

GEO	HOLE	F-22/66
-----	------	---------

PAGE

\_\_\_\_\_

LITHOLOGY				ALTERATION				SULPHIDE				GEOTECHNICAL				STRUCTURE				COMMENTS				
TO	COL	WT	CODE	G	LITH	TEX	DOL	VEIN	NO	CR	CO	PY	MIN	Q	OXJ	REC	CORE	CUT	DEPTH		BCA	A1	OTH	D
7	3	3	4	1	5	3	3	4	3	3	3	2	3	1	3	5	4	3	7	3	3	3	3	30
3	0	BA	CW		CLAY																			
4	31	GY	FW		D									M	M		HS		9	3	30			
10		GY	SW		D	B								M	M									
36	4	GY	BL		D	M								M	S				37			V	O	
37	3	GY	FR		D	M						5		M					42	0				
45	8	GY	FR		D	B						2		M										
46	5	GY	FR		D	B						40		M										
46	6	GY	FR		D																			
140		GY	FR		D	B	W							M	W				128	15				1066x

E 22/663

PROSPECT: <b>HYC - McARTHUR RIVER</b>		HOLE No. <b>E22/66D - INTAKE SHAFT</b> EPM/LEASE No. <b>PAGE 1 OF 7</b>	
SURVEY DETAILS			
Downhole Survey: <b>WIRELINE - EASTMAN</b>	Method: <b>WIRELINE - EASTMAN</b>	Date: <b>30/5/93</b>	By: <b>PONTIL PTY. LTD.</b>
Depth: <b>140 m</b>			
Azimuth: <b>028°</b>			
Declination: <b>-89°</b>			
Core stored at: <b>MINETS CAMP - McARTHUR RIVER</b> Drill contractor: <b>PONTIL PTY. LTD.</b>			
Assay rejects started at: <b>-</b>	Started: <b>27/5/93</b>		
Steel casing left in hole: <b>6m (0-6m)</b>	Finished: <b>30/5/93</b>		
PVC casing left in hole: <b>-</b>	Logged by: <b>R.S.J. L. - MIN EXPLORATION</b>		

  

PROSPECT: <b>HYC - McARTHUR RIVER</b>		HOLE No. <b>E22/66D - INTAKE SHAFT</b> EPM/LEASE No. <b>PAGE 1 OF 7</b>	
SURVEY DETAILS			
Downhole Survey: <b>WIRELINE - EASTMAN</b>	Method: <b>WIRELINE - EASTMAN</b>	Date: <b>30/5/93</b>	By: <b>PONTIL PTY. LTD.</b>
Depth: <b>140 m</b>			
Azimuth: <b>028°</b>			
Declination: <b>-89°</b>			
Core stored at: <b>MINETS CAMP - McARTHUR RIVER</b> Drill contractor: <b>PONTIL PTY. LTD.</b>			
Assay rejects started at: <b>-</b>	Started: <b>27/5/93</b>		
Steel casing left in hole: <b>6m (0-6m)</b>	Finished: <b>30/5/93</b>		
PVC casing left in hole: <b>-</b>	Logged by: <b>R.S.J. L. - MIN EXPLORATION</b>		

