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| **Logged by:** | | | C. Couëslan | | | | | **Date logged:** 2019/08/29 |
| **Location:** | Huzyk Creek | | | | | | | **Continuous core** |
| **UTM zone** | | 14 | | **Easting:** | 479752 | **Northing:** | 6014982 | **Core size:** NQ |
| **DDH#** | | HZ-19-1 | | **Azimuth:** | 322° | **Plunge:** | 55° | **Unit:** meters |
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| **From:** | **To:** | | **Description:** | | | | | |
| **70.8** | **71.5** | | **Regolith** | | | | | |
|  |  | | Appears to be derived from hornblende gneiss / amphibolite. | | | | | |
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| **71.5** | **82.75** | | **Plagioclase Amphibolite–Hornblende Gneiss / Calcsilicate / Pegmatite, pink** | | | | | |
|  |  | | The interval consists of plagioclase amphibolite grading into hornblende gneiss with diffuse zones of calcsilicate <25 cm thick, and intruded by pegmatite dikes <1.6 m wide. Local zones of regolith are <30 cm wide.  The plagioclase amphibolite is dark greenish grey, medium grained, foliated, and moderately magnetic.  Composition: magnetite, tr–1%; hornblende, 60–70%; quartz and plagioclase.  Plagioclase commonly occurs as porphyroblasts/aggregates <8 mm, which are likely pseudomorphous after garnet, but could be pseudomorphous after plagioclase phenocrysts or possibly amygdales. The amphibolite locally grades into bands of hornblende gneiss <30 cm thick.  The hornblende gneiss is grey, medium grained, foliated, and non-magnetic.  Composition: titanite, tr–1%; hornblende 30–40%; quartz and feldspar.  No plagioclase porphyroblasts/aggregates are present, but the gneiss is crudely layered on a scale <7 mm.  The calcsilicate is green, medium to coarse grained, foliated, and strongly magnetic in places.  Composition: chalcopyrite, tr.; titanite, 2–3%; pyrrhotite, 3–5%; green amphibole, 20–40%; quartz and feldspar.  Contacts between the calcsilicate and amphibolite–hornblende gneiss are diffuse over 1–5 cm and typically conformable; however, the calcsilicate locally crosscuts the metamorphic fabric and compositional layering.  Photos: 76.4 m; Plagioclase Amphibolite / Calcsilicate / Regolith; [6559](HZ-19-1_core_photos/IMG_6559.jpg), [6560](HZ-19-1_core_photos/IMG_6560.jpg).  81.55 m; Calcsilicate / Pegmatite / Plagioclase Amphibolite; [6561](HZ-19-1_core_photos/IMG_6561.jpg), [6563](HZ-19-1_core_photos/IMG_6563.jpg).  Samples: 108-19-HZ20; 80.3–80.6 m; Plagioclase Amphibolite  Interpretation: possibly metabasalt with zones of calcsilicate alteration. | | | | | |

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| **82.75** | **92.8** | **Pegmatite / Granite / Calcsilicate / Plagioclase Amphibolite** | |
|  |  | The interval consists of pegmatite with subintervals of granite <2.7 m thick, calcsilicate <50 cm thick, and plagioclase amphibolite <40 cm thick.  The pegmatite is pink to white, coarse grained, foliated, and non-magnetic.  The composition varies from 3–5% biotite, quartz and feldspar; to 1–2% sulphide, 2–3% titanite, 3–5% hornblende, quartz and feldspar.  The granite is pink, medium to coarse grained, foliated, and non-magnetic.  Composition: sulphide, tr.; biotite, 2–3%; quartz, 20–30%; K-feldspar, 20–30%; and plagioclase.  The granite is even textured and locally potassic ±Fe altered.  The calcsilicate is highly variable, from similar to that previously described to a coarse-grained rock containing 2–3% chalcopyrite, 3–5% titanite, 20–30% green amphibole, quartz and feldspar.  The plagioclase amphibolite is similar to previous.  Interpretation: zone of multiple intrusions into the plagioclase amphibolite–hornblende gneiss. The calcsilicate is likely alteration of the mafic rocks later modified by the intrusions. Alternatively, the alteration could be relatively late, overprinting the intrusions; however, the alteration would have to pre-date, or be synchronous with amphibolite-facies metamorphism. | |
