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COMALCO LIMITED

EXPLORATION DEPARTMENT

FINAL REPORT ON E.L. 26/76 LEFROY

SEPTEMBER 1977

MICROFILMED

P.W. ASKINS

I INTRODUCTION

Several areas in the Silurian Mathinna Beds of Eastern Tasmania were thought to be prospective for gold. Accordingly two areas, over Lisle and Lefroy, were applied for.

E.L. 26/76 at Lefroy was originally granted on 8th October, 1976. The location of the E.L. is as shown on Fig. 1.

The licence will not be renewed at the next renewal date, 8th October, 1977, because investigations have indicated that the chances of locating economic concentrations of gold are remote.

II GEOLOGY

The geology of the region has been well described elsewhere, and there is little point in a detailed treatment here. The more recent references to geology are Groves (1965), Gee and Pike (1974) and Marshall (1969).

Gold occurs in the area in a series of east west trending quartz veins which lie in a north north westerly trending zone within Silurian Mathinna Beds, (Fig.2.). The Mathinna Beds are essentially a sequence of well cleaved siltstones, sandstones and slates. The zone containing the quartz veins is parallel to gross stratigraphic units shown on the Beaconsfield and Pipers River 1 mile geological maps. No granite outcrops in the vicinity, but a regional gravity survey by the Mines Dept. (Leaman et al, 1973) indicated the possible presence of a granodiorite body centred south of Lefroy.

III

EXPLORATION AIMS AND PROGRAM

The Mathinna Beds were thought to be prospective for gold, and the aim of exploration in the area was to locate stratabound gold mineralization. An approximate economic target would be an open pittable body of greater than 10 million tonnes of 4.5 g Au/tonne.

Gold in veins is not an attractive target because of historically established small tonnages and patchy grades.

No attempt was made to assess alluvial gold and deep lead deposits which have been investigated in the area in the past. This is because such deposits are likely to be very patchy and very difficult to assess, and, in order to compensate for costs of stringent environmental protection and rehabilitation, the necessary grades would probably be unattainable.

Broadhurst (1935) was the first author to note that the gold mineralization at Lefroy is stratabound: ".....the main reefs lie in a belt of country running to the west of north. There are some reefs outside this belt, but they are relatively unimportant in size and value. This belt agrees very well in direction with the strike of the Cambro-Ordovician rocks, and this suggests that the reefs are connected with a particular series of strata." Broadhurst interpreted this to occur because these beds were more competent than the adjacent ones and so tension fractures occurred preferentially in them. The source of the gold is not stated, but is usually assumed to be from granites at depth.

An alternative origin for the gold, proposed here, is that the gold occurs originally and syngenetically within certain beds of the Ordovician Mathinna Beds, and during metamorphism gold is remobilized into quartz veins which occupy tension fractures. A nearby granite may act merely as a heat source and so generate hydrothermal fluids from connate waters. Gold in the sedimentary beds may be so fine grained that it cannot be detected by panning, and hence could have been missed by early prospectors - the only gold detected would have been in the quartz veins.

Exploration for gold in this E.L. was partly dependent on results of a more thorough sampling program in a similar environment in E.L. 25/76 at Lisle, to the south east. It was decided that the exploration program for Lefroy would be designed when and if favourable rock types were found at Lisle. However, the Lisle investigations did not define any particularly favourable beds, so it was decided initially to sample the zone of rocks within which the quartz veins occur at Lisle, and carry out further work if this sampling was favourable.

IV RESULTS OF INVESTIGATIONS

The best available exposure of rocks in the Lefroy area is in drill core of holes drilled by the Mines Dept. The holes were drilled to test geophysical anomalies which were found in a program to trace vein systems. (Leaman, 1974, 1975.). The Mines Department found in three analyses of the core that black pyritic shales contained traces of gold. However the bulk of the core was not analysed.

The location of the drill holes is shown on Fig.2.

The core was geologically logged (see attached logs). Black shales and some sandstone and siltstone were marked out for splitting and analysis in Holes 1 and 2. Sample intervals (as shown on the logs) were split by Mines Dept personnel in Hobart and despatched to the Mines Dept. Laboratory at Launceston for fire assay for Au and Ag.

Assays are shown on the logs. Only trace amounts (less than 0.1 g/tonne) of both gold and silver were found, but gold occurs in all rock types with no apparent preference for say black shales.

Since trace amounts of gold were found in these rocks, it is possible that within this same stratigraphic horizon there may be zones where gold is in economic concentrations. However, it is thought more likely that only trace quantities of gold persist throughout this horizon and that these trace quantities are sufficient to have been the source of gold in all of the quartz veins in the area.

