



DRILL HOLE REPORT

Hole Number		MM14-35		Project:		MARY MARCH JV PROJECT		Project Number:		JVROX	
Drilling		Casing		Core		Location		Other			
Azimuth:		133		Length:		0		Dimension:		NQ	
Dip:		-61		Pulled:				Storage:		Core Shed	
Length:		348		Capped:		yes		Section:			
Started:		12-Sep-14		Cemented:		no		Hole Type		DD	
Completed:		15-Sep-14									
Logged:		12-Sep-14									
Comment:		Casing down to 300m, then left open.						Coordinate - Gemcom		Coordinate - UTM	
								East:		0	
								North:		0	
								Elev.:		0	
								Zone:		21	
								East:		533852	
								North:		5408560	
								Elev.:		218	
								NAD:		NAD27	
										Logged by:	
										Kelly Bateman	
										Re-log by:	
										Contractor:	
										NEW VALLEY DRILLING	
										Spotted by:	
										Danniel J. Oosterman	
										Surveyed:	
										Surveyed by:	
										Geophysics:	
										Geophysic Contractor:	
										Left in hole:	
										PVC Lining	
										Making water:	
										no	
										Multi shot survey:	

Deviation Tests

Distance	Azimuth	Dip	Type	Good	Comments
0.00	133.00	-61.00		☐	
12.00	133.05	-60.50	F	☐	
42.00	132.55	-60.20	F	☐	
72.00	132.05	-60.20	F	☐	
102.00	131.75	-60.00	F	☐	
132.00	132.35	-60.20	F	☐	
162.00	133.55	-60.30	F	☐	
192.00	133.75	-59.90	F	☐	
222.00	133.05	-58.50	F	☐	
252.00	133.05	-58.30	F	☐	
282.00	134.25	-58.20	F	☐	
348.00	132.45	-57.20	F	☐	

LITHOLOGY REPORT

- Detailed -

Hole Number **MM14-35**

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From (m)	To (m)	Lithology	Sample #	Analysis Type						
				From	To	Length	Assay	ICP	Whole Rock	
0.00	2.90	O/B Overburden								
2.90	19.69	PLYBX Polymictic Breccia: med green to grey fine grained matrix with clast sizes ranging from 1cm-10cm in diameter. Clast composition ranges from felsic (displaying flow banding) to mafic with occasional 20-30cm fragments that are possible pillows with weak rind/selvages. Blocky (stubby) plagioclase phenocrysts occur in matrix and range in size from 1-3mm in diameter. Breccia is not tightly packed and is framework supported. Alteration consists of moderate pervasive chlorite, weak to moderate fracture fill carbonate and moderate patchy epidote. Rare weak hematization is observed on fracture faces. Matrix appears to be intermediate in composition - dacitic(?). DH ct is gradual over 1-2m - consists of broken rock and where competent rock exhibits slight shear and incr alteration.								
19.69	60.00	DAC Dacite: gradual UH ct just after broken rocks where breccia clasts lose once distinct boundaries and become ghosty, with diffuse boundaries and are elongated at 40 deg TCA. Dacite is med green grading to med grey moving away from UH ct. Fine grained, equigranular more massive looking, competent rock. Alteration consists of carbonate and quartz with occasional epidote as fracture fill - size ranging from hairline to 0.5cm. Fractures are in no particular orientation, sometimes occur in stockwork-like pattern but show small crenulation (microfolding) and epidote content decreases moving downhole, where fracs become milky and are predominantly quartz filled. At 31.5m, onset of silica and carb filled amygdules (4-8%). Py mineralization is observed as fracture fill with quartz and carbonate. Local bx zones 2-5cm in size. Buff to pink coloured mineral is sometimes observed in bx zones; rosy quartz (?).At 37.65, very strongly altered zone light yellow to green with hairline fractures in stockwork pattern. At 39.85, returns to regular altered dacite - med grey with occasional polymictic/heterolithic breccia zones. Block plag xtals are common. Fractures sets are observed here trending at 90 deg TCA. Rocks are increasingly broken moving downhole in lithology. At 57m, breccia is observed with incr disseminated py.								
60.00	61.92	MZFV Mineralized felsic volcanics: Blue to light grey in colour, mottled texture with significant mineralization. Py occurs as fracture fill, wispy with chlorite and sometimes in a stockwork-like pattern however is very patchy and not ubiquitous. No sphalerite or galena observed. Rock appears to be weakly pervasively silicified, weakly chlorite altered as fracture fill and weakly carbonate altered in patches. Tr cpy is observed as stringers. Size of py xtals varies from sub mm (vfg) to 3-5mm in diameter. Possible evidence of recrystallization. Near end of interval, there is a 15cm semi-massive pyrite band just prior to entering the massive sulphides.								

