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Title:

ANNUAL REPORT EXPLORATION LICENCE 4423 WOODCUTTERS AREA NORTHERN TERRITORY 31.01.97 TO 30.01.98

Project Name: WOODCUTTERS

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Author: K.A. WILLIAMS

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Report No. 22883

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Report No: 22883

Title: ANNUAL REPORT
EXPLORATION LICENCE 4423
WOODCUTTERS AREA, NORTHERN TERRITORY
31.01.97 - 30.01.98

Author: K.A. Williams

Date: 26 February 1998

LOCATION MAP

SUMMARY

The Woodcutters silver-lead-zinc mine is located adjacent to EL 4423 and consequently the area has been subject to intense exploration activity for base metals.

The licence area is only one graticular block and most of this is covered by Mineral Leases.

Whites Formation sediments underlie most of the licence and comprise carbonaceous dolomitic slates with minor carbonate interbeds (dololutite) and rare, thin but continuous tuff beds. The Whites Formation is underlain by Coomalie Dolomite which consists of massive crystalline dolomite and magnesite. Base metal mineralisation occurs as numerous irregular lenses of sulphides within the Whites Formation and generally fills steeply dipping N-S axial plane faults within the Woodcutters structure (anticline).

Nicron Resources Ltd has previously carried out historical data compilation, diamond drilling, airborne magnetic/radiometric surveys and a test seismic reflection profile. All of this data was compiled and used to re-interpret the geology of the region.

Field work conducting during Year Six of tenure comprised RAB drilling around the interpreted position of the Seismic Anticline. This work outlined a coherent but weak zinc geochemistry anomaly with restricted coincident lead highs.

During Year Seven the seismic data was re-interpreted. This work has resulted in the recognition of thrust tectonics in the development of the Woodcutters and Seismic Anticlinal structures. This re-interpretation is likely to generate new exploration targets.

During Year Eight previously drilled diamond hole S1212 was re-entered to test structures postulated by the recently developed thrust tectonic model.

1. INTRODUCTION

Exploration Licence 4423 was granted to Nicron Resources Limited on 31st January 1990 for a period of six years. The licence now comprises one block, and is located approximately 2km west of the Woodcutters Pb-Zn-Ag Mine (Figure 1). Mineral leases cover a majority of the licence (Figure 2).

The licence is considered to be prospective for base metal mineralisation.

The purpose of this report is to cover work conducted in the eighth year of tenure and propose a work programme and expenditure for the following year. A two year extension of the Exploration Licence has been granted and expires on 30th January 1998. An application for the renewal of EL 4423 for a further two years has been submitted.

2. CONCLUSIONS

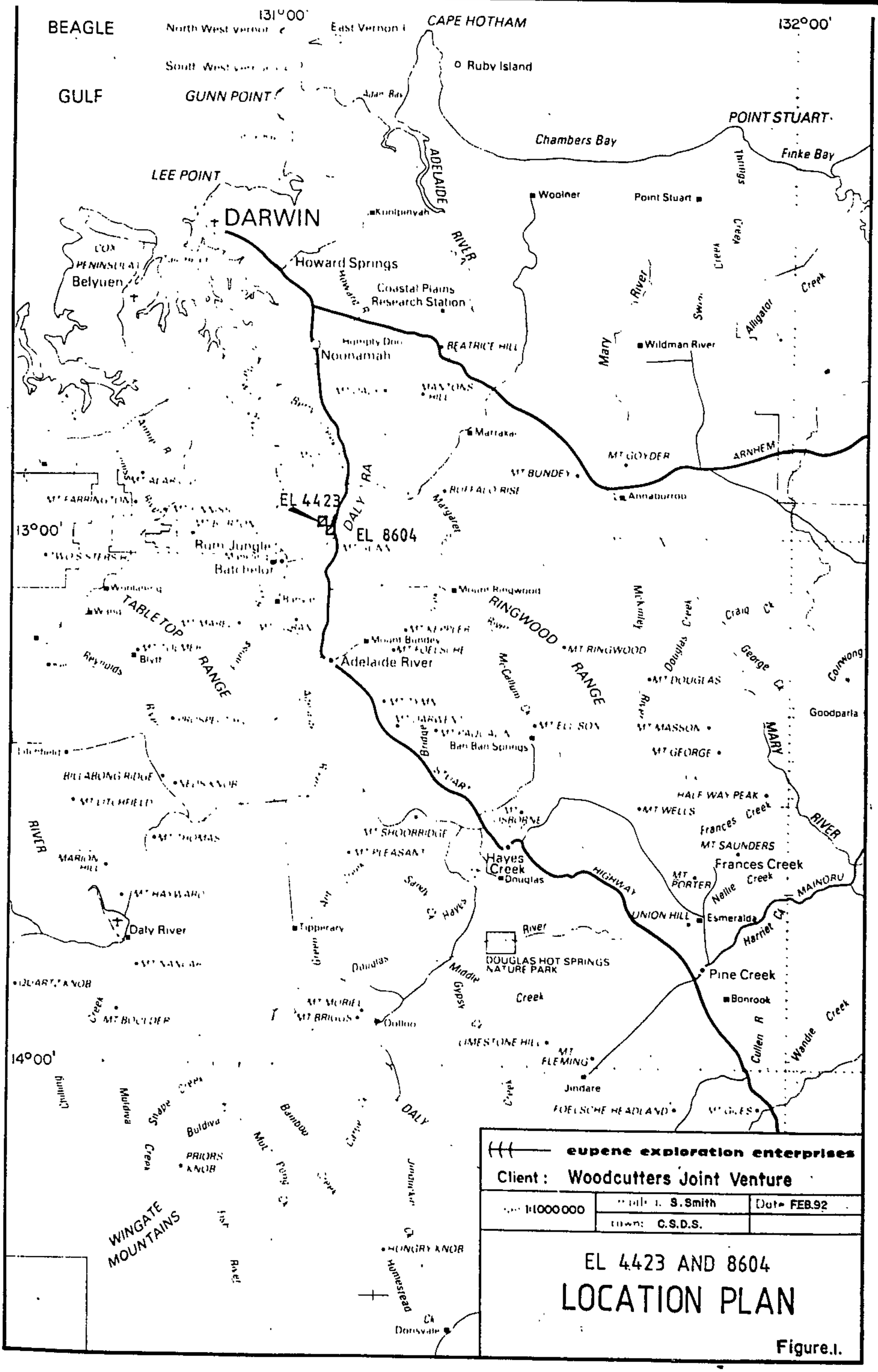
1 RAB drilling in 1995 over a BMR C horizon Pb anomaly failed to verify its position.

