Drill Hole Record

Cominco

HOLE N° QR 18

LOCATION Que River Area PROPERTY Mackintosh EL 2/70 DISTRICT Tasmania, Australia ALTITUDE / RL 688.99 DATE 17.2.1975

COMMENCED 8.2.1975 COMPLETED 12.2.1975 CORE SIZE NQ to 85.7 m BQ to 233.8 E.O.H. LOGGED C.H. Young

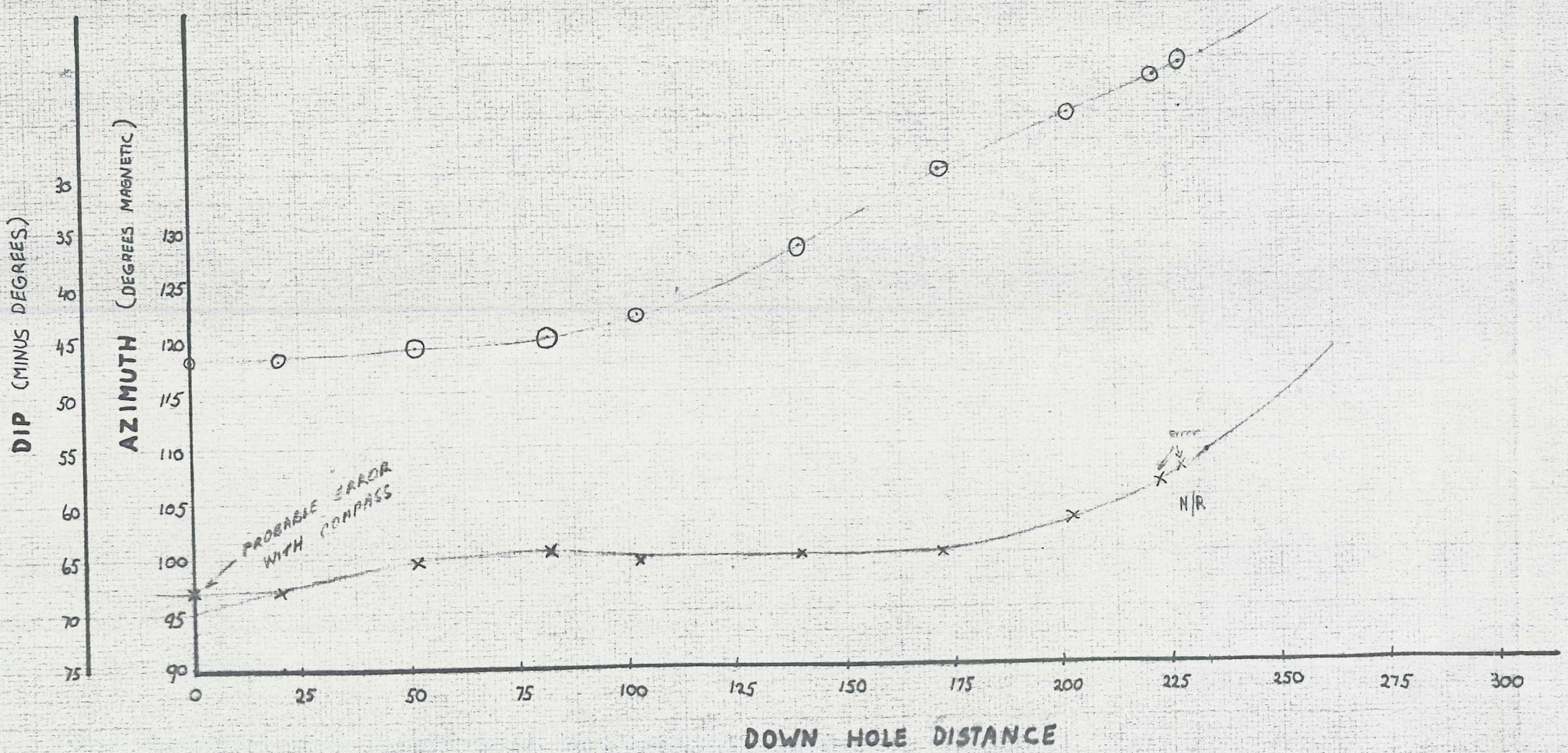
OBJECTIVE To test coincident IP and Geochemical anomaly and the western lens position. %RECOVERY 99% CO-ORDINATES 7800.59N 5140.25E