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| **92.8** | **116** | **Plagioclase Amphibolite / Calcsilicate / Pegmatite, pink / Hornblende Gneiss** | |
|  |  | The interval consists of plagioclase amphibolite–hornblende gneiss with diffuse zones of calcsilicate <80 cm thick, and pegmatite dikes <1.35 m thick.  The plagioclase amphibolite–hornblende gneiss is similar to previous.  The calcsilicate is similar to previous with a wide compositional range. The calcsilicate is most commonly composed of tr–1% magnetite, tr–2% titanite, 3–5% hornblende, 40–60% diopside, quartz and feldspar. Sparse garnet is observed with plagioclase coronas. The calcsilicate locally contains up to 15% orthopyroxene. Amphibolite-calcsilicate contacts are diffuse over 1–10 cm.  Photos: 106.8 m; Plagioclase Amphibolite / Calcsilicate; [6564](HZ-19-1_core_photos/IMG_6564.jpg), [6565](HZ-19-1_core_photos/IMG_6565.jpg).  Sample: 108-19-HZ21; 112.6–112.9 m; Calcsilicate grading into plagioclase amphibolite. | |

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| **116** | **169.8** | **Multicomponent Gneiss** |  |
|  |  | This interval consists of multiple intrusive phases with subintervals of plagioclase amphibolite–hornblende gneiss <35 cm, and calcsilicate <90 cm. The intrusive phases consist of medium-grained granite dikes <2 m, pegmatite dikes <2 m, gneissic biotite granodiorite <5.85 m, and tonalite dikes <55 cm.  The gneissic biotite granodiorite is grey to pinkish grey, coarse grained, strongly foliated, and non-magnetic.  Composition: sulphide, tr.; green amphibole, 2–3%; biotite, 3–5%; K-feldspar, 10–12%; quartz and plagioclase.  The pegmatite is generally biotite bearing, but some zones contain tr–1% sulphide, 2–3% titanite, and 3–5% hornblende. These zones could represent contamination from calcsilicate wall-rock; however, they bear some resemblance to intrusive phases associated with the Burntwood and Brezden intrusions of the Kisseynew domain.  The tonalite is grey to white, coarse grained, foliated, and non-magnetic.  Composition: titanite, tr–1%; biotite, 3–5%; hornblende, 5–7%; quartz and feldspar.  The tonalite is relatively homogeneous.  One 30 cm subinterval of calcsilicate is sulphide rich and contains 1–2% chalcopyrite, 10–20% titanite (andradite?), 20–30% pyrrhotite, 30–40% epidote, quartz, carbonate, and feldspar.  Photos: 123.3 m; Pegmatite / Biotite Granodiorite, gneissic / Tonalite; [6566](HZ-19-1_core_photos/IMG_6566.jpg), [6567](HZ-19-1_core_photos/IMG_6567.jpg)  167.7 m; Calcsilicate, sulphide-rich / Tonalite / Calcsilicate; [6568](HZ-19-1_core_photos/IMG_6568.jpg), [6569](HZ-19-1_core_photos/IMG_6569.jpg)  Sample: 108-19-HZ22; 155.5–155.85 m; Pegmatite, contaminated (metasomatized granite) | |
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| **169.8** | **179.0** | **Calcsilicate / Plagioclase Amphibolite / Tonalite / Pegmatite / Granite** | |
|  |  | The interval consists of calcsilicate with bands of plagioclase amphibolite <35 cm, intruded by tonalite dikes <60 cm, pegmatite dikes <10 cm, and medium-grained granite dikes <20 cm.  The units are as previously described.  Sample: 108-19-HZ01; 171.1–171.37 m; Hornblende Gneiss | |
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| **179.0** | **191.05** | **Orthopyroxene Wacke / Calcsilicate / Plagioclase Amphibolite / Pegmatite / Granite** | |
|  |  | The interval consists of orthopyroxene wacke interlayered with calcsilicate <2.6 m, and plagioclase amphibolite <10 cm, and intruded by pegmatite dikes <1 m and medium-grained granite dikes <10 cm.  The plagioclase amphibolite is always gradational into calcsilicate and does not occur as discrete layers in the wacke.  The orthopyroxene wacke is grey, medium grained, foliated, and non-magnetic.  Composition: biotite, 10–15%; orthopyroxene, 10–15%; quartz and feldspar. | |

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| **191.05** | **196.6** | **Garnet Wacke / Pegmatite / Granite** |
