916001

CRA EXPLORATION PTY LTD

EL 8/77 RIANA

RELINQUISHMENT REPORT INCORPORATING EXPLORATION FOR

12 MONTHS TO 5 AUGUST 1987

Author: T von Strokirch

Date: 21 May 1987

Submitted to: T W Dickson

Accepted by:

Copies: CRAE Hobart
CRAE Canberra
Department of Mines,
Tasmania
Billiton Australia

REPORT NO: 14476

001

916002

CONTENTS

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1. SUMMARY

The EL has been explored for metasomatic replacement bodies around the margin of the Housetop granite and for volcanogenic massive sulphides in the volcanics in the southern portion of the licence. In 1985 the EL became part of a Joint Venture between CRA Exploration, Comalco Ltd. and Billiton Australia. The northern portion of the licence was relinquished in August 1985. The remainder was retained to further investigate the lead/zinc potential of the volcanics which were believed to be possible Mt Read Volcanics correlates. Stream sediment sampling and grinding of old core did not reveal any areas of increased prospectivity. As the licence is scheduled for relinquishment in August 1987 exploration on the EL has been completed.

2. INTRODUCTION

The Riana EL forms part of the Moina Joint Venture between CRAE, Comalco and Billiton Australia. CRAE commenced management of exploration activities within the Licence in conjuction with neighbouring ELs, EL 7/74(Moina) and EL 36/79 (Loongana), in March 1985.

The licence covers the Gunns Plains-Nietta area and is located approximately 20km southwest of Ulverstone (see plans TASh 3075 and 3076)

3. CONCLUSIONS

Airborne magnetic surveys have been completed and these, as well as ground surveys, including geophysics and geochemistry, have failed to locate major sulphides, whether skarn or volcanogenically related.

The time of life of the licence has expired. While CRA exploration feels that there is potential for base metals on the ground it was felt that our priorities should be elsewhere in the Joint Venture ground.

The licence is to be relinquished.

4. GEOLOGY

The oldest rocks outcropping within EL 8/77 are Cambrian sediments and volcanics of the Fossey Mountain Trough and Mt Read volcanic belt.

The licence lies at the western end of the Fossey Mountain Trough which is dominated by acid tuffs and sediments. Lesser volcanics of the Mt Read group occur in the southern portion of the Licence. These include dominantly acid to intermediate volcanics with associated tuffaceous units.

Cambrian rhyodacitic to dacitic intrusives have also been mapped within the area.

The Ordovician Roland Conglomerate unconformably overlies the Cambrian. This is in turn overlain by the Moina Sandstone and Gordon Limestone respectively. Gordon Limestone is well developed in a synclinal feature along the western edge of the EL. This feature contains a core of Silurian Eldon Group sediments.

Tertiary basalt covers much of the central licence area.

Old workings have been noted at two localities. The centrally located Preston Ag mine lies within Cambrian sediments and tuffs along the Cambrian-Ordovician contact. A group of small gold workings lie within Cambrian sediments at the northern edge of the licence.

The geology has been compiled from previous explorers' mapping and is included on plan TASh 3074.

5. EXPLORATION

Most of the exploration concentration in the Riana EL was in the northern portion which was relinquished in 1985. The southern part was retained because of the presence of Cambrian volcanics which are prospective for Mt Read Volcanics style lead/zinc deposits.

5.1 Regional Geochemical Sampling

Comalco, Shell and CRA Exploration have all tested the area with stream sediment sampling. Background metals were found to be variable on different rock types and are summarised below.

	Cu	Pb	Zn	Sn	WO_3
Basalt	30-70	10-30	100-200	10-20	15
Granite	0-30	20-50	50-120	20	20
Volcanics	10-50	10-30	40-80	<10	<10

(Results in ppm)

The Crosby Creek, Loyetea and Preston Silver prospects consistently produced base metal anomalies though they contained little of the gold that is typically associated with Mt Read sulphides. CRA Exploration conducted a cyanide leach sampling survey over the area with the hope of detecting evidence of a fine gold halo around a lead/zinc deposit which might not have been evident in -20# and -80# sampling. This was not successful.

5.2 Regional Aeromagnetic Survey

An aeromagnetic survey was conducted by Shell over the entire joint venture area. This was a detailed survey with a line spacing of 300 metres and a mean terrain clearance of around 100 metres. The main aim of the survey was to detect possible skarns around the margins of the Housetop and Dalcoath Granites. The survey also proved a useful aid to locating regional geological trends but on a prospect scale in the Riana EL it shows little except the presence of magnetic lows across the Loyetea and Crosby Creek prospects which may be due to increased alteration.

5.3 Castra Magnetic Anomaly

One anomaly in the EL was followed up in 1982. This was the Castra Anomaly (Shell designation number 4142/4). The anomaly has a 400 nT magnetic anomaly associated with a coincident radiometric anomaly. A grid was cut over the anomaly and a ground magnetics survey was conducted. The ground magnetics were extremely noisy as the grid was completely over basalt. The anomaly was deemed to be due to a basalt hill with over 200 metres of basalt present in three flows. The basalt susceptibility varies from 500 to 5000 x 10^{-5} SI units. The highest values were found in the uppermost flow. No further exploration was recommended.

6. ACTIVITY IN 1986-87

The previous exploration on the Loyetea and Crosby Creek grids was reviewed. These grids contain predominantly acid to intermediate volcanics with varying grades of sericitic and chloritic alteration. The grids had been founded following the discovery of stream sediment anomalies and altered volcanics.