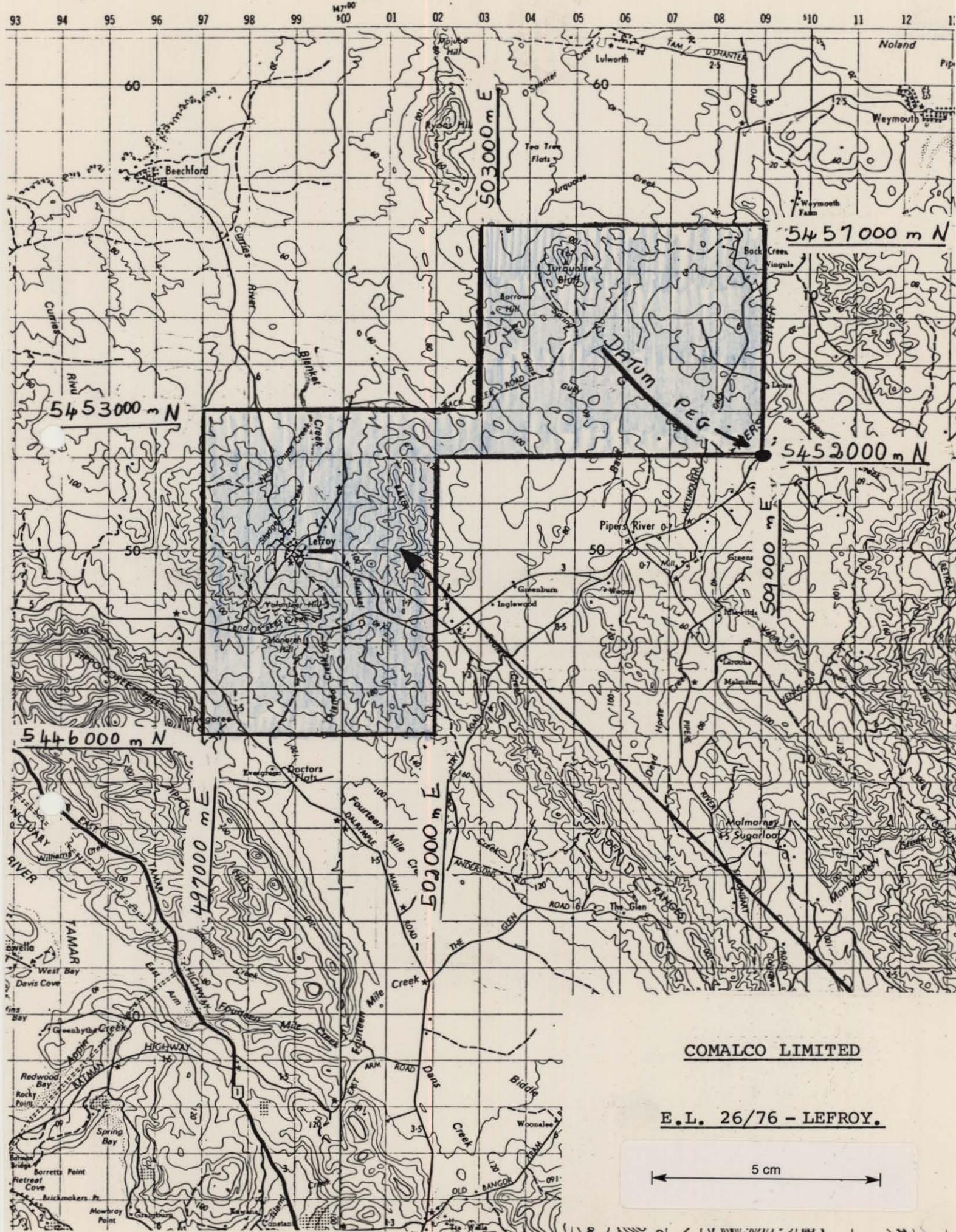
Results of exploration in the Lisle area E.L. 25/76 were also not encouraging, so no further sampling is thought warranted. The exploration licence should not be renewed.



29.9.77

REFERENCES

1. BROADHURST, E. (1935). Lefroy and Back Creek Goldfields.
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3. GROVES, D.I. (1965). Geology of the Lefroy Goldfield
Tech. Rep. Dep. Mines Tas. 9 : 58 - 76.
4. LEAMAN, D.E., (1973). Geophysics of the Lefroy Goldfield.
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5. LEAMAN, D.E., (1975). Results of drilling at Lefroy.
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6. LEAMAN, D.E., SYMONDS, P.A., SHIRLEY, J.E. (1973)
Gravity survey of the Tamar region, northern
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E.L. 26/76 - LEFROY.

