Occurrence Details

Occurrence Number: 115A 054
Occurrence Name: Batt - Main Ridge
Occurrence Type: Hard-rock
Status: Prospect
Date printed: 8/5/2025 8:27:22 AM

General Information

Primary Commodities: cobalt, copper, gold, silver
Deposit Type(s): Unknown
Location(s): N - W
NTS Mapsheet(s): 115A03
Location Comments: Location from map on Strategic Metals website, June 2022
Hand Samples Available: No
Last Reviewed:

Capsule

Exploration History
The area immediately east of the Batt claims was initially staked in 1966 as the Mike claims by a partnership of companies that included Imperial Oil Ltd., Alcon Petroleum Ltd., and Canadian Industrial Oil and Gas Ltd. following copper showings identified during a regional reconnaissance program. Two grab samples from the reconnaissance program returned 5.9% copper, 0.40% antimony and 0.57 g/t gold and 1.72% copper, 0.65% cobalt and 2.27 g/t gold.
Work on the claims was performed the following summer and included geologic mapping and geochemical, mag and IP surveys and the drilling of five holes (totaling 128 feet, 39 m). The work identified several zones of quartz-carbonate veinlets and replacements with chalcopyrite, malachite, pyrite and minor pyrrhotite and erythrite mineralization. A higher-grade zone of massive chalcopyrite, 2 feet (0.6 m) thick, was also identified, hosted in an east-trending carbonate-quartz vein.
Prospecting by the partnership to the west, outside of the main claim group resulted in the discovery of a copper-cobalt showing on top of a northeast-trending ridge. At this showing a 1.8m, true width, northwest striking, east dipping, quartz-carbonate vein hosts chalcopyrite, malachite, azurite, erythrite and pyrite was identified.
This discovery led to the staking of an additional 16 claims (McGinn, 1967). No further work was performed by the partnership and no work on the newly staked claims was ever filed. The property was later allowed to lapse.
The area was re-staked in 1970 as the D claims by El Paso Mg and Mining CL, however no recorded work was completed. It was again re-staked in 1974 by W. Kuhn as the Jet claims, and once again in 1984 by Archer Cathro, as the Cypriot claims (Dodds and Campbell, 1992). There is no work reported from any of these years.
In 2008, the Yukon Geological Survey (YGS) conducted a regional bedrock mapping program that included the area of the Batt claims. Samples collected by YGS geologists from the northeast-trending ridge identified by previous workers in 1967 returned >1% copper, 1067.3 ppm cobalt and 0.1 g/t gold (Israel and Cobbett, 2008). A duplicate sample also collected by the YGS from the same area was analyzed in April 2018 and returned values of 1.16% cobalt and 0.66 g/t gold.
In December 2017 Strategic Metals staked the Batt claims, which included the main northeast trending ridge where strong copper, cobalt and gold mineralization was documented.
BlueBird Battery Metals Inc. optioned the property from Strategic Metals in April 2018 and a program of geologic mapping, soil sampling and prospecting was completed in August of 2018. This program identified several areas with elevated copper, gold and cobalt mineralization, including samples that returned up to 1.46% cobalt at the Main Ridge zone and up to 19.6% copper at the Boulder zone (Israel, 2018).
Regional Geology
The Batt property is underlain by a wedge of Paleozoic to Mesozoic rocks belonging to Wrangellia that is structurally bounded to the northeast by Jura-Cretaceous basinal overlap assemblages across the Denali fault and to the southwest by Paleozoic rocks of the Alexander terrane across the Duke River fault (Israel and Cobbett, 2008). Within the region surrounding the Batt property, Wrangellia is characterized by the Mississippian to Permian Skolai Group, unconformably overlain by Upper Triassic rocks of the Nikolai formation. These rocks are intruded by large Late Triassic plutons of the Mount Beaton suite.
The Skolai Group is divided into the Mississippian to Pennsylvanian Station Creek Formation and the mainly Permian Hasen Creek Formation. The Station Creek Formation is dominated by volcanic flows, tuffs and volcaniclastic rocks that show a transition from a non-arc to arc tectonic setting. The oldest rocks in the Station Creek Formation are characterized by thick accumulations of basalt flows, pillows, pillow breccia and hyaloclastite with minor interbeds of intermediate to felsic tuff. Locally red jasper/magnetite horizons ranging from one to tens of metres thick are found intercalated with the basalt. The overall thickness of the basalt package is not known; however, it appears to be at least several hundreds of metres. The basalt passes upwards into fine-grained crystal tuffs, ash tuffs and chert. Chert is laminated to massive, generally light to dark grey-banded with local black to dark brown massive beds. Crystal tuff is very fine-grained and laminated, commonly having phenocrysts of grey quartz or feldspar.
