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NORGOLD LIMITED

E.L. 6/85 - JUKES DARWIN

RELINQUISHMENT REPORT

REPORT NO. T.236

I.J. MATHISON
JUNE 1989

89-3012

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1. Norms Quartz Prospect E.L. 6/85

FIGURES

- Figure 1 - Tenement
Figure 2 - Geological Setting

1.0 INTRODUCTION

1.1 Tenement (Fig. 1)

EL 6/85 (Jukes Darwin), held by Norgold Limited, covers an area of 70 km² situated 20 km south of Queenstown in western Tasmania. The annual renewal date is 19 October. Expenditure to date by EZ/Norgold on this EL totals \$206,000.

1.2 Geography

The tenement covers part of the West Coast Range, a prominent N-S trending mountain chain of very rugged topography, varying from a low of 480m elevation to the highest point (1,168 m) at Mt Jukes. Along the east side of the range, the Kelly Basin Road lies at an elevation of 280m, while to the west the Clarke and Garfield Valleys lie below 220m.

The top of the West Coast Range is covered with a relatively open sub-alpine vegetation but the steep flanks to the west and east are characterized by dense regrowth with some remnant pockets of rainforest along creeks.

1.3 Geological Setting (Fig. 2)

The area consists predominantly of a N-S trending belt of Cambrian Mt Read Volcanics which can be subdivided into a Western Belt of tuffs, shales and greywackes, a Central Belt of acid volcanics and an Eastern Belt of mixed volcanics and volcanoclastic conglomerates. Within the Central Belt a rhyolitic lava core with prominent hematite-magnetite veining is flanked on both sides by acid pyroclastics containing extensive chloritic alteration zones with significant disseminated and veinlet chalcopyrite and pyrite. Overlying and flanking the volcanics are extensive developments of Ordovician Owen Conglomerate which constitute much of the rugged relief of the area. Other features of note are the Mt Darwin sub-volcanic granite intrusion of Cambrian age and the prominent NW trending faults which transect the area.

1.4 Target Mineralization

Although the Central Belt of the Mt Read Volcanics hosts several massive sulphide bodies to the North (Mt Lyell, Rosebery, Que River, Hellyer), there appears to be no potential for such mineralization in this area, as the Central Belt lithologies and known mineralization represent a subvolcanic environment and there is no indication of a quiescent submarine depositional setting suitable for the accumulation and preservation of massive sulphides.

The area is still of economic interest, however, as the potential for bulk low grade open pittable gold or high grade gold veins has been virtually ignored by previous explorers.

Specified features suggesting potential for economic gold mineralization are:

- * widespread occurrence of gold in old copper workings;
- * occurrence of extensive zones of chlorite-silica-pyrite alteration;
- * the presence of major cross-cutting fractures of regional significance, which may have promoted the movement of auriferous hydrothermal fluids.

1.5 History

1897-1903 - Minor production of copper and gold from various small workings (Lake Jukes, East Darwin, Findons, Hydes etc).

1903-1956 - Periodic Mt Lyell investigations of old workings.

From 1956 to 1984 systematic exploration was conducted in the Central Belt of the Mt Read Volcanics by a number of companies seeking Mt Lyell style volcanogenic massive Cu sulphides. Their investigations delineated several extensive areas of chloritic alteration in the pyroclastics, containing sporadic rich pockets of vein copper mineralization, but no economic concentrations were detected. In this period little consideration was given to the potential for volcanogenic gold until Goldfields made a belated rushed attempt to assess the gold prospectivity in 1983/84.

The exploration can be summarized as follows:

- 1956-1962 Mt Lyell-EZ JV exploration including:
- * two DDHs L1 and L7 in the Lake Jukes Mine area;
 - * a detailed ground EM (turam), magnetic and SP survey in the East Darwin area (EMR);
 - * a helicopter borne EM survey over Prince Darwin;
 - * an airborne magnetic and scintillometer survey over the whole Jukes-Darwin area;
 - * detailed adit sampling of Findons and Prince Darwin workings.
- 1964 US Metals Refining Co mapping, adit sampling and SP over the Prince Darwin and Findons workings.
- 1965-1972 BHP exploration involving two DDHs in the Prince Darwin workings and mapping, magnetics and adit sampling of Intercolonial Spur.
- 1972-1976 INAL regional mapping, airborne EM (turair) and magnetics over the whole EL and detailed follow-up involving:
- * mapping, chip sampling and IP in the East Darwin, Intercolonial Spur, Allans Creek-Snake Peak and Findons area;
 - * Three DDHs in the area of the East Darwin workings
- 1975 EZ mapping and drainage sampling in the Clarke and Garfield River drainage systems to assess the potential for Rosebery-type Pb-Zn.
- 1976-1979 Goldfields exploration of the Clark Valley for stratiform Pb-Zn by drainage sampling, gridding, rock chip, soil sampling and IP.
- 1983-1984 Goldfields brief reconnaissance assessment of the gold potential by rock chip sampling of the Mt Darwin and Intercolonial Spur areas.

