CRA Exploration Pty Limited

RUM JUNGLE CREEK EL 4417, NT

Rum Jungle District.

FINAL REPORT

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Accepted by : W. H. Johnston

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N. T. Department of Mines and Energy

Map reference
Pine Creek SD 52-8
Reynolds River 5071

Report number
12998

CONTENTS

1.0 SUMMARY

Geochemical and petrographic investigations of T.E.P drill core, from key mineralised intersections within EL 4417 to the south of the Area 55 Leases, together with soil sampling were undertaken.

This work aimed at establishing geochemical and mineralogical criteria for the recognition of possible hydrothermal mineralisation occurring at depth in the area.

The study established no clear uranium pathfinder association or evidence of hydrothermal alteration.

The extent of previous work significantly downgrades the potential of the area.

2.0 INTRODUCTION

The Rum Jungle Creek EL 4417, granted on 15th January, 1984, initially covered an area of six sub-blocks, located immediately to the south of the Area 55 Leases held by CRAE Services (Plan Ntd 3452).

The EL was applied for on D.A.Berkman's recommendation after his reappraisal of past Territory Enterprise Pty (T.E.P) drilling results in the vicinity of Area 55 (CRAE Report No 12286).

An area of 2.5 sq.km was excised from EL 4417 in May 1984 as it conflicted with the Finnis River Land Claim recommendations. A review of all past exploration on this area was made prior to surrender.

This report briefly summarises results of past work by T.E.P/BMR and Uranerz Australia Ltd (U.A.L), together with soil and drill-core geochemistry and petrography undertaken by CRAE during the current period of tenure. It should be noted that sampling in the Area 55 Leases was carried out in conjunction with work on EL 4417.

3.0 CONCLUSIONS

1. No clear uranium pathfinder association was established.

2. Soil sampling failed to delineate a significant zone anomalous in uranium within the EL.

3. All gold values in soils and drill-core were below detection limits.

4. Petrography found no evidence of hydrothermal alteration on any significant scale.

5. Extensive work by U.A.L, prior to 1982, discovered that chemical and/or radiometric anomalies were caused by preferential enrichment of uranium at the base of laterite profiles developed on dolomite.

6.No significant radioactivity was detected by U.A.L in holes drilled into haematitic-quartzite breccia of Castlemaine Hill.

4.0 PAST WORK

4.1 T.E.P and BMR 1960's

Exploration in this period encompassed much of the Rum Jungle Field as systematic follow-up of 1950's airborne radiometric anomalies commenced.

Over the area of EL 4417 this work included ground mapping-radiometrics and other surface geophysical surveys, soil geochemistry/costeaning, shallow auger drilling ond the drilling of 106 cored holes for a total of 11950 metres.

A full summary o9f this exploration, prior to 1968 appears in the BMR Report No 1967/150.

Much of the drilling effort centred on the southern stratigraphic extension of the basemetal mineralised zone at Area 55. A body of one million tons at 0.9% Cu and 4.5% Pb to a depth of 66m was outlined by T.E.P.

Half the holes in this area intersected anomalous uranium, including eight holes containing intersections greater than 1 lb U_3O_8/ton. The following five holes occur on the southern extension of Area 55 mineralisation and were resampled during CRAE's 1984 investigations (Plan Ntd 3849).

Hole No	Interval (feet)	Thickness (feet)	lb U O /ton
D 679	83-98	15	1
D 696	150-155	5	1
D 713	145-180	35	0.7
Including	168-170	2	3.8
D 723	95-101	6	1.37
D 727	59-77	18	1.9

This mineralised area comprises Lower Proterozoic Coomalie Dolomite overlain by various schists of the Whites Formation. These have been folded into a series of north-easterly trending synclines and anticlines, substantially disrupted by faulting.

The basal Whites Formation meta-sediments have been thoroughly prospected by drilling, following a favourable zone exploration concept, to about 100m depth.

4.2 U.A.L 1977-1982

U.A.L held and extensively explored all the ground within EL 4417. An examination of all open-file data was carried out. The northern three sub-blocks of the current EL were explored by U.A.L as part of EL 1295 and the remainder under EL 1618 (Figure 1).

4.2.1 Work Summary -

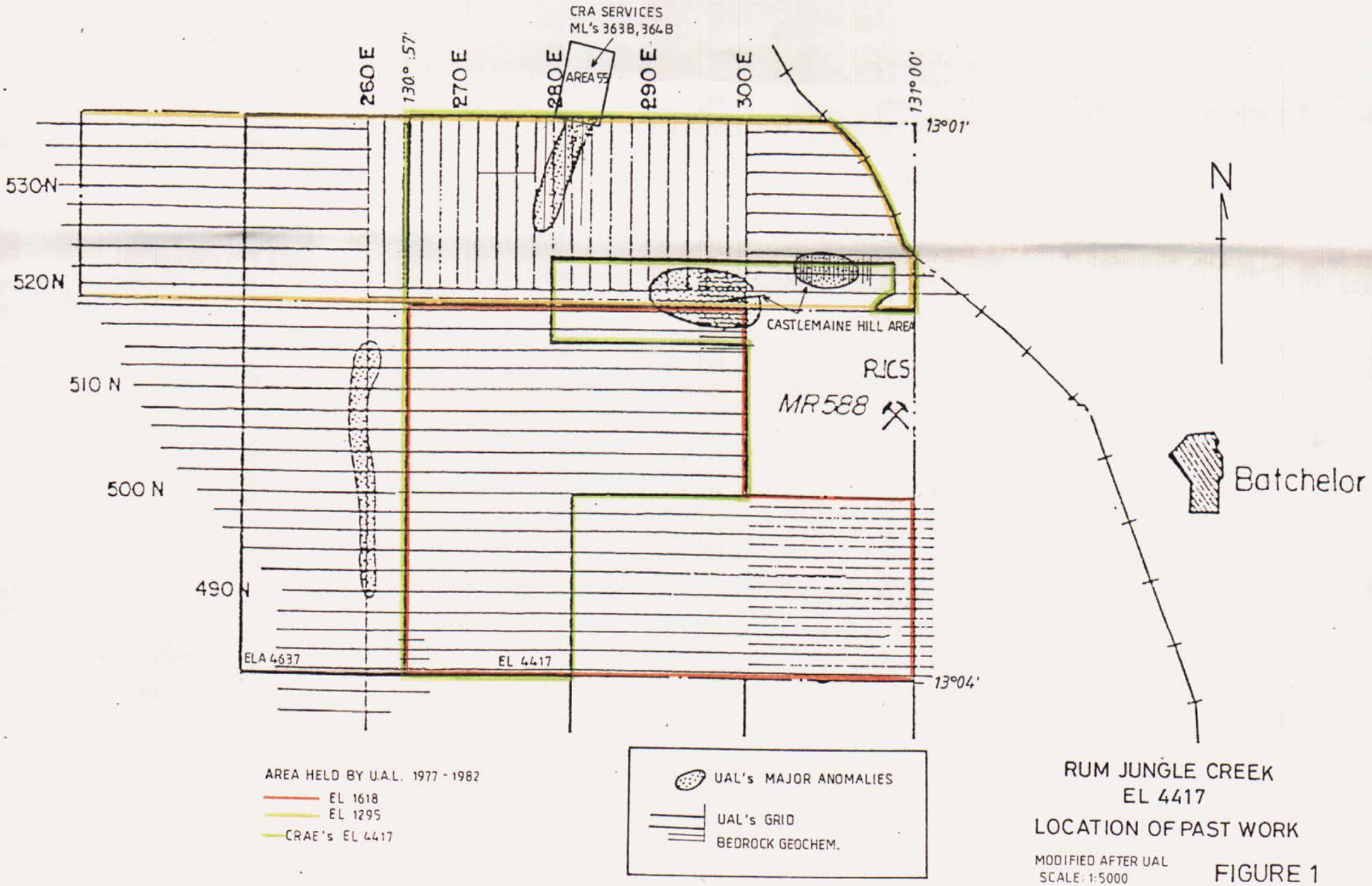
1. The entire area was gridded on lines spaced 200m apart, with infill on 25, 50 and 100m spaced lines over areas where anomalous uranium, phosphate and basemetals were recorded.

2. Entire area covered by ground radiometrics and magnetics on lines spaced 200m apart at 50m intervals. Results of the latter indicated the need for closer spaced readings as a 1500nT magnetic gradient was recorded. Radiometrics defined areas to follow-up and highlighted a 2x background response on Crater Formation which underlies the Coomalie Dolomite on the flanks of the Waterhouse Granite inliers.

Sirotem surveys were undertaken in areas of follow-up surrounding the N.W.margins of Castlemaine Hill and to the east of the Giants Reef Fault. Responses are considered to reflect lithologies and shale/dolomite contacts.

3. Auger drilling was initially used to follow-up radiometric anomalies in the central portion of EL 4417, but was later replaced by air-core and RAB drilling to assist geochemical sampling and mapping of the area. Some 60% to 80% of holes reached bedrock.

Diamond drilling was undertaken on uranium anomalies in the vicinity of Castlemaine Hill, the area excised from EL 4417 in May 1984.



RUM JUNGLE CREEK
EL 4417
LOCATION OF PAST WORK

MODIFIED AFTER UAL
SCALE: 1:5000

FIGURE 1

4.2.2 Drilling Summary and Results -

1. Auger drilling of 74 holes totalling 707.5m, undertaken on the central portion of the EL began the bedrock sampling program.

2. Air-core drilling of 146 holes totalling 1526m assisted with mapping the southern half of EL 4417.

3. RAB drilling of 610 holes for a total of 10 100m assisted with mapping concealed areas. All were radiometrically logged and the lower one metre sample assayed. Scattered anomalies in the southern portion of EL 4417 were not confirmed by infill drilling on 25, 50 and 100m centres.

An area of 1100m x 600m ,immediately to the south of the Area 55 leases, was RAB drilled on 100m centres with local infill. Bedrock samples recorded values of 25-65 ppm U, elevated Cu-Zn-Ni-Co and occasional Rb anomalies. Trenching in this area showed highest uranium values to be associated with basal laterite developed on dolomite.

On the S.W.margins of the EL, erratic weakly anomalous uranium (35 ppm) with coincidenty high P_2O_5 (13.5%) was found in black slate/chert but not confirmed by infill drilling.

A zone of downfaulted carbonaceous dolomite, shales and chert overlying Coomalie Dolomite, to the east of the Giants Reef Fault, extends to the north-east of the phosphate anomaly. U.A.L conducted a Sirotem survey over this prospective zone. Responses confirmed the presence of carbonaceous shales but only weak uranium, phosphate and basemetal values were reported in RAB bedrock samples.

Isolated Th, Sr and Y anomalies recorded in Coomalie Dolomite overlying Crater Formation did not warrant follow-up.

4. Two bedrock/hydrogene U anomalies, recording 20 to 150 ppm U values in RAB holes, along the west and northern margins of the Castlemaine Hill "HQB" were further drill tested by U.A.L.

Percussion drilling of 15 holes totalling 550m was unsuccessful in testing the potential for mineralisation in the area due to caving ground.

Diamond drilling of 6 holes aggregating 916.7m tested these anomalies. No core was assayed but all holes were radiometrically logged with no significant responses recorded.