Locally the tuffs show minor cross-bedding, indicating a re-working. In places, a thick (10's of metres) succession of more felsic volcanic rocks are observed. These are dacitic to rhyodacitic in composition, often flow banded and occur near jasper horizons intercalated with the basalt. The tuff and chert package is variable in thickness, ranging from tens of metres up to 100 m.
Overlying these rocks is a very thick package of volcaniclastic and pyroclastic rocks. These rocks are characterized by re-worked fine to medium-grained crystal tuff, volcanic breccia and volcaniclastic sandstone. The breccia is dominated by pyroxene porphyritic volcanic clasts within a matrix of the same composition. Clast sizes range from < 1 cm up to 10 cm and are subangular to subrounded. Locally, basalt and basaltic-andesite flows are intercalated with the volcaniclastic rocks. Overall thickness of this unit is at least several hundreds of metres.
Chemically, the older basalt package reflects a back-arc basin to normal mid-ocean ridge tectonic setting while the overlying pyroclastic and volcaniclastic rocks represent a transition to a calcalkaline volcanic arc.
North and east of the Batt claims, the volcanic rocks are gradationally overlain by sedimentary rocks of the Hasen Creek Formation. The Hasen Creek Formation is dominated by light to dark grey and brown siltstone and mudstone with lesser amounts of fine to medium-grained sandstone. These form incomplete Bouma sequences and likely represent turbidites formed in a sub-marine fan. Near the top of the formation, thick (up to 50 m) beige to cream coloured limestone are found interbedded with calcareous siltstone and locally pebble to cobble conglomerate.
Unconformably overlying the Skolai Group is the Nikolai formation, consisting of a thick package of basalt. These basalts are dominantly subaerial, with only local subaqueous pillows found near the bottom of the succession. The basalts are considered the eruptive equivalents of the Kluane mafic-ultramafic suite that hosts numerous magmatic Ni-Cu-PGE deposits and showings. The Nikolai basalts can reportedly reach thickness of up to three kilometres in parts of Yukon and Alaska.
Late Triassic hornblende +/- biotite, quartz-diorite to diorite of the Mount Beaton suite intrude most of the rocks mentioned above. These rocks are generally massive and have a salt and pepper appearance. Locally the intrusive rocks are finer-grained with slight feldspar porphyritic textures. Dark grey, fine-grained gabbro is observed locally. The Mount Beaton suite was originally correlated with the similar appearing Early Cretaceous Kluane Ranges suite found elsewhere in Yukon; however, new U-Pb zircon ages indicate a 220 to 216 Ma age for the suite (Colpron et al., 2016). Several dykes of unknown age cross-cut older rocks. These are likely Tertiary in age and are intermediate to mafic in composition and feldspar porphyritic to fine-grained.
Rocks in the region surrounding the Batt claims have been deformed by multiple structural events of varying ages. Folding of the Paleozoic strata is observed elsewhere in Yukon, where flat lying Triassic basalt overlies deformed Permian sedimentary rocks. This episode of deformation is poorly characterized but may be related to Late Paleozoic interaction between the Alexander terrane and Wrangellia. Several thrust faults and regional folds in the area may be related to this event or could be related to Early Cretaceous folding and faulting defined in other parts of Wrangellia. The largest fault in the area, closest to the Batt claims, is the Duke River fault. This is a large fault that has a strike-length of at least 300 km and along most of it, separates rocks of the Alexander terrane from those of Wrangellia.
Property Geology
The Batt property showings are underlain by Mississippian to Pennsylvanian Station Creek Formation, and dykes and plugs of feldspar porphyry and fine-grained mafic dykes of probable Paleocene to Miocene age. The east side of the property is dominated by basalt and crystal tuffs and chert of the lower member of the formation, while the western portion is characterized by volcanic breccia and pyroclastic rocks of the upper Station Creek.
The lower Station Creek Formation is characterized by basalt flows that occur in sporadic outcrops near the main ridge, and as larger, much more extensive exposures in the southeast. The basalt is characterized by thick accumulations of pillows, massive flows, pillow breccia and hyaloclastite. The pillows and massive flows are often found together, weather a dark green/grey and commonly show some amount of chlorite, epidote and locally hematite alteration along fractures or interstitial between pillows and individual flows. Pillow breccia and hyaloclastite occur near the tops of flows, especially in the vicinity of red magnetite-rich jasper horizons.

