CRA EXPLORATION PTY.LIMITED.

EL 43/70 ARTHUR RIVER, TASMANIA

REPORT ON EXPLORATION FOR THE YEAR ENDED

15TH OCTOBER 1983.

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CONTENTS

1. SUMMARY

Two potentially large deposits of moderate-high grade magnesite have been identified by geological mapping and diamond drilling in the Arthur River region, north-western Tasmania. One of these, the Lyons River prospect consists of a magnesite dominated zone 200m - 400m wide, over 1000m long and at least 270m deep. The other deposit, the Keith - Arthur River prospect is less well known as it occurs beneath Quaternary alluvium, but it is considered to be of similar dimensions.

Petrological work and initial beneficiation studies suggest that magnesite of acceptable quality can be produced from the deposits but considerable additional work is required to fully define the resource.

Other magnesite occurrences are known in the region and there is potential for the identification of additional deposits with further exploration.

2. INTRODUCTION

CRA Exploration Pty.Limited has entered into a Farm-in and Joint Venture agreement with Mineral Holdings Australia Pty.Limited. This agreement, which commenced on 8th April, 1982 covers the exploration and development of all magnesite resources within Mineral Holdings EL 43/70 in the Arthur River area of Northwest Tasmania..

Several groups had carried out limited exploration programmes north of the Arthur River but initial mapping by CRAE geologists indicated a large potential resource in the Lyons River. One diamond drillhole, DD82 LR1 was developed in December, 1982 to test the Lyons River area.

This hole encountered a thick magnesite dominant carbonate sequence accross a drill width of 356m.

The result was extremely encouraging and has been followed up by a programme of detailed geological mapping and the development of two additional diamond drillholes to 418.5m and 367.5m depth. This work has been supported by petrological studies to determine mineral and contaminant phases present, and by initial beneficiation tests at the Zinc Corporation Limited in Broken Hill.

Regional mapping suggested a second large body of magnesite beneath alluvial covered ground between the Keith and Arthur Rivers. Two diamond drillholes 138m and 244m deep have been developed in this area. DD83 AR2 intersected 127m of high grade magnesite. As a large magnesite body is indicated in this area, additional drilling is planned.

3. CONCLUSIONS

Exploration to date has provided highly encouraging results. Three diamond drillholes in the Lyons River area have outlined a major body of magnesite. The zone is at least 1000m in length and from 200m - 400m in width. The magnesite extends to vertical depths of at least 270m. DD82 LR1 contains two major sections of magnesite (+40% MgO) between 127.5m and 267.0m (139.5m); and 296.9m to 369.4m (72.5m). In DD83 LR2 major sections of +40% MgO occur between 74.0m and 120.0m (46.0m); 175.0 to 200.7m (25.7m); 250m to 290m (40.0m); and 300m to 403m (103.0m).

The iron, calcium, silica and alumina contents are variable but limited petrological and heavy media separation tests suggest they can be reduced to acceptable limits.

DD83 AR2 intersected 127.5m of magnesite between 104.0m and 231.5m. This result suggests the presence of a second major body in the area between the Keith and Arthur Rivers, some 5km north of the Lyons River Deposit. Initial indications suggest that this body is also extensive but additional drilling is required.

4. RECOMMENDATIONS

It is recommended that CRA Exploration Pty.Limited continue to evaluate the known magnesite deposits and to search for additional deposits within EL 43/70. A future programme involving regional and detailed geological mapping and diamond drilling is presented in section 9 of this report.

5. LOCATION AND ACCESS

A map showing the location of EL 43/70 is presented in Plan TASh 1510.

Access to the main areas of interest is via the Waratah Highway to Henrietta then by sealed and gravelled minor roads to the former sawmilling centre at West Takone. An all-weather forestry road continues beyond West Takone, over the Arthur and Keith Rivers and almost to the Lyons River. This road ends at the Lyons River prospect. Numerous logging tracks beyond this are generally only accessible by foot.

Topography in the area is rugged with relief up to 400m and slopes locally up to 50°. Vegetation consists of horizontal scrub on valley slopes and myrtle and hardwood forests on ridge tops. Ground conditions during winter are very boggy, severely hampering normal exploration and siting of drill rigs.

Outcrop throughout the region is generally poor with most exposures being restricted to road cuttings. The magnesite outcrops are bold but widely scattered. Road cuttings over the known magnesite commonly expose a distinctive yellow sandy clay with magnesite or silica fragments. Where present this is regarded as an indication of underlying magnesite.

6. PREVIOUS EXPLORATION

Magnesite was first identified in 1925 by P.B. Nye (Nye 1925) who assayed "dolomite" outcrops from the northern banks of the Arthur River while assessing the suitability of the area for a dam site. These samples returned MgO values of 45 - 47.6% showing the material to be nearly pure magnesite.

Nye subsequently reported outcrops of dolomite and magnesite in Cann Creek some 6km north of the Arthur River occurrence.

Since Mineral Holdings Australia obtained EL 43/70 numerous companies have explored the area under joint venture arrangements. B.H.P. examined and sampled outcrops at the Arthur River prospect (Flood et al; 1971). A.O. (Australia) drilled two percussion holes there and Osterreichish Amerikanische Magnesite AG (OAMAG) followed this work up with four shallow diamond drillholes (Relogged and presented in Appendix VIII in this report). CRAE explored parts of the area in 1971 for basemetals associated with the Keith River gossan zone (Porter 1971). Two diamond holes were drilled, however, no significant basemetal concentrations were identified. These holes were re-logged and included in this report as Appendix VII.

During the tenure of EL 43/70 Mineral Holdings Australia located three groups of magnesite outcrops in the Lyons River area and carried out minor trenching and sampling. Magnesite was located in the Lyons River, on the northern slopes of a tributary of the Lyons River north of B.A. Creek, and on the high slopes east of the Lyons River. The last mentioned group of outcrops is referred to as the Pinner outcrops.

7. GEOLOGY

The magnesite deposits in the Arthur River region are situated in a north-northeast striking belt of highly deformed Precambrian rocks known as the Arthur Lineament. The Arthur Lineament varies from 8km to 15km wide and extends from Wynyard on the northwest coast to an area north of Granville Harbour on the west coast of Tasmania. The Savage River iron ore and magnesite deposits occur within the Arthur Lineament and along with their host rocks are thought to be correlatives of similar rocks within the Arthur River E.L.

The area north of the Arthur River within EL 43/70 is largely underlain by Permian conglomerate - mudstone and Tertiary basalt. These rocks effectively bury the Precambrian rocks of the Arthur Lineament. A block of down-faulted Permian rocks also occurs to the west of Lyons River - Arthur River magnesite deposits. (See Plan TASh 1435)

The area abutting the magnesite zone to the east is underlain by quartz schists and quartz-mica schists known as the Keith Schists. These rocks are regarded as the hanging wall sequence. The western footwall sequence is dominated by amphibolite and pyritic siltstone. The Keith River gossan zone is situated within this sequence and is possibly a correlative of the Savage River pyrite - magnetite deposits. The magnesite horizon is thought to be a conformable stratagraphic unit.

In view of the poor outcrop in the area detailed structural information is not available however the magnesite horizon is thought from drillhole information to dip steeply south-east.

8. 1982 - 1983 WORK PROGRAMME

8.1 Detailed Geological Evaluation

During the early assessment of the area by CRAE, the Lyons River area was mapped in detail. It was concluded that the magnesite outcrops in that area represent one large magnesite unit or a series of small parallel lenses. The Lyons River - Arthur River line of magnesite occurrences was subsequently mapped at 1 : 5000 scale. The results of both mapping phases are presented in plans TASh 1350, 1351. In total over 10km of strike length was mapped. This was done to identify the positions of the magnesite horizon for future drill testing and to evaluate the possibility of a continuous magnesite horizon between the Lyons River prospect and the Arthur River prospect.

The principal conclusion from this work is that the magnesite is not continuous over the zone but occurs in discrete intervals along it. This is most notable at the northern end of the Lyons River deposit where the magnesite thins from about 350m to 30m or less within a strike length of 300m.

8.2 Air - Track Drilling

Another outcome of the geological mapping programme was the tentative identification of weathered magnesite on the eastern edge of a zone of Quaternary alluvium between the Keith and Arthur Rivers. Subsequent drill testing (DD83 AR2) confirmed the presence of magnesite here.

An attempt was made to locate continuations of this magnesite beneath the alluvium to guide the siting of future diamond drillholes. Fourteen air-track holes were drilled totalling 157m. Six of these encountered identifiable bedrock and allowed the eastern boundary of the magnesite unit to be located on the northern one of three traverses (see Plan TASh 1511 for locations). The remainder of the holes did not penetrate below the alluvium within the 12m depth capability of the drill rig. Samples of the material identified as weathered magnesite were despatched for assay as an additional check.

Results are awaited.

The presence of magnesite on the northern traverse suggests that the Keith-Arthur River magnesite deposit has a strike length of at least 1100m.

8.3 Diamond Drilling

Six diamond drillholes were completed by CRAE during 1982-1983. In total, 1594 metres were drilled. A further diamond drillhole is currently in progress at the Lyons River prospect. Locations of these holes are shown on Plan TASh 1435.

8.3.1. Drilling at the Lyons River Prospect

DD82 LR1 was drilled in the south of the Lyons River prospect to test the conclusion from detailed mapping, that the area of widely scattered magnesite outcrops is underlain by a large magnesite lens. The hole intersected in total 201m of magnesite within a 357m (downhole) zone of magnesite and dolomite.

Drill core was split and sampled at approximately 5m intervals and assayed by Zinc Corporation at Broken Hill.

Results show the following intervals to contain greater than 40% MgO:-

From (m)	To (m)	Interval (m)
97.7	109.7	12.0
127.5	134.0	6.5
139.0	170.2	31.2
182.9	267.0	84.1
296.9	317.1	20.5
322.2	338.6	16.4
341.5	369.4	27.9
	Total	198.6

The result confirms the presence of a wide zone of magnesite at the Lyons River.

A drill section for DD82 LR1 is presented in Plan TASh 1354. A graphic log of assay results is presented in Plan TASh 1225.The drill log is presented in Appendix II.

DD83 LR2 was drilled approximately 900m north of DD82 LR1 to test the carbonate zone in the vicinity of the Pinner outcrops. The hole was collared on a basalt covered ridge and passed through 62m of basalt, gravel and weathered magnesite before intersecting fresh magnesite. The carbonate zone was intersected between 62.2m and 408.1m.

The following intervals contain more than 40% MgO:-

From (m)	To (m)	Interval (m)
74.0	85.0	11.0
100.0	120.0	20.0
125.0	130.0	5.0
135.0	140.0	5.0
175.0	200.7	25.7
250.0	265.0	15.0
280.0	290.0	10.0
300.0	305.0	5.0
310.0	320.0	10.0
325.0	370.0	45.0
375.0	403.0	28.0
	Total	179.7

The result introduced the possibility of a large magnesite deposit over 900m long at the Lyons River prospect.

The DD83 LR2 drill section is presented in plan TASh 1299, assays in plan TASh 1304 and the drill log in Appendix III.

DD83 LR3 was drilled approximately 750m south of DD82 LR1 to seek southern continuations of the magnesite. The hole intersected the carbonate horizon between 41.0m and 284.2m, but the lithology here is dominated by dolomite and carbonate-bearing schist. Minor magnesite only was intersected between 41.0 and 92.1m and between 266.8m and 284.2m. This magnesite is affected by numerous cavities and deposits of silica. Only one interval exceeded 40% MgO (56.8m - 62.0m).

It is concluded that the carbonate horizon thins between DD82 LR1 and DD83 LR3 and that the magnesite lenses out in this zone.

The DD83 LR3 drill section is presented in Plan TASh 1371 and the drill log is presented in Appendix IV.

DD83 LR4 was collared between DD82 LR1 and DD83 LR2 to test for continuity of the magnesite between those two holes. This hole was abandoned at 37.0m due to drilling difficulties in hard siliceous dolomite.

DD83 LR5 was collared approximately 30m east of DD83 LR4 to effect the same test. This hole is currently in progress.

8.3.2. Drilling at the Keith - Arthur River Prospect

DD83 AR1 was drilled southwest and along strike from the Arthur River prospect to seek continuations of that deposit. The hole intersected amphibolite only in the expected carbonate zone and then passed into down-faulted Permian rocks. It is concluded that the Arthur River magnesite outcrops represent a small body truncated by faulting against the Permian sequence.
A drill section for DD83 AR1 is presented in Plan TASh 1410 and the drill log is presented in Appendix V.

DD83 AR2 was drilled beneath Quaternary alluvium between the Keith and Arthur Rivers. The hole was drilled to test the exposures of interpreted weathered magnesite on the eastern edge of the alluvial area. The hole passed through 104m of hanging wall schists and then intersected 127.5m of magnesite. The hole was terminated at 244.5m after intersecting an intrusive mafic dyke.

The following intervals contain greater than 40% MgO.

From (m)	To (m)	Interval (m)
104.0	145.6	41.6
159.0	164.0	5.0
174.0	232.0	58.4
	Total	105.0

The result confirms the presence of good widths of magnesite beneath the alluvial cover at the Keith-Arthur River prospect.

The mafic intrusive at the bottom of DD83 AR2 presents a problem. If it is a small dyke it may not mark the western boundary of the magnesite unit. In this case, it may be feasible to re-enter DD83 AR2 and extend it beyond the intrusive to seek further magnesite. This intrusive contains significant amounts of magnetite and ground magnetic traverses have been done to allow modelling of the magnetic anomaly thus delineated. Processing of these results is in progress.

DD83 AR2 is rich in talc compared to the other holes in the Arthur River region. This possibly reflects a localised contact aureole around the mafic intrusive. The talc is expected to contribute significantly to the silica contents in DD83 AR2. The talc is not regarded as a serious impurity, however, as a simple flotation procedure should be able to separate it from the magnesite.

A drill section for DD83 AR2 is presented in Plan TASh 1425 and a graphic log of assay results in Plan TASh 1430. The drill log is presented in Appendix VI.

8.3.3. Previous Drilling

Drill core from the OAMAG holes at the Arthur River prospect and from the CRAE holes at the Keith River prospect was relogged to gain compatibility with the drill logs from the present phase of drilling. Drill sections are presented in Plans TASh 1372, 1389, 1426 and 1427; and drill logs are presented in Appendices VII and VIII.

8.4 Petrology

Silica is the major impurity in magnesite from the Arthur River region. The magnesite commonly contains silica in components, alumina and iron are variable but commonly very low.

Twenty five samples of core from DD82 LR1 and DD83 LR2 were collected for petrological and chemical examination to determine the size, location and identity of contaminant elements as a first step in beneficiation studies of the magnesite deposits. The results from this work are presented in Appendix IX.

The main conclusion from this work is that the mineralogy is simple. Most samples are mixtures of magnesite and dolomite with minor quartz, pyrite and traces of talc and chlorite. The major contaminants tend to occur in dark coloured dolomitic patches rather than in the magnesite itself. It is possible that this material could be removed by a simple flotation or photometric ore sorting process.

8.5 Beneficiation Studies

Preliminary beneficiation studies using drill core are being carried out at the Zinc Corporation Limited in Broken Hill. It must be stressed that the results available at present can be used only as a rough guide. The results suggest that silica can be readily separated from the magnesite by heavy liquid separation techniques. Iron on the other hand may be harder to separate. Work is continuing on this problem.

9. FUTURE PROGRAMME

The following work has been proposed for the next year of exploration at EL 43/70.

1. Continuation of DD83 LR5 to complete the test of the central Lyons River section.

2. Two diamond drillholes are planned at the Keith-Arthur River prospect. One is planned approximately 800m north of DD83 AR2 and the other is planned approximately 500m south west of DD83 AR2. These holes will seek strike - continuations of magnesite intersected in that hole.

3. The regional mapping programme will be extended to cover the Cann Creek magnesite occurrence to evaluate the possibility of a large magnesite deposit there.

4. Geological mapping will be extended south of DD83 LR3 to locate southern extentions of the carbonate zone:

5. The area east of the magnesite zone, particularly along B.A.Creek, will also be examined to seek further magnesite occurrences.

6. There is a need for additional diamond drill holesbetween DD82 LR1 and DD83 LR3 and north of DD83 LR2, to more closely define the northern and southern limits of the thick magnesite encountered at the Lyons River prospect.

7. Additional diamond drilling may be needed in the Keith-Arthur River section.

8. The beneficiation testing will continue.

This work should be sufficient to outline the major ore zonesidentified to date. Further work on these would consist of vertical percussion drilling to allow the estimation of ore reserves.

10. REFERENCES

Flood, B.; van Wees, H.; 1971	Magnesite deposits - Arthur River area, Tasmania - Preliminary Investigations B.H.P. Report.
Nye, P.B.; 1925	Dolomite & Magnesite deposit near the Victory Mine Arthur River. Government Geologist Report dated 14/4/25
Porter, M.; 1971	Final Report on the Keith River prospect EL 43/70 North-West Tasmania. CRAE Report 3793.

11. KEYWORDS

Magnesite, carbonate,stratabound, Precambrian Drill-diamond, Mineral processing.

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12. LIST OF APPENDICES

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Plan No.	Subject	Scale
TASh 1510	EL 43/70 Location	1:500 000
TASh 1435	Geological Sketch Map Arthur River-Lyons River Magnesite Deposits.	1:20 000
TASh 1350	Geological Map Lyons River-Arthur River Magnesite Horizon North Sheet	1:5 000
TASh 1351	Geological Map Lyons River-Arthur River Magnesite Horizon South Sheet	1:5 000
TASh 1354	DD82 LR1 Drill Section	1: 1 000
TASh 1225	DD82 LR1 Assay Results	1: 1 000
TASh 1299	DD82 LR2 Drill Section	1: 1 000
TASh 1304	DD83 LR2 Assay Results	1: 1 000
TASh 1371	DD83 LR3 Drill Section	1: 1 000
TASh 1410	DD83 AR1 Drill Section	1: 1 000
TASh 1425	DD83 AR2 Drill Section	1: 1 000
TASh 1430	DD83 AR2 Assay Results	1: 1 000
TASh 1426	DD71 KR1 Drill Section	1: 1 000
TASh 1427	DD71 KR2 Drill Section	1: 1 000
TASh 1372	OAMAG Drill holes A.C.D, Drill Sections	1: 1 000
TASh 1389	OAMAG Drill hole E, Drill Sections	1: 1 000
TASh 1511	Keith-Arthur River Airtrack Drill Traverses	1: 2 500

APPENDIX I

DESCRIPTION OF TEXTURES REFERRED TO IN DRILL-LOGS

Most of the magnesite from the Arthur River region occurs as dense cryptocrystalline patches varying from white to brown in colour. There is a transition between magnesite and dolomite typified by the following textures:

1. SANDY DOLOMITE

The dolomite is commonly grey in colour, shows thin banding - lamination in places, and commonly has a sandstone texture. This rock contains up to 30% silica and contains variable amounts of pyrite and carbonaceous material.

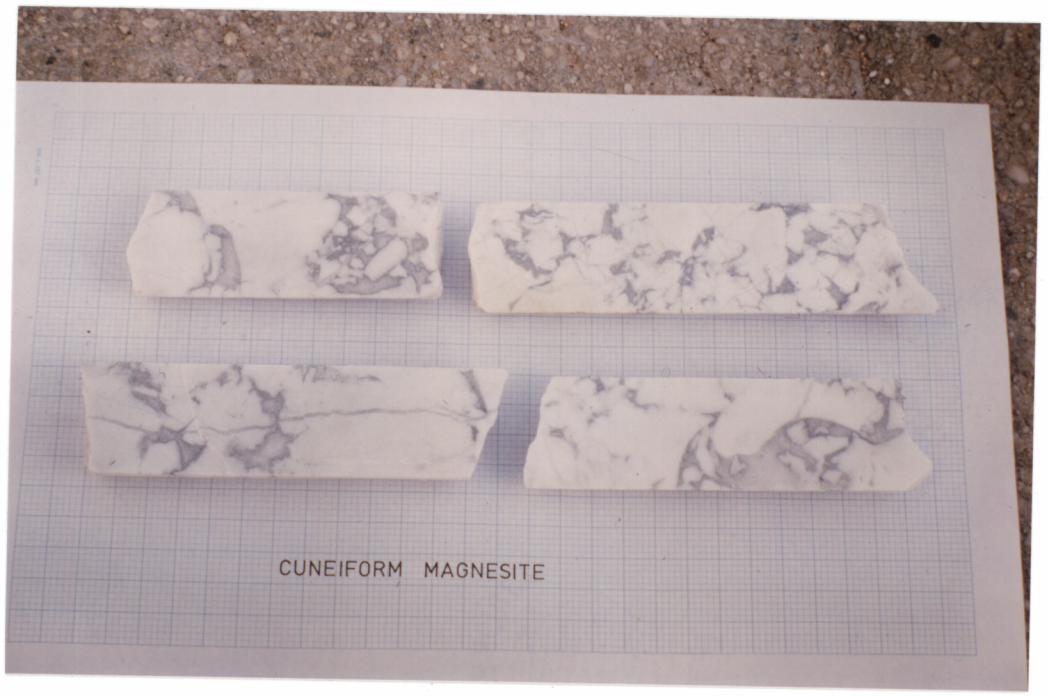
2. ANGULAR MAGNESITE BRECCIA

Angular patches of cryptocrystalline magnesite occur in a sandy dolomite matrix.

3. WISPY MAGNESITE BRECCIA

This type is similar to angular magnesite breccia. The distinguishing characteristics are: - Curved or wavy cryptocrystalline magnesite patches within the sandy dolomite matrix.

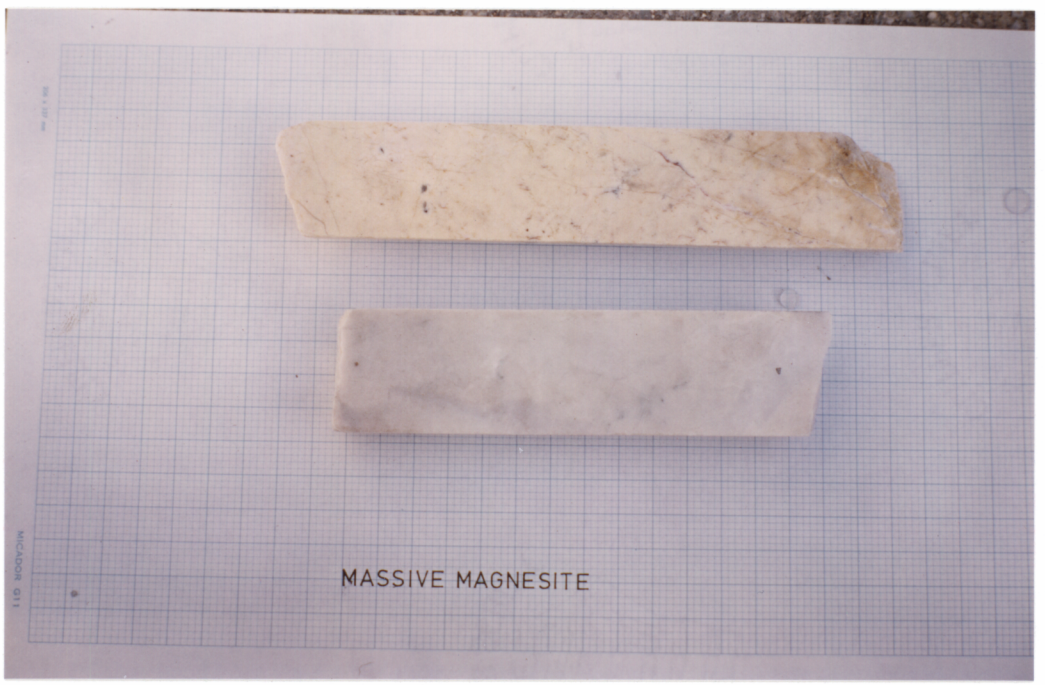
- common preferred orientation shown by magnesite patches.
- the magnesite patches commonly show diffuse boundaries with the dolomite matrix, on their shorter edges.



4. CUNEIFORM MAGNESITE

Cryptocrystalline magnesite is dominant in this type. The name refers to a tendency for wedge-shaped sandy dolomite patches between the magnesite patches. Boundaries between magnesite and sandy dolomite are sharp and commonly show a dark selvedge within the dolomite caused by the presence of carbonaceous material.

The wedge-shaped dolomite patches commonly join giving the appearance of a sandy matrix in a tightly clast-supported breccia.

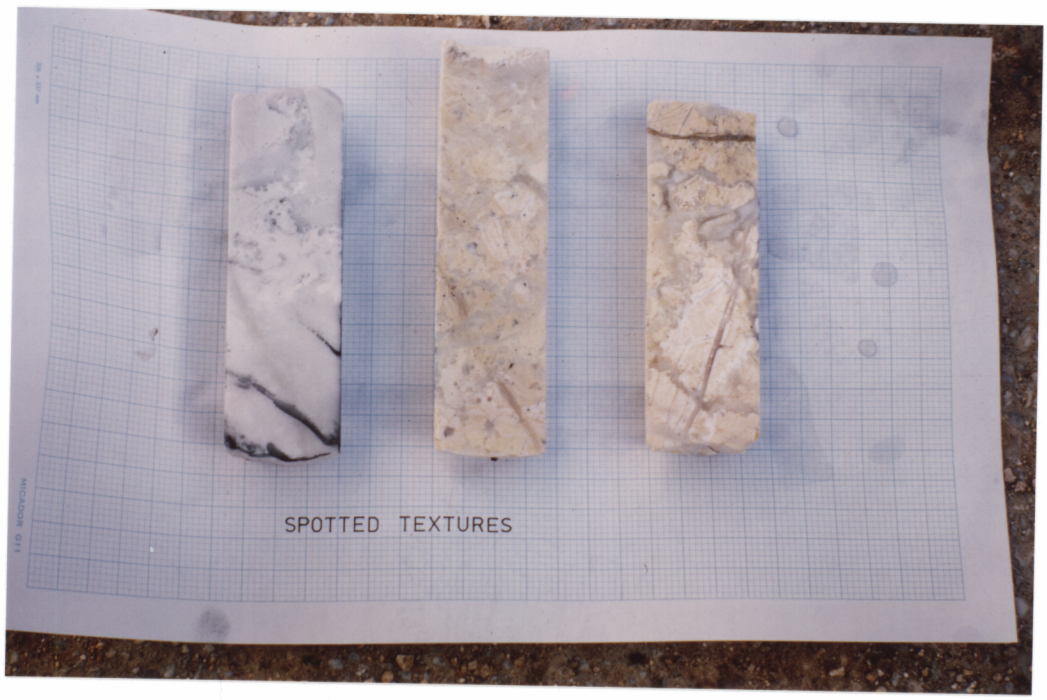


5. MASSIVE MAGNESITE

This refers to cryptocrystalline magnesite containing no sandy dolomite patches.

