

## GeoSpark Logger ~ Drill Log

**Project:** KZK **Hole Number:** K16-352

Prospect:	Krakatoa	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Dillon Hume
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	5/28/2016
UTM Easting	415131.198	Core Size:	HQ3	Azimuth:	225.59	Date Logging Complete:	5/30/2016
UTM Northing:	6815043.9116	Casing Pulled?:	Yes	Dip:	-83	Drill Company:	Hytech
UTM Elev. (m):	1398.971	Casing Depth (m):	1.5	Length (m):	192	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	5/26/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	5/28/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Resource Definition
Comments:						Parent Hole:	

K16-352 was drilled to test inferred portions of the Krakatoa upper and Krakatoa main lenses. Drill rods became stuck at 192 m, and were cut free at a depth of 153 m, leaving ~39 m of drill rods in the ground.

K16-352 encountered bedrock at 1.5 m. The felsic hanging wall package was encountered from 1.5-124 m, consisting of mixed coherent rhyolite, volcanoclastic rhyolite, pelitic sediments, and mudstones. Moderate to strong MU-alteration occurs from 77.5-126.3 m, continuing into the MAFi. MAFi occurred from 124-152.9 m, with strong MU-alteration occurring at 146.1-152.9 m (continues into underlying RHY as well). From 147.5-149.3 m, banded chlorite alteration associated with disseminated to stringer style mineralization occurs. Below the MAFi, strongly MU-altered RHY occurs (152.9-164.7 m) with a zone of semi-massive to patchy mineralization (OI) from 155.1-156 m. Underlying the RHY, brecciated RHYi occurs to 173.5 m, where intense faulting occurs. This fault persists to the bottom of the hole, consisting of matrix-supported polyolithic clasts (RHY, MAFi, MXSX, MDS, QZ-vein, etc.) with sericite-chlorite-clay gouge matrix. Both horizons where mineralization was anticipated to be intercepted contained zones of strong alteration plus or minus disseminated to semi-massive sulfide, and potentially represent the extent of mineralization in their respective lenses.

### Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-83	224.19	1.4	225.59	APS	Dillon Hume	5/26/2016		<input checked="" type="checkbox"/>	Drill rig alignment
12	-81.6	203.4	22.1	225.5	ReflexEZS	Hytech	5/26/2016	5733	<input checked="" type="checkbox"/>	
36	-80.3	196.4	22.1	218.5	ReflexEZS	Hytech	5/26/2016	5768	<input checked="" type="checkbox"/>	
60	-79.1	193.2	22.1	215.3	ReflexEZS	Hytech	5/26/2016	5764	<input checked="" type="checkbox"/>	
84	-78.8	189.7	22.1	211.8	ReflexEZS	Hytech	5/26/2016	5750	<input checked="" type="checkbox"/>	
105	-77.8	189.9	22.1	212	ReflexEZS	Hytech	5/26/2016	5758	<input checked="" type="checkbox"/>	
129	-77.1	187	22.1	209.1	ReflexEZS	Hytech	5/26/2016	5769	<input checked="" type="checkbox"/>	
153	-76.7	185.9	22.1	208	ReflexEZS	Hytech	5/27/2016	5755	<input checked="" type="checkbox"/>	
177	-76.4	184.7	22.1	206.8	ReflexEZS	Hytech	5/27/2016	5744	<input checked="" type="checkbox"/>	