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From (m)	To (m)	Lithology	Sample #	Analysis Type					
				From	To	Length	Assay	ICP	Whole Rock
61.92	68.39	MS Massive Sulphide: Complete replacement of rock by pyrite and lesser cpy. Ratio is likely 80/20, with no evidence of galena or sphalerite. Zinc zap was used to test for sphalerite and produced no results. Py xtals range in size from very fine to med grained. DH ct sharp at 10-15 deg TCA.							
68.39	84.77	MZFV Mineralized felsic volcanics: As above unit (59.5-61.85). Strongly altered, silicified, cherty, pyritized felsic volcanics. Pervasive or fracture fill chlorite gives rock an altered pattern. Local breccia zones - incr in brown to orange, dull mineral occuring inter-laminated between foliations. Py occurs disseminatd, in between laminations and ranges from vfg to large crystals in size. Mineralization is not ubiquitous, is very patchy. Laminations trend at 20 deg TCA. Alteration includes pervasive strong silica, weak pervasive chlorite, weak fracture controlled carbonate and chlorite. DH ct is broken and cannot be described but appears to be sheared.							
84.77	172.07	MV Mafic Volcanics: Intercalated pillow basalts and amygdaloidal basalts. Fine to med grained, med to dark grey-green in colour. Chaotic textured volcanics where beginning of interval contains significant very fine grained metallic (brown-grey) mineralization in matrix behind euhedral, blocky pyrite xtals. Possibly vfg py or sphal (?). Entire zone from 84.87-107m sampled due to metallic lustre and spotty mineralization. Hornblende laths are observed and trend at 40 deg TCA. Alteration products are moderate to strong pervasive chlorite and moderate quartz and carbonate as fracture fill. Small crenulations/microfolds are observed in sheared/more strongly altered zones. This unit is strongly pyritized until 107m. At 107m, grades into mafic flows where only mineralization is 1-4% py in amygdules and 2% rare, not ubiquitous fracture controlled pyrite. Occasional bright red jasper observed in fractures with qtz and carb. Amygdule content incr downhole. At 132m, core appears to be more strongly pervasively silicified, and from here downhole, local brecciated zones and small mafic, diabase and intermediate dykes are common. Flow banding is observed in some breccia clasts. From 147.22-156.58m strongly altered zone with sharp upper and lower contacts. Possible altered felsic volcanic inclusion OR strongly altered mafic volcanic inclusion. Difficult to discern due to complete replacement of original rock textures and minerals. Light green to grey, silicified with disseminated and fracture controlled pyrite (6%) - concentrated in darker vein fill chlorite-rich sections. This zone is mottled. DH ct is strongly sheared with incr pyrite. After altered zone, MVCAN are sheared and brecciated for 50cm. Weak to moderate pyritization with rare cpy stringers and small blebs (2%). Ba-muscovite forest green laths are abundant. This zone is strongly pervasively chloritized where local zones display v strong blebby pyrite. Return to variably altered,strongly sheared rocks (FVCAN/MVCAN?) at 164.28-170.11m with small mafic inclusions. Some zones appear laminated (like sediments?).							

