

## GeoSpark Logger ~ Drill Log

**Project:** KZK **Hole Number:** K16-379

|                  |                |                   |     |                    |                   |                        |               |
|------------------|----------------|-------------------|-----|--------------------|-------------------|------------------------|---------------|
| Prospect:        | Infrastructure | Hole Type:        | DD  | Survey Type:       | RTK DGPS          | Logged By:             | Alicia Vainio |
| Grid:            | NAD83_Z9       | Hole Diameter:    | 96  | Survey By:         | Challenger_Survey | Date Logging Start:    | 7/8/2016      |
| UTM Easting      | 414964.243     | Core Size:        | HQ3 | Azimuth:           | 360               | Date Logging Complete: | 7/9/2016      |
| UTM Northing:    | 6814627.138    | Casing Pulled?:   | Yes | Dip:               | -90               | Drill Company:         | Hytech        |
| UTM Elev. (m):   | 1404.927       | Casing Depth (m): | 6   | Length (m):        | 39.7              | Drill Rig:             | Tech 5000     |
| Local Easting:   |                | Stored?:          | Yes | Claims Title       |                   | Drill Started:         | 7/2/2016      |
| Local Northing:  |                | Cemented?:        | VWP | Core Storage Loc.: | KZK Camp          | Drill Completed:       | 7/3/2016      |
| Local Elev. (m): |                |                   |     | Hole Completed?:   | Completed         | Purpose:               | Geotech       |
| Comments:        |                |                   |     |                    |                   | Parent Hole:           |               |

The purpose of drillhole K16-379 was to collect geotechnical and hydrological information for a potential site of infrastructure. The drillhole collared into bedrock at 5.67 m; the bedrock consisted of alternating coherent and volcanoclastic rhyolite, with a small mafic dyke (32.17-32.43m). Weak to moderate biotite and chlorite alteration was prominent between 11.53-23.06 m, with chlorite alteration ending at 2.0m. Wisps of sulphosalts (?) were encountered within the undifferentiated-altered rhyolite (7.71-8.25 m).

### Downhole Surveys:

| Depth (m) | Dip | Measured Azimuth | Correction Factor | Corrected Azimuth | Survey Type | Survey By      | Survey Date | Mag Field | Accept Values?                      | Comments |
|-----------|-----|------------------|-------------------|-------------------|-------------|----------------|-------------|-----------|-------------------------------------|----------|
| 0         | -90 | 360              | 0                 | 360               | PLND-LiDAR  | Knight Piésold | 7/2/2016    |           | <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>5.67</b> | <b>OVBN Overburden</b>  |          |        |       |           |        |        |       |       |      |
| <b>5.67</b>   | <b>7.71</b> | <b>RHYcw Curdy textured-flow banded (flows, subvolcanics)</b> |          |        |       |           |        |        |       |       |      |
| 5.67 - 7.71: Silicic banding; well-developed crenulation cleavage.  |             |   |          |        |       |           |        |        |       |       |      |
| <<Min: 5.67 - 7.71 0.1% Min: Pyrite>>   |             |   |          |        |       |           |        |        |       |       |      |
| <<Alt: 5.67 - 7.71 Moderate Muscovite>>   |             |   |          |        |       |           |        |        |       |       |      |
| <<Alt: 5.67 - 7.71 Trace Calcite>>  |             |   |          |        |       |           |        |        |       |       |      |
| <<Struc: 7.51 - 7.52 Crenulation cleavage>>   |             |   |          |        |       |           |        |        |       |       |      |
| <b>7.71</b>   | <b>8.25</b> | <b>RHYv Rhyolite volcanoclastic</b>                           | 7.71     | 8.25   | 0.54  | D00004323 | -0.005 | 0.9    | -0.01 | -0.01 | 0.03 |
| 7.71 - 8.25: Volcanoclastic RHY with strong sericite alteration, and wisps of sulphosalts. Banding has been contorted, and the original texture is obscure. |             |   |          |        |       |           |        |        |       |       |      |
| <<Min: 7.71 - 8.25 0.1% Min: Sulphosalts>> Wisps of SS within MU and Bi altered RHYv.   |             |   |          |        |       |           |        |        |       |       |      |
| <<Min: 7.71 - 8.25 1% Min: Pyrite>> Wispy-disseminated PY.  |             |   |          |        |       |           |        |        |       |       |      |
| <<Min: 7.71 - 8.25 0.5% Min: Pyrrhotite>>   |             |   |          |        |       |           |        |        |       |       |      |