Deeply weathered dolomite bearing tremolite, minor breccia zones and talc alteration were intersected. Carbonaceous, calcareous and pyritic slates of the Whites Formation overlying Coomalie Dolomite were intersected in some holes.

5.0 1984 CRAE WORK

Attempts to quantify geochemical criteria to support the recognition of possible hydrothermal alteration were made utilising soil and drill- core geochemistry and petrography.

5.1 Drill Core Geochemistry

A total of 45 drill-core samples were collected from representative intervals of 16 T.E.P holes drilled in the vicinity of the Area 55 leases.

Six of these holes are located immediately to the north of EL 4417 but results are included in this discussion for the sake of completeness (Plan Ntd 3489). Samples were analysed for major oxides and 27 elements with a view to establishing uranium pathfinder associations and indicators of hydrothermal alteration (Appendix 1). Orisinal T.E.P drill logs for all holes sampled are appended (Appendix 2).

A summary of results follows:

1. Uranium values of mineralised intervals recorded by T.E.P, at the time of drilling, were similarly anomalous upon resampling.

2. There is a low Na_2O content throughout, with the highest values (0.37%) associated with talcose sericitic slates.

3. K_2O values, up to 6.9%, recorded in some of the schists are undoubtedly derived from sericite.

4. The blue biotite and chlorite/talc schists are strikingly high in TiO (maximum 6.4%).

5. All gold values were below detection limit (5 ppb).

6. Mercury values are all below detection with the exception of four samples, returning values of between 50 to 250 ppb. However no correlation with uranium mineralisation exists.

7. A strong Cu-Pb-Ni-Co-As association with anomalous uranium was defined.

5.2 Drill Core Petrography

Nineteen drill-core samples, representative of 9 of the above holes, were submitted to Central Mineralogical Services for petrographic study. Results are tabled in Appendix 3.

Little evidence of hydrothermal alteration on any significant scale was observed. Most rock types are low-grade (greenschist facies) schists consisting of varying proportions of micas, quartz, graphite and syngenetic pyrite.

Chemical meta-sediments were found to be much more prone to alteration, showing the effects of retrograde metamorphism. This contrasts to the schists consisting of more stable mineral assemblages and therefore immune to alteration.

5.3 Soil Geochemistry

Soil sampling at 50m intervals on three lines, totalling 1.85km, was undertaken across the synclinal nose to the south of Area 55. Traverses are located on Plan Ntd 3489 and geochemical results listed in Appendix 4.

This work indicates a zone of +20 ppm uranium broadening to the north and extending outside the EL boundary into the CRAE Mining Leases 363B and 364B.

6.0 References

Pasel, P Taylor, K.S	1982	Final Report on Exploration Licences 1618 and 2991 Batchelor, N.T. Open File
Pasel, P Taylor, K.S	1982	Final Report on Exploration Licence No 1295, Rum Jungle Area, N.T. Open File.
Miezitis, Y	1967	Preliminary Report on Compilation of Geological, Geochemical and Radiometric Data from the Central Portion of the Hundred of Goyder, N.T. BMR Record No 1967/150
Berkman, D.A	1983	A Reappraisal of Area 55 Uranium Prospect, Rum Jungle District, N.T. Unpubl. CRAE Report No 12286

7.0 Keywords

Lead, copper, dolomite, black shale, hydrothermal Alteration
Proterozoic-Lr, Geochem rock/soil

8.0 Location

Pine Creek SD 52-8
Reynolds River 5071

9.0 List of Plans

Plan No	Title	Scale
Ntd 3452	Location Plan Rum Jungle Creek EL 4417	1:100 000
Ntd 3849	Sample Locations	1:10 000

APPENDIX 1

DRILL CORE SAMPLE LEDGERS AND ASSAYS

"MINERALISED SAMPLES"

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT Rum Jungle Creek / Area 55 EL 4417, N.T.

D.P.O. No. 20742 & 21320

DATE July 84

SAMPLE No. _____

COLLECTED BY D. Berkman

SHEET No. _____

ANALYSED BY Analabs (21320); Amdel (20742)

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample * Type	U	Th	Ag	Te	Se	Ba	Ni	Co	As	Bi	Y	La	Ce			Cu	Pb	Zn		Geological Observations
				Metal Content, p.p.m.																			
Dpo																							
21320	968584		DD	1250	15	1·5	<	×	40	640	125	7	×		90	95			355	10	110		DD581, Area 55 west, 85-91'; v. soft blue bio. sch
"	968585		DD	540	5	1	<	×	230	1300	195	10	10		100	80			185	30	795		582 " " 83-89'; deeply wx grn chl. sch
"	968588		DD	25	×	0·5	×	×	20	195	65	8	10		×	×			150	30	30		" " " 146-150'; dolomite breccia
"	968586		DD	810	7	0·5	<	×	20	470	100	25	×		75	110			140	190	175		DD696, 154-156'; deeply wx. grn y talcose sch
"	968587		DD	80	20	×	×	×	730	180	65	8	×		90	130			70	40	75		" 133-135'; blue mica sch.
"	968580	√	DD	730	15	2	<	7	20	600	360	230	10		65	55			685	115	200		DD713; 168'-170'; soft dk brn clay y breccia, pyritic
20742	970730		DD	66	8	1	0·3	6·2	16	750	395	280	11	30	35	60			700	20	28		" 205-223'; pyr. qtz-ser. mylonite, tourmaline
"	970731		DD	12	10	<0·5	<0·1	0·3	92	16	6	4	2	40	55	85			15	<5	5		" 124-139'; wx grn talcose slate
21320	968582	√	DD	430	15	×	×	×	×	505	175	7	×		40	40			15	45	195		DD723; 97-99', soft grey sandy shale
"	968581		DD	130	20	×	×	30	45	215	115	10	20		25	×			70	65	50		DD727; 65-67'; bleached blk shale, highly r/e
20742	970733		DD	78	30	<0·5	<0·1	<0·1	225	205	50	6	1	150	65	140			105	10	96		DD745; 219-223'; brown talcose mudstone
"	970734		DD	30	22	<0·5	0·2	1·8	135	16	10	7	4	46	40	80			28	6	10		" 138-156'; grey ser. slate
"	970701		DD	165	<4	1	<0·1	0·7	140	650	3300	70	<1	<4	120	580			3040	2·6%	4900		DD819; 28-47'; brn y wh. clay after blk sh, Cu/Pb
"	970702		DD	74	6	1	<0·1	2·5	215	1400	750	115	2	18	60	180			240	2600	4100		" 214-232'; wx ser. sch.; tr Cu/Pb
"	970703		DD	58	8	4	<0·1	0·8	770	4940	5000	200	1	24	50	110			6500	3340	2740		" 382-385'6"; grn. talcose mylonite
"	970709		DD	26	<4	10	<0·1	0·3	160	480	120	450	<1	<4	<15	<15			1200	18%	350		DD818; 127-145'; brn clay, ~15% Pb, ~0.5% Cu
	970710		DD	50	6	<0·5	0·1	0·2	405	3440	5000	1440	11	12	30	40			9000	3000	300		" 236-253'; slate breccia, ~1% Pb, 0.2% Cu
Average Crust																							
Anal. Method				XRF	XRF	AAS	E2	XRF	B1	C1	C1	B1	B1	B1	B1	B1			C1	C1	C1		
Limit of Detection				3	4	0·5	3/0.1	5/0.1	20/10	5	5	2	10/1	4	10	30			5	5	5		

DRILL CORE SAMPLES

Lee Creek Report # 12286 for DD logs

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT Rum Jungle Creek, N.T.

EL 4417 (AREA 55)

SAMPLE No. 970701 – 970718

D.P.O. No. 20742

DATE July 1984

COLLECTED BY D. Berkman & D. Hossack

SHEET No. 3

ANALYSED BY AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample Type *	SILICATE ANALYSES SiO_2	Al_2O_3	Na_2O	K_2O	CaO	MgO	Tot. Fe as Fe_2O_3	MnO	P_2O_5	FeO_3	% CO_2	% SO_3	% C	% L.O.I.	% TOTAL	ppm U	Geological Observations
																				DRILL CORE GRAB SAMPLES & PETROLOGICAL SPECIMENS (Hole are Shown as D.H. No/depth in feet, eg. 801/166). Core ex old TEP core shed at Lem Tungsten
	970701			36.3	18.2	0.04	0.37	0.06	0.21	24.6	0.26	1.42	6.40	0.10	0.26	0.04	11.5	99.4	165	DD819, 28 - 47 ft ; lens of white clay after blk shale, Cu/Pb
	702			39.1	14.8	0.05	3.20	3.10	8.45	10.3	0.14	2.32	4.82	0.05	0.44	0.06	12.2	98.5	74	" 214 - 232 ; low ser sch, Cu Pb
	970703			40.0	11.6	0.10	2.00	2.16	13.5	9.75	0.03	1.04	3.20	0.06	10.9	0.43	13.3	96.7 #	58	" 382 - 385'6" ; green talcose mylonite
	970704			71.2	14.6	0.14	3.98	0.03	0.70	4.76	0.02	0.04	0.40	0.01	0.03	0.62	4.10	100.0	9	DD801, 19 - 37' ; low sericitic slate
	705			65.2	14.1	0.06	4.06	0.18	3.46	6.15	0.09	0.11	0.40	0.31	3.05	0.68	6.35	100.2	15	" 124 - 140 ; grey " "
	706			68.1	14.1	0.09	5.15	0.24	2.66	3.38	0.03	0.13	0.34	0.03	3.00	0.57	5.60	99.8	25	" 158 - 170 ; 801/166 ; green tale-sericite slate
	707			67.0	11.1	0.10	2.90	0.13	2.76	6.70	0.02	0.06	0.44	0.01	5.80	4.60	9.20	100.4	8	" 208 - 227 ; 801/212 ; blk bryn. sch
	970708			59.0	15.0	0.26	4.08	0.23	2.90	4.68	0.02	0.05	0.60	0.01	6.85	4.80	12.3	99.1	10	" 430 - 466 ; 801/441 ; blk bryn qtz-ser. slate
	970709			33.5	14.4	0.03	1.93	0.07	3.74	2.18	0.01	1.66	5.00	2.45	0.04	x	10.0	72.5 #	26	DD818, 127 - 145' ; lens clay, +15% Pb, ~0.5% Cu
	970710			42.0	13.0	0.06	0.73	3.58	4.10	15.3	0.56	2.68	0.45	7.50	0.33	0.29	15.5	98.0	50	" 236 - 253' ; slate breccia, ~10% Pb, 0.2% Cu
	970711			65.9	12.7	0.20	1.39	0.18	1.20	6.10	0.02	0.20	0.58	0.04	0.14	6.40	10.3	98.8	13	DD807A, 30 - 45' ; low black slate
	712			55.8	18.7	0.06	3.10	0.10	0.69	9.20	0.02	0.05	1.09	0.01	9.70	1.14	11.2	100.0	15	" 98 - 113 ; low creamy talcose slate
	713			60.9	12.7	0.18	3.16	0.24	1.21	9.75	x	0.04	0.45	0.04	17.6	1.06	9.70	98.3	3	" 184 - 192 ; low " " mylonite
	714			63.1	16.7	0.29	6.95	0.17	1.00	5.55	0.01	0.04	0.70	0.15	2.5	0.59	4.74	99.3	9	" 205 - 209 ; 807/205-209 ; creamy talcose slate
	715			54.3	19.7	0.05	6.20	0.03	0.87	7.45	x	0.06	0.91	0.03	13.2	2.60	10.8	100.4	32	" 259 - 263 ; 807/262 ; ditto
	970716			36.6	12.2	0.08	1.52	5.75	10.2	17.2	0.25	1.14	4.74	0.51	14.4	0.04	9.45	99.1	7	" 338 - 361 ; 807/343 ; grey silic. chlorite-ser slate
	970717			57.9	16.1	0.06	3.92	0.04	0.97	8.60	x	0.06	0.66	0.04	0.09	6.80	12.2	100.5	14	DD767, 13 - 30 ft ; low black graphitic slate
	970718			86.4	4.88	0.05	1.52	0.03	0.44	3.22	<	0.08	0.20	0.09	3.34	0.72	3.20	100.0	4	" 153 - 171 ; 767/165 ; fg. grey sericitic slate, silicified
Average Crust																				
Anal. Method																				
Limit of Detection										0.01				0.02	0.02					

* High S

\# High Pb

DRILL CORE SAMPLES

See Report # 12286 for DD logs

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT RUM JUNGLE CREEK, N.T.

