Cominco

DRILL HOLE RECORD

Location Que River Area
Property Mackintosh EL 2/70
District Tasmania, Australia
Commenced 28.5.1975
Completed 3.6.1975
Core size NQ to 221 m E.O.H.
Objective To test "S" (East) lens for grade and Metallurgy and I.P. anomaly at 5350E.
% Recovery 100 (from 4.0 m to 221 m)
Alt./R.L. 712.74
Co-ordinate 7349.4N 5238.5E
Bearing (M) 98° 13'
Grid bearing (M) 8.75
Hole No QR 45
Date 7.6.1975
Logged C.H. YOUNG
Dip 54° 45'

SURVEY DATA

DEPTH	DIP	BEARING(M)	INSTRUMENT TYPE
0	55	098	Clino. and Tube Compass
0	54° 45'	98° 13'	Theodolite
25	56	103	Eastman
56	55	103	Single Shot
88	55	104	Camera
118	53	104	"
148	51	104.5	"
169	49	104.5	"
193	46	105.5	"
217	42.5	105.5	"

GRAPH DERIVED DATA

DEPTH	DIP	BEARING(M)	NORTHING	EASTING	ALTITUDE
0	54.75	98.25	7349.4	5238.5	712.7
25	55	98.5	7349.5	5252.9	692.3
50	55	98.5	7349.6	5267.2	671.8
75	55	99	7349.6	5281.6	651.3
100	54.5	99.5	7349.4	5296.0	630.9
125	52.5	99.5	7349.2	5310.9	610.8
150	49	100	7349.0	5326.7	591.4
175	48.5	100.5	7348.5	5343.1	572.6
200	45	101	7347.9	5360.3	554.4
221	41.5	101	7347.3	5375.5	540.1

REMARKS

12.8 - 22.5 m Interpreted "R" lens mostly massive pyrite, accessory Sph and Gn.

79.0 - 89.3 m Interpreted "S" lens Bands of massive pyrite with associated chalcopyrite.

180.9 - 195.3 m Pyrite up to 20% may be source of I.P. anomaly.

209.9 - 211.4 m Stringer Mineralization? Pyrite 10%, Sphalerite 5% and Galena 3%.

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DIAMOND DRILL LOG

Hole N° QR 45 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	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
		No Core.							
	4.0								
1.7	5	PyP Grey sericitised <u>feldspar crystal tuff</u>. Sericite aggregates up to 3 mm are thought to represent feldspar crystals. The matrix is light grey sericitised and siliceous. (This rock could equally be a lava with feldspar phenocrysts in a quartz - feldspathic matrix). Foliation 40° to core axis. Fractures 30° - 60° to core axis.							Pyrite 5%-10% as disseminations, irregular veins and aggregates of fine subhedral to euhedral crystals.
2.3									
3.0	10								
3.2	12.2	<u>Fault zone</u> Recemented breccia, pug sheared and broken core, 50° to core axis. (This fault zone may extend down to 25 m).						12.8 13.2 13.6 14.2	Pyrite 60%, as bands of fine euhedral crystals. 5 cm Py 60% trace Sph, Gn. Pyrite 60%-90%, massive bands of subhedral to euhedral crystals up to 1 mm. Trace brown sphalerite and galena as aggregates to 5 mm.
2.8	15 15.2	Interpreted "R" lens. Massive pyrite in a grey sericitic and siliceous matrix. Solution cavities are common.							
2.4								18.7	Pyrite 10%, brown sphalerite 2%, galena 1% as aggregates and irregular veinlets.
0.6	19.6 20	<u>Fault zone</u> Pug, sericitised, sheared and broken core, 50° to core axis.							
3.0	20.2	Foliation 40° to core axis.						20.2	Pyrite 40% as bands of very fine subhedral to euhedral crystals, trace sphalerite and galena.
	22.5							22.5	Pyrite 5%-10% as disseminations, irregular veins and aggregates.
	23.0	<u>Fault zone</u> Sheared and broken core.							
2.4		Grey sericitised lithic tuff. Intensely sericitised and sheared down to 25 m. Fragments are altered to sericite.						24.3	Pyrite 30% as fine disseminated crystals.
	25							25	