2 There is a broad, low order coherent bedrock Zn geochemistry anomaly coincident with a restricted Pb bedrock anomaly south of the interpreted position of the Seismic Anticline.

3 Further RAB drilling is required to close off the northern strike extent of the coincident Pb and Zn geochemical anomalies.

4. The importance of thrust tectonics in the development of the Seismic Anticline has been recognised.

5. Diamond drilling confirmed the structures postulated by the thrust tectonics model.



eupene exploration enterprises

Client : Woodcutters Joint Venture

Scale 1:1000000	Drawn: S.Smith	Date: FEB.92
	Drawn: C.S.D.S.	

EL 4423 AND 8604
LOCATION PLAN

Figure.1.

131°05' 131°06' 131°07' 131°08' 131°09'

12°55' 12°56' 12°57' 12°58' 12°59' 13°00' 13°01'

MCN 3249 MCN 3250 MCN 3251 MCN 3928 MCN 3940 MCN 3941 MCN 3952

MCN 3252 MCN 3253 MCN 3254 MCN 3929 MCN 3939 MCN 3942 MCN 3951

MCN 3255 MCN 3256 MCN 3257 MCN 3930 MCN 3938 MCN 3943 MCN 3950

MCN 3258 MCN 3259 MCN 3260 MCN 3931 MCN 3937 MCN 3944 MCN 3949

MCN 3261 MCN 3262 MCN 3263 MCN 3932 MCN 3936 MCN 3945 MCN 3948

MCN 4197 MCN 4198 MCN 4199 MCN 4200 MCN 4201 MCN 4202

MCN 3264 MCN 3265 MCN 3266 MCN 3933 MCN 3935 MCN 3946 MCN 3947

MCN 3267 MCN 3268 MLN 344 MCN 3269

MCN 4158 MCN 4159 MCN 4160 MCN 4161

MLN 377 MLN 378 MLN 379

MLN 355 MLN 356 MLN 357

EL 4423

MLN 358 MLN 359

MLN 360 MLN 361

MLN 427 MLN 428 MLN 362

MLN 429 MLN 430 MLN 363

MLN 431 MLN 432 MLN 364

MLN 433 MLN 434 MLN 365

MLN 366 MLN 367 MLN 368 MLN 398

MLN 401 MLN 402 MLN 403 MLN 404

MLN 1107

MLN 400

MLN 399

MLN 345

MLN 1095

MLN 314

MLN 1104

MLN 315

MLN 977

MLN 316

MLN 1097

MLN 323

MLN 11

MLN 12

MLN 324

MLN 325

EL 8604

MLN 1106

MCN 4127 MCN 4128

MCN 4129 MCN 4130

MCN 4131 MCN 4132

MCN 4494

MCN 4493

MLN 1147

ERL 128

MCN 4162 MCN 4163 MCN 4164

MCN 3934

MCN 3270

MLN 1096

EL 5678

MCN 4495-97

HIGHWAY

CHINNER

ROAD

STUART

BATCHELOR ROAD

WOODCUTTERS MINE TENEMENTS

0 1 2 kilometres

WOODCUTTERS AREA TENEMENT PLAN

Ref. Manton Dam 8/5-111

Figure 2

3. PREVIOUS EXPLORATION

A brief chronology of exploration in the Woodcutters area is presented in Table 1.