6. SUPERIMPOSED TEXTURES

The textural types above commonly contain aggregates of coarse recrystallised magnesite, dolomite and quartz grains. In places the coarse grains are sufficiently abundant to obscure any of the textures listed above. The absence of these superimposed textures in massive magnesite results in the highest grade magnesite encountered (e.g. in the bottom of hole DD82 LR1).



The most abundant configuration of the recrystallised grains is termed a spotted texture. This is characterised by euhedral quartz and carbonate crystals up to 3mm across, within cryptocrystalline magnesite patches. These form the spots. Embayed margins to cryptocrystalline magnesite patches and ptygmatic sparry veins are also typical.

A less abundant recrystallised texture termed cloudy texture is defined by diffuse boundaries between cryptocrystalline and sparry patches.

APPENDIX II

DD82 LR1 LOG

DD82LR1

BOREHOLE SURVEY LOG

517024

DRILL HOLE N°: DD82 LR1 LOCALITY: LYONS RIVER TAS. DATE COMMENCED: 30·11·82 DATE COMPLETED: 17·12·82

Survey Depth	Interval	Magnetic Azimuth	Chord Length	Dip	Grid Azimuth	Northing	Easting	Reduced Level	Camera	Core Size	Comments
COLLAR	———	———	———	———	———						
SETUP 0m	0 - 44·0m	308·5°		50°							
88·0m	44·0 m - 109·0m	296°		46·5°							
130·0m	109·0 m - 154·0m	298°		45°							
178·0m	154·0m - 205·0m	297°		47°							
232·0m	205·0m - 256·0m	298°		45°							
280·0m	256·0m - 307·0m	293°		41°							
334·0m	307·0 m - 361·5m	294°		40°							
389·0m	361·5m - 389·0m	294°		40°							

517025

SHEET No. 1

DD82LR1 Summary Log of magnesite textures.

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME EL 4370 ARTHUR R. No. .....
PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH 301° mag. DRILLERS K. PARRY COMMENCED 30·11·82 DEPTH 389·0 m HOLE No. DD82LR1
RL COLLAR ..... INCLINATION 59° DRILL TYPE BOYLES 37 COMPLETED 17·12·82 CASING LEFT N/C DPO No(s) 30454

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ZINC CORP.) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI.
0	13·0	OPEN HOLE																
13·0	14·0	0·5	NQ		13·0 – 20·4 m		1055501	22·7	28·8		41·86	2·31	7·59	<·05	·857	·062	·015	47·99
14·0	20·0	0·5			Massive magnesite. Spotted.													
20·0	23·0	2·1			20·4 – 25·9 m		1055502	28·8	30·8		39·93	1·16	6·20	·142	·927	·058	·291	46·35
23·0	26·0	2·1			Cuneiform magnesite. Spotted.													
26·0	29·0	2·4			25·9 – 28·2 m		1055503	30·8	32·1		40·23	4·37	7·39	<·05	1·102	·074	·142	46·85
29·0	32·0	3·0			Massive magnesite. Spotted.													
					28·2 – 28·9 m		1055504	32·1	32·5		14·82	7·41	55·91	2·31	1·003	<·03	1·396	16·57
					Angular breccia. Spotted.													
					28·9 – 32·1 m		1055505	32·5	36·7		26·29	15·58	17·12	0·163	·657	·039	·096	40·09
					Massive magnesite. Spotted.													
32·0	34·7	2·7			32·1 – 34·4 m		1055506	36·7	39·6		36·9	1·370	20·25	<·05	·806	·064	·014	40·67
34·7	35·0	0·4			Angular magnesite breccia.													
35·0	38·0	3·0			Spotted.		1055507	39·6	40·5		34·58	2·78	22·15	<·05	·868	·08	<·01	38·53
38·0	40·9	2·9			34·4 – 36·7 m													
40·9	41·0	0·7			Massive grey dolomite. Cloudy.		1055508	40·5	44·2		22·91	26·11	5·61	·069	·382	·092	·159	44·78
41·0	44·0	3·0			36·7 – 39·6 m													
44·0	46·2	2·2			Angular magnesite breccia.		1055509	44·2	46·2		29·62	18·45	5·12	<·05	·621	·048	·146	46·11
46·2	47·0	0·9			Spotted.													
47·0	50·0	3·0			39·6 m – 79·0 m		1055510	46·2	50·0		24·76	21·92	9·07	·093	·746	·098	·185	43·00
50·0	53·0	3·0			Massive grey dolomite.													
53·0	56·0	3·0					1055511	50·0	55·0		24·35	23·44	6·67	·221	·649	·045	·514	43·98
56·0	59·0	3·1																
59·0	62·0	3·0					1055512	55·0	60·0		23·85	21·14	13·75	<·05	·349	·042	·184	41·89
62·0	65·0	3·1																
65·0	68·0	3·0					1055513	60·0	65·0		20·63	17·58	25·82	<·05	·228	·042	·131	35·77
68·0	69·3	1·3																
69·3	71·0	1·8					1055514	65·0	70·0		22·38	26·68	5·90	<·05	·554	·044	·096	44·85
71·0	74·0	3·0																
74·0	75·2	1·2					1055515	70·0	75·0		21·15	24·53	11·98	·196	·418	·055	·178	41·67
75·2	77·0	2·1	NQ															

517026 SHEET No. 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD82LR1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
77·0	80·0	3·0	NQ				1055516	75·0	78·5		19·07	23·09	19·17	<·05	·222	·03	·02	38·5
80·0	80·3	0·3			79·0 – 84·6m													
80·3	82·4	2·0	NQ		Angular magnesite breccia.		1055517	78·5	82·9		27·95	12·17	21·23	<·05	·215	·035	·073	39·00
82·4	85·4	3·0	BQ		spotted.													
85·4	86·0	0·6			84·6 – 86·4m		1055518	82·4	84·6		32·22	7·17	20·22	<·05	·299	·048	·075	40·21
86·0	86·4	0·4			Massive grey dolomite.													
86·4	89·0	2·7			86·4m – 93·7m		1055519	84·6	86·3		20·30	5·73	28·99	<·05	1·075	·096	1·636	32·87
89·0	92·0	3·0			Angular magnesite breccia.													
92·0	93·8	1·8			spotted.		1055520	86·3	88·6		30·24	8·83	21·14	<·05	·507	<·03	·085	37·72
93·8	95·0	1·4			93·7 – 97·2m													
95·0	98·0	3·0			Massive grey dolomite.		1055521	88·6	90·9		21·15	17·89	20·12	<·05	2·87	·150	4·66	33·39
98·0	101·0	3·0			Banded pyrite over bottom													
101·0	104·0	3·0			30cm.		1055522	90·9	93·2		38·77	·554	17·56	<·05	·619	·092	·203	42·39
104·0	107·0	3·0			97·2 – 98·1m													
107·0	108·8	1·7			Angular magnesite breccia.		1055523	93·2	97·0		24·23	22·31	8·21	<·05	1·051	·098	1·330	42·85
108·8	110·0	1·4	BQ		spotted.													
					98·1 – 98·4m		1055524	97·0	97·2		17·96	8·51	27·14	·123	13·91	·186	23·85	8·94
					Angular breccia. Dolomite clasts.													
					98·4 – 101·5m		1055525	97·2	97·7		25·28	13·39	20·90	·091	1·41	·144	2·15	36·67
					Angular magnesite breccia. Cloudy.													
					101·5 – 109·2m.		1055526	97·7	100·9		40·63	3·67	8·35	<·05	1·68	·043	·110	46·30
					Cuneiform magnesite. Spotted.													
					109·2 – 109·9m		1055527	100·9	104·0		43·11	3·52	2·34	<·05	1·483	·048	·215	49·23
					Angular magnesite breccia													
					Cloudy.		1055528	104·0	109·7		42·90	3·68	3·30	<·05	·682	·046	·082	49·32
					109·9 – 110·1m													
					Angular breccia. Dolomite clasts. Cloudy.		1055529	109·7	111·3		25·70	15·93	13·01	·176	3·64	·044	6·88	34·77

517027

SHEET No. 3

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. 3DD82LR1

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To(M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
							1055530	111·3	114·5		30·99	15·06	9·50	<·05	·403	<·03	·171	44·62
110·0	113·0	2·8	BQ		110·1 – 111·3m													
113·0	116·0	2·6			Massive grey dolomite.		1055531	114·5	118·5		18·20	22·93	22·23	·067	·233	<·03	·09	36·77
116·0	117·2	1·2			Pyritic 15cm above base.													
117·2	119·0	1·2			111·3 – 111·7m		1055532	118·5	122·0		21·11	28·23	5·83	·161	·993	<·03	·373	43·73
119·0	123·0	2·8			Massive white magnesite.													
122·0	125·0	3·0			Spotted.		1055533	122·0	127·5		39·02	2·71	11·51	<·05	1·725	·11	·025	44·91
125·0	125·9	0·9			111·7 – 114·0m													
125·9	128·0	2·2			Whispy Magnesite breccia.		1055534	127·5	128·8		41·80	2·04	7·26	<·05	1·047	·073	<·01	47·68
128·0	131·0	3·0			114·0 – 116·8m													
131·0	133·4	2·4			Massive grey dolomite		1055535	128·8	134·0		41·51	1·101	9·44	<·05	1·457	0·117	<·01	46·36
133·4	134·0	0·8			116·8 – 122·0m													
134·0	137·0	3·0			Massive grey dolomite. Cloudy.		1055536	134·0	139·0		38·77	1·265	14·17	<·05	2·01	0·111	·013	43·67
137·0	140·0	3·0			122·0 – 125·4m													
140·0	140·5	0·5			Massive magnesite. Cloudy.		1055537	139·0	144·0		40·00	2·30	8·97	<·05	2·99	·120	·023	46·07
140·5	143·0	2·6			125·4m – 153·0m													
143·0	146·0	3·0			Massive magnesite. Spotted.		1055538	144·0	146·5		41·35	1·246	9·26	<·05	1·658	·086	·012	46·54
146·0	148·1	2·1			Mostly sparry to 145·0m													
148·1	149·0	1·1			153·0 – 161·8m		1055539	146·5	149·5		43·29	1·143	6·07	<·05	1·092	·094	<·01	48·36
149·0	152·0	3·0			Cuneiform magnesite. Spotted													
152·0	155·0	3·0			161·8 – 167·0m		1055540	149·5	152·6		42·22	1·369	8·18	<·05	·722	<·03	<·01	47·35
155·0	155·5	0·5			Massive magnesite. Spotted.													
155·5	158·0	2·7			167·0 – 176·1m		1055541	152·6	154·2		41·79	2·05	7·50	<·05	1·022	·041	·057	47·51
158·0	161·0	3·0			Cuneiform magnesite. Spotted.													
161·0	161·9	1·9			176·1 – 185·0		1055542	154·2	155·4		41·60	2·25	7·54	<·05	1·369	·039	<·01	47·28
161·9	164·0	1·1			Massive magnesite. Trellis													
164·0	167·0	3·0			texture overprinted by spotted		1055543	155·4	156·9		41·63	2·33	7·98	<·05	·914	·037	·038	47·14
167·0	170·0	3·0			texture.													
170·0	173·0	0·9			185·0 – 188·9m		1055544	156·9	161·0		42·90	3·92	3·30	<·05	·676	·097	<·01	49·17
173·0	176·0	1·2			Massive magnesite. Spotted.													
176·0	177·4	1·4	BQ				1055545	161·0	164·0		44·21	1·311	4·91	<·05	·524	<·03	·051	48·07

517028

SHEET No. 4

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. .....

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) 22822LR1

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
177·4	179·0	1·9	BQ				1055546	164·0	167·0		42·99	2·28	5·87	<·05	·750	·041	<·01	48·25
179·0	182·0	3·0																
182·0	184·8	2·9					1055547	167·0	170·2		42·38	3·73	3·42	<·05	1·422	·083	<·01	49·19
184·8	185·0	0·3																
185·0	188·0	3·1					1055548	170·2	175·2		25·97	21·29	5·25	·315	2·28	·519	<·01	44·67
							1055549	175·2	179·0		37·73	7·67	3·22	<·05	3·48	·157	<·01	47·94
							1055550	179·0	182·2		39·92	9·09	<·5	<·05	6·93	·237	<·01	44·15
							1055551	182·2	182·9		36·97	8·99	<·5	<·05	6·53	·312	<·01	48·16
							1055552	182·9	186·6		42·01	2·56	0·779	<·05	5·15	·245	<·01	49·25
188·0	191·0	3·1			188·9 – 191·0 m		1055553	186·6	188·8		45·08	1·419	1·236	<·05	2·10	·097	<·01	50·15
191·0	194·0	3·3			Cuneiform magnesite. Trellis													
194·0	197·0	3·0			textured sparry veins overprinted		1055554	188·8	194·0		42·45	4·72	·516	<·05	2·01	·096	<·01	50·42
197·0	199·8	2·8			by spotted texture.													
199·8	200·0	0·4			191·0 – 193·3 m		1055555	194·0	199·0		44·36	2·28	1·921	<·05	1·588	·065	<·01	50·01
200·0	203·0	3·0			Cuneiform magnesite. Weakly spotted													
203·0	206·0	3·0			193·3 – 197·5 m		1055556	199·0	203·0		45·01	1·634	2·04	<·05	1·523	·059	<·01	49·87
206·0	207·3	1·3			Cuneiform magnesite. Spotted.													
207·3	209·0	2·0			197·5 – 199·6 m		1055557	203·0	206·3		43·10	3·60	1·926	<·05	2·00	·089	<·01	49·47
209·0	212·0	3·0			Massive magnesite. Spotted.													
212·0	214·7	2·7			199·6 – 208·0 m		1055558	206·3	206·8		42·82	2·77	3·74	<·05	1·928	·085	·024	48·89
214·7	215·0	0·5			Cuneiform magnesite. Spotted.													
215·0	218·0	3·0			208·0 – 209·3 m		1055559	206·8	209·3		43·19	2·22	5·01	<·05	1·470	·076	<·01	47·78
218·0	221·0	3·0			Cuneiform magnesite. Cloudy.													
221·0	222·2	1·1			209·3 – 209·4 m													
222·2	224·0	2·2			Whispy magnesite breccia.													
224·0	227·0	3·0	BQ															

517029

SHEET No. 5

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No DD82LR1.....

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
					209.4 – 212.0m Massive grey dolomite. Minor sparry dolomite veins show cloudy texture. 212.0 – 213.6m Massive magnesite. Spotted. 213.0 – 217.9m Cuneiform magnesite. Spotted. 217.9 – 223.9m Massive magnesite. Spotted. 223.9 – 226.0m Cuneiform magnesite. Spotted. 226.0 – 253.7m													
227.0	229.8	2.8	BQ		Massive magnesite. Spotted.		1055560	209.3	212.0		21.37	25.69	9.54	.205	.657	<.03	.505	41.95
229.8	230.0	0.2																
230.0	233.0	3.0					1055561	212.0	217.0		44.28	1.399	4.14	<.05	.968	.042	.018	47.27
233.0	236.0	3.0																
236.0	237.2	1.2					1055562	217.0	222.0		44.78	1.481	4.23	<.05	.776	.035	<.01	47.06
237.2	239.0	2.0																
239.0	242.0	3.0					1055563	222.0	226.3		44.92	1.07	4.44	<.05	1.023	.057	<.01	47.10
242.0	244.7	2.7																
244.7	245.0	0.4					1055564	226.3	228.6		44.93	.566	4.69	<.05	.630	.043	<.01	47.29
245.0	248.0	3.0																
248.0	251.0	2.3					1055565	228.6	230.7		44.38	.773	5.05	<.05	.815	.057	<.01	47.02
251.0	253.0	2.0																
253.0	254.0	1.3	BQ				1055566	230.7	231.9		44.70	.698	4.65	<.05	.907	.082	<.01	47.14
							1055567	231.9	237.0		45.91	.578	2.21	<.05	1.068	.061	<.01	50.40
							1055568	237.0	241.5		45.82	.541	2.65	<.05	1.072	.036	<.01	50.10

517030 SHEET No. 6

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD87LR1

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ..... MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
							1055569	241·5	242·4		45·87	·421	3·29	<·05	·903	·043	<·01	49·43
							1055570	242·4	245·8		46·02	·515	2·60	<·05	·985	·06	<·01	49·92
							1055571	245·8	250·0		45·00	1·394	1·107	<·05	2·00	·130	<·01	50·45
							1055572	250·0	252·0		43·07	3·43	<·50	<·05	3·60	·203	<·01	49·63
					253·7 – 257·7m													
254·0	257·0	3·0	BQ		Massive magnesite. Cloudy.		1055573	252·0	256·0		38·13	8·10	<·5	·055	4·41	·20	<·01	49·26
257·0	260·4	3·4																
260·4	263·0	2·9			257·7 – 267·0m													
263·0	266·0	2·4			Massive magnesite. Spotted.		1055574	256·0	257·3		43·92	1·939	1·960	·064	2·41	·115	·012	49·79
266·0	268·6	2·6					1055575	257·3	259·7		44·98	1·816	·657	<·05	1·855	·135	<·01	50·79
268·6	269·0	1·1			267·0 – 272·0m													
269·0	272·0	3·0	BQ		Whishy magnesite breccia. Weakly Spotted.		1055576	259·7	259·9		42·62	3·77	<·5	<·05	2·65	·235	<·01	50·00
							1055577	259·9	266·3		43·27	3·19	·939	<·05	2·50	·113	<·01	50·16
							1055578	266·3	267·0		40·12	6·47	1·721	<·05	2·48	·206	<·01	49·06
							1055579	267·0	269·3		37·02	7·61	12·92	<·05	·938	·04	·025	41·66
							1055580	269·3	270·0		28·33	12·80	39·05	·076	·159	<·03	·115	29·22
							1055581	270·0	272·6		37·33	7·85	14·08	·079	·584	·042	·269	39·70
							1055582	272·6	272·9		21·50	12·07	32·50	5·19	2·97	·044	2·22	21·96

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

517031 SHEET No. 7

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD82LR1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
272·0	275·0	3·0	BQ		272·0 – 296·6m		1055583	272·9	275·7		22·22	17·96	17·57	·463	·628	·185	·343	35·51
275·0	275·2	0·2			Massive grey dolomite. Minor													
275·2	278·0	3·1			magnesite veins show diffuse		1055584	275·7	282·0		19·92	13·99	28·30	4·55	3·99	·122	2·15	24·94
278·0	281·0	3·0			boundaries.													
281·0	282·7	1·7					1055585	282·0	283·6		26·10	12·21	12·94	·265	7·33	·201	11·92	27·43
282·7	284·0	1·4																
284·0	287·0	3·0					1055586	283·6	289·0		17·92	22·87	19·87	·051	1·372	·089	1·852	35·77
287·0	290·0	3·0																
290·0	293·0	3·1					1055587	289·0	292·8		17·89	24·31	17·06	·088	1·397	·143	1·903	37·12
293·0	296·0	3·0																
296·0	297·5	1·5			296·6 – 304·4m		1055588	292·8	296·6		20·12	26·57	9·73	·136	·961	·173	·320	42·19
297·5	299·0	1·5			Massive magnesite. cloudy.													
299·0	302·0	3·0					1055589	296·6	299·5		46·34	·563	<·50	<·05	1·891	·156	<·01	51·09
302·0	305·0	3·0			304·4 – 317·1m													
305·0	308·0	3·0			Massive magnesite. spotted.		1055590	299·5	304·6		45·56	1·22	·815	<·05	2·12	·136	·053	50·27
308·0	311·0	3·0																
311·0	312·7	1·7					1055591	304·6	305·6		44·16	3·56	<·50	<·05	1·498	·145	<·01	50·82
312·7	314·0	1·4																
314·0	317·0	3·0					1055592	305·6	310·6		44·37	2·33	·886	·248	2·01	·131	·149	50·00
317·0	320·0	3·0			317·1 – 322·2m													
320·0	323·0	3·1	BQ		Massive dolomite. cloudy.		1055593	310·6	315·4		44·83	3·20	1·611	·116	1·399	·131	·116	49·76
					322·2 – 324·4m		1055594	315·4	317·1		43·49	3·25	2·96	·185	1·672	·142	·107	48·69
					Massive magnesite. Spotted													
							1055595	317·1	322·2		17·34	18·92	29·31	·054	·776	·066	·327	32·97
							1055596	322·2	324·4		42·11	3·20	1·843	<·05	2·24	·125	·108	49·52

517032 SHEET No. 8

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. 3D82LR1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
323·0	326·0	3·0			324·4 – 326·3m		1055597	324·4	325·5		22·96	20·80	12·91	·111	2·86	·052	3·19	37·08
326·0	327·8	1·8			Massive dolomite.													
327·8	329·0	1·3					1055598	325·5	331·4		40·67	6·14	·949	<·05	2·47	·116	·03	49·58
329·0	332·0	3·0			326·3 – 338·6m													
332·0	335·0	3·0			Massive magnesite. Spotted.		1055599	331·4	331·5		43·76	3·17	<·5	<·05	2·24	·174	·036	50·41
335·0	335·5	0·5																
335·5	338·0	2·6			338·6 – 341·5m		1055600	331·5	335·3		42·22	4·79	1·481	<·05	2·37	·103	·07	49·56
338·0	341·0	3·0			Banded pyritic dolomite.													
341·0	343·1	2·1					1055601	335·3	337·7		33·17	15·17	·676	<·05	2·81	·155	·014	47·99
343·1	344·0	0·9			341·5 – 342·5m													
344·0	347·0	3·0			Massive magnesite.		1055602	337·7	338·6		42·50	4·96	<·5	<·05	2·65	·150	·022	50·14
347·0	350·0	3·0																
350·0	353·0	3·1					1055603	338·6	340·4		27·02	18·59	7·01	·064	4·57	·131	5·22	37·31
353·0	356·0	3·0																
356·0	358·0	2·0			342·5 – 369·4m	* Too much sulphur for LOI determination.	1055604	340·4	341·5		25·08	·893	4·79	·493	28·71	·196	47·18	*
358·0	359·0	1·0			Massive magnesite.													
359·0	362·0	3·0					1055605	341·5	342·0		41·71	·956	1·742	·492	6·79	·201	5·32	42·60
362·0	365·0	3·0			369·4 – 385·8m													
365·0	368·0	3·2			Pyritic calc-siltstone		1055606	342·0	347·0		40·33	6·69	·970	<·05	2·68	·136	·128	47·13
368·0	371·0	1·4																
							1055607	347·0	349·4		43·59	3·11	2·59	<·05	1·987	·125	·387	48·18
							1055608	349·4	355·0		44·50	2·45	1·644	<·05	1·875	·108	·150	49·45
							1055609	355·0	358·0		43·65	2·70	<·5	<·05	2·12	·128	·089	50·51
							1055610	358·0	359·3		45·62	1·075	1·262	<·05	1·766	·116	·102	50·05
							1055611	359·3	362·6		45·88	1·226	<·5	<·05	1·666	·110	·114	50·93
							1055612	362·6	365·9		44·99	·566	<·5	<·05	1·744	·066	<·01	51·29

517033

SHEET No. 9

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD82LR1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
371·0	374·0	2.0																
374·0	377·0	2.2					1055613	368·9	369·4		46·37	1·777	·802	<·05	·714	·064	<·01	50·34
377·0	380·0	3·0			385·8 – 387·7m													
380·0	383·0	3·1			Amphibolite – carbonate													
383·0	386·0	2·6			breccia.													
386·0	389·0	2·6																
E.O.H.					387·7 – 389·0m													
					Amphibolite.													
					E.O.H.													

APPENDIX III

DD83 LR2 LOG

DD83LR2

BOREHOLE SURVEY LOG

517035

DRILL HOLE N°: DD83LR2 LOCALITY: LYONS RIVER TAS. DATE COMMENCED: 1·2·83 DATE COMPLETED: 23·2·83

Survey Depth	Interval	Magnetic Azimuth	Chord Length	Dip	Grid Azimuth	Northing	Easting	Reduced Level	Camera	Core Size	Comments
Collar	———	———	———	———	———						
Setup 0m	0 - 47m	289·5°	47m	46°	300°						
94·0m	47·0m - 149·5m	289·5°	102·5m	46°	300°						
205·0m	149·5m - 268·5m	289°	119·0m	43°	300·5°						
332·0m	268·5m - 375·25m	291°	106·75m	38°	302·5°						
418·5m	375·25m - 418·5m	295°	43·25m	34°	306·5°						

517036

SHEET No. 1/...

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL ... No. 43/...

PLAN – MAP REFERENCE ...

