

Phelps Dodge Corporation of Canada

DIAMOND DRILL LOG

PROPERTY: Mary March (294)
HOLE No.: MM294-6
Collar Eastings: -11600.00
Collar Northings: 325.00
Collar Elevation: 0.00
Grid: Mary March -PDC

Collar Inclination: -45.00
Grid Bearing: 180.00
Final Depth: 211.20 metres

Logged by: J.G. Thurlow
Date: June 29/99
Down-hole Survey: Tropari

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)
0	3.5	Overburden								
3.5	94.6	Unaltered felsic flows with anomalous breccia conglomerate units. Becomes weakly pyritized with depth.								
3.5	34.8	Weakly epidotized, medium blotchy greenish, porphyritic felsic intrusive/extrusive rocks, local minor hematite alteration. Abundant stubby plagioclase phenocrysts, common amphibole. Contains common xenoliths of diabasic-textured material. Somewhat broken core with some moderately broken zones. Sections of more broken core from 56-57.5m, 59.5-60.5m, 63-65.5m, 78.5-79m; local minor fault gouge. Some bleaching around small, irregularly-shaped silica-filled voids. Common hyaloclastic brecciation with introduction of minor leucocratic material; breccia textures involve minimal fragment rotation. Locally magnetite-bearing with k up to 1.2. Rare trace pyrite.								
34.8	35.4	Polymictic breccia-conglomerate with quite a variety of clast types including some quite altered and pyritized clasts. Average 1/2% pyrite (i.e., much more than average for the host felsic unit). Mainly felsic clast varieties, but some mafic ones as well. Clast colours are variable, most are melanocratic but some pinks and light greys.								

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)
		Some are quite well rounded, tight packed, unsorted. A few specks of disseminated sphalerite and one splash of chalcopyrite in carbonate veinlet. This is an anomalous lithotype.								
35.4	46.3	Porphyritic felsic flow, as above 34.8m. Locally medium dark green with purplish cast due to hematite.								
46.3	51.5	Aphyric intermediate-felsic flow, medium brownish green.								
51.5	63.0	Tight packed breccia conglomerate. Clast size generally appears to increase with depth. Compositionally similar to unit from 34.8m-35.4m but contrast between clasts is not as great. Anomalous disseminated pyrite and contains some quite altered lithologies, some of which can be related to the strongly altered felsics which usually underlie this unit. Weak shearing 54.1-54.3m.								
63.0	74.2	Hyaloclastically brecciated felsic flow, medium greenish. Abundant plagioclase phenocrysts. Mostly in-situ brecciation with limited introduction of leucocratic matrix material.								
74.2	77.0	Hyaloclastically brecciated flow with distinctly anomalous pyrite content and in which some clasts take on different (brownish) coloration from the rest. Locally 1% disseminated and streaks of pyrite. Incipient to weak sericitic alteration - a distal alteration style.								

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	ASSAYS				
							Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		77.0 94.6 Massive to hyaloclastically brecciated flow, common plagioclase phenocrysts, altered amphibole, common leucoxene. Contains two instances of sheared, sericitic rock with 10-20% fine grained pyrite from 77.8-78.0 and again from 79.5-79.7m. Some mafic clasts locally and minor sections of stratified arenaceous pyritic wacke. Pyrite content increases toward base of unit and, despite 1cm of clayey gouge at base, this unit is essentially gradational with the next.									
94.6	96.6	Pyritized transition zone between units above and units below. Moderately sericitized felsic units containing 1% to 5% disseminated pyrite, local chalcopyrite. Incipient siliceous alteration like next unit.	294030	94.60	95.60	1.00	12	0.4	0.01	0.01	0.01
			294031	95.60	96.60	1.00	16	1.2	0.14	0.01	0.03
96.6	97.04	Sand seam reported by drillers - no core recovered									
97.04	103.06	Zone of abundant pyrite with associated fine silica. Banding in massive pyrite is parallel to significant bands within enclosing rocks.	294032	97.04	98.37	1.33	22	3.8	0.07	0.01	0.01
			294033	98.37	99.70	1.33	32	2.9	0.10	0.02	0.02
			294034	99.70	100.65	0.95	249	17.8	0.10	0.02	0.06
			294035	100.65	101.60	0.95	331	25.7	0.12	0.02	0.06
		97.04 99.7 Silica-pyrite rock. Light grey-white, fine grained silica with minor sericite, in part brecciated and with interstitial and anastomosing fine to medium grained pyrite; 30%-40% pyrite overall. Fabric 55 to 60 degrees to core. Traces barite.	294036	101.60	103.06	1.46	52	4.8	0.04	NIL	NIL
<u>MINERALIZED ZONE: Massive Sulphide Core Angle: 90 True Width: 1.90</u>											
				99.70	101.60	1.90	290	21.7	0.11	0.02	0.06