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<b>0.00</b>	<b>1.50</b>	<b>OVBN Overburden</b>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<b>1.50</b>	<b>10.40</b>	<b>RHYc Rhyolite coherent volcanics</b>									
<p>1.5 - 10.4: Unit varies from RHYi near the center to flow-banded and silica banded outward. Potentially representing a flow with more flow movement along edges ??</p> <p>&lt;&lt;Min: 1.5 - 10.4 2% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Alt: 1.5 - 10.4 Trace Calcite&gt;&gt;</p>											
<b>10.40</b>	<b>12.70</b>	<b>PEL Equigranular biotite + calcite +/- quartz rock</b>									
<p>10.4 - 12.7: BI-CA schist with heterogeneous composition. Interpreted to be a pelitic sedimentary horizon.</p> <p>&lt;&lt;Alt: 10.4 - 12.7 Moderate Calcite&gt;&gt;</p>											
<b>12.70</b>	<b>20.10</b>	<b>RHYvl Lapilli tuff</b>									
<p>12.7 - 20.1: Volcaniclastic rhyolite with variable amounts of lpl, local flow textures, and BI content (sediment input?)</p> <p>&lt;&lt;Min: 12.7 - 20.1 0.5% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Min: 12.7 - 20.1 0.1% Min: Pyrrhotite&gt;&gt;</p> <p>&lt;&lt;Alt: 12.7 - 20.1 Weak-Moderate Calcite&gt;&gt;</p> <p>&lt;&lt;Struc: 16.5 - 16.8 Weak Fault&gt;&gt; Minor fault gouge and wash away</p>											
<b>20.10</b>	<b>33.30</b>	<b>RHYi Aphanitic Rhyolite (intrusion)</b>									
<p>20.1 - 33.3: Aphanitic rhyolite with silica banded texture near upper contact and ~gradational lower contact</p> <p>&lt;&lt;Min: 20.1 - 33.3 1% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Alt: 20.1 - 33.3 Weak Calcite&gt;&gt;</p> <p>&lt;&lt;Struc: 30.7 - 30.71 Weak-Moderate dominant foliation&gt;&gt;</p>											
<b>33.30</b>	<b>34.00</b>	<b>RHYvl Lapilli tuff</b>									
<p>&lt;&lt;Min: 33.3 - 72.2 0.5% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Alt: 33.3 - 34 Weak-Moderate Calcite&gt;&gt;</p> <p>&lt;&lt;Struc: 33.5 - 33.51 Weak-Moderate dominant foliation&gt;&gt;</p>											
<b>34.00</b>	<b>37.40</b>	<b>PEL Equigranular biotite + calcite +/- quartz rock</b>									
<p>34 - 37.4: Black to olive green BI-CA-CL schist with heterogeneous texture and composition</p> <p>&lt;&lt;Alt: 34 - 37.4 Moderate Calcite&gt;&gt;</p>											
<b>37.40</b>	<b>38.50</b>	<b>RHYcw Curdy textured-flow banded (flows, subvolcanics)</b>									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<p>&lt;&lt;Alt: 37.4 - 38.5 Weak Calcite&gt;&gt;</p> <p>&lt;&lt;Struc: 37.4 - 37.6 Weak Fault&gt;&gt; Broken ground and minor fault gouge at PEL/RHYcw contact</p> <p><b>38.50 38.80 PEL Equigranular biotite + calcite +/- quartz rock</b></p> <p>&lt;&lt;Alt: 38.5 - 38.8 Moderate Calcite&gt;&gt;</p> <p><b>38.80 40.30 RHYcw Curdy textured-flow banded (flows, subvolcanics)</b></p> <p>&lt;&lt;Alt: 38.8 - 40.3 Weak Calcite&gt;&gt;</p> <p><b>40.30 65.80 RHYvl Lapilli tuff</b></p> <p>40.3 - 65.8: Dominated by lpl tuff, with variable composition of lpl from BI-CL-CA to felsic lpl.</p> <p>&lt;&lt;Alt: 40.3 - 75.3 Weak-Moderate Calcite&gt;&gt;</p> <p>&lt;&lt;Alt: 60.7 - 77.5 Weak Muscovite&gt;&gt;</p> <p>&lt;&lt;Vein: 42 - 42.2 100% Quartz-Sericite/White mica&gt;&gt; Broken QZ-Sericite vein in fault zone</p> <p>&lt;&lt;Vein: 64.6 - 64.8 20% Quartz&gt;&gt; Minor folded and deformed (ptigmatic) QZ veins</p> <p>&lt;&lt;Struc: 41.3 - 44.1 Weak-Moderate Fault&gt;&gt; Zone of fault planes with gouge every ~15 cm. Minor veining within zone. Wash away also recorded in zone.</p> <p>&lt;&lt;Struc: 44.94 - 44.95 Moderate dominant foliation&gt;&gt;</p> <p>&lt;&lt;Struc: 52.89 - 52.9 Moderate dominant foliation&gt;&gt;</p> <p>&lt;&lt;Struc: 54.6 - 62.7 Weak-Moderate Fault&gt;&gt; Zone of fault planes with some gouge every ~20-50 cm. Minor wash away recorded in zone.</p> <p><b>65.80 66.20 MAFi Mafic Intrusions (primarily footwall mafic intrusion)</b></p> <p>65.8 - 66.2: Small Ca-phyric mafic dyke</p> <p><b>66.20 73.00 RHYvl Lapilli tuff</b></p> <p>&lt;&lt;Min: 72.2 - 73 1% Min: Pyrrhotite&gt;&gt;</p> <p>&lt;&lt;Vein: 67.4 - 71.6 5% Quartz 70 deg. &gt;&gt; Zone with White QZ-veining and poor recovery (faulting?)</p> <p>&lt;&lt;Struc: 67.3 - 78.7 Moderate Fault&gt;&gt; Zone of many fault planes with gouge surfaces and high core loss. Zone appears to have low RQD rating. As well, a transposition foliation appears to be superimposed on the original foliation. This can be seen where a crenulation cleavage is overprinting the original foliation at a high angle.</p> <p><b>73.00 75.30 MDSw Coherent rhyolite flow with carbonaceous content</b></p> <p>73 - 75.3: Flow banded rhyolite with minor carbonaceous material</p> <p>&lt;&lt;Min: 73 - 77.5 1% Min: Pyrite&gt;&gt;</p>											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<b>75.30</b>	<b>77.50</b>	<b>MDSc Carbonaceous dominant mudstone</b> 75.3 - 77.5: Argillaceous mudstone									
