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CRA EXPLORATION PTY.LIMITED.

E.L. 10/79 SMITHTON EXPLORATION REPORT

FOR THE PERIOD TO 30TH JUNE, 1983.

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Dept. of Mines, Tas.

AMG REFERENCE POINTS ADDED

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**OPEN FILE**

**MICROFILMED**

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1. SUMMARY

Nine percussion drill holes were completed within EL 10/79 to test the quality and extent of the Smithton Dolomite with a view to its open cut potential for agricultural or refractory usage.

Five of the drill holes intersected the Smithton Dolomite within the maximum (30m) meterage requirements. Average assay grades indicate approximately 30% CaO, 20% MgO with Silica being the major contaminant varying from 0.8% - 19.2%.

2. INTRODUCTION

A joint venture agreement with Mineral Holdings Australia P/L. was negotiated on April 8th 1982. Two areas of dolomite potential, at Irishtown and the Duck River were considered to require further testing. The Irishtown area has been previously drilled by B.H.P. and by Mineral Holdings but assay grades showed a high proportion of silica.

Seven percussion drill holes were designed to test this area and to determine the extent of silica contamination.

Five out of the seven holes were completed. 3 drilled dolomite

The Duck River area, in the western portion of the E.L. is previously untested. Four widely spaced percussion drill holes were completed in this area. In addition, a number of rock chip samples were collected and submitted for geochemical analysis.

3 drilled dolomite

5 + 4 = 9 percussion holes

The drilling programme of nine holes totalling 190 metres was completed in March, 1983.

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3. CONCLUSIONS

Two separate dolomite resources occur within E.L.10779.

The Irishtown deposit in the east, is approximately 3500 x 700 metres in extent, which would give a resource in the order of 7 million tonnes per vertical metre.

The CaO content for the Irishtown deposit averages 29.5% CaO with a range of 26.0 - 31.7% CaO.

The MgO content averages 19.9% MgO with a range of 17.0 - 21.3%.

The Silica content ranges from 0.8% to 19.2 % and averages at 6.36%. The iron content is low, ranging from 0.02% to 0.35% as Fe<sub>2</sub>O<sub>3</sub>.

Soil and sand cover would be in the order of 10 metres.

The Duck River deposit in the west has approximate dimensions of 9km. with a width varying from 0 to 1.5km.

This would give a possible resource in the order of 27 million tonnes per vertical metre, with average assay grades and ranges of:

- CaO: Range 25.8 - 31.4% CaO, average 28.48% CaO.
- MgO: Range 16.5% - 21.7% MgO, average 19.72% MgO.
- SiO<sub>2</sub>: Range 0.8% - 10.5% SiO<sub>2</sub>, average 5.37% SiO<sub>2</sub>.
- Fe<sub>2</sub>O<sub>3</sub>: Range 0.75 - 2.6% Fe<sub>2</sub>O<sub>3</sub>, average 1.16% Fe<sub>2</sub>O<sub>3</sub>.

The soil and sand cover over this deposit would be in excess of 10 metres and drainage would also be a problem.

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4. RECOMMENDATIONS

Although a large resource of dolomite occurs in EL 10/79, there are problems with extensive superficial cover and the majority of the area is well developed farmland. Major potential drainage problems are envisaged in the Duck River deposit in the western part of the Licence area.

Abundant resources of similar grade dolomite occur elsewhere in N.W. Tasmania and unless CRA Exploration has an urgent requirement for dolomite, there is no need to continue exploration at Smithton.

It is recommended that CRA Exploration withdraw from the Joint Venture agreement with Mineral Holdings Australia Pty.Ltd.

5. HISTORY OF PREVIOUS INVESTIGATIONS

Longworth and Mackenzie P/L. under contract to Mineral Holdings, drilled five percussion holes in the Irishtown district, of which only two intersected dolomite; the remaining three holes were abandoned owing to unstable ground conditions.

PH1, PH4

Their conclusions indicated that silica was a major contaminant of the dolomite in this area and further mapping and drilling was required to assess the extent of silicification as well as to determine the ground-water conditions for open cut mining.

6. GEOLOGY

The geology of E.L. 10/79 is dominated by a central N-S trending belt of Cambrian spilitic basalt and associated tuffaceous sediments, in part interbedded with siltstones and greywackes.

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The Western boundary of the belt is controlled by the Duck River fault. Mapping and photo-interpretation to the south of E.L.10/79 suggests that the Eastern margin of the volcanic belt may also be fault controlled, implying a graben type structure.