Clasts within the breccia and hyaloclastite are angular to sub-angular fragments of basalt and basaltic glass, often with highly altered rims. Locally, these rocks are so strongly altered that it is difficult to make out the clasts and they appear more felsic in composition. In rare cases, sulphide (pyrite) clasts are found within the breccias.
The upper Station Creek Formation is characterized by thick accumulations of volcanic breccia intercalated with fine-grained massive to thinly bedded crystal-rich tuff. Breccias are composed of pyroxene phyric basalt clasts, ranging in size from less than one centimetre up to several tens of centimetres in diameter, within a fine-grained matrix of similar composition. The tuffs are generally grey to pastel purple and pink in colour and include very fine-grained ash layers intercalated with medium-grained, crystal-rich tuffs.
The upper and lower volcanic members are separated by chert, crystal tuff and laminated ash tuffs. These rocks are mainly found within the east-central portion of the Batt claims and extending to the northeast along the claim boundary. Thickness of this unit is variable; however, it makes an excellent marker horizon and shows the regional folding.
All units are deformed by northwest-trending, upright, open folds, with shallow to moderate plunges. The folds are large-scale features with little evidence for them at the outcrop scale, and they are defined mainly on the changes in bedding observed in the laminated tuffs and chert.
Several faults of varying size and orientation are found on the Batt property. The most common are northwest striking, northeast dipping and north to northeast striking with variable dips. Two main northwest striking faults are found along the Main Ridge and dip northeast between 80 and 50 degrees. Shear fabrics are developed in the hangingwall of these structures and locally show apparent thrust sense of movement. The zones range in thickness from one to several metres. In both cases, quartz-carbonate veins are developed within the fault zones. North to northeast striking faults are more common and are found throughout the property. They are characterized by highly brittle features such as brecciated wall-rock with quartz infilling and tightly spaced fracture cleavage. These faults range in thickness from less than one metre up to several metres across and have a range of dips between 40 and 90 degrees. In only one instance were any kinematics observed associated with these structures, where oblique, dextral indicators were noted. It is not known how much motion occurred across any of these faults. Quartz and quartz-carbonate veins were found within or near almost all north to northeast striking structures.
Several highly oxidized, brecciated zones are found throughout the property that weather an orange to red colour and are responsible for large colour anomalies that can be easily seen on airphotos and satellite images. The largest of these runs north-south and nearly bisects the property. These zones are faults; however, their significance is not yet understood. They are characterized by intensely silica, carbonate and hematite altered and oxidized wallrock up to a hundred metres wide that has been variably brecciated and fractured. The zones have limited along-strike continuity and appear to pinch-out or step over to other zones. They occurred late in the structural history of the area, cross cutting all other features.
The Main Ridge is underlain by volcanic breccia and tuff of the upper Station Creek Formation. The volcanic rocks are intruded by plagioclase +/- hornblende porphyry and gabbro to diorite bodies. The porphyry is characterized by plagioclase and hornblende crystal up to several millimetres in length within a fine-grained groundmass composed of feldspar, hornblende and quartz. The porphyry weathers a light to dark grey generally form north-northwest striking bodies several tens of metres thick.
Locally plagioclase crystals are up to five millimetres in a very dark grey, fine-grained matrix with no hornblende. It can be difficult to distinguish between the older crystal tuff of the Station Creek Formation from the feldspar porphyry at times. Mafic diorite to gabbro intrusions are found in the central part of the Main Ridge. These are dark grey weathered and variably plagioclase porphyritic. The nature of the contact between these more mafic rocks and the feldspar porphyry is not well constrained; however, it appears as though the two types of intrusions are at least in part coeval. Both rock types are deformed by faults and host mineralized veins. Locally they are cut by epidote-quartz veins and are slightly magnetic.
