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DRILL HOLE RECORD

407.51

Location Que River Area Property MackintoshEL2/70 District Tasmania, Australia Alt./R.L. 700.9 Hole No QR27

Commenced 11/3/75 Completed 12/4/75 Core size NQ to 4.07, BQ to 505.35 EOH Co-ordinate 7498·5N, 5015·25E Date 14/4/75

Objective To test intersections below QR11,10,3 and test east and west lens position. % Recovery 95 Bearing (M) 99° Grid bearing (M) 8.68° Logged CHY/RDB Dip -65

SURVEY DATA

DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE
0	65	99	Clino/compass
32	64	101	Eastman
62	63	104	single
92	62	104.5	shot
122	61.5	104.5	camera.
158	60	105	
188	56	107	
190	56	105.5	
217	53.5	108	
258	49	108	
310	46	107	
340	43	107	
377	39	106	
407	37.5	106	
438	35	110	
469	30	109.5	
502	22	110.5	

GRAPH DERIVED DATA

DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE
0	-65	99	7498.50	5015.25	700.90
25	-64.5	100.5	7498.30	5025.81	678.24
50	-63.5	102	7497.81	5036.76	655.77
75	-63	104	7496.96	5047.98	633.45
100	-62	104.5	7495.84	5059.47	611.28
125	-61.5	104.5	7494.64	5071.24	589.25
150	-60.5	105	7493.36	5083.29	567.39
175	-58.5	106	7491.86	5095.89	545.85
200	-55.5	107	7489.99	5109.37	524.89
225	-53	108	7487.75	5123.80	504.60
250	-50	108.5	7485.16	5139.14	485.05
275	-48	108	7482.43	5155.31	466.18
300	-46.5	107.5	7479.76	5172.07	447.82
325	-45.5	107.5	7477.10	5189.23	429.84
350	-44	107	7474.46	5206.78	412.24
375	-39.5	106	7471.93	5225.25	395.60
400	-37.5	106	7469.43	5244.65	380.04
425	-36	106.5	7466.79	5264.50	365.08
450	-33.5	108.5	7463.64	5284.79	350.84
475	-29	110	7459.71	5305.79	337.88
505.35	-21	110.5	7454.20	5332.67	325.08

REMARKS

250 - 300m Irregularly spaced massive pyrite bands, some with base metals.

360 - 416m As above.

DIAMOND DRILL LOG

Hole N° QR 27 Page N° 1.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
	5	No Core.			
	7.6				
0.2		Down to 24.8 m weathered generally rusty orange to pale green in colour and partly kaolinised.	BROKEN CORE		Pyrite < 1% as discrete fine subhedral to euhedral crystals within the matrix and as occasional irregular veins.
0.8	10	Green lithic feldspar hornblende crystal tuff agglomerate.			
1.0		In the weathered zone the feldspar is distinct as white (carbonate altered?) subhedral aggregates to 3 mm. Small chlorite aggregates represent relict hornblende. Fragment outlines are obscure.			
0.3			BROKEN CORE		
0.9	15				
1.1					
1.2		16.9 - 19 m Carbonated and kaolinised pale buff in colour some green illite-hydromuscovite.	BROKEN CORE		
0.7	20				
0.2					
0.8			BROKEN CORE		
0.8					
0.3		23 - 23.5 m Grey feldspar tuff band minor pyrite veins.			
3.0		24.8 - 26 m Iron stained on fractures at 30° - 80° to core axis.	BROKEN CORE		
	25				

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DIAMOND DRILL LOG

Hole N° QR 27 Page N° 2.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein (c carbonate, q quartz)

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Fresh rock below 25 m.							
		27.3 m Sample for petrology 155504. Pink alteration zone 27.3 - 27.7 m.							
3.05		The majority of lithic fragments are dark green (chloritised) dacitic lava? They are angular to sub-rounded in shape often with difuse corroded margins, varying in size from 1 mm to 10 cm. Euhedral feldspars (plagioclase?) are abundant within the fragments, small dark green chlorite aggregates are considered to represent hornblende. Irregular aggregates of carbonate are common.							28.5 m 3 cm pyrite 5% as irregular veins.
	30								
3.0									
		The matrix is green, of similar composition to the fragments and contains relict feldspar crystals up to 3 mm, now carbonate or albite? Small dark green chlorite aggregates (hornblende) are common.							
3.05									
	35								
		Weak foliation 40° to core axis.							
3.0		Fractures parallel, perpendicular and at 30° - 80° to core axis. Fracture planes are commonly coated with chlorite.							
2.8	40								
2.8									
	45								
3.05									
2.05		48.2 - 50 m Increased carbonate content, altered grey-green in colour.							
0.3	50								