## GEOLOGICAL LOG

PAGE 20

## GEOLOGICAL LOG

PROSPECT: HVC -		McARTHUR	RIVER	HOLE No. E22/66 D	DESCRIPTION
FROM	TO	LENGTH			
0.00	3.00	3.00	BROWN CLAY/SOIL - Semi-friable and podsollic when dry, plastic and cohesive when wet.		
3.00	4.31	1.31	MITCHELL YARD DOLOMITE MEMBER - Weathered, moderately oxidised and iron stained. Approximately 10% of interval is original grey dolomite. Rusty brown clay intervals with a weak gravel and grit component are common. White, weakly iron stained clay intervals are also noted. Oxidation appears to begin along fractures and joints in the dolomite, eventually leading to a breakdown of the dolomite into white clay.		
4.31	140.00	135.69	MITCHELL YARD DOLOMITE MEMBER - Fresh (slightly weathered in places) grey, pale grey and brownish grey dolomite. Thinly bedded, though commonly massive. Bedding is difficult to distinguish in places due to moderately variable dolomitisation. Bedding plane contacts are generally vague and distorted. Highly disrupted bedding intervals, or "chaotic" zones, were noted. The chaotic intervals have no defined continuous bedding planes or structure. They have a brecciated, disrupted appearance, and may possibly be weakly bedding planes or structure. They have a brecciated, disrupted appearance, and may possibly be weakly to moderately dolomitised fragments of thinly bedded dolosiltstone and dolarenite. Whether the fragments are tectonic breccias, sedimentary breccias or due to soft sediment deformation is		

## GEOLOGICAL LOG

GEOLOGICAL LOG			
PROSPECT: HVC -	McARTHUR	RIVER	HOLE No. E22/66 D
FROM	TO	LENGTH	DESCRIPTION
			unclear. A common texture observed is that akin to bioturbation, as described by Logan (MIM TECH REPORT = 686).
			The core is weakly oxidised, with the oxidation restricted to fractures and joints (refer to p5). A few minor cavities occurred in the hole.
			The core is weakly veined by carbonate (refer to pages 6 and 7 respectively).
			Minor to trace amounts of disseminated fine grained sphalerite, pyrite and galena were noted. Similar amounts of galena and pyrite also occur as blebs in stylolites and carbonate veinlets, and in cavities.
			EXCEPTIONS OCCUR AT: CHAOTIC INTERVALS - Brecciated, disrupted appearance. Moderate to weak dolomitisation of thinly bedded dolosiltstone and dolarenite fragments. Moderate to strong stylolite content.
			60.30 - 69.24 strong disruption
			75.30 - 79.60 weak disruption
			80.34 - 86.54 moderate disruption
			88.72 - 92.75 weak to moderate disruption
			128.94 - 129.35 strong disruption

# GEOLOGICAL LOG

[illegible]

## GEOLOGICAL LOG

GEOLOGICAL LOG						
PROSPECT: HVC -		McARTHUR	RIVER	HOLE No. E22/66 D		
FROM	TO	LENGTH	DESCRIPTION			
STRUCTURAL INFORMATION						
1.0 FRACTURED INTERVALS - Intervals of weak to moderate core fracture (open fractures).						
			9.20-10.10	30.61-30.90	117.70-118.00	131.61-132.64
			29.20-29.42	31.33-31.64	121.64-121.70	
2.0 IRON STAINED JOINTS/FRACTURES						
			5.09	18.36	32.64	50.24 62.71 96.95 118.10 136.50
			7.67	22.15	35.12	53.93 63.50 97.00 119.90 137.60
			8.00	23.00	39.55	54.92 64.43 97.46 120.74 137.71
			8.92	23.25	42.25	54.17 68.84 109.38 123.70 137.78
			10.30	23.50	44.65	54.90 73.32 110.75 128.38 137.84
			10.66	23.67	45.58	55.68 81.20 110.87 128.67 138.35
			12.38	24.63	45.72	57.12 87.57 110.94 130.25 139.20
			14.59	25.07	45.82	57.50 88.20 114.09 130.60
			15.64	28.00	46.22	57.90 93.50 116.36 133.22
			16.49	29.00	49.68	58.21 93.60 116.50 133.90
			17.07	29.20	49.80	59.05 96.12 117.07 134.83
			17.92	29.80	49.94	59.36 96.49 117.43 135.00