EL. 4417 (AREA 55)

SAMPLE No. 970701 – 970718

D.P.O. No. 20742

DATE July 1984

COLLECTED BY D. Berkman & D. Hossack

SHEET No. 4

ANALYSED BY AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; RO: Rock chip; DD: Drill core; RG: Rock grab; DC: Drill cuttings; SL: Soil; SS: Stream sediment

Core Condition	Sample Number	Sample Width	Sample Type *	Au ppb	Ag	Hg ppb	Te	Se	Ba	Cu	Pb	Zn	Ni	Co	As	Bi	Sb	Sn	W	U	Th	Geological Observations
																						DRILL CORE GRAB SAMPLES & PETROLOGICAL SPECIMENS (Rock are shown as D.H. No / depth in feet, eg. 801/166). Core extracted TEP core shed at Rum Jungle
	970701			<5	1	x	<0.1	0.7	140	3040	2.6%	1900	650	3300	70	<1	<1	<4	24	165	<4	DD819, 28-47 ft; lens of white clay after blk shale, Cu/Pb
	702			<5	1	x	<0.1	2.5	215	240	2600	4100	1400	750	115	2	1	4	<5	74	6	" 214-232; lens ser sch, tr Cu/Pb
	970703			<5	4	x	<0.1	0.8	770	6500	3140	12760	4940	5000	200	1	4	18	6	98	8	" 382-385'6"; green talcose mylonite
	970704			<5	<0.5	x	0.4	1.4	325	170	105	125	36	26	70	3	1	4	8	9	24	DD801, 19-37'; lens sericitic slate
	705			<5	<0.5	x	0.1	1.0	275	66	46	225	36	16	385	1	<1	10	<5	15	20	" 124-140; grey " "
	706			<5	<0.5	x	<0.1	0.7	365	33	50	140	20	6	7	2	1	<4	<5	25	24	" 158-170; 801/166; green talc-sericite slate
	707			<5	<0.5	x	<0.1	2.3	220	66	16	130	66	6	7	2	<1	4	<5	8	18	" 208-227; 801/212; blk pyr. sch
	970708			<5	1.0	x	0.2	1.6	350	105	20	140	66	16	10	5	2	<4	6	10	22	" 430-466; 801/441; blk pyr gf-ser. slate
	970709			<5	10	x	<0.1	0.3	160	1200	18%	350	480	120	450	<1	2	10	54	26	<4	DD818, 127-145'; lens clay, +15% Pb, ~0.5% Cu
	970710			<5	<0.5	x	0.1	0.2	405	9000	3000	300	3440	5000	1440	11	2	8	<5	50	6	" 236-253'; slate breccia, ~1% Pb, 0.2% Cu
	970711			<5	1	x	0.1	1.5	115	185	3040	48	20	16	62	3	<1	<4	<5	13	10	DD807A, 30-45'; lens black slate
	712			<5	<0.5	x	0.1	1.4	80	215	4340	230	205	76	34	3	2	<4	6	15	<4	" 98-113; lens creamy talcose slate
	713			<5	1	x	0.2	3.3	1520	295	180	70	96	50	7	1	<1	<4	8	3	12	" 184-192; lens " " mylonite
	714			<5	1	x	<0.1	1.8	1880	230	350	185	66	36	5	1	<1	4	6	9	14	" 205-209; 807/205-209; creamy talcose slate
	715			<5	<0.5	50	0.2	3.3	185	35	76	18	40	26	135	4	<1	<4	6	32	16	" 259-263; 807/262; ditto
	970716			<5	<0.5	x	0.1	0.7	2420	100	26	70	145	60	6	5	<1	<4	6	7	6	" 338-361; 807/343; grey silic. chlorite-ser slate
	970717			<5	<0.5	x	0.1	3.3	300	90	16	23	6	6	28	1	<1	<4	6	9	14	DD767, 13-30 ft; lens black graphitic slate
	970718			<5	1	100	0.1	5.7	66	205	36	45	50	40	32	2	<1	<4	<5	22	4	" 153-171; 767/165; fg. grey sericitic slate, silicified
Average Crust																						
Anal. Method																						
Limit of Detection				5	0.5	50	0.1	0.1	5	2	5	2	5	5	1	1	1	4	5	1	4	

DRILL CORE SAMPLES

See CRAE Report # 12286 for DD logs

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT RUM JUNGLE CREEK, N.T.
EL 4417 (AREA 55)

SAMPLE No. 970701 – 970718

D.P.O. No. 20742
DATE July 1984
COLLECTED BY D. Berkman & D. Hossack
ANALYSED BY AMDEL
SHEET No. 5

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample Type *	INDICATORS OF HYDROTHERMAL ALTERATION (Metal Content, p.p.m.) V	B	F %	Rb	Sr	Ga	Ce	Y	La	U	Cu	Pb	Zn	Geological Observations
																	DRILL CORE GRAB SAMPLES & PETROLOGICAL SPECIMENS (These are Shown as D.H. No/depth in feet, eg. 801/166). Core ex old TEP core shed at Rum Jungle
	970701	#		<50	200	0.05	38	22	130	580	<4	120	165	3040	2.6%	1900	DD819, 28 – 47 ft ; brn & white clay after blk shale, Cu/Pb
	702			<50	560	0.50	62	54	44	180	18	60	74	240	2600	4100	" 214 – 232 ; brn ser sch, Pb Cu/Pb
	970703			<50	440	0.31	135	37	30	110	<4	80	58	6500	3340	2740	" 382 – 385'6" ; green talcose mylonite
	970704			<50	120	0.05	165	20	19	110	28	40	9	170	105	125	DD801, 19 – 37' ; brn sericitic slate
	705			<50	80	0.11	140	26	16	100	20	40	15	66	46	225	" 124 – 140 ; grey " "
	706			<50	160	0.10	160	72	15	140	34	50	25	33	50	140	" 158 – 170 ; 801/166 ; green talc-sericite slate
	707			70	720	0.12	115	15	19	110	30	45	8	66	16	130	" 208 – 227 ; 801/212 ; blk pyr. sch
	970708			160	2850	0.21	105	30	22	110	24	50	10	105	20	140	" 430 – 466 ; 801/441 ; blk pyr qtz-ser. slate
	970709	#		<50	330	0.14	450	42	1350	<15	<4	<15	26	1200	18%	350	DD818, 127 – 145' ; brn clay, +15% Pb ~0.5% Cu
	970710			60	130	0.20	21	1240	12	40	12	30	50	9000	3000	300	" 236 – 253' ; slate breccia, ~1% Pb, 0.2% Cu
	970711			270	2350	0.07	41	84	22	90	<4	65	13	185	3040	48	DD807A, 30 – 45' ; grn black slate
	712			190	830	0.02	84	38	28	35	<4	15	15	215	4340	230	" 98 – 113 ; grn creamy talcose slate
	713			<50	1750	x	76	56	16	45	6	<15	3	295	180	70	" 184 – 192 ; grn " " mylonite
	714			80	2000	0.03	125	56	21	100	10	50	9	230	350	185	" 205 – 209 ; 807/205-209 ; creamy talcose slate
	715			100	450	0.03	86	40	25	110	12	35	32	35	76	18	" 259 – 263 ; 807/262 ; ditto
	970716			<50	500	0.22	37	84	37	170	28	55	7	100	26	70	" 338 – 361 ; 807/343 ; grey silic. chlorite ser slate
	970717			250	80	0.09	150	12	23	45	22	15	9	90	16	23	DD767, 13 – 30 ft ; brn black graphitic slate
	970718			<50	110	x	31	7	5	55	20	30	22	205	36	45	" 153 – 171 ; 767/165 ; lt. grey sericitic slate, silicified
Average Crust																	
Anal. Method																	
Limit of Detection				50		0.02	2	2	2	15	4						

* Due to matrix interferences Th, Bi, Ga may be in error
# " " " Th, Bi, Ga, As, Y " "

DRILL CORE SAMPLES

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT Rum Jungle Creek

D.P.O. No. 20742

DATE July 1984

SAMPLE No. 970719 - 970737

COLLECTED BY D. Berkman & D. Hossack

SHEET No. 6

ANALYSED BY AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; RO: Rock chip; DD: Drill core; RG: Rock grab; DC: Drill cuttings; SL: Soil; SS: Stream sediment

SILICATE ANALYSES (PERCENT)