The grids were tested with IP, ground magnetics and soil geochemistry. Five anomalies on the two grids were drilled to test elongated geochemical and geophysical responses (TASh 3221, 3222). No massive sulphide intersections were recorded and the holes were only selectively assayed. Gold was not tested for.

In view of this it was decided to regrind some of the core and assay it for gold at three metre intervals. A portion of DD75 CC1 was tested and found to contain a trace of gold throughout (.01-.02 ppm) but nothing greater than .04 ppm (Appendix 1). It was felt that gold was likely to be following the same dissemminated pattern as the base metals and thus, in view of financial constraints a decision was made to discontinue the programme.

7. REFERENCES

Caithness, S J 1986 Riana EL 8/77 Progress Report for the 12 months to 7 July 1986. Unpublished CRAE Report No. 14024

Porter, T M 1976 EL 19/72 Nietta, Northwest Tasmania. Progress Report No. 3 Unpublished CRAE Report No. 8491

Purvis, G J 1978 EL 19/72 Nietta, Northwest Tasmania. Progress Report No. 4 Unpublished CRAE Report No. 9278

Ruxton, P A 1983 EL 8/77 Riana. Progress Report on Exploration During the Period 2/7/82 to 1/9/83. Shell unpublished Report 08.2061

von STROKIRCH, T 1985 Relinquishment Report on the Cuprona Section of EL 8/77 Riana, Tasmania. Unpublished CRAE Report No. 13394

For a detailed list of references on exploration in Nietta to Penguin area see von Strokirch 1985.

8. LOCATION

Burnie 1:250 000 Sheet SK55-3

9. KEYWORDS

Cambrian, Acid, Sediments, Assays-drill, Base Metals

10. LIST OF PLANS

Plan No.			
TASh	3075	Riana EL 8/77 Location Plan	1:1000 000
TASh	3076	Riana EL 8/77 EL and Prospect Location Plan	1:100 000
TASh	3074	Riana EL 8/77 Regional Geology	1:25 000

008

TASh	3194	Riana EL 8/77 Crosby Creek Prospect Grid Location Plan	1:5 000
TASh	3196	Riana EL 8/77 Loyetea Prospect Grid Location Plan	1:5 000
TASh	3197	Riana EL 8/77 Loyetea Prospect Geological Plan	1:5 000
TASh	3198	Riana EL 8/77 Crosby Creek Prospect Geological Plan	1:5 000
TASh	3221	Riana EL 8/77 Crosby Creek Prospect. Summary of previous Exploration Results	1:5 000
TASh	3222	Riana EL 8/77 Loyetea Prospect. Summary of Previous Exploration Results	1:5 000

11. LIST OF APPENDICES

Appendix 1 Assay results from drillhole.

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APPENDIX 1

ASSAY RESULTS FROM DRILLHOLE

010

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	DDH 75 CC 1 INTERVAL in metres		Sample Type	ANALYSES Cu	Pb	Zn						Au ppm		Geological Observations
1152001	10·0	20·0	core grind									0·01	0·04	
002	20·0	25·0	"									0·02		
003	25·0	28·0	"									0·02		
004	28·0	32·0	"									0·02		
005	32·0	35·0	"									0·03		
006	35·0	38·0	"									0·02		
007	38·0	41·0	"									0·03	0·04	
008	41·0	44·0	"									0·02		
009	44·0	470	"									0·02		
010	47·0	50·0	"									0·02		
011	50·0	53·0	"									0·02		
012	53·0	56·0	"									0·03		
013	56·0	59·0	"									0·02		
014	59·0	62·0	"									0·02		
015	62·0	65·0	"									0·01		
016	65·0	68·0	"									0·02		
017	68·0	71·0	"									0·03		
018	71·0	74·0	"									0·03		
019	74·0	77·0	"									0·02		
1152020	77·0	80·0	"									0·01		
DETECTION LIMIT												0·01		
ANALYTICAL METHOD												Pol 209		

9160111

Project	CROSBY CREEK	1 : 250 000 Sheet	AMG Zone
Tenement	RIANA EL 8/77	DPO's 32062	Laboratory ALS BRISBANE
Area / Prospect			Collected By Date

Sheet No. 1.

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	DDH 75 CC 1 INTERVAL (in metres)		Sample Type	ANALYSES Cu	Pb	Zn						Au ppm		Geological Observations
1152021	80.0	83.0	core: ground									0.02		
022	83.0	86.0	"									0.02		
023	86.0	89.0	"									0.03		
024	89.0	92.0	"									0.03		
025	92.0	95.0	"									0.01		
026	95.0	98.0	"									0.02		
027	98.0	101.0	"									0.03		
028	101.0	104.0	"									0.02	0.04	
029	104.0	107.0	"									0.03		
030	107.0	111.0	"									0.02		
031	111.0	114.0	"									0.02		
032	114.0	117.0	"									0.03		
033	117.0	120.0	"									0.02		
034	120.0	123.0	"									0.03		
035	123.0	126.0	"									0.03		
036	126.0	129.0	"									0.02		
037	129.0	132.6	"									0.02	0.04	
038	132.6	136.0	"									0.01		
039	136.0	139.0	"									0.01		
1152040	139.0	142.0	"									0.01		
DETECTION LIMIT												0.01		
ANALYTICAL METHOD												PM 209		

Project: CROSBY CREEK | 1 250 000 Sheet: | AMG Zone: | Sheet No: 2.