1.6 Norgold Exploration

Norgold exploration has comprised the following:

* 1985/86

reconnaissance geology, drainage sampling and rock chip sampling in areas of old workings in the South Darwin, East Darwin, Intercolonial Spur, Upper Lake Jukes and Mt Darwin-Snake Peak areas;

* 1987

detailed grid-based mapping and chip sampling to follow-up anomalous results in the Allans Creek-Lyell Consols, Upper Lake Jukes and Intercolonial Spur areas; resampling of drill core from the East Darwin area. Small quartz-sericite-chlorite lodes with economic grades were mapped at Upper Lake Jukes and Lyell Consols but the tonnage potential was subeconomic. In addition anomalous gold (to 5.5 g/t) was detected in a zone of silicified volcanics in the Lyell Consols-Mt Lyell Extended line of workings; a quartz float sample on the south flank of Mt Darwin returned 21 g/t Au;

* 1988

detailed outcrop and adit mapping and chip sampling of the zone of silicified volcanics at Lyell Consols with negative results; reconnaissance chip sampling in the Mt Darwin, Findons and Prince Darwin-South Darwin Peak areas;

1.7 Best Results to Date

In the 1988 follow-up of the 1987 21 g/t Au quartz float sample, chip sample results, of 4.2, 6.7 and 2.7 ppm Au were received for a shallow dipping quartz veins up to 1.5m wide within altered rhyolite on the southern slope of Mt Darwin immediately west of the Darwin Granite (Fig 2). The pyrite-chalcopyrite-rich vein, which is exposed in two small pits (Fig 3), can be traced to the northwest in sporadic outcrop and float over a distance of 200m, before diminishing into fine wispy veinlets. To the southeast of the two pits, the vein occurs over a 10m length, but is then obscured by soil cover and thick scrub over a 130m distance to the margin of the Darwin Granite.

To the north and south of the main vein two other quartz veins have been located, but they are narrower and of lower grade. The lower vein is up to 1.5m wide with a maximum gold value of 0.05 g/t, while the upper vein returned a best value of 0.14 g/t over its 0.5m width.

It is noteworthy that the main quartz vein is a rare occurrence in the area as the other known quartz veins in the tenement do not carry significant gold mineralization.

Further work is required to delineate the full surface extent of the vein and to determine whether it is genetically related to the Darwin Granite or is the surface expression of a large body of auriferous veined rhyolite at depth.

2.0 WORK COMPLETED AUGUST 1988 - JUNE 1989

2.1 J.V. Negotiations

Attempts were made to attract J.V. partners to continue exploration in this area. All companies approached considered the targets defined to have an inadequate potential.

2.2 Rehabilitation

A hutted camp on the South Darwin plateau was recovered after complete destruction by storms. All other material, wooden grid pegs, flagging tape and sample tickets which were taken into the area will biodegrade rapidly.

2.3 Reinterpretation (Appendix)

A brief review of Norms Quartz Prospect was completed. Some further work was recommended.

3.0 CONCLUSIONS

3.1 Large, Low Grade Gold Deposits

No indication of any large scale deposits suitable for bulk mining methods was detected.

3.2 Gold in Altered Volcanics

Small, structurally controlled, steeply plunging shoots of gold-copper mineralization occur in quartz-sericite zones within sericitized acid volcanics at Upper Lake Jukes.

Occurrences of gold in chlorite-magnetite/hematite pods and veins are wide spread. These pods and veins are too small to be economically significant.

3.3 Gold in Quartz Veins

At Norms Quartz Prospect a thin (.15m) shallowly dipping quartz vein has been mapped over a strike length of 200m. This vein and similar undetected veins are the probable source of alluvial gold in the Clarke River valley and the stream east of Mt Darwin. In themselves, these quartz veins appear to have little economic potential. Connections of these veins to larger deposits are hypothetical.