GRID BEARING (M) 8.75° BEARING (M) 97° DIP -47°

SURVEY DATA			
DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE
0	47	97	Clinometer and compass
20.4	47	97	Eastman
51.5	46	99.5	Single Shot
82.0	45	100.5	Camera
101.9	43	99.5	" "
139.35	37	99	" "
172.9	30	100	" "
203.4	25	103	" "
228	20.5	N/R	In casing
233.9	E.O.H.		

GRAPH DERIVED DATA						REMARKS
DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE	
0	47	97	7800.59	5140.25	688.99	
22.05	46.5	97.5	7801.0	5155.4	672.9	22.05 - 24.9 m Semi-massive sulphides
50	46	99.5	7801.0	5174.7	652.7	Galena 8% Sphalerite 5%
75	45.5	100.5	7800.7	5192.1	634.8	
96.5	44	100	7800.3	5207.4	619.7	96.5 - 103.4 m Semi-massive sulphides
125	40	100	7799.8	5228.5	600.6	Galena 3% Sphalerite 2%
150	35	100	7799.4	5248.4	585.4	
175	30	100.5	7798.8	5269.4	572.0	
200	25.5	102.5	7797.7	5291.5	560.4	204.25 - 206.1 m West lens position
233.9	19.5	109	7793.9	5322.5	547.4	Galena 3%

Q.R. 18.


DIP (MINUS DEGREES)
AZIMUTH (DEGREES MAGNETIC)
30
35
40
45
50
55
60
65
70
75
130
125
120
115
110
105
100
95
90
0
25
50
75
100
125
150
175
200
225
250
275
300
PROBABLE ERROR WITH COMPASS
N/R
DOWN HOLE DISTANCE

DIAMOND DRILL LOG

Hole N° QR 18 | Page N° 1.

Feature: Bedding, Foliation, Fragment – size & shape (Og) | 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
	0	No core.							
	3.05								
0.9	5	Deeply weathered and kaolinised down to 17.35 m. White to soapy green in colour the rock is most likely a fine <u>feldspar crystal tuff</u>.	VERY BROKEN CORE						Pyrite < 1% as occasional irregular veinlets.
0.4	10								
0.6			BROKEN CORE						
1.0	15								
	17.35								
0.7		Partly weathered pale green-grey <u>lithic pumice tuff agglomerate</u>. Pale green filamentus pumice fragments to 6 cm in length and dark green lithic fragments in a fine grained grey to buff coloured siliceous matrix.	F						
3.05	20								
	21.2		F					21.2	Pyrite 10% as rounded fragments and disseminations within the matrix, trace galena. Zone of base metal sulphides, as fragments and irregular bands. Semi-massive where indicated. Overall pyrite 15% galena 8% dark grey sphalerite 5%.
3.05		Grey lithic pumice tuff agglomerate. Fragments of dacitic lava are sub-rounded often weathered and up to 5 cm. Grey to dark green chloritic and carbonate spotted lithic fragments also up to 5 cm. Other fragments include smaller rounded dark grey siliceous tuff and pyrite fragments.	BROKEN CORE					22.05	
	25		F					24.9	

DIAMOND DRILL LOG

Hole N° QR 18 Page N° 2.