Tenement: RIANA EL 8/77 | DPD's: 32062 | Laboratory: ALS BRISBANE

Area / Prospect: | Collected By: | Date:

9169012

012

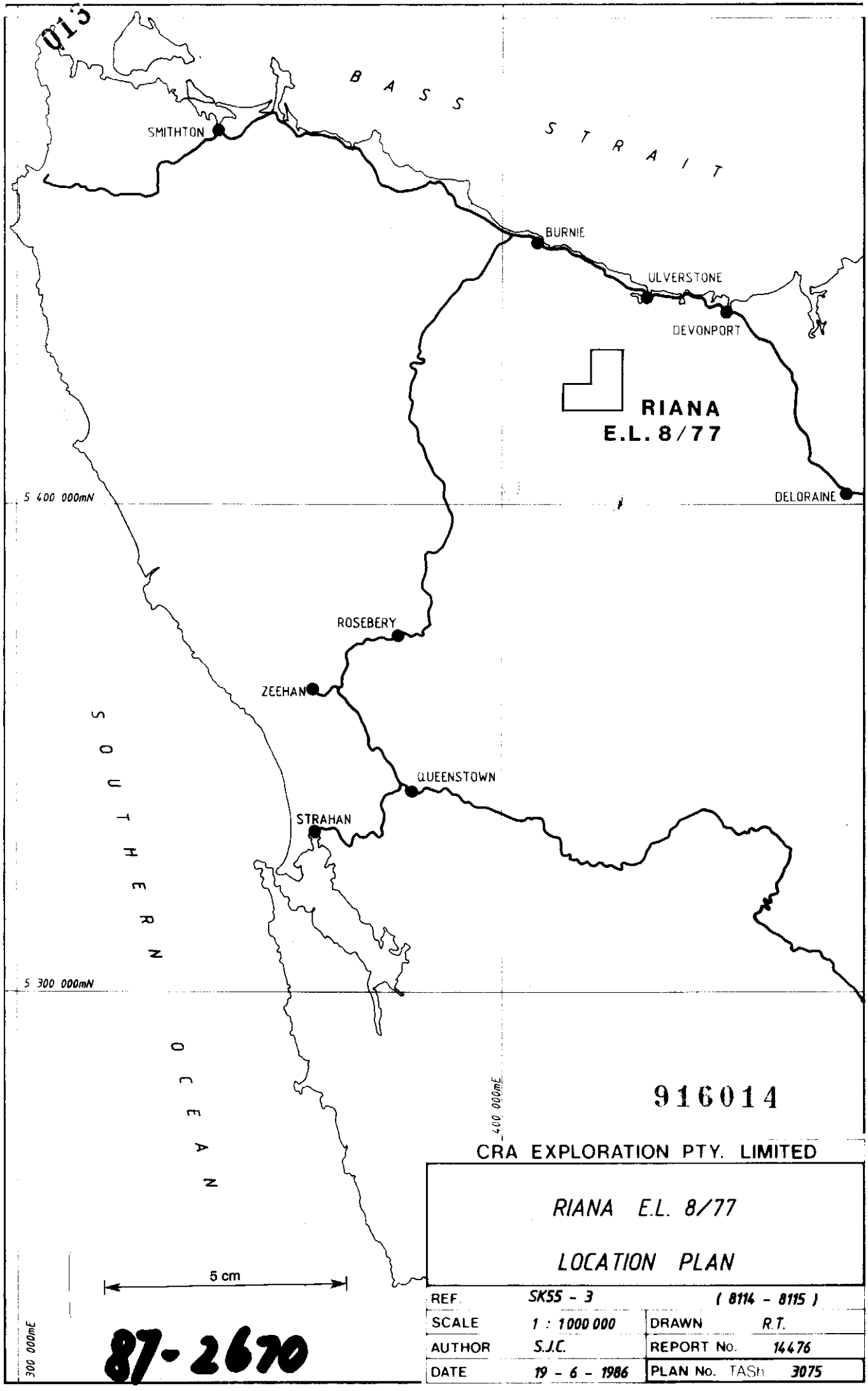
CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	DDH 75 CC 1 INTERVAL (in metres)		Sample Type	ANALYSES Cu	Pb	Zn						Au ppm		Geological Observations
1152041	142.0	145.0	core grind									0.02		
042	145.0	148.0	"									0.01		
043	148.0	151.7	"									0.01		
044	151.7	155.0	"									0.02		
045	155.0	158.0	"									0.04		
046	158.0	161.0	"									0.01		
047	161.0	164.0	"									0.01		
048	164.0	167.0	"									0.01		
1152049	167.0	170.0	"									0.02	0.04	
DETECTION LIMIT												0.01		
ANALYTICAL METHOD												PM 209		

9160113

Project	CROSBY CREEK	1 250 000 Sheet	AMG Zone
Tenement	RIANA EL 8/77	DPO's 32062,	Laboratory ALS BRISBANE
Area / Prospect			Collected By Date

Sheet No. 3.



916014

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RIANA E.L. 8/77

LOCATION PLAN

REF.	SK55 - 3		(8114 - 8115)
SCALE	1 : 1000 000	DRAWN	R.T.
AUTHOR	S.J.C.	REPORT No.	14476
DATE	19 - 6 - 1986	PLAN No. TASh	3075

87-2670

015

RIANA E.L. 8/77

LEGEND

QUATERNARY — Qt — Alluvium, talus, residual gravels

TERTIARY — Tb — Basalt flows
Ts — Sediments

DEVONIAN — Ddogr — Dolcoath Granite
Dhogr — Housetop Granite

SILURIAN — Se — Eldon Group Sediments: undifferentiated quartzwacke, siltstone and shale sequences.