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)
	99.7	101.60	Massive pyrite, fine grained, weakly banded 55 to 60 degrees to core; healed brittle fractures visible on dry surface. Minor barite. Non magnetic (k = 0.0). Quite conductive (300 ohms across width of core) where fine grained and 100% pyrite, more resistive where only 80% pyrite. Trace light grey sphalerite locally.							
	101.6	103.06	Silica-sericite-pyrite rock; 10-15% pyrite average. Generally similar to the unit above the massive pyrite. Pyrite/sericite strings at 55 degrees to core. Resembles "discovery outcrop." Arbitrary basal contact marked by decrease in pyrite content.							
103.06	115.7	Strongly silicified and sericitized felsic Volcanics.								
	103.06	107.2	Dominant leucocratic silicic alteration with 10%-20% "interstitial-looking" wispy sericite. Silica is milky, fine grained, amorphous. Trace chalcopryrite-barite. Variable pyrite content from very little to locally 4 cm massive pyrite bands which resemble the units above. Pyrite is concentrated in the sericitic wisps.							
	107.2	111.4	Sericitized, silicified felsic volcanics, similar to sub-unit above but with 40% anastomosing and parallel sericitic entities and 60% light-medium grey silicified material. Several sericite types present including anomalous greenish brown sericite and a soapy/talc variety. Variable pyrite content, averaging less than 1%; locally almost							

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		none despite strong alteration. Traces barite.									
		111.4 115.7 Sheared, foliated, locally friable, strongly sericitized felsic volcanics; lithologies similar to unit above but more sheared and with more pyrite. Variable pyrite content averaging 1%-3%, locally 10%. Traces barite-sphalerite-chalcopryrite. Foliation 55 to 70 degrees to core. Flattened (pseudo?) fragmental texture locally. Basal contact no more sheared than the rest of the unit.									
115.7	166.5	Moderately altered and pyritized amygdular mafic volcanics. Common Cu-Zn-barite-pyrite in silica-filled amygdules and some disseminations and streaks Cu-Zn at top of unit. Minor anomalous green sericite. 1% fine to coarse grained pyrite disseminated. Local vermiform silica-(barite-Cu-Zn) veining - one such section assayed in sample 294041. Minor broken zones - fairly good coring. Dark late diabase 148.1-150.1m. Common amygdule base metal from 151.3m to 157.15m; mineralization carries on below to the bottom of the unit though at lower grades. 10cm shearing at 50 degrees to core at basalcontact.	194037	115.70	117.30	1.60	20	2.0	0.10	0.02	0.02
			194038	117.30	118.90	1.60	17	1.8	0.05	0.08	0.36
			194039	118.90	120.50	1.60	12	1.9	0.17	0.28	0.45
			194040	122.60	124.32	1.72	14	0.9	0.04	0.01	0.14
			194041	143.80	144.22	0.42	22	7.9	0.18	6.10	6.20
			194042	151.30	152.76	1.46	6	1.2	0.02	0.30	0.60
			194043	152.76	154.23	1.47	5	0.6	NIL	0.10	0.17
			194044	154.23	155.69	1.46	5	0.6	0.01	0.10	0.67
			194045	155.69	157.15	1.46	26	1.1	0.01	0.13	0.63
166.5	174.0	Altered, leucocratic synvolcanic felsic (intrusive? or flow?). Moderately sericitized and pyritized with minor base-metal and barite-bearing veinlets. Resembles MM-294-4 around 317m and MM-294-3 from around 182m to 189m. Foliated 50 degrees to core - some pseudofragmental textures.									

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	ASSAYS							
				FROM	TO	WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
174.0	184.4	Moderately altered and pyritized amygdular melanocratic mafic volcanics, as above the felsic unit. Common barite-pyrite-filled amygdules with local Zn-Cu. This zone appears to correlate structurally with the best assaying section in MM-294-3. 178-179 is broken core with some gouge; shearing at 25 degrees to core. More brittle shear 180.8 to 182.4m. Correlates with shearing around 210.3m in MM-294-3.	194046	174.50	176.20	1.70	10	0.6	0.01	NIL	0.05
			194047	176.20	177.50	1.30	20	0.9	0.06	NIL	0.11
			194048	179.10	180.80	1.70	32	1.9	0.04	0.01	0.06
184.4	184.6	A lone 20 cm silica vein containing 10% chalcopryite, 15% sphalerite. Appears to correlate with base metal-bearing silica vein in MM-294-3 @ 210.3m.									
184.6	194.7	Light to medium grey green moderately to strongly sericitized mafic rock (synvolcanic intrusive?) with common anomalous green specks after sericite. Local Zn-Pb veinlets and disseminations, local barite veinlets. Correlates with narrow anomalous green section in MM-294-3 from 210.4-210.6m. Contains minor volcanic screens. Brittle shearing with fault gouge from 192.7 to 194.7 correlates with MM294-3 from 210.6 to 211.2m in MM-294-3.									
194.7	211.2	Moderately sericitized and chloritized mafic(?) volcanics with 1% disseminated pyrite. Fairly common calcite veinlets. Dark green. Fairly good coring. Minor Zn-Pb-Cu-pyrite-barite veinlets and disseminations. Significant sections look like parts of the bottoms of Holes 4 and 5 which have some intermediate-felsic characteristics.	194049	203.60	204.30	0.70	46	1.0	0.02	0.25	0.75

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						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)

211.2 metres EOH, 55 core trays

Tropari tests:

at 211.2 metres: 40 degree dip at 138.5 degree true azimuth

Hole is lined with small PVC pipe (xxmm OD, xxmm ID) to 211.2m.

Assay Samples: 294030 to 294047

Lithogeochem samples @ 103.9, 131.8, 198.4

DOWN-HOLE SURVEY DATA

DEPTH	INCLINATION	BEARING
211.20	-40.00	188.50

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