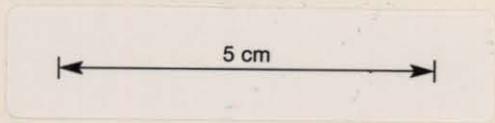


Fig.1.



DEPARTMENT OF MINES--TASMANIA

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22-26/76 L-1-207

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LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

TELEPHONES:
Metallurgical Research }
Laboratory } 44 2431-2
Mines Inspection } (2 lines)
Explosives & Inflammable Liquids

8th August, 1977

Comalco Exploration Ltd.
P.O. Box 691,
Devonport. Tas. 7310

Dear Sir,

Please find below results on samples submitted to us on the 11th and 29th July, 77, from Lefroy Bore Hole 2.

<u>Reg.Nos.</u>		<u>Ag g/t</u>	<u>Au g/t</u>
771890	50.74-54.74	Trace	Trace
891	66.03-67.73	Nil	Nil
892	69.90-71.06	Trace	Trace
893	72.63-74.24	Trace	Trace
894	76.12-77.18	Trace	Trace
895	78.63-91.75	Trace	Trace
896	93.23-94.49	Nil	Nil
897	96.37-99.24	Trace	Trace
772139	20.62-22.56		Trace
140	25.34-26.86		Trace
141	30.17-31.17		Trace
142	37.40-39.18		Trace
143	40.99-43.00		Trace
144	43.00-44.39		Trace
145	44.69-46.22		Trace
146	47.74-49.27		Trace
147	56.38-58.95		Trace

Analyses by *M. F. ...*

Fee: \$125.00

Trace is less than 0.1 g/t

H. K. Wellington
(H. K. Wellington),
Chief Chemist & Metallurgist.

DEPARTMENT OF MINES—TASMANIA

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TELEPHONES:

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 Laboratory }
 Mines Inspection } (2 lines)
 Explosives & Inflammable Liquids }
 }

LAUNCESTON OFFICES
 287 WELLINGTON STREET
 SOUTH LAUNCESTON 7250

28th June, 1977

Comalco Ltd.,
 Main Road,
 Spreyton. Tas. 7310

Dear Sirs,

Please find below results on samples received from you on the 20th June, 77 and stated to be from Lefroy, D.D.H. Hole 1.

<u>Reg.No.</u>	<u>Details</u>	<u>Au g/t</u>	<u>Ag g/t</u>
771804	21.38m-22.66m	Trace	Trace
805	23.90m-25.00m	Nil	Nil
806	25.85m-29.66m	Trace	Trace
807	40.23m-41.60m	Trace	Trace
808	41.60m-43.00m	Trace	Trace
809	43.00m-45.90m	Trace	Trace
771810	45.90m-49.00m	Trace	Trace
811	49.00m-50.40m	Nil	Trace
812	50.40m-51.64m	Trace	Trace
813	59.81m-61.41m	Nil	Trace
814	71.52m-73.92m	Trace	Trace
815	84.73m-86.00m	Nil	Trace
816	86.00m-87.00m	Nil	Trace
817	90.50m-92.58m	Nil	Trace
818	98.00m-100.00m	Trace	Trace
819	100.00m-101.85m	Trace	Trace
771820	101.85m-103.47m	Trace	Trace
821	103.47m-104.85m	Trace	Trace
822	104.85m-106.08m	Trace	Trace

Analyses by *J. H. Lefroy* ..
 Fee: \$190.00

Whenever a trace is reported the combined weight of precious metals is less than 0.5g per tonne.

J. H. Lefroy
 (H. K. Wellington),
 Chief Chemist & Metallurgist.

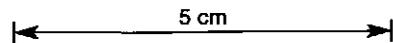
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EXPLORATION DEPARTMENT

DRILLING LOG

313012

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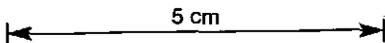


Project: LEFROY

Date: 17-5-1977 (Logged) 18

Core No. B.H. 1. Location. Angle Azimuth Collar R. L. Drilling Method.
 Logged by R. POLTOCK Drilled by MINES DEPARTMENT Total Depth. 106.80