ORDOVICIAN — Θg — Gordon Limestone
Θm — Moina Sandstone
Θr — Roland Conglomerate

VOLCANICS

*CAMBRIAN

Acid Volcanic Units:
This division includes units dominantly within the Nietta Group
€qp..... quartz porphyry. } possible intrusives
€qbp..... quartz biotite porphyry }
€qfp..... quartz feldspar porphyry }
€na..... rhyolite extrusives and microgranodiorite intrusives with some pyroclastics.
€rd..... rhyolitic to dacitic volcanics.
€nlnv..... rhyolitic to rhyodacitic lavas with lesser pyroclastics. - unaltered
€ua..... undifferentiated acid volcanics.

Intermediate Volcanic Units:
€ra..... Beulah intermediates - andesite and dacite
€iv..... intermediate volcanics - andesite

Basic Volcanic Units:
€m..... Motton Spilite with intercalated mudstone and chert
€uv..... Undifferentiated volcanics

TUFFACEOUS UNITS

Acid Tuffaceous Units:
€xt..... crystal tuff
€lxt..... lithic crystal tuff
€vxt..... vitric crystal tuff
€qxt..... quartz crystal tuff
€lt..... lithic tuff
€vlt..... vitric lithic tuff
€vt..... vitric tuff
€lvt..... lithic vitric tuff
€at..... undifferentiated acid tuff

Intermediate Tuffaceous Units:
€uit..... undifferentiated intermediate tuff
€ixt..... crystal tuff
€ilxt..... lithic crystal tuff
€ixlt..... crystal lithic tuff

€ut..... Undifferentiated tuff

SEDIMENTS

Fine - Medium Sediments:
€b..... Barrington chert
€rm..... Redfords Creek Group -mudstone and siltstone with lesser feldspathic sandstone and minor conglomerate
€rg..... Redfords Creek Group -feldspathic sandstone with lesser mudstone and conglomeratic greywacke, includes some tuffaceous beds.
€lg..... Lorinna greywacke
€sh..... shale

Medium - Coarse Sediments:
€rc..... Redfords Creek Group -conglomeratic greywacke with lesser feldspathic sandstone and mudstone
€us..... Undifferentiated sediments

Intrusive Units:
€dogr..... Dove Granite
€u..... Undifferentiated

* Cambrian units are based on lithological divisions and do not represent a stratigraphic column.

PRE CAMBRIAN — pEd..... Dove Group metasediments

Fault, showing relative movement
Concealed Fault
Synclinal axis
Anticlinal axis, showing plunge direction
Dip and strike of bedding
Dip and strike of cleavage
Possible geological boundary
Unconformable geological boundary
Geological boundary
Mineral occurrence - old working
Plunge of drag fold

Radfords Reef
Colbourns
Browns Blow
Preston Ag Mine

5 430 000mN
5 425 000mN
5 420 000mN
415 000mE
420 000mE
425 000mE

5 cm

** N.B. **
This plan is a compilation of pre-existing mapping. Major regional references include: T.M. Porter and Tasmanian Mines Department, with small detailed areas taken from individual grid maps.

916016

CRA EXPLORATION PTY. LIMITED		
RIANA E.L. 8/77		
REGIONAL GEOLOGY		
REF. SK55 - 3	(8114 - 8115)	
SCALE 1 : 25.000	DRAWN R.T.	
AUTHOR S.J.C.	REPORT No. 14476	
DATE 19 - 6 - 1986	PLAN No. TASh 3074	

