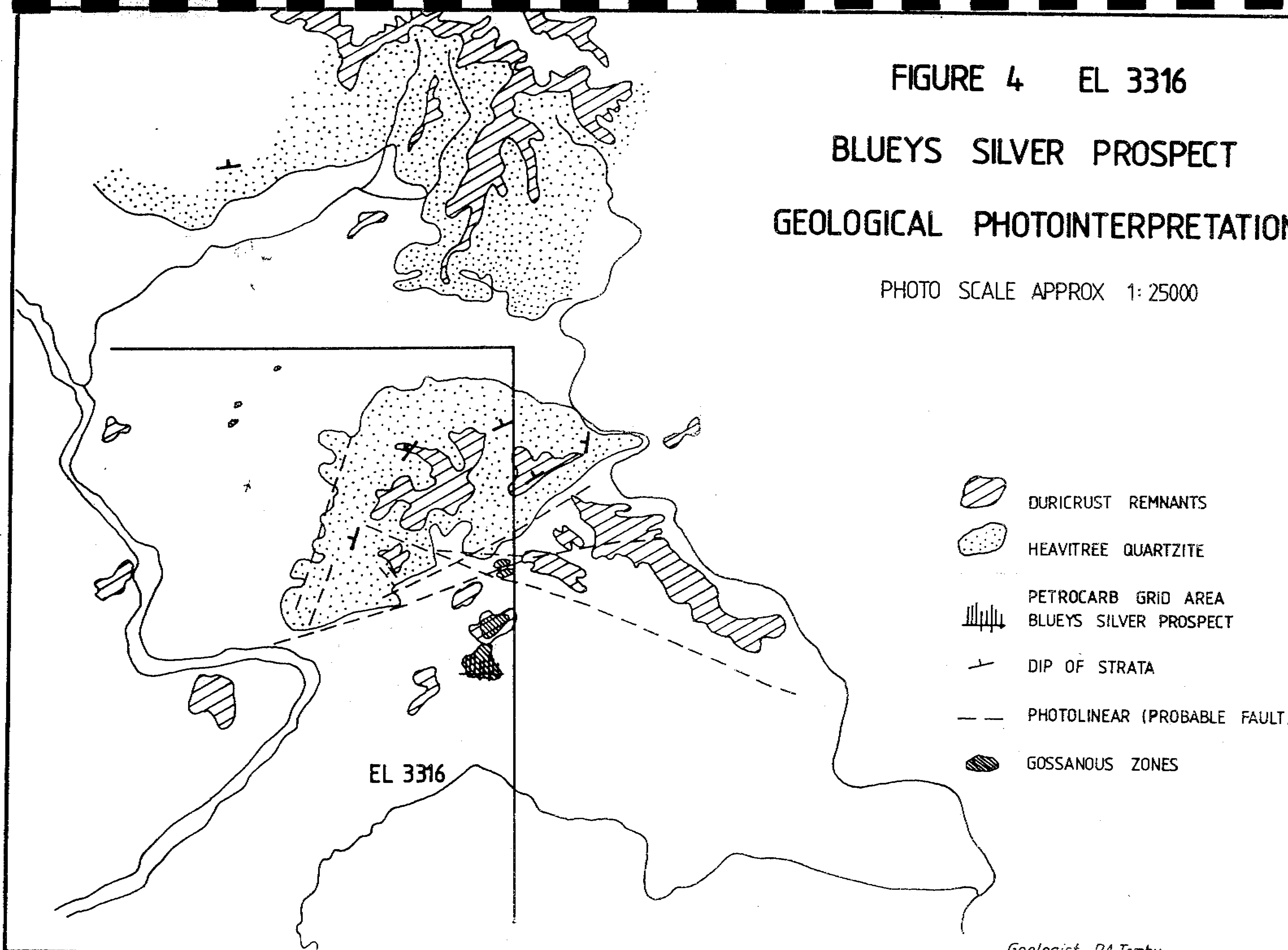
Geologist P.A.Temby

FIGURE 4 EL 3316

BLUEYS SILVER PROSPECT

GEOLOGICAL PHOTOINTERPRETATION

PHOTO SCALE APPROX 1: 25000



Geologist P.A.Temby

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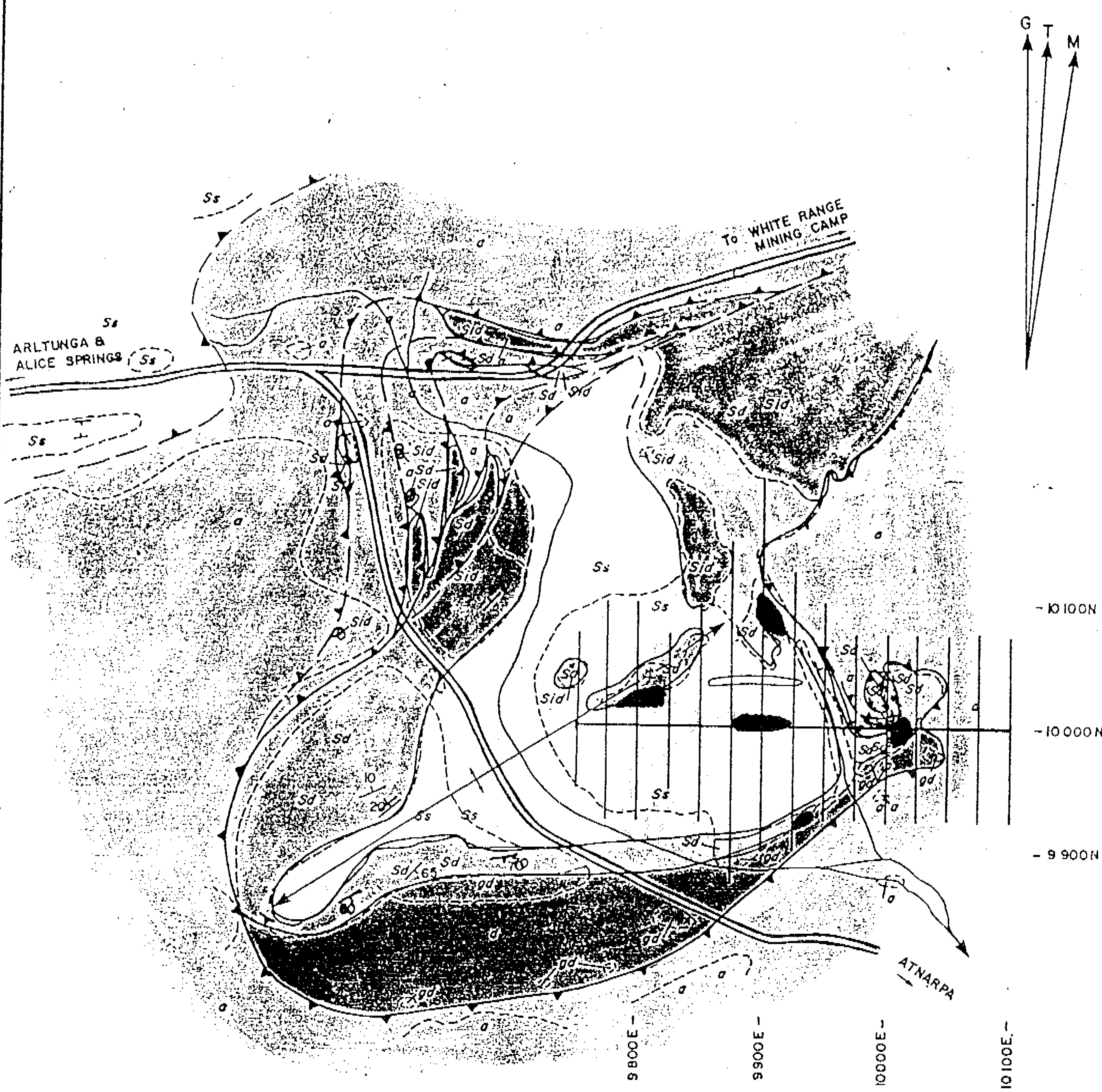

LEGEND

BITTER SPRINGS FORMATION
Ss - Siltstone
Sd - Silty dolomite
gd - grey dolomite
Sid - Silicified dolomite

ARUNTA COMPLEX
a - metadolerite and gneiss

Zones of surface Cu-Pb-Zn mineralisation

STRUCTURAL INTERPRETATION

FACT GEOLOGY

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

GORDON

0 50 100 150 200 metres

SCALE 1:5000

GEOLOGIST	Figure 5
DATE	BLUEY'S SILVER PROSPECT & ENVIRONS ARLTUNGA AREA N.T. GEOLOGICAL SKETCH MAP
DRAWN	
CHECKED	PROJECT / DWG NO.