Grid Co-ordinates	Sample Number	Sample Width	Sample Type *	SiO_2	Al_2O_3	Na_2O	K_2O	CaO	MgO	Total Fe as Fe_2O_3	MnO	V_2O_5	TiO_2	CO_2	% SO_3	C	L.O.I.	% Total	ppm U	Geological Observations
	970719			65·9	14·7	0·13	4·40	0·02	1·00	7·35	0·66	0·17	0·34	0·02	<0·02	0·53	4·20	98·9	9	DD768, 20-40'; 768/25; wvs grey ser. slate
	720			61·9	14·7	0·14	4·52	0·26	3·06	6·00	0·08	0·17	0·40	0·15	0·54	0·82	4·14	100·4	8	" 337-354; 768/345; grey sericitic slate
	970721			53·6	15·6	0·10	5·05	0·12	3·42	7·90	0·03	0·10	0·65	0·04	7·55	7·30	13·1	99·7	21	" 483-500; 768/492; by. blk graph. sch
	970722			72·6	11·5	0·11	2·82	0·03	1·39	4·22	0·04	0·04	0·31	0·01	<0·02	0·45	6·55	99·6	4	DD765; 11-27, wvs grey sandy slate
	723			73·6	16·0	0·07	4·82	0·07	0·62	0·95	0·01	0·06	0·21	0·01	1·0	0·06	3·44	99·8	13	" 213-229; 765/222; grey qz-ser schist
	970724			67·0	15·2	0·31	5·25	0·22	2·58	4·50	0·06	0·09	0·30	0·03	0·65	0·58	3·40	98·9	9	" 404-421; 765/416; grey by. ser slate
	970725			18·4	5·0	0·02	1·29	19·7	17·0	5·65	0·07	0·42	1·94	24·9	4·67	0·04	2·51	94·6*	10	DD692, 183-203; 692/191; calcite-bio.-chl. sch, pyritic
	726			50·6	13·6	0·37	2·98	6·95	5·45	10·1	0·12	1·55	3·12	0·38	3·66	0·06	4·64	99·5	16	" 111-123; 692/118; by. chlo-qz-talc sch
	970727			44·6	18·9	0·12	6·20	2·98	1·46	9·25	0·07	2·42	4·30	0·06	0·27	0·22	9·30	99·6	52	" 36-56; brn deeply wvs slate
	970728			32·6	13·3	0·03	0·14	0·84	22·8	9·80	0·01	0·55	4·36	0·08	10·1	0·06	14·8	99·2	32	DD713, 375-397; 713/384; by qz-bio-ser slate
	729			25·3	13·5	0·17	0·11	1·79	21·4	11·7	0·01	1·15	4·76	0·02	18·1	0·04	18·1	98·0	46	" 258-275, highly pyritic "
	730			15·7	7·75	0·06	0·14	0·78	14·5	32·6	0·03	0·50	4·44	6·99	54·3	0·03	24·3	100·8	66	" 205-223; 713/218; by qz-ser. mylonite, tourmaline
	731			78·1	12·5	0·07	2·54	0·05	1·15	1·03	x	0·05	6·63	0·07	0·38	0·13	2·98	100·1	12	" 124-139, wvs green talcose slate
	970732			56·3	17·1	0·08	4·14	0·03	1·12	9·75	x	0·05	0·64	0·07	0·06	5·90	10·9	100·1	10	" 5-22, wvs black carbonac. slate
	970733			41·3	30·4	0·08	0·30	0·19	8·15	3·08	<	0·16	1·22	0·04	0·06	0·26	14·4	99·3	78	DD745, 219-223; brn talcose mudstone
	734			63·7	17·3	0·12	5·80	0·04	1·56	2·12	x	0·08	0·76	0·03	0·14	5·15	8·05	99·5	30	" 138-156; 745/152; grey ser. slate
	970735			66·9	18·2	0·21	4·88	0·18	2·10	1·61	x	0·07	0·73	0·24	0·85	2·12	6·15	101·0	58	" 120-135; 745/133; grey pyr. ser slate
	970736			58·0	18·4	0·05	3·98	0·13	1·52	8·15	0·01	0·12	0·99	0·28	0·05	0·32	8·15	99·5	3	DD752, 157-176; talcose q blk slate
	970737			63·3	12·8	0·08	3·90	x	0·94	3·36	x	0·02	0·52	0·07	5·25	8·35	15·8	100·7	17	" 429-446; 752/436; by grey sericitic slate, quartz veined
Average Crust																				* Weigh S
Anal. Method																				
Limit of Detection								0·01			0·01			0·01	0·02	0·02				

DRILL CORE SAMPLES

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT Rum Jungle Creek

D.P.O. No. 20742

DATE July 1984

SHEET No. 7

SAMPLE No. 970719 – 970737

COLLECTED BY D. Berkman & D. Hassack

ANALYSED BY AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample Type*	Metal Content, p.p.m. "PATHFINDER" ELEMENTS ppb Au	Ag	ppb Hg	Te	Se	Ba	Cu	Pb	Zn	Ni	Co	As	Bi	Sb	Sn	W	U	Th	Geological Observations
	970719			<5	1	100	<0.1	0.5	980	66	30	135	40	46	10	<1	<1	<4	<5	9	30	DD768, 20-50'; 768/25; wns grey ser. slate
	720			<5	<0.5	x	<0.1	0.6	435	80	16	90	36	20	7	1	2	4	<5	8	20	" 337-354; 768/345; grey sericitic slate
	721			<5	<0.5	x	<0.1	2.2	245	80	16	40	60	40	40	2	<1	8		21	24	" 483-500; 768/492; fg. blk graph. sch
	722			<5	<0.5	x	<0.1	0.2	430	33	26	56	10	6	7	1	<1	<4	8	4	16	DD765; 11-27, wns grey sandy slate
	723			<5	<0.5	x	<0.1	0.7	140	20	16	5	6	6	2	1	1	8		13	54	" 213-229; 765/222; grey qf-ser schist
	724			<5	<0.5	x	0.2	0.8	830	76	40	145	20	10	10	4	<1	4	<5	9	26	" 404-421; 765/416; grey fg. ser slate
	725			<5	<0.5	x	<0.1	0.4	225	43	10	30	105	30	13	2	1	<4	<5	10	6	DD692, 183-203; 692/191; calcit-bio.-chl. sch, pyritic
	726			<5	<0.5	x	<0.1	0.3	990	43	16	550	60	36	4	2	<1	<4	10	16	10	" 111-123; 692/118; fg-chlo-qf-talc sch
	727			<5	<0.5	x	<0.1	1.4	1600	110	36	100	130	66	4	1	1	38	<5	52	12	" 36-56; brn dusky wns slate
	728			<5	<0.5	x	<0.1	0.6	<5	20	10	23	495	70	4	3	<1	12	<5	32	8	DD713, 375-397; 713/384; fg qf-bio-ser slate
	729			<5	1	x	0.2	1.9	<5	20	16	18	385	135	13	6	<1	6	34	44	8	" 258-275, highly pyritic "
	730			<5	1	250	0.3	6.2	16	700	20	28	750	395	280	11	1	10	<5	66	8	" 205-223; 713/218; fg qf-ser-mylonit, tourmaline
	731			<5	<0.5	x	<0.1	0.3	92	15	<5	5	16	6	4	2	<1	<4	<5	12	10	" 124-139, wns green talcose slate
	732			<5	<0.5	x	0.5	0.5	140	25	16	8	26	6	22	4	2	6	6	10	16	" 5-22, wns black carbonac. slate
	733			<5	<0.5	x	<0.1	<0.1	225	105	10	96	205	50	6	1	<1	12	6	78	30	DD745, 219-223; brn talcose mudstone
	734			<5	<0.5	x	0.2	1.8	135	28	6	10	16	10	7	4	<1	<4	6	30	22	" 138-156; 745/152; grey ser. slate
	735			<5	1	x	0.2	3.4	76	220	6	13	70	125	6	2	<1	<4	6	58	24	" 120-135; 745/133; grey pyr. ser slate
	736			<5	<0.5	x	<0.1	<0.1	14	20	6	45	60	26	1	1	<1	<4	<5	3	12	DD752, 157-176; talcose grey slate
	737			<5	<0.5	x	0.2	1.9	440	56	16	48	40	16	25	1	<1	8	6	17	18	" 429-446; 752/436; fg grey sericitic slate, quartz veined
Average Crust																						
Anal. Method																						
Limit of Detection				5	0.5	50	0.1	0.1	5	2	5	2	5	5								

DRILL CORE SAMPLES

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT Rum Jungle Creek

D.P.O. No. 20742

DATE July 1984

SAMPLE No. 970719 - 970737

COLLECTED BY D. Berkman & D. Hossack

SHEET No. 8

ANALYSED BY ANDEL

* ABBREVIATIONS (SAMPLE TYPE): PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample Type *	V	B	F %	Rb	Sr	Ga	Ce	Y	La	U	Cu	Pb	Zn	Geological Observations
				"INDICATORS OF Metal Content, p.p.m. HYDROTHERMAL ALTERATION"													
	970719			<50	80	0.08	190	24	21	140	32	55	9	66	30	135	DD768, 20-40'; 768/25; wvs grey ser. slate
	720			<50	140	0.08	165	14	15	85	24	40	8	80	16	90	" 337-354; 768/345; grey sericitic slate
	970721			190	130	0.17	175	19	21	85	20	35	21	80	16	40	" 483-500; 768/492; fg. blk graph. sch
	970722			<50	40	0.09	145	28	16	100	20	50	4	33	26	56	DD765, 11-27, lwr grey sandy slate
	723			<50	90	0.06	290	13	17	160	46	65	13	20	16	5	" 213-229; 765/222; grey qfs-ser schist
	970724			<50	45	0.11	190	31	21	65	18	40	9	76	40	145	" 404-421; 765/416; grey fg. ser slate
	970725			<50	30	0.21	28	76	9	60	14	20	10	43	10	30	DD692, 183-203; 692/191; calcit-bio.-chl. sch, pyritic
	726			<50	200	0.25	70	115	32	210	40	90	16	43	16	550	" 111-123; 692/118; fg-chla-qfs-talc sch
	970727			<50	120	0.22	140	160	46	290	60	120	52	110	36	100	" 38-56; brn dusky wvs slate
	970728			<50	400	0.54	<2	8	38	130	34	55	32	20	10	28	DD713, 375-397; 713/84; fg qfs-bio-ser slate
	729			<50	2400	0.54	<2	33	33	190	28	70	44	20	16	18	" 258-275, highly pyritic "
	730			<50	270	0.24	7	15	27	60	30	25	66	700	20	28	" 205-223; 713/218; fg qfs-ser. mylonite, tourmalin
	731			<50	145	0.04	100	21	17	85	40	55	12	15	<5	5	" 124-139, wvs green talcose slate
	970732			210	105	0.11	125	16	22	65	24	40	10	25	16	8	" 5-22, wvs black carbonac. slate
	970733			<50	1120	0.16	<2	125	48	140	150	65	78	105	10	96	DD745, 219-223; brn talcose mudstone
	734			440	550	0.11	180	24	27	80	46	40	30	28	6	10	" 138-156; 745/152; grey ser. slate
	970735			460	2450	0.12	140	45	26	160	38	95	58	220	6	13	" 120-135; 745/133; grey fgr. ser slate
	970736			190	280	0.08	120	3	23	40	14	15	3	20	6	45	DD752, 157-176; talcose blk slate
	970737			150	75	0.08	115	17	19	95	20	45	17	56	16	48	" 429-446; 752/436; fg grey sericitic slate, quartz veined
Average Crust																	
Anal. Method																	
Limit of Detection				50		0.02	2	2	2	15	4						

APPENDIX 2

ORIGINAL T.E.P. DRILL LOGS

TERRITORY ENTERPRISES PTY. LTD.

- RUM JUNGLE: NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE No. DD581

AREA: 55 WEST

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid*	S1550; W4130	135°	60°	182	170'
Mine Grid					

* 1961 Geophysical Grid.

LOG: Logged by: B. D. Mellor.

From (feet)	To (feet)	
		CORE DESCRIPTION
0	20	No core.
20	71	Weathered mica schist.
71	79	Weathered mica slate.
79	92.5	Dark grey mica schist.
92.5	139.5	Brown and grey weathered mica schist.
139.5	145	Silicified limestone with tremolite.
145	170	12' rec. Silicified limestone.
		RADIOMETRIC ASSAYING
74	78	4' x 0.33 lbs. U_3O_8/ton.
78	80	2' x 0.08
80	92	12' x 3.25
92	98	6' x 0.30
132	138	6' x 0.65
138	140	2' x 1.47

TERRITORY ENTERPRISES PTY. LTD.