Feature : Bedding, Foliation, Fragment – size & shape (Fg); 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	DEPTH m	MINERALIZATION
3.05	29.7	Small filamentus pumice fragments are common. The matrix is grey siliceous and "ashy". The unit becomes thoroughly sheared below 28 m. Fractures and foliation at approx. 30° to core axis. Chlorite is common on the fracture planes. Slickensides indicates some fractures are at right angles to each other.		29.7	24.9 – 29.7 m Pyrite 5% as disseminations within the matrix and irregular veins and nettworks.
3.05	30	Carbonated buff to pink coloured (occasionally pale green) fine <u>feldspar crystal tuff-lava</u>. Essentially a weakly flow banded (60° to core axis) lava with a varying tuffaceous content. Small plagioclase feldspars are common and occasional carbonate aggregates <2mm are also thought to represent relict feldspar. A random distribution of quartz phenocrysts (to 1 mm) has been noted. The tuffaceous (pyroclastic) content is illustrated by various amounts of filamentus pumice occasionally to 6 cm, fragments of rounded grey chert, buff coloured tuff fragments and rounded fragments (bombs) of dacitic lava all in a fine ashy matrix. Fractures commonly at 30° to core axis.	BROKEN CORE		Pyrite <1%. The pyrite is restricted to occasional small irregular veins and aggregates and discrete euhedral crystals within the matrix.
3.05	35				
3.05	39.7				
3.05	40	39.7 – 49.8 m the unit is brecciated (autobrecciated in part with large rounded fragments?) becoming a coarse agglomerate with fragments (bombs) of dacitic lava (characterised by euhedral aggregates of pale green sericite after feldspar) to 12 cm and pale green sericitised filamentus pumice.	BROKEN CORE	42.2	Pyrite 5% as irregular veins and aggregates of fine subhedral to euhedral crystals and as aggregates interstitial to the fragments.
3.05	44.1	<u>Fault zone</u> 70% sheared and broken core 30° to core axis.			
3.05	45 45.2	Small grey siliceous tuff fragments have been noted.	BROKEN CORE	45.3	Pyrite <1% as above.
3.05		48 – 49.8 m cemented breccia zone nearly parallel to core axis.			
	49.8 50				

DIAMOND DRILL LOG

Hole N° QR 18 | 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	DEPTH m	MINERALIZATION
		49.8 – 54.7 m feldspar crystal tuff lava as described above, bedding or flow banding 50° to core axis.			Pyrite <1%.
2.45					
0.5					
3.05	55	Below 54.7 m there is a pyroclastic component; often as "bombs" of rounded dacitic lava to 10 cm together with green sericitised filamentus pumice and smaller grey siliceous tuff fragments. Green illite-hydromuscovite has been noted.	c		
1.85					
1.2					
	60				
0.5	60.1	Fault zone 80% sheared and broken core 30° to core axis some chlorite on fracture planes.			
1.0				62.5	Pyrite 3% as irregular veins and aggregates associated with minor carbonate veining.
	61.9				
1.2		Below the fault the unit is silicified. Small carbonate flecks are often aligned parallel to the core axis, (Original flow banding?) Small quartz phenocrysts <1 mm are common although their distribution is random.		64	Pyrite <1%.
3.05	65	Often the unit is grey coloured locally about irregular fractures.			
3.05			c c c		
	70				
3.05		70.5 – 71.7 m weakly brecciated and autobrecciated. Some fragments exhibit concentric alteration zoning.	F	70.5 71.7	Pyrite 5% as irregular veins and aggregates, interstitial to the fragments.
	72.5				
	72.9	Fault zone sheared and broken core.			
3.05		Below the fault, feldspar crystal tuff lava as above.	q-c F		
	75				

DIAMOND DRILL LOG

Hole N°: QR 18 | Page N°. 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	DEPTH m	MINERALIZATION
3.05		Minor carbonate veining is common parallel to the fracture at 50° to core axis.	c		Pyrite < 1% as above.
3.05	80				
	80.7	Fault zone broken core, fractures			
	81.5	at 30° to core axis.			
3.6					
	84.6				
0.75	85	Fault zone sheared and broken core 30° to core axis.			
	85.7	85.9 – 87.6 m grey lithic tuff agglomerate. A minor pyroclastic band in the feldspar quartz crystal tuff sequence. Angular to sub-rounded fragments up to 4 cm of grey fine grained tuff, filamentus pumice and pyrite.	BROKEN CORE	85.9	Pyrite 3% as fragments and fine disseminations within the matrix.
2.0					
				87.6	Pyrite < 1%.
3.05	90				
		91.3 – 91.45 m fine to coarse pyroclastic band bedded at 50° to core axis.		91.3	Pyrite 1% – 3% as disseminations of fine subhedral to euhedral crystals.
3.05		Below 91.45 m the unit is generally disrupted – lithic pumice tuff agglomerate. Fragments of pink lava and pale green filamentus pumice in a grey ashy matrix – often chloritised.	F		
3.05	95				
	96.5		F	96.5	Pyrite 60% as aggregates and disseminations of subhedral to euhedral crystals to 2 mm. Some rounded aggregates to 3 mm (framboidal). Galena 3% as minor bands to 4 mm and disseminations. Light brown cont
3.05		Semi-massive sulphides in a thoroughly sericitised grey lithic pumice tuff matrix. Weak bedding at 60° to core axis.			
	100				

DIAMOND DRILL LOG

Hole N°. QR 18 Page N°. 5.