Recent deposits cover much of the geology on either side of the volcanic belt. However, limited outcrop information indicates that the Smithton dolomite is folded about N-S trending and ENE trending fold axes to the east of EL 10/79. The dolomites to the West however, dip regularly to the West.

The dolomite outcrops on either side of the central volcanic belt differ markedly. In the West, the dolomite is a grey-yellow, fine grained dolomite with minor slightly shaley partings, though minor silicified dolomite breccia crops out at the junction of Geales Creek and the Duck River.

In the East, the dolomite is probably better defined as a dolomitic chert. The rock varies in colour from black to grey-white and appears to be a highly brecciated, very friable siliceous dolomite, whose bedding has largely been destroyed. The silicification is apparently a secondary process and may have been introduced as a result of brecciation.

## 7. PRESENT INVESTIGATIONS

### 7.1 Percussion Drilling

Nine percussion drill holes totalling 190 metres were completed in March 1983. Drill hole locations are shown on Plan TASH 1386. Each hole was initially percussion drilled until solid bedrock was attained, using a Warman 500 rig. The rig was converted to NQ coring capability and a 2 metre core sample obtained.

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This system worked effectively in the Duck River area but at Irishtown, the bedrock was so friable that a proper core sample could not be obtained and percussion drilling was used throughout in the final hole.

7.1.1. Summary Drill Logs.

Detailed drill logs together with assays are presented in Appendix 1.

PD 83 SM1

RAB drilled to 5.0metres.  
NQ core 5.0 - 7.9 metres.  
Coarse angular fine grained dolomite fragments. \*  
Hole abandoned as RAB could not penetrate to bedrock.

PD 83 SM2

Same site as SM1.  
Percussion drilled 0 - 19.0 metres.  
NQ core 19.0 - 21.1 metres.  
Fine grained, grey, well bedded dolomite. ✓

PD 83 SM3

Percussion drilled 0 - 19.0 metres.  
NQ core 19.0 - 20.0 metres.  
Grey slightly ferruginous dolomite with minor shaley? interbeds. ✓ \*  
Hole completed at 20.0 metres owing to danger of caving at surface.

PD 83 SM4

Percussion drilled 0 - 30.0 metres.  
Grey angular weathered dolomite fragments in grey mud.  
Hole abandoned as did not reach bedrock prior to maximum depth.

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PD 83 SM5

Percussion drilled 0 - 15 metres.  
Weathered basalt.  
Hole abandoned.

PD 83 SM6

Percussion drilled 0 - 21.0 metres.  
Weathered basalt.  
Hole abandoned.

PD 83 SM7

Percussion drilled 0 - 15.0 metres.  
NQ core 15.0 - 25.0 metres.  
Highly fractured, friable grey siliceous dolomite/chert. ✓  
Rods broke at 25.0 metres. Core recovered to 23.0 metres. Poor recovery.

PD 83 SM8

Percussion drilled 0 - 15.0 metres.  
NQ core 15.0 - 21.4 metres.  
Highly fractured grey siliceous dolomite/chert. ✓

PD 83 SM9

Percussion drilled 0 - 30 metres.  
Bedrock from ± 20.0 metres.  
Grey friable siliceous dolomite/chert. ✓

7.2 Rock Chip Geochemistry

Limited rock chip geochemistry was undertaken in the Duck River area. A number of outcrops along the Duck River were chip sampled over intervals varying from 5.0 - 15.0 metres.

Care was taken to obtain the freshest samples possible. Full details are located in Appendix 2.

### 7.3 Analytical Techniques

Core samples where whole, were sawn in half, or representative samples were taken along the length of the cuttings where poor recovery was obtained. The percussion chip samples were divided in half and bulked over appropriate intervals.

All samples were sent to Analabs, and washed thoroughly prior to XRF analysis for CaO, MgO, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, SO<sub>3</sub> and L.O.I.

Details of assays are located in the appendices and plotted on Plan TASH 1387.

## 8. DISCUSSION

Analyses obtained indicate that the dolomite cropping out in the Duck River area appears to be of better quality than that at Irishtown. However, any exploitation of a deposit in this area would have to take into account the relatively high water table and the possibility of flooding of the Duck River during winter. The depth to bedrock may also be a prohibitive factor for open cut mining as evidenced by percussion hole PD S483 which did not attain bedrock by 30 metres.

Drilling results at Irishtown suggest that:

1. The dolomite outcrop is not as extensive as suggested by Mines Dept. mapping.
2. The contact between the dolomite and the volcanic rocks, including the Tertiary basalt is very steep.