CO-ORDINATES ... AZIMUTH 300° T ... DRILLERS K. PARRY ... COMMENCED 1/2/83 ... DEPTH 418.5 m ... HOLE No. DD83...LR

RL COLLAR ... INCLINATION 46° ... DRILL TYPE BOYLES 37 ... COMPLETED 23/2/83 ... CASING LEFT NIL ... DPO No(s) 30365

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.L)
						Mostly Buff | White; % Cryptocryst. Magnesite; Minerals in sparry patches: sil. | Dol. | Mag.					MgO | CaO | SiO_2 | Al_2O_3 | Fe_2O_3 | MnO | SO_3 | LOI
0·00	33·0	0	TRICONE								
33·0	34·4	1·33	NQ		33·0m – 43·0m						
34·4	35·6	1·10	"		Coarse arenite –						
35·6	37·0	1·17	"		conglomerate. Grains						
37·0	37·7	0·50	"		and clasts are basalt						
37·7	39·1	0·80	"		lithic fragments.						
39·1	41·0	1·10	"		This unit is thin						
41·0	43·0	1·40	"		bedded.						
					43·0m – 62·2m						
43·0	44·0	0·90	"		Breccia composed						
44·0	47·0	1·50	"		of spongey silica –						
47·0	50·0	0·35	"		magnesite fragments						
50·0	53·0	0·00	"		in a clay matrix.						
53·0	56·0	0·30	"		– ie weathered						
56·0	59·0	0·10	"		equivalent of						
59·0	62·0	0·00	"		magnesite.						
62·0	63·5	0·65	"		62·2m – 110·0m						
63·5	66·0	0·80	"		Spotted magnesite.	✓ — 60% — ✓ —	1056501	68·5	74·0		38·09 | 2·30 | 15·08 | <·05 | ·689 | ·063 | <·010 | 43·97
66·0	68·5	0·80	"		ie previous textures	✓ — 60% — ✓ —	1056502	74·0	80·0		40·99 | 1·848 | 10·29 | <·05 | ·564 | ·055 | <·010 | 46·34
68·5	71·0	1·65	"		if any obscured by	✓ — 80% — ✓ ✓	1056503	80·0	85·0		40·54 | 1·983 | 11·10 | <·05 | ·489 | ·045 | <·010 | 45·91
71·0	74·0	1·14	"		recrystallization.	✓ — 80% ✓ ✓ ✓	1056504	85·0	90·0		39·88 | 2·12 | 12·41 | <·05 | ·306 | ·033 | <·010 | 45·45
74·0	76·7	1·20	"			✓ — 60% — ✓ ✓	1056505	90·0	93·8		41·02 | 1·296 | 11·56 | <·05 | ·267 | <·03 | <·010 | 45·80
76·7	79·4	0·30	"			✓ — 40% — ✓ ✓	1056506	93·8	96·0		38·19 | 4·08 | 11·88 | <·05 | ·653 | ·042 | ·048 | 45·18
79·4	80·0	0·50	NQ								
80·0	85·0	3·35	BQ								
85·9	88·0	3·17									

517037

SHEET No. 2/

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL ..... No. 43/

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH 300° T ..... DRILLERS K. PARRY ..... COMMENCED 1/2/83 ..... DEPTH 418.5 m ..... HOLE No. DD83-L

RL COLLAR ..... INCLINATION 46° ..... DRILL TYPE BOYLES 37 ..... COMPLETED 23/2/83 ..... CASING LEFT NIL ..... DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization: Mostly Buff	Mostly White	% Cryptocryst. Magnesite	Minerals in sparry patches: sil.	Dol.	Mag.	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.): MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
88·0	91·0	3·13	BQ																				
91·0	94·0	3·05	"																				
94·0	97·0	2·98	"																				
						—	✓	50%	—	—	✓	1056507	96·0	98·3		38·11	·941	17·50	<·05	·428	·042	·039	42·85
97·0	100·0	3·18	"			✓	—	40%	—	—	✓	1056508	98·3	100·0		36·79	9·27	14·90	<·05	·379	·042	·028	43·91
100·0	102·7	2·14	"			✓	—	60%	—	✓	✓	1056509	100·0	105·0		40·86	1·709	11·46	<·05	·243	<·03	<·010	45·87
102·7	104·0	1·45	"			✓	—	80%	—	✓	✓	1056510	105·0	110·0		42·39	1·297	8·73	<·05	·367	<·03	<·010	47·25
104·0	107·0	3·00	"		110·0m – 131·0m																		
107·0	110·0	3·01	"		Magnesite. Any																		
110·0	113·0	3·05	"		precious textures																		
					obscured by cloudy	✓	—	95%	—	✓	✓	1056511	110·0	115·0		41·22	1·754	11·54	<·05	·420	·044	<·010	45·18
113·0	116·0	2·21	"		texture.	✓	—	95%	—	✓	✓	1056512	115·0	120·0		41·28	1·807	10·10	<·05	·670	·074	<·010	46·11
116·0	119·0	2·98	"			✓	—	95%	—	✓	✓	1056513	120·0	123·0		39·39	3·93	10·97	<·05	·313	·042	<·010	45·99
119·0	122·0	3·10	"			✓	—	75%	—	✓	✓	1056514	123·0	125·0		37·04	7·15	9·73	<·05	·461	·037	<·010	45·76
122·0	125·0	2·91	"			✓	—	90%	—	—	✓	1056515	125·0	130·0		40·18	3·06	11·19	<·05	·227	<·03	·018	45·53
125·0	128·0	3·07	"			✓	—	95%	—	—	✓	1056516	130·0	131·5		38·82	1·877	15·40	<·05	·267	<·03	<·010	43·77
128·0	131·0	3·00	"																				
131·0	134·0	2·99	"		131·0m to 157·5m																		
					Magnesite. Any																		
34·0	137·0	2·95	"		previous texture	✓	—	60%	—	✓	✓	1056517	131·5	135·0		39·30	1·286	15·23	<·05	·279	<·03	<·010	43·85
37·0	140·0	2·94	"		obscured by	✓	—	80%	—	✓	—	1056518	135·0	140·0		40·31	1·633	12·16	<·05	·449	·037	<·010	45·96
40·0	143·0	2·99	"		spotted texture.	✓	—	80%	—	—	✓	1056519	140·0	144·0		38·78	2·03	16·56	<·05	·361	<·03	<·010	42·32
43·0	146·0	3·10	"			✓	—	95%	—	—	✓	1056520	144·0	145·0		40·47	1·950	11·66	<·05	·098	<·03	<·010	45·63
46·0	149·0	3·08	BQ			✓	✓	60%	—	—	✓	1056521	145·0	150·0		39·91	1·906	14·00	<·05	·120	<·03	·015	43·92

517038 SHEET No. 3/8

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL No. 43/7
PLAN – MAP REFERENCE

CO-ORDINATES AZIMUTH 300° T DRILLERS K. PARRY COMMENCED 1/2/83 DEPTH 418.5 m HOLE No. DD83LR2
RL COLLAR INCLINATION 46° DRILL TYPE BOYLES 37 COMPLETED 23/2/83 CASING LEFT NIL DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization: Mostly Buff	Mostly White	% Cryptocryst. Magnesite	Minerals in sparry patches: sil.	Dol.	Mag.	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.): MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
149·0	152·0	2·92	BQ																				
152·0	155·0	3·01	"			✓	–	70%	–	–	✓	1056522	150·0	155·0		39·20	2·40	13·39	<·05	·237	<·03	<·010	14·79
155·0	158·0	2·99	"		157·5m – 162·6m	✓	–	80%	–	✓	✓	1056523	155·0	157·5		38·37	2·15	15·65	<·05	·264	<·03	<·010	13·55
					Massive grey dolomite with							1056524	157·5	160·0		21·23	29·08	3·20	·078	·310	<·03	·193	45·75
158·0	161·0	2·80	"		siliceous patches.							1056525	160·0	162·6		21·60	26·93	6·65	<·05	·224	<·03	·058	44·49
161·0	164·0	3·07	"		162·6m – 165·0m																		
164·0	167·0	3·02	"		Magnesite. Any																		
					previous textures	✓	–	80%	–	✓	✓	1056526	162·6	165·0		37·13	3·63	16·09	<·05	·289	<·03	·090	42·93
					obscured by spotted																		
167·0	170·0	2·99	"		texture.	✓	–	60%	✓	✓	✓	1056527	165·0	170·0		28·39	8·66	24·65	<·05	·419	·033	<·010	37·82
170·0	173·0	3·14	"		165·0m – 171·25m	✓	–	60%	✓	✓	✓	1056528	170·0	171·25		29·10	1·364	36·22	<·05	·257	<·03	<·010	33·00
					Angular magnesite																		
					breccia. Spotted.																		
					171·25m – 204·1m																		
173·0	176·0	2·99	"		Magnesite. Spotted.																		
176·0	179·0	3·20	"		Possible fault at	–	✓	80%	✓	–	✓	1056529	171·25	175·0		37·78	·834	19·26	<·050	·373	·031	·041	41·85
179·0	182·0	3·16	"		177·7m.	✓	✓	90%	–	✓	✓	1056530	175·0	180·0		43·70	·835	6·18	·260	·763	<·03	<·010	48·28
182·0	185·0	3·06	"																				
185·0	188·0	3·08	"			✓	–	80%	–	✓	✓	1056531	180·0	185·0		42·45	1·114	8·73	<·050	0·40	<·03	·043	47·44
188·0	191·0	2·63	"																				
191·0	194·0	3·03	"			✓	✓	80%	–	✓	✓	1056532	185·0	190·0		42·29	1·521	8·54	<·05	·354	<·03	·070	47·28
194·0	197·0	2·87	"																				
197·0	200·0	1·49	BQ			–	✓	90%	–	–	✓	1056533	190·0	195·0		43·87	·994	6·25	<·05	·583	·045	·155	48·31
						✓	✓	80%	–	✓	✓	1056534	195·0	200·0		40·11	3·00	9·67	·147	·924	·058	·384	45·75
						✓	✓	80%	✓	–	✓	1056535	200·0	200·7		41·77	1·396	9·28	<·05	·959	·060	·109	46·69

517039

SHEET No. 4/

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL ..... No. 43/..

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH 300° T ..... DRILLERS K. PARRY ..... COMMENCED 1/2/83 ..... DEPTH 418.5 m ..... HOLE No. DD83...L

RL COLLAR ..... INCLINATION 46° ..... DRILL TYPE BOYLES 37 ..... COMPLETED 23/2/83 ..... CASING LEFT NIL ..... DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization						Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.)							
						Mostly Buff	White	% Cryptocryst. Magnesite	Minerals in sparry patches sil.	Dol.	Mag.					MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
					204.1m – 220.5m																		
200.0	203.0	4.49	BQ		Massive grey dolomite							1056536	200.7	201.15		33.80	1.226	23.03	.907	2.74	.081	.163	38.21
203.0	206.0	3.08	"		with minor angular																		
206.0	209.0	3.11	"		magnesite clasts.							1056537	201.15	205.0		23.09	10.12	32.35	<.05	.946	.084	.168	33.32
209.0	212.0	3.02	"		Siliceous in places.																		
212.0	215.0	3.07	"		220.5m – 222.5m							1056538	205.0	210.0		29.51	23.37	6.21	<.05	.621	.047	.041	45.27
215.0	218.0	2.96	"		Angular magnesite																		
218.0	221.0	2.96	"		breccia - weakly							1056539	210.0	215.0		25.66	22.06	5.88	.059	.853	.059	.077	45.35
221.0	224.0	3.15	"		spotted.																		
224.0	227.0	3.09	"		222.5m – 226.0m							1056540	215.0	220.0		21.95	15.43	26.25	<.05	.332	.044	.064	36.00
227.0	230.0	2.97	"		Whispy magnesite																		
230.0	233.0	2.95	"		breccia - weakly							1056541	220.0	221.0		22.99	19.03	17.26	<.05	.376	.045	.066	40.12
233.0	236.0	3.11	"		spotted.																		
236.0	239.0	2.74	"		226.0m – 238.0m							1056542	221.0	225.0		33.91	8.55	13.88	<.05	.382	.054	.036	43.58
239.0	242.0	3.01	BQ		Pyritic siliceous																		
					dolomite.							1056543	225.0	226.0		33.08	7.65	16.74	<.05	.457	.061	.148	42.13
					238.0m – 239.2m																		
					Pyritic angular							1056544	226.0	226.74		22.29	23.35	10.80	<.05	.482	.081	.229	42.57
					magnesite breccia.																		
					239.2m – 241.8m							1056545	226.74	230.21		22.26	13.11	16.60	.08	8.89	.213	15.77	23.38
					Sparry magnesite -																		
					dolomite with	✓	–	25%	–	✓	✓	1056546	230.21	235.0		31.89	8.45	15.79	<.05	1.887	.095	.305	41.80
					spotted magnesite																		
					patches.							1056547	235.0	238.0		34.85	4.05	14.61	<.05	3.82	.106	3.74	39.00
					241.8m – 244.5m																		
					Magnesite. Any	✓	–	25%	–	✓	✓	1056548	238.0	240.0		33.88	2.86	23.22	<.05	.603	.056	.312	39.16
					previous textures																		
					obscured by spotted																		
					texture.																		

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

517040 SHEET No. 5/8

TENEMENT NAME ARTHUR RIVER EL ..... No. 43/70

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH 300° T ..... DRILLERS K. PARRY ..... COMMENCED 1/2/83 ..... DEPTH 418.5 m ..... HOLE No. DD83 LR2

RL COLLAR ..... INCLINATION 46° ..... DRILL TYPE BOYLES 37 ..... COMPLETED 23/2/83 ..... CASING LEFT NIL ..... DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization: Mostly Buff	Mostly White	% Cryptocryst. Magnesite	Minerals in sparry patches: sil.	Dol.	Mag.	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.H.): MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	L.O.I.
					244.5m – 292.3m Cuneiform magnesite with common dark selvedges on sparry - sandy patches.																		
242.0	245.0	3.10	BQ			✓	✓	60%	–	✓	✓	1056549	240.0	245.0		37.48	5.26	10.55	.088	1.111	.077	.075	45.30
245.0	248.0	3.00	"			–	✓	60%	–	✓	✓	1056550	245.0	250.0		38.93	7.41	4.64	.055	.460	.074	.146	48.20
248.0	251.0	3.03	"			–	✓	80%	–	✓	✓	1056551	250.0	255.0		42.21	3.14	5.94	<.05	.411	.046	.055	48.32
					292.3m – 306.8m																		
251.0	254.0	3.03	"		Cuneiform magnesite	–	✓	90%	–	✓	✓	1056552	255.0	260.0		42.38	2.69	6.49	<.05	.264	.042	.045	48.15
254.0	257.0	3.03	"		with largely sparry																		
257.0	260.0	3.01	"		infill.	–	✓	80%	✓	✓	✓	1056553	260.0	265.0		40.00	5.13	6.75	<.05	.332	.035	.064	47.50
260.0	263.0	2.97	"		306.8m – 310.7m																		
263.0	266.0	3.02	"		Angular magnesite	✓	✓	90%	–	✓	✓	1056554	265.0	270.0		42.53	5.54	.833	<.05	.383	.044	.067	50.62
266.0	269.0	3.07	"		breccia.																		
269.0	272.0	3.05	"		310.7m – 316.2m	✓	✓	85%	✓	✓	✓	1056555	270.0	275.0		41.17	7.06	.635	<.05	.534	.045	.044	50.30
272.0	275.0	3.04	"		Cuneiform magnesite																		
275.0	278.0	3.07	"			es –	✓	70%	–	✓	✓	1056556	275.0	280.0		39.34	8.16	2.35	<.05	.661	.053	.103	49.38
278.0	281.0	3.04	"																				
281.0	284.0	2.92	"			–	✓	70%	–	✓	✓	1056557	280.0	285.0		40.42	3.94	7.87	.170	.891	.065	.133	46.72
284.0	287.0	2.47	"																				
287.0	290.0	3.14	"			–	✓	85%	–	✓	✓	1056558	285.0	290.0		41.45	5.24	3.33	.080	.842	.054	.189	49.08
290.0	293.0	2.88	"																				
293.0	296.0	3.17	"			–	✓	90%	–	✓	–	1056559	290.0	295.0		38.28	6.95	6.16	<.05	.925	.083	.089	47.57
296.0	299.0	3.08	"																				
299.0	302.0	3.07	BQ			✓	✓	90%	–	✓	✓	1056560	295.0	300.0		39.12	7.54	3.30	<.05	.923	.094	.033	49.11
						–	✓	80%	–	✓	✓	1056561	300.0	305.0		41.46	5.44	2.48	<.05	.663	.061	.032	50.16

517041 SHEET No. 6/8

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL ..... No. 43/70
PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH 300° T ..... DRILLERS K. PARRY ..... COMMENCED 1/2/83 ..... DEPTH 418.5 m ..... HOLE No. DD83-LR2
RL COLLAR ..... INCLINATION 46° ..... DRILL TYPE BOYLES 37 ..... COMPLETED 23/2/83 ..... CASING LEFT NIL ..... DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization: Mostly Buff	Mostly White	% Cryptocryst. Magnesite	Minerals in sparry patches: sil.	Dol.	Mag.	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.H): MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
302·0	305·0	3·05	BQ			–	✓	70%	–	✓	–	1056562	305·0	310·0		39·19	6·64	4·96	<·05	·898	·090	·084	48·20
305·0	308·0	2·98	"																				
308·0	311·0	3·00	"		316·2m – 319·2m	✓	✓	90%	–	✓	✓	1056563	310·0	315·0		42·29	3·08	5·03	<·05	·816	·059	·059	48·69
311·0	314·0	3·07	"		Sparry magnesite																		
314·0	317·0	2·93	"		with approx 50%	–	✓	80%	–	✓	–	1056564	315·0	320·0		40·26	2·66	10·11	<·05	·614	·057	·081	46·38
317·0	320·0	3·00	"		cloudy-spotted																		
320·0	323·0	3·05	"		cryptocrystalline	✓	✓	80%	✓	✓	–	1056565	320·0	325·0		39·56	4·65	8·32	<·05	·591	·05	·062	46·87
323·0	326·0	2·93	"		magnesite patches.																		
326·0	329·0	3·07	"		319·2 – 320·4m	✓	✓	90%	–	✓	✓	1056566	325·0	330·0		42·35	4·01	3·87	<·05	·375	<·03	·051	49·37
329·0	332·0	3·15	"		Cuneiform magnesite.																		
332·0	335·0	2·96	"		320·4m – 321·5m	–	✓	95%	–	✓	✓	1056567	330·0	335·0		43·96	3·00	2·51	<·05	·366	·031	·014	50·25
335·0	338·0	3·10	"		Magnesite. Spotted.																		
338·0	341·0	3·03	"		321·5m – 326·6m	–	✓	95%	–	✓	✓	1056568	335·0	340·0		44·41	2·58	1·679	<·05	·823	·048	·021	50·49
341·0	344·0	3·01	"		Magnesite. Cloudy.																		
344·0	347·0	3·16	"		326·6m – 328·0m	✓	✓	90%	–	✓	✓	1056569	340·0	345·0		42·33	4·65	1·752	<·05	1·235	·065	·022	50·19
347·0	350·0	2·63	"		Angular magnesite																		
350·0	353·0	3·00	"		breccia. Siliceous	✓	–	95%	–	✓	✓	1056570	345·0	350·0		44·35	3·05	·858	<·05	·919	·04	·017	50·75
353·0	356·0	3·01	"		in places.																		
356·0	359·0	3·02	"		328·0m – 388·0m	✓	–	95%	–	✓	✓	1056571	350·0	355·0		44·24	2·61	1·769	<·05	1·133	·062	·065	50·27
359·0	362·0	3·10	"		Cuneiform																		
362·0	365·0	3·03	"		magnesite.	✓	–	90%	–	✓	✓	1056572	355·0	360·0		43·72	4·15	·740	<·05	·627	·044	·034	50·78
365·0	368·0	3·01	"																				
368·0	371·0	3·07	"			✓	–	90%	–	–	✓	1056573	360·0	365·0		43·70	4·20	·603	<·05	·645	·060	·046	50·87
371·0	374·0	3·10	"																				
374·0	377·0	3·11	"			✓	–	90%	–	–	✓	1056574	365·0	370·0		42·58	4·77	1·723	<·05	·912	·064	·126	50·06
377·0	380·0	2·95	"																				
380·0	383·0	3·07	"			✓	–	60%	–	✓	✓	1056575	370·0	375·0		39·09	7·75	1·964	<·05	1·856	·096	·055	49·17
383·0	386·0	3·04	BQ																				

517042

SHEET No. 7/8

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ARTHUR RIVER EL No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES AZIMUTH 300° T DRILLERS K. PARRY COMMENCED 1/2/83 DEPTH 418.5 m HOLE No. DD83LR2

RL COLLAR INCLINATION 46° DRILL TYPE BOYLES 37 COMPLETED 23/2/83 CASING LEFT NIL DPO No(s) 30365

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Mostly Buff	Mostly White	% Cryptocryst. Magnesite	Minerals in sparry patches: sil.	Dol.	Mag.	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.R.H.) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	L.O.I.
					388.0m – 394.7m																		
386.0	389.0	2.97	BQ		Magnesite. Obscured by spotted texture.	✓	–	80%	–	✓	✓	1056576	375.0	380.0		41.32	5.45	3.02	<.05	.919	.05	.058	49.35
389.0	392.0	2.85	"																				
392.0	395.0	3.09	"		Possible cuneiform textures are present.	✓	–	95%	–	✓	✓	1056577	380.0	385.0		44.65	2.45	1.194	<.05	1.013	.04	.049	50.55
						✓	–	95%	–	–	✓	1056578	385.0	390.0		44.79	2.42	1.151	<.05	1.051	.053	.032	50.78
						✓	–	90%	–	✓	✓	1056579	390.0	395.0		44.17	2.77	1.905	<.05	1.048	.061	.110	50.00
395.0	398.0	3.09	"																				
						✓	–	20%	–	✓	✓	1056580	395.0	398.6		39.11	7.32	2.53	<.05	2.03	.113	.444	48.65
398.0	401.0	3.07	"		394.7m – 407.25m																		
					Sparry magnesite.	✓	–	20%	–	✓	✓	1056581	398.6	403.0		41.22	4.06	5.01	<.05	1.110	.077	.131	48.43
401.0	404.0	3.07	"		Minor cryptocrystalline																		
					patches only.	✓	–	30%	–	✓	✓	1056582	403.0	407.25		32.43	10.17	9.82	.150	2.79	.156	.890	43.68
404.0	407.0	3.03	"																				
					407.25m – 408.1m							1056583	407.25	408.1		20.37	7.23	24.15	2.40	13.18	.149	21.88	10.45
407.0	410.0	3.04	"		Pyritic (~15%) calcite dolomite rock broadly banded																		
					408.1m – 410.0m	✓	–	80%	–	✓	✓	1056584	408.1	410.0		34.11	8.11	9.66	.121	2.95	.246	1.531	43.25
					Weakly pyritic trellis textured magnesite							1056585	410.0	412.3		16.94	19.55	15.09	.754	9.30	.180	15.85	22.34
410.0	413.0	3.10	"		410.0m – 415.1m																		
413.0	416.0	3.22	"		Pyritic calcite –																		
416.0	418.5	3.07	BQ		dolomite rich siltstone with intercalated																		
EOH					sandstone.																		

DD83LR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

517043 SHEET No. 8/8

TENEMENT NAME ARTHUR RIVER EL No. 43/7

PLAN – MAP REFERENCE

CO-ORDINATES AZIMUTH 300° T DRILLERS K. PARRY COMMENCED 1/2/83 DEPTH 418.5 m HOLE No. DD83 LR

RL COLLAR INCLINATION 46° DRILL TYPE BOYLES 37 COMPLETED 23/2/83 CASING LEFT NIL DPO No(s) 30355

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z C B H)
					Mostly Buff White	% Cryptocryst. Magnesite					
						Minerals in sparry patches sil. Dol. Mag.					
					415.1m – 418.5m Weakly pyritic calcite dolomite-rich quartzite.						
					E.O.H.						

APPENDIX IV

DD83 LR3 LOG

517045

DD83LR3

BOREHOLE SURVEY LOG

DRILL HOLE N°: DD83LR3 LOCALITY: LYONS RIVER N W TASMANIA DATE COMMENCED: 1·3·83 DATE COMPLETED: 9·4·83

Survey Depth	Interval	Magnetic Azimuth	Chord Length	Dip	Grid Azimuth	Northing	Easting	Reduced Level	Camera	Core Size	Comments
COLLAR											
SETUP 0m	0m - 77m	298·5°	77m	46°	310°						
154m	77m - 195m	285°	118m	46°	296·5°						
236m	195m - 289·5m	286°	94·5m	40°	297·5°						
343m	289·5m - 367·5m	281°	78m	40°	292·5°						

517046

DD83LR3

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/5

TENEMENT NAME ARTHUR RIVER E.L. No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ... AZIMUTH 310° AMG ... DRILLERS K PARRY ... COMMENCED 1.3.83 ... DEPTH 367.5m ... HOLE No. DD83LR3

RL COLLAR ... INCLINATION 46° ... DRILL TYPE Boyles 37 ... COMPLETED 9.4.83 ... CASING LEFT ... DPO No(s)

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization
0	9.0	0			0 - 9.0m OPEN HOLE (TRICONE).	
9.0	11.0	0.36	NQ			
11.0	14.0	0.84			9.0m - 41.0m	
14.0	17.0	0.60			Quartz sandstone with minor	
17.0	20.0	1.05			schist. Quartz veins at 39.0m and	
20.0	23.0	1.08			35.0m.	
23.0	26.0	1.06				
26.0	29.0	1.20				
29.0	32.0	0.98				
32.0	35.0	0				
35.0	38.0	0.45				
38.0	41.0	0.38			41.0m - 41.05m.	
					Carbonaceous dolomite with	
41.0	44.0	0.51			magnesite patches.	
44.0	47.0	0.23				
47.0	50.0	0.96			41.05m - 43.0m.	
50.0	53.0	1.35			Quartz sandstone.	
53.0	56.0	2.29				
56.0	59.0	1.18			43.0m - 92.1m.	
59.0	62.0	0.59			Cuneiform magnesite (~50%	
62.0	65.0	0.96			crypto crystalline magnesite) with	
65.0	68.0	2.92			very fine sharp black selvedges	
68.0	71.0	2.41			on sandy - shaney dolomite	
71.0	74.0	2.88			patches.	
74.0	77.0	1.89			Core is leached & cavernous	
77.0	80.0	1.60			over the following intervals:	
80.0	83.0	1.90			41.0 - 54.0m, 56.8m - 65.2m	
83.0	86.0	0.29			68.5m - 69.4m, 70.8m - 71.3m	
86.0	89.0	0.23			72.2m - 73.0m, 75.2m - 77.1m	
89.0	92.0	0.89			77.5m - 92.1m.	

