CANADIAN SUPERIOR MINING (AUST.) PTY. LTD.

EXPLORATION LICENCE NO. 130

Report on Area Relinquished
to 13th June 1975

August 1975

CONTENTS

INTRODUCTION

Exploration Licence No. 130, Northern Territory was originally held by six individual aboriginals but early in 1974 the Licence was transferred to joint ownership by the Maningrida and Goulburn Island Progress Associations. The area is one of several which were held under Licence by aboriginals, but the others (in the Maningrida - Millingimbi areas) have now been relinquished entirely. Exploration rights on all of these were granted in 1971 to the Ormac Joint Venture, whose original participants were Ocean Resources N.L. and McIntyre Mines (Aust.) Pty. Ltd. In 1973 McIntyre Mines relinquished its rights to Canadian Superior Mining (Aust.) Pty. Ltd. and the latter company became the operator of the Joint Venture, continuing this role to the present day.

AREA

The original area of E.L. 130 was about 390 square miles; the first reduction of area occurred in June 1974, and the present area (application submitted and pending, for the 1975/76 term) is about 92 square miles (Plate 1).

EXPLORATION

This has consisted of airborne radiometric and magnetic surveys, regional mapping, auger and percussion drilling, ground prospecting and Track-Etch surveys.

RELATED SURVEYS

The Bureau of Mineral Resources, Geology & Geophysics has conducted airborne radiometric and magnetic surveys, and has geologically mapped the relinquished area at a scale of 1:50,000.

REGIONAL GEOLOGY OF RELINQUISHED AREA

The basement rocks are very poorly exposed and consist of schists and some gneissic rocks; these occur in the western part of the area; and are probably present in other parts but are concealed by large areas of alluvium (particularly along the East Alligator River and Coopers Creek), sand and laterite. Rock units overlying basement are the Carpentarian Kombolgie Formation and, on the north, the Cretaceous Mullaman Beds. (Plate 1).

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DETAILED INVESTIGATIONS

(i) The large areas of black soil plains have been relinquished because of the extreme difficulty of prospecting such terrain, where there are no known meaningful impressions of surface radioactivity and the subsurface rocks are completely unknown.

(ii) North of Coopers Creek. Six percussion holes were drilled in 1972, but at only one site were the Cretaceous thin enough to allow penetration by the drill. At this location, schist was encountered at a depth of 177 feet.

(iii) The Kombolgie Formation. Several radioactive bands of pebble conglomerate were found, but the radioactivity was due almost entirely to thorium minerals. One such prospect, named "Yalco" was examined in 1974, with the following results:-

The prospect sensu strictu is some 200 metres north north-west of a prominent peak whose aboriginal name is "Yalco", but since the prospect is located in gently dipping beds of the Kombolgie Formation, the area up to 2km west of the peak is here included in the discussion.

Staff of McIntyre Mines had previously investigated radioactive pebble beds in the Kombolgie Formation but on field instruments the uranium/thorium ratio was low and the investigation was discontinued. During 1974, when improved instrumentation was available, parts of Kombolgie Formation were examined again and in this respect the Yalco area was regarded as the most favourable one because of ease of access from the Murganella road and because it contained one of the thickest radioactive beds found in the Formation.

The Ormac 1973 airborne radiometric survey of E.L. 130 did not reveal an anomaly at Yalco, but one was shown in the earlier B.M.R. survey and Fig. MA 12 in the B.M.R. Records 1974/174 (released after the completion of the Ormac 1974 field season) shows three anomalies - two of mixed source, and one with a source predominantly due to thorium.

Near Yalco peak the outcropping Kombolgie Formation is an estimates 90m thick, but the base is not exposed and is probably some 10m below the surface. At surface level a pavement of quartz cobble conglomerate, about 0.6m thick,

gave 10,000 - 15,000 cpm on a TV1 instrument. The cobbles are entirely of quartz, and the radioactive material is in the iron-stained matrix.