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DIAMOND DRILL LOG

Hole N° QR 27 Page N° 3.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.0			BROKEN CORE						Pyrite < 1% as above.
0.8		53.4 - 54.5 m Carbonate alteration, grey-green in colour.							
0.2		53.95 m Fault, carbonate cemented fault breccia. May correlate with breccia 49 m in QR 25.	F						
	55								
2.8		Below 57 m rounded and sub-rounded buff coloured dacitic lava fragments, (characterised by pale green sericite aggregates often with euhedral outlines, relict plagioclase?), up to 20 cm are common. Less common are rounded fragments up to 5 cm in size of fine grey siliceous tuff.	C						
3.05									
	60								
3.05									
	65		C						
3.05									
	70								
3.05									
3.05									
	75								

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DIAMOND DRILL LOG

Hole No QR 27 Page No 4.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		As above.	F						Pyrite < 1% as above.
1.1									
1.8	80 80.6	20 cm disrupted bedding? 30° to core axis at the contact.	F						
1.8		Pink-buff and green (chloritic) feldspar quartz crystal tuff-lava.							
0.7		A varied unit, essentially similar to the tuff agglomerate described above. Feldspar crystals are represented by white carbonate and green chlorite aggregates to 2 mm.	BROKEN CORE						
1.2	85								
2.1		Small (to 2 mm) quartz crystals have corroded margins and are generally smokey grey in colour. They appear to be distributed more commonly within the pink coloured lava.	BROKEN CORE						
3.0		The matrix is fine grained and of similar composition to the fragments. Common fracture at 40° to core axis. 80.6 - 85 m Pink-grey due to carbonate alteration.							
	90	85 - 91.1 m Green coloured, probably chlorite alteration. Altered feldspars are pink in colour.							
0.6	91.1								
0.7		Fault zone Sheared and broken core 25° to core axis. Within this zone is included some grey sericitised shale? thin stringers up to 5 mm wide.							
1.3	93.2								
1.3		95.3 - 97.25 m Fragmental or brecciated angular chloritised lithic fragments (tuff-lava) in a lava matrix, carbonate stringers are common.							
	95								
0.9									
0.9		97.25 - 107.5 m The rock is grey-buff in colour and appears to be auto-brecciated. Large rounded fragments (often with concentric alteration zones) altered grey at fragment margins.	F						
1.2			F					98.4	Pyrite 1% - 2% fine subhedral to euhedral crystals as disseminations, irregular veins and aggregates.
1.2	99.5		F						
	100	Fault zone 70% sheared and broken core.							

Common

DIAMOND DRILL LOG

Hole N° QR 27 Page N° 5.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		Fault zone as above.							
1.3	101.2								
1.9		Grey-pink auto-brecciated tuff-lava as above.						102.8	Pyrite 3% - 5% as disseminations and aggregates within the matrix of fine subhedral to euhedral crystals. Irregular veins and nettworks are also common.
1.6	104.5								
	105	Fault zone 80% sheared and broken core approx. 45° to core axis.							
1.8	105.6	Below the fault large fragments to 10 cm of buff coloured dacitic lava are common.							
2.0									
1.4	108.6	Fault zone Pug, 80% sheared and broken core approx. 20° to core axis.							
	110								
1.1	110.8								
1.2		113.4 m 10 cm disrupted bedding 40° to core axis.							
1.1	113.5								
0.8		Fault zone 70% sheared and broken core 30° to core axis.							
	115								
0.4	115.55								
2.45									
3.05								118.4	Pyrite 1% - 2% as above.
	120								
	121								
3.05		Below 121 m the rock is altered grey-green in colour, fragmental partly brecciated, Dacitic lithic tuff lava. Large to 10 cm sub-rounded to rounded fragments of pale grey dacite (lava) in a fine grey matrix of similar composition. Fractures 30° - 50° to core axis.						124.2	Pyrite < 1% as discrete fine subhedral to euhedral crystals within the matrix
	125								