<b>77.50</b>	<b>107.90</b>	<b>RHYcw Curdy textured-flow banded (flows, subvolcanics)</b> 77.5 - 107.9: Good flow banded texture. Local crenulation cleavage appears to transpose original foliation. Maybe the dominant foliation in other units (i.e. RHYv) is this transposed foliation.  <<Min: 77.5 - 107.9 2% Min: Pyrite>> <<Alt: 77.5 - 116.5 Moderate Muscovite>> <<Alt: 77.5 - 116.5 Weak Calcite>> <<Vein: 93.2 - 93.3 100% Quartz 60 deg. >> Massive QZ vein with cross-cutting cleavage of MU-GL-PY <<Struc: 84.28 - 84.29 Weak-Moderate dominant foliation>> <<Struc: 85.2 - 85.3 Moderate-Strong Fault>> Narrow zone of strongly faulted material with milled clasts in a gouge matrix <<Struc: 91.24 - 91.25 Weak-Moderate dominant foliation>> <<Struc: 100.69 - 100.7 Weak-Moderate dominant foliation>> <<Struc: 101.8 - 103.4 Weak-Moderate Fault>> Zone of broken rock with fault gouge. Clasts supported zone.									
<b>107.90</b>	<b>121.80</b>	<b>RHYvl Lapilli tuff</b> 107.9 - 121.8: Felsic and pyrite lpl  <<Min: 107.9 - 124 2% Min: Pyrite>> <<Alt: 116.5 - 121.8 Weak-Moderate Calcite>> <<Alt: 116.5 - 124 Strong Muscovite>> <<Vein: 114 - 114.03 90% Quartz 75 deg. >> QZ vein <<Vein: 117.5 - 118 30% Quartz 50 deg. >> Zone with massive QZ veining in strong MU-alteration. Minor blebby SP+PY near vein margin <<Struc: 118 - 120 Weak Fault>> Local fault surfaces with minor gouge	120.30	121.80	1.50	B00292238	0.006	0.7	-0.01	-0.01	0.01
<b>121.80</b>	<b>124.00</b>	<b>RHYc Rhyolite coherent volcanics</b> 121.8 - 124: Strongly sericite altered with silicic banding resembling coherent rhyolite. Local QZ-veining may mimic the silicic bands. Faulted and folded lower contact with MAFi.  <<Alt: 121.8 - 124 Moderate Calcite>> <<Vein: 122.3 - 122.7 90% Quartz-Sericite/White mica 70 deg. >> Massive QZ veining with MU-cleavages and faulted margins. In strong Mu-alteration <<Vein: 122.7 - 124 80% Quartz-Carbonate 60 deg. >> Laminated QZ-veining or silicic banded due to lithology ???	121.80	122.50	0.70	B00292239	-0.005	0.4	-0.01	-0.01	-0.01
			122.50	124.00	1.50	B00292241	-0.005	0.4	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Struc: 121.9 - 125.7 Moderate Fault>> Faulting near contact between RHY and MAFi. Note that the actual contact is folded and faulted as well. Patches of fault gouge material.											
<b>124.00</b>	<b>147.50</b>	<b>MAFi Mafic Intrusions (primarily footwall mafic intrusion)</b>	124.00	125.20	1.20	B00292242	-0.005	0.6	-0.01	-0.01	0.02
124 - 147.5: Strong Mu-alteration occurs at top and bottom contacts with rhyolite. Potentially distal extents of the ore horizons. Lower contact grades into OJ mineralization.											
<<Min: 124 - 146.1 0.1% Min: Pyrite>>											
<<Min: 146.1 - 147.5 0.5% Min: Sphalerite>>											
<<Min: 146.1 - 147.5 0.1% Min: Pyrite>>											
<<Min: 146.1 - 147.5 0.5% Min: Chalcopryrite>>											
<<Alt: 124 - 125.2 Moderate-Strong Calcite>>											
<<Alt: 124 - 125.2 Moderate Biotite>>											
<<Alt: 125.2 - 126.3 Strong Muscovite>>											
<<Alt: 125.2 - 126.3 Weak Biotite>>											
<<Alt: 125.2 - 128.3 Moderate Calcite>>											
<<Alt: 126.3 - 126.5 Moderate-Strong Biotite>>											
<<Alt: 128.3 - 139.4 Weak Calcite>>											
<<Alt: 139.4 - 152.9 Moderate Calcite>>											
<<Alt: 146.1 - 147.5 Strong Muscovite>> Strong pervasive alteration of MAFi groundmass											
<<Vein: 127 - 133 3% Calcite>> Zone with minor thin CA veinlets in MAFi cross-cutting foliation											
<<Struc: 129.85 - 129.86 Moderate dominant foliation>>											
<<Struc: 146.3 - 147.2 Weak-Moderate Fault>> Minor zones of faulting with gouge material ove ~5 cm											
<b>147.50</b>	<b>149.30</b>	<b>OJ Heavilly disseminated sulphides and/or stringer style mineralization in proximal altered rock</b>	147.50	148.40	0.90	B00292255	0.075	32.3	0.48	0.33	1.52
147.5 - 149.3: Strongly MU-altered MAFi with local bands of chlorite + PO+CP+PY+/-SP mineralization.											
<<Min: 147.5 - 149.3 5% Min: Sphalerite>>											
<<Min: 147.5 - 149.3 2% Min: Pyrite>>											
<<Min: 147.5 - 149.3 5% Min: Pyrrhotite>>											
<<Min: 147.5 - 149.3 2% Min: Chalcopryrite>>											
<<Alt: 147.5 - 148 Moderate Muscovite>> Moderate MU alteration of MAFi groundmass											
<<Alt: 147.5 - 148 Moderate Chlorite>> Bands of CL alteration associated with PO+CP+PY+SP stringer mineralization											