About 8 metres stratigraphically above the cobble conglomerate a prominent unit of quartz pebble conglomerate, about 1.8m thick gave 20,000 - 25,000 cpm on a TV1 spectrometer, and on a DISA 300 instrument the following readings were obtained:-

	To	T2(U)	T2(Th)
0.3m below top of unit	70,000	940	30
1.3m below top of unit	45,000	901	61
base of unit	110,000	2,610	112

Fluorescent specks were noted, parallel to bedding planes, near the base of the unit. Because of the volume of rock available, and the apparently favourable uranium/thorium ratios recorded above, the units were traced westward, intermittently, (their continuity depending on the subcrop topography of the underlying Lower Proterozoic units) and at a point some 2km west of Yalco four additional, thin radioactive bands of pebble conglomerate were found, as illustrated in the sketch on Fig. 1.

Samples from the thick quartz-pebble conglomerate at Yalco were assayed by XRF methods, with the following results:-

Sample No.	Location	U (ppm)	Th (ppm)
1511	0.3m below top	8	500
1512	1.3m below top	14	410
1544	Near base of unit	44	26
1513	Grab Sample	18	420
1515	Grab Sample	5	1080

With the exception of Sample No. 1544, all samples showed Thorium dominant, which was the reverse of the situation obtained by use of the DISA 300 instrument on outcrop. This instrument performed reliably elsewhere on E.L. 130 and the cause of the reversal is unknown. Petrological examination

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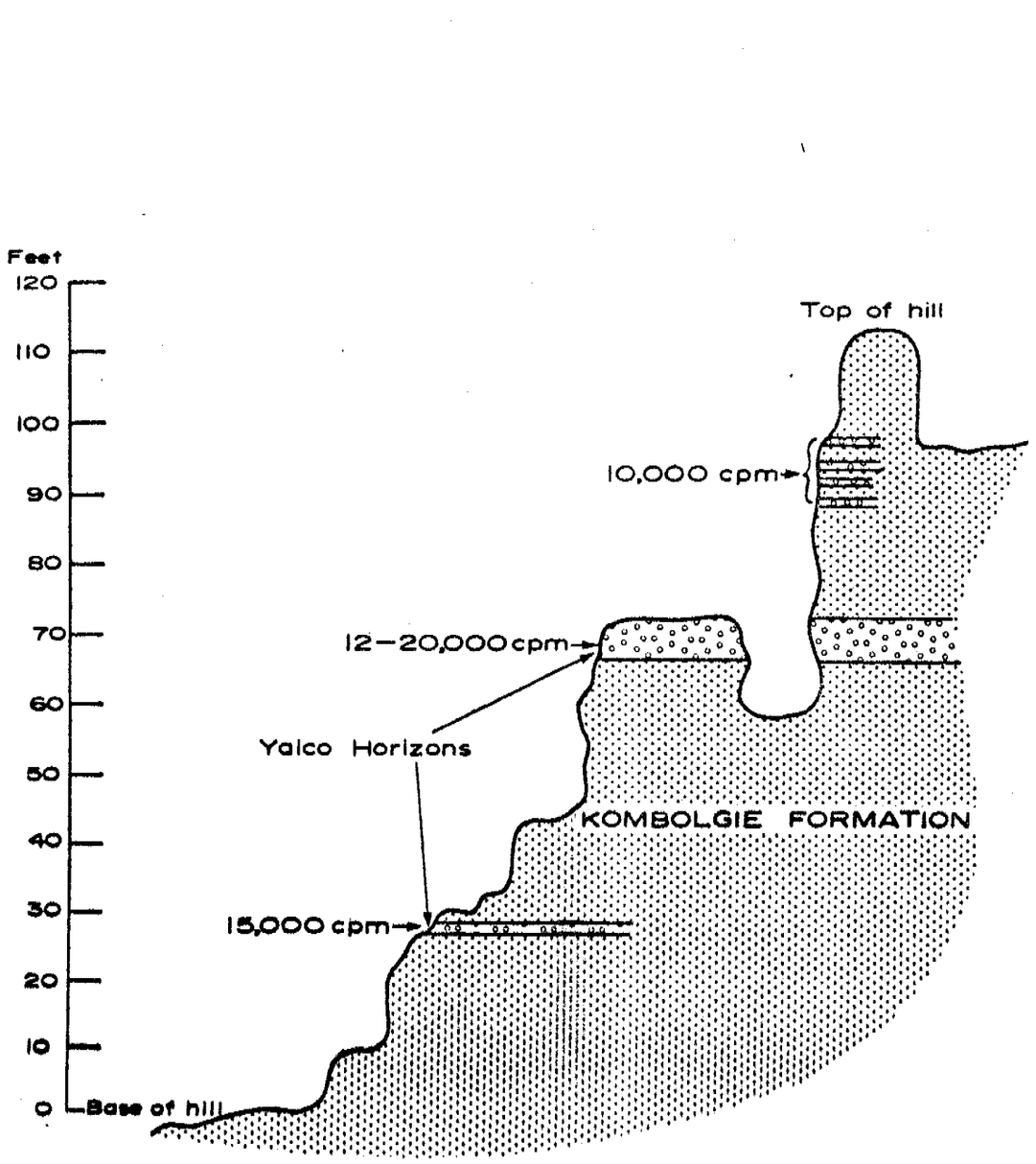