87- 2670 015

016

RIANA E.L. 8/77
Scale 1:5000

CROSBY CREEK PROSPECT

916017

5 cm

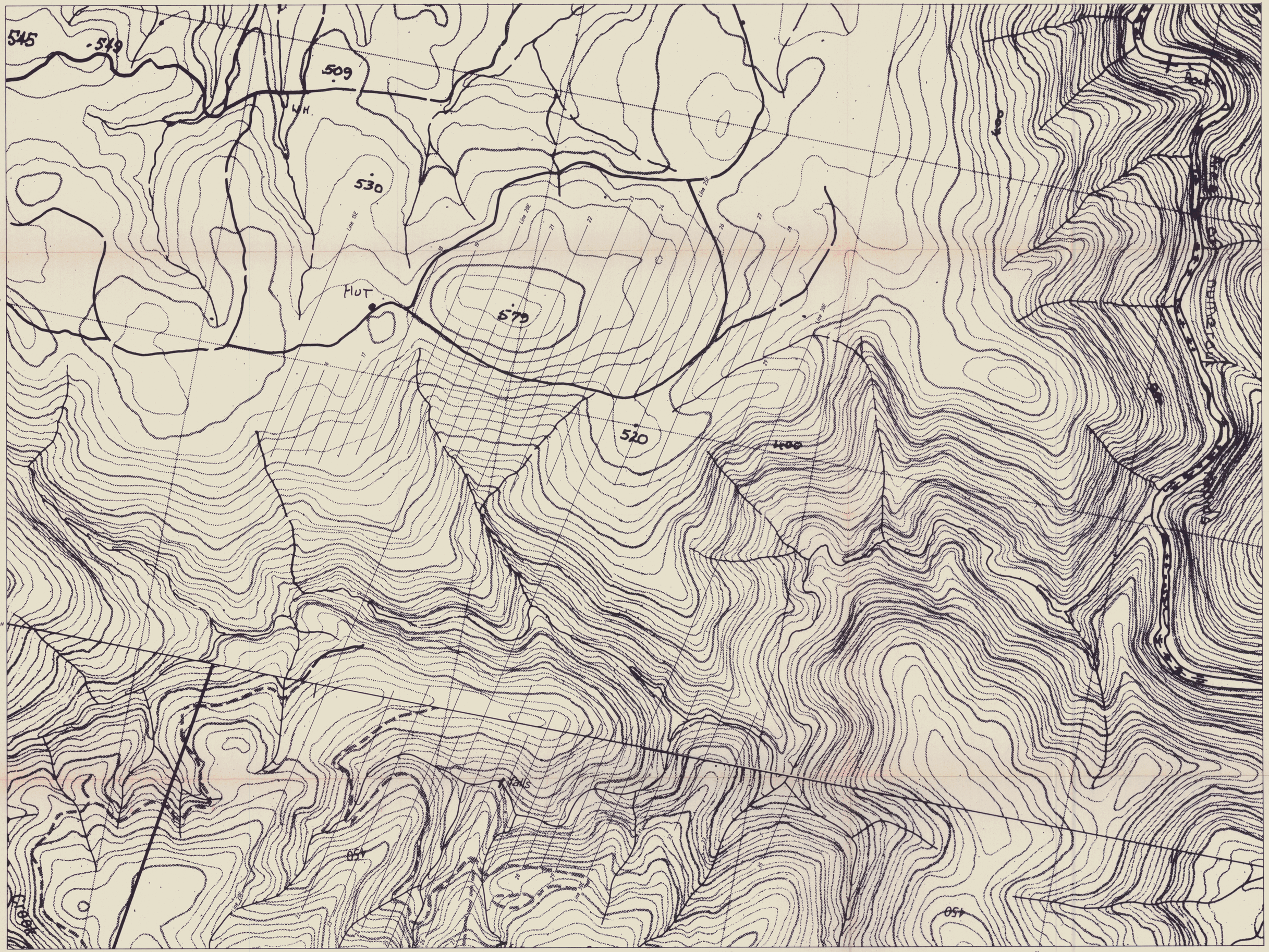
CRA EXPLORATION PTY. LIMITED		
RIANA E.L. 8/77 CROSBY CREEK PROSPECT GRID LOCATION PLAN		
REF.	SXSS - 3	(8015 - 8115)
SCALE	1 : 5000	DRAWN R.T.
AUTHOR	T.v.S.	REPORT No. 14476
DATE	19 - 11 - 1986	PLAN No. TASh 3194