Feature: Bedding, Foliation, Fragment – size & shape (Og); 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	DEPTH m	MINERALIZATION
		100.7 – 100.8 m band of buff coloured silicified pumice tuff.	F		sphalerite < 2%. Barite bands to 4 mm have been noted.
1.8		Below 103.4 m fragments of dacitic lava and pale green filamentus pumice.		103.4	Pyrite 10% as disseminations of fine subhedral to euhedral crystals.
	104.3				
3.05		Fault zone mostly pug, sheared and broken core 40° to core axis.			
	105				
	105.65	Fault contact.		105.65	Pyrite < 3% as disseminations and aggregates of fine subhedral to euhedral crystals often banded parallel to the foliation.
	105.8				
2.25		Carbonated buff to pink coloured lithic pumice tuff agglomerate. (Essentially a pyroclastic phase of feldspar quartz crystal tuff-lava.)			
2.15		The lithic fragments are generally pale buff to grey in colour, tuff-lava (often with small aggregates of pale green sericite) sub-angular to raggard in outline, often as "bombs" up to 10 cm. Sericitised pale green filamentus pumice up to 4 cm in length is common.			
	110				
3.05		The matrix is fine feldspar quartz crystal tuff-lava, often heavily carbonated.	C		
1.5		Carbonate veinlets to 3mm are fairly common.			
		Foliation at 25° to core axis.			
	115				
3.05			C		
			F		
3.05			F		
	120		F		
3.05					
		124.9 – 150.55 m grey lithic pumice tuff band, fragmental pyrite.		124.9	Pyrite 10% as fragments.
	125				

DIAMOND DRILL LOG

Hole N°. QR 18 Page N°. 6.

Feature : Bedding, Foliation, Fragment – size & shape (Og); 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
3.05		
3.05		127.2 – 132.4 m coarse lithic pumice tuff, the lithic fragments are generally pink in colour usually <3 cm. Foliation 40° to core axis.
	130	
3.05		Below 132.4 m the unit is partially disrupted. Chlorite is common on fracture planes at 30° – 50° to core axis some fractures are perpendicular to each other and often arcuate in outline.
3.05	135	
2.4		
0.5		Sample for petrology 139.7 m 155542.
	140	
3.05		142.4 – 144.15 m weak banding or bedding at 35° to core axis, the fragments are often green-chloritised.
3.05		144.15 – 161.7 m carbonated pink to orange coloured lithic pumice tuff agglomerate, becoming coarse tuff below 151 m. The lithic fragments are often mottled white to orange feldspar crystal tuff, angular to sub-rounded and often up to 5 cm. Pale green weakly sericitised filamentus pumice up to 4 cm long is common. The matrix is buff coloured and siliceous. Foliation 35° to core axis.
	145	
3.05		
	150	

VISUAL LOG: TRACE | COMMON | ABUNDANT | MASSIVE

DEPTH m	MINERALIZATION
125.55	Pyrite <3% as fine cryptocrystalline material and as disseminations within the matrix. Fragments of bedded galena have been noted. Rare pyrite as discrete euhedral crystals.
128	
131.8	Pyrite 5% as disseminations and aggregates of fine subhedral to euhedral crystals.
137.2	Pyrite <3%.
144.15	Rare pyrite as discrete euhedral crystals.

DIAMOND DRILL LOG

Hole N°. QR 18 | Page N°. 7.