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DIAMOND DRILL LOG

Hole No QR 45 Page No 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	DEPTH m	MINERALIZATION
0.2		The matrix is light grey and completely sericitised.	F	25.0	Pyrite 5%-10%, 60% where indicated as disseminations, aggregates and irregular veins (generally at low core angles) with associated trace sphalerite galena and chalcopyrite as small aggregates.
1.9	27.3		C		
	27.7	Fault zone Sheared and broken core.			
1.5	28.5				
		The rock is now much more siliceous and often disrupted.			
	30	Grey silicified carbonated lithic tuff.			
3.0		Irregular shaped lithic fragments, generally to 1 cm occasionally to 3 cm consist of fine grained tuff, chert and possible dacitic lava (sericite aggregates after feldspar phenocrysts).			
3.0		The matrix is generally siliceous and contains varying proportions of granular carbonate.		34.0	40 cm vein of pyrite 60% trace chalcopyrite, sphalerite and galena as aggregates to 1 cm.
	35	Small irregular quartz and carbonate veins are common, often with solution cavities.			
		Fractures 30° - 60° to core axis.			
3.0					
3.0	40			39.9	30 cm irregular vein of pyrite 60% trace chalcopyrite, sphalerite and galena.
3.0					
	45				
3.0					
3.0			F		
	50				

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DIAMOND DRILL LOG

Hole N° QR 45 Page N° 3.

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	VISUAL LOG	DEPTH m	MINERALIZATION
3.0		PyP as above.		50.4	10 cm Irregular vein Pyrite 60% chalcopyrite 2% trace sphalerite and galena as aggregates to 5 mm.
3.0	55	Below 53 m lithic fragments are often dark green, chloritised? Small blebs of chalcopyrite within the fragments have been noted.		55.8	2 cm vein pyrite 50% chalcopyrite 20%.
3.0		58.5 m Weak foliation 10° to core axis.			
1.0	60				
2.0					
3.0					
	65				
3.0					
		69.4 - 70.0 m Sericitised and foliated at 40° to core axis.		69.4	Sphalerite 3%, galena 1%, as aggregates to 5 mm.
3.0	70			70.0	(pyrite 5%-10% as above). Pyrite 5%-10%, 60% where indicated trace chalco-pyrite sphalerite and galena as above.
3.0					
	75				

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DIAMOND DRILL LOG

Hole N° QR 45 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
3.0		Pyp as above.			
				77.4	Py 40% as disseminations and irregular veins.
3.0				78.2	
				78.5	Py 60% as above.
		Interpreted "S" lens.		78.7	
		Bands of massive pyrite with associated chalcopyrite.		79.0	Py 60%, locally 80% as bands at 40° to C.A. and as veins of fine (to 2mm) subhedral to euhedral crystals. Solution cavities are common.. Cpy 1%-2%.
	80				
3.0				81.3	Py 30% as above.
				82.0	As above.
3.0					
				84.8	Py 20% as disseminations.
	85			85.0	As above.
				87.3	Py 30% as disseminations and fine euhedral crystals.
3.0				88.0	
				88.55	Py 40% Cpy 30% as bands at 40° to core axis of fine subhedral to euhedral crystals.
		Below 89.3 m the rock is partly disrupted. Light grey carbonated silicified lithic tuff agglomerate.		89.3	Py 15% as disseminations, aggregates and irregular veins. Trace pale brown sphalerite, galena and chalcopyrite as aggregates to 1 cm.
	90				
3.0					
3.0	94.0			94.0	Py 5% as disseminations aggregates and irregular veins of fine subhedral to euhedral crystals. Rare sphalerite and galena as secondary aggregates associated with carbonate veins.
		UPL Light grey-buff mottled carbonated <u>feldspar crystal tuff</u>. (Possibly porphyritic lava).			
	95				
3.0		Sericite and occasionally green illite-hydromuscovite replace feldspar as aggregates up to 2 mm, some euhedral outlines have been recognised. Pyrite commonly is associated with the sericite aggregates.			
		The matrix is fine grained and siliceous.			
3.0		Foliation 20° to core axis.			
	100				