87-2670

017

RIANA E.L. 8/77
SCALE 1:5000

LOYETEA PROSPECT



916018

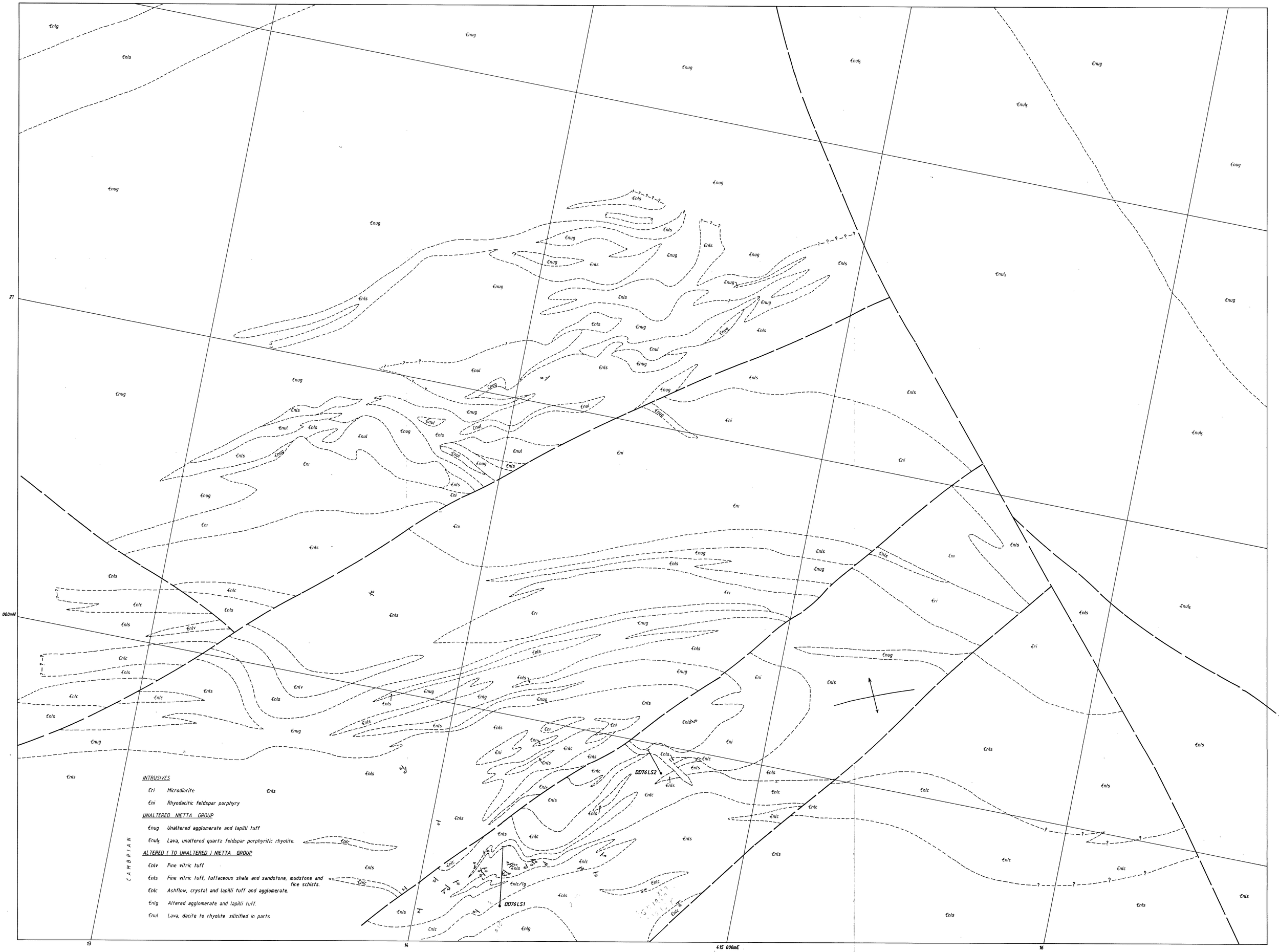
5 cm

017

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 LOYETEA PROSPECT GRID LOCATION PLAN			
REF.	SK55 - 3	(8015 - 8115)	
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.vS.	REPORT No.	14476
DATE	25 - 11 - 1986	PLAN No. TASh	3196

87-2670

LOYETEA PROSPECT



916019

5 cm

6375

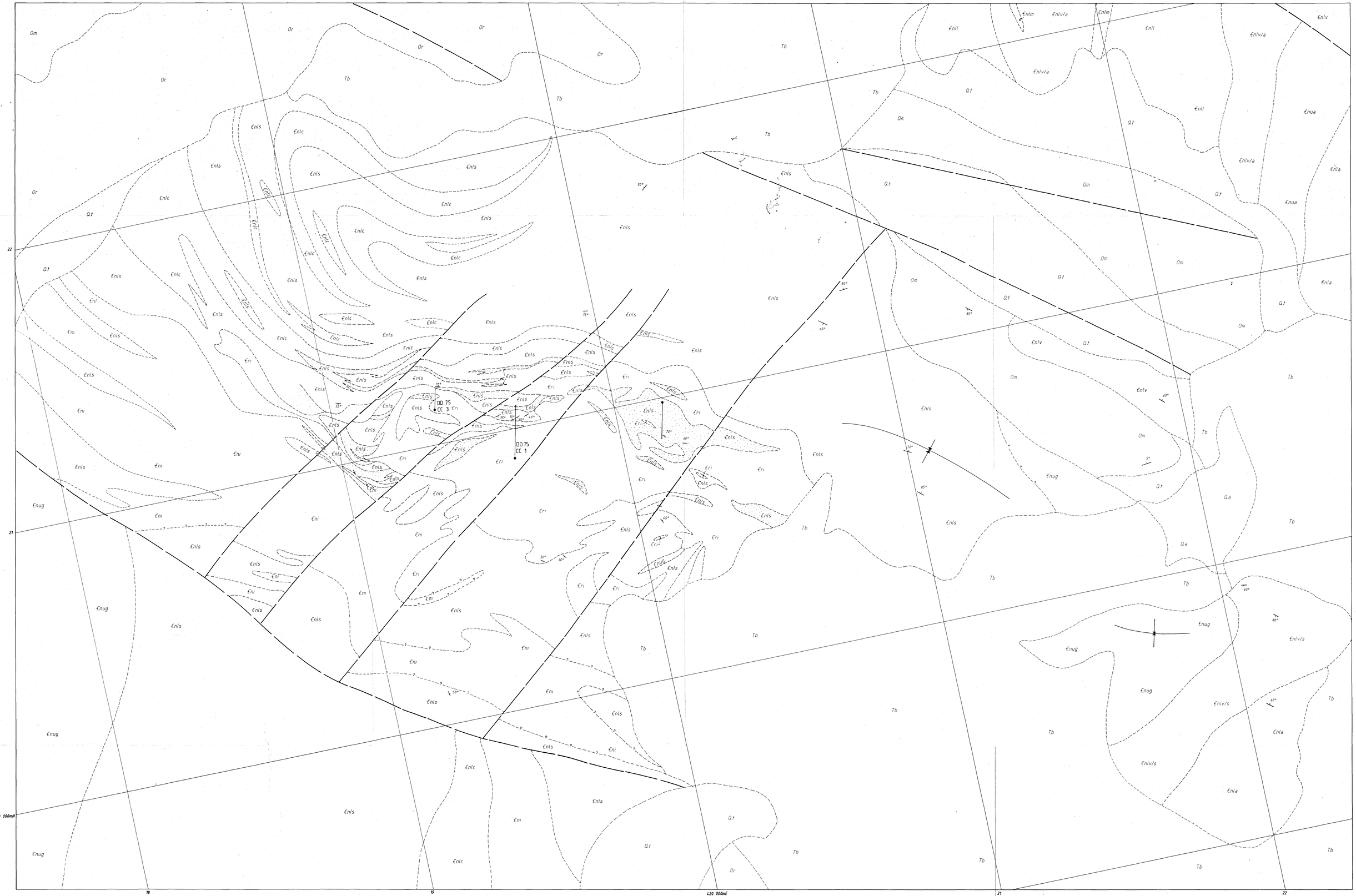
87-2670

CRA EXPLORATION PTY. LIMITED

RIANA E.L. 8/77
LOYETEA PROSPECT
GEOLOGICAL PLAN

REF.	SK55 - 3	(8015 - 8115)	
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.vS.	REPORT No.	14476
DATE	25 - 11 - 1986	PLAN No. TASh	3197