4.0 RECOMMENDATIONS

As no J.V. partner can be attracted to the area and as the defined targets are too small to be economically viable for Norgold, the area should be relinquished.

5.0 CONTENTS OF PREVIOUS NORGOLD/EZ REPORTS

Mathison, I.J. and Taylor, S. 1986: EL 6/85 - Jukes
 Darwin. Progress Report on Exploration Activity,
 October 1985 to 19th September 1986.
EZ Report No. T219

<u>Area</u>	<u>Exploration</u>	<u>Significant Results</u>
Whole EL	Review of previous exploration	Several areas worthy of further exploration
South Darwin-Darwin Plateau	Reconnaissance stream sediment and rock chip sampling (Assays Cu,Pb,Zn,Ag Fe,As,Au)	One anomalous Au value in a stream draining Mt Darwin
East Darwin	Rock chip and adit sampling (Assays as above)	Anomalous Au (0.5 g/t) from Darwin Pty adit
Intercolonial Spur	Rock chip sampling (Assays as above)	2 anomalous Au values (0.1 & 0.32 g/t) in samples of pyritic, chloritic fault zone
Upper Lake Jukes	Rock chip sampling (Assays as above)	3 anomalous samples (best 1.98 g/t Au) in altered volcanics.
Mt Darwin-Snake Peak	Rock Chip and stream sediment sampling (Assays as above)	Gossanous volcanics from Sumpters Peak reported 5.13g/t Au in chloritized volcanics
Findons	Reconnaissance rock chip sampling (Assays as above)	No anomalous gold values
Lyell Consols	Reconnaissance rock chip sampling (Assays as above) 4 stream sediment samples	No anomalous gold values in rock chips. Two streams highly anomalous (1.45 & 3.04g/t Au)

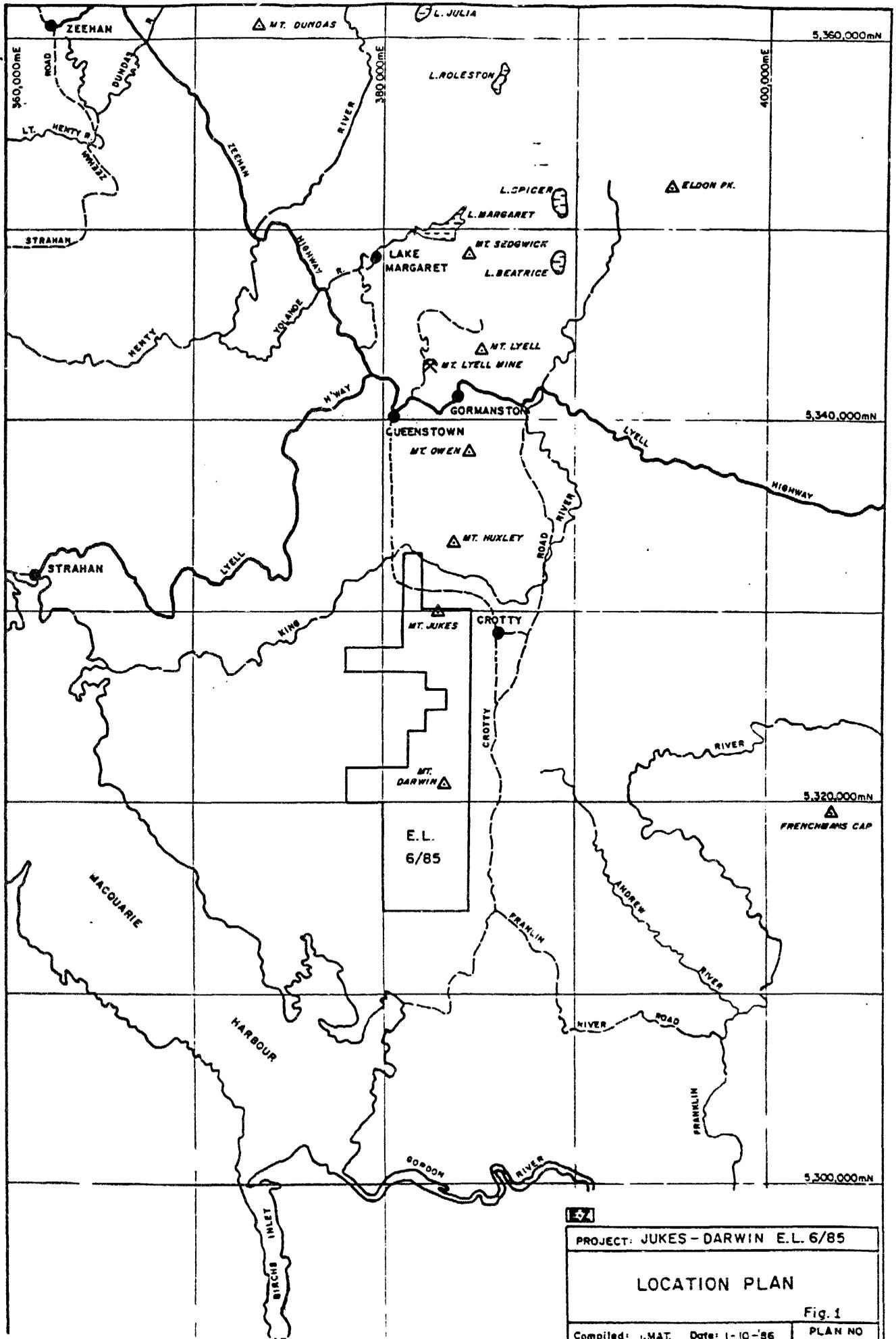
Mathison, I.J. and Gardner, D. 1987: EL 6/85 Jukes Darwin. Report on Exploration Activity, August 1986 to August 1987.