SPECIAL FEATURES: White or Buff	% Cryptocryst Magnesite	Comments
W	10%	
W	70%	
B	70%	leached, with
B	70%	cavities
W	80%	
B	90%	
B	95%	
B	90%	

Sample No.	From (M)	To (M)	Rec (M)
1056237	50.0	54.4m	
1056238	54.4	56.8	
1056239	56.8	62.0	
1056240	62.0	66.2	
1056241	66.2	68.4	
1056242	68.4	73.0	
1056243	73.0	76.5	
1056244	76.5	80.0	

ASSAY VALUES (Analysed by ZC BH)

SPLIT CORE SAMPLES.

MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI
42.23	5.65	<.50	<.05	0.863	0.177	0.369	50.05
19.03	31.64	0.864	<.05	2.04	0.35	1.928	43.85
44.98	2.52	<.50	<.05	1.038	0.182	0.306	50.62
23.99	23.93	8.91	<.05	0.243	0.125	<.010	43.67
43.08	4.28	3.64	<.05	0.159	0.069	<.010	48.62
31.78	14.51	7.72	<.05	0.407	0.100	<.010	45.31
40.77	4.35	7.17	<.05	.297	0.087	<.010	47.31
30.09	17.44	6.04	<.05	0.219	0.110	<.010	45.89

517047

SHEET No. 2/5

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD836R1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....)
92·0	95·0	1·09			92·1m – 92·5m. Siliceous dolomite.						
95·0	98·0	1·43									
98·0	101·0	0·73			92·5m – 99·5m. Extensively leached and cavernous limestone and siliceous dolomite.						
101·0	104·0	1·39									
104·0	107·0	3·64									
107·0	110·0	3·27									
110·0	113·0	2·62									
113·0	116·0	2·71			99·5m – 101·0m. Quartz sandstone as in top interval of hole.						
116·0	119·0	2·88									
119·0	122·0	3·09									
122·0	125·0	3·17									
125·0	128·0	2·87			101·0m – 217·5m. Banded sandy dolomite and coarser sandy textured limestone (bands 5mm – 10mm thick). Very minor schist and black shale bands. Cloudy magnesite-dolomite patches throughout.	Numerous zones of broken oxidized core (generally associated with the limestone bands) give very poor recovery.					
128·0	131·0	3·01									
131·0	134·0	2·96									
134·0	137·0	3·04									
137·0	140·0	3·19									
140·0	143·0	3·00									
143·0	146·0	0·34									
146·0	149·0	2·92				121·0m. Core-axis to bedding angle: 30°.					
149·0	152·0	2·97									
152·0	155·0	3·20				123·6m. Core-axis to bedding angle: 70°					
155·0	158·0	1·91									
158·0	161·0	3·20									
161·0	164·0	3·09				164·0m. Core-axis to bedding angle: 34°					
164·0	167·0	2·65									
167·0	170·0	2·94									
170·0	173·0	2·79									
173·0	176·0	1·80									
176·0	179·0	3·09									
179·0	182·0	2·94									
182·0	185·0	2·84									

517048 SHEET No. 3/5

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. PD836R3....

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by A.L.S.)
185·0	188·0	3·00									
188·0	191·0	3·15									
191·0	194·0	3·15									
194·0	197·0	2·96									
197·0	200·0	3·05									
200·0	203·0	3·14									
203·0	206·0	1·94									
206·0	209·0	3·00									
209·0	212·0	3·07									
212·0	215·0	2·97									
215·0	218·0	2·98			217·5m – 259·5m.						
218·0	221·0	3·06			Dark grey dolomitic siltstone	Massive – slump bedded					
221·0	224·0	3·11			with dolomitic black slate –	pyrite from 254·5m – 255·0m.					
224·0	227·0	3·00			schist and pyritic laminae.						
227·0	230·0	2·40			Schistose units have a	220·0m. Core-axis to bedding					
230·0	233·0	2·86			distinctive silvery sheen.	angle: 72°					
233·0	236·0	2·95			Plane bedded and contorted	224·0m. Core-axis to bedding			GROUND CORE		SAMPLES (Assayed by ALS.) ppm
236·0	239·0	3·00			slumped and microfaulted	angle: 72°.					Cu Pb Zn Ag Fe% As
239·0	242·0	3·00			laminations types are present.		1056230	251·0	255·0		80 35 135 1 2·97 <20
242·0	245·0	2·97			Overall pyrite content ~2%		1056231	255·0	255·5		170 105 105 4 19·5 60
245·0	248·0	3·06			Cremulated schist is common.		1056232	255·5	257·0		70 40 95 2 1·32 <20
248·0	251·0	3·20			Schist is carbonaceous.		1056233	257·0	260·0		90 40 100 2 1·32 <20
251·0	254·0	3·10					1056234	260·0	263·0		25 35 240 1 1·58 <20
254·0	257·0	3·11					1056235	263·0	266·0		45 40 310 2 1·25 <20
257·0	260·0	3·13			259·5m – 266·8m.		1056236	266·0	266·8		90 40 1100 2 1·11 20
260·0	263·0	3·00			Siliceous sandy dolomite	Cavity with basal pyrite-dolomite					
263·0	266·0	1·51			with minor pyrite intercalations.	breccia from 264·3m – 266·8m.					
						266·8m. Core-axis to					
						bedding angle: 65°.					

517049

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

SHEET No. 4/5

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD836R3

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)
266·0	269·0	2·51			266·8m – 284·2m.				SPLIT CORE SAMPLES	
269·0	272·0	1·36			Cream coloured massive	Sharp ufter contact ~45°				
272·0	275·0	0·54			magnesite (cryptocrystalline).	to core axis.	1056245	266·8	269·0	
275·0	278·0	1·65			Numerous veinlets of sparry	Pyrite and red sphalerite upto				
278·0	281·0	1·25			magnesite – dolomite constitute	2cm across occur within	1056246	269·0	275·2	
281·0	284·0	1·06			~5% of interval.	1cm of this contact.				
					Numerous zones of honeycomb-		1056247	275·2	281·0	
					structured silica dolomite					
					rock (residual after carbonate)				GROUND CORE	SAMPLES
					occur over the following intervals:					
					269·2m – 275·2m		1056201	281·0	284·0	
					275·35m – 277·0m		1056202	284·0	287·0	
					277·6m – 278·0m		1056203	287·0	290·0	
					281·0m – 284·2m.		1056204	290·0	293·0	
284·0	287·0	2·56					1056205	293·0	296·0	
287·0	290·0	2·90			284·2m – 314·0m.		1056206	296·0	299·0	
290·0	293·0	1·37			Dark grey siliceous dolomitic	284m – 293m. Bedding is	1056207	299·0	302·0	
293·0	296·0	2·31			siltstone – graphitic slate	approximately normal to core	1056208	302·0	305·0	
296·0	299·0	1·85			laminite. Plane – slump –	axis.	1056209	305·0	308·0	
299·0	302·0	1·37			microfaulted bedding is present.		1056210	308·0	311·0	
302·0	305·0	1·46			The more graphitic zones have upto		1056211	311·0	314·0	
305·0	308·0	2·70			30% slump bedded pyrite.		1056212	314·0	317·0	
308·0	311·0	2·99			Pyrite is most prominent over the		1056213	317·0	320·0	
311·0	314·0	3·18			following intervals:		1056214	320·0	323·0	
					287·2m – 287·5m and		1056215	323·0	326·0	
					290·1m – 290·2m		1056216	326·0	329·0	
					Core is bleached (suggestive of		1056217	329·0	332·0	
					removal of carbonaceous	Significant pyrite is still present	1056218	332·0	335·0	
					material) from 293·0m – 295·5m	in the bleached zones.	1056219	335·0	338·0	
					and 296·0m – 306·0m and 306·4m		1056220	338·0	341·0	
					– 314·0m.		1056221	341·0	344·0	

ASSAY VALUES (Analysed by Z.C.B.H.)								
MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	LOI.	
29·02	19·55	3·03	<·050	1·004	0·151	0·016	46·96	
34·54	14·95	<·50	<·05	1·201	0·147	0·162	49·22	
22·20	27·38	4·11	<·05	0·318	·093	·069	45·29	
ASSAYED BY ALS) ppm								
Cu	Pb	Zn	Ag	Fe%	As			
50	40	125	½	1·10	<20			
40	35	135	2	2·99	<20			
300	50	220	3	6·76	20			
130	55	175	3	5·92	20			
110	35	310	3	3·64	<20			
125	35	130	3	5·54	<20			
800	40	310	4	12·4	20			
600	55	700	3	16·4	<20			
620	35	170	2	16·9	40			
290	30	60	2	11·6	20			
520	30	85	2	11·2	60			
80	20	60	2	5·33	<20			
125	25	70	2	8·18	<20			
170	35	60	3	13·5	40			
135	25	165	2	4·99	<20			
180	20	170	2	3·54	<20			
150	20	105	2	2·78	<20			
90	20	85	2	3·78	<20			
75	20	85	2	2·58	<20			
125	30	145	2	2·74	<20			
235	30	85	3	11·0	40			

517050

SHEET No. 5/5

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD834R3

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by... A.L.S.....) Cu	Pb	Zn	Ag	Fe	As
314·0	317·0	3·10			314·0m – 367·5m.		1056222	344·0	347·0		340	30	120	3	9·87	20
317·0	320·0	3·32			As above but siltstone-schist is		1056223	347·0	350·0		130	25	115	1	7·42	<20
320·0	323·0	3·04			pale green (chloritic) rather than	Patches of specular hematite	1056224	350·0	353·0		160	15	170	1	1·60	<20
323·0	326·0	3·05			graphitic. Rock is still dolomitic	from 318·5m – 318·6m and at	1056225	353·0	356·0		120	25	130	1	3·38	<20
326·0	329·0	2·92			and pyritic.	318·0m and 318·9m.	1056226	356·0	359·0		55	20	75	1	3·97	<20
329·0	332·0	2·92			Core is strongly pyritic from:		1056227	359·0	362·0		65	20	90	1	4·32	<20
332·0	335·0	3·00			320·2m – 322·0m (~15%).		1056228	362·0	365·0		80	20	90	2	2·97	<20
335·0	338·0	2·97			342·0m – 345·3m (~10%).		1056229	365·0	367·5		160	20	155	1	2·00	<20
338·0	341·0	2·76			Numerous speckled cryptocrystalline		EOH	-								
341·0	344·0	2·56			silica-dolomite patches											
344·0	347·0	2·58			occur between 339·2m and											
347·0	350·0	1·70			341·5m.											
350·0	353·0	2·05			A conglomerate band occurs											
353·0	356·0	2·95			from 347·0m – 348·5m.											
356·0	359·0	3·05			Clasts are low sphericity sub-											
359·0	362·0	2·87			rounded sandstone, argillite											
362·0	365·0	2·90			and black shales up to 3cm											
365·0	367·0	2·10			across. Matrix is pyrite											
367·0	367·5	0·50			and carbonate-rich.											
EOH																
					A band of amphibolite occurs											
					between 357·5m and 358·3m.											
					EOH at 367·5m.											

APPENDIX V

DD83 AR1 LOG

DD83AR1

BOREHOLE SURVEY LOG

517052

DRILL HOLE N°: DD83AR1 LOCALITY: ARTHUR RIVER N.W. TAS. DATE COMMENCED: 9·5·83 DATE COMPLETED: 19·5·83

Survey Depth	Interval	Magnetic Azimuth	Chord Length	Dip	Grid Azimuth	Northing	Easting	Reduced Level	Camera	Core Size	Comments
COLLAR	———	———	———	———	———				Eastman		
SETUP 0m	0 - 66·5m	299·5°	66·5m	46°	310°AMG				Single		
133·0m	66·5m - 138·0m	292°	71·5m	45°	303·5°				Shot.		
	E.O.H. 138·0m										

517053

DD83AR1

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1
TENEMENT NAME ARTHUR RIVER EL No. 43/70
PLAN – MAP REFERENCE

CO-ORDINATES ... AZIMUTH 310° AMG ... DRILLERS K. PARRY ... COMMENCED 9.5.83 ... DEPTH 138.0m ... HOLE No. DD83AR1
RL COLLAR ... INCLINATION 46° ... DRILL TYPE BOYLES 37 ... COMPLETED 19.5.83 ... CASING LEFT NIL ... DPO No(s)

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ...)
0	30.0	0			0-30.0m No CORE (TRICONE)						
30.0	33.0	1.50	NQ		30.0m - 48.7m.						
33.0	36.0	0.95			Clay (weathered amphibolite						
36.0	38.0	0.75			or calc silicate). A patch of						
38.0	41.0	0.25			gossan occurs between 38.0m						
41.0	44.0	0.21			and 41.0m.						
44.0	47.0	0.63			48.7m - 55.0m.						
47.0	50.0	1.77			Less weathered pyritic						
50.0	53.0	1.67			amphibolite ~ 2% py average.						
53.0	56.0	1.52									
56.0	59.0	2.41			55.0m - 56.5m						
59.0	62.0	0.86			Quartzite. Probably altered amphibolite.						
62.0	66.0	1.40			56.5m - 59.0m						
65.0	66.0	1.10			Weathered silty rock and amphibolite.						
66.0	71.0	1.70									
71.0	74.0	0.33			59.0m - 65.0m						
74.0	77.0	2.01			Amphibolite or calc silicate						
77.0	80.0	0.70			with approx 20% patchily						
80.0	82.8	0.42			disseminated pyrite.						
82.8	85.0	0.49									
85.0	86.20	0.39			65.0m - 83.0m						
86.20	87.7	0.56			Interalated pyritic amphibolite						
87.7	88.5	0.37			and chloritic schist.						
88.5	90.0	0.52									
90.0	91.0	0.30			83.0m - 87.0m						
91.0	94.0	0.13			Black chlorite schist with						
94.0	100.0	0.40			minor chloritic, quartz veined						
100.0	102.5	0.18			cherty siltstone patches.						
102.5	106.0	0.05									
106.0	109.0	0.44									
109.0	112.0	0.50									

517054

SHEET No. 2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DD83AR1

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....)
112.0	115.0	0.05	NQ		87.0m – 138.0m						
115.0	118.0	0.45		PROBABLE PERMIAN?	Black chlorite schist with						
118.0	118.9	0.35			minor patches of dark grey						
118.9	121.0	0.19			mudstone.						
121.0	122.5	0.41									
122.5	123.4	0.58			Hole terminated at 138.0m						
23.4	125.5	0.58									
25.5	127.0	0.75									
27.0	127.9	0.53									
27.9	129.4	0.84									
29.4	130.6	0.81									
30.5	132.7	1.08									
32.7	133.4	0.20									
133.4	135.0	0.86									
135.0	136.0	0.30									
136.0	138.0	1.82	NQ								
EOH.											

APPENDIX VI

DD83 AR2 LOG

DD83AR2

BOREHOLE SURVEY LOG

517056

DRILL HOLE N°: DD83AR2 LOCALITY: ARTHUR RIVER NW. TASMANIA DATE COMMENCED: 20·5·83 DATE COMPLETED: 30·5·83

Survey Depth	Interval	Magnetic Azimuth	Chord Length	Dip	Grid Azimuth	Northing	Easting	Reduced Level	Camera	Core Size	Comments
COLLAR	———	———	———	———	———				Eastman		
SETUP 0m	0 - 67·0m	319·5°	67m	46°	330° AMG				single shot		
134·0m	67·0m - 176·0m	319°	109·0m	47°	330·5°						
218·0m	176·0m - 231·25m	318°	55·25m	43°	329·5°						
244·5m	231·5m - 244·5m	320°	13·00m	42°	331·5°						

517057

DD83AR2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/3

TENEMENT NAME ARTHUR RIVER EL No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ..... AZIMUTH 330° AMG DRILLERS K. PARRY COMMENCED 20:5:83 DEPTH 244.5 HOLE No. DD83AR2

RL COLLAR ..... INCLINATION 46° DRILL TYPE BOYLES 37 COMPLETED 30:5:83 CASING LEFT NIL DPO No(s) 30357

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization		Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ZCBH) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	L.O.I.
0	21·0	0	TRICONE																
21·0	25·0	0·170	NQ																
25·0	28·0	0·70			21·0m – 104·0m														
28·0	31·0	0·50			Strongly weathered schist														
31·0	34·0	0·45			sandstone, siltstone and clay														
34·0	35·0	1·00			sandstone is pale green in														
35·0	38·0	0·00			places.														
38·0	44·0	0·00																	
44·0	47·0	1·52																	
47·0	53·0	1·47																	
53·0	56·0	0·33																	
56·0	62·0	0·45																	
62·0	65·0	0·49																	
65·0	68·0	0·65																	
68·0	71·0	0·70																	
71·0	74·0	1·960																	
74·0	77·0	0·85																	
77·0	80·0	0·97																	
80·0	83·0	0·78																	
83·0	86·0	0·86																	
86·0	89·0	0·82																	
89·0	92·0	1·505																	
92·0	93·5	0·99																	
93·5	95·0	0·93			104·0m – 233·7m.														
95·0	98·0	0·61			Magnesite.														
98·0	101·0	0·66			White and buff varieties occur	White or Buff	% Cryptocryst. Magnesite												
101·0	104·0	0·79			as indicated in sample log.														
104·0	107·0	2·22	NQ		Texture is spotted throughout	W	70%	1056251	104·0	107·0		41·17	4·38	9·98	0·107	0·833	0·100	<·010	43·86
107·0	110·0	1·97	BQ		with minor cloudy textures.	W&B	90%	1056252	107·0	112·0		40·43	5·05	9·80	<·050	0·731	0·080	<·010	43·66
110·0	113·0	2·99			Up to 50% of sparry	W	90%	1056253	112·0	117·0		43·12	2·30	9·53	<·050	0·747	0·079	<·010	44·15
113·0	116·0	2·02			material is white talc	W	60%	1056254	117·0	122·0		42·89	2·19	9·90	<·050	0·867	0·097	0·031	44·02

517058

SHEET No. 2/3

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD83AR2.....

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization			Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ZC.B.H.) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	L.O.I
16·0	119·0	1·57	BQ		between 104·0m and 127·0m	White or Buff	% Cryptocryst. Magnesite													
19·0	122·0	2·90			and at 136·0m. Talc content															
22·0	125·0	0·31			decreases from 136·0m to 180m	W	85%		1056255	122·0	127·0		44·11	1·242	8·15	<·050	0·324	0·050	<·010	45·83
125·0	128·0	2·87			below which it occurs on	W	80%		1056256	127·0	129·5		41·40	1·080	11·08	<·050	0·308	0·049	<·010	45·93
128·0	131·0	3·11			joint faces only.	B	60%		1056257	129·5	131·6		41·90	1·174	10·12	<·050	0·378	0·048	<·010	46·35
131·0	134·0	3·10				W	70%		1056258	131·6	136·0		42·74	0·819	8·98	<·050	0·339	0·058	<·010	47·12
134·0	136·5	2·26			Minor irregularly shaped	W	80%		1056259	136·0	141·0		42·73	0·992	8·48	<·050	0·431	0·077	<·010	47·26
36·5	139·4	3·02			talc-dolomite patches occur	W	80%		1056260	141·0	145·6		43·12	1·681	9·86	<·050	0·786	0·122	<·010	44·34
139·4	143·0	3·01			from; 145·6m – 154·0m,	W	40%		1056261	145·6	149·0		37·80	6·13	13·90	1·161	1·299	0·113	0·308	38·89
43·0	146·0	2·87			158·2m – 159·0m (w/ trace cpy)	W	40%	Weathered	1056262	149·0	154·0		37·44	6·74	11·10	0·151	0·663	0·075	0·114	43·97
146·0	149·0	2·82			189·0m – 191·8m (w/ trace cpy)	W	40%		1056263	154·0	158·2		40·07	3·91	9·02	<·050	0·715	0·066	0·014	46·21
149·0	152·0	3·03				W	30%		1056264	158·2	159·0		37·74	3·69	11·89	1·238	1·322	0·050	1·333	42·29
152·0	155·0	3·01			A zone of whispy magnesite	W	20%		1056265	159·0	164·0		40·26	3·03	10·07	<·050	1·190	0·128	0·034	45·26
155·0	158·0	3·00			breccia with a sandy dolomite	W≥B	60%		1056266	164·0	167·4		37·78	7·48	9·52	<·050	0·929	0·081	0·042	44·13
158·0	161·0	3·01			matrix containing approx.	B	40%		1056267	167·4	170·0		37·56	7·99	7·33	<·050	1·019	0·100	<·010	45·87
161·0	164·0	3·05			2% pyrite occurs from 232·4m		170·0m – 174·4m CAVITY.													
164·0	167·0	3·03			– 233·0m.	W≥B	50%		1056268	174·4	179·0		40·77	3·19	9·78	<·050	0·900	0·036	<·010	45·97
167·0	170·0	3·06				W	80%		1056269	179·0	184·0		43·07	1·00	7·65	<·050	0·651	0·070	<·010	47·57
170·0	173·0	0				W	90%		1056270	184·0	188·2		43·55	0·897	6·80	<·050	0·505	0·052	<·010	48·27
173·0	176·0	1·630				B	60%		1056271	188·2	189·0		41·91	2·08	7·84	<·050	0·853	0·104	<·010	47·19
176·0	179·0	3·02				W	40%	Weathered	1056272	189·0	191·8		28·00	18·87	6·31	0·535	0·897	0·075	<·010	44·90
179·0	182·0	1·87				B≥W	60%		1056273	191·8	196·0		43·62	1·028	6·74	<·050	0·878	0·073	<·010	47·78
182·0	185·0	2·85				B≥W	80%		1056274	196·0	200·0		44·05	0·766	6·99	<·050	0·392	0·031	<·010	47·90
185·0	188·0	2·92				B	80%		1056275	200·0	203·0		42·54	2·55	6·53	<·050	0·793	0·093	<·010	47·65
188·0	191·0	2·14				W	80%		1056276	203·0	205·0		44·26	0·861	7·03	<·050	0·301	<·030	<·010	47·49
191·0	194·0	3·02				B≥W	80%		1056277	205·0	210·0		41·51	3·55	7·33	<·050	0·607	0·037	<·010	47·01
194·0	197·0	3·00				B	80%		1056278	210·0	215·0		40·79	4·28	7·97	<·050	0·964	0·047	<·010	46·01
197·0	200·0	2·98				A	90%		1056279	215·0	220·0		43·38	1·01	7·70	<·050	0·932	0·036	<·010	46·35
200·0	203·0	2·90				B	80%		1056280	220·0	225·0		43·54	2·57	5·46	<·050	1·166	0·060	0·023	47·21
203·0	206·0	2·98				B	95%		1056281	225·0	230·0		41·31	4·31	7·44	<·050	1·492	0·081	0·047	45·29
206·0	209·0	1·31	BQ			B	70%		1056282	230·0	232·4		42·33	4·38	5·18	<·050	0·828	0·059	<·010	47·19

517059

SHEET No. 3/3

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD83AR2...

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization		Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Z.C.B.H.) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3	MnO	SO_3	L.O.I.
						White or Buff	% Cryptocryst. Magnesite												
209·0	212·0	2·32	BQ																
212·0	215·0	3·05																	
215·0	218·0	2·72				B	30%	1056283	232·4	233·0		24·28	18·93	18·08	0·057	3·43	0·115	3·34	31·45
218·0	221·0	3·16				B	50%	1056284	233·0	233·7		27·08	20·39	8·48	<·050	1·683	0·108	0·044	42·17
221·0	224·0	2·46																	
224·0	227·0	2·86																	
227·0	230·0	3·19																	
230·0	233·0	3·01			233·7m – 244·5m.														
233·0	236·0	3·00			Amphibolite. (Probably a														
236·0	236·5	0·50			metamorphosed dolerite or diorite														
236·5	237·0	0·50			dyke).														
237·0	237·5	0·50			- Approx 1-2% pyrite throughout.														
237·5	239·0	1·50			- Contains disseminated magnetite														
239·0	241·2	2·20			- Weak foliation is evident in														
241·2	242·0	0·80			places.														
242·0	242·8	0·84			- Minor carbonate veining														
242·8	243·4	0·60			throughout.														
243·4	244·5	1·05	BQ		- Upper contact is marked by														
EOH.					a talc rich zone.														
					- The rock is strongly chloritic														
					however relic mafic and														
					plagioclase grain shapes can														
					be seen in coarser parts of the														
					core where an igneous sub-														
					ophitic texture is evident.														
					- The size of relic grains														
					increases down hole from <1mm														
					at 233·7m to 2-3mm at														
					244·5m, suggesting a chilled														
					margin effect.														
					E.O.H.														

APPENDIX VII

DD71 KR1 LOG

DD71 KR2 LOG

517061

DD71KR1

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/3

TENEMENT NAME ARTHUR RIVER EL No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES AZIMUTH 143°m DRILLERS COMMENCED DEPTH 241.2m HOLE No. DD71KR1

RL COLLAR INCLINATION 60° DRILL TYPE COMPLETED CASING LEFT DPO No(s)

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....)
					0-8.3m No CORE						
					8.3m - 50.0m (-165'). Red-brown clay with relic amphibolite texture. A moderate to strong foliation is evident in places.						
					50.0m - 55.5m (165'- 183') Grey siltstone. Partly oxidized only.						
					55.5m - 59.5m (183'- 196'). Fine amphibolite.	The interval 55.5m - 98.6m probably represents a dyke with chilled margins.					
					59.5m - 91.0m (196' - 300'). Coarse amphibolite. Relic ophitic textures are present in places. Weakly magnetic. Minor specular hematite patches.						
					91.0m - 98.6m. (300'- 325') Fine amphibolite.	91.0m - 157.3m Sulphide zone of T.M. Porter (1971).					
					98.6m - 109.2m (325'- 360') Grey pyritic siltstone. Core in poor condition.						
					109.2m - 120.3m (360'- 396'6"). Pyritic hematitic siltstone. Core in very poor condition.						

517062

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

SHEET No. 2/3

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DD71KR1...