Table 1

Early 1950's	Territory Enterprises excavated shallow costeans at Area 44 after surface radiometric prospecting.
1957	BMR airborne radiometric survey found two anomalies on the Woodcutters structure.
1962	BMR surface radiometrics and EM over Area 44.
1964-1968	Intensive geochemical sampling, mapping and geophysics outlined distinct base metal anomalies at Area 44 and L1-L6. These were drilled, but only L5 produced ore-grade intersection.
1969-1971	Detailed drilling and other geochemical and geophysical exploration at L5 by Geopeko defined over 0.7 million tonnes of ore reserve.
1974-1977	Further geochemical and geophysical surveys by Geopeko at Area 44 and Huandot defined earlier anomalies.
1977-1983	Magnum Exploration and then CSR outlined anomalous Pb mineralisation at Flaming Fury.
1980-1982	L5 open cut resource was defined and RC drilling north of L5 and to the north of Area 44 confirmed the extent of the anomalies but did not intersect ore-grades.
1987, 1989	Woodcutters Mine intersected minor Pb-Au mineralisation at Flaming Fury in diamond drill holes, then found significant low grade Pb-Au in costeans.
1989-1990	Deep drilling at L5 revealed large resource.

Prior to the discovery of Woodcutters, exploration interest was centred on Rum Jungle, 12 km to the west (Figure 3). Mineralisation at Rum Jungle first became known during the construction of the overland telegraph line in the 1870's and later the North Australian Railway which passed through what is now Batchelor. Copper minerals were seen and identified, and a green mineral, probably torbernite was reported. It was not until 1949 that uranium mineralisation was identified at Rum Jungle and intensive exploration then located three uranium orebodies, two copper orebodies and one large sub-economic lead-cobalt deposit (Walpole et al, 1968).

In conjunction with this local exploration, regional work by the Bureau of Mineral Resources (BMR) and Territory Enterprises Pty Ltd (the operator of the Rum Jungle mines) identified many areas of uranium and base metal anomalism. A regional "C" horizon geochemical sampling programme by the BMR in 1964 outlined a linear anomaly over what is known to be the Woodcutters structure, and significant anomalies in Area 44.

Initial drilling of the major geochemical anomalies in the Woodcutters area in 1966-67 produced ore grade intersections of lead-zinc-silver mineralisation only at L5, where efforts were then concentrated. In 1968, L5 was put up for tender by the Commonwealth and a consortium of Electrolytic Zinc Company of Australia (EZ) and Peko Wallsend was successful. Intensive drilling and detailed geochemical sampling were successful in outlining a resource, but exploration ceased in 1971 when a feasibility study by the Joint Venture showed that further development work was not justified due to the size of the deposit.

Between 1972 and 1979 the Joint venture acquired ground covering Area 44 and the Woodcutters structure to the north (towards Manton Dam) and south (Huandot). Intermittent surface exploration was carried out with no positive results. Between 1977 and 1983 work by Magnum Exploration and then CSR identified the Flaming Fury anomaly, east of L5. Further development of the L5 deposit occurred from 1980 when shallow drilling designed to test for precious metal rich bodies in oxidised zones, delineated the pod which formed the open-cut resource. In 1983, Nicron Resources purchased the tenements and through the formation of the Woodcutters Joint Venture, proceeded to develop L5 on the basis of an ore reserve of 1,073,000 tonnes at 7.9% Pb, 17.9% Zn and 170 g/t Ag. The open cut pre-strip commenced in December 1984 followed by mill and site infrastructure construction and upgrading of concentrate storage and handling facilities at Darwin Port. The first ore was milled in August 1985.

Work conducted during the first year of tenure (1990-1991) on EL 4423 included historical data compilation, diamond drilling, airborne magnetic/radiometric surveys, a test seismic reflection profile and reinterpretation of the geology and controls of mineralisation in light of the additional information (Butler, 1991).

No mineral exploration was undertaken during the second year of tenure (1991-1992) in portions of the licence not covered by mineral leases or mineral lease applications. Extensive environmental and geotechnical design work was conducted over areas of EL 4423 as part of the mine expansion and ongoing environmental management (Pevely, 1992).

Exploration in year three was designed to evaluate a largely structural stratigraphic target (the Seismic Anticline) which was initially identified from the seismic survey. Work carried out included reinterpretation of previous geological and geophysical data, geological mapping and the drilling of one deep diamond drill hole.

Traces of sphalerite were intersected by the drilling in the target area. The drilling confirmed the overall structural interpretation of the area, although more faulting than anticipated was encountered. No dololutite units were located and their absence may be the main factor in the failure of this hole to intersect significant mineralisation.

No field work was carried out in Years Four, Five and Seven.

4. WORK CARRIED OUT AND RESULTS

A re-interpretation of the geology of the Woodcutters deposit and surrounding district is largely complete, although the process is ongoing as more information from surface and underground drilling becomes available.

An important step in the process of re-evaluation and development of the new model was the extension of the diamond hole S1212 at Seismic Anticline immediately to the west of Woodcutters (see Enclosure 1).

The thrust tectonic model developed for Woodcutters appears to be repeated at the Seismic Anticline. Hole S1212 was re-entered and extended to test for structures postulated by the model. A number of laminated shears, both concordant and discordant to the bedding, were

found and interpreted to be consistent with the thrust model (see Appendix A).

Diamond hole S1212 was extended by 282m to a total of 850m.

5. *GEOLOGY AND MINERALISATION*

The Woodcutters Mineral Field lies to the east of the Rum Jungle Complex. The rocks of the Rum Jungle Complex are Archaean in age and act as basement to Lower Proterozoic sedimentary rocks of the Pine Creek Geosyncline. The Lower Proterozoic sediments are unconformably overlain by minor pockets of Middle Proterozoic sandstone and karstic deposits. Tertiary alluvial deposits and laterite cover low lying areas.