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From (m)	To (m)	Lithology	Sample #	Analysis Type					
				From	To	Length	Assay	ICP	Whole Rock
172.07	177.33	FLT Fault: Major fault, very strongly sheared, gougey, strongly sericite, epidote and chlorite altered. Disseminated and fracture controlled pyrite but no evidence of galena or sphalerite. Local brecciated zones.							
177.33	282.21	MV Variably Altered Mafic Volcanic: As above mafic volcanics, however unit begins in light grey to blue-green strongly altered rocks with strong fracture controlled pyrite and abundant ba-muscovite laths. Inclusions of very fine grained, massive looking mafic material - possible dyke phalanges with sharp, well developed irregular chill margins. Moving out of altered zone at 179.82m, into dark grey to med grey green mafic volcanics with abundant vesicles that have quartz-carb cores and chlorite rinds. Fracture fill quartz and carbonate is very common. Intercalated small (5-15cm) mafic dykes or mafic inclusions with very well developed irregular chill margins. Local zones of stronger stringer cpy in the mafic volcanics between these small dykes (ex: 184m). Galena is occasionally observed in fractures with py, cpy, carb and qtz. After dyke at 195m, volcanics include weakly to strongly altered amygdaloidal basalts and pillow flows/pillow flow breccias. Rocks are strongly, pervasively chlorite altered with fracture controlled and disseminated py (3-15%) (occasional cpy and galena in stringers). Local brecciated sections, and more green-intermediate in composition clasts - overall rock is competent. Pyrite mineralization is not ubiquitous - some clasts in breccia zones appear to be completely py replaced (ex: 207m). Shear is observed in local zones at 40-50 deg TCA - microfolds/crenulations are also present. At 221.6-222.3m, incr galena (5-7% fracture controlled). Moving downhole, local altered zones are very common as described above (sericite altered, vfg, med green to light green and often have a strong laminated appearance or sheared at 40 deg TCA). These do not have sharp contacts with the surrounding relatively unaltered mafic volcanics and are so comon that have not been separated out. These more strongly altered zones also contain significant ba-muscovites (5%) Mineralization is not ubiquitous - rather varies greatly from 2%-25% py with lesser galena (sometimes and rare cpy) in local zones. Amygdules are increasingly irregular masses or sheared along 40 deg TCA moving downhole. Occasional light green to yellow dykes - possibly altered diabase are observed with hairline fractures filled by chlorite. Samples AA00172314-AA00172319 are out of sequence bc were inserted later. At 272m, increase in fracture controlled py mineralization to 15%.							
282.21	292.11	DIKE Dike: UH ct is sheared and brecciated. Colour is light green to yellow, very fine grained to fine grained, equigranular and massive. Pervasive and fracture controlled chlorite alteration in hairline fractures in a stockwork pattern. Dyke is unmineralized - potential altered diabase dyke (?). Colour grades to med green-grey at 290m. DH ct is sheared and irregular but distinct.							

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<i>From (m)</i>	<i>To (m)</i>	<i>Lithology</i>	<i>Sample #</i>	<i>From</i>	<i>To</i>	<i>Length</i>	<i>Analysis Type</i>			
							<i>Assay</i>	<i>ICP</i>	<i>Whole Rock</i>	
292.11	342.12	MV Mafic to Intermediate relatively unaltered volcanics: med grey in colour, amygdules are common and are quartz+carbonate filled. Rock is competent, contains disseminated pyrite mineralization and pyrite as amygdule fill (3%). Occasional galena is observed in wispy fractures with quartz, carbonate and pyrite. Unit still exhibits shear with hornblende phenocrysts 1-3mm large elongated at 40-45 degrees TCA. Rare vesicle rich zones in pillows also show shearing in elongated vesicles at 40-45 deg TCA. Texture is strongly chaotic. Alteration consists of moderate to strong pervasive chlorite and moderate quartz and carbonate as fracture fill. From 313.23-314.26m, strongly altered zone with abundant ba-muscovite phenocrysts - chlorite filled fractures with fc pyrite. Both UH and DH cts with this inclusion are sheared at 70 deg TCA- possible inclusion of felsic volcanics (?). Moving downhole incr in local brecciates zones and inclusions of moderate to strongly altered felsic material (andesite?). At 330m, carbonate and quartz alteration increases to moderate-strong, rocks are mottled due to stronger alteration but remain med grey-green in colour with common brecciated zones, very weak tr-1% disseminated pyrite mineralization and strong shear is observed. DH ct is sheared over 11cm at 75 deg TCA.								
342.12	348.00	DAC Dacite: med green-strongly, fine to med grained, hairline fractured with qtz-carb fill in a stockwork-like style. Rock is incompetent likely due to strong pervasive chloritization evident on fracture faces. At 344.39m, rock is brown to green in colour - possible vfg sphalerite and pyrite mineralization in wispy/fracture fill style. From 345-345.32m, cherty, silicified salmon pink strongly fractured zone that grades into weakly altered dacites. At 346.02m, enters same zone of fine grained, brown to green unfractured, laminated and possibly mineralized rocks.								
348.00	0.00	EOH End of Hole								