## GEOLOGICAL LOG

PAGE 6 OF 7

GEOLOGICAL LOG			
PROSPECT: HVC -	MCARTHUR	RIVER	HOLE No. E22/66 D
FROM	TO	LENGTH	DESCRIPTION
			3.0 CAVITIES - Usually caused by corrosion of dolomite by water; often lined with dolomite crystals; sometimes iron stained.
			4.85-4.90
			46.59-46.69 mineralised cavity-mostly filled with dolomite, pyrite and
			galena.
			129.15-129.20
			4.0 FAULTS - One late stage graphitic fracture with slickensides was noted at
			63.70 metres (fault ?) weak iron staining.
			5.0 CORE TO BEDDING ANGLES, AND ALPHA (A) ANGLES
			8.88=10, A=246 33.92=11, A=97 75.20=6, A=30 128.72=10, A=165
			11.85=22, A=118 39.27=12, A=90 92.56=25, A=305 131.61=5, A=102
			15.30=7, A=32 42.00=8, A=110 96.20=3, A=190 136.38=12, A=170
			19.76=11, A=52 45.25=5, A=94 107.80=3, A=222 139.00=11, A=162
			23.60=12, A=68 49.00=25, A=284 112.10=12, A=64
			28.10=29, A=80 52.18=15, A=108 113.80=7, A=90
			30.10=8, A=52 69.90=15, A=88 121.00=15, A=95
			31.15=6, A=65 70.80=13, A=75 125.00=12, A=120



## MIM EXPLORATION PTY LTD.

## GEOLOGICAL LOG

PAGE 7 OF

GEOLOGICAL LOG			
PROSPECT:	HVC -	McARTHUR	RIVER
			HOLE No. E22/66 D
FROM	TO	LENGTH	DESCRIPTION
			6.0 CORE TO FRACTURE (F) / VEINLET (V) ANGLES, AND ALPHA (A) ANGLES
			8.92=35 (F), A=148 66.15=52 (F), A=313 131.61=5 (F), A=100
			11.21=50 (F), A=125 73.05=55 (F), A=43 136.49=14 (F), A=200
			14.66=16 (F), A=121 81.20=27 (F), A=348 139.24=4 (F), A=48
			18.37=20 (F), A=303 84.29=63 (F), A=60
			21.33=30 (V), A=170 86.48=48 (F), A=183
			22.15=19 (F), A=347 93.40=54 (F), A=88
			23.00=50 (F), A=280 96.49=45 (F), A=281
			23.60=47 (F), A=90 100.73=65 (F), A=184
			25.00=41 (F), A=80 109.05=73 (V), A=346
			28.01=32 (F), A=70 109.38=34 (F), A=228
			32.30=45 (F), A=150 110.95=55 (F), A=262
			35.27=44 (F), A=343 114.10=52 (F), A=233
			39.56=60 (F), A=245 116.41=42 (F), A=328
			42.25=50 (F), A=113 117.72=35 (F), A=128
			45.71=50 (V), A=253 118.10=23 (F), A=290
			53.60=50 (V), A=248 120.70=17 (F), A=336
			57.50=25 (F), A=135 124.90=44 (F), A=76
			59.42=35 (F), A=55 128.68=41 (F), A=75

# BASIC GEOTECHNICAL LOG

## McARTHUR RIVER PROJECT

HOLE No. E22/66D.  
LOGGED BY RJSL/PFL  
DATE 3/6/93...