The following are descriptions of the stratigraphic units in order of decreasing age:

Rum Jungle Complex
Lithologies consist of granite, gneiss, schist and iron formation.

Beestons Formation (Batchelor Group)
This unit consists of conglomerate, arkose and sandstone and is 100 to 200 metres thick.

Celia Dolomite (Batchelor Group)
Massive crystalline dolomite and magnesite are the main lithologies, with minor interbeds of chert and mudstone. The unit is 100 to 400 metres thick.

Crater Formation and Coomalie Dolomite (Batchelor Group)
These formations are very similar in lithology and thickness to the Beestons Formation and Celia Dolomite respectively.

Whites Formation (Namoona Group)
This unit has a thickness of at least 500m and predominantly comprises carbonaceous dolomitic slate with minor interbeds of impure carbonate (dololutite) and rare thin tuffs. Dololutite units and thin tuff marker beds can be correlated over distances of 2-3km to the north and west of Woodcutters Mine.

Wildman Siltstone (Mount Partridge Group)
Carbonaceous meta-pelite is the predominant lithology with lesser interbedded quartzite. Some intervals of carbonaceous slate contain 20-30% pyrite and lesser pyrrhotite. An amphibolite unit 50-100 metres thick occurs at the base of the Wildman Siltstone or at the top of the Whites Formation. The BMR have mapped this unit to the south of the Woodcutters and subsequent diamond drilling indicates it is probably an intrusive sill.

The Acacia Gap Quartzite Member
The Acacia Gap Quartzite Member occurs about 200 metres above the base of the Wildman Siltstone. It is 50-200 metres thick and comprises several 3-20 metre thick beds of quartzite. Outside the Woodcutters Area, the Wildman Siltstone is overlain by the South Alligator and Finniss River Groups.

Sink holes and karstic surfaces have formed over the carbonate sequences, probably during Middle Proterozoic time. Depressions were filled with clay, gossan-sulphide-quartz breccia and sandstone. The sandstone probably correlates with the Depot Creek Sandstone of the Tolmer Group.

Two main types of base metal mineralisation are recognised within the Woodcutters area:-

- Vein-replacement base metal mineralisation (L5)
- Stratiform base metal mineralisation (Rum Jungle type)

The L5 vein replacement mineralisation consists of numerous irregular lenses of sulphides which generally fill the steeply dipping north-south axial plane faults within the Woodcutters structure. Thicker sections of the lenses and sometimes the actual presence of mineralisation are controlled by the intersection of these faults with dololutite rich intervals and cross faults. The mineralisation thickness may change rapidly both in the vertical plane and along strike. The orebodies show replacement textures as well as vein-like features. A number of chemical/mineralogical types of ore can be distinguished but the most common sulphide minerals in the lenses are pyrite, arsenopyrite, sphalerite, galena and lead-antimony sulphosalts.

Diamond drilling has intersected stratiform chalcopyrite, sphalerite and galena mineralisation associated with manganese rich stratigraphic intervals in the Lower Whites Formation close to the basal contact into Coomalie Dolomite at Area 44. Highly anomalous Pb, Zn, Cu, Ni and Co levels have also been recorded from shallow drilling and surface sampling in the same area as the deeper stratiform mineralisation intersections.

6. EXPENDITURE FOR YEAR EIGHT

Salaries/wages	3,400
Consultants	1,900
Consumables	2,300
Drilling	25,380
Administration (15%)	4,947
TOTAL	**$37,927**

7. PROPOSED WORK PROGRAMME AND BUDGET FOR YEAR NINE

The proposed programme for Year Nine is as follows:-

Data compilation and geological re-interpretation	2,000
RC drilling geochemical targets	10,000
	$12,000

8. REFERENCES

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APPENDIX A

DIAMOND DRILL HOLE LOGS

S1212

EL 4423

WOODCUTTERS MINE — DRILLHOLE RECORD

HOLE NO: S1212

PROPOSAL

LOCATION: EL 4423

PURPOSE: To test for mineralisation associated with the Seismic Anticline

PROPOSED BY: W.O. SET UP BY:

SET UP DETAILS:

4720 N 3475 E 1070 RL 283 GRID AZIMUTH 70° DIP

TARGET: ① 390m (m depth) 4760 N 3300 E 730 RL
② 470m 4775 3240 680

PLANED DEPTH: 500 (m)

DOWNHOLE SURVEY REQUIREMENTS: 30m, 80m, 130m, in Precollar, 160m, then every 30m to EOH

OTHER SPECIFICATIONS (CORE SIZE, PERCUSSION DEPTH ETC.)

Pre-collar to 150m

FINAL DATA

FINAL DEPTH: 573.0 (m)

COMMENCED: 31/8/92 COMPLETED: 18/9/92 DRILLER: Leo

COLLAR CURVEY: BY:

4721.499 N 3475.460 E 1069.162 RL GRID AZIMUTH DIP

DOWNHOLE SURVEYS: See attached sheet

CORE SIZE: NQ

OTHER DRILLING DETAILS:

GEOLOGIST: W.R. Drysby.