CROSBY CREEK PROSPECT



LEGEND

QUATERNARY	Qa	Alluvium
	Qt	Talus
TERTIARY	Tb	Basalt Flows
ORDOVICIAN	Om	Moina Sandstone
	Or	Roland Conglomerate
CAMBRIAN		UNALTERED NIETTA GROUP
	€nua	Unaltered ash flow tuff
	€nug	Unaltered agglomerate and lapilli tuff

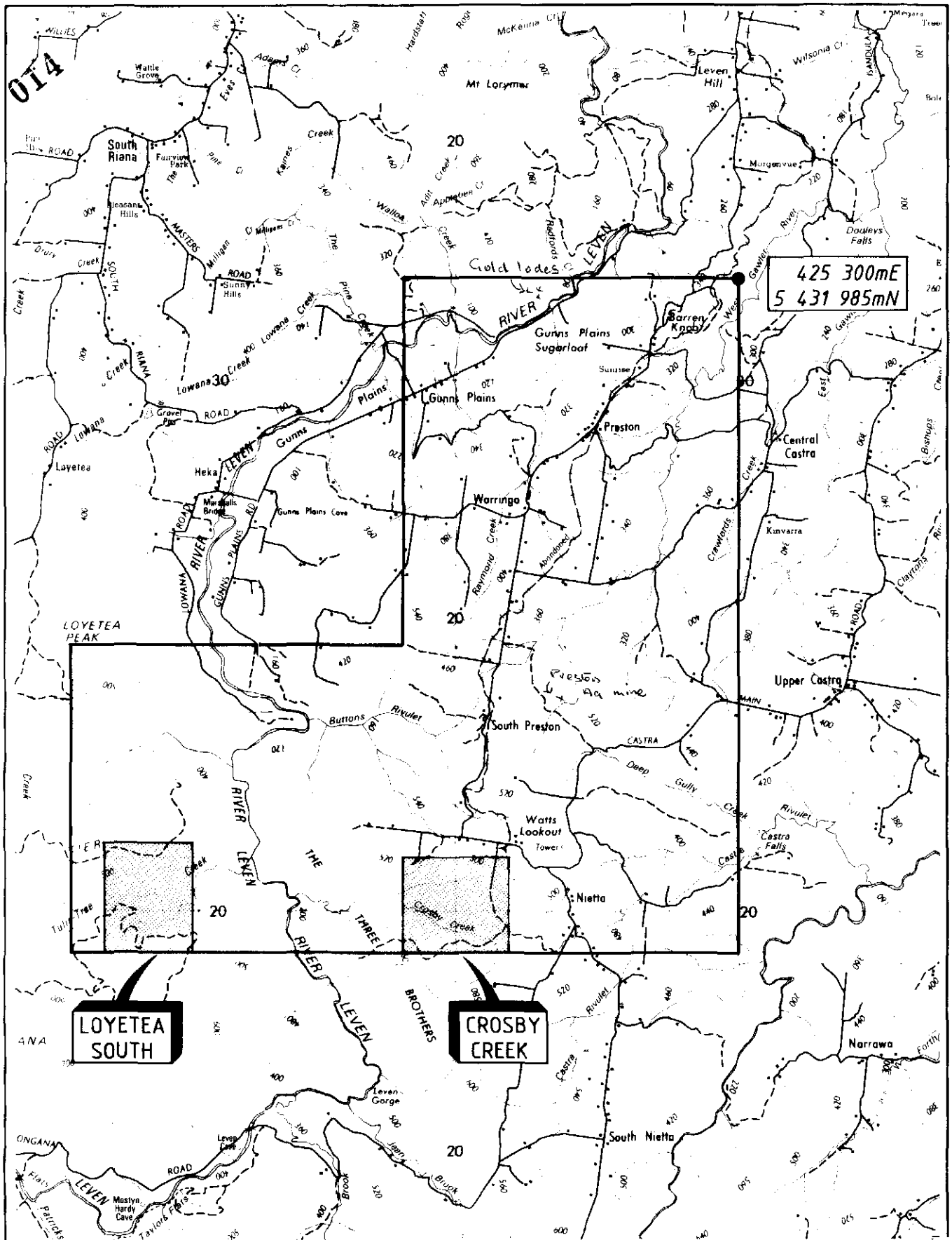
CAMBRIAN		ALTERED NIETTA GROUP
	€nlm	Fine tuffaceous sandstone to mudstone
	€nlv	Fine vitric tuff
	€nla	Ashflow tuff
	€nlc	Ashflow, crystal and lapilli tuff and agglomerate
	€nll	Rhyolitic Lava - Quartz feldspar porphyritic lava
	€nls	Fine vitric tuff, tuffaceous shale and sandstone, mudstone and fine schists. Sediments dominent.
		INTRUSIVES
	€ri	Rhyodacitic feldspar porphyry
	€rl	Microdiorite

S16020

5 cm

CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 CROSBY CREEK PROSPECT GEOLOGICAL PLAN			
REF.	SK55 - 3		(8015 - 8115)
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.vS.	REPORT No.	1447G
DATE	28 - 11 - 1986	PLAN No. TASh	3198

87-2670 6373



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RIANA E.L. 8/77
E.L. AND PROSPECT
LOCATION PLAN