HOLEID	FROM	TO	LENGTH	Sample Id	Sample De:	Au ppm	Ag ppm	Al%	As ppm	B ppm	Ba ppm	Be ppm
MM14-35	56.6	57	0.4	5835170	E5162777	0.002	<0.2		2.61	13	12	177 <0.5
MM14-35	57	57.82	0.82	5835171	E5162778	0.002	<0.2		1.19	8 <5		54 <0.5
MM14-35	57.82	58.91	1.09	5835172	E5162779	0.023		0.6	0.44	27 <5		14 <0.5
MM14-35	58.91	60	1.09	5835174	E5162781	0.054		1	0.35	55 <5		12 <0.5
MM14-35	60	61.4	1.4	5835175	E5162782	0.022		0.4	0.21	43 <5		30 <0.5
MM14-35	61.4	61.92	0.52	5835176	E5162783	0.032		2	0.17	50 <5		2 <0.5
MM14-35	61.92	62.6	0.68	5835177	E5162784	0.077		3	0.1	53	16 <1	<0.5
MM14-35	62.6	63.83	1.23	5835178	E5162785	0.179		7.4	0.1	90	6	16 <0.5
MM14-35	63.83	64.98	1.15	5835179	E5162786	0.25		9.3	0.07	128	25	30 <0.5
MM14-35	64.98	66	1.02	5835180	E5162787	0.326		14.2	0.1	62	8	17 <0.5
MM14-35	66	67.14	1.14	5835181	E5162788	0.302		13.4	0.1	89	18	5 <0.5
MM14-35	67.14	68.39	1.25	5835182	E5162789	0.268		14.2	0.08	75	16	37 <0.5
MM14-35	68.39	69.53	1.14	5835184	E5162791	0.014		0.5	0.29	2 <5		78 <0.5
MM14-35	69.53	72	2.47	5835185	E5162792	0.003	<0.2		0.24 <1	<5		272 <0.5
MM14-35	72	73.39	1.39	5835186	E5162793	0.048		2.9	0.2	5 <5		28 <0.5
MM14-35	73.39	75	1.61	5835187	E5162794	0.009	<0.2		0.3 <1	<5		296 <0.5
MM14-35	75	76.82	1.82	5835188	E5162795	0.004	<0.2		0.33	1 <5		267 <0.5

HOLEID	FROM	TO	LENGTH	Bi ppm	Ca%	Cdppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe%	Ga ppm	
MM14-35	56.6	57	0.4	<1		4.08	<0.5	13	18.1	16.1	140	4.27	11
MM14-35	57	57.82	0.82	<1		2	<0.5	11	19.2	13.1	50.8	3.65	5
MM14-35	57.82	58.91	1.09		1	0.37	<0.5	6	35.3	22.3	1230	6.88	6
MM14-35	58.91	60	1.09		3	0.68	1.3	3	33.1	4	455	6.6	<5
MM14-35	60	61.4	1.4		2	0.06	6	5	13.7	50.4	215	2.75	<5
MM14-35	61.4	61.92	0.52		1	0.05	<0.5	2	54.8	1.7	387	14.2	10
MM14-35	61.92	62.6	0.68		4	0.05	<0.5		62.2	43.7	1220	18.6	14
MM14-35	62.6	63.83	1.23		3	0.02	0.8	<1	68.9	2	745	20.1	15
MM14-35	63.83	64.98	1.15		4	0.01	<0.5		103	37.2	820	19.9	18
MM14-35	64.98	66	1.02		5	0.03	<0.5		73.6	1.9	866	18.8	15
MM14-35	66	67.14	1.14		1	0.03	1.5	<1	151	43.4	657	18.8	15
MM14-35	67.14	68.39	1.25		3	0.01	0.7	<1	131	2.1	916	19.3	16
MM14-35	68.39	69.53	1.14		2	0.06	<0.5	1	7.9	62.4	37.6	2.93	<5
MM14-35	69.53	72	2.47		1	0.13	<0.5	2	2.3	5.9	12.2	0.66	<5
MM14-35	72	73.39	1.39		2	0.05	0.7	3	12.8	60.3	113	3.27	<5
MM14-35	73.39	75	1.61	<1		0.14	<0.5	4	2.5	2.1	13.9	0.68	<5
MM14-35	75	76.82	1.82	<1		0.15	<0.5	8	1.7	57.6	26.3	0.54	<5