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....)
					120·3m - 147·4m (396'6" - 486'). Laminated pyritic calc siltstone. Variable dolomite and pyrite.						
					147·4m - 157·3m (486' - 518'6"). Banded pyritic calc siltstone with chlorite schist bands up to 1cm thick.						
					157·3m - 160·9m (518'6" - 530'6"). Chloritic amphibolite.						
					160·9m - 161·1m (530'6" - 531'). Weakly pyritic breccia. Chlorite - kaolinite matrix. Angular clasts up to 2cm across. Varied clast types.						
					161·1m - 197·7m (531' - 651'8") Pale green - light grey siltstone. Strongly foliated. Intense ptygmatic carbonate veining. Sandstone lenses increase in abundance down hole.						
					197·7m - 241·1m. (651'8" - 795'). Pale green - grey sandstone with strong carbonate veining.						

517063

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

SHEET No. 3/3

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. PD21.KRI

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....)
					241.1m - 241.2m (795' - 795'2"). Chlorite chert rock. Probably altered amphibolite.						

DD71KR2

517064

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/3

TENEMENT NAME ARTHUR RIVER EL No. 43/79

PLAN – MAP REFERENCE

CO-ORDINATES ..... AZIMUTH 300° m ..... DRILLERS ..... COMMENCED ..... DEPTH 165.3m ..... HOLE No. DD71KR2

RL COLLAR ..... INCLINATION 60° ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....)
					0 - 6.1m No CORE.						
					6.1m - 24.6m (20' - 81'). Buff-yellow sandstone with common Liesegang bands.						
					24.6m - 41.6m (81' - 137'). Yellow-white clay with relic amphibolite texture in places. A gossan patch occurs between 28.4m and 28.7m.						
					41.6m - 52.4m (137' - 172'9"). Oxidized silicified amphibolite.						
					52.4m - 59.0m (172'9" - 194'6"). Weathered pale green siltstone.						
					59.0m - 61.9m (194'6" - 204'). Chloritic amphibolite.						
					61.9m - 79.5m (204' - 262'). Banded pyrite magnetite rich siltstone. Massive magnetite zones up to 30cm thick. Minor amphibolite zones increasing down hole.	61.9m - 83.1m Sulphide zone of T.M. Porter (1971).					

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

517065 SHEET No. 2/2

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DDH.KR2

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....)
					79.5m – 83.1m (262'–274'). Amphibolite with minor siltstone lenses.						
					83.1m – 128.3m (274'–423'). Silicified amphibolite.						
					128.3m – 145.9m (423'–481'). Breccia with pale green clay matrix and mixed clast types. (Fault breccia?).						
					145.9m – 165.3m (481'–545'). Dark grey mudstone with minor angular clasts. Clasts are subrounded limestone up to 2cm across. Trace pyrite on joint faces. This interval is strongly foliated with black chloritic slickensides on cleavage folia.	} PERMIAN.					
					E.O.H.						

APPENDIX VIII

DDH's A,C,D,E,DRILL LOGS

51706?

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/2

DDH AR 'A' (OAMAG).

TENEMENT NAME ARTHUR RIVER EL No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ... AZIMUTH ... DRILLERS ... COMMENCED ... DEPTH 70.7m (233') HOLE No. DDHAR'A'

RL COLLAR ... INCLINATION VERTICAL ... DRILL TYPE ... COMPLETED NOV. 1975 ... CASING LEFT ... DPO No(s) —

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ...)
											HOLE NOT ASSAYED
0	3.03	OPEN HOLE									
				PERMIAN	3.03m - 20.2m (10' - 66'6"). Poorly sorted mudstone with angular coarse sand grains and minor rounded to subangular schist and mudstone clasts.						
				PERMIAN	20.2m - 50.43m (66'6" - 166'3"). Paraconglomerate. As above with more abundant pebble sized clasts. Clast size ranges up to 30cm across. Clasts are mainly quartzite and argillite with minor mafic and intermediate igneous rocks.						
				PERMIAN	50.4m - 59.0m (166'3" - 194'6"). Clast supported conglomerate - breccia. Very poorly sorted all clast sizes from 5cm - microscopic are present. Clasts are mainly quartzite and schist.	50.4m - 70.7m Core is intensely weathered.					
				L PRE-CAMBRIAN	59.0m - 64.9m (194'6" - 214'). Quartzite and dolomitic clay. Very poor recovery over this interval.						

517068

SHEET No. 2/2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DDHARA

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To(M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....)
				MAGNESITE ZONE	64·9m – 70·7m (214' – 233') Foliated pale green kaolinitic – limonitic rock Probably weathered calc silicate. Poor recovery. E.O.H.						

DDH AR 'C' (Oamag).

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

517069

SHEET No. 1/2

TENEMENT NAME ARTHUR RIVER EL No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ... AZIMUTH ... DRILLERS ... COMMENCED ... DEPTH 65.2 m ... HOLE No. DDH AR'C'

RL COLLAR ... INCLINATION VERTICAL ... DRILL TYPE ... COMPLETED NOV. 1975 ... CASING LEFT ... DPO No(s) ...

DEPTH From (M)	DEPTH To (M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by TAS DEPT. MINES) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3			LOI
					0 - 2.4m (0 - 8') OPEN HOLE													
					2.4m - 8.5m (8' - 28') Magnesite. Any previous textures obscured by spotted texture. Mostly sparry.			2.4	3.9		31.58	12.3	7.2	0.11	2.5			42.1
								3.9	5.5		44.50	3.9	5.1	<.10	2.1			44.3
								5.5	7.0		45.00	0.6	4.7	<.10	1.6			47.1
					8.5m - 14.3m (28' - 47') Grey dolomite with cloudy magnesite veins and vugs.			7.0	8.5		42.70	4.2	2.6	<.10	2.3			48.1
								8.5	10.0		31.50	17.1	3.5	<.10	1.7			46.1
					14.3m - 43.5m (47' - 143'6"). Magnesite (mostly buff). Any previous textures obscured by spotting. Mostly cryptocrystalline.			10.0	11.5		28.50	22.8	1.6	<.10	0.5			46.5
								11.5	13.0		28.50	22.4	2.6	<.10	0.6			45.9
								13.0	14.6		27.7	20.7	6.0	<.10	1.1			44.4
					43.5m - 47.3m (143'6" - 156'). Calc silicate (previously referred to as pyroxenite).			14.6	16.1		45.00	1.0	2.7	<.10	1.7			49.5
								16.1	17.6		44.70	2.7	0.3		1.3			51.0
					47.3m - 53.1m (156' - 175') Deeply weathered clay rich magnesite. Relic spotted textures.			17.6	19.1		42.70	3.4	2.8		1.6			49.8
						Possible fault zone.		19.1	20.6		45.40	1.7	0.6		1.1			51.2
					53.1m - 55.2m (175' - 182'). Magnesite. Any previous textures obscured by spotted texture. Mostly cryptocrystalline.			20.6	22.1		42.90	3.5	2.5		1.4			49.7
								22.1	23.7		39.60	7.8	2.0		2.2			48.4

517070 SHEET No. 2/2

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME ..... No. .....
PLAN – MAP REFERENCE .....
CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DDH AR'C
RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3			LOI
					55·2m – 60·1m (182' – 198'3"). Talc-chlorite schist.			23·7	25·2		43·50	3·8	0·9		2·5			49·3
								25·2	26·7		37·40	5·8	12·0		1·9			43·9
								26·7	28·2		41·60	1·1	9·3		1·4			46·6
					60·1m – 62·6m (198'3" – 206'6"). Strongly weathered banded dolomite rock.			28·2	29·7			4·4	4·9		1·7			48·2
								29·7	31·2		45·30	1·7	2·8		1·1			49·1
								31·2	32·8		46·60	1·3	1·9		1·6			48·6
					62·6m – 64·3m (206'6" – 212'). Coarsely granoblastic dolomite with trace pyrite and chalcopyrite. Fresh.			32·8	34·3		44·60	2·1	1·9		1·5			49·7
								34·3	35·8		45·10	2·2	3·0		1·0			48·7
					64·3m – 65·2m (212' – 215'). Talc schist			35·8	37·3		44·00	2·9	1·8		1·7			49·6
								37·3	38·8		43·20	3·4	1·8		1·7			49·9
					E.O.H.			38·8	40·3		45·20	1·2	0·8		1·5			50·7
								40·3	41·9		44·00	3·5	1·0		1·7			49·8
								41·9	43·4		44·20	4·2	2·2		1·8			47·6
								43·4	48·5		41·20	6·9	1·1		1·2			49·6
								48·5	50·0		41·30	6·6	0·7		1·1			50·3
								50·0	51·6		42·2	5·2	1·1		1·4			50·1
								51·6	53·1		44·30	3·3	0·8		1·0			50·6
								53·1	55·2		45·40	3·3	0·9		1·0			49·4

517071

DDH AR'D' (Oamag).

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET No. 1/2

TENEMENT NAME ARTHUR RIVER E.L. No 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ... AZIMUTH ... DRILLERS ... COMMENCED ... DEPTH 69·6m ... HOLE No. DDH AR'D'

RL COLLAR ... INCLINATION VERTICAL ... DRILL TYPE ... COMPLETED NOV. 1975 ... CASING LEFT ... DPO No(s) ...

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by TAS. DEPT OF MINES) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3			L.O.I.
					0 – 12m OPEN HOLE			12·0	13·7		47·74	1·8	0·62		0·84			49·0
								13·7	15·2		46·30	0·9	1·3		1·1			54·1
					12·0m – 32·2m (39'6" – 106')			15·2	16·7		49·62	4·8	0·98		1·1			43·5
					Buff magnesite. Mostly			16·7	18·2		45·03	4·8	0·37		1·5			
					cryptocrystalline. Previous													
					textures obscured by spotted			22·8	24·3		44·19	6·2	0·42		0·95			
					texture.			24·3	25·8		45·19	5·1	0·35		0·96			
								25·8	27·3		43·28	6·2	1·5		0·92			48·1
					32·2m – 44·5m (106' – 146'6")			27·3	28·8		48·04	1·8	0·3		0·96			49·9
					Angular magnesite breccia.			28·8	30·6		42·20	6·6	3·9		1·9			45·9
					Strongly spotted such that			30·6	31·9		48·30	2·1	2·3		1·5			49·9
					most material present is sandy			31·9	33·4		36·30	9·2			2·4			43·9
					dolomite and sparry magnesite.			33·4	34·9		33·20	18·8	3·		1·3			44·2
								34·9	36·4		27·30	16·5	16·6		1·2			37·
					44·5m – 59·2m (146'6" – 195')			36·4	37·6		32·50	12·9	9·9		2·5			42·6
					Mixed magnesite and sandy	Strongly limonitic from 43·4m		37·6	39·4		33·50	9·7	12·0		2·6			42·2
					dolomite. Interval is largely	– 46·0m		39·4	41·0		35·30	8·1	12·4		1·8			42·4
					obscured by sparry magnesite			41·0	42·5		38·50	9·7	3·7		2·5			46·6
					– dolomite (cloudy) but relic	Pyritic from 51·7m – 51·9m		42·5	44·0		36·50	14·3	2·1		2·5			
					cuneiform textures can be			44·0	45·5		40·44	9·0	0·86		2·7			47·0
					identified in places.			45·5	47·0		36·50	15·7	1·6		2·1			44·1
								47·0	48·5		34·20	16·5	5·7		1·1			
					59·2m – 61·0m (195' – 201').			48·5	50·0		41·20	6·9	7·8		2·5			
					Carbonate – talc schist ock.			50·0	51·6		38·7	10·1	5·2		4·0			
					Banded. Banding is highly			51·6	53·1		36·60	11·8	3·9		2·6			44·1
					contorted but is at a low			53·1	54·6		38·50	13·1	2·4		2·0			
					angle to core axis.			54·6	56·1		40·80		5·2		2·0			
								56·1	57·6		40·70		3·3		2·1			47·6
								57·6	59·2		34·00	16·2	13·1		1·0			33·7

517072

SHEET No. 2/2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME ..... No. .....

PLAN – MAP REFERENCE .....

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH ..... HOLE No. DDH AR'D'

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by .....)
					61.0m – 69.6m (201' – 229'6"). Quartzite – magnesite rock with massive sandy texture. Minor magnesite veins.						
					E.O.H.						

DDH AR'E'(OAMAG).

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

517073

SHEET No. 1/2

TENEMENT NAME ARTHUR RIVER E.L. No. 43/70

PLAN – MAP REFERENCE

CO-ORDINATES ..... AZIMUTH ..... DRILLERS ..... COMMENCED ..... DEPTH 89.9m ..... HOLE No. DDH AR'E'

RL COLLAR ..... INCLINATION ..... DRILL TYPE ..... COMPLETED DEC 1975 ..... CASING LEFT ..... DPO No(s) .....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by TAS DEPT OF MINES) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3				LOI
					0-6.7m Open hole			6.7	10.2		19.27	0.03	71.1		4.5				5.1
								10.2	13.2		18.90	0.10	64.2		10.4				6.4
				PERMIAN	6.7m - 18.8m (22' - 62')			13.2	19.3		29.40	16.9	5.6		2.4				45.7
				PERMIAN	Buff-grey siltstone and fine conglomerate-breccia.	Very poor recovery to 28.4m		19.3	22.3		37.40	5.3	39.2		4.4				13.7
				PERMIAN				22.3	25.3		25.00	1.1	53.6		10.0				10.3
								25.3	28.4		20.90	27.6	2.8		3.9				44.8
					18.8m - 66.1m (62' - 218')			28.4	29.0		34.17	14.3	0.83		3.5				47.2
					Sparry to cryptocrystalline magnesite with minor sandy dolomite. Primary			29.0	30.5		37.60	9.5	1.1		3.1				48.7
					textures are substantially			30.5	32.0		30.20	16.0	4.3		3.4				46.1
					obscured by spotted clodded			32.0	34.9		30.10	16.1	5.0		2.1				46.7
					and trellis textures. Relic			34.9	37.9		25.10	23.1	2.8		3.4				45.6
					cuneiform textures are			37.9	39.4		28.90	18.6	2.0		3.5				47.0
					visible in places. Two massive			39.4	41.0		27.00	18.6	7.7		2.7				44.0
					dolomite zones occur from			41.0	42.5		19.90	28.7	3.3		3.2				44.9
					38.7m - 39.1m and			42.5	44.0		23.20	15.7	24.5		1.7				34.9
					40.3m - 43.9m.			44.0	45.5		33.30	11.8	9.0		1.4				44.5
								45.5	46.7		26.70	12.3	2.3		1.4				47.3
					66.1m - 67.9m (218' - 224').			47.0	48.5		41.40	5.6	2.5		1.4				49.1
					Calc silicate. A talc schist			48.5	50.0		42.00	5.3	1.9		1.9				48.9
					zone occurs between 67.3m			50.0	51.6		37.40	11.5	1.3		2.4				47.4
					and 67.6m.			51.6	53.1		33.60	11.5	10.3		1.7				42.9
								53.1	54.6		26.30	15.7	20.0		1.3				36.7
					67.9m - 76.4m (224' - 251'9").			54.6	56.1		28.63	16.2	15.1		0.97				39.1
					Cuneiform magnesite. Strongly			56.1	57.6		32.80	15.4	8.5		1.4				41.9
					spotted. Minor whispy			57.6	59.1		31.23	16.0	13.9		0.77				38.0
					magnesite breccia zones and			59.1	60.7		29.84	14.0	18.7		0.46				37.0
					zones transitional ~~to~~ between			60.7	62.2		30.30	12.3	17.0		0.60				39.8
					Cuneiform magnesite and			62.2	63.7		30.60	15.7	9.6		1.3				42.8
					whispy magnesite breccia			63.7	65.2		34.00	11.2	7.9		2.1				44.8
					occur.			65.2	65.8		32.60	13.7	7.3		1.9				44.5

517074

SHEET No. 2/2

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

TENEMENT NAME..... No. .....

PLAN – MAP REFERENCE.....

CO-ORDINATES..... AZIMUTH..... DRILLERS..... COMMENCED..... DEPTH..... HOLE No. DDH AR'E

RL COLLAR..... INCLINATION..... DRILL TYPE..... COMPLETED..... CASING LEFT..... DPO No(s).....

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by.....) MgO	CaO	SiO_2	Al_2O_3	Fe_2O_3				LOI
					76.4m – 76.5m (251'9"–252'). Whispy magnesite breccia.			65.8	68.2		38.00	8.6	3.3		4.0				46.1
								68.2	69.8		34.40	5.9	16.1		1.5				42.1
								69.8	71.3		41.46	2.0	11.7		0.79				44.1
					76.5m – 78.0m (252'–257'). Magnesite. Any previous textures obscured by spotted texture.			71.3	72.8		43.66	0.84	7.8		0.60				47.1
								72.8	74.3		42.64	0.52	10.6		0.64				45.6
								74.3	75.8		40.77	2.5	8.0		0.83				47.9
								75.8	77.3		36.88	7.7	6.5		0.92				48.0
								77.3	78.9		26.40	19.0	8.1		1.5				45.0
					78.0m – 78.3m (257'–258') Whispy magnesite breccia with some equant dolomite clasts.	Whispy banding is at approx 45° to core axis.													
					78.3m – 89.9m (258'–296'6"). Calc silicate. Dolomite veining becomes more abundant down hole.														
					E.O.H.														

APPENDIX IX

PETROLOGICAL REPORTS

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

amdel

3/1/6/0 - AC 4660/83

23 March 1983

NATA CERTIFICATE

Mr. T. W. Dickson,
CRA Exploration Pty. Ltd.,
P.O. Box 138,
ROSNY PARK, Tasmania 7018

REPORT AC 4660/83

YOUR REFERENCE:	DPO No. 30224
IDENTIFICATION:	As listed
DATE RECEIVED:	7 March 1983

D. K. Rowley
Manager
Analytical Chemistry Division

D. K. Bowditch
for Norton Jackson
Managing Director

cc The Administration Officer,
CRA Exploration Pty. Ltd.,
P.O. Box 138,
ROSNY PARK, Tasmania. 7018

(Invoice)

cjw

Head Office:
Flemington Street, Frewville
South Australia 5063,
Telephone (08) 79 1662
Telex: Amdel AA82520
Pilot Plant:
Osman Place
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43 5733
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Melbourne, Vic.
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Perth, W.A.
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Townsville
Queensland 4814
Telephone (077) 75 1377

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES 517077

FORM 38

REPORT AC 4660/83

ANALYSIS %

Sample N°	754	755	756	934- 757	758	759	760	761
SiO_2	6.00	12.9	0.19	9.25	17.1	3.85	2.94	1.80
* Al_2O_3	0.38	0.35	0.24	0.44	0.19	0.36	0.36	0.37
Fe_2O_3	0.11	0.21	0.20	0.66	0.17	0.20	0.57	0.84
MgO	44.9	40.9	21.4	41.6	17.8	44.4	36.8	44.6
CaO	0.19	0.89	30.2	1.21	25.4	1.28	10.4	2.60
SO_3	<0.01	<0.01	0.02	0.10	<0.01	<0.01	0.02	<0.01
LOI	47.9	45.0	47.1	46.8	38.7	49.4	48.4	49.6
TOTAL	99.5	100.2	99.4	100.1	99.4	99.5	99.5	99.8

	762	763	934- 764	765	766	767	768	769
SiO_2	0.74	13.3	0.74	0.49	5.00	0.17	8.40	2.13
* Al_2O_3	0.37	1.20	0.37	0.37	0.31	0.38	0.36	0.35
Fe_2O_3	0.59	0.43	0.31	4.55	0.54	0.46	1.21	0.48
MgO	46.0	25.2	45.5	43.1	37.8	46.5	41.9	45.2
CaO	0.40	17.7	1.28	0.34	7.80	0.77	0.12	1.32
SO_3	<0.01	0.45	<0.01	0.12	0.01	<0.01	<0.01	<0.01
LOI	51.6	41.1	51.4	50.4	47.8	51.6	47.4	50.0
TOTAL	99.7	99.4	99.6	99.4	99.3	99.9	99.4	99.5

METHOD: H1/1

* Analytical Error

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

FORM 38

REPORT AC 4660/83

ANALYSIS %

Sample N°	770	771	772	934-773	774	775	776	777
SiO_2	0.78	0.54	1.22	1.04	1.17	1.80	1.82	0.92
* Al_2O_3	0.35	0.38	0.38	0.38	0.88	0.51	0.37	0.38
Fe_2O_3	1.22	0.75	0.94	2.03	1.20	1.12	2.14	1.15
MgO	43.3	45.6	45.8	44.0	44.6	44.0	44.7	45.6
CaO	2.88	0.41	0.28	1.47	1.30	1.75	0.14	0.14
SO_3	<0.01	<0.01	<0.01	<0.01	0.16	0.08	0.08	0.02
LOI	50.9	51.6	51.1	50.6	50.5	50.1	50.2	51.1
TOTAL	99.4	99.3	99.7	99.5	99.8	99.4	99.5	99.3

	934-778
SiO_2	0.02
* Al_2O_3	0.37
Fe_2O_3	0.83
MgO	46.4
CaO	0.19
SO_3	<0.01
LOI	51.8
TOTAL	99.6

METHOD: H1/1

* Analytical Error

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

517079

amdel

3/1/6/0 - AC 4660/83

15 April 1983

NATA CERTIFICATE

REPORT ADDENDUM

The Manager,
CRA Exploration Pty. Ltd.,
P.O. Box 138,
ROSNY PARK, Tasmania. 7018

Attention: Mr. T. W. Dickson

REPORT AC 4660/83

YOUR REFERENCE:	*DPO 30224 - Additional verbal request*
IDENTIFICATION:	*As listed*
DATE RECEIVED:	*30 March 1983*
NOTE:	*We regret the high aluminium values originally reported due to incomplete correction for the interference of magnesium on aluminium. The values have been recalculated with a considerable number of samples being checked by atomic absorption spectrophotometry to confirm the amended results.*

D. K. Rowley
Manager
Analytical Chemistry Division

D.K. Bowditch

for Norton Jackson
Managing Director

cjw

Head Office:
Flemington Street, Frewville
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Thebarton, S.A.
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Townsville
Queensland 4814
Telephone (077) 75 1377

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

517080

FORM 38

REPORT AC 4660/83

ANALYSIS %

Sample N°		Al_2O_3						
934754		0.02						
755		0.03						
756		0.06						
757		0.10						
758		0.05						
759		<0.02						
760		0.07						
761		<0.02						
762		<0.02						
763		1.08						
764		<0.02						
765		0.03						
766		<0.02						
767		<0.02						
768		0.02						
769		<0.02						
770		<0.02						
771		0.02						
772		<0.02						
773		0.04						
774		0.55						
775		0.16						
776		<0.02						
777		0.02						
934778		<0.02						

METHOD: AMENDED H1/1

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

FORM 38

REPORT AC 4660/83

517081

ANALYSIS ppm

Sample N°	B							
934754	17							
56	37							
61	16							
63	890							
64	18							
67	23							
71	18							
77	89							
934778	206							

METHOD:

ICP 01

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

517082

amdel

23 March, 1983

GS3/1/6/0

CRA Exploration Pty. Ltd.,
PO Box 138,
ROSNY PARK, Tas 7018

Attention: Mr T.W. Dickson

REPORT GS 4660/83

YOUR REFERENCE:	D.P.O. 30224 dated 4/3/83
MATERIAL:	25 magnesite samples
IDENTIFICATION:	934754-778
DATE RECEIVED:	7/3/83
WORK REQUIRED:	Chemical analysis and XRD examination

Investigation and Report by: Dr Roger Brown

Chief - Geological Services Section: Dr Keith J. Henley
Manager, Mineral and Materials Sciences Division: Dr William G. Spencer

Keith Henley

for Norton Jackson
Managing Director

c.c. CRA Exploration Pty. Ltd.,
GPO Box 384D,
MELBOURNE, Vic 3001

Administration Officer,
CRA Exploration Pty. Ltd.,
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(Invoice + Report)

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Queensland 4814
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EXAMINATION OF 25 MAGNESITES

1. INTRODUCTION

A batch of 25 mineral samples was submitted by Mr T.W. Dickson of CRA Exploration Pty. Ltd., to be examined by chemical and XRD methods. The samples were all carbonate-rich (mostly magnesites).

Chemical analyses for MgO, CaO, SiO_2, Fe_2O_3, SO_3, Al_2O_3 and LOI were requested, and these are being reported separately as AC 4660/83.

The work reported here covers the XRD examination of all samples for mineral phase determination. Also requested was a percentage mineralogical analysis based on XRD. This, however, is not a practical proposition because of various experimental difficulties. The procedure adopted has been to use the analytical figures to calculate the percentage of the various mineral phases as determined by XRD. This point was discussed with Mr Dickson on the telephone (22/3/83).

2. PROCEDURE

X-ray powder diffractometer traces were prepared from all samples and interpreted in terms of the phases present on a semiquantitative basis.

A review of the mineralogies determined showed that in a large proportion of the samples the mineral percentages could be satisfactorily calculated from the analytical figures. In the other cases some simple assumptions had to be made, or the proportion of quartz had to be measured independently by XRD methods, to allow a proper calculation to be carried out. The quartz contents were measured experimentally in nine cases.

In nine cases some minor probable clay was detected in the XRD examination. A montmorillonitic or interstratified clay was suspected, but to try to determine the precise clay type, three chosen samples were sedimented in water to separate clay-rich (-2 μm) fractions which were laid down on ceramic plates for clay mineral determination by XRD. For reasons not understood, no clay was found in these "clay" fractions, and the question of the presence of clay remains open. Notes on some of the assumptions and some comments on the results are given in the next section.

3. RESULTS

The results are given in Table 1.

Various points to be mentioned in connection with the calculation of the table, and the results are as follows:-

(a) The presence of consistent low percentages of alumina is not satisfactorily explained and its mineral location is uncertain. The observation of possible clay in some samples, plus the lack of an alternative, has prompted the calculation of alumina into clay (about 50% SiO_2 and 20% alumina, corresponding roughly to a montmorillonite). However, convincing evidence for clay was not found (q.v.) and in some instances (e.g. 78) the analysed silica is insufficient to support the clay calculated from the alumina.

(a) cont.

The impression gained was that the alumina is largely located elsewhere. If this is so, the calculated clay will largely disappear, and the reported quartz will rise correspondingly in many cases.

(b) Lime was calculated into dolomite even if not seen by XRD.

