

Phelps Dodge Corporation of Canada

DIAMOND DRILL LOG

PROPERTY: Mary March (294)

HOLE No.: M294-10

Collar Eastings: -11060.00

Collar Northings: 145.00

Collar Elevation: 0.00

Grid: Mary March -PDC

Collar Inclination: -45.00

Grid Bearing: 180.00

Final Depth: 440.00 metres

Logged by: J.G. Thurlow

Date: July 24, 1999

Down-hole Survey: Tropari

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
0	6.0	Overburden									
6.0	9.7	Intermediate-felsic hyaloclastic breccia. Local perlitic cracks. Incipient sericitic alteration. Includes two small sections of late diabase. 9.4m to 9.7m is fault gouge and broken core.									
9.7	306.5	Mafic volcanoclastics. Moderately solid core with minor broken zones.									
	9.7	131.0 Mafic volcanoclastic composed of bleached leucocratic clasts with calcite amygdulcs and even lighter rims in dark chloritic matrix. Some clasts with only partial rims. Only trace pyrite. Rare trace chalcopryrite in bleached clasts; more common below 50m. Weak sericitic alteration overall. Local anomalous green sericite in clasts. Minor sections of broken core and localized gouge. Fragment:matrix contrast waxes/wanes. Some sections with well developed perlitic cracks in clasts. Anomalous pyrite in matrix with traces Zn-Pb around 78m. Diabase-like intermediate intrusive from 78.2-79.2m contains minor disseminated pyrite and traces Zn. Below 100m, fragment matrix contrast essentially becomes minimal. At 105.7m is a lone 2x4cm massive pyrite clast-like object, fine to medium grained with minor calcite in									

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		LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
FROM	TO					WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		matrix - another one at 108m has minor chalcopyrite. A few more small examples show evidence of an in-situ replacement origin. Fault gouge from 126.6m-126.8m.									
		131.0 141.5 Mafic breccia containing a significant proportion of altered and pyritized clasts. Upper contact is gradational. One 20 cm semi-massive pyrite clast is a replacement of perlitic-cracked volcanic. Traces sphalerite-chalcopyrite disseminated and in amygdules in some clasts. Arbitrary, gradational basal contact.									
		141.5 198.5 Basaltic pillow breccia with a lower proportion of altered clasts compared to unit above. Some clasts have bands of calcite amygdules. Some weakly bleached clasts have traces chalcopyrite. Incipient chloritization in the matrix. Gradational basal contact.									
		198.5 296.2 Weakly, but distinctly, altered mafic-intermediate volcanoclastics. Obfuscated textures by calcite-sericite alteration. No increase in pyrite content (i.e., still only traces) but also contains traces chalcopyrite in some calcite amygdules. Some anomalous pink/magenta calcite amygdules. Trace sphalerite associated with local increase in disseminated pyrite. Common specks leucoxene. Diabase and minor fault gouge 222.0m-223.8m with local anomalous green mica alteration present adjacent to the shears. From 248.0-248.3m is synvolcanic shear with associated silicic alteration and several specks Pb-Zn. Rare silicified/pyritized clast. Shearing and									

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			ASSAYS								
FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		gouge 50 degrees to core from 275.1m-275.3m; anomalous pyritic stringers and disseminations in this area. Intermediate-felsic intrusive with anomalous disseminated pyrite and local traces Zn-Pb from 277.8-279.8m.									
		279.8m-296.2 Basaltic volcanics with epidote spots after plagioclase and weakly chloritized-pyritized matrix. Minor barite veinlets.									
		296.2 301.3 Brownish intermediate-felsic intrusive; locally dark greenish with almost diabasic aspect. Weak shear at upper contact. Minor pyritic veinlets/fracture-fills and local anomalous coarse disseminated pyrite. Some screens of epidotic mafic volcanic host rock.									
		301.3 306.5 Weakly sheared and altered (chlorite-calcite) basaltic rocks. Anomalous disseminated and veinlet pyrite. Somewhat broken/blocky core with minor gouge zones.									
306.5	318.5	Deformation and intrusive zone with minor screens of altered and pyritized rocks.									
		306.5 306.9 Light grey, sheared, altered, weakly pyritized diabase. Shearing at various angles.									
		306.9 307.3 Light greenish, sericitic cohesive fault gouge. Includes some quite pyritized silicified clasts.									

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		Shearing at 45 degrees to core.									
		307.3 318.5 Brownish, post-mineral, felsic intrusive with greenish tinges in fractures and adjacent there- to. Seams of weak chlorite have trace disseminated pyrite, otherwise, essentially unmineralized. Trace barite fracture- fill. Resembles unit around 307.5m in Hole #7. Weak sericitic alteration, trace hematite. Incipient brittle-ductile shear throughout - core is not particularly broken, but rock is not strong. Some slickensides at 20 degrees to core with lineation running approx. down the core axis. Coarse and fine leucoxene specks. Indistinct plagioclase phenocrysts. Around 316m, be- comes more greenish overall with weak sericitization (of chilled intrusive margin?). At 318.4m is 2mm high grade Zn-Pb fracture- fill in sheared, sericitized, weakly pyritized material which still appears to be intrusive-margin material.									
318.5	358.56	Mainly diabasic intrusives with screens of sericitized-pyritized material.									
		318.5 321.5 Light to medium grey, chilled, sheared diabase. Upper contact weakly chilled against previous unit. Numerous weak ductile shears at various angles. From 319.8m-320.6 is numerous shears with interdigitated diabase and pyritized sections similar to that immediately above this sub- unit - local trace Cu-Zn-Pb. Gradational basal contact.									
		321.5 324.2 Reddish, hematitic diabase, minor									