CALCULATIONS FOR HOLE PLOTTING FROM DOWNHOLE SURVEYS

HOLE NUMBER: S1212

* Collar Azimuth and Dip not to be used for plotting

Survey Depth	(Grid)	Dip (I)	Mid-Points	Interval	RL	N	E
Collar	*	**	0		Depth	Az	Dip
33	285°	-68°					
					450	276	-44½
63	In Rods	-68°		1			
					480	274	-42
111	In Rods	-67½					
					510	272	-38
135	281	-67					
					552	269	-35
168	282	-65					
					573	267	-33
201	284	-63					
234	285	-62					
264	283	-61					
294	283	-60					
327	281	-58					
357	280	-55½					
390	280	-52					
420	278	-48		11			
		EOH =					
		CHECK TOTAL =					

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 12/9/92
Logged by: W.R. Oracey

Hole: S1212
Page No. 1 of 6.

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
117.0	95	5			40	10	P		2						tr					tr	tr			fn carbonate vein. Thin q-CO3 vns slate slightly lighter gy - more dolomitic
120.0	1	1			20	17	Q		2						tr					tr	tr			
123.0	12	11			25	30	P		2						tr					tr	tr			125m. fn q-CO3 vn. mor altered, fr flur.
126.0	11	4	127	CL2					2						1					tr	tr			126.95–127.05m fn py in q-CO3 vn
129.0			128.5																					strong cleavage., shearing @ 128.4m.
	11	5		CL1 V2	25	20	S		2						tr					1	tr			sheared & fn q-CO3 vn.
131.0	11	2		V2 S2					2						tr					tr	tr			fr flurite.
134.0	11	5		CL3	25	15	S		2						tr					tr	tr			
0	11	4		V1 S2					2						tr					1	1			
140.0	11	5			35	15	P		2						1					tr	tr			fn py assoc. & q-CO3 veins.
143.0	11	5			30	25	S		2						tr					tr	tr			grading to dol slate.
144.0	11	2		S2					2.14						tr					1	tr			~30% sst. impure - beds 1–15cm thick
145.0	11	4		V1					2						tr					5	10			Intense veining & graphitic slip surfaces.
148.0	11	3		V1,S2					2						tr					15	20			As above to 150.3m then b'ds core to 151m.
151.0	11	4			25	35	O		2						tr					tr	tr			grades to dol slate.
154.0	11	5			15	15	S		2						tr					tr	tr			
156.0	11	5			25	30	S		2						tr					tr	tr			gr
159.0	11	11			30	25	O		2						tr					tr	tr			grading to dol slate.
0	11	11			30	15	O		2						tr					tr	tr			
165.0	11	4	167.8	S1	25	35	O		2						tr					tr	tr			
168.0	11	5	168.1		25	25	O		2						tr					tr	tr			
171.0	11	5			30	40	P		2						tr					tr	tr			grading to dol slate.
174.0	11	11			20	55	S	176.5	2 / 11						tr					tr	tr			grading to dll, but still S1 visible & no veining
177.0	11	11	177.3	S2	25	35	O	178 / 179.3 / 179.8 / 180	2 / 9 / 2 / 8					tr	2.					2	tr			180.5–180.8m q/min CO3 vn ± py thin q-CO3 vns = tr sph fn dyke @ 181.1m
180.0	11	5																		15	2			
181.9	11	5			20	35	S		2.14						tr					tr	tr			thin sst bed (<1cm) @ 182.6m
183.0	11	5							2						tr					tr	tr			
186.4																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Sandstone

0–25
25–50
50–75
75–90

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 12/9/92
Logged by: W.R. Ormsby

Hole: S1212
Page No. 2 of 6

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
186.4	>95	4		S2	25	45	S		2						tr					1	tr			sheared zn @ 187m blk cre 189 - 189.2m
189.4	11	5			25	50	S		11.2	60					tr					tr	1			CO_3 vn @ 192.1m
192.4	11	4	93 143	V1,S2	20	45	S		2						tr					1	5			Intense CO_3 & vnlg & shearing
195.4	11	4		S2					2						tr					tr	1			
198.4	11	5			25	50	P		2						tr					tr	tr			grades to dol slate
201.4	11	11			35	60	P		2						tr					tr	tr			
204.4	11	11			30	50	P		2						tr					tr	tr			slight increase in dissem py.
207.4	11	11			30	60	O		2						tr					tr	tr			grading to dol slate
210.4	11	11			30	70	P		2						tr					tr	tr			
213.4	11	11			30	65	P		2						tr					tr	tr			
216.4	11	11			30	90	P		2.11	25					tr					tr	tr			
219.4	11	11							2						tr					tr	tr			becoming more graphitic
222.4	11	3		S2	30	65	P		2						tr					tr	tr			225 - 225.1 more pyrite, CO_3 rich, light colour, sheared. Mod. blk core
225.4	11	5			30	65	P		2						1*					1	tr			228 - 228.1m A/A, dyke? - more sericite
228.4	11	5							2						tr					tr	tr			
231.4	11	11			30	55	P		2						tr					tr	tr			
234.4	11	4							2						tr					tr	tr			
237.4	11	5			30	70	P		2						tr					1	tr			mnr g-CO_3 vnlg & brecciation. 239.6 - 240m
240.4	11	5			30	75	S		2						11					tr	tr			
243.4	11	5			40	70	P?		2						tr					tr	tr			strong S1 in part
246.4	11	11			30	80	S?		2						11					11	11			
249.4	11	4	243 29.6	S2	35	65	S		2						11					11	11			
252.4	11	5			30	55	S		2						11					11	11			
256.0	90	3	256.5	S1					8.2						1.					5	1			
258	>95	5			30	25	O		2						1					1	tr			
260.5	11	2		S1 V1					2						tr					2	2			shearing, pol. surf. con thin g-CO_3 vns
264.9																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 12/9/92 Hole: S1212
Logged by: W.R. Ormsby Page No. 3 of 6