HOLEID	FROM	TO	LENGTH	Hg ppm	In ppm	K%	La ppm	Li ppm	Mg%	Mn ppm	Mo ppm	Na		
MM14-35	56.6	57	0.4	<1	<1		0.17	6	22	1.86	1270	3.2	0.03	
MM14-35	57	57.82	0.82		2	<1	0.2	5	9	0.9	609	2.8	0.03	
MM14-35	57.82	58.91	1.09		2	<1	0.16	3	2	0.14	106	5.9	0.03	
MM14-35	58.91	60	1.09		3	<1	0.19	1	<1	0.02	188	8.9	0.03	
MM14-35	60	61.4	1.4		3	<1	0.13	2	<1	<0.01	15	10.7	0.01	
MM14-35	61.4	61.92	0.52		3	<1	0.1	2	<1	<0.01	21	16.2	0.01	
MM14-35	61.92	62.6	0.68		7	<1	0.05	2	<1	<0.01	18	9	<0.01	
MM14-35	62.6	63.83	1.23		6	<1	0.05	2	<1	<0.01	20	12.5	<0.01	
MM14-35	63.83	64.98	1.15		5	<1	0.04	3	<1	<0.01	19	13.4	<0.01	
MM14-35	64.98	66	1.02		6	<1	0.06	2	<1	<0.01	18	24.8	<0.01	
MM14-35	66	67.14	1.14		5	<1	0.06	2	<1	<0.01	16	19.2	<0.01	
MM14-35	67.14	68.39	1.25		5	<1	0.04	2	<1	<0.01	19	11.4	<0.01	
MM14-35	68.39	69.53	1.14		1		2	0.16	1	<1	<0.01	16	7.9	0.01
MM14-35	69.53	72	2.47		1		2	0.15	1	<1	<0.01	23	7.7	0.01
MM14-35	72	73.39	1.39		1	<1		0.12	1	<1	<0.01	16	8.9	0.01
MM14-35	73.39	75	1.61	<1	<1		0.19	2	<1	0.01	13	14.3	0.02	
MM14-35	75	76.82	1.82	<1		1	0.19	4	<1	<0.01	14	4.5	0.01	

HOLEID	FROM	TO	LENGTH	Ni ppm	P ppm	Pb ppm	Rb ppm	S%	Sb ppm	Sc ppm	Se ppm	Sn ppm
MM14-35	56.6	57	0.4	10.4	955	7 <10			1.13	3	10.1 <10	<5
MM14-35	57	57.82	0.82	19.5	811	8.4 <10			3.26 <1		6.1	10 <5
MM14-35	57.82	58.91	1.09	15.4	647	80.2 <10			7.56	2	5.5	26 <5
MM14-35	58.91	60	1.09	16.6	678	130 <10			7.49 <1		4.2	22 <5
MM14-35	60	61.4	1.4	10.2	209	220 <10			3.09	8	1.8 <10	<5
MM14-35	61.4	61.92	0.52	8.2	191	65.5 <10	>10	<1			0.9	52 <5
MM14-35	61.92	62.6	0.68	16.1	225	54.2 <10	>10	<1		<0.5		39 <5
MM14-35	62.6	63.83	1.23	23.6	62	191 <10	>10			1 <0.5		37 <5
MM14-35	63.83	64.98	1.15	37.3	35	133 <10	>10	<1		<0.5		51 <5
MM14-35	64.98	66	1.02	44.8	146	182 <10	>10	<1		<0.5		49 <5
MM14-35	66	67.14	1.14	48.6	136	256 <10	>10			1 <0.5		92 <5
MM14-35	67.14	68.39	1.25	45	75	230 <10	>10	<1		<0.5		35 <5
MM14-35	68.39	69.53	1.14	7.8	250	14 <10			3.17 <1		2.2	10 <5
MM14-35	69.53	72	2.47	1.6	534	3.4 <10			0.469 <1		1.5 <10	<5
MM14-35	72	73.39	1.39	17.1	155	57.6 <10			3.62 <1		1.9 <10	<5
MM14-35	73.39	75	1.61	3.4	527	15.7 <10			0.722 <1		3.2 <10	<5
MM14-35	75	76.82	1.82	8.8	627	10 <10			0.513 <1		1.5 <10	<5