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- 3. The Forest quartzite is more extensive than is mapped. The increasing silica assays with depth in PD S983 suggest that the gradational contact with the Forest quartzite is being approached.
- 4. The variability in silica assays would imply a secondary cause of silicification and would indicate the patchy nature of any resource outlined in this area.

Very detailed drilling would be required to assess the degree of silica contamination.

9. KEYWORDS

Precambrian, Dolomite, Percussion drill, Assays - geochem.

10. LOCATION

Burnie SK55-3 1:250 000 sheet.

11. LIST OF REFERENCES

<p>Nye, P.B., Finucane K.J., Blake F.,</p>	<p>1934</p>	<p>The Smithton District. Geol. Surv. Bulletin No.41 Tas. Dept. Mines.</p>
<p>Hughes T.D.</p>	<p>1957</p>	<p>Limestones in Tas. Geol. Survey. Mineral Resources No.10 Tas. Dept. of Mines.</p>
<p>Longworth &amp; Mackenzie P/L</p>	<p>1981</p>	<p>Report on drilling programme Dolomite prospect EL10/79 Tas., for Mineral Holdings P/L. Unpublished Report.</p>

12. LIST OF APPENDICES

Appendix I Drill hole logs and assays.

Appendix 2 Surface rock chip geochemistry.

13. LIST OF PLANS

TASh 1386	Geology, drill hole and sample locations	1:50 000
TASh 1387	Assay results and interpreted Dolomite outcrop.	1:50 000

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APPENDIX 1

DRILL HOLE LOGS AND ASSAYS

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

SHEET No. 199

TENEMENT NAME SMITHTON E.L.10/79 No.

PLAN - MAP REFERENCE SMITHTON 1:50000 GEOL. AT

CO-ORDINATES 3404006 AZIMUTH DRILLERS OVERLAND DRILLING COMMENCED 12/3/83

DEPTH 7.9m HOLE No. PD 83 5M1

RL COLLAR 5473000 MN INCLINATION VERTICAL DRILL TYPE WARMAN 500 COMPLETED 12/3/83

CASING LEFT DPO No(s) 30462

DEPTH		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 ANALABS)								
From (M)	To (M)										CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	SO	SO <sub>3</sub>	L.O.I.	
0	3.0				Black - Dk brown clayey soil & small 1-5mm grey dolomite fragments.														
3.0	4.0				grey - sandy clay & numerous dolomite fragments Also, black Mn rich sandstone nodules. Minor black clay.														
4.0	5.0		4.0		Dominantly angular dolomite fragments up to 20 mm. minor clays.														
					<u>Recalled at 5.0m. converted to HQ core.</u> <u>RAB unable to penetrate weathered bedrock.</u>														
5.0	7.9		7.9		Dolomite. Angular dolomite fragments up to 20 mm.		1056701	5	7.9		31.4	21.1	0.15	2.2	0.25	0.11	0.11	45.2	
7.9m	E.O.H.																		

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

SHEET No. 3 of 9

TENEMENT NAME SMITHTON EL10/79 No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES 340725mE AZIMUTH..... DRILLERS OVERLAND DRILLING COMMENCED 12/3/83 DEPTH 20.0m HOLE No. PD 83 543  
5471850mN RL COLLAR..... INCLINATION VERTICAL DRILL TYPE WARMAN 500 COMPLETED 12/3/83 CASING LEFT..... DPO No(s) 30462

DEPTH		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 <u>ANALABS</u> )								
From (M)	To (M)										CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	SO	SO <sub>3</sub>	L.O.I.	
0	1.0			...	buff coloured alluvial sand.														
1.0	2.0			...	brown-black alluvial sand.														
2.0	3.0			...	brown sand.														
				3.0 A A	3.0m water table.														
3.0	4.0			A A	Brown alluvial sand with coarse ± 20mm dolomite frags.														
4.0	18.0			A A A A	Brown alluvial sand with coarse dolomite fragments up to 20mm.														
18.0	19.0			18.0 A A A A A A A A	Brown alluvial sand with dolomite fragments up to 5mm.														
				20.0	Precollected at 19.0m. Connected to NQ core.														
19.0	20.0				Dolomite.	grey ferruginous dolomite with shaly interbeds.	1055703	19.0	20.0			26.2	16.9	2.9	8.1	2.5	0.85	0.85	39.1

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

SHEET No. 749

TENEMENT NAME Sprinton EL10/79 No. ....

