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GeoSpark Logger ~ Drill Log

Project: KZK **Hole Number:** K16-376

Prospect:	Infrastructure	Hole Type:	DD	Survey Type:	RTK DGPS	Logged By:	Jerome de Pasquale
Grid:	NAD83_Z9	Hole Diameter:	96	Survey By:	Challenger_Survey	Date Logging Start:	6/30/2016
UTM Easting	415074.37	Core Size:	HQ3	Azimuth:	335.2	Date Logging Complete:	7/1/2016
UTM Northing:	6815128.282	Casing Pulled?:	Yes	Dip:	-50	Drill Company:	Hytech
UTM Elev. (m):	1385.405	Casing Depth (m):	9	Length (m):	170.2	Drill Rig:	Tech 5000
Local Easting:		Stored?:	Yes	Claims Title		Drill Started:	6/27/2016
Local Northing:		Cemented?:	Yes	Core Storage Loc.:	KZK Camp	Drill Completed:	6/30/2016
Local Elev. (m):				Hole Completed?:	Completed	Purpose:	Geotech
Comments:						Parent Hole:	

Geotechnical borehole GT03. Collared in order to investigate East fault and north-east wall stability including footwall and saddle area of ABM and Krakatoa, about 40m offset from north-east mid-wall and projected fault. Ongoing geotechnical logging was processed at the drill rig.
K16-376 is made up of volcaniclastic and coherent rhyolite, felsic KZK formations sequence.
From 132.26m to 157.20, fault zone (locally brecciated) and sheared rhyolite are intercepted. Weak to moderate muscovite alteration is observed from top to bottom.
No mineralization zone is encountered. K16-376 was shut down on engineer call.

Downhole Surveys:

Depth (m)	Dip	Measured Azimuth	Correction Factor	Corrected Azimuth	Survey Type	Survey By	Survey Date	Mag Field	Accept Values?	Comments
0	-50	333.8	1.4	335.2	TN14	Dillon Hume	6/27/2016		☑	Rig aligned to true north (measured azimuth). Grid convergence of 1.4 deg applied to correct to UTM azimuth.
18.7	-50.7	314.1	22.1	336.2	ReflexEZS	Hytech	6/28/2016	5797	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
42.7	-51	312.9	22.1	335	ReflexEZS	Hytech	6/28/2016	5749	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
66.7	-52.6	313.6	22.1	335.7	ReflexEZS	Hytech	6/28/2016	5730	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
90.7	-53.6	313.5	22.1	335.6	ReflexEZS	Hytech	6/29/2016	5730	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
114.7	-53.6	312.1	22.1	334.2	ReflexEZS	Hytech	6/29/2016	5699	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
139	-54.1	314.1	22.1	336.2	ReflexEZS	Hytech	6/29/2016	5702	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.
170.2	-54.5	311.7	22.1	333.8	ReflexEZS	Hytech	6/29/2016	5707	☑	Measured azimuth relative to magnetic north. Grid declination of 22.1 deg applied to correct to UTM azimuth.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %
0.00	**9.20**	**OVBN Overburden**									

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

9.20 29.00 RHYvl Lapilli tuff

9.2 - 29: Green/grey, locally MU altered. Mid strain. Thin foliation. Lapilli/crystal concentration increases at lower contact (pressure shadow ?). Locally narrow possibly SEDc or calcareous ash intervals.

<<Min: 9.2 - 25.75 0.5% Min: Pyrrhotite>>

<<Min: 9.2 - 35.8 2% Min: Pyrite>>

<<Min: 25.75 - 29 2% Min: Pyrrhotite>>

<<Alt: 9.2 - 24.3 Weak-Moderate Muscovite>>

<<Alt: 9.2 - 77.96 Weak-Moderate Calcite>> and lapilli replacement.

<<Alt: 24.3 - 24.8 Moderate Muscovite>>

<<Alt: 24.8 - 29 Weak Muscovite>>

<<Struc: 17 - 17.01 dominant foliation>>

<<Struc: 22.6 - 23.2 Weak-Moderate Fault>> Narrow fault gouge, partially washed away during drilling.

<<Struc: 27.6 - 27.61 dominant foliation>>

29.00 35.80 RHYcf Feldspar & feldspar quartz porphyry

29 - 35.8: Few quartz eyes. Locally aphanitic texture in the groundmass, Feldspar up to 1cm long, mid strained. Heterogeneous texture, narrow fault gouge interval.

<<Struc: 31.3 - 31.9 Weak-Moderate Fault>> Narrow gouge interval.

35.80 45.81 RHYc Rhyolite coherant volcanics

35.8 - 45.81: Dark green/grey. Fspar phenos, non-deformed, 1cm long, aggregated. Possibly TML alteration responsible of the color. Locally aphanitic (RHYi), peperitic or hyaloclastic texture. QZ vein from 39.52m to 41.70m. This unit could also be sedimentary, coarse grain/conglomerate.