- RUM JUNGLE: NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE No. DD582

AREA: 55 WEST

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid*	S1450; W4235.	135°	60°	180	235'

Mine Grid

* 1961 Geophysical Grid.

LOG: Logged by: B. D. Mellor.

From (feet)	To (feet)	CORE DESCRIPTION
0	25	No core.
25	68.5	Brown and grey weathered mica schist.
68.5	74	Quartz.
74	78.5	Brown and grey weathered mica schist.
78.5	82	Quartzite.
82	110	Pyritic chloritic schist. $\theta = 40^{\circ}-50^{\circ}$.
110	152	Chloritic schist and slate with calcite veins.
152	235	Limestone. Fragments of chalcopyrite at 176' and 184.5'. Pyrrhotite at 203'. Tremolite-actinolite and pyrite throughout.
		RADIOMETRIC ASSAYING
82	86	4' x 1.23 lbs. U_3O_8/ton.
86	94	8' x 0.31

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 692

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2100 W 900	-	Vertical	223	252
Mine Grid	N 18977 E 16354				

Logged by D. Berkman

LOG

From (feet)	To (feet)	Description
0	20	Non coring.
20	70	Brown deeply weathered slate, minor yellowish brown clay, @ 60°.
70	126	Green pyritic chlorite - quartz - talc schist, prominent banding, @ 60°, weathered to 87'.
126	204	Very fine grained hard green calcite - biotite - chlorite pyrite schist.
204	252	Coarse grained pyritic grey limestone, minor tremolite and chlorite.
		RADIOMETRIC.
		Probing showed no significant increase in radioactivity throughout the hole.

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 696

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 1800 W 900	-	Vertical	223	230
Mine Grid	N 19221 E 16525				

Logged by D. Berkman

LOG

From (feet)	To (feet)	Description
0	10	Non coring.
10	21	Grey broken silicified slate.
21	25	Grey clay with weathered slate fragments
25	43	Bands of broken grey quartzite in brown clay with quartz pebbles.
43	59	Weathered black slate with quartzite bands.
59	67	Brown weatheres slate.
67	77	Green talc - chlorite - sericite mylonite.
77	88	Coarse grained green pyritic chloritic schist.
88	137	Well banded pyritic quartz - chlorite schist, pyrite bands to 3", talc on shears.
137	180	Soft green talc - biotite mylonite.
180	223	Green calcareous chloritic schist, θ 30°, transitional to limestone.
223	230	Fine grained grey crystalline dolomite
		RADIOMETRIC.
		Probing showed a zone of anomalous radioactivity from 155' - 170'. Assays from this section show: -
		ASSAYS (Radiometric) lbs U_3O_8/ton
		150 - 155 0.99
		155 - 160 0.85
		160 - 165 0.31
		165 - 170 0.27
		170 - 175 0.15
		175 - 180 0.21
		180 - 185 0.21
		185 - 190 0.08
		190 - 195 0.37
		195 - 200 0.49

TERRITORY ENTERPRISES PTY, LIMITED

RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 713

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2850 W 900	-	Vertical	224	400
Mine Grid	N 18363 E 15945				

Logged by D.A. Berkman

LOG

From (feet)	To (feet)	Description
0	5	Non coring
5	110	Weathered black carbonaceous slate, θ 0 - 30°.
110	141	Weathered green talcose chlorite slate, θ 60°, few black slate bands to 3".
141	146	Broken grey silicified slate.
146	157	Soft green talc-sericite mylonite, minor white clay.
157	160	Black pyritic slate, θ 45°.
160	164	Creamy green talcose slate.
164	173	Highly pyritic black slate breccia, minor quartz fragments.
173	243	Highly pyritic creamy grey quartz-sericate mylonite, pyrite + 50%, no foliation, bands of subhedral pyrite to 3"; "tourmaline - chlorite - pyrite schist" A.M.D.L. MP 1709 - 63.
243	283	Soft highly pyritic quartz-biotite-sericite slate, θ 45°, pyrite + 50% as disseminated grains and bands of sub-hedral cubes.
283	400	Highly pyritic hard quartz-biotite-sericite slate, θ 10°, few pyrite veins.
		RADIOMETRIC.
		Probing showed anomalous radioactivity in the section 165' - 185', of maximum intensity equivalent to about 2 lbs U_3O_8/ton at 172'.

MINING DEPARTMENT - EXPLORATION SECTION

HOLE NO. 713 continued

AREA 55

From (feet)	To (feet)

ASSAYS

Interval	lbs U_3O_8/ton (Radiometric)	lbs U_3O_8 (Chemical)
125 - 130	0.15	
130 - 135	0.01	
135 - 140	0.13	
140 - 145	0.01	
145 - 150	0.45	
150 - 155	0.50	
155 - 160	0.54	
160 - 165	0.21	
165 - 168	0.80	
168 - 170	3.32	3.87
170 - 172	0.63	
172 - 174	0.52	
174 - 176	0.90	
176 - 180	0.90	
180 - 185	0.15	
185 - 190	0.27	

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RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 723

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 3000 W 750	-	Vertical	223	234
Mine Grid	N 18164 E 15977				

Logged by D.A. Berkman.

LOG

From (feet)	To (feet)	Description
0	19	Non coring.
19	91	Weathered black slate and schist, @ 30°
91	114	Weathered creamy green talcose slate, @ 30°
114	120	No core recovered - cuttings of sand size black slate fragments.
120	126	Black slate pebbles in green clay.
126	212	Interbanded green pyritic talcose slate and black slate, highly pyritic, @ 30°, weathered to 145'.
212	234	Yellowish white silicified limestone.

RADIOMETRIC.

Probing showed anomalous radioactivity in the section 95' - 105' with peak at 102' equivalent to roughly 11b U_3O_8/ton.

ASSAYS

Interval	lbs U_3O_8/ton (Radiometric)
92 - 95	0.39
95 - 98	1.18
98 -101	1.56
101 -104	0.33
104 -107	0.11
107 -110	0.27
110 -113	0.17

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 727

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 3000 W 1050	-	Vertical	221	402
Mine Grid	N 18331 E 15740				

Logged by D.A. Berkman

LOG

From (feet)	To (feet)	Description
0	5	Non coring.
5	35	Partly weathered grey sericitic slate, θ 60° to vertical.
35	54	Soft weathered black carbonaceous slate, black clay in part.
54	57	Hard white magnesite.
57	130	Partly weathered black slate and schist, θ steep, veins of green talc and sericite to ¼".
130	138	Felted aggregate of sericitic slate fragments to ½" and smaller green talc fragments.
138	195	Grey schist with talc veins (as 57 - 130), minor talc rich bands.
195	302	Black sericitic slate, pyrite veins to 1/10".
302	390	Soft black slate, θ 30°, weathered to 326'.
390	402	Medium grained grey dolomite.

RADIOMETRIC.

Probing showed anomalous radioactivity in the zone 55 - 80', with highest reading equivalent to about 5 lbs U_3O_8/ton at 66'.

ASSAYS.

Interval	lbs U_3O_8/ton (Radiometric)
50 - 53	0.1
53 - 56	0.1
56 - 59	0.15
59 - 62	1.05
62 - 65	4.75
65 - 68	0.8
68 - 71	1.2
71 - 74	2.4
74 - 77	1.35

59 - 77' = 18' @ 1.9 lbs

11.55

MINING DEPARTMENT - EXPLORATION SECTION

HOLE NO. 727 continued

AREA 55

From (feet)	To (feet)	

ASSAYS

Interval	lbs U_3O_8/ton (Radiometric)
77 - 80	0.45
80 - 83	0.8
83 - 86	0.25
86 - 89	0.1

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 745

AREA 55

Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid S 2950 W 600	-	Vertical		279'
Mine Grid N 18100 E 16124				

Logged by D.A. Berkman.

LOG

From (feet)	To (feet)	Description
0	12	Non coring.
12	109	Partly weathered soft black slate, black graphitic schist from 32', few quartzite bands to 6", @ 30° at 108'.
109	112	Pale green pyritic talcose chloritic slate, @ 45° - 60°, few black slate bands to ½".
112	135	Pale grey soft sericitic slate, highly talcose and pyritic with common talc veins to ½", @ 30° at 116', 60° at 126'.
135	167	Harder grey sericitic slate, @ 60° to vertical.
167	173	Grey sericitic slate with bands of creamy talcose slate to 2", @ 30°.
173	186	Soft weathered creamy talcose slate, @ 45°.
186	204	Black slate with creamy talcose slate bands, @ 60° or steeper.
204	219	Creamy green pyritic talcose slate, almost pure grey talc 217' - 219'.
219	223	Broken reddish brown talcose mudstone.
223	248	Soft grey talcose slate, few red slate bands to 6".
248	266	Do - pebble of quartz.
266	279	Yellow silicified limestone - broken to 275'.
		RADIOMETRIC
		No anomalous radioactivity.

RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 752

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2850 W 1150		Vertical		500
Mine Grid	N 18500 E 15740				

Logged by R.N. Spratt & D.A. Berkman.

LOG

From (feet)	To (feet)	Description
0	20	Non coring.
20	37	Oxidised slate - θ variable but steep - parts limonitic.
37	39	Quartz breccia with black staining.
39	44	Slate breccia - limonite.
44	57.5	Semi oxidised slate. θ 60° - limonitic.
57.5	75	Semi oxidised black slate with bands of chlorite - θ 45°.
75	89	Bands of soft talcose slate with harder quartzite. Partly brecciated.
89	96	Semi oxidised black slate - θ 90°.
96	112	White clay (weathered sericitic?) - θ near vertical.
112	136	Semi oxidised black and sericitic slate.
136	150	White and yellow clay with sericitic slate fragments.
150	156	Broken black slate with bands of clay.
156	158	Black and sericitic slate.
158	168	Partly oxidised black and sericitic slate.
168	178	Soft talcose and chloritic slate. Some brecciated patches.
178	181	Quartz - black slate brecciated.
181	182	Quartz - pyrite
182	188	Weathered black and talc slate with gritty bands - limonitic
188	193	Sericitic slate with yellow green mineral (? talc) on joints
193	199	Mainly black slate with minor talc slate. θ vertical to 30°.
199	203	Soft talc slate.
203	211	Pyritic chloritic slate.
211	231	Pale grey sericite - talc slate minor quartz veins, θ 30°.
231	235	Grey-green talcose slate, θ steep.
235	255	Black slate, brecciated and recemented in part. Numerous talc and quartz veins to ½", band of talcose slate 242' - 246'.
255	273	Pale grey and creamy talcose slate, θ, 10° - 20°.