|  |  | The interval consists of garnet wacke intruded by pegmatite dikes <35 cm thick and medium-grained granite dikes <50 cm thick.  The garnet wacke is grey, fine to medium grained, foliated, and non-magnetic.  Composition: graphite, tr.; sulphide, tr–1%; orthopyroxene, 3–5%; garnet, 5–7%; biotite, 10–20%; quartz and feldspar.  The wacke is compositionally layered with garnet and orthopyroxene typically occurring along discrete alternating layers.  Photos: 191.4 m; Garnet Wacke; [6598](HZ-19-1_core_photos/IMG_6598.jpg), [6599](HZ-19-1_core_photos/IMG_6599.jpg).  Sample: 108-19-HZ02; 193.62–193.94 m; Garnet Wacke |
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| **196.6** | **220.4** | **Orthopyroxene Wacke–Mudstone / Pegmatite / Granite / Tonalite** |
|  |  | The interval consists of orthopyroxene wacke locally grading into orthopyroxene mudstone layers <1.1 m thick. The metasediments are intruded by pegmatite dikes <45 cm thick, medium-grained granite dikes <50 cm thick, and tonalite dikes <1.1 m thick.  The orthopyroxene wacke is similar to previous, but locally contains coarse-grained orthopyroxene poikiloblasts <1 cm. The wacke typically contains 1–2% sulphide and locally grades into mudstone containing trace amounts of graphite, 2–3% sulphide, 10–20% orthopyroxene, 20–30% biotite, quartz and feldspar.  Photos: 208.6 m; Orthopyroxene Wacke / Orthopyroxene Mudstone; [6600](HZ-19-1_core_photos/IMG_6600.jpg), [6602](HZ-19-1_core_photos/IMG_6602.jpg).  216.9 m; Orthopyroxene Wacke / Tonalite, sheared; [6570](HZ-19-1_core_photos/IMG_6570.jpg), [6571](HZ-19-1_core_photos/IMG_6571.jpg).  Sample: 108-19-HZ03; 200.3–200.63 m; Tonalite?  108-19-HZ04; 215.4–215.65 m; Orthopyroxene Wacke |
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| **220.4** | **230.9** | **Calcsilicate / Hornblende Gneiss / Pegmatite / Plagioclase Amphibolite** |
|  |  | The interval consists of calcsilicate interbanded with plagioclase amphibolite on a scale <20 cm, with local layers of hornblende gneiss <50 cm, and intruded by pegmatite dikes <2.2 m.  The hornblende gneiss grades into calcsilicate. The plagioclase amphibolite locally contains garnet <7 mm with plagioclase coronas, in many places the garnet appears to be completely consumed resulting in pseudomorphous plagioclase aggregates after garnet.  Photos: 221.65 m; Calcsilicate–Plagioclase Amphibolite / Pegmatite; [6572](HZ-19-1_core_photos/IMG_6572.jpg), [6573](HZ-19-1_core_photos/IMG_6573.jpg).  Sample: 108-19-HZ05; 220.58–220.8 m; Plagioclase Amphibolite–Calcsilicate, interbanded  108-19-HZ06; 230.0–230.35 m; Calcsilicate |
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| **230.9** | **236.45** | **Orthopyroxene Wacke–Mudstone / Garnet Wacke–Mudstone / Pegmatite, pink** |
|  |  | The interval consists of orthopyroxene wacke–mudstone locally interbedded with garnet wacke–mudstone layers <15 cm thick, and grading into garnet wacke at the bottom 75 cm of the interval. The interval is intruded by pink pegmatite dikes <30 cm thick. |
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| **236.45** | **237.2** | **Garnet Wacke, graphitic** |
|  |  | Grey, medium-grained, foliated to strongly foliated, and non-magnetic rock.  Composition: garnet, 2–3%; graphite, 2–3%; sulphide, 2–3%; orthopyroxene, 3–5%; biotite, 10–20%; quartz and feldspar. |

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| **237.2** | **240.9** | **Garnet Wacke–Mudstone / Orthopyroxene Wacke–Mudstone / Pegmatite** |
|  |  | The interval consists of garnet wacke–mudstone grading into orthopyroxene wacke–mudstone downhole, and intruded by pegmatite dikes <95 cm thick.  Sample: 108-19-HZ07; 239.35–239.7 m; Garnet Mudstone |
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| **240.9** | **250.1** | **Granite, medium-grained / Pegmatite** |