DIAMOND DRILL LOG

Hole N° QR 27 Page N° 6.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	MINERALIZATION
3.05		124.5 - 125.1 m Weakly bedded at 55° to core axis.	Pyrite <1% as above.
		125.1 - 130.2 m Partly brecciated and autobrecciated.	
3.05			
	130		
3.05		130.2 - 136.5 m Darker green in colour increased chlorite alteration particularly in the matrix.	
3.05			
	135		135.1 Pyrite 1% - 2% fine subhedral to euhedral crystals as disseminations within the matrix and as irregular veins.
1.8			
2.8			
	140		
1.5		145.6 - 153.5 m Pale grey in colour increased carbonate alteration? Disrupted and weakly sheared down to 147.6 m at approx. 40° to core axis.	
1.6			
1.65			
	145		
3.05			
1.8			
	150		

VISUAL LOG: TRACE, COMMON, ABUNDANT, MASSIVE

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		As above. Fractures 20° - 40° to core axis.							Pyrite 1% - 2% as above.
	153.5							153.5	
1.2		Grey <u>lithic tuff agglomerate</u>. A variety of lithic fragments, generally sub-rounded to rounded dacitic lava clasts to 5 cm, small fragments of grey to buff coloured trachyte?, dark green chloritised dacite all in a grey ashy matrix.							Pyrite 3% fine subhedral to euhedral crystals as disseminations and aggregates.
2.0	155								
	156.7	Bedded contact at 30° to core axis.						156.7	
2.3		Pale grey-green <u>feldspar crystal tuff-lava</u> (altered pink-buff tuff-lava?) Relict feldspars are often euhedral in outline (plagioclase?) are represented by pale green sericite aggregates up to 2 mm in size, in aweakly sericitised pale grey matrix.							Pyrite 1% - 2% fine subhedral to euhedral crystals as disseminations within the matrix and as irregular veins.
1.8	160								
3.05		Minor chlorite alteration is indicated as many of the sericite aggregates are chlorite rimmed and fractures at 20° - 60° to core axis are chlorite lined. 160.7 m 3 cm grey tuffaceous material bedded at 40° to core axis.							
3.05	165	The rock is often fragmental or autobrecciated. The fragments are generally sub-rounded up to 10 cm and appear to consist of dacitic lava.							
1.25		167.7 m sub-rounded carbonate aggregates to 3 mm maybe amydgules.							
1.8		172.5 - 182.8 m fine tuff bands, up to 10 cm, disrupted and bedded at 40° to core axis.							
3.05	170								
2.1	175								

DIAMOND DRILL LOG

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		As above.							Pyrite 1% - 2% as above.
2.85	180		F					180.1	Pyrite 3% fine subhedral to euhedral crystals as irregular veins and as disseminations within the matrix.
1.5	181.8	Light grey lithic tuff agglomerate, similar to the unit described QR 20 61.7 - 86.8 m (Petrology QR 20 76.7 m). Of essential pyroclastic nature, large "shredded" lithic fragments dacitic or rhyolitic are altered to clay and sericite. The matrix is light grey and ashy.	F						
2.3									
1.35	185								
1.8	186.9	Below 186.9 m the rock is relatively fine grained, pale grey green feldspar crystal tuff lava as described above.						186.7	Pyrite 1% - 2% as above.
1.85		Foliation at 30° to core axis.							
0.45	190								
3.05		191 - 198.8 m numerous irregular carbonate veinlets up to 2 cm.	c						
1.35									
2.4	195	196 m carbonate cemented fault breccia. The core is reasonably competent fractures at 20°, 30°, 40° and 60° to the core axis are often greater than 30 cm apart.	q F q c c						
3.05	200								

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		200.35 - 204 m the rock is weakly layered, flow banding or pyroclastic banding? at 40° to core axis. Foliation 30° - 40° to core axis.							Pyrite 1% - 2% as above.
3.05	205	204 - 206.4 m the unit is weakly autobrecciated. Fragment margins (fractures) are altered dark grey and often carbonate filled.							
2.15									
2.45	210								
3.05									
	215								
3.35		216.45 - 218.6 m fractures and jointes at 20°, 30° and 50° to core axis.						216.1 216.4	Pyrite 15% as irregular veins associated with secondary carbonate (colloform textures). Pyrite 1% - 2% as above.
1.2									
	220								
3.05									
3.0									
	225								

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DIAMOND DRILL LOG

Hole N° QR 27 Page N° 10.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault (F), Vein (c carbonate, q quartz)