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. DD 765

AREA 55

	Co-ordinates		Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2000	W 1950		Vertical		500
Mine Grid	N19660	E15560 (approx)				

Logged by D. Berkman

From (feet)	To (feet)	Description
0	11	Non coring.
11	61	Weathered grey sandy slate, @ 30° - 45°.
61	212	Massive grey sericitic slate, joints limonite stained to 80', @ 30°, open joints with coarse grained muscovite 170' - 172'.
212	229	Greyish white quartzose sericitic rock (? silicified talcose slate ?), @ 30°, pyritic in part, quartz bands to 2', yellow stained in part (uranium ochre ?)
229	246	Black pyritic slate, @ 30°.
246	500	Very fine grained grey pyritic sericitic slate, @ 60°, few dolomite veins to 1" from 483'.
		RADIOMETRIC
		Small increase in radioactivity at 323 feet.
		ASSAY
		Less than 0.2 lbs. U_3O_8/ton

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. DD 767

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2000 W 1150		Vertical	211.6	252
Mine Grid	N19201.4 E16218.6				

Logged by D. Berkman

From (feet)	To (feet)	Description
0	13	Non coring.
13	67	Weathered black graphitic slate, θ 30°-60° talcose slate 66'67'.
67	88	Broken black pyritic slate and black graphitic slate.
88	109	Contorted black pyritic slate with thin quartz veins, blac graphitic slate bands to 2'.
109	125	Black pyritic slate, θ 45°, pyrite veins to ¼", few quartz veins to ½".
125	152	Pale greenish grey talcose pyritic slate, talc veins to ¼", pyrite veins to ⅛", θ 45°.
152	171	Well banded silicified grey sericitic slate, θ 60°, numerous thin quartz bands and lenticules along schistosity pyritic in part.
171	192	Broken milky quartz, containing minor chalcopyrite, with black coating on open joints (? MnO_2? lampadite), band of black slate breccia 184'3" - 186.
192	194	Broken milky quartz (as above).
194	198	Ditto
198	200	Ditto
200	204	Ditto
204	223	Broken silicified black slate, quartz bands to ¼", θ 60°.
223	236	Broken milky quartz and white quartzite.
236	240	Broken silicified black slate θ 30°.
240	248	Broken silicified black slate, θ 30°
248	252	Highly tremolitic silicified domomite.
		ASSAY
		Nil U_3O_8

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. DD 768

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid	S 2000 W 1550		Vertical	206.0	500
Mine Grid	N19424.9 E 15893.8				

Logged by D. Berkman

From (feet)	To (feet)	Description
0	6	Deeply weathered black slate and lateritic clay.
6	73	Weathered grey sericitic slate, θ 60°, quartz bands to ¼" from 60'.
73	465	Grey sericitic slate, well banded with θ 45°, few quartz filled cross fractures - biotite porphyroblasts to ⅛" 218 - 221', θ 60° from 220 - 310', 45° 310', weakly chloritic band 373' - 390'.
465	467	Quartzite (? silicified slate).
467	500	Contorted black graphitic schist, highly pyritic in part with pyrite veins, to 2", numerous thin quartz veins.
		RADIOMETRIC
		No increase in radioactivity.

TERRITORY ENTERPRISES PTY. LIMITED.

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. DD 801

AREA 55

Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid				
Mine Grid N20637 E16422		Vertical	5196	501'

Logged by D.A. Berkman

From (feet)	To (feet)	Rec. (feet)	Description
0	20		Non core.
20	22		Broken clear quartz.
22	61		Weathered grey sericitic slate, quartz veins to 3".
61	140		Fine grained grey lustrous sericitic slate, $\theta = 60^{\circ}$ to 85', then near vertical. Vein quartz 129' - 130'.
140	157		Well banded grey sericitic slate and pale greenish-grey talc-sericite slate. Talc rich bands widening with depth. $\theta = 70^{\circ}$.
157	170		Pale greenish grey talc-sericite slate. Green talc on numerous cleavage faces, fissile along schistosity planes. $\theta = 70^{\circ} - 90^{\circ}$.
170	270		Black pyritic schist, occasional from talc on cleavage planes. $\theta = 60^{\circ} - 90^{\circ}$.
270	501		Dark grey to black pyritic quartz-sericite slate.
			Radiometric.
			Probing showed slightly increased radioactivity 140' - 160'
			Assays.
			Core from 20' - 100' showed trace Cu only.

TERRITORY ENTERPRISES PTY. LIMITED.

RUM JUNGLE, NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. DD 807a

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Local Grid					
Mine Grid	N20446 E16674		Vertical	5205	500'

Logged by D.A. Berkman.

From (feet)	To (feet)	Rec. (feet)	Description
0	30		Non core.
30	57		Weathered black slate and black clay.
57	75		Weathered creamy talcose slate.
75	113		Weathered creamy talcose slate, traces copper mineralisation.
113	137		Well banded silicified grey sericitic slate, $\theta = 60°$.
137	162		Partly weathered creamy and greenish-blue talcose mylonite.
162	183	18	Broken silicified black slate - joints limonite stained.
183	192		Weathered creamy talcose mylonite.
192	205		Weathered well banded black slate, $\theta = 45° - 60°$.
205	209		Creamy talcose slate.
209	213		Brown and grey weathered slate.
213	237	9	Silicified black slate, joints limonite stained. $\theta = 45°$.
237	259	4	Pebbles of silicified black slate.
259	263		Creamy talcose slate.
263	271	1	Fragments of white quartzite.

From (feet)	To (feet)	Recovery (feet)	Description
271	290	7	Pale grey talcose slate, θ = 10° - 30°.
290	298	0.7	Fragments of white and grey quartzite.
298	374		Pale grey silicious chlorite-sericite slate.
374	406	5	Fragments of dark grey microbreccia. Elongate fragments of black biotite in silty matrix.
406	449		Dark grey microbreccia, tabular masses of fine grained black biotite in fine grained talc-chlorite matrix.
449	454		Banded talc-biotite schist, biotite rich bands to ½".
454	457		Pale grey silky sericite schist, minor lenses of biotite.
457	477	Nil	Cavity
477	500	4	Banded biotite-talc schist.

Radiometric.

Probing showed only very slight increases in radioactivity.

TERRITORY ENTERPRISES PTY. LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 818

AREA 55

	Co-ordinates	Bearing	Declination	R.L. Collar	Depth
Mine Grid	N20165 E17233	-	Vertical	5222	297

Logged by D. A. Berkman.

From (feet)	To (feet)	Rec. (feet)	Description
0	20		Non core.
20	164	144.0	Brown clay with deeply weathered slate and fine grained sericite throughout. $\theta = 45^{\circ}-60^{\circ}$. Pb traces 40'-68', strong test 107'-164'.
164	223	59.0	Deeply weathered sericite-talc schist (probably equivalent to the blue mica schist,) occasional black coating from 189', trace copper as malachite veins in limonitic joints, 207'-223'. Pb strong test 164'-178', 204'-205'.
223	229	6.0	Grey quartz-sericite schist, few quartz boudins, trace malachite and chalcocite in joints, $\theta = 15^{\circ}$
229	238	9.0	Fault Zone. Fragments of grey quartz-sericite schist and quartz in silicious matrix, bands of clear quartz and angular quartz pebbles. Pb strong test 234'-235', 237'-238'.
238	267	29.0	Fault Zone. Breccia of black and talcose slate and quartzite fragments in silty talc-rich matrix. Sooty black coating (? tenorite) common, veins and smears of native copper 243'-252'.
267	276	9.0	Broken and deeply weathered silicified dolomite, mainly brown clay containing quartzite bands and fragments to 6".
276	281.5	5.5	Hard grey and white quartzite, few limonite stained cavities. From 278' few blobs and very fine veins of pyrite and chalcopyrite.
281.5	297	11.0	Cavernous brown quartzite and quartz breccia, tremolite and tremolitic casts throughout, thin malachite veins and tenorite staining common. Broken core 287'-297' and only 5' rec.
			Radiometric Slight increases in radioactivity.

HOLE NO. 818 (continued)

AREA 55

From (feet)	To (feet)	Rec. (feet)	Description

Assays

From (feet)	To (feet)	Width (DD) (feet)	% Cu	% Pb
20	75	55	0.48	9.4
75	120	45	1.06	9.5
120	150	30	0.52	17.8
150	185	35	1.12	5.8
185	195	10	1.19	3.7
195	220	25	0.92	0.2
220	245	25	0.33	0.2
245	275	30	1.23	N.S.

TERRITORY ENTERPRISES PTY LIMITED

RUM JUNGLE NORTHERN TERRITORY

MINING DEPARTMENT - EXPLORATION SECTION

DRILLING RECORD

HOLE NO. 819

AREA 55

	Co-ordinates		Bearing	Declination	R.L. Collar	Depth
Mine Grid	N20311	E17051	-	Vertical	5219	412

Logged by D. A. Berkman

From (feet)	To (feet)	Rec. (feet)	Description
0	10		Non core.
10	188	178.0	Pale brown and white clay, relict foliation with $\theta = 45^{\circ}$. Few thin black sooty bands (?tenorite) 55'-68', 104'-120', 142'-146', 152'-154', 162'-178'.
188	234	46	Deeply weathered brown sericitic schist, black sooty coating 193'-196', 209'-210'. θ steepening from 10° at 188' to 60° at 234'.
234	249	15.0	Grey partly weathered sericitic-talcose slate, $\theta = 60^{\circ}$.
249	263	14.0	Highly shattered green talc-biotite mylonite, occasional $\frac{1}{10}$" veins of galena at 247', 256'-263'.
263	320	57.0	Pale grey talcose schist, common 1" veins of green talc and pale green acicular tremolite, partly adhered to talc, shattered 263'-280', 283'-289', 291'-292'6", 302'-304'.
			Rich in galena as fine veins and disseminated grains 280'-320'. Trace chalcopyrite as very fine grains and minor medium brown ? sphalerite. Copper rich 281'-309' including ? bornite.
320	329.5	9.5	Shattered dark green talcose mylonite ("sand")-blue biotite a major constituent.
329.5	335	Nil	Some sand bailed out.
335	376	?	Dark green biotite-talc "sand". Hole sunk with bailer.
376	381	5.0	Silicified dolomite with traces of chalcopyrite.
381	385.5	4.5	Soft green talcose mylonite (bailed).
385.5	390	3.75	Bands of hard grey tremolitic dolomite and soft pale grey biotite-talc mylonite.
390	391	1.0	Soft talc-biotite mylonite.
391	412	21.0	Hard grey partly weathered tremolitic dolomite.

From (feet)	To (feet)	Rec. (feet)	Description

Radiometric

Slight increases in radioactivity throughout the hole.

Assays

From (feet)	To (feet)	Width (DD) (feet)	% Cu	% Pb
15	65	50	0.39	3.01
65	85	20	1.00	2.10
85	105	20	0.94	11.12
105	150	35	0.36	2.89
150	210	60	0.22	1.38
210	235	25	0.05	0.33
235	243	8	0.20	2.57
243	245	2	1.2	2.9
245	260	15	0.80	1.71
260	278	18	0.23	0.99
278	305	27	1.64	0.28
305	320	15	6.16	0.08

Sample reliability low below 320'. See log.

APPENDIX 3

PETROGRAPHIC REPORT

Central Mineralogical Services

39 Beulah Road
Norwood, S.A. 5067
Telephone 42 5659

The Chief Geologist
C.R.A. Exploration Pty. Ltd.
P.O. Box 39598
WINNELLIE / N.T. 5789

13th September, 1984

REPORT CMS 84/7/9

YOUR REFERENCE:	D.P.O. No. 20743
DATE RECEIVED:	11th September, 1984
SAMPLE NOS.:	19 Samples
SUBMITTED BY:	D. Berkman
WORK REQUESTED:	Petrology

Copy to:
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MELBOURNE / VIC. 3001

H.W. Fander, M. Sc.