<u>Area</u>	<u>Exploration</u>	<u>Significant Results</u>
Mt Lyell - Allans Creek	Grid based mapping, rock chip sampling, adit sampling and infill stream sediment sampling (Assays Cu,Pb,Zn,Mn, Fe, Au) Thin section petrology	A zone of cherty rocks running from Mt Lyell Consols to Mt Lyell Extended (Dardus Creek) reported anomalous gold. Minor anomalous gold in magnetite-chlorite alteration pods.
Intercolonial Spur	Grid based mapping and rock chip sampling (Assays as above) Thin section petrology	Minor anomalous gold in magnetite-chlorite alteration pods.
Upper Lake Jukes	Grid based mapping, rock chip sampling & adit sampling (Assays as above) Thin section petrology	Gold and Copper mineralizations restricted to small structurally controlled bodies within intensely sericitized volcanics
South Darwin Plateau	Reconnaissance rock chip sampling and stream sediment sampling (Assays as above)	Erratic anomalous gold in stream sediment and panned concentrates from streams draining southern slopes of Mt Darwin. Sulphide quartz float from this area reported 21 g/t Au.
East Darwin	Drill core logging and sampling (Assays Cu,Pb,Zn, Au, Au)	No anomalous Au reported.
Whole EL	Geochemical scan of samples reporting >0.1 g/t Au. Analysis of Ag, Cr, Mo, Bi, Co, As, Sb, Te, Hg, Ba, W, Tl, Sn, and S	High Mo and Cr reported from many samples suggest granite related, high temperature mineralization.