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DIAMOND DRILL LOG

Hole N° QR 45 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
		UPL as above.				Pyrite 5% as above.
		Fractures 20° - 60° to core axis.				
3.0		Partly disrupted, brecciated below 103.5 m.				
3.0	105				105.1	10 cm irregular vein of pyrite 20% chalcopyrite 3%, trace Sph and galena.
		107.25 - 108.2 m White quartz veins are common.			107.25	Pyrite 20% as disseminations and aggregates of fine subhedral to euhedral crystals, Sph 2%-3%, Gn 1%-2%, as aggregates to 1 cm.
	108.2					
3.0		PyP Grey silicified lithic tuff agglomerate. (White quartz veining is common down to 111.2 m).				Below 108.2 m Py 5%-10% as disseminations irregular veins and aggregates, rare Cpy Sph Gn.
	110	Lithic fragments up to 6 cm are generally irregular in shape. In order of abundance are fragments of porphyritic lava where feldspar phenocrysts are represented by white carbonate aggregates up to 3 mm in a grey sericitic, partly siliceous groundmass. Fragments of grey tuff and fragments of tuff or lava, dark green in colour due to chlorite alteration.				
2.75						
1.85					114.6	Py 70% as bands of fine subhedral to euhedral crystals.
	115	The matrix is light grey and siliceous.			115.1	
		There is a crude banding at 30° to core axis.				Py 5%, 10% where indicated as disseminations and irregular veins often parallel to core axis, subhedral to euhedral crystals to 1 mm are common.
3.0		Fractures 20° - 60° to core axis.			116.8	
					117.1	
1.4					118	
					119.4	
	120					
					120.4	
3.0					120.6	
					123.7	
3.0					124.0	
					124.2	
	125					

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DIAMOND DRILL LOG

Hole N° QR 45 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	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
3.0		PyP as above. 125.0 - 132.0 m Irregular white quartz veins are common and the rock is partly disrupted.						125.3	Pyrite 5%, 10% where indicated as above.
								128.0	
								128.3	
3.0								129.3	
	130								
3.0									
	135								
3.0								137.5	
								137.9	
3.0									
	140								
3.0								142.6	Pyrite 30% as irregular veins of subhedral to euhedral crystals to 2 mm. Pyrite 5%, 10% where indicated as above.
		Below 143.5 m the rock is partly disrupted, fragment outlines are often obscure.						143.5	
3.0									
	145								
3.0									
	150								

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DIAMOND DRILL LOG

Hole N° QR 45 Page N° 7.

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
3.0					Pyrite 5%, 10% where indicated as above.
3.0		Below 152 m the rock has the appearance of a lithic tuff but is a lithic tuff agglomerate, lithic fragments up to 5 cm are themselves of lithic tuff, containing chloritised lithic fragments up to 1 cm.			
	155				
	155.5	UPL Contact at 30° to core axis.		155.5	10 cm pyrite 40%.
2.8		Light grey-green to buff vitric feldspar crystal tuff, (or porphyritic lava). This rock is similar to that described above, 94 - 108.2 m.			Below 155.5 m pyrite < 3% as disseminations and aggregates of subhedral to euhedral crystals.
3.2		There is a weak foliation or flow banding at 30° to core axis, locally obscured by alteration - pyritisation (areas of fine grained pyrite). Feldspar crystals are very small < 1 mm, represented by carbonate flecks.		159	Pyrite 30% as bands and
	160			159.3	veins at 30° to core axis.
1.0		The matrix is fine grained and siliceous and contains fairly frequent crudely lenticular patches of granular quartz which may represent spherulites, hence vitric.			Pyrite < 3% as above.
2.0					
0.7		The rock becomes light grey to buff in colour under the influence of increased carbonate alteration.			
	165				
2.3		Occasional lithic fragments (fine tuff) to 2 cm have been noted.	c		
				167.2	2 cm pyrite 20%, vein of subhedral to euhedral crystals at 20° to core axis.
3.0			c		
	170		c		
3.0			c		
			c		
3.0					
	175				

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DIAMOND DRILL LOG

Hole N° QR 45 Page N° 8.