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive ≥60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		225.8 - 227.7 m badly fractured and jointed, the dominant fracture is parallel to core axis (carbonate and chlorite lined with slickensides at 10° to core axis.)							Pyrite 1% - 2% as above.
3.05		225.2 - 230.6 m relict feldspars represented by white carbonate aggregates to 2 mm are common.							
	230	Down to 244.8 m the unit is fragmental (pyroclastic). Lithic fragments up to 5 cm are often "shredded" and sericitised with diffuse outlines.							
3.05									
3.05	235		BROKEN CORE						
0.95									
3.05									
	240								
2.4			F						
1.85		Below 244.8 m the rock is fine grained, partly autobrecciated and weakly sheared.	F					244.8	Minor veins of pyrite at 30° to core axis (colloform textures may indicate original bedding.) Cut at right angles by a secondary carbonate vein at 70° to core axis.
	245								
1.85									
0.9									
	247.9							247.9	
3.05		Blue grey sericitised locally carbonated and silicified lithic feldspar crystal tuff. The fragments of this pyroclastic unit are generally obscured by shearing							Pyrite 5% - 10% where indicated as irregular veins and disseminations of fine subhedral to euhedral crystals.
	250								

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DIAMOND DRILL LOG

Hole N° QR 27 Page N° 11.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive >60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
	250.9	and alteration, where evident fragments appear to be dacitic lava. Relict		250.2 250.6	Pyrite 15%, sphalerite 10%, galena 5% and chalcopyrite 3% over 3 cm.
1.0		Fault zone Pug, sheared and broken core 40° to core axis.			Pyrite 5%, 10% where indicated as above.
1.5		Below 252.6 m the rock is "cemented" with secondary carbonate.			252.3 m trace sphalerite and galena in fault zone.
	254.35	feldspar crystals to 3 mm are completly altered to pale green sericite.			
	255				
2.1	255.3	Fault zone Pug, 70% sheared and broken core 30° to core axis.			
1.5	257.7	The matrix is grey, fine grained and ashy.			
2.6	260	Foliation 30° to core axis. Some fractures at 10° to core axis.		260.9	Pyrite 50%, vein at 30° to core axis, euhedral crystals to 3 mm. Trace sphalerite and galena in a carbonate-barite? matrix.
2.5		261.8 - 265.3 m minor carbonate veinlets with secondary pyrite are common.		261.8	Pyrite 5%, 30% where indicated as irregular veins and bands of fine subhedral to euhedral crystals. Rare sphalerite and galena.
3.0	265				
0.7			BROKEN CORE		
3.05					
	270				
1.8		271 - 273.95 m 1.6 m core lost.		271.2	Bands of massive pyrite at various core angles. Subhedral to euhedral crystals to 2 mm. 60% overall.
0.3					
0.15			BROKEN CORE	273.1	Pyrite 5% as above.
0.15	273.5	Grey coarse sericitised and chloritised lithic tuff. Lithic fragments up to 3 cm are sub-rounded to angular and		273.95	Pyrite 70%, vein at 50° to core axis, euhedral crystals to 1 cm.
	275				

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DIAMOND DRILL LOG

Hole N° QR 27 Page N° 12.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive ≥60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
3.05		dark green in colour due to chlorite alteration. The matrix is grey fine grained and ashy. 279.6 - 287.5 m the rock is dark grey-green in colour due to increased chlorite alteration.		277.5	Pyrite 5% as above.
2.7				278.1	Pyrite 60% vein with euhedral crystals to 1 cm. Pyrite 5% as above.
	280			279.8	Pyrite 60% banded at 60° to core axis.
1.7	280.8	Grey fine tuff band, bedded at 30° to core axis.		280.8	Pyrite 1%.
	281.5			281.5	
1.4		Foliation 40° to core axis.			Pyrite 5%, 60% - 90% where indicated, as fine to coarse subhedral to euhedral crystals often as veins.
0.4					
1.2					
0.8					
	285			285.1	Pyrite 70%, in a chloritic matrix.
1.0				285.95	
1.0				286.7	Pyrite 70%, 20° to core axis.
2.4				287.2	
	289.3				
0.8		Fault zone Pug, sheared and broken core, 45° to core axis. Some core loss.	BROKEN CORE		
	290				
0.3	290.85				
1.9					
2.1		294.9 m intensively altered by chlorite over 20 cm.			
	295				
1.2			BROKEN CORE		
0.6					
0.4			BROKEN CORE	297.2	Pyrite 90% a band of fine subhedral to euhedral crystals.
	297.95			297.8	
0.9		Fault zone Pug, sheared and broken core 30° to core axis.			
0.9	299.7				
	300				