REPORT CMS 84/7/9

EL 4417 Drill Core Samples

Nineteen drill core samples were received for petrological study; thin-sections were prepared and examined, and are described in the accompanying tables.

Summary

All the rocks are metasediments, many of them fine-grained and graphitic. The general lithology seems to have been a black shale sequence with occasional intercalated chemical and exhalative units. The abundance of graphite indicates reducing conditions of deposition.

Most of the rocks are low-grade (greenschist facies) schists, consisting of varying proportions of micas, quartz and graphite, with pyrite of syngenetic origin. These represent fine clastic sediments. In addition, there are metamorphosed chemical sediments, including a marble, a pyrite-chlorite rock, a metasomatic rock, and a degraded schist. Only one sample (765/222') may be igneous-related, but is rather featureless and non-diagnostic.

The schists consist of stable mineral assemblages and are thus fairly immune to alteration; some show brecciation and veining, and where more sensitive minerals occur (e.g. 801/166') these may be altered. The chemical metasediments are much more prone to alteration and show the effects of retrograde metamorphism.

One the whole however, there is little evidence for hydrothermal alteration on any significant scale, and no mineralisation was detected; if analyses have revealed any geochemical anomalies, these can perhaps be followed up in detail.

H.W. Fander, M. Sc.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
801/ 166' (T.S. 50859)	Altered Pyritic, Graphitic Schist. Dominantly matted-parallel hydromuscovite flakes, thin streaks of argillised feldspar, minor graphite, chlorite. Pyrite lenses; later pyrite, quartz, adularia(?).	Uniform, finely laminated, with occasional coarser lenses; good schistosity.	Some chlorite introduced at postmetamorphic stage. Folded, lenses of coarser quartz, altered feldspar.	Selective argillisation of feldspar, and introduction of new minerals after metamorphism. Formation of cavities (lined with pyrite) due to leaching.
801/ 212'	Graphite-Quartz-Muscovite Schist. Very abundant fine granular graphite, intergrown with thin parallel muscovite flakes; streaks and lenses of granular quartz. Younger chlorite veins.	Schistosity mainly due to micas, as graphite is finely granular. Veins are semi-concordant.	Isolated pyrite cubes. Orientated chlorite flakes in quartz; vein-chlorite is a different variety.	Low-grade regional metamorphism of carbonaceous siltstone. Younger chlorite veins (+ some patches) seem to be replacive.
801/ 441'	Graphite-Quartz-Muscovite Schist. Very abundant fine graphite or subgraphite with embedded small muscovite flakes, quartz grains; isolated irregular pyrite patches.	Very uniform, with only moderate schistosity. Spotty distribution of graphite.	Small authigenic pale tourmaline crystals. Meandering veinlets of pale chlorite.	Similar to 212', but finer-grained and less schistose. Pyrite patches are postmetamorphic, since they contain host rock inclusions.
807/ 205' to 209'	Tourmaline Metaquartzite. Chips all consist of fine quartz and poikiloblastic pale tourmaline (dravite-elbaite), with ultrafine rutile needles; some contain sericite, others microcline.	General preferred orientation, some banding. Fine- to medium-grained.	Traces of fine pyrite and graphite in some chips. Fe-staining.	A series of metaquartzites/feldspathic metaquartzites, partly sericitised. Pale tourmaline seems to be late- or post-metamorphic.
807/ 262'	Crenulated Graphite-Muscovite Schist. Finely interlayered fine graphite and muscovite, with grains and small lenses of quartz; clusters of pyrite crystals.	Tightly, irregularly crenulated; some brecciation around quartz and pyrite patches.	None detected.	Fairly featureless low-grade metasediment, apparently unaltered; pyrite is pre-metamorphic, probably syngenetic.
807/ 343'	Quartz-Chlorite-Sphene Rock. Mainly composed of microgranular quartz and shapeless patches of pale fibrous chlorite, with granular sphene throughout, and siderite crystals.	Vague banding and poorly defined poikiloblastic textures after ?feldspar, ?hornblende.	Grains, clusters of pyrite. Finely-crystalline apatite.	Origin of rock uncertain, but could be a thoroughly chloritised quartz-feldspar-hornblende microgneiss; sphene is secondary.
767/ 165'	Muscovite Metaquartzite. Dominantly microgranular quartz, with very thin parallel laminations of fine muscovite; a few coarser lenses. Ultrafine graphite throughout.	Good preferred orientation; with more mica, rock would grade into schist. Fine-grained.	Isolated small pyrite grains. Mica weakly Fe-stained.	Low-grade metasediment, featureless and of simple composition. Not susceptible to alteration. Pyrite probably syngenetic.
768/ 25'	Quartz-Mica Schist. Grading from massive, matted-parallel muscovite with minor biotite to a more quartzose rock with muscovite, biotite, microgranular quartz.	Good schistosity on fairly fine scale. Perhaps banded on a coarser scale.	Ultrafine carbonaceous matter in places. Authigenic tourmaline. Goethite veins, adjacent staining.	Low-grade metasediment, originally a shale. Rock is relatively fresh, with unaltered biotite. Goethite veins may be oxidised sulphide.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
768/ 345'	Micaceous Metaquartzite. Scattered coarser subangular quartz grains in a finer quartzose mass with small parallel muscovite and biotite flakes, fine carbonaceous matter.	Semi-schistose; micas are discontinuous. Fine/medium-grained. Relict clastic textures.	Crosscutting quartz-chlorite veinlets. Detrital apatite, tourmaline. Scattered oxidised pyrite.	Greenschist facies metasediment, originally a sandy siltstone. Postmetamorphic quartz-chlorite veinlets. Fresh rock.
768/ 492'	Graphite-Muscovite Schist. Abundant fine graphite intergrown with matted-parallel fine muscovite; thin streaks of microgranular quartz with minor chlorite.	Fine schistosity. Rock is deformed, folded, brecciated, and veined.	Pyrite patches and lenses. Later quartz veins, conformable and crosscutting.	Rock shows both plastic and brittle deformation. Quartz appears to be the only introduced mineral. Pyrite is of syngenetic origin.
765/ 416'	Quartz-Mica Schist. Mainly microgranular quartz, with evenly dispersed thin, short flakes of muscovite and brownish-green biotite. Ultrafine carbonaceous pigmentation.	Very uniform, with good preferred orientation. Not foliated or banded. Fine-grained.	Scattered small groups of fine pyrite crystals. Crosscutting quartz veinlets.	Composition verges on micaceous metaquartzite. Greenschist facies metamorphism of siltstone. Pyrite originally syngenetic?
765/ 222'	Quartz-Muscovite Rock. Relatively large polygonal grains of quartz, crowded with small rosettes of muscovite. Scattered small pyrite crystals.	Average grainsize (of quartz) = 1 mm. Uniform structureless rock; no relict textures.	Small apatite grains and zircon crystals. Quartz veins.	Thought to be a type of greisen or similar granite-related rock, but rather featureless. Field relations may help.
692/ 191'	Phlogopite Marble. Bands and streaks, lenses of fibrous carbonate (?dolomite), subparallel phlogopite flakes, clear granular ?replacive calcite throughout. Conspicuous rutile.	Good preferred orientation. Fibrous textures are inherited from replaced ?tremolite.	Veins and poikiloblastic patches of pyrite. Granular quartz in places.	Evidence suggests that rock was originally tremolitic, but now retrograded. Pyrite and calcite introduced. Unusually abundant rutile.
692/ 118'	Actinolite-Muscovite Rock. Mainly composed of matted and subradiating needles of pale actinolite, with interstitial muscovite/ hydromuscovite; fine pyrite throughout.	Vague banding, but essentially unstructured, without relict features.	Fine black oxide opaques. Clusters of small biotite flakes.	A type of calc-silicate assemblage of metasomatic origin, suggesting proximity to an intrusive.
713/ 384'	Degraded Mica Schist. Dominantly composed of matted-parallel, pale Mg-chlorite, with patches of chloritised ?amphibole. Abundant cloudy rutile, and thin bands of apatite crystals.	Good compositional banding. Schistosity diminished through alteration.	Minor quartz, granular pyrite scattered through rock. Trace elbaite (Na-tourmaline).	Original rock probably a phlogopite-tremolite schist, derived from a chemical, possibly exhalative sediment (P_2O_5, TiO_2).
713/ 218'	Pyrite-Chlorite Rock. Composed almost entirely of granular to euhedral pyrite crystals and aggregates, and relatively coarse, pale Mg-chlorite.	Structureless on this scale; chlorite is randomly orientated.	Fine cloudy rutile throughout. Small siderite rhombs. Trace apatite.	Problematical origin, but may be related to 384' in being of chemical sedimentary derivation.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
745/ 152'	Graphite-Sericite Schist. Composed of abundant fine graphite and small parallel sericite flakes, with minor quartz in places. Cut by substantial, compact goethite veins.	Fine schistosity, not well-developed, because components very fine-grained. Faint banding.	Networks of quartz veinlest cut by younger goethite veins.	Low-grade metamorphism of strongly carbonaceous, fine argillaceous sediment. Goethite veins are devoid of diagnostic boxworks.
745/ 133'	Quartz-Muscovite-Graphite Schist. Generally thin, crenulated laminae of fine matted-parallel muscovite with graphite, and granular quartz bands and lenses.	Good schistosity, distinct banding or foliation, fine folding, plastic deformation.	Isolated small crystals of elbaite. Fine leucoxene aggregates.	Featureless low-grade metasediment, originally a laminated carbonaceous siltstone. No evidence of alteration, mineralisation.
752/ 436' (T.S. 50877)	Quartz-Muscovite-Graphite Schist. Mainly graphite-muscovite intergrowths, with thin quartzose partings, grading into more quartzose rock. Massive pyrite.	Finely, tightly crenulated in places; more competent quartz-pyrite is brecciated.	Networks of fine carbonate veinlets filling fractures in pyrite.	Similar to previous rock, showing varying response to competent and incompetent components to tectonism. Introduced carbonate.

