Drill Hole Record

191491

Cominco

Property	Tum property	District	Whitehorse M.D. Yukon	Hole No.	T83-1
Commenced	August 12, 1983	Location	West of Bouillabaise Lk.	Tests at	84.4m-(31°),148.4m(-30°)
Completed	August 20, 1983	Core Size	N.Q.	Corr. Dip	-35° end to end
Co-ordinates	140 + 00W, 3 + 67N			True Brg.	205°
Objective	To test a strong EM anomaly in stratigraphy similar to the nearby Clear Lake Pb, Zn, Ag deposit.			% Recov.	76%

Hor. Comp. 121.8m
Vert. Comp. 84.5m
Logged by M.R. Murrell
Date Aug 19, 22, 23, 1983

Claim Tum 150 | T Brg. 205° | Collar Dip -45° | Elev. 595m± | Length 149m | Hole No. T83-1 | Sheet 1

Metres From	Metres To	Description	Sample No.	Length	Analysis
0.00	12.2	Overburden - Recovered pieces mainly glacial boulders - mainly intrusives (granodiorite) and quartzite.			
12.2	23.0	Brecciated quartz and mudstone unit. Much is broken by surface weathering, but intact pieces consist of white quartz fragments - angular, usually 1 to 3cm across, with interstitial black mudstone. Quartz makes up 80% of the remaining core - much of the softer mudstone has likely been washed away in drilling. Contains a few gouge (or surface leached?) zones as at 13.4-16.0 (Black sand), and 20.9-21.6. All is silicified. Quite calcareous at the start becoming less so toward the end of the section.			
23.0	27.4	Dark grey to black fine grained very calcareous limestone massive, silicified where carbonaceous. No bedding apparent. Broken into chunks 2-3cm wide with occasional section to 8 cm, by irregular and random fractures. Contains a few wispy random calcite veins which gain in intensity down hole so that the last 30 cm is mainly white quartz - calcite in a stockwork or brecciated to stylolitic arrangment. Minor graphite is present on a few of the fracture surfaces. 23.0 - 25.5: Black carbonaceous muddy looking limestone. 25.5 - 27.4: Med grey f.g. limestone. Undulatory contact with above at about 25° but no bedding apparent in the limestone.			
27.4	46.0	Mudstone locally streaked with thin to laminated subtle siltstone and streaky pyrite. Overall is black, massive, fine grained. Usually broken into small (1cm to 3cm) chunks, as cherty looking fragments, but larger intervals present after 46.6. Hard and silicified throughout. Calcareous content varies from slightly limy to very limy.			

Drill Hole Record

Cominco

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim	T Brg.	Collar Dip	Elev.	Length	Sheet 2 / Hole No. T83-1

Metres From	To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba
		27.4 - 31.7: Slightly calcareous							
		31.7 - 33.5: Non calcareous							
		33.5 - 35.1: Very calcareous							
		35.1 - 36.5: Moderately calcareous							
		36.5 - 37.8: Very calcareous at start grading to slightly calcareous down-hole.							
		37.8 - 42.4: same as 36.5 - 37.8							
		42.4 - 43.9: same as 36.5 - 37.8							
		43.9 - 45.7: Very calcareous							
		45.7 - 46.0: Non calcareous to very slightly calc.							
		Pyrite is present in three forms. The obvious as a few clasts or nodules up to 1½ cm (ie. at 34.4 ot 36.0), as thin disseminated semi-massive beds (ie. at 37.5 to 37.7). More subtle pyrite is found as thin dusty disseminations through much of this section, and gives the wet core its bedding definition (ie 31.2 - 37.6, diminishing down-hole). Locally pyrite cumulatively totals 2% over short intervals (20 - 30cm). Graphite is not abundant, but occassionally is pronounced as glossy mirror-smooth fracture surfaces likely parallel to bedding. Bedding can be seen in numerous places and runs a consistent 25° with no variations due to flexures, slumping, or other tectonism. Although much of this section is broken, no gouge or slickensides (inferring faulting) are present.							
		Samples:							
		31.2 - 32.2	39507	1.0	50	276	.9		829
		37.2 - 37.7	39508	0.5	9	273	<.4		777