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DIAMOND DRILL LOG

Hole N° QR27 Page N° 13

Feature : Bedding, Foliation, Fragment - size & shape; Shearing, Fault, Vein; c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
					Pyrite 3% except where indicated, with the narrow bands at 30° to C.A.
0.9		The unit is variably chloritised and carbonated, a characteristic that has destroyed the fragmental appearance of the rock.		301	Pyrite 80%
0.9				301.5	Pyrite 90%
2.0			BROKEN CORE	303.5	30cm Pyrite 80%
1.4				305	Pyrite 30%. Trace chalcopyrite at 306.67
2.75	305			306.67	Pyrite 60%
					Pyrite 20%
		Below 308m, chlorite alteration less common with dominant carbonate matrix alteration and irregular aggregates and veins throughout. The unit appears as a coarse lithic tuff.		308.1	Pyrite 5%
3.05	310		F	309.64	3cm band Py 90%, sphalerite 7%
				310.64	Pyrite 90%
0.6			BROKEN CORE F	311	Pyrite 60%
2.56					Pyrite 40%
					Pyrite 60%
					Pyrite 50%
2.32	315			314.20	
				315.5	
				315.65	Pyrite 90%
				316	
				316.25	16cm Py 80%
			F	316.9	Pyrite 90%
3.05				317.8	
			F	318.6	Py 90%, trace cpy
			BROKEN CORE	319.7	Py 90%
	320			319.95	Py 90%
2.92				320.7	Py 50%
				321.6	Py 80%
				321.8	
				322.65	Py 60%
2.53				323.65	Py 60%
	325				

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DIAMOND DRILL LOG

Hole N° QR27 Page N° 14

Feature : Bedding, Foliation, Fragment - size & shape; Shearing, Fault, Vein (c carbonate, q quartz)

Mineralization : Trace 1-5%; Common 5-15%; Abundant 15-60%; Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
					Pyrite as above
0.9	326	FAULT ZONE — Broken and sheared core			
	326.65				
1.65					
				329.29	8cm Py 80%
3.01	330	Carbonate spotting is common below 330m.		329.92	30cm Py 60%
					Py 5% except where indicated.
3.02					
	335				
2.65					
	336.81	FAULT ZONE	F		
	336.95				
3.09		Fault possibly oblique to cleavage at 338.25m.	F		
	340		qc	340.25	Py 55%
3.11				342.2	Py 60%, trace cpy
					Pyrite 3%
	345		c		
3.08					
3.02			c		
	350				

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DIAMOND DRILL LOG

Hole N° QR27 Page N° 15

Feature : Bedding, Foliation, Fragment - size & shape; Shearing, Fault, Vein; c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
3.03		Dark grey lithic tuffs similar to above, with minor, local chloritised zones.			As above
3.03	355	Irregular carbonate aggregates to 1cm, and veins to 0.5cm are common.		352.85	Py 50%
					Py 5% except where indicated, as veins of euhedral to sub-hedral crystals, to 1cm.
3.03				357.03	15cm Py 60%, cpy 1%
3.1	360				
				361.3	
				361.6	Pyrite 70%, cpy 1%.
3.05				364.05	
	365	Foliation is at 40° to the core axis.			Py 80%, cpy 3%.
				365.15	
3.05					Py 3% except where indicated.
				366.85	
				367.3	Py 85%, cpy 10%
				368.2	10cm Py 85%, cpy 5%
3.05				368.8	15cm Py 60%, cpy 1%
	370			370.25	
					Py 80%, cpy 3%
				371.2	
				371.65	
				372.05	Py 70%, cpy 1%
4.05					Py 40%, trace cpy.
				372.8	
				373.1	10cm band Py 90%
				373.5	10cm band Py 80%
				374.2	10cm Py 90%
	375			374.7	20cm Py 70%