(c) The mineral location of the iron is not known. Iron is reported to be accepted into the magnesite lattice with a continuous solid solution to siderite, but no corresponding diffraction peak shifts in the magnesite pattern were observed, so that no XRD evidence was forthcoming on this subject. The proportion of iron relative to magnesite is generally small and the peak shift would be very difficult to observe. The iron may presumably equally well be located in dolomite. In the absence of knowledge of where to place the iron mineralogically, and because the percentage is generally only minor, the Fe_2O_3 analysis has been inserted direct for purposes of summation. Its form may, of course, very likely be ferrous.

(c) Similarly, the very minor amounts of SO_3 were not located mineralogically. No gypsum was found. The SO_3 figure has been inserted direct.

TABLE 1: QUANTITATIVE MINERALOGY DETERMINED FROM XRD AND CHEMICAL ANALYSES 517085

Sample 9347-	54	55	56	57	58	59	60	61	62	63	64	65	66
Magnesite	91.4	84.1		85.1		91.0	61.3	89.4	95.6	26.2	93.3	89.7	67.3
Dolomite	0.6	2.9	99.3	4.0	82.5	4.2	34.2	8.5	1.3	58.2	4.2	1.1	25.0
Quartz	2.8	11.9		8.1	16.6	3.6	1.9	1.0	0.5	12.1	0.5		4.2
Clay+	2.0*	1.8*	0.8	2.3*	1.0*	1.2	1.9*	1.9*	1.9		1.0*	1.9	1.6
Talc	3.5												
Chlorite													
Tourmaline										3.5			
(Fe_2O_3)	0.1	0.2	0.2	0.7	0.2	0.2	0.6	0.8	0.6	0.4	0.3	4.6	0.5
(SO_3)				0.1						0.5		0.1	
Total	100.4	100.9	100.3	100.3	100.3	100.2	99.9	101.6	99.9	100.9	99.3	97.4	99.2

Sample 9347-	67	68	69	70	71	72	73	74	75	76	77	78
Magnesite	96.0	87.4	92.7	86.2	94.8	95.0	89.7	90.2	87.4	91.6	93.9	96.9
Dolomite	2.5	0.4*	4.3	9.5	1.3	0.9*	4.8	4.3	5.8	0.5*	0.5*	0.6*
Quartz	0.1	7.4	1.3	0.5	0.5	0.8	0.8	0.3	0.2			
Clay+	2.0*	1.9	1.8*	1.8*	2.0	2.0*	2.0*	1.5	1.3*	1.9	2.0*	1.9
Talc						0.6			2.0	2.5	2.0	
Chlorite								2.9	1.3			
Tourmaline												
(Fe_2O_3)	0.5	1.2	0.5	1.2	0.8	0.9	2.0	1.2	1.0	2.1	1.2	0.8
(SO_3)								0.2	0.1	0.1		
Total	101.1	98.3	100.6	99.2	99.4	100.2	99.3	100.6	99.1	98.7	99.6	100.2

+presence of clay uncertain - see text.

*not detected in the XRD examination

Central Mineralogical Services

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

Mr. T.W. Dickson
Senior Geologist
C.R.A. Exploration Pty. Ltd.
P.O. Box 138
ROSNY PARK / TAS. 7018

16th March, 1983

REPORT CMS 83/3/8

YOUR REFERENCE:	D.P.O. No. 30223
DATE RECEIVED:	7th March, 1983
SAMPLE NOS.:	934754 - 934778
SUBMITTED BY:	G.B. Weber
WORK REQUESTED:	Petrology/Mineralogy

Copy to:
The Chief Geologist
C.R.A. Exploration Pty. Ltd.
G.P.O. Box 384D
MELBOURNE / VIC. 3001

Copy & Invoice to:
Administration Officer
C.R.A. Exploration Pty. Ltd.
P.O. Box 138
ROSNY PARK / TAS. 7018

H.W. Fander, M. Sc.

REPORT CMS 83/3/8

Magnesite Samples 934754 - 934778

Twenty-five drill core samples from a magnesite occurrence were received for petrological examination, with special reference to different carbonate phases and other, non-carbonate minerals present.

Thin-sections were prepared, and offcuts were subjected to stain tests (A.R.S. + 5 % NaOH, at boiling point for 5 minutes) to attempt to distinguish dolomite and magnesite. Selected portions of samples were positively identified by the X-ray powder diffraction method.

Each sample is described in the attached table, in terms of the carbonates and their approximate abundances, quartz and other mineral occurrences, grainsizes and distribution; the carbonates were identified partly by XRD, partly by reaction to staining and by analogy with proven carbonates. Three photomicrographs were prepared, showing typical minerals and textures.

X-Ray Diffraction

A number of rocks were selected for X-ray powder diffraction (marked XRD in the tables); the actual samples were hand-picked under the stereobinocular microscope to ensure that the material selected was homogeneous. In two of the rocks, vein-material was picked to verify its identity.

X-ray diffractometry of bulk samples (i.e. goniometer method) is carried out on much larger quantities of material than are used in the powder method; hence, the results will also be different, and both methods have their uses.

X-ray identification of vein material from 934760 and 934766 shows that both consist of dolomite; on this basis and on results of stain tests, it has been assumed that all carbonate veins are dolomite.

X-ray identification of host rock material, in most cases the dense, ultrafine variety, shows that most of this is magnesite (934754, 934764, 934772), but some is a mixture (934766); of the coarser samples tested, one is dolomite (934756) and one is magnesite (934768).

Petrology, Mineralogy

There is very strong textural evidence to indicate that almost all the rocks were partly replaced by dolomite, quartz, talc and Mg-chlorite (leuchtenbergite); this metasomatic process probably occurred after lithification or in the latter stages of diagenesis, and must have resulted in the removal as well as the addition of material; the photomicrographs clearly illustrate the replacive process.

The dolomite veins are clearly recognisable and are well-defined; however, the presence of dolomite is virtually undetectable when finely intergrown with magnesite, as in 934766, and it is not known whether this type of dolomite is syngenetic, i.e. co-precipitated with magnesite, or whether it is evidence of a subtle diagenetic dolomitisation process; the quantitative XRD results will probably assist in evaluating the dolomite distribution in veins and host rock in each sample.

The minerals identified (apart from magnesite and dolomite) were quartz, talc, magnesian chlorite, colourless tourmaline (dravite-elbaite) and pyrite. Quartz is present in the great majority of samples, but the other minerals occur sporadically, as indicated in the tables; the mineral assemblage is typical of a low-temperature hydrothermal situation.

Photomicrographs

1. 934755 Magnification 30x

   Dense, ultrafine magnesite (dark colour due to opacity) cut by thin dolomite vein, and showing replacement by dolomite-quartz (clear) mass.

2. 934760 Magnification 30x

   Dolomite progressively replacing magnesite (dark), with euhedral quartz crystals containing zones of carbonate inclusions.

3. 934775 Magnification 30x

   Dense magnesite host, with irregular dolomite veins outlined by talc flakes (clear, curved).

H.W. Fander, M. Sc.

[redacted]

Sample No.	Carbonate Occurrence	Quartz	Other Minerals	Comments
934 754 (XRD) (T.S. 45441)	Well-crystallized magnesite (XRD), vaguely banded, 10-250 μ, average 100 μ.	Authigenic(?) grains, 5 μ to 500 μ, as semi-continuous bands, 3-5 % of rock.	Talc flakes (10x100 μ) throughout, 2-3 %.	Dolomite may be present, but not detected by XRD. Quartz is subhedral, contains carbonate inclusions.
934 755	Dense ultrafine (< 5 μ) carbonate (?magnesite); dolomite veins and dolomite-quartz veins.	Crystals, mosaics, as patches in, and bordering, veins. Also throughout rock. 10-15 %, 10 μ - 3 mm.	None.	Dolomite comprises 20-25 % of rock, dolomite-quartz veins appear to be replacive.
934 756 (XRD)	Finely crystalline dolomite (XRD) with coarser, cloudy crystals; grainsizes average 25 μ and 150 μ. Dolomite veins (clear).	Scattered crystals and mosaics, 50 μ to 1 mm. < 1 %.	None.	No magnesite detected by XRD. Quartz is authigenic or diagenetic.
934 757	Dense ultrafine (< 5 μ) carbonate (?magnesite); dolomite veins, 20 μ to 4 mm wide, containing quartz; dolomite = 25-30 % of rock.	As crystals and mosaics in, and flanking, dolomite veins; 20 μ to 1 mm. 10-15 % or rock.	Trace (< 1 %) pyrite crystals in rock, 20-100 μ.	Widespread replacement of original dense, porcellanous ?magnesite rock
934 758	Well-crystallized carbonate (?magnesite-dolomite intergrowths), mostly fine (< 50 μ), with coarser crystals (250 μ) and patches.	Abundant throughout, as small crystals 20μ to 70μ, and larger mosaics up to 1 mm. 30-35 %.	None.	May be all dolomite, by analogy with 934756 XRD results. Quartz comprises up to 65-70 % in places.
934 759	Dense ultrafine (< 5 μ) carbonate (?magnesite) extensively replaced by coarser, clear dolomite (about 25 %) veins and patches.	Associated with dolomite, 20μ to 2 mm grains and mosaics. About 15 %.	Traces of pyrite, as isolated crystals, 50-100 μ.	Clear evidence of widespread replacement of original rock, presume to be magnesite.
934 760 (XRD)	Dense, ultrafine (< 5 μ) ?magnesite replaced by patches, veins of coarse, clear dolomite (30 %) with associated quartz.	Euhedral replacive crystals, and mosaics, in dolomite veins.	None.	Coarse, clear carbonate in veins proved to be dolomite, based on stain tests and XRD.
934 761	Dense, ultrafine (< 5 μ) ?magnesite, with coarse, clear dolomite veins, 30μ to 2 mm wide, comprising 5-10 % of rock.	Euhedral replacive crystals, 50μ to 2 mm, in rock and veins; 1-2 %.	Traces of fine dendritic goethite.	Quartz occurs as single crystals with minute carbonate inclusions in zones, also as clusters up to 5 mm.
934 762	Dense, ultrafine (< 5 μ) ?magnesite or magnesite-dolomite; thin ptygmatic dolomite veins, 20-300 μ, 2-4 % of rock.	Granular to euhedral, dispersed and associated with veins; 20-500 μ, 10 %.	None.	?Magnesite shows breccia structure which resulted from tectonism prior to lithification.

[redacted]

Central Mineralogical Services

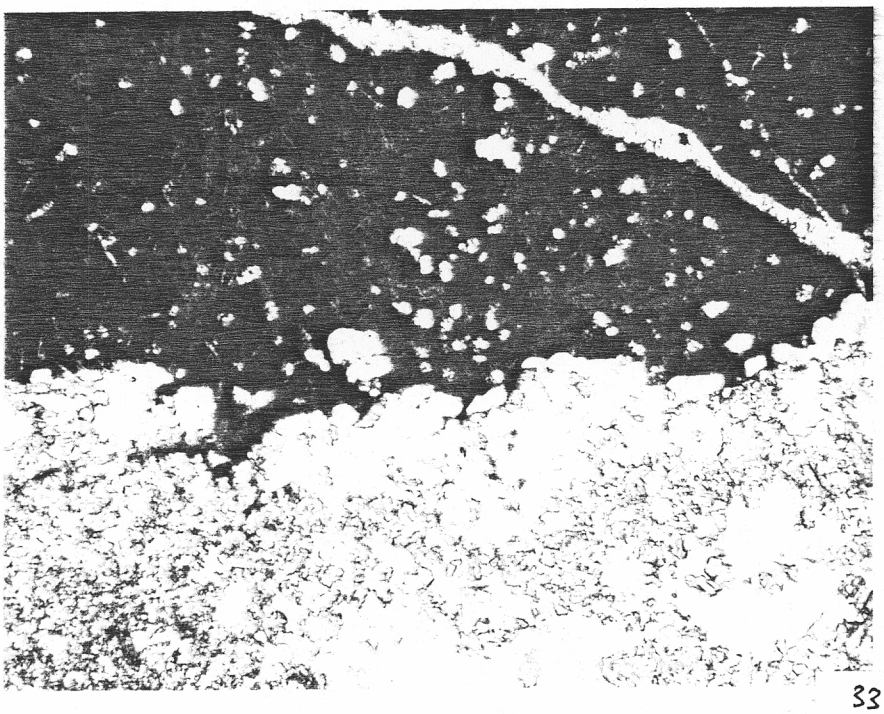
Sample No.	Carbonate Occurrence	Quartz	Other Minerals	Comments
934 763	Relict patches (20-25 %) of dense, ultrafine ?magnesite; mainly (40 %) microcrystalline, clear dolomite, with associated quartz.	Small grains (20-250μ, mostly 50-150μ) with dolomite; 25-30 % of rock.	Sporadic ultrafine tourmaline needles (3-5 %). Small pyrite crystals (1-2 %).	Pyrite and tourmaline sometimes form concentrations. Widespread dolomitisation of magnesite.
934 764 (XRD)	Dense, ultrafine (< 5 μ) magnesite (XRD), with small concentric features; occasional thin dolomite veinlets (30-600 μ) and larger patches (5 %).	Small crystals and mosaics, 10 μ to 1 mm, associated with dolomite; 1-2 %.	None.	XRD shows magnesite only (fine portions of rock); dolomite absent or below detection limit.
934 765	Coarsely-crystalline ?dolomite, with micro-crystalline patches representing dolomitised ?magnesite.	Scattered euhedral crystals, 30 μ to 1 mm, with carbonate inclusions. 1-2 %.	Isolated pyrite crystals, 5-50 μ; traces only.	Assumed to be dolomite, but subject to XRD results from other sources, as well as analyses.
934 766 (XRD)	Dense, ultrafine (< 5 μ) magnesite/subordinate dolomite (XRD); replacive clear, crystalline dolomite (XRD) with quartz; vein-dolomite = 20-25 %.	Grains and mosaics, 50 μ to 3 mm, mainly in dolomite veins; 5 %.	Scattered isolated pyrite crystals, 30-200 μ.	XRD results show that at least some dense, ultrafine carbonate is a mixture of magnesite and dolomite, presumably contemporaneous.
934 767	Dense, ultrafine (< 5 μ) magnesite/dolomite; replacive masses and veins of dolomite, 30 μ to 2 mm; vein-dolomite = 5-10 %.	Crystals, clusters in dolomite and adjacent rock; 50 μ to 1 mm; 2-3 %.	Isolated pyrite crystals, 50-100 μ.	Rock assumed to be mixed magnesite/ dolomite, as suggested by stain test and similarity with 934 766.
934 768 (XRD)	Coarsely-crystalline magnesite (XRD); many crystals 20-30 mm, with microcrystalline aggregates.	As irregular patches, crystals, in haphazard stringers, 100μ to 1 mm; 5 %.	None.	Coarse crystallinity believed to be due to recrystallization, but no evidence of metamorphism.
934 769	Dense, ultrafine (< 5 μ) ?magnesite or magnesite/dolomite; replacive dolomite-quartz veins in which crystalline dolomite comprises about 10 %.	Grains, crystals up to 600 μ, associated with dolomite; about 5 %.	Rare small pyrite crystals.	Mottled appearance of rock suggests possible dolomite intergrown with magnesite.
934 770	Dense, ultrafine (< 5 μ) ?magnesite (+ ?dolomite); irregular veins of replacive clear, crystalline dolomite, 10-15 %, 30 μ to 5 mm wide.	Minor trace or absent.	Isolated pyrite crystals, 50-100 μ.	Virtually entirely composed of carbonates.
934 771	Dense, ultrafine (< 5 μ) ?magnesite, partly replaced by patches, veins of coarse, clear dolomite; 15-20 % of rock.	Very minor (1-2 %) as 100-600 μ patches in dolomite.	Minute brown ferruginous needles/ spicules(?); trace only	Brown "spicules" and small circular textures may be fossiliferous remains.

517091

[redacted]

Central Mineralogical Services

Sample No.	Carbonate Occurrence	Quartz	Other Minerals	Comments
934 772 (XRD)	Dense, ultrafine (< 5 μ) magnesite (XRD) with minor (5 %) coarser dolomite patches and veinlets.	None.	Scattered very thin (10μ x 250 μ) flakes of talc and Mg-chlorite; 1-2 %.	Replacive patches and veinlets are assumed to be dolomite by analogy with known material.
934 773	Coarse plates of carbonate set in smaller crystals; faint brown colour due to intergranular ferruginous films; carbonate may be member of $MgCO_3$-$FeCO_3$ series.	Intergranular patches 50 μ to 1 mm, 1-2 %.	Single crystals and clusters of colourless tourmaline needles, trace to 1 %.	Rock appears incipiently oxidised, implying that the carbonate has significant Fe - may be breunnerite.
934 774	Dense, ultrafine (< 5 μ) ?magnesite, laced with clear dolomite veinlets and larger replacive patches totalling 15-20 % of rock.	Traces of finely-crystalline patches, mostly < 100 μ.	Single flakes, bunches, of colourless Mg-chlorite in dolomite veins, patches; 2-3 %.	Traces of pyrite also occur as small (mostly < 100 μ) crystals scattered through rock.
934 775	Dense, ultrafine (< 5 μ) ?magnesite. Ptygmatic and straight veins of clear, coarse dolomite, 20 μ to 2 mm wide, 15-20 % of rock.	None.	Thin talc and Mg-chlorite flakes in veins 2-3 %. Trace pyrite, 10-100 μ.	Presence of talc, chlorite in veins; suggests metasomatism, since there is no evidence of metamorphism.
934 776	Dense, ultrafine (< 5 μ) ?magnesite with irregular patches and veinlets of clear dolomite, totalling about 5 %.	None.	Thin talc flakes throughout, and bunches of flakes in dolomite veins; 1-2 %.	Pyrite also occurs in traces throughout the rock, as crystals 10 μ to 200 μ
934 777	Dense, ultrafine ?magnesite with pre-lithification breccia structures; irregular veinlets of clear dolomite, about 10 %.	None.	Fine talc flakes, mostly in dolomite veinlets, 1-2 %.	Pyrite as above. Dolomitisation much more subtle than in other rocks, and possibly more abundant than estimated 10 %.
934 778 (T.S. 45465)	Dense, ultrafine ?magnesite with extensive pre-lithification breccia structures; scarce dolomite veinlets and small patches (< 1 mm); 2-3 %.	Rare quartz veinlets, 300 μ wide.	Minor trace of fine pyrite, and of goethite.	Appears to be relatively pure magnesite rock, but needs checking (chemical and XRD).



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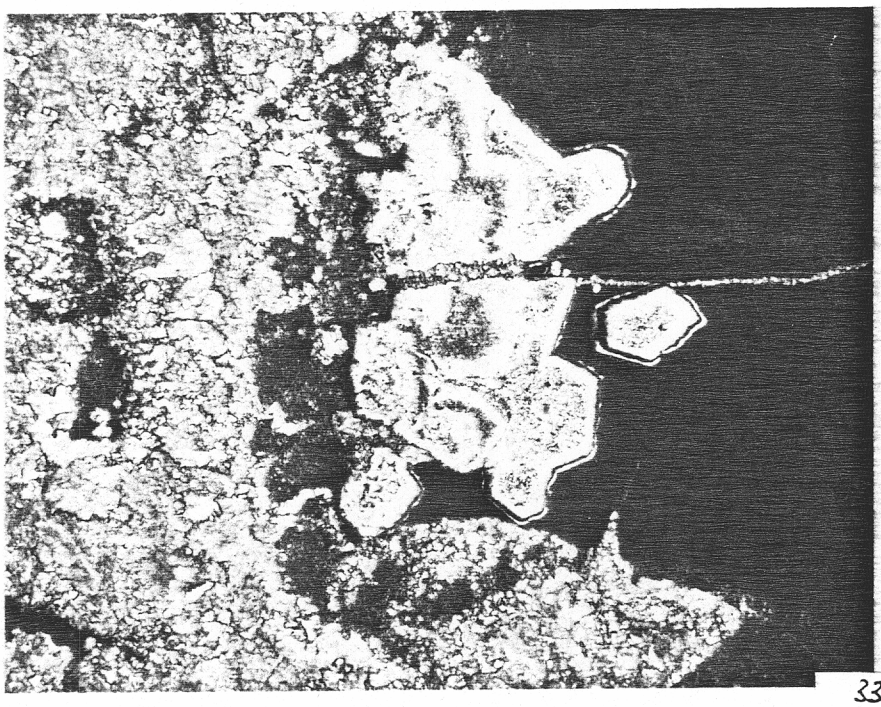
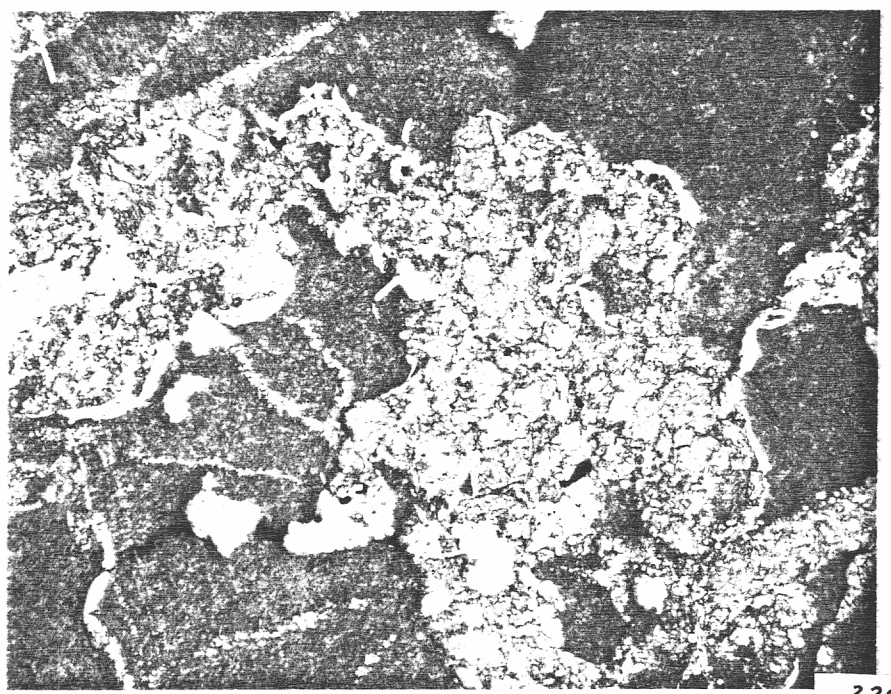


2

5 cm



5 cm

517094

Central Mineralogical Services

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

Mr. T. W. Dickson
Senior Geologist
C.R.A. Exploration Pty. Ltd.
P.O. Box 138
ROSNY PARK / TAS. 7018

29th March, 1983

REPORT CMS 83/3/8
Supplement

YOUR REFERENCE:	D.P.O. No. 30223
DATE RECEIVED:	7th March, 1983
SAMPLE NOS.:	93756, 93758
SUBMITTED BY:	T.W. Dickson
WORK REQUESTED:	Mineralogy

Copy to:
The Chief Geologist
C.R.A. Exploration Pty. Ltd.
G.P.O. Box 384D
MELBOURNE / VIC. 3001

Copy & Invoice to:
Administration Officer
C.R.A. Exploration Pty. Ltd.
P.O. Box 138
ROSNY PARK / TAS. 7018

H.W. Eander, M. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 29th March, 1983

Supplementary
SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
93756, 93758

Job No. CMS 83/3/8 Date Received: 7.3.1983

Reference D.P.O. No. 30223

Sample No. 93756, 93758

Nature of Sample: D.D. Core

DESCRIPTION **SECTION No.**

a. Hand Specimen:

b. Microscopic:

Two drill core samples were selected for further investigation, on the basis of discussions with T. Dickson, concerning reported Al_2O_3 analyses.

10 g portions of samples 93756 and 93758 were crushed and dissolved in dilute HCl. The residues were dried, weighed and mineralogically examined.

93756 The residue comprised 1.5 % of the sample and consists dominantly of colourless tourmaline (elbaite) and quartz, with very minor illite-sericite. The elbaite generally occurs as small needles and as aggregates of minute (< 10 μ) stubby crystals. Dispersed fine colourless tourmaline is very difficult to detect in a carbonate host, and thin-section observations suggest that the tourmaline is erratically distributed, which inevitably causes various sampling problems.

93758 The residue comprised 22.1 % of the sample and consists almost entirely of quartz, with very fine elbaite crystals.

Based on this evidence, the source of the Al_2O_3 is most probably mainly elbaite in most samples, since this mineral contains 40-42 % Al_2O_3; illite-sericite and Mg-chlorite no doubt make minor contributions also.

H.W. Fander, M. Sc.

517096

CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

LOCATION PLAN 83-2036

Ref:	SK55 - 3		
Scale:	1 : 500.000	Drawn:	R. T.
Author:	V. A. W.	Report N°:	12283
Date:	31 - 8 - 1983	Plan N°:	TASh 1510

5 442 000 m N.

ARTHUR RIVER

DD 83 AR 1

VICTORY

PROPOSED HOLE 'B'

PROPOSED HOLE 'A'

DD 83 AR 2

KEITH RIVER

KEITH RIVER GOSSAN

5 440 0

PINNER

DD 83 LR 2

Tb

DD 83 LR 5

DD 82 LR 1

B.A. Creek

LYONS RIVER 1

LYONS RIVER 2

DD 83 LR 3

LYONS RIVER 3

5 434 000mN.

370 000 m E.

366 000 m E.

368 000 m E.

Pinners

E.L. 43/70

REFERENCE

- BASALT
- PERMIAN
- SCHIST
- SCHIST Footwall
- MAGNESITE HORIZON
- ALLUVIUM
- PINNER — KNOWN MAGNESITE DEPOSIT.