| From (m)   | To (m) | Rocktype & Description | From (m) | To (m) | Width | Sample | Au ppm | Ag ppm | Cu % | Pb % | Zn % |
|--|--------|------------------------|----------|--------|-------|--------|--------|--------|------|------|------|
| <p>&lt;&lt;Alt: 7.71 - 8.25 Weak Calcite&gt;&gt;<br/>           &lt;&lt;Alt: 7.71 - 8.25 Weak Biotite&gt;&gt; Disseminated-wispy Bi.<br/>           &lt;&lt;Vein: 7.71 - 7.75 Quartz-Carbonate 65 deg. &gt;&gt; Quartz vein with carbonate-rich blebs.</p> <p><b>8.25 23.06 RHYvl Lapilli tuff</b></p> <p>8.25 - 23.06: Localized silicic bands around 12.8m. Mod-strong chlorite and biotite alteration begins at approx 11.6m, and continues to the end of the unit.</p> <p>&lt;&lt;Min: 8.25 - 11.53 1% Min: Pyrrhotite&gt;&gt; Elongated blebs of PO, disseminated along foliation.<br/>           &lt;&lt;Min: 8.25 - 23.06 0.1% Min: Pyrite&gt;&gt;<br/>           &lt;&lt;Min: 11.53 - 23.06 0.1% Min: Pyrrhotite&gt;&gt;<br/>           &lt;&lt;Alt: 8.25 - 11.53 Moderate-Strong Muscovite&gt;&gt;<br/>           &lt;&lt;Alt: 8.25 - 11.53 Weak Calcite&gt;&gt;<br/>           &lt;&lt;Alt: 11.53 - 20 Weak-Moderate Muscovite&gt;&gt; Weaker MU alteration within CL-BI altered zone.<br/>           &lt;&lt;Alt: 11.53 - 20 Weak-Moderate Chlorite&gt;&gt; Disseminated blebs-clots.<br/>           &lt;&lt;Alt: 11.53 - 23.06 Weak-Moderate Biotite&gt;&gt; Disseminated-banded Bi.<br/>           &lt;&lt;Alt: 11.53 - 32.17 Weak-Moderate Calcite&gt;&gt; Disseminated-banded CA.<br/>           &lt;&lt;Alt: 20 - 32.17 Moderate Muscovite&gt;&gt;<br/>           &lt;&lt;Vein: 16.17 - 16.25 Quartz-Tourmaline 45 deg. &gt;&gt; Sub-angular quartz clasts brecciated by tourmaline; the vein is weakly-oxidized.<br/>           &lt;&lt;Vein: 21.61 - 23.21 Quartz-Carbonate&gt;&gt; Deformed quartz-carbonate veins within RHY.<br/>           &lt;&lt;Struc: 9.03 - 9.04 dominant foliation&gt;&gt;<br/>           &lt;&lt;Struc: 11.77 - 11.78 dominant foliation&gt;&gt;<br/>           &lt;&lt;Struc: 13.87 - 13.88 dominant foliation&gt;&gt;<br/>           &lt;&lt;Struc: 16.68 - 16.69 dominant foliation&gt;&gt;<br/>           &lt;&lt;Struc: 19.33 - 19.34 dominant foliation&gt;&gt;<br/>           &lt;&lt;Struc: 21.4 - 21.7 Weak Fault&gt;&gt; Crushed-healed FLT zone with subrounded, brecciated clasts. Cm-size band of gouge at the start of the FLT.<br/>           &lt;&lt;Struc: 22.7 - 22.71 dominant foliation&gt;&gt;</p> <p><b>23.06 27.92 RHYcf Feldspar &amp; feldspar quartz porphyry</b></p> <p>23.06 - 27.92: Dismembered RHYcf with cm-size, subrounded feldspar. QTZ-PY bands are irregular and deformed.</p> <p>&lt;&lt;Min: 23.06 - 29.48 3% Min: Pyrite&gt;&gt; Disseminated PY localized within deformed quartz bands.<br/>           &lt;&lt;Min: 23.06 - 29.48 1% Min: Pyrrhotite&gt;&gt; Disseminated PO localized within deformed quartz bands.<br/>           &lt;&lt;Vein: 25.77 - 25.8 Quartz-Carbonate&gt;&gt; Quartz vein with CA blebs.</p> |        |                        |          |        |       |        |        |        |      |      |      |