Several fine-grained basaltic dykes intrude all other rock types and are often found along north-northwest striking structures and veins. They are generally 50 cm to two metres in width and do not form larger bodies. These are likely Miocene in age.
The Main Ridge is cut by several faults, shears and fracture zones of various sizes. The dominant orientation is north-northwest striking and steeply dipping to the east-northeast. The faults range in size from less than 10 cm, up to five metres wide. The larger faults are defined by damage zones that are characterized by strongly fractured and sheared rock, veining and slip surfaces with many of the shears and veins extending into both the hanging wall and footwall of the main structure. All larger structures (over 10 cm wide) host quartz and quartz-carbonate veining and many smaller-scale shears also host some vein material. Kinematics associated with the largest faults suggests early reverse motion that appears to be overprinted by oblique normal faulting.
Mineralization observed at the Batt property to date falls into one of two categories: 1) sulphide development associated with VMS-style mineralization; and 2) vein hosted copper, cobalt and gold with lesser amounts of silver mineralization.
The lower Station Creek Formation basalt package hosts several indicators that submarine, hydrothermal vent systems were active during deposition of the volcanics, including thick sequences of magnetite-rich jasper exhalative, chlorite and locally sericite altered basalt hosting disseminated, semi-massive and massive pyrite (+/- cpy) and sulphide clasts within hyalocalstic basalt breccia. The jasper/magnetite horizons especially are indicative of seafloor hydrothermal vents.
Two showings have been identified at the Main Ridge zone, both related to strongly mineralized structures. These are the Rosie and the Saddle showings.
The Rosie showing is related to a deformation zone that ranges from 3-10 m wide and consists of quartz-carbonate veins and strongly altered wallrock. The main structure at the Rosie showing strikes north-northwest and dips between 65 and 75 degrees towards the east and can be traced along strike for at least 200 m. At the ridge crest a single quartz-carbonate vein is up to 1.5 to 2 m wide with abundant smaller veins developed along shears in the hanging wall. Along strike in both directions the zone becomes a wide area of distributed deformation with discrete shears and veins. Within the zone, wall rock is strongly deformed and altered, and locally mineralized.
Malachite, azurite and chalcopyrite are found within veins and on shear surfaces. Chalcopyrite is often found disseminated, as blebs and seams in veins. Erythrite is found mostly in more carbonate-rich zones in quartz-carbonate veins and along shears in altered wall rock. Manganese is locally very abundant in veins as a coating on surfaces.
Two outcrop samples taken from the main structure that runs through the Rosie showing 15 and 80 m along strike to the north returned values of 1.03% cobalt with 2.3 g/t gold and 2.28% cobalt with 2.37 g/t gold, respectively.
The Saddle showing is found east of the Rosie, along an east-west trending ridge crest. The Saddle showing is structurally similar to the Rosie but is not as well exposed and talus and overburden covers the main structure along strike in both directions off the ridge. The Saddle is characterized by a fault zone that contains deformed and altered gabbro, quartz-carbonate veins and a strongly oxidized zone of goethite and jarosite with minor remnant quartz grains. The zone strikes north-northwest and dips between 60 and 70 degrees to the east northeast. The width of the zone is not known as it extends across the ridge crest through rubble.
Malachite, azurite, erythrite and chalcopyrite were found through all rock types, except the strongly oxidized zone. Deformation and mineralization continued outside the trench, but talus made it too difficult to continue the trench. Table V shows the values returned from five continuous chip samples from the Saddle trench.

Work History

Date	Work Type	Comment
6/1/2021	Geochemistry	
6/1/2021	Trenching	
6/1/2021	Geology	
6/1/2018	Geochemistry	
6/1/2018	Geochemistry	
6/1/2018	Geology	
6/1/1967	Ground Geophysics	

Related References

Number	Title	Page(s)	Reference Type	Document Type
2008-21	Bedrock Geology of the Silver Creek area, Yukon (NTS 115A/3 and parts of 115A/6)		Yukon Geological Survey	Open File (Geological - Bedrock)
2016-37	Yukon Plutonic Suites		Yukon Geological Survey	Open File (Geological - Bedrock)