From	To	Graphic Log	Description	Assay			
				Ag	gt	Ag	gt
50.29	100.00		SILTSTONE - fresh dom grey with black bands 57.4 - 58.35, 60.20 - 60.40				
		60m	65.50, 73.4, sandy silts and sandstone 86.27 - 86.47	NIL	TR	59.81	61.41
			cleavage 30° at 60 m. bedding 15° - 25° at 73 m.				
			pyritic between 50.29 - 100.00				
		70m	qtz veining 87.42, 90.6, 91.12, 92.38, 95.42, 97.23, 98.23, 99.13, 85.73, 78.63, 81.85. these <1 mm thick.				
				TR	TR	71.52	73.12
		80m					
				NIL	TR	84.73	
				NIL	TR	86.00	87.00
		90m					
				NIL	TR	10.50	12.53
		100m					
				TR	TR	18.00	102.00
100	106.80		SILTSTONE	TR	TR	101.85	
				TR	TR	103.47	
				TR	TR	100.85	
				TR	TR	106.03	



EXPLORATION DEPARTMENT DRILLING LOG

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012

18-5-1977 (Logged)

Project: LEFROY

Date:

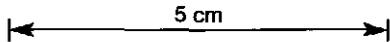
Hole No. B.H. 2	Location.	Angle	Azimuth	Collar R. L.	Drilling Method.
Logged by R. POLTOCK		Drilled by MINES DEPARTMENT			Total Depth. 100.76

From	To	Graphic Log	Description	Assay			
				Ag gt	Au gt		
6.02	9.00		SOIL				
9.00	17.85		SILTSTONE - SANDSTONE mod weathered white - pink brown				
17.85	23.00		SILTSTONE fresh olive - grey green, fine - sandy				
23.00	28.65		SANDSTONE - fresh, fine - med grained				
			core very broken 24.08 - 25.34				
28.65	31.17		SILTSTONE - grey - dark grey 30.97 - 31.00 dark silt with thin qtz veins				
31.17	45.25		SANDSTONE - medium grained bedding 30°				
			silt bands 38.35 - 39.52 and 43.37				
			qtz veining at 38.25, 41.10 and 45.15. These <15mm				
45.25	58.95		SILTSTONE - grey, dark grey pyritic between 51.70 - 53.85, 55.50 - 58.95				
			bedding at 47.75 m 00 - 10°, 58.0 m 45°.				
			qtz veining 45.40, 56.58 - 57.0, qtz chlorite 50.74 - 52.93 and				
			53.84 - 54.10				
				TR	TR		

**EXPLORATION DEPARTMENT
DRILLING LOG**

313014

013



Project: LEFROY

Date: 18-5-1977

Hole No. B.H. 2 Location. Angle Azimuth Collar R. L. Drilling Method.
 Logged by R. POLTOCK Drilled by MINES DEPARTMENT Total Depth. 100.76

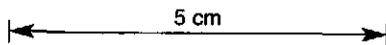
From	To	Graphic Log	Description	Assay			
				Ag gt	Au gt		
58.95	64.00	<i>60m</i>	SANDSTONE - fine - medium grained with dark silt bands at 62.10 and 63.24 bedding 30° scattered qtz veins < 3mm thick		TR	56.38	58.95
64.00	91.75		SILTSTONE - SANDSTONE interbedded former < 2 m thick qtz veining frequent 0.02 - 0.05 m thick	NIL	NIL	60.03	62.73
		<i>70m</i>		TR	TR	69.90	71.06
				TR	TR	72.63	74.24
				TR	TR	76.12	77.18
		<i>80m</i>		TR.	TR	78.63	
91.75	96.0	<i>90m</i>	SANDSTONE				91.75
96.0	100.76		SILTSTONE - SANDSTONE thin interbeds qtz veining 97.00 - 97.6	NIL	NIL	93.23	94.49
		<i>100m</i>		TR	TR	96.37	99.24

Copies to: Project Geologist, Originator, Exploration Manager.

COMMONWEALTH ALUMINIUM CORPORATION LIMITED
EXPLORATION DEPARTMENT
DRILLING LOG

313016

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Project: LEFROY

Date: 19-5-77 (Logged)

Hole No. B.H.3. Location. Angle Azimuth Collar R. L. Drilling Method.

Logged by R. POLTOCK Drilled by MINES DEPARTMENT Total Depth. 140.80

From	To	Description	Assay					
52.70	62.78	SILTSTONE fine to sandy with black pyritic silt bands at 52.80 and 54.35						
62.78	105.00	SANDSTONE fine grained with black siltstones at 64.80, 69.80 (with qtz), 67.80, 103-104.7, grey siltstones 74.0-81.10. Qtz veining at 74.90 and 76.52.						
105.0	144.44	SILTSTONE grey, pyritic with fine sandstone lenses						