Drill Hole Record

Cominco

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. T83-1	Sheet 3

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba	
46.0	62.0	Calcareous mudstone: Black to dark grey, competent. Bedded throughout with very thin to wispy hair-lines of white discontinuous to streaky silt. Several 10 cm sections show better bedding, with silt forming perhaps 5%. Dusty (pin-point) pyrite disseminated, fairly evenly distributed throughout, but can only easily be seen in the darker portions of the core. In other areas a hand lens in necessary. Perhaps is only 1%, but could possibly account for a portion of the EM anomaly. Few thin calcite veins present between 48 and 54, usually cutting at 50 to 60°. Quite broken between 49.4 and 52, with possible gouge at 51.1 - 51.3. Minor graphite on broken (shear?) faces near 45, and in the broken zone (49.4 - 52). Broken piece of quartz vein at 50.6 contains 3 cm patch of f.g. pyrite. Bedding: 47.0 - 20°, 49.0 - 25°, 48.0 - 22°, 51.7 - 15°, 52.6 - 20°, 55.5 - 20°, 59.0 - 30°, 61.0 - 30°, Again - no folding or flexures.							
		Sample: 51.5 - 52.5	39509	1.0	14	682	<.4		482	
62.0	76.8	Black laminated calcareous mudstone as above, but interbedded with wide zones (30cm) of medium grey massive to subtly bedded calcareous mudstone - Possibly the slight addition of silt, or more probably the lack of carbonaceous material gives the lighter colouration. Contacts are even, sharp and regular at 20°. Pyrite is present throughout as dusty disseminations, but is more pronounced in the darker portions. Would run less than 1% pyrite throughout. Locally, minute clots, or even very thin beds (to 3mm) are present - ie near 74.3. Much is broken into small pieces but overall longer core pieces are present - 10 to 15 cm. Glossy graphite is common on some surfaces, but most broken pieces are just carbonaceous. Random fractures.							

Drill Hole Record

Cominco

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim	T Brg.	Collar Dip	Elev.	Length	Hole No. T83-1	Sheet 4

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba
		Fossils - small graptolite fragments spotted at 67.3 - sample taken for identification.							
		67.4 - 67.5 - Coarser grained dirty limestone unit - soft.							
		Locally the bedding is slightly intercalated & a small disruption (subaqueous erosion) and							
		truncation of bedding is present at 68.8 (See litho sample). Could get "way-up" info from							
		this piece, but the piece is so small that it could be inverted.							
		Gouge zone with carbonaceous fragments at 67.1 - 67.3, and minor at 69.0. Other slightly							
		graphitic zones may be reflecting slight slips. Note poor recovery (12%) from 69 - 72, tube did							
		not lock. Two stages of calcite veining over the last metre: Earliest is a clean white coarse							
		grained calcite vein running parallel to core - about 0.4 cm wide. The second is a wispy to							
		irregular dirty medium grained cross cutting vein as seen at 76.0 (0.5cm wide) thats cutting							
		at 40°. Note that at this instance only, small specks of dark orange sphalerite grains to minute							
		clusters are present in the vein.							
		Bedding: Most is 25° with a few short sections as low at 17°.							
		Samples: 75.0 - 75.9	39510	0.9	49	724	.7		2291
		75.9 - 76.1	39511	0.3	17	883	<.4		2241
		76.1 - 76.8	39512	0.7	16	1290	<.4		706
76.8 - 77.6		Limestone - medium to dark grey. Very fine grained to aphanitic. Non bedded, but has an							
		overall slightly undulatory or mottled texture. Shot through with thin wispy random							
		calcite veins, likely sweated out of the limestone itself. One of the larger irregular dirty							
		veins (at 77.0) has a small 2mm patch of what looks like ZnS by eye, but doesn't look like ZnS							
		under hand lens - see litho sample. A few of the minute calcite veins of 76.9 have internal							

Drill Hole Record

Cominco

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim	T Brg.	Collar Dip	Elev.	Length	Sheet 5 / Hole No. T83-1

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag	Ba
		fine grained pyrite wisps.						
		Sample: 76.8 - 77.6	39513	0.8	10	158	<.4	5216
77.6	84.4	Black graphitic calcareous mudstone. Black, fine grained, massive to very subtly bedded. Local minor pyrite in only trace amounts, but is present as a few small clots or nodules and 80.5 - 81.0 as well as disseminated on bedding.						
		78.6 - 79.2: Broken carbonaceous fault zone, but no real muddy gouge development						
		80.2 - 84.3: Very graphitic. Bedding becomes almost parallel to core over most of this interval.						
		Overall is moderately to very calcareous with a few short (10cm) sections only slightly calcareous. Entire section is silicious and hard.						
		Sample: 80.5 - 81.0	39514	0.5	23	996	<.4	3409
84.4	91.8	Limestone light to medium grey, fine grained. Subtle mottled texture overall; but grades into it from a "typical" bedded mudstone - ie between 84.4 - 85.1 is more a mudstone, from 85.1 to 85.6 is very tight mottled to semibedded black and dark grey, and afterwards is very " wide mottled" with undulatory bands about 20-30 cm wide. Most are stylolitic along their boundaries. Whole section is shot through with 1-2% very thin calcite veins that become more intense in darker portions of the limestone (ie 86.7, 87.8 - 88.1, 90.0 - 90.2, 91.1 - 91.8.) (Crackle-zone). Bedding in upper, muddy portion is at 20°, rest cannot be determined. Note - ZnS present as two small (1-2mm) specks at 85.6, the contact point between the "tight mottled" and the wide mottled zones. Core is massive, unbroken, excellent recovery.						
		Sample: 85.4 - 85.8						