<<Min: 35.8 - 49.21 3% Min: Pyrite>>

<<Min: 35.8 - 49.21 5% Min: Pyrrhotite>>

<<Alt: 36.58 - 46.2 Weak-Moderate Tourmaline>>

<<Vein: 39.6 - 41.7 Quartz>> QZ vein, in and out, Ca in fracture.

<<Struc: 45.4 - 45.41 dominant foliation>>

45.81 47.93 RHYcw Curdy textured-flow banded (flows, subvolcanics)

45.81 - 47.93: Flow banded rhyolite.

<<Alt: 47.83 - 63.6 Weak Muscovite>>

<<Struc: 47.8 - 47.81 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

47.93 63.30 RHYva Coarse grained to ash tuff

47.93 - 63.3: Grey/green, foliated, mid strain, dominantly fine grain/ash.

<<Min: 49.21 - 58.75 2% Min: Pyrrhotite>>

<<Min: 49.21 - 62.7 0.5% Min: Pyrite>>

<<Min: 58.75 - 71.1 0.5% Min: Pyrrhotite>>

<<Min: 62.7 - 75.7 5% Min: Pyrite>>

<<Vein: 50.2 - 50.9 Quartz>> Massive QZ vein.

<<Struc: 52.26 - 52.27 dominant foliation>>

<<Struc: 60.2 - 60.21 dominant foliation>>

63.30 74.04 RHYcf Feldspar & feldspar quartz porphyry

63.3 - 74.04: Locally flow banded, abundant quartz eyes. From 71.10m to 72.05m, texture obscured, dirty interval, QE preserved, phenoblasts replaced by black mineral (possibly TML).

<<Min: 71.1 - 77.36 2% Min: Pyrrhotite>>

<<Alt: 63.6 - 75.7 Moderate Muscovite>>

<<Struc: 66.8 - 66.81 dominant foliation>>

74.04 77.96 RHYva Coarse grained to ash tuff

74.04 - 77.96: Dominantly fine grain/ash. MU altered.

<<Min: 75.7 - 85.75 1% Min: Pyrite>>

<<Min: 77.36 - 85.75 5% Min: Pyrrhotite>>

<<Alt: 75.7 - 85.75 Weak Muscovite>>

<<Struc: 75.65 - 75.66 dominant foliation>>

77.96 85.75 MAFi Mafic Intrusions (primarily footwall mafic intrusion)

77.96 - 85.75: Heterogeneous, foliated, containing amygdule/brown biotite, weakly altered MU. Cain veinlets and groundmass. Large chill margins (partly due to drilling dip). Few CL. Crosscut by a 5cm large QZ/dolomite vein-breccia texture).

<<Alt: 77.96 - 85.75 Moderate-Strong Calcite>> Mafic dike.

<<Vein: 79.55 - 79.61 Quartz-Carbonate>> Brecciated QZ/dolomite/few BI vein, foliation oriented. Unusual.

<<Struc: 82 - 82.01 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

85.75 95.60 RHYv Rhyolite volcaniclastic

85.75 - 95.6: Heterogeneous, probably volcaniclastic.

<<Min: 85.75 - 102.7 0.5% Min: Pyrrhotite>>

<<Min: 85.75 - 132.6 0.1% Min: Pyrite>>

<<Alt: 85.75 - 95.6 Weak-Moderate Calcite>>

<<Alt: 85.75 - 131.2 Weak-Moderate Muscovite>>

<<Struc: 87.3 - 87.31 dominant foliation>>

<<Struc: 92.2 - 93.7 Weak-Moderate Fault>> Broken zone, weak shearing, narrow gouge interval.39.6

95.60 111.67 RHYv Rhyolite volcaniclastic

95.6 - 111.67: Heterogeneous, showing dark weakly altered possibly lapilli. Fractured, weakly MU altered matrix. From 107.46m to 107.85m, biotite rich interval (pelite?). Possibly coherent rhyolite locally, disaggregated flow bands.

<<Min: 102.7 - 132.6 1% Min: Pyrrhotite>> Locally elongated along the foliation. Irregular repartition.

<<Alt: 95.6 - 111.67 Weak Calcite>>

<<Struc: 98.27 - 98.28 dominant foliation>>

<<Struc: 100.32 - 100.66 Moderate Fault>>

<<Struc: 107.66 - 107.67 dominant foliation>>

<<Struc: 111.6 - 111.61 dominant foliation>>

111.67 114.00 RHYva Coarse grained to ash tuff

111.67 - 114: Very fine grain, light brown, homogeneous matrix. Gradual upper contact (few lapilli), sharpe lower contact. Dark band fading out.

<<Alt: 111.67 - 114 Moderate Calcite>> Associated with fin e grain volcaniclastic unit.