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	ASSAYS				
							Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		greenish sections. Minor calcite amygdulcs, some with disseminated pyrite. k = 0.03 - 0.27.									
324.2	324.6	Interdigitated green sericite (chilled felsic intrusive?) and silicified, pyritized rock with trace sphalerite.									
324.6	329.5	Intermediate felsic intrusive, similar to 307-315m. Post-mineralization. Colours vary from greenish to brownish. Some weakly pyritized-sericitized-silicified sections have trace base metal sulphides (these sections appear to be contaminated glassy sections of intrusive as opposed to screens between intrusives). At 326.2 a 3mm high grade veinlet.									
329.5	358.56	Hematitic diabase with some greenish sections; generally similar to 321-324m. At upper contact, diabase appears to intrude the more felsic rock above. Minor calcite amygdulcs. Minor gouge zones and sections of broken core; weak rock overall. Some fracturing subparallel to core. k = 0.03-0.15 for the most part but minor sections run as high as 2.0 (moderately-strongly magnetic). Minor epidote in brittle fractures. A screen of sericitized-pyritized (+minor base metal) felsic rock at 357.2m-357.5m resembles a similar section in Hole #7 at 312.3m and sections farther up this hole.									
358.56	365.16	Altered, mineralized felsic rocks.	294084	358.56	359.24	0.68	279	8.9	0.07	0.27	1.39

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		358.56 359.24 Sheared, mineralized, friable felsic rock. Includes one 5mm seam of high grade sphalerite and a few other minor occurrences. Minor seams of semi-massive pyrite - 5% pyrite overall. Fault gouge at lower contact.									
		359.24 365.16 Pyritic stringer zone within strongly silicified/sericitized, buff-beige felsic host. Resembles thick unit in Hole #8. Common minor specks sphalerite, rare chalcopryite. Elongate silica-pyrite-filled amygdules. Common leucoxene specks. Shearing 70 degrees to core at basal contact.									
365.16	381.0	Greenish to reddish (hematitic) diabasic intrusive, identical to units previous. Minor calcite amygdules and fracture-fills. Unmineralized. k = 0.03 - 0.71. Somewhat broken and blocky core (some fractures follow core). A screen of strongly altered and pyritized rock from 370.9 to 371.8m has pyrite-barite void fills and traces sphalerite; yellowish sericitic wisps resemble									
381.0	382.65	Dark grey, fine grained, foliated, sericitic, friable, pyritic rock. Average 5% fine grained pyrite, locally 20%. Traces sphalerite. Foliated 45-50 degrees to core. Some yellowish sericitic streaks contrast against dark background. Appears to correlate with Hole #7 around 310m (i.e., hanging-wall) and Hole #8 around 383m or 395m (hangingwall again).	294085	381.00	382.65	1.65	19	1.8	0.01	0.01	0.03
382.65	399.0	Pyritic stringer/stockwork zone with local	294086	382.65	384.00	1.35	102	2.3	NIL	0.05	0.17

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDTH	Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
		base metal-bearing stringers. Medium grey, strong silica-sericite alteration of host felsic lithology. Silica-pyrite-(barite) stringers are in brittle fractures, generally centimetre-scale width. From 384.0m-384.36m is sheared good grade, presumably stringer material with gouge on both edges; some dismembered siliceous material resembles Hole #8 around 387.2m. Overall, grades are quite low. Average 5% pyrite, fine to coarse grained. Basal contact is gradational decrease in stringer density.	294087	384.00	384.36	0.36	304	8.6	0.08	0.89	4.30
			294088	384.36	385.65	1.29	73	5.2	0.03	0.01	0.04
			294089	390.35	391.15	0.80	65	2.3	0.02	0.19	0.48
399.0	440.0	Strongly altered (silica-sericite) felsic volcanics characterized by darker clast-like entities in leucocratic matrix. Common pyritic stringers, but not as abundant as in unit above; average 2-3% pyrite. Common specks sphalerite-barite, better sections are assayed. Some hyaloclastic brecciation and widespread pseudofragmental textures. Solid core but with two dark gouge/shear zones at 15 degrees to core from 424.5m-425.1m and from 430-430.5m. Weakly foliated 40 to 50 degrees to core.	294090	399.67	400.90	1.23	69	6.2	0.17	0.74	0.85
		440.0 metres EOH, 109 HQ core trays Casing left in hole.									
		Line 110+00 runs 126 degrees - hole collared at 126 degrees									
		Tropari tests: at 162 metres: 44 degree dip at 135 degree true azimuth									

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIOTH Au (ppb)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)
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at 440 metres: 40 degree dip at 148.5 degree true azimuth
Hole is lined to bottom with small PVC pipe (48mm OD, 40mm ID)

Assay Samples: 294084 to 294090

DOWN-HOLE SURVEY DATA

DEPTH	INCLINATION	BEARING
162.00	-44.00	189.00
440.00	-40.00	202.50

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