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 148 - 152.9 Strong Muscovite>> Strong pervasive alteration of MAFi groundmass <<Struc: 148.8 - 150 Weak-Moderate Fault>> Zone with 2 patches of fault gouge <b>149.30 152.90 MAFi Mafic Intrusions (primarily footwall mafic intrusion)</b>			149.30	150.50	1.20	B00292257	0.023	1.8	0.05	0.04	0.11
149.3 - 152.9: Strong Mu-alteration of groundmass of MAFi, with patches of relict (?) CA+BI <<Min: 149.3 - 155.1 0.1% Min: Sphalerite>> <<Min: 149.3 - 155.1 0.5% Min: Pyrite>> <<Min: 149.3 - 155.1 0.1% Min: Chalcopyrite>> <<Min: 149.3 - 155.1 1% Min: Arsenopyrite>> <<Struc: 152 - 158 Moderate Fault>> Moderate faulting displayed as brecciated sulfide, gouge zones, and folding of foliation. Local core loss. Core has very low strength.			150.50	151.70	1.20	B00292258	0.096	4.4	0.11	0.06	0.2
			151.70	152.90	1.20	B00292259	0.145	4.2	0.1	0.06	0.22
<b>152.90 155.10 RHY undifferentiated rhyolite</b> 152.9 - 155.1: Strongly MU-altered and foliated rhyolite <<Alt: 152.9 - 164.7 Strong Muscovite>> Strong pervasive alteration of RHY <<Alt: 152.9 - 164.7 Weak-Moderate Calcite>>			152.90	154.00	1.10	B00292261	0.172	14.1	0.1	0.11	0.33
<b>155.10 156.00 OI Heavily disseminated sulphides in host schist</b> 155.1 - 156: Brecciated to patchy massive PO+CP+PY+CA within massive MU-SI alteration <<Min: 155.1 - 156 2% Min: Pyrite>> <<Min: 155.1 - 156 20% Min: Pyrrhotite>> <<Min: 155.1 - 156 1% Min: Chalcopyrite>>			154.00	155.10	1.10	B00292262	0.023	4.3	-0.01	0.06	0.15
			155.10	156.00	0.90	B00292263	0.054	114	0.33	2.05	2.76
<b>156.00 164.70 RHY undifferentiated rhyolite</b> 156 - 164.7: Strong MU-alteration or undifferentiated rhyolite. Strongly foliated. Proximal to Sunda fault. Local kink folding. <<Min: 156 - 173.5 1% Min: Pyrite>> <<Vein: 160.7 - 161 10% Quartz>> Folded ~1 cm wide QZ vein in intense sericite alteration <<Struc: 158.9 - 162 Moderate Fault>> Moderate faulting shown by strong alteration with folded to broken foliation with minor gouge zones <<Struc: 160.95 - 160.96 Moderate-Strong >> Axial plane of tight folded vein in strong altered zone and fault zone			156.00	157.50	1.50	B00292264	-0.005	2.3	0.01	0.03	0.05
			157.50	159.00	1.50	B00292265	-0.005	0.5	-0.01	-0.01	-0.01
			159.00	160.50	1.50	B00292266	-0.005	0.6	-0.01	-0.01	-0.01
			160.50	162.00	1.50	B00292267	-0.005	0.6	-0.01	-0.01	-0.01
			162.00	163.50	1.50	B00292268	-0.005	0.5	-0.01	-0.01	-0.01
			163.50	164.70	1.20	B00292269	-0.005	0.4	-0.01	-0.01	-0.01
<b>164.70 173.50 RHYi Aphanitic Rhyolite (intrusion)</b> 164.7 - 173.5: Grey to yellowish beige brecciated aphanitic rhyolite.			164.70	166.20	1.50	B00292271	0.006	0.8	-0.01	-0.01	-0.01