|  |  | The interval consists of medium-grained granite with local pegmatitic segregations, intruded by pegmatite dikes.  The granite is pink, medium-grained, foliated, and non-magnetic.  Composition: biotite, 3–5%; quartz and feldspar.  The pegmatite contains up to 7% biotite.  Photos: 242.45 m; Granite, medium-grained / Pegmatite; [6574](HZ-19-1_core_photos/IMG_6574.jpg), [6575](HZ-19-1_core_photos/IMG_6575.jpg). |
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| **250.1** | **254.45** | **Calcsilicate / Hornblende Gneiss–Plagioclase Amphibolite / Pegmatite** |
|  |  | The interval consists of hornblende gneiss, locally grading into plagioclase amphibolite layers <15 cm thick, interbanded with calcsilicate at a scale <35 cm, and intruded by pegmatite dikes <75 cm thick. |
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| **254.45** | **262.9** | **Hornblende Wacke–Mudstone / Pegmatite** |
|  |  | The interval consists of hornblende wacke interlayered with mudstone horizons <30 cm thick, and intruded by pegmatite dikes <1 m thick.  The wacke is grey, medium to coarse grained, foliated, and non-magnetic.  Composition: hornblende, 3–5%; biotite, 7–10%; quartz and feldspar.  The mudstone is dark grey-brown, medium grained, strongly foliated, and non-magnetic.  Composition: hornblende 5–7%; biotite, 20–30%; quartz and feldspar.  Interpretation: The presence of hornblende could indicate a more calcareous bulk composition, or possibly the presence of greater volcanic detritus. Alternatively, the calcareous wacke–mudstone could represent sheared and altered hornblende gneiss. |
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| **262.9** | **268.85** | **Garnet Wacke–Mudstone / Pegmatite** |
|  |  | The interval consists of garnet wacke with local interbeds of garnet mudstone <30 cm thick, intruded by pegmatite dikes (possibly leucosome) <70 cm thick.  The garnet wacke is grey, medium to coarse grained, foliated, and non-magnetic.  Composition: orthopyroxene, 3–5%; garnet, 3–5%; biotite, 10–20%; quartz and feldspar.  The garnet mudstone is grey, medium grained, foliated to strongly foliated, and non-magnetic.  Composition: orthopyroxene, 3–5%; garnet, 5–7%; biotite, 20–30%; quartz and feldspar.  Photos: 264.3 m; Garnet Wacke / Garnet Mudstone; [6576](HZ-19-1_core_photos/IMG_6576.jpg), [6577](HZ-19-1_core_photos/IMG_6577.jpg).  268.5 m; Garnet Wacke / Orthopyroxene Wacke; [6578](HZ-19-1_core_photos/IMG_6578.jpg), [6580](HZ-19-1_core_photos/IMG_6580.jpg).  Sample: 108-19-HZ08; 267.84–268.08 m; Garnet Wacke–Mudstone |

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| **268.85** | **300.5** | **Orthopyroxene Wacke–Mudstone / Pegmatite / Tonalite** |
|  |  | The interval consists of orthopyroxene wacke with beds of orthopyroxene mudstone <1 m thick, intruded by pegmatite dikes <2.2 m thick, and tonalite dikes <1.5 m thick.  The orthopyroxene wacke contains local horizons <20 cm thick of garnet wacke with 3–5% garnet. The orthopyroxene mudstone contains local interbeds of garnet mudstone <5 cm thick.  Photos: 272.75m; Orthopyroxene Wacke / Orthopyroxene Mudstone–Garnet Mudstone; [6581](HZ-19-1_core_photos/IMG_6581.jpg), [6585](HZ-19-1_core_photos/IMG_6585.jpg).  276.70 m; Orthopyroxene Mudstone–Garnet Mudstone / Pegmatite; [6582](HZ-19-1_core_photos/IMG_6582.jpg), [6583](HZ-19-1_core_photos/IMG_6583.jpg).  Sample: 108-19-HZ09; 272.43–272.64 m; Orthopyroxene Wacke |
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| **300.5** | **314.8** | **Graphite Mudstone / Wacke, sulphidic / Pegmatite** |
|  |  | The interval is composed of graphitic mudstone grading into sulphidic wacke over the lower 2 m, and intruded by pegmatite dikes <40 cm thick.  The graphitic mudstone is dark grey, coarse grained, strongly foliated, and magnetic.  Composition: chalcopyrite, tr.; molybdenite, tr–2%; sphalerite, 2–3%; pyrrhotite, 7–10%; biotite, 10–30%; graphite, 20–30%; quartz and feldspar.  The sulphidic wacke is grey, medium grained, foliated, and magnetic in places.  Composition: sulphide, 2–3%; orthopyroxene, 2–3%; biotite, 10–20%; quartz and feldspar.  Photos: 303.2 m; Mudstone, graphitic; [6588](HZ-19-1_core_photos/IMG_6588.jpg), [6589](HZ-19-1_core_photos/IMG_6589.jpg).  311..1 m; Mudstone, graphitic / Wacke, sulphidic; [6586](HZ-19-1_core_photos/IMG_6586.jpg), [6587](HZ-19-1_core_photos/IMG_6587.jpg).  Sample: 108-19-HZ10; 305–305.2 m; Mudstone, graphitic |