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic skate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
269.9	80	2		S1,V1					2						tr					2	2			A/A sheared
267.9	95	3		S1,V1					2						tr					2	3			sheared.
270.9	11	3		S1,V1					2						tr					2	2			"
272.1	"	5	275.3 BT 280.5		30	20	P		2						tr					3	1			
276.1	"	"			30	20	P		2						tr					tr	tr			
279.4	"	"			25	30	P		2						"					"	1			
282.4	"	"			35	25	P		2						"					"	"			
285.4	"	"			25	35	P		2						"					"	"			
288.4	"	"			40	30	P		2						"					"	"			strong S1 290-290.5m
291.4	"	"			25	20	P		2						"					"	"			
294.4	"	"			30	30	P		2						"					"	"			
297.4	"	"			30	25	P		2						"					"				
300.4	"	"			35	35	P		2						"					"	"			
303.4	"	"							2						"					"	"			
306.4	"	"			35	25	P		2						"					"	"			
309.4					25	20	P		2						"					"	"			
312.4					30	30	P		2						"					"	"			grading to dol. strong S1 in part
315.4					30	25	NP		2															Influenced by strong S1 in part
318.4		4			25	20	S																	minor shear 321.2m
321.4		5			35	25	P		2															
324.4		4	324.7 BT 326.7		30	50	S		2															
327.0		2		S1				324.7 BT 326.7	2						1					tr	tr			broken core, strong S1, gal sulf
330.3		5			30				8						1					1	1			strong S1 in dyke 330.6 - 330.65m dol. slate xenol in dyke
333.0		4	334.7 BT 335.1	S1					8						tr					20	2			334.2 - 334.7m. g-mm CO3 vn. pyrite tr sph.
337.0		3	337.5	S1					2:11	50					tr					10	tr			bkn, highly polished core.
339.0		5			35	35	S		2						tr					tr	tr			
342																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite

0-25 1
25-50 2
50-75 3
75-90 4
>90 5

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 15/9/92 Hole: S12/2
Logged by: W.R. Ormsby Page No. 4 of 6

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
342.0	>95	5			35	35	P		2						tr					tr	tr			
345.0									2						tr					tr	tr			grading to dol slate
348.0		4			40	30	S		2						tr					tr	tr			A/A
351.0		5			35	30	P		2						tr					tr	tr			A/A
354.0		5			30	30	S		2															A/A
356.0				S3					2						tr					tr	1			mod. shearing, but not broken
359.0		2	359.1	B1 S2	30	35	S		2.9						tr					1S	1S			
2		3		S3	40	30	S		2						tr					1	tr			grades to dol slate
363.0		3	363.6	S3	45	35	P		2						tr					tr	tr			A/A
366.0		4			30	35	S		2						tr					tr	tr			grades to dol slate/dl 366.1-366.4m
369.0		5			35	30	S		2						tr					3	tr			grades to dol slate
372.0					35	LS	P		2						tr					tr	tr			A/A. stray S_1 in part
375.0					30	25	S		2						tr					4	1			
378.0			378.8 376.2	V1					2						tr					5	2			
381.0					40	10	P		2						tr					tr	tr			
384.0									2						tr					tr	tr			
387.0					45	15	P		2						tr					tr	tr			grading to dol slate
.0					45	30	P		2						tr					tr	tr			v. thin q-CO_3 vns
393.0					35	45	P	394	2 / 11						1					tr	tr			grades to dol slate.
396.0					40	45	P		2-11	30					tr					tr	tr			slate → dol slate gradational
399.0									11.2	50					tr					tr	tr			
402.0					40	50	S		11.2	90					tr					tr	tr			
405.0									11.2	90					tr					tr	tr			
408.0					45	55	S		11						tr					tr	tr			
411.0					35	60	S		11						tr					tr	tr			
414.0					40	65	S		11						tr					tr	tr			
416.5																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 10/10/92
Logged by: W. R. Ormsby