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	DEPTH m	MINERALIZATION
3.05		146.4 SAMPLE FOR PETROLOGY 155538 Foliation 40° to core axis. Fractures some parallel, others 20° – 30° to core axis. Carbonate veinlets become more common below 152.3 m.			Rare pyrite.
3.05	155		c		
3.05			c F		
3.05			F c		
3.05	160	161.55 – 162 m grey disrupted carbonated lithic tuff agglomerate fault bounded at 40° to core axis.	F	161.55	Pyrite 10% as disseminations, irregular veins and aggregates.
3.05	162	Carbonated buff to salmon pink coloured fine feldspar crystal tuff-lava (often grey coloured about irregular carbonated fractures.) Small white carbonate flecks and occasional pale green sericite aggregates after feldspar in a fine grained buff coloured matrix. Weak banding or bedding 60° to core axis.	F c	162	Rare pyrite.
3.05	165		c		
3.05			F		
3.05	168.1	Fault zone 60% broken core some fractures parallel to core axis.	BROKEN CORE		
3.05	169.8 170	Irregular carbonate veinlets to 4 mm are common. Small (to 2 cm) lithic fragments have been noted.	F		
3.05			BROKEN CORE c		
	175				

Feature : Bedding, Foliation, Fragment – size & shape Og; 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
		175.1 – 175.95 m minor brecciation.	F						Rare pyrite as minor aggregates within the matrix.
3.05									
		178.3 – 178.7 m minor autobrecciation some of the fragments show concentric alteration zones.						178.3 178.7	Pyrite 5% as aggregates of fine subhedral to euhedral crystals interstitial to the fragments.
	180								Pyrite < 1% as minor aggregates.
3.05									
		182 – 184.5 m partly fragmental, occasional lithic fragments to 3 cm (fine grey tuff) and minor pale green filamentus pumice.						182.3	Pyrite 1% – 2% as aggregates of fine subhedral to euhedral crystals often associated with secondary carbonate veinlets.
3.05		Foliation at 70° to core axis.	F						
	185							185.5	Pyrite < 1%.
3.05									
								187.3 187.7	Pyrite 1% – 2% as above.
	188.2								
3.05		Carbonated buff to pale green pumice lithic tuff agglomerate. Fragments of pale green weakly sericitised pumice to 8 cm and occasional lithic fragments, fine grained grey tuff to 3 cm in a fine buff coloured matrix.							Pyrite < 1% as discrete euhedral crystals and minor aggregates or fragments.
	190		F						
		Foliation 60° to core axis.							
3.05									
	194.6							194.6	Pyrite 3% as minor aggregates, discrete euhedral crystals (secondary) and fragments.
		Gradational Contact							
	195	Carbonated grey-chrome green <u>lithic tuff agglomerate</u>. Amygdaloidal lava clasts to 6 cm, tuffaceous fragments and filamentus pumice to 2 cm in a grey "ashy" matrix.							
3.05									
	197.3	<u>Fault zone</u> disrupted, sheared and broken 60° to core axis.							
	198.4								
3.05		Chrome green illite-hydromuscovite is abundant.							
	200								

DIAMOND DRILL LOG

Hole N°. QR 18 | Page N°. 9.

Feature: Bedding, Foliation, Fragment – size & shape (Og), 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	DEPTH m	MINERALIZATION
3.05	200.1	Light grey weakly carbonated and sericitised coarse lithic tuff. The lithic fragments are grey coloured, angular to sub-rounded and are characterised by white carbonate aggregates to 3 mm. The matrix is light grey and fine grained. Foliation 50° to core axis.		200.1	Pyrite 5% as disseminations of fine subhedral to euhedral crystals.
3.05	204.05	West lens position. Disrupted silicified and sericitised pumice lithic tuff agglomerate. White sericitised filamentus pumice to 5 cm in length and rounded fragments of dacitic lava? Often with disseminations of galena, weakly bedded with pyrite at 60° to C.A.		204.25	Pyrite 20% as irregular veins and bands with aggregates and disseminations of fine galena 3%.
3.05	207.5	Grey to grey-green weakly carbonated and chloritised lithic tuff agglomerate. The fragments predominately of the one type are sub-rounded (to 6 cm) with difuse outlines often merging imperceptibly with the matrix. The fragments are characterised by pale green sericite (chlorite) aggregates generally <2 mm, probably representing relict feldspars.		206.1	Pyrite 10% - 15% with fine disseminated galena <1%.
3.05		The matrix is pale grey-green of similar composition to the fragments, commonly carrying small sericite and chlorite aggregates, disseminated pyrite and carbonate aggregates.		207.5	Pyrite 3% as fine disseminations and aggregates within the matrix and as occasional discrete euhedral crystals.
3.05		Carbonate spotting is common, aggregates of white carbonate to 3 mm often make fragment outlines difficult to distinguish.			
3.05		This unit is relatively competent breaks in the core are often up to 70 cm apart.			
3.05					
3.05		224.5 – 224.75 m weakly bedded 60° to core axis.			