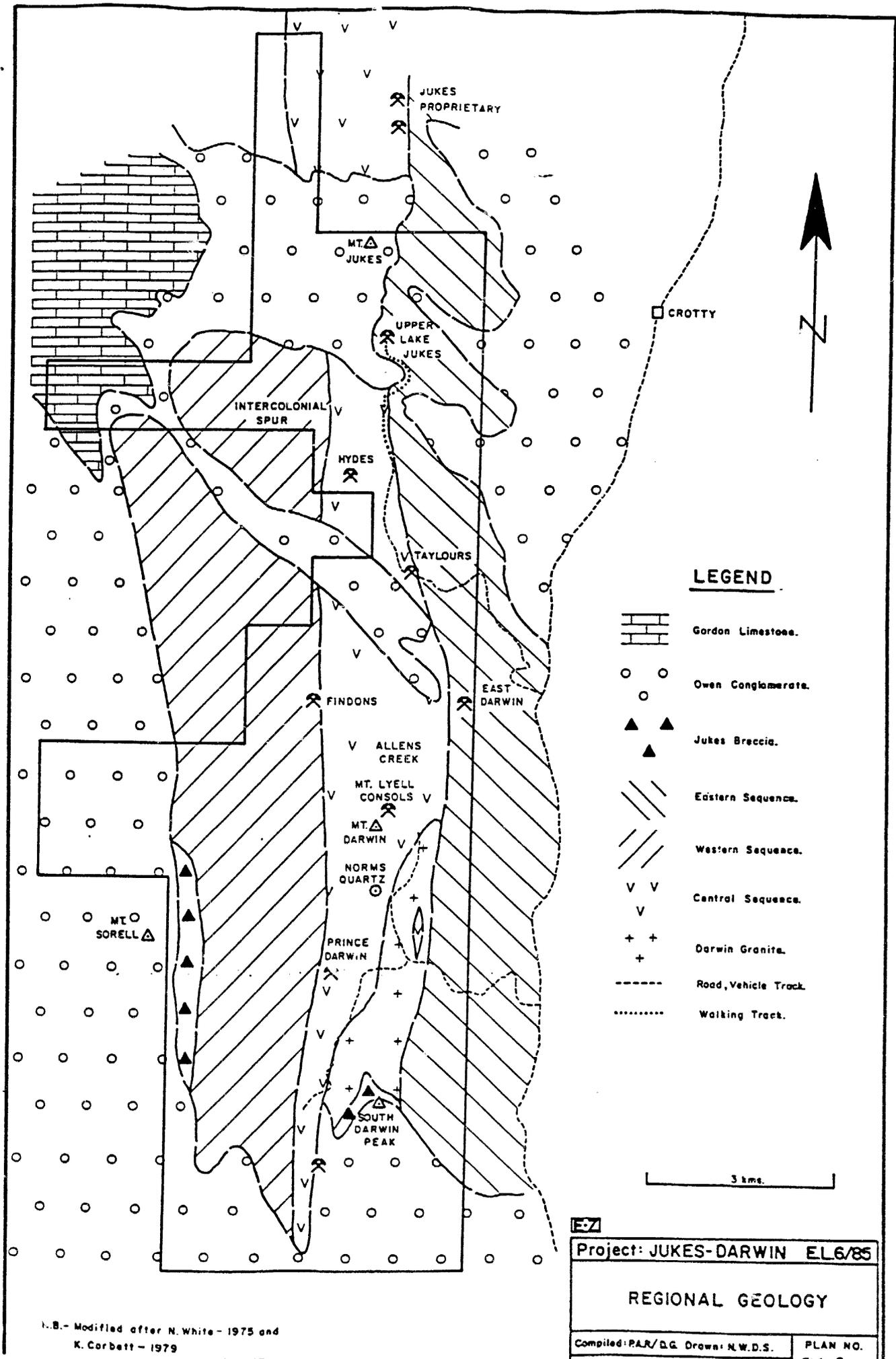
Gardner, D 1988: EL 6/85 - Jukes Darwin Report on
Exploration Activity, August, 1987 to August, 1988

EZ Report No. T233

<u>Area</u>	<u>Exploration</u>	<u>Significant Results</u>
Mt Lyell Consols - Mt Lyell Extended	Grid based rock chip sampling and mapping Adit sampling	No significant zone with anomalous gold values was detected
Norms Quartz Prospect	Grid based mapping, rock chip and mattock sampling	A thin (Max 1.5m) quartz vein with consistently anomalous gold values was discovered
Findons	Reconnaissance mapping and rock chip sampling. Adit mapping & sampling	Best gold (0.7g/t) from thin veins. Results generally disappointing.
South Darwin	Reconnaissance rock chip sampling	All gold assays <0.008 g/t



PROJECT: JUKES - DARWIN E.L. 6/85	
LOCATION PLAN	
Fig. 1	
Compiled: J.MAT.	Date: 1-10-'86
PLAN NO	