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
<<Alt: 164.7 - 173.5 Weak Calcite>> <<Vein: 166 - 166.5 20% Quartz>> Zone of patchy QZ-veins <<Struc: 164.7 - 173.5 Weak-Moderate Fault>> Brecciated and fractured RHYi with minor cementation of fractures											
<b>173.50</b>	<b>187.20</b>	<b>FLZ Fault Zone</b>	184.50	186.00	1.50	B00292272	0.005	0.6	-0.01	-0.01	0.01
173.5 - 187.2: Intense fault zone, with polyolithic clasts (MAFi, MDS, RHY, QZ-vein, MXSX) within sericite-chlorite gouge matrix. Gouge-supported.											
<<Min: 173.5 - 192 3% Min: Pyrite>> Clasts of MXSX and heavily disseminated sulfide within fault zone <<Alt: 173.5 - 182 Strong Muscovite>> Intense sericitic alteration of gouge material in fault zone <<Alt: 173.5 - 192 Weak-Moderate Calcite>> <<Struc: 173.5 - 192 Intense Fault>> Intense faulting with matrix-supported, polyolithic clasts in sericite-chlorite-clay gouge matrix.											
<b>187.20</b>	<b>188.90</b>	<b>OI Heavily disseminated sulphides in host schist</b>	187.20	188.00	0.80	B00292274	0.011	1.7	-0.01	0.02	0.12
187.2 - 188.9: Clast of heavily disseminated pyrite in siliceous and MU-altered groundmass. Clast/clasts within fault zone											
<<Min: 187.2 - 188.9 15% Min: Pyrite>> Clast of heavily disseminated pyrite in siliceous and MU-altered groundmass. Clast/clasts within fault zone											
<b>188.90</b>	<b>192.00</b>	<b>FLZ Fault Zone</b>	188.90	190.40	1.50	B00292276	-0.005	0.6	-0.01	-0.01	0.01
188.9 - 192: Intense fault zone, with polyolithic clasts (MAFi, MDS, RHY, QZ-vein, MXSX) within sericite-chlorite gouge matrix. Gouge-supported.											
190.40 192.00 1.60 B00292277 -0.005 0.5 -0.01 -0.01 0.02											
<b>End of Hole @ 192</b>											