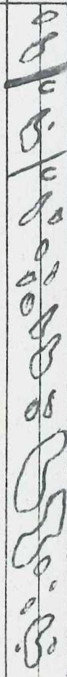
DIAMOND DRILL LOG

Hole Nº QR 18   Page Nº. 10.

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		Feldspars are occasionally pink in colour, albitised?.							Pyrite 3% as above.
3.0	230	230 - 230.7 m large, to 20 cm fragments of grey tuff.							
3.1									
	233.9	E.O.H.							
	235								

HOLE No QR 18 DATE 17/2/75

SAMPLE No	FROM (M)	TO (M)	W (cm)	REMARKS	INITIAL ANALYSIS: %Cu AAS	%Cu XRF	%Pb AAS	%Pb XRF	%Zn AAS	%Zn XRF	%Fe TIT	ppm Ag AAS	ppb Au AAS	ppm Au FIRE	CHECK LAB: INT.	%Cu	%Pb	%Zn
156336	203.68	204.26	58	Datum block 203.40	0.01		0.06		0.13			< 2	25					
156337	204.26	204.89	63		0.12			1.65		3.09		23	80					
156338	204.89	205.73	84		0.18			4.10		4.66		39	160					
156339	205.73	206.38	65	End of tray measured 205.87	0.05			1.28		1.04		15	40					
156340	206.38	206.96	58	Block 206.45 ties in	0.03		0.91		0.85			9	30					
	204.26	205.73	147		0.15		3.05		3.99			32.1	0.1					

HOLE No QR 18 DATE 17/2/75

SAMPLE No	FROM (M)	TO (M)	IW (cm)	REMARKS	INITIAL ANALYSIS: %Cu AAS	%Cu XRF	%Pb AAS	%Pb XRF	%Zn AAS	%Zn XRF	%Fe TIT	ppm Ag AAS	ppb Au AAS	ppm Au FIRE	CHECK LAB: INT.	%Cu	%Pb	%Zn
156316	20.86	21.41	55	Datum block 22.25	<0.01		<0.01		0.04			< 2	< 20					
156317	21.41	21.95	54		0.05		0.90			2.02		18	>500	1.0				
156318	21.95	22.60	65	Approx. 30 cm core loss	0.05			1.17		2.04		23	280					
156319	22.60	23.43	83		0.07			1.74		2.66		20	300					
156320	23.43	24.04	61		0.03		0.13		0.14			5	20					
156351	95.94	96.52	58	Datum block 96.65	<0.01		0.06		0.09			< 2	< 20					
156352	96.52	97.08	56		0.06			1.48		2.36		18	>500	1.0				
156353	97.08	97.87	79		0.03		0.69		0.86			12	280					
156354	97.87	98.41	54		0.03		0.66		0.94			15	>500	0.7				
156355	98.41	99.13	72		0.02		0.69		0.70			18	>500	1.3				
156356	99.13	99.73	60	Block 99.70 is 6cm short	0.02			1.53		2.83		45	>500	1.3				
156357	99.73	100.90	117	60-65cm core loss	0.09			2.96		4.22		59	200					
156358	100.90	101.52	62		<0.01		0.43		0.41			15	250					
156359	101.52	102.07	55		0.13			1.05		2.59		44	280					
156360	102.07	102.66	59		0.02		0.63		0.91			17	160					
156361	102.66	103.36	70	Block 102.75 ties in	0.12			2.23		2.61		31	345					
156362	103.36	103.87	51	Start of next tray ties in	0.01		0.37		0.64			4	240					
	21.41	23.43	202		0.06		1.33		2.29			20.4	0.5					
	96.52	103.36	684		0.05		1.38		2.02			29.5	0.6					