Hole: S1212
Page No. 5 of 6

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate%	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
416.5	95	5							2						tr					tr	tr			Gradational to dol slate.
420.0					55	65	S		2											tr	tr			
423.0					50	65	P		11.2	80										tr	tr			gradational
426.0									11.2	60										tr	tr			1cm CO_3 vn @ 428.9m.
429.0					50	45	P		2											tr	tr			
432.0		4	1428	S1	50	45	P		2											tr	tr			Broken core; vn breccia & gouge at 432.9m.
435.0			433	S2																				
		5	433.3						2											tr	tr			thin CO_3 veinlets. mnr shear @ 437m.
438.0																								
441.0					50	30	P		2															gradational to dol slate.
444.0									2															thin qz CO_3 & mac py vns along So
447.0					40	40	P		2															
450.0									2															
453.0			454.2	S1	40	45	P		2											tr	tr			blk, slickened, qtz & CO_3.
456.0			454.5					457.5	2											tr	tr			2cm δ cream colour lam upper & lower contacts
459.0					45	45	P		2											tr	tr			
462.0								464.5	2															fine grained, light gy calcareous sst.
465.0					40	40	O	467	2															grades to dol slate. 466–466.15m v. fg core, fine breccia in dol matrix – angular contacts. Clasts <3mm well cleaved matrix. qtlet wispy, partly lam dll 466.2m
471.0			470.6	S2	40	45	P	471.6	2															Partly sheared δ 3mm δ? slate becom. well lam, strong S_1 in part. 473.4m, 2cm shear in slate 30° to BCI opp to So. Mnr blk core 475–476m
474.0									2															
477.0					45	35	P		2															
480.0									2															
483.0					45	60	P		2															
486.0									2															
489.0					30	35	P		2															4mm patch q-CO_3 & py.
492.0									2															
495.0																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Massive vein quartz
15. Calcareous sandstone

73-10

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 10/10/92
Logged by: W.R. Ormsby

Hole: S1212

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate%	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	SampleNumber	Comments
495-0																								
498.3	95	5			45	BS	P		2						tr					tr	tr			
501.0		1		S1					2						tr					1	2			V. broken esp 498.3-499.3m, shrdy Can CO_3-q vn.
504.1		2	502.5-504	S1 S2 S1	40	45	S		11.260											2	2			grades to dol slate.
507.0		3							11	100										tr	tr			
510.0		4	509.4-509.5	B1	45	60	P		2, 11	25										6	6			Breccia, intense q-CO_3 vn, blm, shrdy slate in dol matrix
513.0		4	511.5-512	S1	40	60	P		2											tr	tr			
516.0		3		S2					2											1	tr			grades to dol slate.
		4	517.7-517.9	S1	40	45	P		2											tr	tr			" "
522.0		3		S2					2.11	20										tr	tr			520.2-520.25m possible δ.
525.0		5			50	30	P		11.2	80														
528.0		3		S2					11	20										2	2			527.1m. 2cm shrd, brecc q-CO_3.
531.0		4	528.3-528.6	B2	40	40	P		11.2	90										tr	2			Tr sph? on fract surf @ 528.9m.
534.0		2	533.5-533.3	S1					11.2	90										1	1			soft, flaky grn min on fract-surf. blm cm & lam q-CO_3 vns
537.0		2	536.3	S2 S1	55	50	P		2											tr	1			Tr flourite in q-CO_3 vn.
540.4		1		S1					2											2	1			core completely broken in places, Com q-mnr CO_3 vns.
543.0		5			45	40	S		2											tr	tr			
546.0		1			45	40	S		2.11	40														Tr flourite in thin q-CO_3 vn.
		4	545.3-545.2	S1				548.0-548.6	11.2	60					1									dol dyke,
553.1		5			35	35	S		2						tr									grades to dol slate
555.7		5						553.1-553.8	8				tr		2					7	tr			long (up to 1cm) py xtls & pressshadows 554.1-554.3m q vn & mnr CO_3, dk brn sph patches <2cm across
558.0		2	555.9-556.8	S1					2						tr.					1	tr			S1 is completely blm core & q-CO_3 vning. grades to dol slate
561.0		3		S2	45	65	S		2						1					tr	tr			
564.0		3	563-563.6	S1 B2					2					tr						1	1			grades to dol slate soft, smooth grn min on fract surf.
567.0		2		S2	55	30	S		2											tr	tr			strong S_1 in part.
570.0		1	569.6	S1					2															
573.3		4			35	35	P		2															grades to dol slate.

EOH

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dalomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Massive vein quartz

1. 0-25
2. 25-50
3. 50-75
4. 75-90
5. na

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

ENTERED 1995

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date: 14/5/97 REENTRY Hole: S1212R