N.B. - Modified after N. White - 1975 and K. Corbett - 1979

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APPENDIX 1

NORMS QUARTZ PROSPECT

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
MINERAL RESOURCES DIVISION

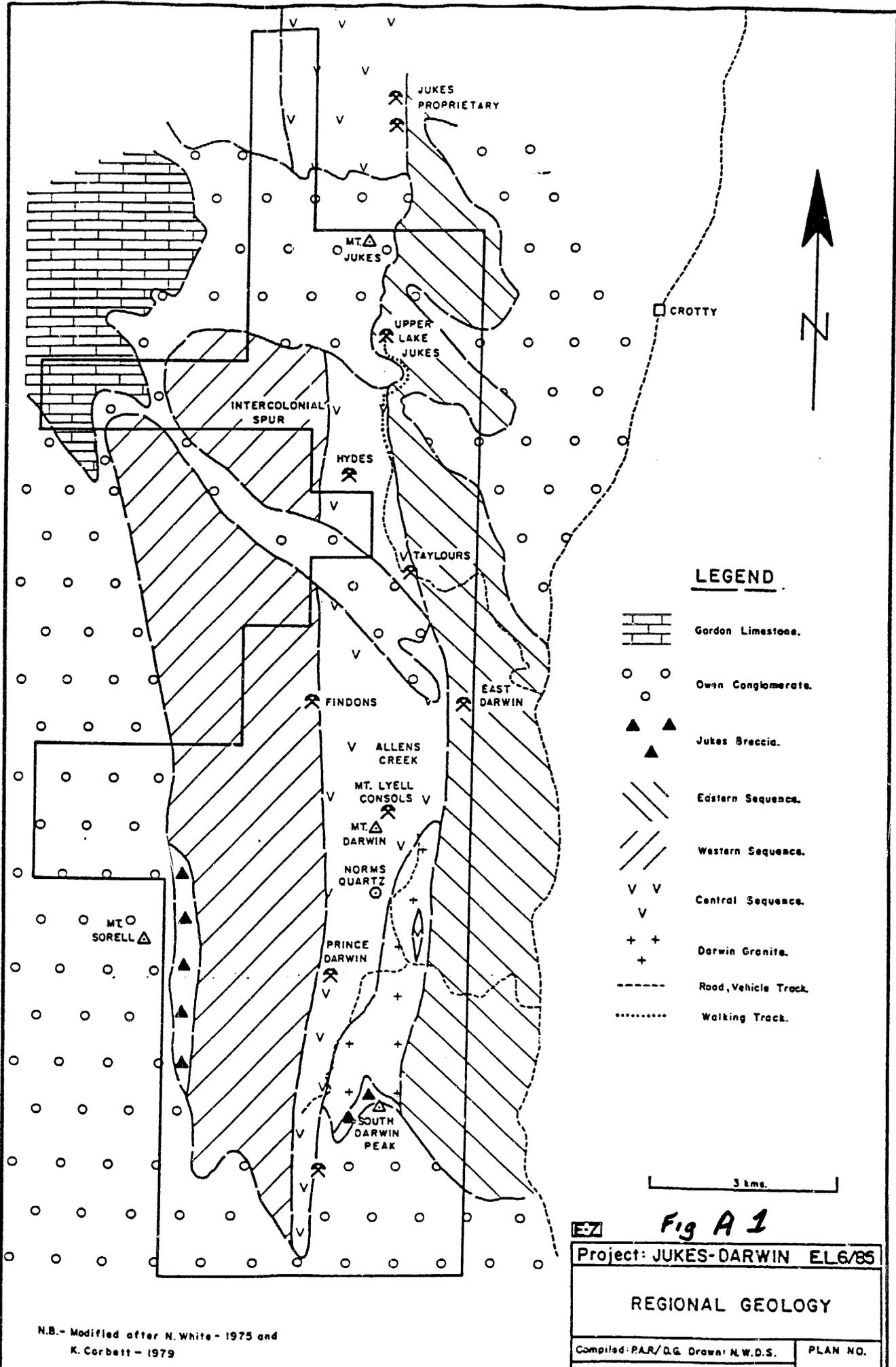
MEMORANDUM

To: Ian Mathison Date: 14th January 1989
From: D. Gardner
Subject: NORMS QUARTZ PROSPECT E.L. 6/85