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| **314.8** | **317.3** | **Orthopyroxene Wacke / Garnet Mudstone** |
|  |  | The interval consists of orthopyroxene wacke with local interbeds of garnet mudstone <15 cm thick.  Sample: 108-19-HZ11; 317–317.23 m; Orthopyroxene Wacke |
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| **317.3** | **338.7** | **Orthopyroxene Wacke / Pegmatite / Granite, medium-grained** |
|  |  | The interval consists of orthopyroxene wacke intruded by pegmatite dikes <1.9 m wide and medium-grained granite dikes <30 cm wide.  The wacke contains layers <1.6 m thick with orthopyroxene poikiloblasts <1 cm.  Photos: 319.75 m; Orthopyroxene Wacke / Orthopyroxene Mudstone; [6590](HZ-19-1_core_photos/IMG_6590.jpg), [6596](HZ-19-1_core_photos/IMG_6596.jpg). |
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| **338.7** | **342.8** | **Granite–Granodiorite / Hornblende-Biotite Gneiss** |
|  |  | The granite–granodiorite is pink to white, medium grained, weakly foliated, and non-magnetic.  Composition: biotite, 3–5%; quartz and feldspar.  The granite–granodiorite contains a 35 cm interval of hornblende-biotite gneiss.  The gneiss is grey-green, coarse grained, weakly foliated, and non-magnetic.  Composition: hornblende, 7–10%; biotite, 10–20%; quartz and feldspar.  The protolith of the gneiss is uncertain. It could represent an intrusive rock, or a partially digested xenolith of country rock. |

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| **342.8** | **349.3** | **Orthopyroxene Wacke–Mudstone / Granite–Granodiorite / Pegmatite** |
|  |  | The interval consists of orthopyroxene wacke with local interbeds of orthopyroxene mudstone <20 cm thick, intruded by granite–granodiorite dikes <20 cm thick, and pegmatite dikes <20 cm thick. |
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| **349.3** | **365.8** | **Granite / Pegmatite / Wacke, graphitic** |
|  |  | The interval consists of medium-grained granite with sparse pegmatite dikes <40 cm thick, and a xenolith/subinterval of graphitic wacke from 350–351.05 m.  The granite is pink, medium to coarse grained, weakly foliated, and non-magnetic.  Composition: sulphide, tr.; biotite, 3–5%; quartz, 20–30%; K-feldspar, 20–30%; and plagioclase.  The graphitic wacke is grey, coarse grained, foliated, and weakly magnetic.  Composition: sulphide, 2–3%; graphite, 2–3%; biotite, 10–20%; quartz and feldspar.  Photos: 350.1 m; Granite / Wacke, graphitic; [6591](HZ-19-1_core_photos/IMG_6591.jpg), [6592](HZ-19-1_core_photos/IMG_6592.jpg)  354.2 m; Granite; [6593](HZ-19-1_core_photos/IMG_6593.jpg), [6594](HZ-19-1_core_photos/IMG_6594.jpg). |
| **365.8** | **371** | **Wacke, graphitic** |
|  | **EOH** | The graphitic wacke consists of orthopyroxene wacke and garnet wacke interbedded on a scale <1.4 m; however, the wackes consistently contain 1–2% sulphide and 2–3% graphite, and locally contain 2–3% sulphide and 3–5% graphite. Sillimanite knots occur along sparse layers <5 cm thick, locally making up to 30% of the rock.  Photos: 367.1 m; Wacke, graphitic, sillimanite-bearing; [6603](HZ-19-1_core_photos/IMG_6603.jpg), [6604](HZ-19-1_core_photos/IMG_6604.jpg)  367.3 m; Wacke, graphitic; [6595](HZ-19-1_core_photos/IMG_6595.jpg), [6597](HZ-19-1_core_photos/IMG_6597.jpg) |
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| **Interpretation of the drillcore:** | | Possible metabasalt with calcsilicate alteration from 70.8–179 m, followed by a thick succession of wacke-mudstone, including a graphite-rich horizon from 300.5–314.8 m, and a graphite-bearing horizon from 365.8–371 m (EOH). The sequence is intruded throughout by numerous granitoid phases. |