| From (m)   | To (m) | Rocktype & Description | From (m) | To (m) | Width | Sample | Au ppm | Ag ppm | Cu % | Pb % | Zn % |
|--|--------|------------------------|----------|--------|-------|--------|--------|--------|------|------|------|
| <p>&lt;&lt;Struc: 25.15 - 25.16 dominant foliation&gt;&gt;</p> <p><b>27.92 32.17 RHYvx Quartz and/or feldspar crystal tuff</b></p> <p>27.92 - 32.17: QE and elongated-LPL within fine-grained tuff.</p> <p>&lt;&lt;Min: 29.48 - 32.17 0.5% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Min: 29.48 - 32.17 0.1% Min: Pyrrhotite&gt;&gt;</p> <p>&lt;&lt;Vein: 29.48 - 29.6 Quartz-Carbonate&gt;&gt; Deformed quartz veins with CA blebs.</p> <p>&lt;&lt;Vein: 32 - 32.02 Quartz-Carbonate 45 deg. &gt;&gt; Quartz vein with CA blebs.</p> <p>&lt;&lt;Struc: 28.47 - 28.48 dominant foliation&gt;&gt;</p> <p>&lt;&lt;Struc: 30.58 - 30.59 dominant foliation&gt;&gt;</p> <p>&lt;&lt;Struc: 31.04 - 31.05 dominant foliation&gt;&gt;</p> <p><b>32.17 32.43 MAFi Mafic Intrusions (primarily footwall mafic intrusion)</b></p> <p>32.17 - 32.43: Fine-grained, carbonate-rich MAFi dyke with well-developed foliation and crenulation cleavage. Sharp upper and lower CNT.</p> <p>&lt;&lt;Min: 32.17 - 32.43 1% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Min: 32.17 - 32.43 1% Min: Pyrrhotite&gt;&gt;</p> <p>&lt;&lt;Alt: 32.17 - 32.43 Moderate-Strong Calcite&gt;&gt; Carbonate-rich MAFi.</p> <p>&lt;&lt;Struc: 32.25 - 32.26 Crenulation cleavage&gt;&gt;</p> <p>&lt;&lt;Struc: 32.37 - 32.38 dominant foliation&gt;&gt;</p> <p><b>32.43 39.70 RHYvi Lapilli tuff</b></p> <p>32.43 - 39.7: Localized zones of quartz eyes, with random-singular QE throughout the unit.</p> <p>&lt;&lt;Min: 32.43 - 34.39 0.1% Min: Pyrite&gt;&gt;</p> <p>&lt;&lt;Min: 34.39 - 39.7 3% Min: Pyrite&gt;&gt; Disseminated-bands of PY +/- PO.</p> <p>&lt;&lt;Min: 34.39 - 39.7 0.1% Min: Pyrrhotite&gt;&gt;</p> <p>&lt;&lt;Alt: 32.43 - 39.7 Weak Muscovite&gt;&gt; Weak MU alteration within RHY; alteration visible on fractured surfaces.</p> <p>&lt;&lt;Alt: 32.43 - 39.7 Weak-Moderate Calcite&gt;&gt; Disseminated blebs-bands of CA.</p> <p>&lt;&lt;Struc: 32.43 - 32.44 Contact&gt;&gt; Sharp lower CNT.</p> <p>&lt;&lt;Struc: 35.31 - 35.32 dominant foliation&gt;&gt;</p> <p>&lt;&lt;Struc: 38.65 - 38.66 dominant foliation&gt;&gt;</p> <p><b>End of Hole @ 39.7</b></p> |        |                        |          |        |       |        |        |        |      |      |      |