ORMAC JOINT VENTURE
EL 130

SKETCH OF RADIOACTIVE CONGLOMERATE BANDS IN THE KOMBOLGIE FORMATION 2 Km. WEST OF YALCO

FIG. 1.

GEOLOGIST: K.G. SMITH DATE: OCTOBER 1974

of Sample No. 2285, from near the base of the thick unit, showed that the fluorescent mineral is non-radioactive and is probably a zeolite (Appendix 4).

No further work was done on the prospect after receipt of assays and none is recommended for the future; although some pockets of uranium mineralisation may occur in the Kombolgie Formation but search for them is a project in its own right and must be awarded a low priority on E.L. 130.

(iv) Lower Proterozoic

(a) CS8 and CS8W

These localities are about twelve miles, by road, north-north-east of Ngara campsite and lie on either side of the Oenpelli - Murganella Road. Both areas are close to outcrops of the Kombolgie Formation, but both are mainly covered either by sand from that formation or by soil. At CS8 there are sporadic small outcrops of gneiss in the banks of streams, and at CS8W there are no outcrops, but the presence of large mica flakes in a stream bed indicates subcrop of gneiss or schist. These rocks lie within the upper unit of Lower Proterozoic rocks shown in the Regional Geological Map.

Although a considerable amount of work has been done unsuccessfully on rocks of the upper unit in previous years, testing of the CS8 areas proceeded in 1974 because of confidence in the prediction of the type of subcrop and because relatively large areas of the rock type could be tested by the Track-Etch method.

Accordingly two areas, each measuring 480m (east-west) by 560m (north-south), were selected and tested by a Track-Etch survey installed on an 80m grid. The Track-Etch results (Appendix 1.) showed a very low background, and very low readings, usually below 10; at CS8, only ten readings exceeded this figure, and only six at CS8W exceeded it.

These higher readings are plotted against the appropriate locations in the grids.

Examination of the locations showed:-

(a) CS8

Cup No.	Track Density (T/mm^2)	Remarks
5841	14.576	Cup emplaced in sand.
5847	38.360	" " " laterite;
5852	15.344	" " " sand;
5853	19.947	" " " sand;
5871	35.051	" " " laterite;
5872	28.530	" " " laterite;
5873	21.194	" " " laterite;
5876	12.227	" " " laterite;
5885	21.134	" " " laterite;
5886	24.454	" " " laterite.