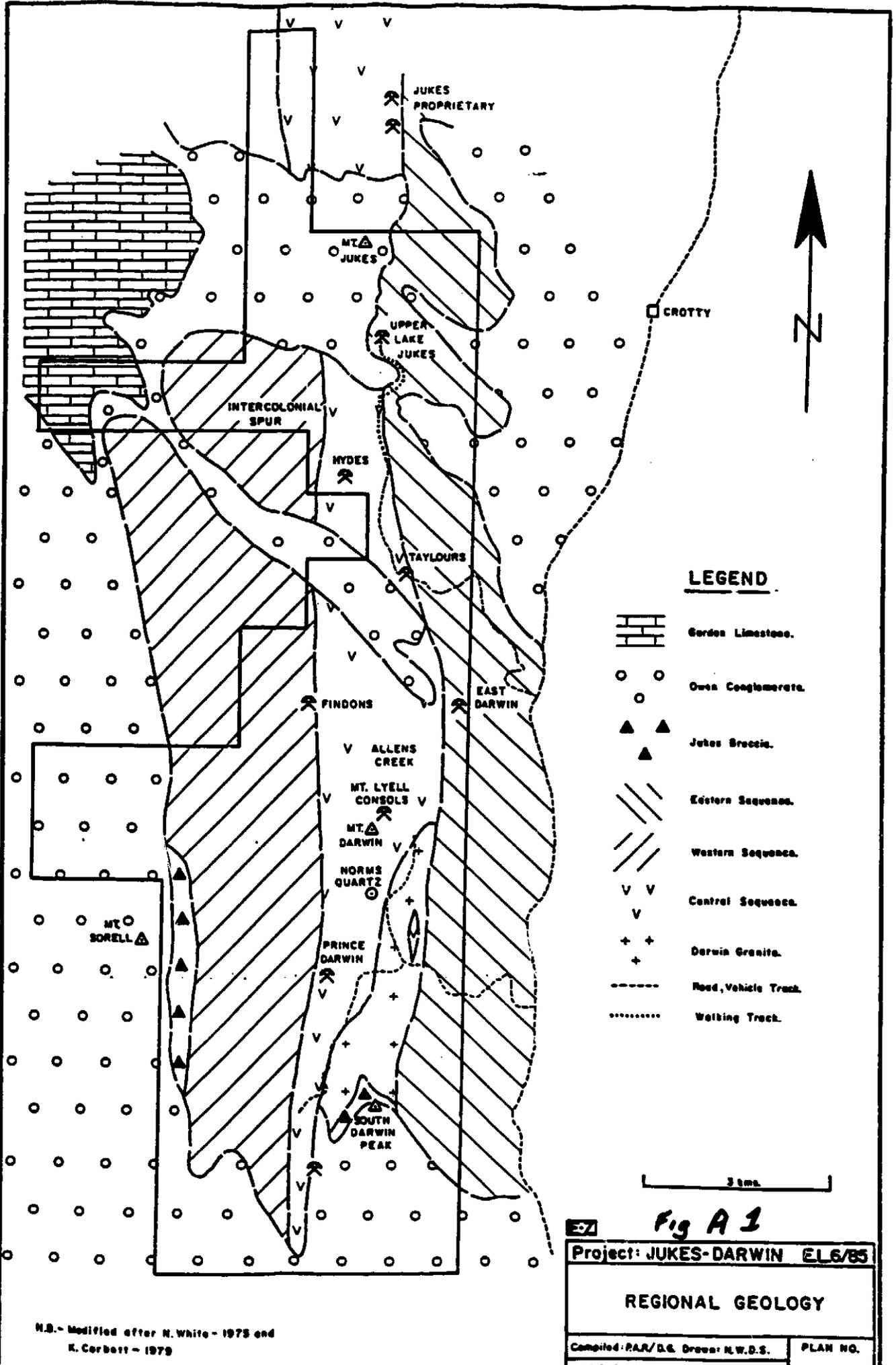
1988 field work at Norms Quartz Prospect (Fig. 1) delineated an anomalous quartz vein 170m long and up to 1.5m wide, with Au values up to 6.68 g/t (EZ Report T233) as shown in Figure 2. Sampling to the east of the ridge has not closed off the potential 150m strike length from the last outcrop to the Darwin Granite. The vein is both thickest and of highest grade where it disappears.

The prospect requires further work because this style of mineralisation has not been encountered before, and its significance is not understood. It may or may not be associated with the Darwin Granite (low results for Cr, Mo, W, Sn for the quartz vein suggest it may not be related). An increase in grade and/or thickness of quartz at depth may or may not be expected.

It is also worth considering the source of the anomalous quartz. Quartz veins, in the region are generally not anomalous, but the rhyolite often is. Norms Quartz vein could be leaking gold from a (large?) body of anomalous rhyolite adjacent to the granite and as such could be the only surface expression of this anomalous body. We do not know what to attribute the high gold values to, and we should be trying to find out. EZ obtained the well explored Jukes Darwin Lease in order to search for mineralisation missed by other explorers. Norms Quartz vein is the most significant discovery both in gold grades, and in the fact that it is a 'new' style of mineralisation.