0 — 1:20 000 — 1 Kilometre

N

5 cm

83-2036

517097

CRA EXPLORATION PTY. LIMITED

GEOLOGICAL SKETCH MAP
ARTHUR RIVER - LYONS RIVER
MAGNESITE DEPOSITS

Ref:	SK55 - 3		
Scale:	1 : 20 000	Drawn:	R. T.
Author:	T. W. D.	Report N°	12283
Date:	30 - 6 - 1983	Plan N°.	TASh 1435

369 000 mE

370 000 mE

371 000 mE

5 441 000 mN

5 440 000 mN

5 439 000 mN

ARTHUR RIVER

KEITH RIVER

Qa

Pm

PEm

PEM

PEs

Pt

F

grey sh

dark grey sh

ferruginous gos float

massive limonitic gos (beige sandy clay)

py gos

scattered gos nodules & boulders

cellular Fe gos float

Basic unit

F/W Fe-carbonate zone with massive limonitic pods (float)

Basic dyke amphibolite pyroxenite

ferr gos cellular limonite & hematite

rare massive Py patches

pale yellow qtz schist

foliated qtz schist minor Fe

qtz schist

sandy qtz schist

weakly foliated sandy qtz schist

dark sh

foliated qtz schist

strongly foliated qtz mica schist with minor limonitic veins

schist with minor limonitic veins

qtz mica schist (schistose ssh)

P mdst/sh

mdst, sh

mdst

qtz mica schist

sericitic qtz mica schist

talcose qtz schist

foliated qtz schist, quartzite

micaceous qtz schist

massive ferruginous carbonate? chert, gossan

strongly foliated schist with ferruginous veins

contact

gos

friable quartzite & sand

ferruginous clay

gos float

qtz schist

foliated qtz schist

massive gos float & o/c

DD71KR1

quartzite

phyllite

qtz schist float

foliated qtz schist

TRAVERSE 5

TRAVERSE 4

sandy mica schist

foliated qtz schist

LEGEND

QUATERNARY

- Qa — ALLUVIUM, TERRACE DEPOSITS, SWAMPS

TERTIARY

- Tb — BASALT RUBBLE AND FLOAT.
- Tg — " GREYBILLY " SILICIFIED QUARTZ PEBBLE CONGLOMERATE

PERMIAN

- Pm — TAKONE MUDSTONE: Bluish grey mudstone and siltstone. Distinctive spheroidal weathering.
- Pf — FENESTELLA SHALE: Fossiliferous shale, (Pectens)
- Pt — VICTORY TILLITE: Poorly sorted glacial conglomerate.

PRECAMBRIAN

- PEs — KEITH BEDS: Grey quartz mica schists, schistose micaceous quartzites, grits, undifferentiated.
- PEM — MAGNESITE: Magnesite - Dolomite. Creamy white, pale brown amorphous, coarsly crystalline, brown porous limonitic rubble.
- PEm — INTERPRETED MAGNESITE: Magnesite - Dolomite. Beige, pale brown silty clay, frequently with rounded pebbles of quartz & secondary iron oxides, with irregular or white fine grained silica rock and brown siliceous conglomerate.
- GOSSAN: Massive, cellular, stratiform , hematitic-limonitic-pyritic outcrop and float. Interpreted to represent the surface expression of strata form pyritic carbonate (Magnesite, Magnesite-Dolomite, Dolomite) horizons.
- PEa — AMPHIBOLITE: Dark green (fresh), creamy grey (weathered) rock. Generally massive in outcrop. Includes undifferentiated basic units.
- PEu — SEDIMENTS: Undifferentiated pale brown, grey, pink siltstone, shale, sericitic quartzite, phyllite.

ROADS — TRAVERSES

TRACKS — BOUNDARY OF QUATERNARY ALLUVIUM

RIVERS, CREEKS — GEOLOGICAL BOUNDARY

QUARRY — INTERPRETED GEOLOGICAL BOUNDARY

FAULT — DIP AND STRIKE OF BEDDING

OUTCROP DIMENSIONS — DIP AND STRIKE OF SCHISTOSITY

DD71KR2 — DIAMOND DRILL HOLE LOCATION, NUMBER AND DIRECTION DRILLED

517098

83-2036

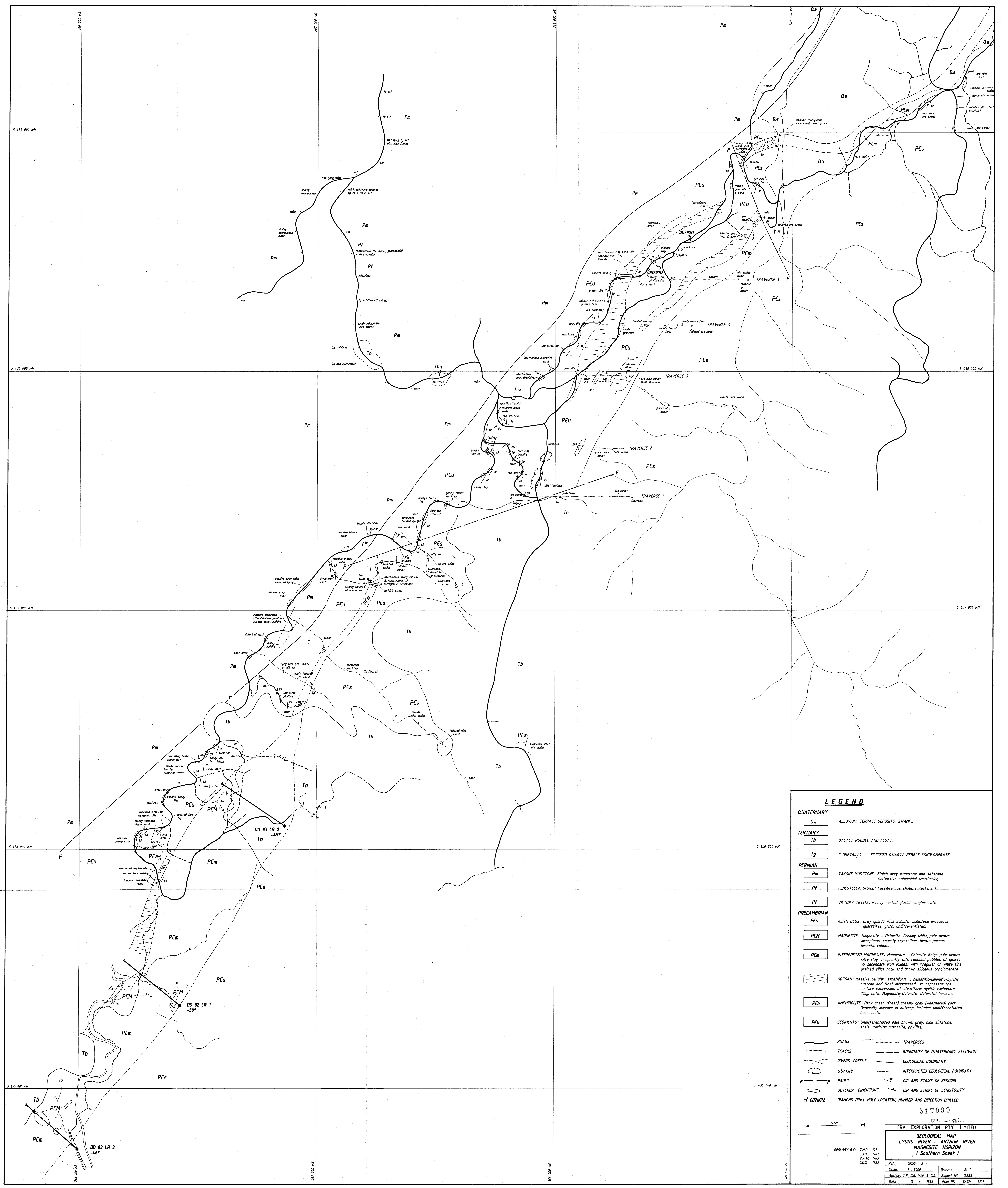
5 cm

GEOLOGY BY: T.M.P. 1971
G.J.B. 1982
V.A.W. 1983
C.D.S. 1983

CRA EXPLORATION PTY. LIMITED

GEOLOGICAL MAP
LYONS RIVER - ARTHUR RIVER
MAGNESITE HORIZON
(Northern Sheet)

Ref:	SK55 - 3		
Scale:	1 : 5000	Drawn:	R. T.
Author:	T.P. G.B. V.W. & C.S.	Report N°.	12283
Date:	13 - 4 - 1983	Plan N°. TASh	1350


366 000 mE
367 000 mE
368 000 mE
369 000 mE
5 439 000 mN
5 438 000 mN
5 437 000 mN
5 436 000 mN
5 435 000 mN
Pm
Pf
fossiliferous (bi valves, gastropods) in fg sst/mdst
flat lying fg sst with mica flakes
mdst/sst/rare cobbles up to 3 cm in sst
shaley overburden
flat lying mdst
fg sst/(worm? tubes)
sandy mdst/with mica flakes
Tb soil/mdst
Tb soil over/mdst
Tb scree
Qa
PCm
PCu
PCs
PCM
PCa
massive ferruginous carbonate? chert,gossan
strongly foliated schist with ferruginous veins
friable quartzite & sand
ferruginous clay
dolomitic sltst
DD71KR1
DD71KR2
ferr talcose clay zone with specular hematite, limonite.
massive gossan
cellular and massive gossan zone
interbedded quartzite/sltst
TRAVERSE 1
TRAVERSE 2
TRAVERSE 3
TRAVERSE 4
TRAVERSE 5
qtz mica schist float abundent
quartz mica schist
foliated qtz schist
massive grey mdst minor slumping
massive disturbed sltst /sh/mdst,boulders chaotic zone,turbidite
interbedded sandy talcose clays,sltst,chert,sh ferruginous sediments
sericitic schist
sericitic mica schist
foliated mica schist
micaceous sltst qtz schist
ferr mang brown sandy clay
Talcose contact lam ferr sltst/sh
spotted ferr clay
FAULT CONTACT
weathered amphibolite
Narrow ferr veining
Specular hematite veins
DD 83 LR 2 -45°
DD 82 LR 1 -50°
DD 83 LR 3 -46°
F
LEGEND
QUATERNARY
Qa ALLUVIUM, TERRACE DEPOSITS, SWAMPS
TERTIARY
Tb BASALT RUBBLE AND FLOAT.
Tg " GREYBILLY " SILICIFIED QUARTZ PEBBLE CONGLOMERATE
PERMIAN
Pm TAKONE MUDSTONE: Bluish grey mudstone and siltstone. Distinctive spheroidal weathering.
Pf FENESTELLA SHALE: Fossiliferous shale, (Pectens).
Pt VICTORY TILLITE: Poorly sorted glacial conglomerate.
PRECAMBRIAN
PCs KEITH BEDS: Grey quartz mica schists, schistose micaceous quartzites, grits, undifferentiated.
PCM MAGNESITE: Magnesite - Dolomite. Creamy white, pale brown amorphous, coarsly crystalline, brown porous limonitic rubble.
PCm INTERPRETED MAGNESITE: Magnesite - Dolomite. Beige, pale brown silty clay, frequently with rounded pebbles of quartz & secondary iron oxides, with irregular or white fine grained silica rock and brown siliceous conglomerate.
GOSSAN: Massive, cellular, stratiform , hematitic-limonitic-pyritic outcrop and float. Interpreted to represent the surface expression of stratiform pyritic carbonate (Magnesite, Magnesite-Dolomite, Dolomite) horizons.
PCa AMPHIBOLITE: Dark green (fresh), creamy grey (weathered) rock. Generally massive in outcrop. Includes undifferentiated basic units.
PCu SEDIMENTS: Undifferentiated pale brown, grey, pink siltstone, shale, sericitic quartzite, phyllite.
ROADS
TRAVERSES
TRACKS
BOUNDARY OF QUATERNARY ALLUVIUM
RIVERS, CREEKS
GEOLOGICAL BOUNDARY
QUARRY
INTERPRETED GEOLOGICAL BOUNDARY
FAULT
DIP AND STRIKE OF BEDDING
OUTCROP DIMENSIONS
DIP AND STRIKE OF SCHISTOSITY
DD71KR2 DIAMOND DRILL HOLE LOCATION, NUMBER AND DIRECTION DRILLED
517099
83-2086.
5 cm
CRA EXPLORATION PTY. LIMITED
GEOLOGICAL MAP
LYONS RIVER - ARTHUR RIVER
MAGNESITE HORIZON
(Southern Sheet)
GEOLOGY BY: T.M.P. 1971
G.J.B. 1982
V.A.W. 1983
C.D.S. 1983
Ref: SK55 - 3
Scale: 1 : 5000
Drawn: R. T.
Author: T.P. G.B. V.W. & C.S.
Report N°. 12283
Date: 13 - 4 - 1983
Plan N°. TASh 1351

320° AMG

140° AMG

DD 82 LR 1

13.0m
20.4m
25.9m
28.2m - 28.9m Angular magnesite breccia
32.5m
122.0m
154m
161.8m
167.0m
176.1m
188.9m
197.5m
199.6m
209.3m
212.6m
226.0m
267m
272.2m
296.6m
317.1m
322.2m
Pyritic
338.6m
341.5m
369.4m
385.8m
F.W. CONTACT
E.O.H.
389.0m

0 10 20 30 40 50 100 metres

5 cm

LEGEND

- Tertiary Gravel
- Pyritic Calc - Siltstone
- Amphibolite

CARBONATE TYPES

- Massive Grey Dolomite
- Angular Magnesite Breccia
- Whispy Magnesite Breccia
- Cuneiform Magnesite
- Magnesite. Textures are dominated by sparry (ie. recrystallized) material obscuring any previous textures.

517100

83-2036

CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

DD 82 LR 1 SECTION

Ref:	SK55 - 3		
Scale:	1 : 1000	Drawn:	R. T.
Author:	V.W. J.W.	Report N°.	12283
Date:	19 - 4 - 1983	Plan N°.	TASh 1354

CRA EXPLORATION PTY. LTD.

DD 82 LR1

GRAPHIC LOG AND ASSAYS

REF	
SCALE: AS SHOWN	DRAWN R.G.
AUTHOR: T.W.D.	REPORT No 12283
DATE JAN. 1983	TASK No. 1225

83-2036

51710 1

METRES DOWN HOLE

5 cm

NO CORE 13

MAGNESITE 40.5

DOLOMITE-MAGNESITE 122

MAGNESITE 147

MAGNESITE PALE TO BUFF COLOUR

SCHIST AND DOLOMITE 269

MAGNESITE 296.6

SILIC. DOL. 317

MAGNESITE 322.5

PYRITE

MAGNESITE 369.4

SEDIMENTS

BRECCIA AMPHIBOLITE 389.0

% MgO

% CaO

% L.O.I.

ZERO 8.94 16.57

% SiO_2

32.50 27.14 55.97

% Fe_2O_3

28.17 13.41

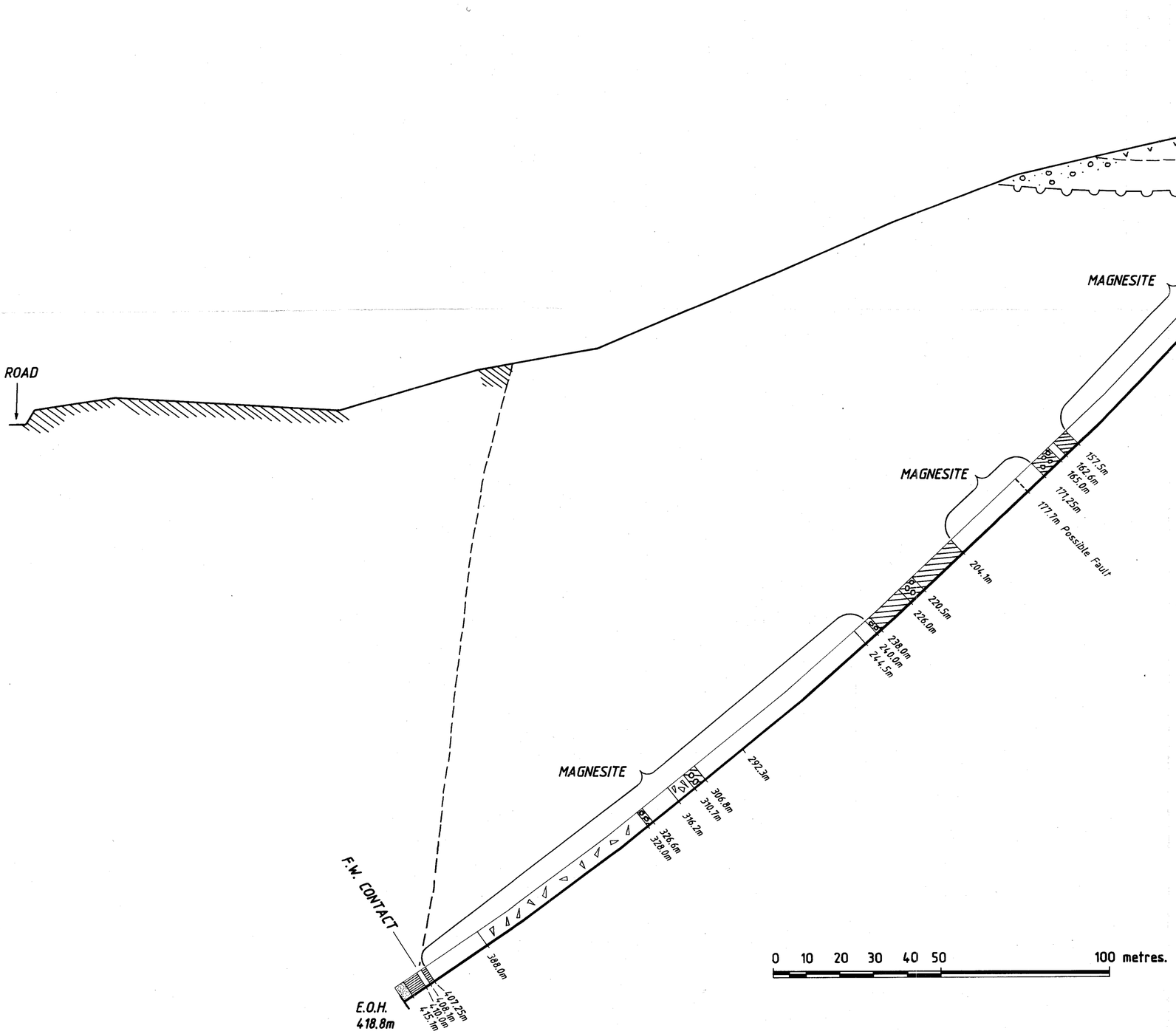
% Al_2O_3

4.55 5.91 2.31

% SO_3

47.18 23.85

0 30 60 90 120 150 180 210 240 270 300 330 360 390 420



LEGEND

- Tertiary Basalt
- Tertiary Gravel
- Magnesite Breccia & Clay
- Pyritic Calc - Siltstone
- Pyritic Calc - Quartzite

CARBONATE TYPES

- Massive Grey Dolomite
- Angular Magnesite Breccia
- Cuneiform Magnesite
- Magnesite.. Textures are dominated by sparry (ie. recrystallized) material obscuring any previous textures.

5 cm

517102

83-2036

CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

DD 83 LR 2 SECTION

Ref:	SK55 - 3		
Scale:	1 : 1000	Drawn:	R. T.
Author:	V. W.	Report No.	12283
Date:	23 - 3 - 1983	Plan No.	TASh 1299

517103

83-2036

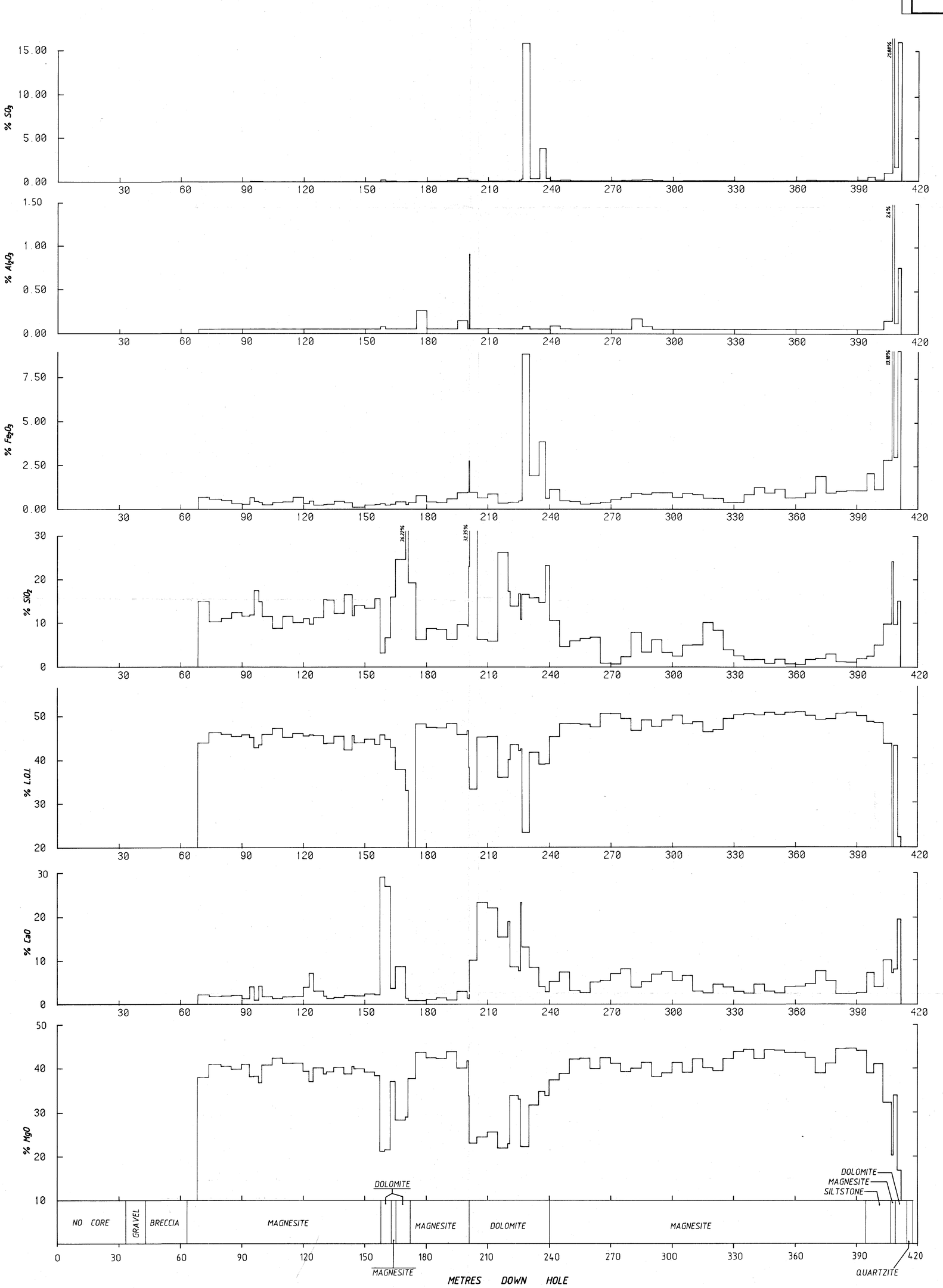
CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

DD 83 LR 2

GRAPHIC LOG AND ASSAYS

Ref:	±SK55 - 3
Scale:	1 : 1000
Author:	M. F. F.
Date:	7 - 4 - 1983
Drawn:	R. T.
Report N°	12283
Plan N°	TASD 1304



310° AMG

130° AMG

MAGNESITE FLOAT

CARBONATE FLOAT

CARBONATE FLOAT

DD 83 LR 3
-46°

MAGNESITE

CARBONACEOUS ZONE

MAGNESITE & DOLOMITE

BLEACHED ZONE

CHLORITIC ZONE

E.O.H.
367.5m

9.0m
43.0m
92.1m
99.5m
101.0m
201.9m
205.8m
217.5m
259.5m
266.8m
284.2m
347.0 - 348.5m
358.5 - 359.3m

0 10 20 30 40 50 100 metres.

5 cm

LEGEND

- Tertiary Basalt
- Tertiary Gravel
- Psammitic Schist and Sandstone
- Pyritic Dolomitic Carbonaceous Slate - Schist. Note bleached and chloritic zones occur as marked
- Conglomerate
- Amphibolite

CARBONATE TYPES.