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DIAMOND DRILL LOG

Hole No QR27 Page No 16

Feature : Bedding, Foliation, Fragment - size & shape 0%, Shearing, Fault F, Vein c carbonate q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	MINERALIZATION
3.0		As above.	Py 3% as above, trace cpy.
			376.8 Py 40%, sph 1%, gn 1%(2), cpy 1% occurs as irregular aggregates and veins
3.0			378.85 Py 7%
	380		379.9 Py 30%, sph trace, gn trace(3%), cpy trace
			385.45 Py 3% except where indicated.
3.1			381.1 5cm Py 50%, sph 10% gn 3%, cpy 3%
			383.4 Py 20%, trace cpy.
			384
3.0	385		385.2 20cm Py 70%, sph 5% gn 3%, cpy 1%.
			Py 3%, trace sph, gn, cpy, except where indicated.
3.1			
	390		389.5 10cm Py 90%, cpy 1%
			389.8 5cm Py 80%, cpy 10%
3.0			390.1 20cm Py 60%, cpy 1%
			393.5 Py 80%, cpy 1%
3.1			393.7 Py 80%, cpy 1%
	395		394.60 Py 80%, cpy 1% 394.85
			396.5 Py 90% 396.75
3.0			
			398.4 Py 90%, local bands sph 15%, gn 7%, cpy 1%
3.0	400		399.6 399.75 Py 70%, cpy trace.

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
		As above.		400.1	Py 20% where indicated 90%
				401.65	Py 3% except where indicated.
				402.2	
				402.6	Py 90%, trace cpy
3.05				403.1	
				404.3	Py 60%
				404.7	10cm Py 40%
	405				
1.55	405.2	FAULT ZONE Pug, broken and sheared core.	F		
	406.1			406.25	10cm Py 40%, cpy 10%
		Below 406.1 the unit is thoroughly chloritised and sericitised, in addition to massive sulphide bands.	F	406.5	
1.3				406.75	Py 90%, trace cpy
		The unit appears to be a lithic tuff with fine bands of feldspar (?) crystal tuff, thoroughly sericitised with fine pyrite dust throughout. Small, pale green sericite aggregates, lenticular, and aligned with the foliation at 30° to the core axis may represent sheared feldspar crystals.		407.5	Py 70%, trace cpy,
				407.8	sph.
3.05				408.6	406.75 - 408.6 Py 20%, cpy
	410				
					Py 7% occurs as veins and aggregates with rare local bands to 5cms containing 3% cpy and trace sph, gn.
3.0		Irregular carbonate-quartz veins have random occurrence			
		The matrix is light grey, carbonated and has fine sugary quartz crystals in some zones.			
	415				
3.0		414.7 - 416.4m - zone of thorough chloritisation with minor irregular carbonate veins and massive pyrite aggregates and veins.		416.5	Py 3%
3.0					
	420				
3.1					
				423	Py 10% occurs as veins and aggregates in zones of chloritisation. Trace cpy
3.0	425				

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.0	423	423 - 428m thoroughly chloritised pyrite rich tuff. Dark grey-black in colour, the chlorite alteration obliterates textural features, and evidence of its composition.	C					428	Py 10% as above.
3.0	430	Below 428 the unit is a dark green grey carbonated, thoroughly sericitised locally chloritised lithic tuff. Pyrite is usually common as fine dust in sericitised areas. Irregular carbonate aggregates and veins to 1cm and spots are common. Fragments to 1cm of feldspar(?) crystal tuff have sericite aggregates < 2mm, often lens shaped	C						Py 3% as aggregates, veins and disseminated through the matrix.
3.0	435	The matrix is light grey, carbonated and has grey sugary quartz crystals < 1mm that have corroded margins.	C						
3.0	440	Sericite alteration in many areas, obliterates textural and compositional features.	C						
3.0	445	Foliation is at 40° to the core axis and is emphasised by sericite pyrite rich bands.	F F						
3.0	450								

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	DEPTH m	MINERALIZATION
3.05	455	Fractures are usually 30°-50° to the core axis.	BROKEN CORE		Pyrite 3% as above. Chalcopyrite has been noted.
3.05	460	Below 458m, the unit becomes disrupted with abundant irregular yellow-brown carbonate aggregates to 10cm and small veins to 0.5cm occasionally with quartz. Although still sericitised carbonate alteration appears dominant			Decline Fault?
3.05	465			466.1	Py 30%, trace cpy
3.05	467	The unit grades to a dark green-grey sericitised feldspar(?) crystal tuff. The matrix is fine grey and carbonated. Lens and lath shaped aggregates of pale green sericite may represent stretched or sheared feldspar crystals. These aggregates emphasize the foliation at 30° to the core axis.		467.5	Py 3%
3.05	470				
3.05	475				