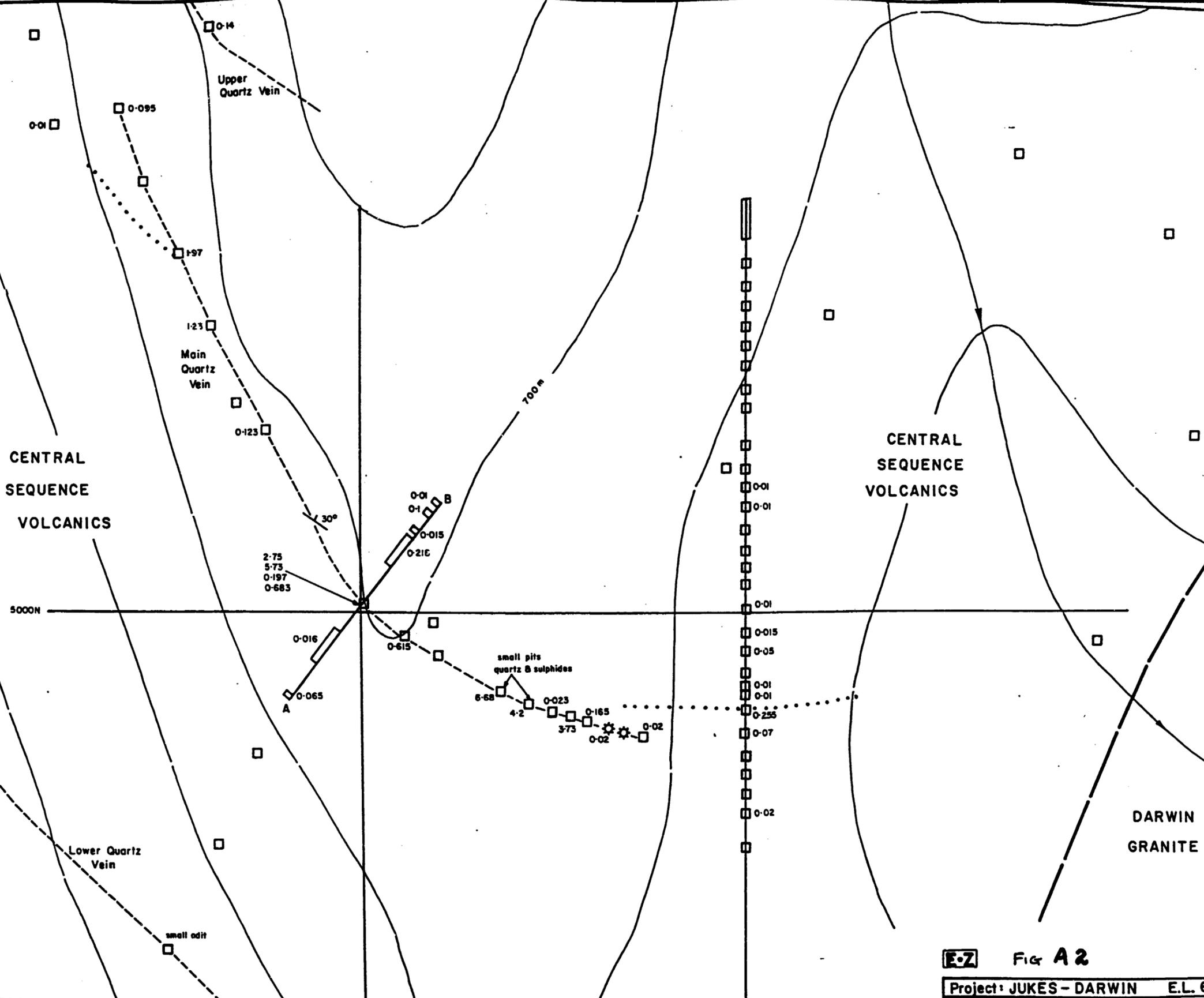
N.B. - Modified after N. White - 1975 and K. Corbett - 1979



N.B. - Modified after N. White - 1973 and K. Corbett - 1979

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A3-518-0067



LEGEND

- Bedrock Sample
 - ⊛ Float Sample
 - Outcropping quartz vein.
 - Calculated outcrop of quartz vein. (assume strike 300° mag, dip 30° NE)
- Au values >0.005 g/t shown.

N.B. - Located on South Ridge of Mt. Darwin.



CENTRAL SEQUENCE VOLCANICS

DARWIN GRANITE

E-Z

FIG A2

Project: JUKES - DARWIN E.L. 6/85	
NORMS QUARTZ PROSPECT GEOLOGY and Au GEOCHEMISTRY	
Survey: D. GARDNER	Scale: 1:1000
Date: April, 1988	No.
Drawn: N.W.D.S. - 26-6-88	A3-518-0067