REF.	SK55 - 3	(8115 - 8115)	
SCALE	1 : 100 000	DRAWN	R.T.
AUTHOR	S.J.C	REPORT No.	14476
DATE	20 - 6 - 1986	PLAN No. TASh	3076

RIANA E.L. 8/77
Scale 1:5000

CROSBY CREEK PROSPECT

916021

5 cm

Soil Geochemistry Pb >200 ppm
Resistivity <500 ohm metres
Chargeability >15 ms

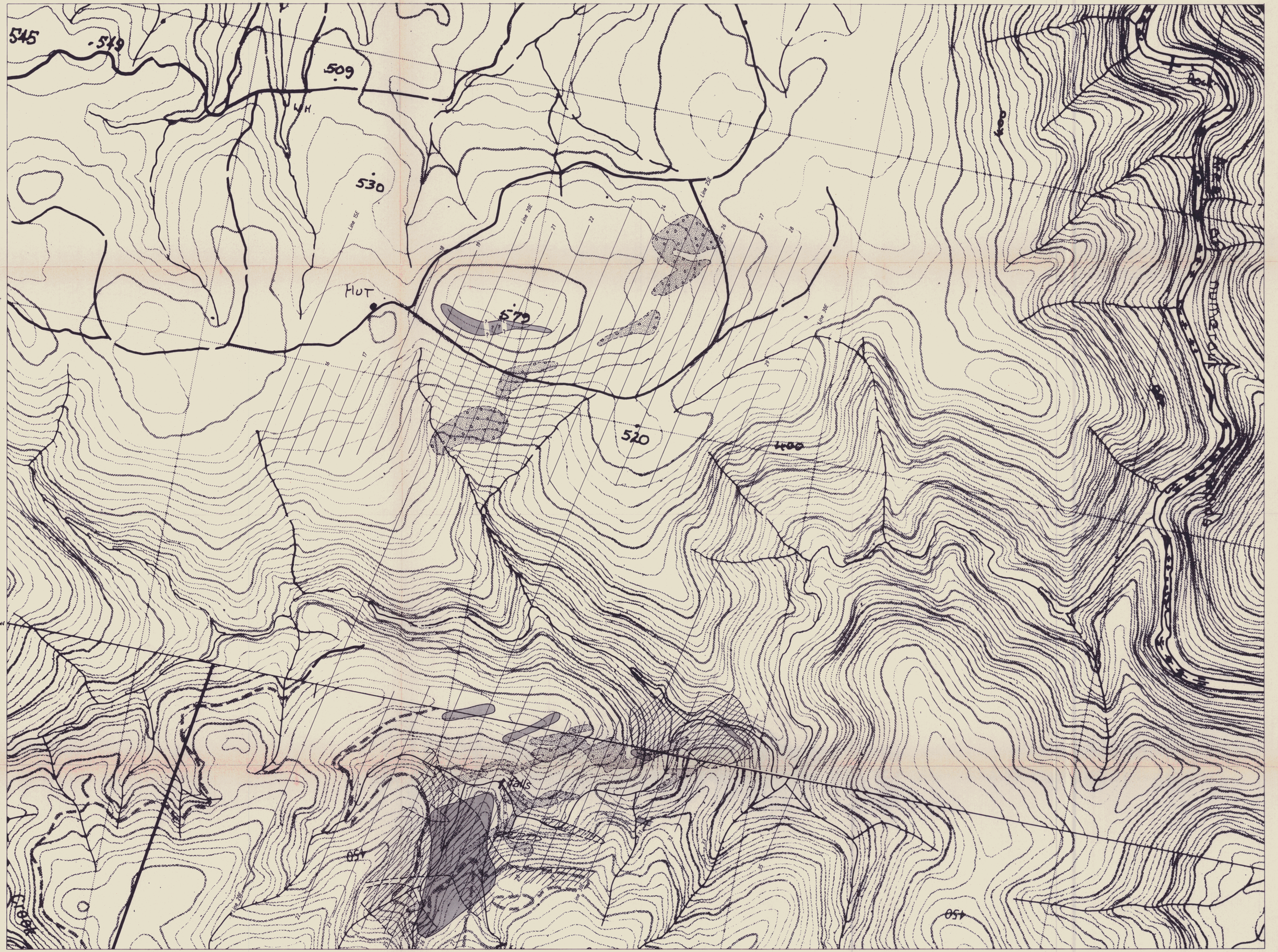
CRA EXPLORATION PTY. LIMITED			
RIANA E.L. 8/77 CROSBY CREEK PROSPECT SUMMARY OF PREVIOUS EXPLORATION RESULTS			
REF.	SK55 - 3		(8015 - 8115)
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.v.S.	REPORT No.	14476
DATE	17 - 12 - 1986	PLAN No. TASK	3221

87-2670

6374

RIANA E.L. 8/77
SCALE 1:5000

LOYETEA PROSPECT



Soil Geochemistry Pb >200 ppm

Resistivity <500 ohm metres

Chargeability >20 ms

916022

5 cm

CRA EXPLORATION PTY. LIMITED		
RIANA E.L. 8/77 LOYETEA PROSPECT SUMMARY OF PREVIOUS EXPLORATION RESULTS		
REF. SK55 - 3		(8015 - 8115)
SCALE 1 : 5000	DRAWN R.T.	
AUTHOR T. vS.	REPORT No. 14476	
DATE 17 - 12 - 1986	PLAN No. TASh 3222	

87-2670 6372