APPENDIX 4

SOIL SAMPLE LEDGERS AND ASSAYS

SOIL SAMPLES

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SAMPLING LEDGER

PROJECT: RUM JUNGLE CREEK, EL 4417, N.T. (AREA 55)

SAMPLE No. 970660 – 970685

D.P.O. No. 20742

DATE: July 1984

SHEET No. 1

COLLECTED BY: J. Bertman & D. Hossack

ANALYSED BY: AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Coordinates	Sample Number	Sample Width	Sample Type*	U	Cu	Pb	Zn	Hg (ppb)	Geological Observations: See BMR Record 1967/150, map E72. LOCATION / DEPTH / SOIL TYPE / ROCK
ON	LINE			6S					Soil sample @ 50m centres, on old TEP "Area 55" grid
	970660		SL	47	940	5200	46	x	@ DD818 collar, 3", pale yellow brn clay loam
	661		SL	115	1200	3500	76	x	50m grid E (125°T) from 970660, [illegible] wall, 2'6", dk brn clay
	662		SL	23	680	500	60	x	100m " ; 3", dk brn clay loam + vein qz rubble
	663		SL	12	290	170	34	x	150m " ; 3", dk brn loam, lateritic pebbles
	970664		SL	16	130	2700	18	x	50m grid W (305°T) from 970660; 3", pale gy loam + lat. pebbles
	665		SL	22	210	2500	18	50	100m " , 3", same pale grey loam
	666		SL	7	130	350	18	x	150m " , 5", pale brn loam with lateritic pebble
	667		SL	4	56	86	140	x	200m " 3", pale gy loam, vein qz + " "
	668		SL	5	34	56	38	x	250m " 3" " , lateritic cobbles
	970669		SL	4	30	56	26	x	300m " 3", ditto
ON	LINE			20S					
	970670		SL	28	260	96	28	x	100m grid E (125°T) from DD767; 3", red brn loam
	671		SL	32	190	60	22	x	150m " 3" ditto
	672		SL	27	140	26	18	x	200m " ; 5"; red brn loam & lat. pebbles
	674		SL	8	86	36	14	x	250m " ; 6"; pale brn loam, cherty qz brec. o/c
	675		SL	5	50	26	8	x	300m " 6"; pale brn loam
	970676		SL	22	160	50	16	x	50m grid E from DD767; 1"; " on lat o/c
	677		SL	18	160	40	16	x	@ DD767 collar; 6"; pale brn loam; blk slate floaters
	678		SL	13	96	30	10	x	50m grid W (305°T) from DD767; 4"; pale brn loam
	679		SL	12	66	20	8	x	100m " (@ DD768); 4"; "
	680		SL	12	56	16	10	x	150m " ; 6"; pale brn loam & lat. pebbles
	681		SL	8	50	16	10	x	200m " 6" ditto
	682		SL	6	28	10	8	x	250m " 6" pale brn loam
	683		SL	4	22	6	12	x	300m " 4" pale grey loam
	684		SL	7	30	20	12	x	350m " 6", red brn loam, on dolomite
	970685		SL	14	60	10	14	x	400m " 6" " "
Average Crust									
Anal. Method				B1	C1	C1	C1		
Limit of Detection				1	2	5	2	50	

Metal Content, p.p.m.

SOIL SAMPLES

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL · SAMPLING LEDGER

PROJECT Rum Jungle Creek
EL 4417, N.T.

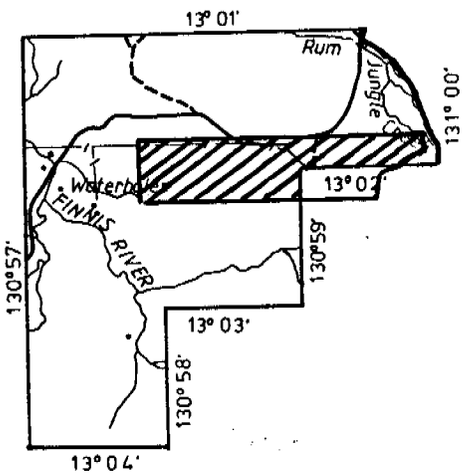
SAMPLE No. 970686 - 970700

D.P.O. No. 20742
DATE July 1984
SHEET No. 2
COLLECTED BY D. Berkman & D. Hoorack
ANALYSED BY AMDEL

* ABBREVIATIONS: (SAMPLE TYPE) PP: Prepared pulp; DD: Drill core; DC: Drill cuttings; RO: Rock chip; RG: Rock grab; SL: Soil; SS: Stream sediment

Grid Co-ordinates	Sample Number	Sample Width	Sample Type *	Metal Content, p.p.m. V		Cu	Pb	Zn		ppb Hg	Geological Observations LOCATION / DEPTH / SOIL TYPE / ROCK
0N	LINE			28	S						Soil samples, on old TEP "Area 55" grid.
	970686		SL	8		16	6	6		<	@ CD169 collar: 4"; pale grey loam, silic blk shale o/c
	687		SL	25		36	16	10		x	50m grid E (125°T) from CD169, 4" pale grey loam
	688		SL	9		16	6	8		x	100 " + 6" pale grey loam, white qtz breccia o/c
	689		SL	17		14	10	6		x	150 " + 4" pale brn loam + laterite pebbles
	970690		SL	15		30	16	14		x	200 " 4", red brn loam, vermicular lat. o/c
	691		SL	7		18	10	4		x	50m grid W (305°T) from CD169 4" pale grey loam + silic blk shale frags
	692		SL	6		18	10	6		x	100 " 3" ; ditto
	693		SL	4		22	6	4		<	150 " 6" ; pale brn loam, red shale frags
	694		SL	4		22	6	6		x	200 " 6" ditto ditto
	695		SL	3		20	6	6		100	250 " 4" pale grey loam
	696		SL	3		16	16	8		50	300 " 3" ditto
	697		SL	2		14	10	8		<	350 " 3" ditto + vein qtz rubble
	698		SL	3		16	20	10		<	400 " 6" reddish brn loam (? dolomite)
	699		SL	4		22	26	10		x	450 " 3" " "
	970700		SL	5		26	20	10		<	500 " 4" " "
Average Crust				B.I.		C1	C1	C1			
Anal. Method											
Limit of Detection				1		2	5	2		50	

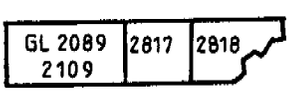
silic = silicified ; blk = black
o/c = outcrop ; qtz = quartz
lat. = laterite ; brn = brown
frags = fragments ; brec = breccia
med = medium ; dk = dark



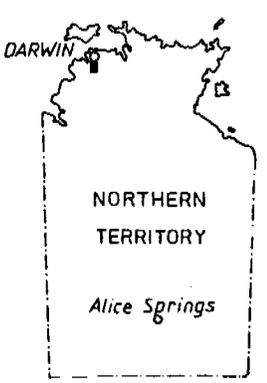
AREA: 6 BLOCKS
19·998 sq. kilometres

SURRENDERED AREA

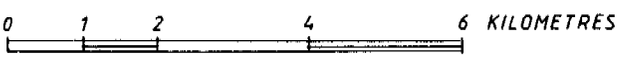
PART OF THE FINNIS RIVER LAND CLAIM AS LISTED BELOW:



PORTION 2109, 2817, 2818
HUNDRED OF GOYDER



MAP SHEET LOCATION



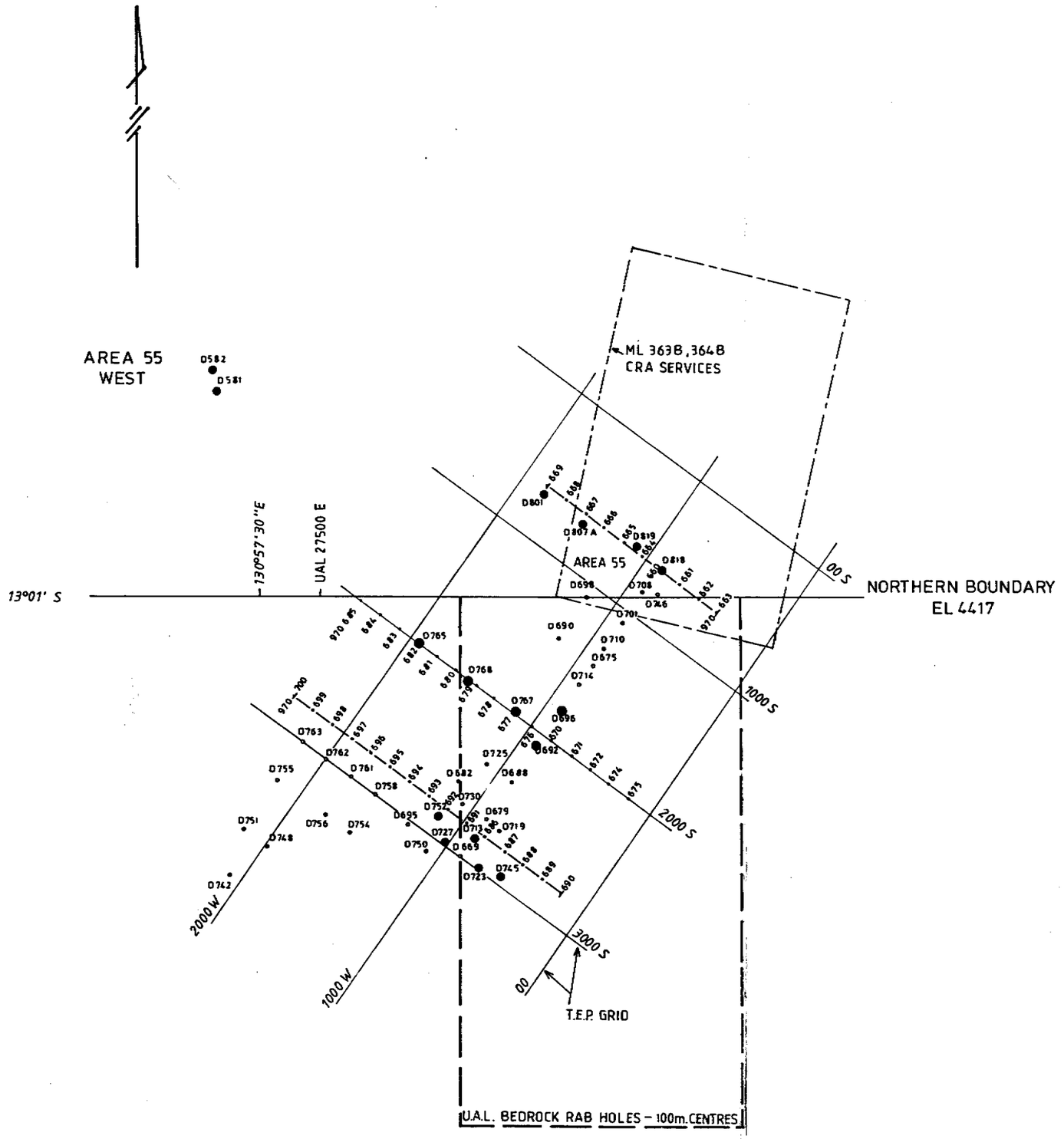
CRA EXPLORATION PTY LIMITED

EL 4417

RUM JUNGLE CREEK

LOCATION PLAN

REFERENCE SO 52-8 PINE CREEK (REYNOLDS RIVER Sheet 5071)	
SCALE 1:100,000	DATE AUGUST 1983
AUTHOR SLA	REPORT 12998
DRAWN SRJ	PLAN No NTd 3452



LEGEND

- D713 TEP *DIAMOND DRILL HOLES*
- *1984 DRILL CORE GEOCHEM.*
- *1984 SOIL GEOCHEM. TRAVERSE 970600 SERIES SAMPLE No's.*

0 100 200 300 400 500 600 700 METRES

C R A EXPLORATION PTY LIMITED

RUM JUNGLE CREEK-EL4417
AREA 55
SOUTHERN EXTENSION
SAMPLE LOCATIONS

REFERENCE *SD 52-8 PINE CREEK*	
SCALE *1:10,000*	DATE *FEBRUARY 1985*
AUTHOR *SLA*	REPORT 12998
DRAWN *SRJ*	PLAN No *NTd 3849*