ale

lour Plot
Dips

Drill Hole Record

Comineo

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. T83-1 | Sheet 6

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba
		Pyrite is present as irregular patches to streaks to aggregates (totalling 2-3%), in clots up to 1 cm wide from 87.5 - 89.3.							
		Sample: 85.4 - 85.8	39519	0.4	30	709	<.4		651
91.8	101.8	Dolomite: Medium to dark grey, subtly mottled. Grades from fine grained at the start to sandy textured by 96.0 and maintains the grain size to section end at 101.8. Most is hard and silicic, with a few short softer portions. Quartz-calcite veining is as per usual (thin wisps to local stockworks) but contain no pyrite or other sulphides. Irregularly broken into chunks 3 to 10cm long. No graphite or carbonaceous dust on surface except for minor amt at 95.2 and 95.7. A stockwork quartz and minor calcite vein zone is present from 97.0 to 97.8 where the core is completely shattered into angular 1 to 2 cm pieces. Unbroken pieces consist of mainly white quartz with small angular pieces of dolomite (60%). Local stylolite development, but quite minor. An 8 cm wide white calcite vein cuts at 60° at 101.5. Subtle bedding at 30° suggested at a few areas.							
101.8	109.1	Graphitic fault zone: Mainly black massive mudstone almost completely broken into 2 to 3 cm irregular core pieces. Glossy graphite on all fracture surfaces. Gouge is present only as a thin band (1cm) at 106.9 (50°) and 105.9. A few of the larger pieces show minor streaky pyrite which gains in intensity down hole so that by 107 the core looks very similar to that seen higher up the hole. Core is only slightly calcareous throughout, but in a few brecciated-calcite areas is very calcareous.							

Drill Hole Record

Cominco

Property	Tum Property	District	Hole No. T83-1
Commenced		Location	Tests at Hor. Comp.
Completed		Core Size	Corr. Dip Vert. Comp.
Co-ordinates			True Brg. Logged by
Objective			% Recov. Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. T83-1 | Sheet 7

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba
		Small white specks (siderite or barite ?) present at 102.0 - 102.9.							
		ZnS present over 1cm as several minute dark orange fragments with calcite in a brecciated area							
		with pyrite at 106.5.							
		Sample: 106.2 - 106.8	39515	0.6	43	596	<.4		888
109.1	121.9	Black mudstone with streaky pyrite. Fairly massive and competent with many pieces around 10 cm							
		in length. Black silicious non-calcareous to locally slightly calcareous. Quartz and							
		calcite veining almost non-existent. Pyrite is the main structural feature found throughout							
		at 2 to 3% as very thin, sometimes discontinuous hair-line thickness. These streaks are							
		closely spaced and may actually make up a larger percentage of the total core. - difficult							
		to estimate. Starting at about 118, the streaking becomes more pronounced and appears, on							
		dry surface,there could be a fair amount of very fine grained silt present, giving a very-very fine							
		"pin-striped" effect.							
		Bedding is easily discernible throughout, consistently at 25°to 117, then changing to 35° for the							
		rest of the section.							
121.9	126.2	Graphitic Fault Zone - Essentially all graphitic black mudstone with several sections of black							
		gouge. Variably calcareous from thin black muddy sections with no reaction, to minor streaky							
		pyrite poritons which are moderately calcareous, to a few "crackle-zones" with quartz-calcite							
		veining. Most fracture surfaces are graphitic, many of which are highly-polished glossy.							
		Fragments vary from gravel sized angular to chunky 3-4cm pieces, with better recovered portions							

Drill Hole Record

Cominco

Property Tum Property	District	Hole No. T83-1	
Commenced	Location	Tests at	Hor. Comp.
Completed	Core Size	Corr. Dip	Vert. Comp.
Co-ordinates		True Brg.	Logged by
Objective		% Recov.	Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. T83-1 | Sheet 8