Logged by: KENT WILLIAMS Page No. 1 of

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate%	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
573																								
579	95	4		B2/D3	45	45	S		2/3															minor lam dk beds, some veining to lam 576.7 10cm calcite / breccia @ 48°
585	95	5							2/11															minor carbonating.
591	75	5			35	35	S		2/11															
597	75	5			35	35	S		2															592.3 7cm carb, graphitic shear breccia veining laminations @ 50° (sub // to beds)
603	95	5							2															
609	95	5			36	36	S		2															
15	75	5		S1	40	40	S		2															609.3 4cm lam shear, carb, some crackle breccia, graphitic carb @ 30°
621	75	5		V2	48	48	S		2									sub // to beds						615.1 6cm lam shear & mosaic breccia @ 45° sub // to beds
627	95	5		V3					2															distinct carb "spots" (pressure shadows) // to bedding. minor vns
633	95	5							2															
636	95	5			35	35	S		2															
639	95	5		V1					2/11															fine carb vns & mosaic breccia. well cleaved
639.6	95	5							14															massive vn qtz. @ 38° // to beds.
644.3	95	5							2/11															
650.3	75	5			20	20	S		2/3															pale dk carb 646.7 qtz vn (15cm) @ 55°
652.3	95	5		V3					2/3															fine carb vns to 4cm, some pyritic
2.4	95	5		V3					2															3cm carb vn @ 15°
663.6	95	5		V2					3															DOLOMITITE pale scrappy massive (MARKER) carb vns
669.3	95	5			40	40	0		2															
675.3	75	5		V2					3															DOLOMITITE — as above brecciated
	80	1		S1/B1					2/3															MAJOR STRUCTURE lam, breccia, graphitic, some dk, & py carb vns & major shearing @ 55°
682.9	80	1		S1/B1					2/3															
688.9					35	25	S		11															
692.3				V1					3/11	20	80													qtz vn @ 689 → 690.3 (MARKER) PALE SCRAGGY DOLOMITITE
699.3									11/3															
705.3				V3					11															fine carb vns to 1cm

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Massive vein quartz

4050E
5300N

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

ENTERED 28/5

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

Date:

Logged by: KW.

RE-ENTRY
Hole: SJ12

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
705.3																								minor dll beds.
712.2	75	5			70	55	S		3/11															
717.3	95	5		1/53	50	15	O		2/11															carb uns to 1cm
719.1	95	5		1/52					2/11															carb uns to 8 718.2 6cm LAM. SHEAR @ 72°
720.2	75	5							6															massive py. + dll beds
723.3									3															pale dk slate + dll beds scroggy to laminated. minor py
729.3				1/53	50	50	S		2/11															lam shear 4mm wide // to beds.
735.3					65	45	O		2/11															
741.3					70	40	O		2/11															
747.3					60	10	O		2/11															well cleaved, tr py - BEDDING FROM 10 → 20°
753.0				1/53	40	55	S		2/11															747.3 - 5cm qtz vn @ 60°
759.3				1/53					3															754.3 2cm lam. shear // to dge @ 60° LAMINATED DOLOLUTITE
763.3									3															LAMINATED DLL & Grecc @ 759.5 + MINN carb uns.
765.3					50	45	S		2															strongly cleaved slate.
771.3				1/53					2/11															well cleaved to 769.3, carb uns to 3cm, some mosaic brecc (pyritic)
777.3					50	10	S		11															774m 10cm dll bed sub // to core axis & tr py.
783.3					45	5	S		11															DRILLING DOWN BEDS
789.3					65	55	O		2/11															
791.3									3															LAMINATED DLL
795.3					60	20	O		2/11															well cleaved adjacent to dll.
801.3					50	10	O		2/11															797.8 2cm brecc @ 25° X cuts bedding. Some more dolomitic horizons
807.3				1/53	60	20	O		2/11															806.1 LAM. SHEAR @ 55° // to dge and bedding
812.3									2/11															811 → 812 4mm dll bed cutting in end of core.
819.3					55	5	O		11															
825.3				1/53	50	45	O		11															820.3 - 2cm carb LAM SHEAR // to dge (also @ 821.3) @ 45°
831.3					45	45	O		11/3															827.4 thin dll bed
837.3				2/53					2															835 → 827.3 STRUCTURE lam. // carb uns, graphitic & mosaic brecc // to bedding

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Massive vein quartz

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

WOODCUTTERS JOINT VENTURE
CORE LOGGING SHEET

ENTERED ds

Date:

REENTRY Hole: 81212

Logged by: KW

Page No. 3 of

Distance from collar	Recovery %	RQD	Weathering	Structure	Cleavage	Bedding	Sense	Stratigraphy	Rock type	Dolomitic slate %	Dololutite %	Mineral Percentages: Galena	Sphalerite	Sulphosalts	Pyrite	Chalcopyrite	Stibnite	Arsenopyrite	Pyrrhotite	Quartz	Carbonate	HMR	Sample Number	Comments
837.3																								
843.3					50	20	0		2/4						5									pyrite clots to 1cm
849.3				V1 82 S1					2/4															845.3 → 848.8 STRUCTURE mosaic/cracklé breccia assoc. w/ carbonate LAM SHEARS @ 45° + graphite + 2 mylonite zones @ ~40° to core axis
855.3					70	10	S		2/4															LAM SHEAR @ 853.6 → 856.3 @ 70° to edge
EOH																								

1. Spotted slate
2. Slate
3. Dololutite
4. Laminated dololutite
5. Tuff marker bed
6. Massive sulphides
7. Calcareous dyke
8. Dolomite dyke
9. Breccia
10. Leached slate
11. Dolomitic slate
12. Cream dololutite
13. Stromatolitic dololutite
14. Massive vein quartz

Dip angles measured with respect to long core axis, sense measured with respect to cleavage

CR98/236

Woodcutters Mine

	Init	Date
Surveyor	KAW	
Drawn		
Checked		
Approved		

Woodcutters Mine

SEISMIC ANTICLINE

DIAMOND DRILLHOLE S1212

File S1212

Scale 1 : 2000

Date 26 Feb 1998

Enclosure 1