Since eight of these cups were emplaced in laterite, it was felt that this fact afforded sufficient explanation for the readings in them, because the "scavenging" effect of Northern Territory laterites is well known; no satisfactory explanation for the other two cups could be found, but the readings were too low to warrant further work.

(b) CS8 West

Five cups (Nos. 5888, 5889, 5891, 5892 and 5924) were emplaced in laterite, but all except No. 5924 were drilled by auger, and assayed with disappointing results. The sixth cup, No. 5934 was emplaced in brown-black sandy soil and probably owed its reading to humus.

At CS8W, 23 auger holes were drilled at 20m intervals across the 00 line, and three others on the westernmost line tested areas of higher Track-Etch readings. All holes were shallow, and all except one penetrated weathered Precambrian gneiss or schist below soil and/or laterite, which persisted to a depth of approximately 2 metres. All probe readings (TV5) were low, and sample piles recorded low readings on TV1 (No. 171-36). The assays of bottom-hole samples from four holes were all low and had a minimum U/Th ratio of 1:5.

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Conclusion - Both CS8 and CS8 West were tested adequately and neither showed any encouraging signs of mineralisation.

Recommendations - No further work can be recommended.

(b) General

Ground Prospecting and auger drilling a few miles west of CS8W has failed to reveal any anomalous radio-activity.

APPENDIX 1.

Track-Etch Survey by Terradex Corp.

CS3
CS7 (including CS9) and CS8
CS9 (second survey)

EXTRACT OF REPORT FROM TERRADEX CORPORATION ON TRACK-ETCH SURVEY

CS8 AND CS8W

October 22, 1974

Mr. R.A. Searl
Manager
Canadian Superior Mining (Aust) Pty. Ltd.
Private Mail Bag 57
via Darwin, N.T. 5791
Australia

Dear Mr. Searl:

I am enclosing two sets of final tabulated data from your recent Track Etch Surveys of the CS8 area. The Track Etch readings are reported in units of tracks per square millimeter (T/sq.mm) and they are normalized to equivalent 30 day exposures. The data from the films have been tabulated in two different ways for easy use; firstly by ascending film serial numbers and secondly, by ascending Track Etch readings.

The readings range from 0.8 to 38.4 T/sq.mm with a background mean of 3.5 T/sq.mm and a standard deviation of 3.0 T/sq.mm or 86%. The data are summarized in Table I.

Table I

Survey	Background Mean (T/sq.mm)	S.D. (T/sq.mm)	%S.D.
CS7	8.1	5.8	71
CS8	3.5	3.0	86

CS8 is among the lowest backgrounds we have seen, even in the Northern Territory.

The background mean is related to uranium mineralization in the surface soil and the standard deviation to the range of that surface mineralization in the area surveyed. In looking at the high end of the data ranking, however, we can use the background statistics to define abnormally high or statistically anomalous values. This can be done by calculating a "Z" value for each high reading, "Z" being the number of standard deviations the reading is above the mean.

Table II

Range of Z	No. of Points	T/sq.mm	Range of Ratio to Background Mean
2 - 3	3	10.1 - 12.2	2.9 - 3.5
3 - 4	3	14.6 - 15.5	4.2 - 4.4
4 - 5	2	16.3, 17.9	4.6, 5.1
5	8	18.7 - 38.4	5.3 - 11.0

Statistically 12% of the 110 points in CS8 are anomalous.

Although the high points in CS8 are statistically not a part of the background distribution, (and hence related to other mineralization) their relatively low magnitude raises some questions of