PLAN - MAP REFERENCE .....

CO-ORDINATES 344000mE AZIMUTH..... DRILLERS OVERLAND DRILLING COMMENCED 15/3/83

DEPTH 25.0m HOLE No. PD 83 SM 7

RL COLLAR 3469485 mN INCLINATION VERTICAL DRILL TYPE WARMAN 500 COMPLETED 15/3/83

CASING LEFT..... DPO No(s) 30462

DEPTH		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 <u>ANALABS</u> )									
From (M)	To (M)										CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	SO	SO <sub>3</sub>	LOI		
0	1.0				No Recovery.															
1.0	8.0				Reddish brown soil with weathered basalt fragments.															
8.0	15.0		8.0		No Recovery. - Clays?															
15.0					light brown soil with dolomite fragments up to 4 mm. on bottom of bit.															
					<u>Precoloured at 15.0 m. converted to ND core.</u>															
15.0	19.0				Dolomite. weathered, highly fractured friable siliceous dolomite.		1055704	15.0	19.0		30.3	19.6	0.05	4.0	0.30	0.03	0.03	44.6		
19.0	23.0				Dolomite breccia? less weathered, highly fractured siliceous dolomite.		1055705	19.0	23.0		30.5	20.8	0.05	3.3	0.35	0.02	0.02	44.5		
					Rods broke at 25.0 m. Core recovered to 23.0 m. Hole abandoned.															
<u>END.</u>	<u>25.0m</u>																			

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

SHEET No. 899

TENEMENT NAME SMYTHTON EL 10/79 No. ....

PLAN - MAP REFERENCE .....

CO-ORDINATES 344350m E AZIMUTH ..... DRILLERS OVERLAND DRILLING COMMENCED 16/3/83 DEPTH 21.4m HOLE No. PD 83 SM 8

RL COLLAR ..... INCLINATION VERTICAL DRILL TYPE WARMAN 500 COMPLETED 16/3/83 CASING LEFT ..... DPO No(s) 30462

DEPTH		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 <u>ANALABS</u> )								
From (M)	To (M)										CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	SO	SO <sub>2</sub>	LOI	
0	15.0			A A A A A A + 13.0	Grey dolomite fragments, up to 10mm. fragments siliceous, angular appears to be brecciated dolomite.														
					<u>Recollared at 15.0 m. Converted to HQ core.</u>														
15.0	21.4				Dolomite.	Grey, brecciated highly friable siliceous dolomite.	1055706	15.0	16.4		31.7	20.9	<0.05	0.8	0.05	0.02	0.02	45.7	
							1055707	16.4	21.4		31.5	21.3	<0.05	1.0	0.05	0.02	0.02	44.9	
E.O.N	21.4																		

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

SHEET No. 299

TENEMENT NAME SHINTON EL 10/79 No. ....

PLAN - MAP REFERENCE.....

CO-ORDINATES 344625 m E AZIMUTH..... DRILLERS OVERLAND DRILLING COMMENCED 17/3/83 DEPTH 30.0 HOLE No. PD 83 SM 9  
RL COLLAR 5472 225 m N INCLINATION VERTICAL DRILL TYPE WARMAN 500 COMPLETED 17/3/83 CASING LEFT..... DPO No(s) 30462

DEPTH		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.....)							
From (M)	To (M)										CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	SO	SO <sub>3</sub>	L.A.I.
0	1.0				Grey-white sandy soil with dolomite + quartz fragments.													
1.0	2.0				Grey-brown sandy soil with dolomite + quartz fragments.													
2.0	5.0		60		grey-brown sandy soil + clay balls. light grey siliceous dolomite fragments.													
			8.0															
5.0	8.0				No recovery. - clays?													
8.0	10.0				Grey-green mud with dolomite fragments up to 20mm.													
10.0	15.0		15.0		Grey dolomite fragments - siliceous, appears brecciated. fragments up to 5mm.													
					Water table @ 15.0m.													
15.0	19.0		19.0		light grey mud with dolomite fragments up to 5mm. - weathered bedrock? bedrock @ ± 20.0m.													
19.0	30.0				Grey siliceous brecciated? dolomite fragments up to 15mm.		1055708	21.0	24.0		29.7	20.2	0.05	5.4	0.10	0.04	0.04	43.4
							1055709	24.0	27.0		26.9	19.6	0.20	11.2	0.25	0.04	0.04	46.1
30mm	E.O.H.						1055710	27.0	30.0		26.00	17.0	0.15	19.2	0.20	0.04	0.04	37.4
					Bedrock too soft to core.													