114.00 116.31 RHY undifferentiated rhyolite

114 - 116.31: Elongated PO in foliation few PY. Possibly coherent rhyolite, wavy QZ bands over 50 cm.

<<Alt: 114 - 170.2 Weak Calcite>>

<<Struc: 115.8 - 115.81 dominant foliation>>

116.31 119.10 RHYvl Lapilli tuff

116.31 - 119.1: Possibly lapilli (dark/elongated locally banded).

119.10 120.20 RHYv Rhyolite volcaniclastic

119.1 - 120.2: Narrow interval marking the heterogeneity of the entire sequence.

<<Struc: 120.08 - 120.09 dominant foliation>>

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

120.20 129.60 RHYvl Lapilli tuff

120.2 - 129.6: Mid strain, elongated clasts, banded texture locally, CL alteration well marked.

<<Alt: 120.2 - 129.6 Weak-Moderate Chlorite>> Lapilli replacement.

<<Vein: 127.3 - 127.35 Tourmaline>> TML "spider web" style vein

<<Struc: 128.36 - 128.37 Shear>> Also DFOL.

129.60 132.26 RHY undifferentiated rhyolite

129.6 - 132.26: MU altered, texture obscured. Partially faulted, 3 to 5 cm QZ veins.

<<Alt: 131.2 - 132.26 Moderate Muscovite>>

<<Struc: 129.6 - 132.26 Moderate Shear>>

132.26 134.42 FLZ Fault Zone

132.26 - 134.42: Dominantly RHY/QZ clasts. PY as vein relic (or clasts). Gouge at upper contact.

<<Min: 132.6 - 157.2 2% Min: Pyrite>> Clasts or disaggregated veins.

<<Min: 132.6 - 157.2 0.1% Min: Pyrrhotite>>

<<Alt: 132.26 - 170.2 Weak Muscovite>>

<<Struc: 132.26 - 134.42 Moderate-Strong Fault>>

134.42 136.91 RHYv Rhyolite volcaniclastic

134.42 - 136.91: Silicic bands. Weakly to moderately sheared, texture obscured.

<<Struc: 134.52 - 136.91 Moderate Shear>>

<<Struc: 135.15 - 135.16 Shear>> Also DFOL.

136.91 137.50 MDSc Carbonaceous dominant mudstone

136.91 - 137.5: Strongly graphitic. Faulted at lower contact., foliated (white bands in foliation, non calcareous-Fspar?).
Foliation differs from RHY surrounding, upper contact suggests allochthone material.

137.50 144.02 FLZ Fault Zone

137.5 - 144.02: Sheared and brecciated, locally CL alteration picking up.

<<Alt: 141.6 - 145 Weak-Moderate Chlorite>> Associated with fault zone.

<<Struc: 137.5 - 144.02 Moderate-Strong Fault>>

144.02 146.02 RHY undifferentiated rhyolite

144.02 - 146.02: Sheared, locally silicic bands, quick changes in foliation.

From (m)	To (m)	Rocktype & Description	From (m)	To (m)	Width	Sample	Au ppm	Ag ppm	Cu %	Pb %	Zn %

<<Vein: 145.7 - 145.9 Quartz-Tourmaline>> QZ/TML remnant vein in sheared zone.

<<Struc: 144.02 - 146.02 Moderate Shear>>

<<Struc: 144.25 - 144.26 dominant foliation>> Preserved RHY in sheared zone.

<<Struc: 145.55 - 145.56 Vein>> Remnant QZ/TML/PY vein in sheared zone.

146.02 147.30 RHYc Rhyolite coherant volcanics

146.02 - 147.3: Aphanitic (RHYi) to silica banded on the edge.

147.30 151.30 FLZ Fault Zone

147.3 - 151.3: Brecciated, containing dark (possibly graphitic bands). Angular and sub rounded clasts (mostly rhyolite/quartz).

<<Struc: 147.3 - 151.3 Moderate-Strong Fault>>

<<Struc: 149 - 149.01 Shear>> Main shearing orientation, in gouge.

151.30 157.20 RHY undifferentiated rhyolite

151.3 - 157.2: Sheared rhyolite, texture obscured.

<<Struc: 151.3 - 157.2 Weak-Moderate Shear>>

157.20 170.20 RHY undifferentiated rhyolite

157.2 - 170.2: Possibly sedimentary. Conglomeritic texture from 160m to 161.50m. Heterogeneous suggesting mixing with sediment, epiclastic formation. E.O.H.

<<Min: 157.2 - 170.2 1% Min: Pyrite>> And patchy.

<<Min: 157.2 - 170.2 0.5% Min: Pyrrhotite>> Rare patches.

<<Struc: 162.26 - 162.27 dominant foliation>>

<<Struc: 167.5 - 167.51 dominant foliation>>

End of Hole @ 170.2