ROCK STRENGTH  
R1 v. weak R2 weak R3 med strong R4 strong R5 v. strong

	TO	CORE LOSS	ROCK TYPE	WEATHER	ROCK STRENGTH	C.B.A.	BEDDING BREAKS	C.F.A.	JOINT BREAKS	R.Q.D.	REMARKS
0	1	5%	clay	CW	R1		1		1	1	"BLACK SOIL" - Firm clay
1	2	5%	clay	CW	R1		1		1	1	AA
2	3	5%	clay	CW	R1		1		1	1	AA
3	4	69%	clay + dolomite	W	R1		1		1	1	Brown + white clay - weathered dolomite
4	5	0%	dolomite	FrOx	R2		1		3	95%	MICHELLYARD Dolomite
5	6	0%		FrOx	R3		1		2	100%	↓
6	7	0%		Fr	R3		1		1	100%	
7	8	0%		FrOx	R3		1		1	100%	
8	9	0%		FrOx	R3	10	1	35	2	100%	
9	10	0%		FrOx	R3		1		4	100%	
10	11	0%		FrOx	R3		1		2	93%	
11	12	0%		Fr	R3	22	1	50	2	100%	
12	13	0%		FrOx	R3		1		1	100%	
13	14	0%		Fr	R3		1		1	100%	
14	15	0%		FrOx	R3		1	16	1	100%	
15	16	0%		FrOx	R3	7	1		2	100%	
16	17	0%		FrOx	R3		1		1	100%	
17	18	0%		FrOx	R3		1		2	100%	
18	19	0%		FrOx	R3		1	20	1	100%	
19	20	0%		Fr	R3	11	1		1	100%	
20	21	0%		Fr	R3		1		1	100%	
21	22	0%		FrOx	R3		1		1	100%	
22	23	0%		FrOx	R3		1	19	2	95%	
23	24	0%		FrOx	R3	12	1	50,47	5	100%	
24	25	0%		FrOx	R3		1		1	100%	
25	26	0%		FrOx	R3		1	41	1	100%	
26	27	0%		Fr	R3		1		1	100%	
27	28	0%		Fr	R3		1		1	100%	
28	29	0%		FrOx	R3	29	1	32	1	100%	
29	30	0%		FrOx	R3		1		3	100%	
30	31	0%		FrOx	R3	8	1		3	100%	
31	32	0%		FrOx	R3	6	1		2	100%	
32	33	0%		FrOx	R3		1		2	100%	
33	34	0%		FrOx	R3	11	1		1	100%	
34	35	0%		Fr	R3		1		1	100%	
35	36	0%		FrOx	R3		1	44	3	100%	
36	37	0%	dolomite	Fr	R3		1		1	100%	

# BASIC GEOTECHNICAL LOG

## McARTHUR RIVER PROJECT

HOLE NO. RJL/DFL  
LOGGED BY. JP E22/66  
DATE. 3/6/93

	TO	CORE LOSS	ROCK TYPE	WEATHER	ROCK STRENGTH	C.B.A.	BEDDING BREAKS	C.F.A.	JOINT BREAKS	R.Q.D.	REMARKS
37	38	0%	dolomite	Fr	R3		-		1	100%	McConnell and Dolomite
38	39	0%		Fr	R3		-		1	100%	
39	40	0%		FrOx	R3	12	-	60	2	100%	
40	41	0%		FrOx	R3		-		2	100%	
41	42	0%		Fr	R3		-		-	100%	
42	43	0%		FrOx	R3	8	-	50	1	91%	
43	44	0%		Fr	R3		-		-	100%	
44	45	0%		FrOx	R3		-		1	100%	
45	46	0%		FrOx	R3	5	-		3	91%	
46	47	0%		FrOx	R2		-		4	92%	10cm mineralised cavity - dolomite, Galena, Pyrite
47	48	0%		Fr	R3		-		-	100%	
48	49	0%		Fr	R3		-		-	100%	
49	50	0%		FrOx	R3	25	-		4	96%	
50	51	0%		FrOx	R3		-		1	100%	
51	52	0%		Fr	R3		-		-	100%	
52	53	0%		Fr	R3	15	-		-	100%	
53	54	0%		FrOx	R3		-		1	93%	
54	55	0%		FrOx	R3		-		4	90%	
55	56	0%		FrOx	R3		-		3	100%	
56	57	0%		Fr	R3		-		-	100%	
57	58	0%		FrOx	R3		-	25	5	96%	
58	59	0%		FrOx	R3		-		1	100%	
59	60	0%		FrOx	R3		1	35	4	97%	
60	61	0%		Fr	R3		-		-	100%	
61	62	0%		Fr	R3		-		-	100%	
62	63	0%		FrOx	R3		-		1	100%	
63	64	0%		FrOx	R3		1		2	100%	
64	65	0%		Fr	R3		1		-	100%	
65	66	0%		Fr	R3		2		1	96%	
66	67	0%		Fr	R3		-	52	-	100%	
67	68	0%		Fr	R3		-		-	100%	
68	69	0%		FrOx	R3		-		2	100%	
69	70	0%		Fr	R3	15	-		-	100%	
70	71	0%		Fr	R3	13	-		-	100%	
71	72	0%		Fr	R3		-		-	100%	
72	73	0%		Fr	R3		-		-	100%	
73	74	0%	dolomite	Fr	R3		-	55	1	100%	