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CANADIAN SUPERIOR CS8

FILM SERIAL NUMBER	TRACK DENSITY (T/SQ.MM.)	FIELD NOTES AND DATA
REFA		
REFB		
RMAX		
ZERO		
5771	2.301	
5772	1.534	
5773	1.534	
5774	1.534	
5775	3.068	
5776	3.836	
5777	3.068	
5778	2.301	
5779	3.836	
5841	14.576	
5842	7.672	
5843	1.534	
5844	3.068	
5845	2.301	C58
5846	3.836	
5847	38.360	
5848	6.904	
5849	5.370	
5850	3.068	
5851	3.068	
5852	15.344	
5853	19.947	
5854	6.904	
5855	3.836	
5856	1.534	
5857	1.534	
5858	.767	
5859	3.068	
5860	2.301	
5861	1.534	
5862	3.068	
5863	.767	
5864	3.068	
5865	3.068	
5866	3.836	
5867	1.534	
5868	3.836	
5869	3.836	
5870	.767	
5871	35.051	
5872	28.530	
5873	21.194	
5874	8.966	
5875	5.706	
5876	12.227	
5877	1.630	

CANADIAN SUPERIOR CS8

FILM SERIAL NUMBER	TRACK DENSITY (T/SQ.MM.)	FIELD NOTES AND DATA
5878	4.075	
5879	6.521	
5880	6.521	
5881	2.445	
5882	7.336	
5883	1.630	
5884	4.075	
5885	21.194	CS8
5886	24.454	
5887	4.075	
5888	17.933	
5889	15.487	CS8W
5890	5.706	
5891	18.748	
5892	16.303	
5893	4.890	
5894	1.630	
5895	6.521	
5896	3.260	
5897	1.630	
5898	2.445	
5899	4.890	
5900	7.336	
5901	3.260	
5902	8.966	
5903	3.260	
5904	2.445	
5905	1.630	
5906	4.890	
5907	4.075	
5908	3.260	
5909	4.075	
5910	4.890	
5911	3.260	
5912	5.706	
5913	1.630	
5914	.815	
5915	1.630	
5916	3.365	
5917	5.048	
5918	1.682	
5919	1.682	
5920	.841	
5921	6.731	
5922	4.207	
5923	1.682	
5924	10.097	
5925	1.662	
5926	1.682	
5927	3.365	

interpretation. Lacking other geologic information, we cannot tell if these anomalous points are due to very deep buried ore, surface or shallow light mineralization (identifiable by ground scintillometry), or some very gas-impervious cover strata between the surface and the ore.

Contour maps are in preparation on your grids and will be forwarded shortly. I note that hand plotting shows a grouping of the CS8 points into four strong areas. The clustering of high points is characteristic of uranium mineralization in our experience.

Thank you for the continuing opportunity of working with you. I trust that these data meet the timing needs of your program.

Sincerely,

H. Ward Alter
President

HWA/ssh
Enclosures

CANADIAN SUPERIOR CS8

FILM SERIAL NUMBER	TRACK DENSITY (T/SQ.MM.)	FIELD NOTES AND DATA
5928	3.365	
5929	3.365	
5930	1.682	
5931	9.255	
5932	9.255	
5933	2.524	
5934	10.938	
5935	.841	
5936	.841	
5937	.841	
5938	.841	
5939	1.682	
5940	1.682	
5941	1.682	

CANADIAN SUPERIOR CSB / CSBW

TRACK DENSITY (T/SQ.MM.)	FILM SERIAL NUMBER	FIELD NOTES AND DATA
.767	5870	
.767	5863	
.767	5858	
.815	5918	
.841	5938	
.841	5937	
.841	5936	
.841	5935	
.841	5920	
1.534	5861	
1.534	5857	
1.534	5856	
1.534	5867	
1.534	5774	
1.534	5773	
1.534	5772	
1.534	5843	
1.630	5877	
1.630	5883	
1.630	5915	
1.630	5913	
1.630	5905	
1.630	5897	
1.630	5894	
1.682	5919	
1.682	5918	
1.682	5925	
1.682	5923	
1.682	5930	
1.682	5926	
1.682	5939	
1.682	5941	
1.682	5940	
2.301	5860	
2.301	5845	
2.301	5778	
2.301	5771	
2.445	5881	
2.445	5898	
2.445	5904	
2.524	5933	
3.068	5859	
3.068	5862	
3.068	5865	
3.068	5864	
3.068	5775	
3.068	5777	
3.068	5844	
3.068	5851	
3.068	5850	