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DIAMOND DRILL LOG

Hole N° QR27 Page N° 20

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein, c carbonate, q quartz

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05	477	As above.	C						Pyrite 1-3%
		Grey carbonated locally sericitised and chloritised lithic tuff.							
3.05	480	Fragments to 3cm are dark grey-green angular to subangular with sericite and chlorite(?) aggregates. Possibly feldspar crystal tuff.							Secondary sphalerite and galena has been noted in minor carbonate veins.
3.05		Other fragments of fine grey tuff are sericitised and have fine dusty pyrite throughout.							
3.05	485	486m-496m the unit is finer grained and appears 'ashy'. Possibly a quartz feldspar crystal tuff.	C						
3.05	490	The matrix is light grey ashy and has abundant sugary quartz crystals (< 1mm).	C						
3.05	495	Below 495m. the unit becomes increasingly chloritised. Patches of dark green chlorite impart a pseudo-agglomeritic appearance	C						
3.05	500								

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DIAMOND DRILL LOG

Hole Nº QR27 Page Nº 21

Feature : Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein (c carbonate, q quartz)

Mineralization : Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.05		Below 500.5m, the unit becomes a coarse lithic tuff, genetically very similar to that above between 477m and 486m. Fragments are chloritised and sericitised, while the matrix is light grey, carbonated and, at the end of the hole 'ashy'.							Pyrite 1% as above.
3.05									
	505								
	505.35	EOH							

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 3rd April 1975

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION
155504
Altered Porphyritic Dacite or Rhyodacite.

Job No. CMS 75/3/11 Date Received: 17/3/75

Reference Order No. 5050

Sample No. 155504

Nature of Sample: ~~D.D. Core~~ QR 27 27·3 M

DESCRIPTION **SECTION No.** 16331 (A,B,C)

a. Hand Specimen:

Pink/grey green altered porphyritic lavas, K stain negative.

Microscopic:

This is a thoroughly altered porphyritic dacite or possibly a rhyodacite (primary feldspar composition is largely obscure).

Three thin sections, covering most of this length of core, were examined. These are homogeneous in terms of the relict fabric and mineralogy, but exhibit subtle variations in the alteration pattern. Section 16331A is from the mesoscopically pink end of the core, B and C were cut progressively away from this portion.

Relict primary features can be summarised as essentially random to weakly orientated feldspar phenocrysts (150μ–2mm) and sporadic quartz microphenocrysts in a weakly flow banded groundmass of semi-felsitic/anhedral quartzo-feldspathic material (20–40μ). Some feldspar persists both in the phenocrysts and groundmass; this is plagioclase although specifically indeterminate. There are two semi-distinct types of altered feldspar phenocrysts, sericite--carbonate- or locally chlorite--replacements and microgranular quartz-carbonate pseudomorphs. This suggests that two feldspar species were present as phenocrysts (ie, orthoclase or sanidine--anorthoclase in addition to plagioclase) -- hence ? rhyodacite.

Alteration is pervasive throughout the rock but in slightly varying degrees. Typically phenocrysts are completely altered and the groundmass extensively replaced by sericitic illite-hydromuscovite and fine grained carbonate. Chlorite is common as an alteration of phenocrysts and the groundmass (16331C)(rare elsewhere) and impregnations of ultrafine pyrite are common particularly marginal to sporadic pyrite-healed fractures. A sheared chlorite-carbonate vein (2mm) with a pyritic selvedge occurs in 16331C.

The pink section of the core is slightly less altered than the remainder and is characterised by relatively abundant carbonate, and an absence of pyrite and of chlorite. Marginal "grey" areas are relatively poor in carbonate but are in fact pink under low angle incident light. This indicates the pink colouration is a primary feature, enhanced by the development of carbonate (translucency) and masked by the ultrafine pyrite (causing grey) and chlorite (green). This conclusion tends to be verified by the presence of patchy relict phenocryst-plagioclase in 16332B which is stained pinkish by virtually submicroscopic Fe-oxide particles. This phenomonon is not uncommon in intermediate and acid igneous rocks and is sometimes referred to as "magmatic reddining".

D. Cowan, B.Sc.