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APPENDIX 2

SURFACE ROCK CHIP GEOCHEMISTRY



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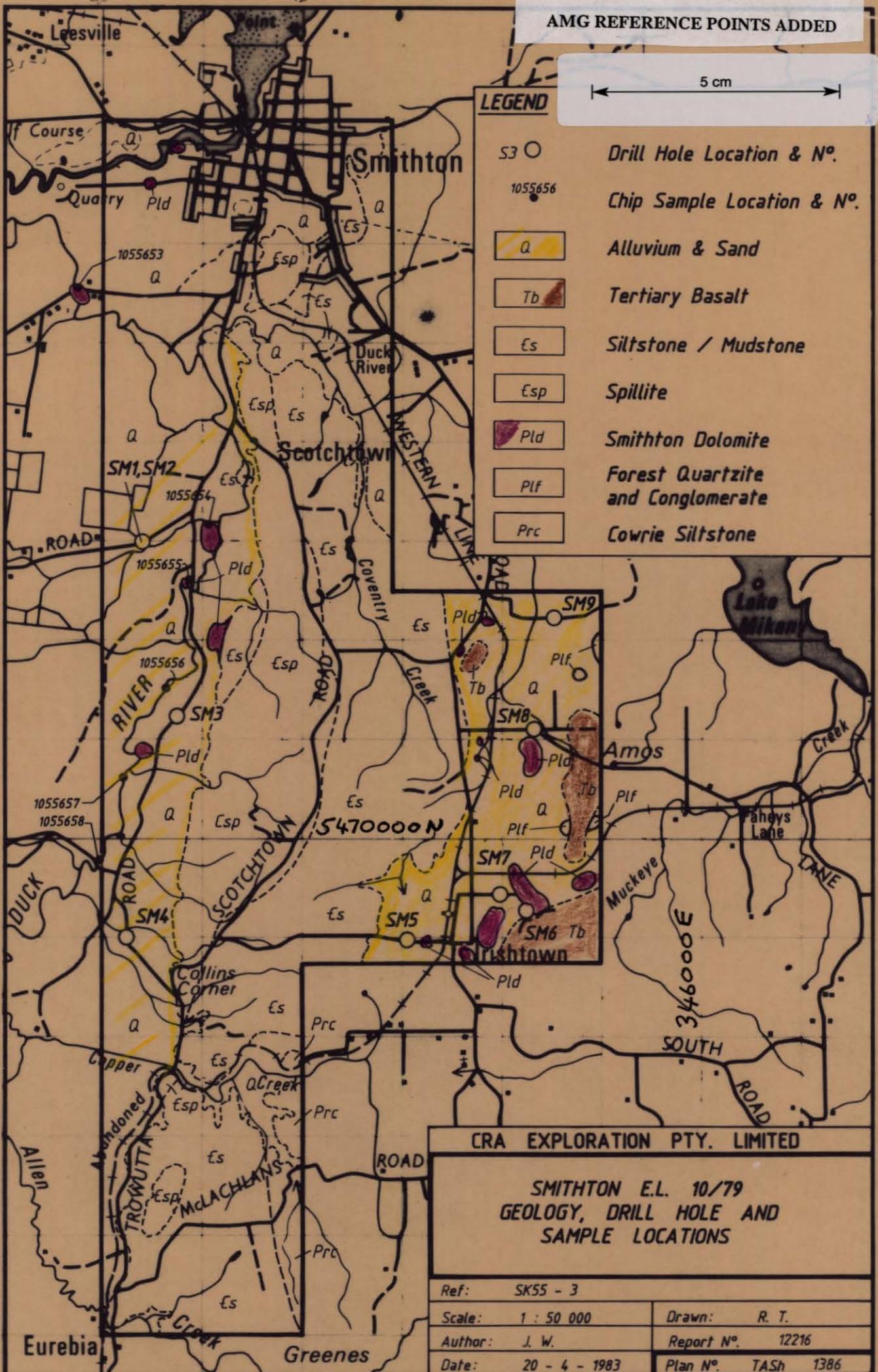
540024

AMG REFERENCE POINTS ADDED

5 cm

LEGEND

- S3 ○ Drill Hole Location & N°.
- 1055656 ● Chip Sample Location & N°.
- Q Alluvium & Sand
- Tb Tertiary Basalt
- Es Siltstone / Mudstone
- Esp Spillite
- Pld Smithton Dolomite
- Plf Forest Quartzite and Conglomerate
- Prc Cowrie Siltstone