CANADIAN SUPERIOR CSB & CSBW

TRACK DENSITY (T/SQ.MM.)	FILM SERIAL NUMBER	FIELD NOTES AND DATA
.767	5870	
.767	5863	
.767	5858	
.815	5914	
.841	5938	
.841	5937	
.841	5936	
.841	5935	
.841	5920	
1.534	5861	
1.534	5857	
1.534	5856	
1.534	5867	
1.534	5774	
1.534	5773	
1.534	5772	
1.534	5843	
1.630	5877	
1.630	5883	
1.630	5915	
1.630	5913	
1.630	5905	
1.630	5897	
1.630	5894	
1.682	5919	
1.682	5918	
1.682	5925	
1.682	5923	
1.682	5930	
1.682	5926	
1.682	5939	
1.682	5941	
1.682	5940	
2.301	5860	
2.301	5845	
2.301	5778	
2.301	5771	
2.445	5881	
2.445	5898	
2.445	5904	
2.524	5933	
3.068	5859	
3.068	5862	
3.068	5865	
3.068	5864	
3.068	5775	
3.068	5777	
3.068	5844	
3.068	5851	
3.068	5850	

CANADIAN SUPERIOR CSB

TRACK DENSITY (T/SQ.MM.)	FILM SERIAL NUMBER	FIELD NOTES AND DATA
3.260	5903	
3.260	5908	
3.260	5911	
3.260	5901	
3.260	5896	
3.365	5916	
3.365	5927	
3.365	5929	
3.365	5928	
3.836	5846	
3.836	5779	
3.836	5776	
3.836	5866	
3.836	5869	
3.836	5868	
3.836	5855	
4.075	5878	
4.075	5884	
4.075	5909	
4.075	5907	
4.075	5887	
4.207	5922	
4.890	5893	
4.890	5899	
4.890	5906	
4.890	5910	
5.048	5917	
5.370	5849	
5.706	5875	
5.706	5912	
5.706	5890	
6.521	5895	
6.521	5879	
6.521	5880	
6.731	5921	
6.904	5854	
6.904	5848	
7.336	5882	
7.336	5900	
7.672	5842	
8.966	5874	
8.966	5902	
9.255	5932	
9.255	5931	
10.097	5924	
10.938	5934	
12.227	5876	
14.576	5841	
15.344	5852	
15.487	5889	

CANADIAN SUPERIOR CS8

TRACK DENSITY (T/SQ.MM.)	FILM SERIAL NUMBER	FIELD NOTES AND DATA
16.303	5892	
17.933	5888	
18.748	5891	
19.947	5853	
21.194	5873	
21.194	5885	
24.454	5886	
28.530	5872	
35.051	5871	
38.360	5847	
	ZERO	
	RMAX	
	REFB	
	REFA	

240,000m E
132°40'00"E
250,000m E
260,000m E
132°50'00"E
270,000m E
280,000m E
133°00'00"E
12°00'00"S
8,670,000m N
8,660,000m N
8,650,000m N
8,640,000m N
8,630,000m N
12°10'00"S
12°20'00"S
12°25'00"S
12°07'
12°10'
12°15'
12°25'
132°48'
132°59'
133°00'