Metres From	To	Description	Sample No.	Length	Analysis
		(10cm) usually in the crackle zone. Gouge sections are 122.8 - 123.1, 125.0 - 126.2.			
		Bedding at 123.4 is at 25°.			
126.2	129.0	Very limy mudstone. Very thin bedded light and medium grey - regular bedding. Almost looks			
		laminated. No graded bedding apparent. Possibly is interbedded very fine black graphitic			
		mudstone with slightly granular lighter grey limestone (?). Graphite present on all bedding			
		plane partings. Most of this section is broken into chunky 1 to 3 cm sizes. A few minor			
		bedding plane stylolites are present in the more competent pieces. Bedding pronounced at 35°.			
		Non silicified.			
		NOTE: only about 10 cm recovered between 128.3 and 128.9.			
129.0	130.2	Fault zone: Almost all is gouge now, but it appears the original rock type was carbonaceous to			
		graphitic black mudstone grading down hole to medium grained red grey limestone, judging from			
		the few remaining fragments. Contains a few white quartz chunks which have trace amounts of			
		fine cubic pyrite. Recovery actually quite good through this gouge zone.			
130.0	133.2	Tuff: Overall is a light tan-grey colour, but when wet appears to consist of a fine light			
		grey matrix with minute black specks, with slightly larger ovoid to angular creamy white			
		fragments. (Question - could this be a fine grained intrusive?). But is fairly soft and			
		competent. Cut occassionally by a few grey quartz veins that often contain centerally located			
		pyrite streaks. Pyrite also found as disseminated granular patches which usually are associated			

Drill Hole Record

Cominco

Property	Tum Property	District	Hole No. T83-1
Commenced		Location	Tests at Hor. Comp.
Completed		Core Size	Corr. Dip Vert. Comp.
Co-ordinates			True Brg. Logged by
Objective			% Recov. Date

Claim | T Brg. | Collar Dip | Elev. | Length | Hole No. T83-1 | Sheet 9

Footage From	Footage To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba
		with healed fractures or minute quartz veins. The first 0.6m of this section is completely sheared up (see fault in previous section) and gone to gouge, but was mainly irregular quartz veins surrounding or impregnating the tuff. Trace amounts of minute pyrite cubes scattered throughout.							
		Sample: 130.2 - 131.7	39516	1.5	17	74	<.4		1269
		131.7 - 133.2	39517	1.5	16	81	<.4		1527
133.2	140.0	Black mudstone with local minor silt components. Quite broken now, but rock type is mainly very thin bedded to laminated medium and dark grey silicious silty mudstone to siltstone. Resembles much the 127-129 band, but is only very slightly calcareous. Overall is quite carbonaceous, but graphite is only developed on broken surfaces from the start to 135. Gouge is present locally through this graphitic portion. Calcite veining is developed as thin to wispy white veins near 135.5, 136.8, and 137.5. Brecciated stockworks of white calcite with angular mudstone fragments are present beneath the fault zone at 134.3 to 134.9, and well developed from 138.0 to 140.0. Within this last section is a 30 cm wide zone consisting of angular to sub-angular white (cherty?) silicious fragments less than 1 cm wide surrounded by 70% mudstones. (Somewhat resembles the debris flows or diamictites at Nidd property). Bedding at 35°.							
140.0	142.4	Black graphitic mudstone: Most is small jet black chunks of irregularly broken mudstone with graphite on all surfaces. Section starts off with a 5cm thick black gouge zone with minor yellowish mud, followed by 15cm of white quartz. Gouge also present at 141.7 and 142.1. Competent pieces between 141.7 and 142.1 resemble limestone in texture but are not calcareous.							

211-9437

Drill Hole Record

Cominco

Property	Tum Property	District	Hole No. T83-1	Claim	Sheet 10
Commenced		Location	Tests at / Hor. Comp.	T Brg.	Hole No. T83-1
Completed		Core Size	Corr. Dip / Vert. Comp.	Collar Dip	
Co-ordinates			True Brg. / Logged by	Elev.	
Objective			% Recov. / Date	Length	

Metres From	Metres To	Description	Sample No.	Length	Analysis - ppm Pb	Zn	Ag		Ba	
		Whole section is silicious. No bedding apparent.								
142.4	149.0	Mudstone streaked with pyrite. Overall is black with thin hair-line streaks of fine bedded pyrite to give an overall laminated to very thin bedded aspect to the usually fine grained core. Pyrite could run 2-3% but difficult to estimate. Resembles closely the pyritic sections seen higher in the hole. Much is broken into small chunks with either dull carbonaceous material on the irregular fractures, or commonly shiny glossy graphite section is slightly calcareous to locally non-calcareous. Hard, but not as silicious as most previous sections. Bedding starts off at 25°, but changes over to 50° by 146 (just past a gouge zone at 145.2 - 145.5) and up to 65° by 147, which it remains to the end of the hole.								
		Sample: 146.0 - 147.0	39518	1.0	26	62	<.4		585	
149.0		End of Hole.								