

APPENDIX A

Sixtymile Rock Library

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For Flow Metals

NASINA SUBTERRANE

Package of amphibolite grade Meta-sediments and intrusives from meso-paleozoic (Wheeler et al. 1988). Part of Yukon Tanana Terrane

KLONDIKE SCHIST

Quartz-Muscovite schist with large quartz boudins. Formed in Early Jurassic to Late Triassic (Metcalf et al. 1983). Part of Yukon Tanana Terrane

CARMACKS VOLCANICS

Mafic to intermediate Volcanics formed from yellowstone hotspot track in Late Cretaceous (Johnson et al. 1996)

Biotite Schist

- Brown weathering, blueish grey, fine grained, biotite schist
- Often Graphitic and silicified
- Minor retrograde chlorite alteration often present



S1 compositional banding, and silicification of Nasina biotite schist.

Foliated Intrusive

- Light to medium grey orthoclase phyric foliated felsic to intermediate intrusive.
- Varying amounts of shear accumulated within the unit. From lightly foliated to pseudomylonitic, augen texture.



Rotated porphyroclasts give "Augen" texture, with strong S2 foliation (Nasina Int.)

Chlorite-Hematite Schist

- Variant of the Nasina schist rarely encountered so far.
- Unclear of importance with respect to gold mineralization



Klondike Schist

Quartz Muscovite Schist

- Orange weathering, tan, quartz muscovite schist with large boudinaged clear Quartz veins.
- Sometimes Graphitic, rare sulphide stringers and disseminations in the quartz boudins.
- Boudinaged quartz can be very large, up to one meter thick in some locations (one example, near "Drive in theater").



S3 Crenulations

Carmack Volcanics

Extrusives

- Brown to grey, feldspar phyric andesites, found on east of claim closer to sixtymile river.
- Formed from yellowstone hotspot track 70 MYa



Not from Sixtymile, will replace image.

Sinter

- Sulphur Yellow weathering, dark blue-grey sinter with bladed quartz-lined vugs filled with Kaolinite.
- Up to 10% arsenic by weight in certain areas.
- Likely related to Carmacks volcanics.



Kaolinite
filled vug

Bladed quartz
lined vug

Structure Overview

S1

Small, centimeter scale quartz-rich and mica-rich layers that may represent a primary compositional feature of a sedimentary protolith.

S2

A well-defined foliation that is roughly parallel to S1 and gently dips about 20 degrees to the east and southeast. The foliation has a rotational aspect with localized asymmetrical porphyroclasts implying some shear rather than purely compressive burial metamorphism.

D3

A set of 1 cm to 5 cm scale crenulations with axial planes that cuts S2 at roughly 60 degrees. These

crenulations are rarely seen in core but were occasionally intercepted. One good exposure of the D3 crenulations can be seen on the west wall of the entrance to the adit at Miller creek. The crenulations don't seem to be associated with larger scale folding.

D4

is represented by a set of high angle brittle-ductile features that include tension gashes, drag folds and quartz veining that cut foliation at 45 degrees but strike almost parallel.

D5

A set of vertical brittle fractures and veins filled with quartz and arsenopyrite, associated with the dextral sixtymile strike slip fault and its offshots.



Good Example of D3 crenulations at old adit entrance

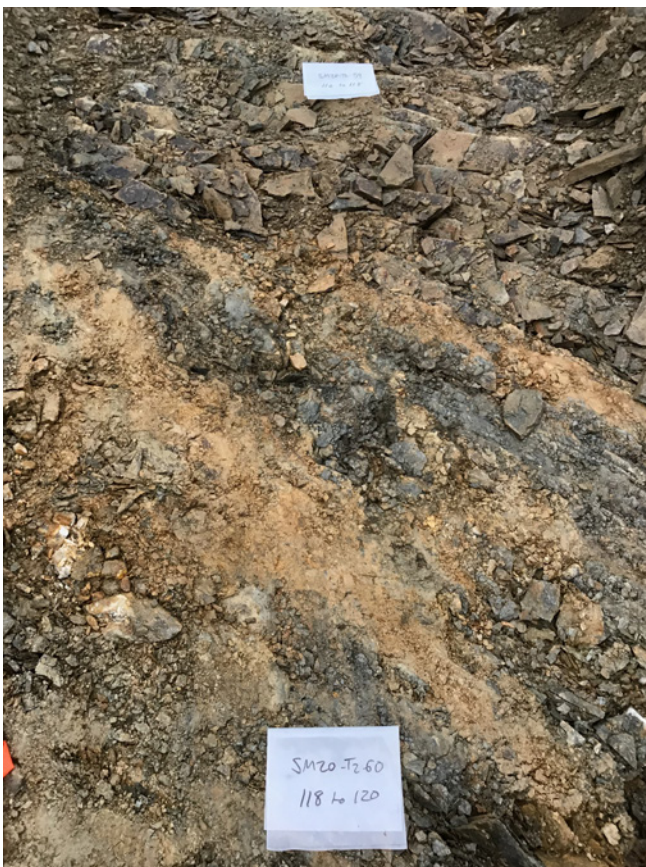
Faults

Thrust Faults

Shallowly dipping (20 to 30 degrees), West Northwest verging reverse faults. These are characterized by orange clay +/- graphite filled faults that have variable spacing. The faults have imbricated the Klondike and Nassina schists in some areas and are a likely candidate for the D4 deformation and veining.