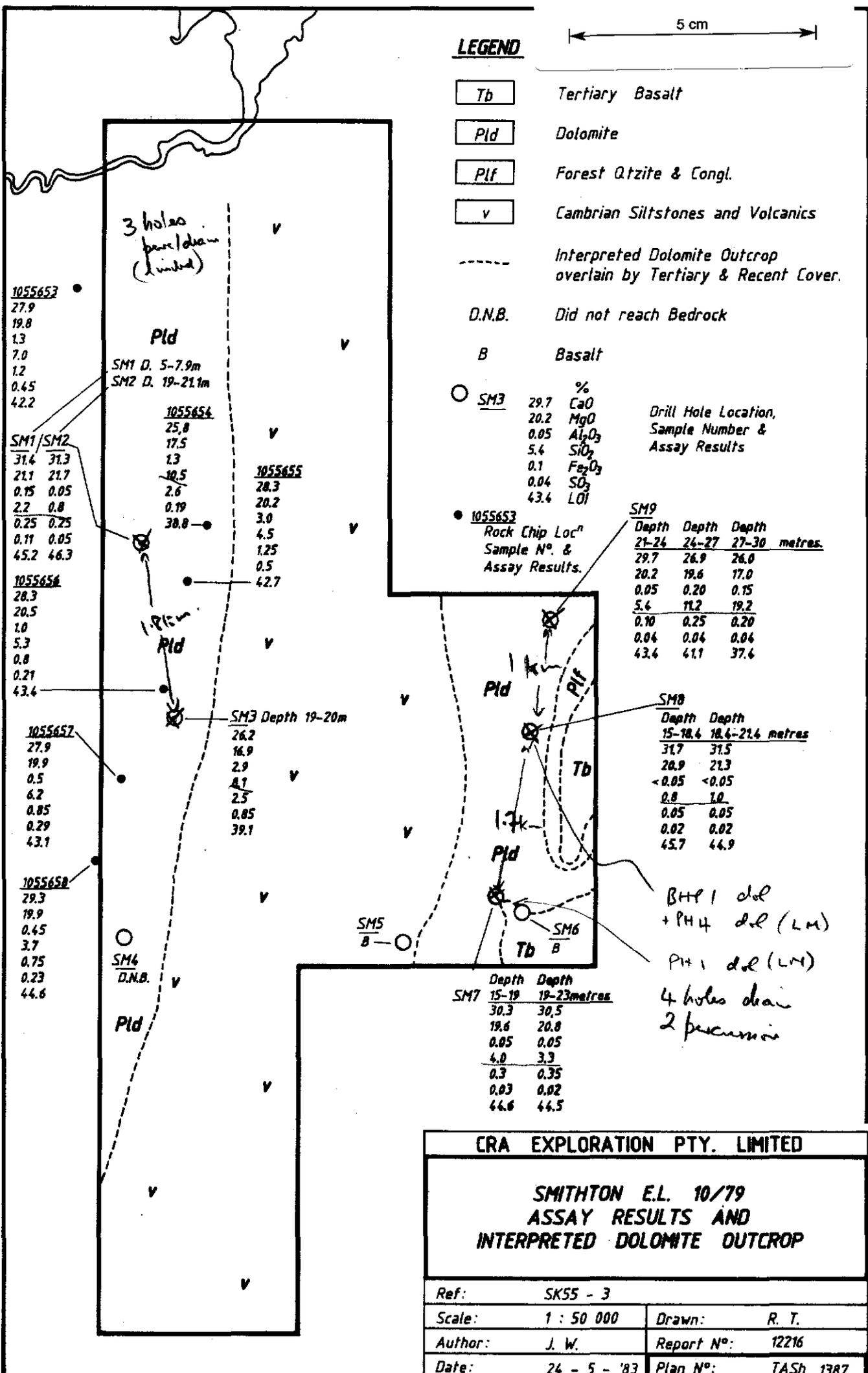
CRA EXPLORATION PTY. LIMITED

SMITHTON E.L. 10/79  
GEOLOGY, DRILL HOLE AND  
SAMPLE LOCATIONS

Ref:	SK55 - 3	Drawn:	R. T.
Scale:	1 : 50 000	Report N°:	12216
Author:	J. W.	Plan N°:	TASH 1386
Date:	20 - 4 - 1983		

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SMITTON E.L. 10/79  
ASSAY RESULTS AND  
INTERPRETED DOLOMITE OUTCROP