COOPERS CREEK

EAST ALLIGATOR RIVER

MT BORRADAILE

YALCO

CS-8

NGARA AIRSTRIP

Cahills Crossing

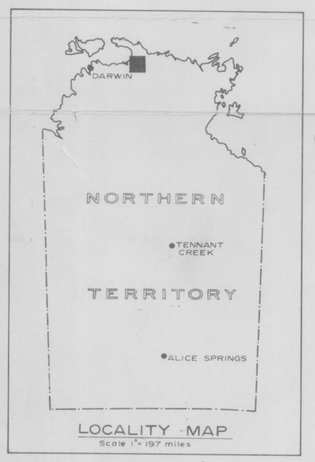
Billabong

PM

P

AREA RETAINED
1975/76

AREA RETAINED 1975/76



LOCALITY MAP
Scale 1" = 197 miles

SCALE 1:50,000

0 1 2 3 4 5
KILOMETRES

N

GEOLOGIC LEGEND

TERTIARY TO RECENT
- CLAY, BLACK HUMIC SOIL, SILT, LEVEE, COLLUVIAL & COASTAL DEPOSITS
- LATERITE (EXCLUDING LATERITISED MULLAMANS)
- UNCONSOLIDATED SAND, CLAYEY SAND

CRETACEOUS
- MULLAMAN BEDS (EXPOSED & INFERRED)

CARPENTARIAN
- LOWER KOMBOLGIE SANDSTONE (EXPOSED & INFERRED)
- BASAL KOMBOLGIE (WITH OR WITHOUT GRAVEL)

LOWER PROTEROZOIC
- GRANITE
- ULTRABASIC
- DOLERITE
- BANDED HEMATITE, CHERT
- QUARTZ MICA CHLORITE SCHIST (EXPOSED & INFERRED)

- TRACK
- OBSERVED & INFERRED GEOLOGICAL BOUNDARY
- 40° DIP & STRIKE OF FOLIATION
- 8° DIP & STRIKE OF STRATA
- UNCONFORMITY & DIP
- P ~~~ M LINEAMENT (P — PHOTO INFERRED, M — MAGNETICALLY INFERRED)
- JOINTS
- MINOR PHOTO LINEAMENT
- ROUTE OF MAJOR TRAVERSES
- CS-8, YALCO LOCALITY DESIGNATION
- STREAM
- WATER HOLE
- 0.3 McINTYRES AIRBORNE RADIOMETRIC ANOMALY (LOCATIONS APPROX. ONLY DUE TO DISTORTION OF ORIGINAL PLOTTING)

CR 75/125.

Canadian Superior Mining (Aust.) Pty. Ltd.

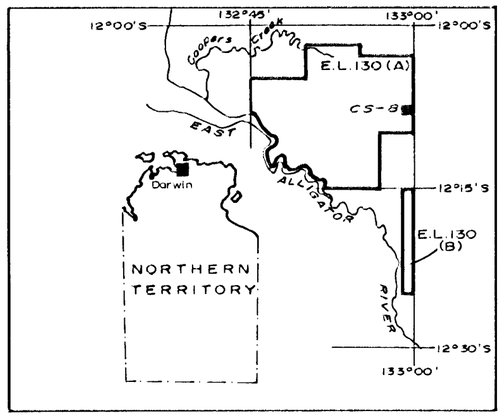
ORMAC JOINT VENTURE

REGIONAL GEOLOGICAL MAP OF E.L. 130 RELINQUISHED

BASED ON MAPS BY BUREAU OF MINERAL RESOURCES AIRBORNE PHOTO AND MAGNETIC INTERPRETATION AND REGIONAL GROUND TRAVERSES.

Scale 1:50,000 (1cm = 500mts)	Date June 1975
Sheet 1 of 1	Project Nº 2102
Compiled by K. M. Chan	PLATE No. 1
Drawn T. P. R.	Index Nº 2102 – 225

CR 75/125.



LOCATION MAP

DEAD AREA

GRID NORTH 330° M

AREA DEAD

5940 CUP LOCATION AND FILM NUMBER

SCALE 1:5,000

100 0 100 200 300 400 500

METRES

Canadian Superior Mining (Aust.) Pty. Ltd.

ORMAC JOINT VENTURE
E.L.130

LOCATION CS-8

TRACK ETCH GRID

SCALE 1:5,000	DATE SEPTEMBER 1974
SHEET 1 OF 1	PLATE No.2
GEOLOGIST K. G. SMITH	
DRAWN T. P. R	INDEX Nº 2102-204