HOLEID	FROM	TO	LENGTH	Sr ppm	Ta ppm	Te ppm	Th ppm	Ti%	Tl ppm	U ppm	V ppm	W ppm
MM14-35	56.6	57	0.4	100	<10	<10	<5	<0.01	<5	<5		116 <1
MM14-35	57	57.82	0.82	48.1	<10	<10	<5	<0.01	<5	<5		37.1 <1
MM14-35	57.82	58.91	1.09	22.1	<10	<10		6 <0.01	<5	<5		14.7 <1
MM14-35	58.91	60	1.09	23.1	<10	<10		5 <0.01	<5	<5		9.6 <1
MM14-35	60	61.4	1.4	15.3	<10	<10	<5	<0.01	<5	<5		2.5 <1
MM14-35	61.4	61.92	0.52	9	<10	<10		9 <0.01		6 <5		7.2 <1
MM14-35	61.92	62.6	0.68	9.7	<10		17	12 <0.01		6 <5		8.2 <1
MM14-35	62.6	63.83	1.23	8.8	<10		19	12 <0.01	<5	<5		8.8 <1
MM14-35	63.83	64.98	1.15	10.2	<10		20	16 <0.01		6 <5		8.4 <1
MM14-35	64.98	66	1.02	8.4	<10		23	13 <0.01	<5	<5		9.2 <1
MM14-35	66	67.14	1.14	8.6	<10		30	13 <0.01	<5	<5		8.1 <1
MM14-35	67.14	68.39	1.25	8.6	<10		28	14 <0.01		6 <5		8.3 <1
MM14-35	68.39	69.53	1.14	9	<10	<10	<5	<0.01	<5	<5		2.9 <1
MM14-35	69.53	72	2.47	7.6	<10	<10	<5	<0.01	<5	<5		1.8 <1
MM14-35	72	73.39	1.39	8.5	<10	<10	<5	<0.01	<5	<5		3.1 <1
MM14-35	73.39	75	1.61	15.3	<10	<10	<5	<0.01	<5	<5		1.9 <1
MM14-35	75	76.82	1.82	11.9	<10	<10	<5	<0.01	<5	<5		2.3 <1

HOLEID	FROM	TO	LENGTH	Yppm	Zn ppm	Zr ppm	Cu%	Zn%	Ag	As%	Pb%
MM14-35	56.6	57	0.4	16	119	<5					
MM14-35	57	57.82	0.82	13	37.8		10				
MM14-35	57.82	58.91	1.09	7	416		16				
MM14-35	58.91	60	1.09	4	685		11				
MM14-35	60	61.4	1.4	1	1540		9				
MM14-35	61.4	61.92	0.52	1	174		5				
MM14-35	61.92	62.6	0.68	1	30.8	<5					
MM14-35	62.6	63.83	1.23	<1		633	<5				
MM14-35	63.83	64.98	1.15	<1		299	<5				
MM14-35	64.98	66	1.02	1	450	<5					
MM14-35	66	67.14	1.14	<1		830	<5				
MM14-35	67.14	68.39	1.25	<1		555	<5				
MM14-35	68.39	69.53	1.14	1	36.6		12				
MM14-35	69.53	72	2.47	1	9		9				
MM14-35	72	73.39	1.39	2	357		8				
MM14-35	73.39	75	1.61	3	23.2		13				
MM14-35	75	76.82	1.82	2	41.1		5				