- Cuneiform Magnesite
- Siliceous Dolomite with minor Limestone Bands.
- Angular Magnesite Breccia
- Massive Magnesite

Core Axis to Bedding Angle

517104

83-2036

CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

DD 83 LR 3 SECTION

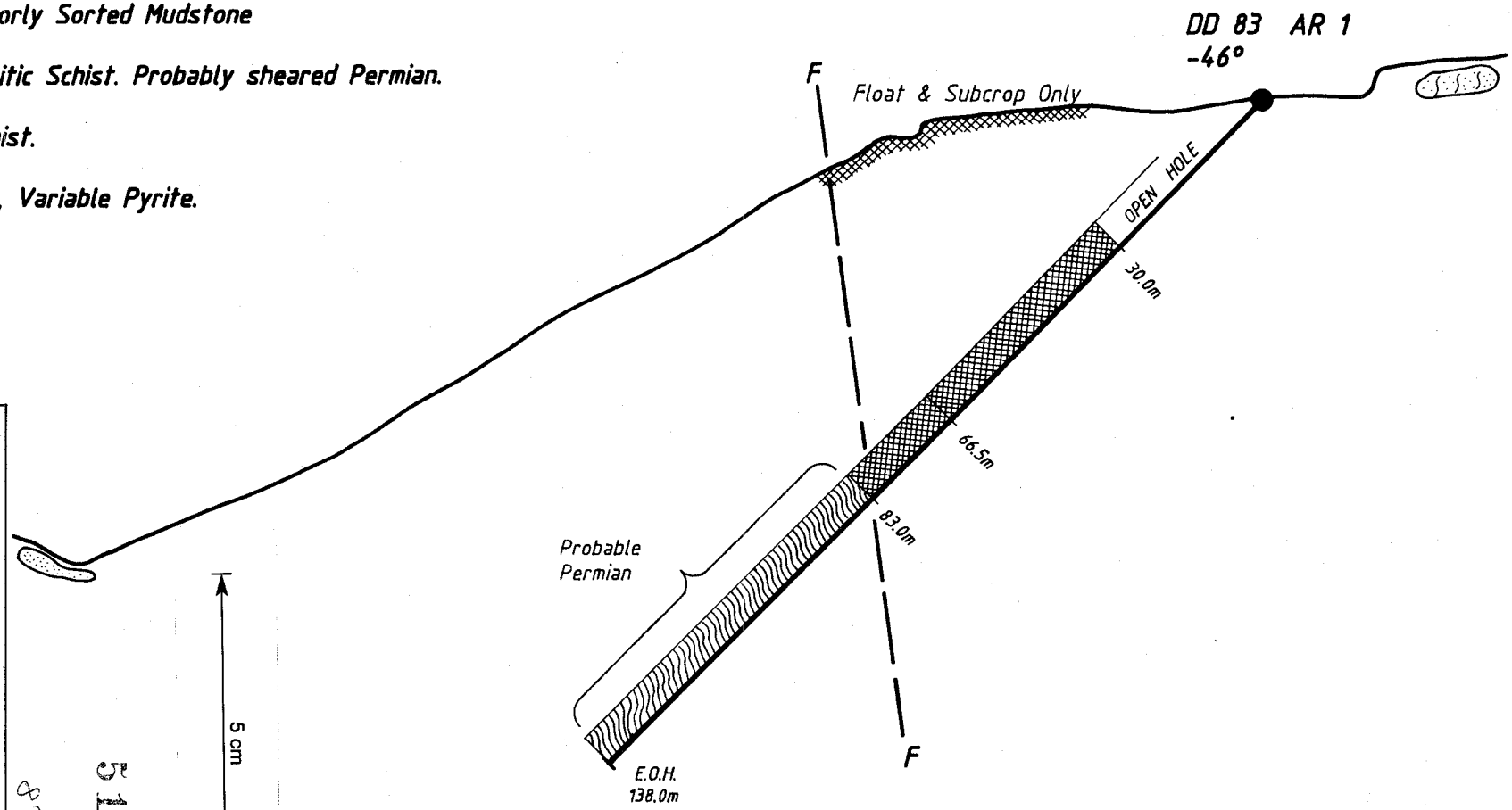
Ref:	SK 55 - 3		
Scale:	1 : 1000	Drawn:	R. T.
Author:	V. A. W.	Report N°.	12283
Date:	10 - 5 - 1983	Plan N°.	TASh 1371

310° AMG

130° AMG

LEGEND

- Permian Poorly Sorted Mudstone
- Black Chloritic Schist. Probably sheared Permian.
- Quartz Schist.
- Amphibolite, Variable Pyrite.



CRA EXPLORATION PTY. LIMITED

E.L. 43/70
ARTHUR RIVER PROSPECT
DD 83 AR 1 SECTION

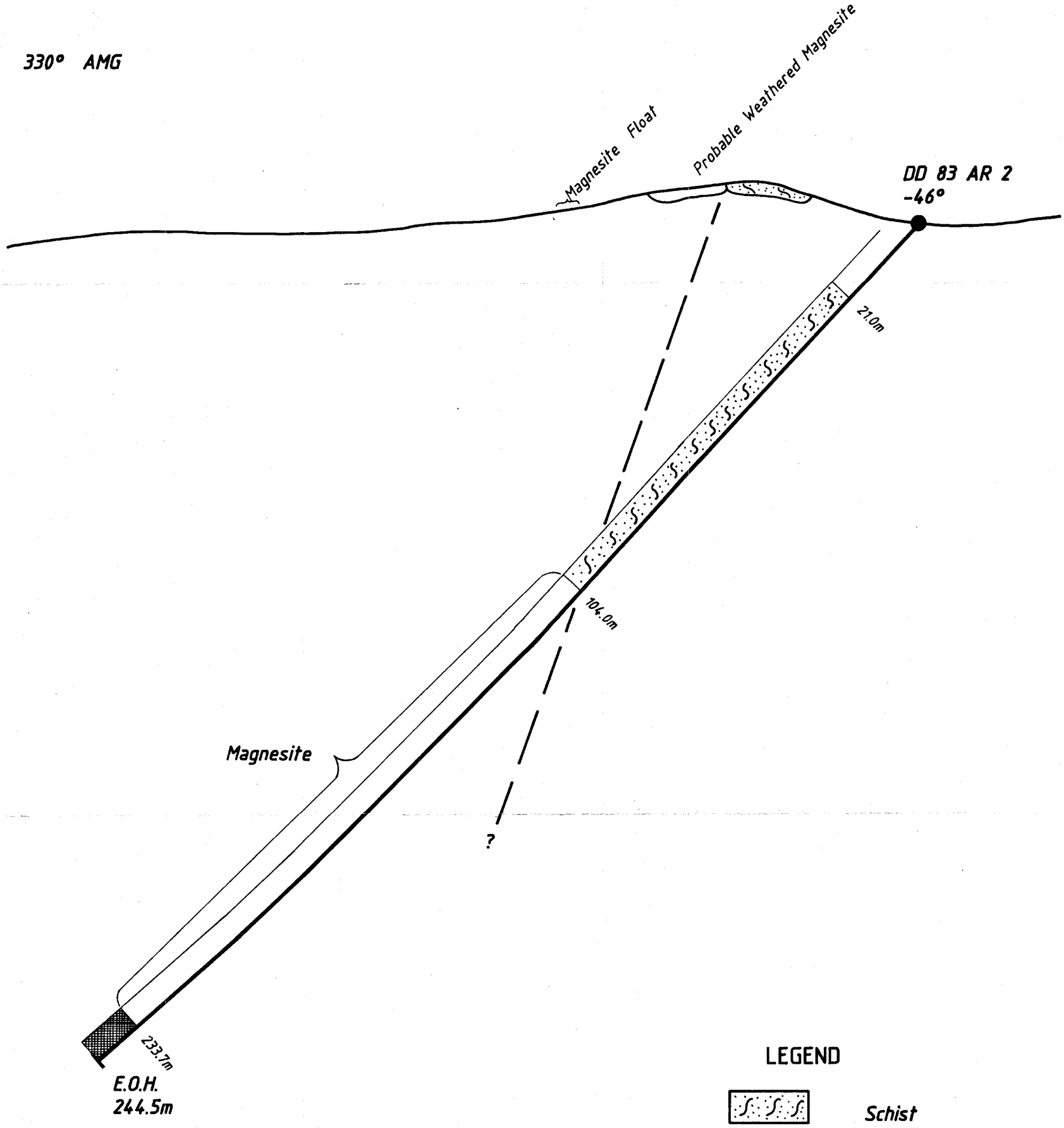
Ref: SK55 - 3	
Scale: 1 : 1000	Drawn: R. T.
Author: V. A. W.	Report N°: 12283
Date: 31 - 5 - 1983	Plan N°: TASh 1410

83-2036

5171105

330° AMG

150° AMG



0 10 20 30 40 50 100 metres

LEGEND

Schist

Magnesite dominated by spotted textures

Amphibolite. Probably a metamorphosed dolerite - diorite dyke.

517106

5 cm

CRA EXPLORATION PTY. LIMITED

ARTHUR RIVER E.L. 43/70
DD 83 AR 2
SECTION

83-2036

Ref:	SK55 - 3		
Scale:	1 : 1000	Drawn.	R. T.
Author:	V. A. W.	Report N°.	12283
Date:	9 - 6 - 1983	Plan N°.	TASh 1425

CRA EXPLORATION PTY. LIMITED

ARTHUR RIVER E.L. 43/70
DD 83 AR 2
GRAPHIC LOG AND ASSAYS

Ref: SKSS - 3 | 83-2086
Scale: 1 : 1 000 | Drawn: R. T.
Author: T. W. D. | Report N°: 12283
Date: 28 - 6 - 1983 | Plan N°: TASh 1430

5 cm

51710.

% SO_3
15.00
10.00
5.00
0.00

% Al_2O_3
1.50
1.00
0.50
0.00

% Fe_2O_3
7.50
5.00
2.50
0.00

% SiO_2
30
20
10
0

% L.O.I.
50
40
30
20

% CaO
30
20
10
0

% MgO
50
40
30
20
10

30 60 90 120 150 180 210 240 270

NO CORE | SCHIST | MAGNESITE | MAGNESITE | AMPHIBOLITE

0 30 60 90 120 150 180 210 240

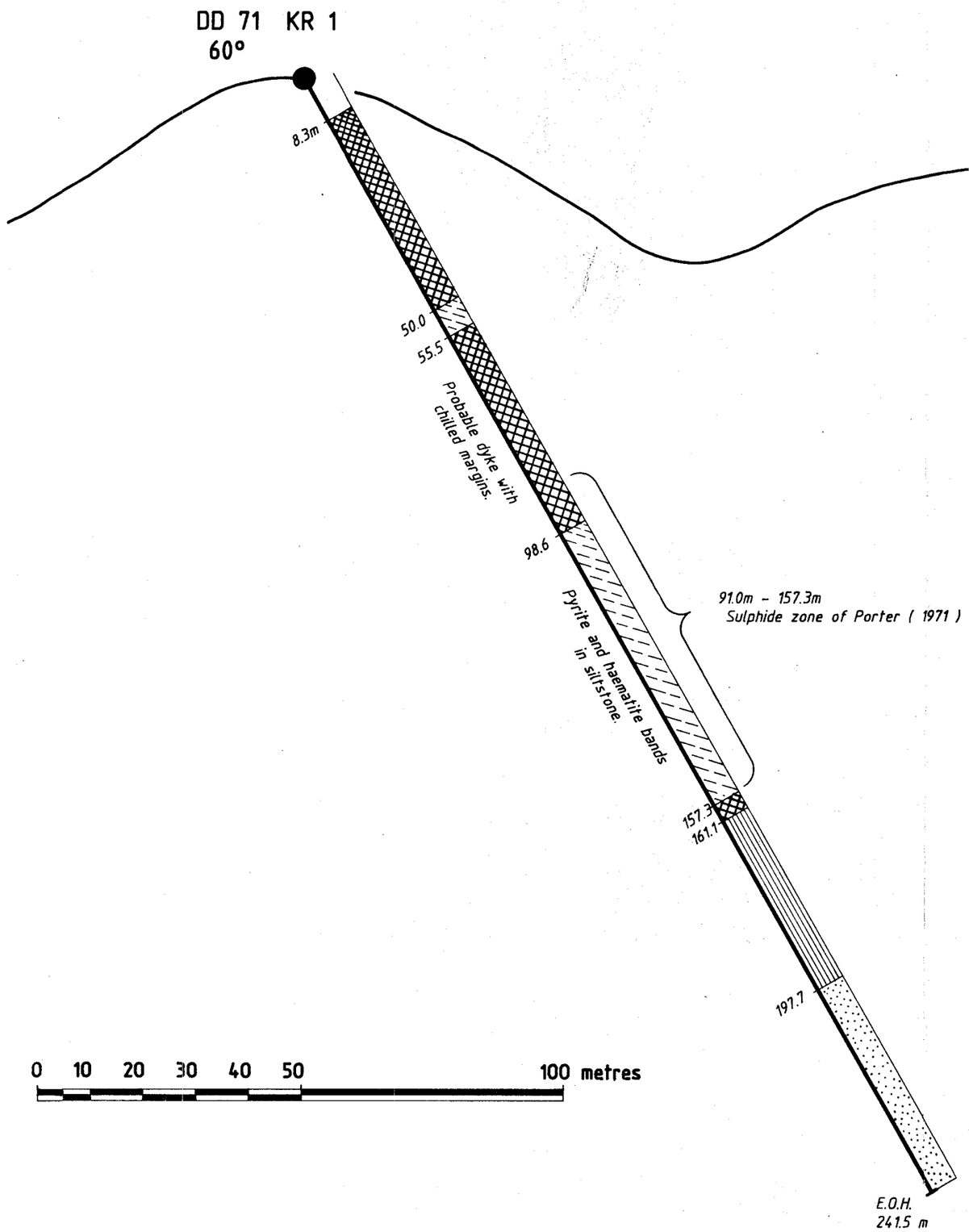
Cavity

E.O.H. 244.5m

METRES DOWN HOLE

324° AMG

154° AMG



LEGEND

Amphibolite

Siltstone

Carbonate veined siltstone

Carbonate veined sandstone

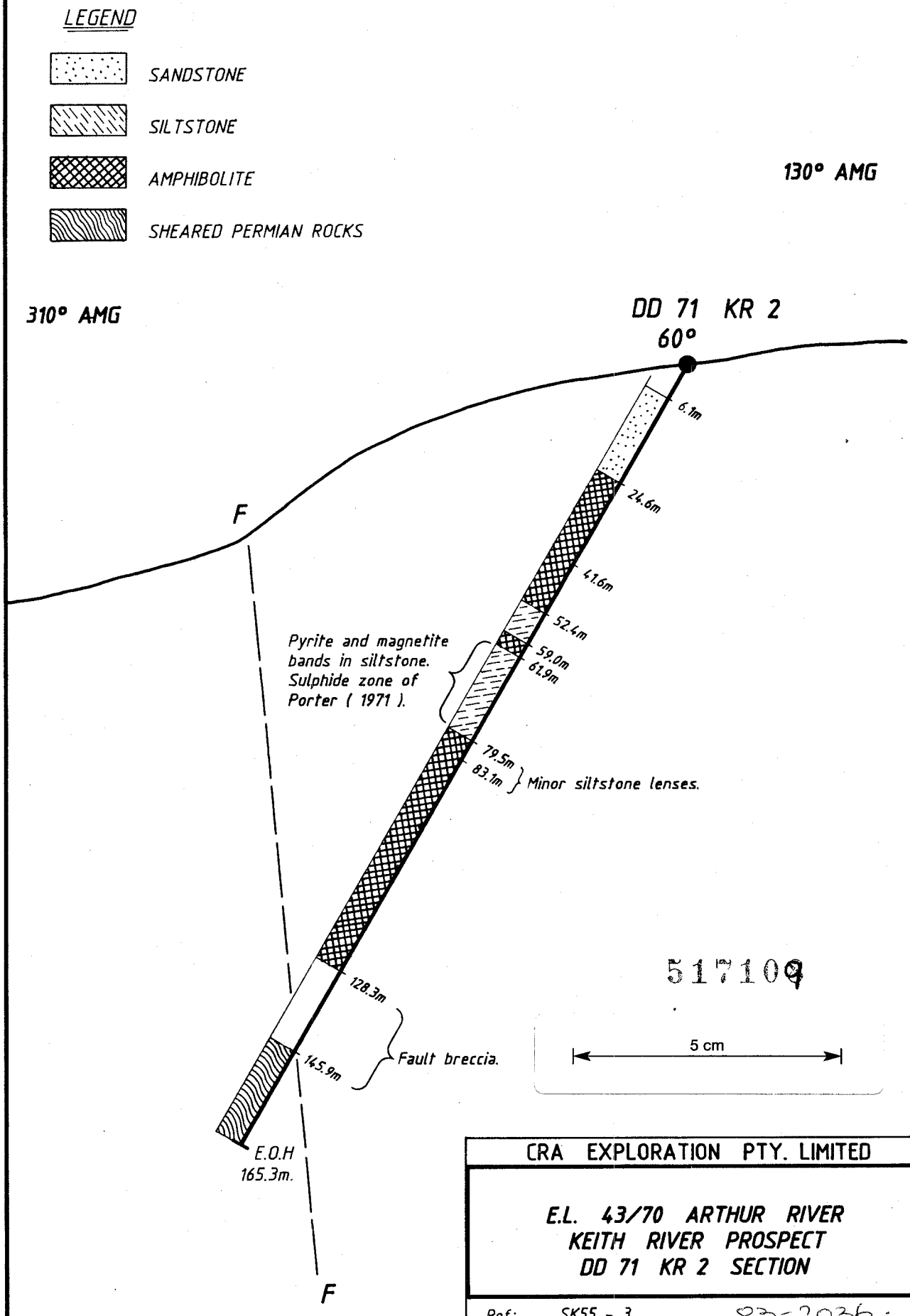
517108

5 cm

CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER
KEITH RIVER PROSPECT
DD 71 KR 1 SECTION

REF.	SK55 - 3	83-2036.	
SCALE.	1 : 1000	DRAWN.	R. T.
AUTHOR.	V.A.W.	REPORT N°.	12283
DATE.	20 - 6 - 1983	TASh N°.	1426



CRA EXPLORATION PTY. LIMITED

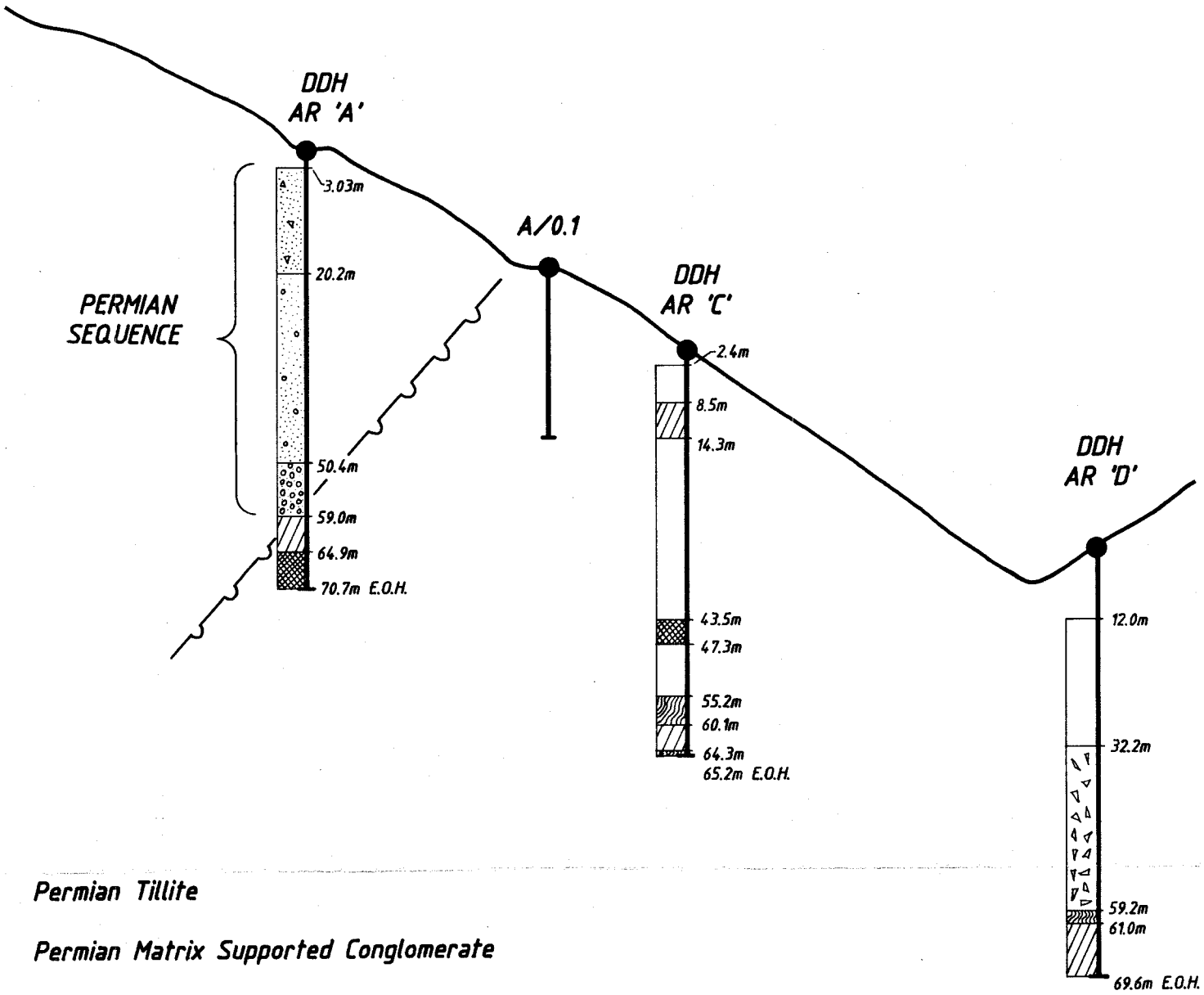
E.L. 43/70 ARTHUR RIVER
KEITH RIVER PROSPECT
DD 71 KR 2 SECTION

Ref:	SK55 - 3	83-2036	
Scale:	1 : 1000	Drawn.	R. T.
Author:	V. A. W.	Report N°.	12283
Date	23 - 6 - 1983	Plan N°.	TASh 1427

North

SECTION LOOKING EAST

South



LEGEND

- Permian Tillite
- Permian Matrix Supported Conglomerate
- Permian Clast Supported Conglomerate
- Magnesite. Any primary Textures Obscured by Sparry Textures.
- Cuneiform Magnesite
- Massive Siliceous Dolomite
- Talc Chloritic Schist
- Calc Silicate

0 10 20 30 40 50 100 metres

517110

83-2036.

** NOTE **

Topographic Profile & Collar Positions
From P. B. NYE.

5 cm

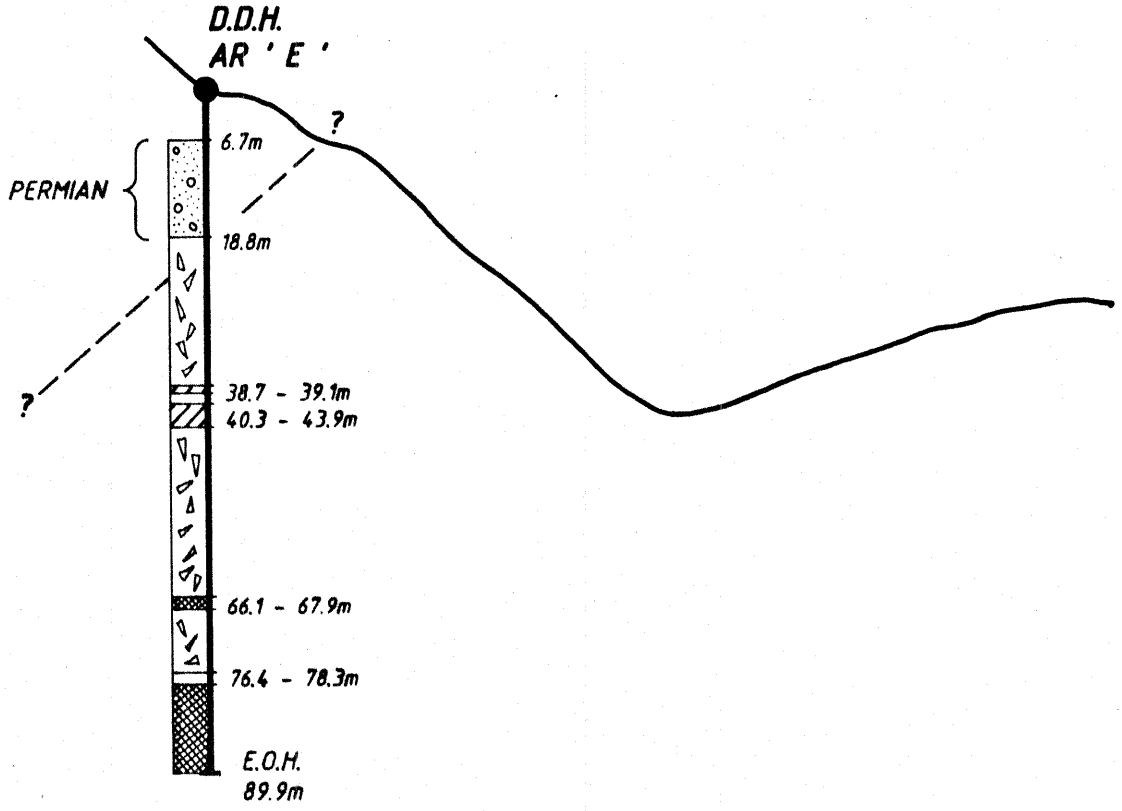
CRA EXPLORATION PTY. LIMITED

E.L. 43/70 ARTHUR RIVER

OAMAG DIAMOND DRILL HOLES
AR 'A', AR 'C', AR 'D', SECTION

Ref: SK55 - 3	
Scale: 1 : 1000	Drawn. R. T.
Author: V. A. W.	Report N°. 12283
Date: 10 - 5 - 1983	Plan N°. TASh 1372

NNW SSE



LEGEND

- Permian matrix supported conglomerate.
- Cuneiform Magnesite.
- Magnesite. Any previous textures obscured by recrystallization.
- Sandy dolomite.
- Calc silicate.

517111

Topographic Section after P. B. NYE. (1976)

5 cm

CRA EXPLORATION PTY. LIMITED			
E.L. 43/70 ARTHUR RIVER OAMAG DDH AR ' E ' SECTION			
Ref:	SK55 - 3	83-2036	
Scale:	1 : 1000	Drawn:	R. T.
Author:	V. A. W.	Report N°:	12283
Date:	24 - 5 - 1983	Plan N°:	TASh 1389

Qa

RIVER

Qa

Qa

Qa

NORTH AIRTRACK TRAVERSE

Hole 9 >40' wet yellow clay (possibly PEm)

Hole 8 >40' mud and gravel

Inferred contact.

Hole 1 PEm 30'-40' (1056285)

Hole 5 PEm 30'-40' (1056286)

Hole 7 PEm 30'-40' (1056288)

Hole 6 30'-40' schist (1056287)

Hole 2 >40' mud and gravel

PEm

PEs

Qa

Hole 3 >40' mud and gravel

Hole 4 30'-40' sand and gravel

schis limon

30 schistose ssh

qtz mica schist (schistose ssh)

Qa

CENTRAL AIRTRACK TRAVERSE

Hole 11 PEm at 10'

Hole 10 30'-40' mixed carbonate and schist fragments

Qa

50

qtz mica schist

sericitic qtz mica schist

talcose qtz schist

foliated qtz schist, quartzite

qtz schist

Qa

PEm

60

micaceous qtz schist

PEs

qtz schist

PEm

Hole 14 >40' mud

Hole 13 >40' mud

PEs

qtz schist

Qa SOUTH AIRTRACK TRAVERSE

5 cm

517112

CRA EXPLORATION PTY. LIMITED

E.L. 43/70
KEITH - ARTHUR RIVER
AIRTRACK DRILL TRAVERSES

Ref:	SK55 - 3	83-2036	
Scale:	1 : 2500	Drawn:	R. T.
Author:	V. A. W.	Report N°.	12283
Date:	1 - 9 - 1983	Plan N°.	TASh 1511