Drag folds are present in the trenches, including parasitic structures within the larger folds, all with a West vergence.

Deflection of foliation can be a good indicator for proximity to these thrust faults. The orientations are similar so deflections are a subtle steepening or reversal of dip direction with little change in strike.



Orange Clay and graphite filled fault



Small parasitic kink fold, found in SM20-T1

Strike Slip Faults

East west trending strike slip faults are present in the upper glacier creek river valley and are responsible for some of the natural the straight ledges and shelves in the area. These often show dextral displacement in the order of a few centimeters to tens of meters. The orientation of East trending dextral strike slip faults coincide with expected extension in the orientation of the D5 Veining. These are more recent than the thrust faults since they crosscut and displace the orange gouge.



Veins

S2 Veining

boudinaged foliation parallel veins: can be very large in Klondike schist (up to 1m wide). Present in Nasina as centimeter scale compositional banding. Formed during or pre-foliation since they are partially to completely transposed.

Main points: Commonly clear/colourless quartz, sometimes with small amounts of sulphides (pyrite).



D4 Veining

Wavy-sided, milky quartz-feldspar veins with euhedral to subhedral arsenopyrite. Often has drag folds on margins and sulphide filled tension gashes within the quartz. These strike the same direction as the foliation but dip more steeply usually cutting the foliation by 45 degrees. These were likely formed during the thrust faulting event. Consistent gold mineralization around 1g/ton. This style of vein was present in 12g/ton interval at KEX zone.

Note folds around vein, sericitization and fractures within vein



Main points: same strike as foliation, Milky quartz, often weathers orange, will have tension gashes or tears within and around the vein. Should be associated with APY and other sulphides.



Intense D4 veining/ hydrothermal brecciation, with sericitization and sphalerite blebs

Kink folds and D4 veining present in 12g/t Au interval.



D5 Veining

Sharp-Sided Quartz +/- APY veins. Red weathering milky quartz veins with massive arsenopyrite and gold. These generally trend northwest, and are steeply dipping. They offset all other structures with dextral motion. These are interpreted as splays associated with the Dextral strike slip faults, and are the most recent structures observed. Sometimes veins are massive arsenopyrite with very little quartz.

VG in straight sided vein. note orange-red weathering along fractures and APY. Also note slight displacement of vein.



Straight sided vein cutting foliated Nasina rock at right angle



Red-brown weathering vertical vein associated with arsenic anomalies in the trench.



Alteration

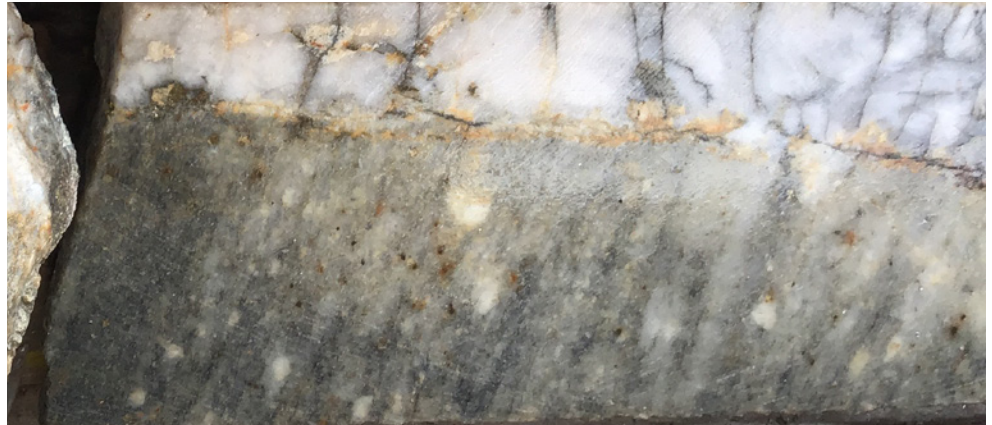
Silicification

Often present in the Nasina biotite schist, accompanied by a fine quartz stockwork. It is unclear if silicification is correlated to faulting since no clear relation was observed.



Sericitization

More commonly found in Nasina rocks near D4 veining and deformation. Forms a light coloured halo around the structure.



Graphite

Mostly found in Nasina biotite schist, and in thrust faults.



Chlorite

Generally minor retrograde metamorphism of mafic minerals in Nasina rocks. Sometimes found as gouge and chlorite/hematite schist.



References

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