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
						Pyrite < 3% as above.
3.0		Patches of green illite-hydromuscovite up to 2 cm have been noted.			176.1	2 cm pyrite 20% as a vein at 20° to core axis.
3.0	180					
	180.9				180.9	Pyrite 5%-10% as disseminations and irregular veins, rare splashes of chalcopyrite.
3.0		PyP Grey sericitised carbonatised coarse lithic tuff. Lithic fragments have irregular outlines and are up to 3 cm, grey in colour and completely sericitised, often chloritised. The matrix is light grey and siliceous. 182.4 - 183.0 m Quartz-carbonate cemented breccia zone. There is a crude bedding at 30° to C.A.			182.4 183.0	Pyrite 30% in a quartz-carbonate cemented breccia zone. Pyrite 5%-10% as above.
	185					
3.0	186.3	UPL Brecciated and carbonitised buff vitric feldspar crystal tuff.				
	187.4				187.4	Pyrite 20% as disseminations and irregular veins within a chloritic zone. Pyrite 5%-10% as above.
1.8		PyP Grey sericitised carbonitised coarse lithic tuff, as above.			188.3	
	189.8				189.8	Pyrite 10% as disseminations, irregular veins and aggregates of fine euhedral crystals.
1.2	190	UPL Buff carbonated vitric feldspar crystal tuff. (Tuff-lava?) as above. 191.5 - 1953 m the rock is partly brecciated or autobrecciated, giving a pseudo fragmental appearance.				
3.0						
	195				195.3	Pyrite 3%-5% as disseminations and irregular veins of fine subhedral to euhedral crystals.
3.0						
3.0	200					

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DIAMOND DRILL LOG

Hole No QR 45 Page No 9.

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
3.0			c					201	Pyrite 5%, trace sphalerite and galena as aggregates in small irregular secondary quartz-carbonate veins, rare chalcopyrite.
3.0	205	Below 205.5 m the rock becomes green in colour under the influence of increased chlorite alteration.	c						
2.6									
3.2	210	209.9 - 211.4 m Secondary base metal mineralization as aggregates associated with quartz carbonate veins.	q q					209.9	Pyrite 10% as disseminations, light brown sphalerite 5% as aggregates to 2 cm and "bright" crystalline galena 3%.
3.2									Pyrite 5% as disseminations and as fine euhedral crystals associated with minor carbonate veins, generally at 30° to core axis, rare sphalerite, galena and chalcopyrite.
3.0	215		c						
3.0			c						
3.0	220		c						
	221	E.O.H.							

¼ Section Samples

HOLE No QR 45 DATE 6.6.75

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
159424	104.45	105.15	70	Datum Block 104	0.10		0.03		<0.01			9	95					
159425	105.15	106.00	85		0.85		0.06		<0.01			24	100					
159426	106.00	107.00	100	Block 107 ties in	0.04		0.01		<0.01			2	<20					
159427	107.00	107.70	70		0.18		0.04		0.05			7	65					
159428	107.70	108.30	60		0.14		0.05			2.53		4	95					
159429	108.30	109.00	70		0.34		0.03		0.09			7	40					
159430	109.00	110.00	100	Block 110 ties in	0.42		0.05		0.01			13	120					
159431	203.32	203.75	43	Datum block 203	<0.01		0.09		0.37			2	<20					
159432	203.75	204.85	110		0.22		0.24			1.06		17	20					
159433	204.85	206.00	115	Datum Block 206	0.07		0.13		0.85			4	<20					
159434	206.00	206.85	85		<0.01		0.06		0.38			<2	<20					
159435	206.85	207.85	100		0.01		0.05		0.10			4	<20					
159436	207.85	208.60	75	Datum Block 208.60	0.03		0.11		0.30			4	<20					
159437	208.60	209.75	115		0.05		0.07		0.21			4	<20					
159438	209.75	210.40	65		0.18			5.17		12.8		36	85					
159439	210.40	211.40	100		0.28		0.14			1.51		7	55					
159440	211.40	211/90	50	Block 211.80 ties in	<0.01		0.03		0.22			<2	<20					
	209.75	210.40	65		0.18		5.17		12.8			36	-					

HOLE No QR 45 DATE 2/6/75

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
159414	12.08	12.08	60	Datum Block 11.0	<0.01		0.07		0.05			<2	30					
159415	12.68	14.20	152	Datum Block 14.20	0.01		0.30		0.26			8	200					
159416	14.20	15.60	160		0.13			1.25		3.16		16	200					
159417	15.80	17.00	120	Datum Block 17.00	0.26		0.46		0.28			26	260					
159418	17.00	18.80	180		0.29		0.32		0.18			19	280					
159419	18.80	19.80	100	Block 19.40 ties in	0.04		0.23		0.93			5	90					
159420	19.80	21.00	120	Block 20.00 ties in	0.01		0.07		0.26			3	65					
159421	21.00	22.50	150		0.01		0.07		0.16			5	95					
159422	22.50	23.25	65	Block 23.00 ties in	<0.01		0.05		0.33			3	50					
	14.20	15.80	160		0.13		1.25		3.16			16	0.2					