CW comp. weather R1 v. weak R2 weak R3 med. strong R4 strong R5 v. strong

SW sl. weather FrOx fresh weather Fr fresh

ROCK STRENGTH

# BASIC GEOTECHNICAL LOG

## McARTHUR RIVER PROJECT

HOLE No. E22/66D  
 LOGGED BY RJSL/DPL  
 DATE. 3/6/93

	TO	CORE LOSS	ROCK TYPE	WEATHER	ROCK STRENGTH	C.B.A.	BEDDING BREAKS	C.F.A.	JOINT BREAKS	R.Q.D.	REMARKS
74	75	0%	dolomite	Fr	R3		-		-	100%	McHELL YARD Dolomite
75	76	0%	T	Fr	R3	6	-		-	100%	↓
76	77	0%		Fr	R3		-		-	100%	
77	78	0%		Fr	R3		-		-	100%	
78	79	0%		Fr	R3		-		-	100%	
79	80	0%		Fr	R3		-		-	100%	
80	81	0%		Fr	R3		-		-	100%	
81	82	0%		FrOx	R3		-	27	1	100%	
82	83	0%		Fr	R3		-		-	100%	
83	84	0%		Fr	R3		-		-	100%	
84	85	0%		Fr	R3		-	63	-	100%	
85	86	0%		Fr	R3		-		-	100%	
86	87	0%		FrOx	R3		-	48	1	100%	
87	88	0%		Fr	R3		-		-	100%	
88	89	0%		FrOx	R3		-		-	100%	
89	90	0%		Fr	R3		-		-	100%	
90	91	0%		Fr	R3		-		-	100%	
91	92	0%		Fr	R3		-		-	100%	
92	93	0%		FrOx	R3	25	-		1	100%	
93	94	0%		FrOx	R3		-	54	1	91%	
94	95	0%		Fr	R3		-		-	100%	
95	96	0%		Fr	R3		-		-	100%	
96	97	0%		FrOx	R3	3	-	45	4	95%	
97	98	0%		FrOx	R3		-		1	100%	
98	99	0%		Fr	R3		-		1	100%	
99	100	0%		FrOx	R3		-		-	100%	
100	101	0%		Fr	R3		-	65	-	100%	
101	102	0%		Fr	R3		-		-	100%	
102	103	0%		Fr	R3		-		-	100%	
103	104	0%		Fr	R3		-		-	100%	
104	105	0%		Fr	R3		-		-	100%	
105	106	0%		Fr	R3		-		-	100%	
106	107	0%		Fr	R3		-		1	100%	
107	108	0%		Fr	R3	3	-		1	100%	
108	109	0%		Fr	R3		-		-	100%	
109	110	0%	↓	FrOx	R3		-	34	2	100%	
110	111	0%	dolomite	FrOx	R3		-		3	86%	

ROCK STRENGTH  
 R1 v.weak R2 weak R3 med - t ng R4 strong R5 v.strong

HOLE No. E 22/66 D  
LOGGED BY RJSY/DPL  
DATE, 3/6/93

[illegible]

ROCK R1 v. weak R2 weak R3 med. strong R4 strong R5 v. strong