## Location/Identification

**MINFILE Number:** 104I 001
**National Mineral Inventory Number:** 104I5 Cu2
**Name(s):** **GNAT PASS**
JUNE, STIKINE, HILL, CREEK, KRYSKO, TROY, GALAXIE
**Status:** Developed Prospect
**Mining Division:** Liard
**Electoral District:** Stikine
**Regions:** British Columbia
**Resource District:** Skeena Stikine Natural Resource District
**BCGS Map:** 104I021
**NTS Map:** 104I05W
**UTM Zone:** 09 (NAD 83)
**Latitude:** 58 15 13 N
**Northing:** 6457244
**Longitude:** 129 49 36 W
**Easting:** 451483
**Elevation:** 1246 metres
**Location Accuracy:** Within 500M
**Comments:** Hill zone, 1.25 kilometres east of the Cassiar-Stewart Highway 31, adjacent to Lower Gnat Lake, 25 kilometres south of Dease Lake (Minister of Mines Annual Report 1966).

## Mineral Occurrence

**Commodities:** Copper

**Minerals**
**Significant:** Chalcopyrite, Bornite
**Associated:** Magnetite, Pyrite
**Alteration:** Carbonate, Sericite, Chlorite, Tourmaline, K-Feldspar, Silica, Hematite
**Alteration Comments:** Also iron oxide staining.
**Alteration Type:** Carbonate, Propylitic, Oxidation, Silicific'n
**Mineralization Age:** Unknown

**Deposit**
**Character:** Disseminated, Stockwork
**Classification:** Porphyry, Hydrothermal, Epigenetic
**Type:** L04: Porphyry Cu +/- Mo +/- Au
**Shape:** Irregular **Modifier:** Fractured

## Host Rock

**Dominant Host Rock:** Volcanic

| Stratigraphic Age | Group | Formation | Igneous/Metamorphic/Other |
|---|---|---|---|
| Upper Triassic | Stuhini | Undefined Formation | ------ |
| Upper Triassic | ------ | ------ | Cake Hill Pluton |

| Isotopic Age | Dating Method | Material Dated |
|---|---|---|
| ------ | ------ | ------ |
| ------ | ------ | - |

**Lithology:** Andesite, Andesitic Greenstone, Porphyritic Hornblende Andesite, Feldspar Porphyry, Quartz Hornblende Monzonite, Volcanic Breccia, Tuff, Basalt, Basalt Lithic Tuff, Granodiorite
**Comments:** The Cake Hill pluton is part of the Hotailuh batholith.

## Geological Setting

**Tectonic Belt:** Intermontane
**Physiographic Area:** Tanzilla Plateau
**Terrane:** Stikine

**Metamorphic Type:** Regional

**Grade:** Greenschist

## *Inventory*

**Ore Zone:** DRILLHOLE
**Year:** 2012
**Category:** Assay/analysis
**Report On:** N
**NI 43-101:** N

**Sample Type:** Drill Core

| Commodity | Grade |
|---|---|
| Copper | 0.44 per cent |

**Comments:** Hole GT12001 intersected two intervals of significant copper mineralization, including 56 metres grading 0.44 per cent copper, well below the extent of the historical estimate, demonstrating that porphyry-style copper mineralization in the Gnat deposit extends over a known vertical range of about 500 metres

**Reference:** Bowen, B.K. (2012-07-30): Technical Report on the Galaxie Project

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**Ore Zone:** GNAT PASS
**Year:** 1972
**Category:** Indicated
**Report On:** Y
**Quantity:** 30,387,850 tonnes
**NI 43-101:** N

| Commodity | Grade |
|---|---|
| Copper | 0.3890 per cent |

**Comments:** Includes 20 per cent dilution with wallrock grading 0.15 per cent copper.

**Reference:** CSE Statement 07/11/72 - Lytton Minerals Ltd., D.W. Ashbury, 24/10/72.

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## *Capsule Geology*

The Gnat Pass deposit is located at Lower Gnat Lake about 26 kilometres southeast of Dease Lake. Two zones comprise the deposit, the Hill zone and the Creek zone. The Creek zone is located just north of the lake and the Hill zone is about 1.2 kilometres northeast of the lake.

The area is predominantly covered by overburden and largely devoid of outcrop. Regional mapping indicates that the area is underlain by rocks of the Upper Triassic Stuhini Group consisting of andesite and basalt flows, tuffs and breccias with some sediments intruded by small stocks and sills of porphyritic andesite and basalt. The property is adjacent to the contact of the Upper Triassic Cake Hill pluton, part of the Jurassic-Triassic Hotailuh batholith. The pluton consists mainly of hornblende quartz monzonite, granodiorite and rare hornblende diorite.

Locally, the rocks consist of dark green hornblende porphyritic andesite, fine grained andesitic greenstone, volcanic breccia and tuff. Basaltic rocks and basaltic lithic tuffs are evident in drill core. These volcanic rocks are intruded by an irregular mass of fine grained, broken, feldspar porphyry rock that is highly variable in texture. Much of this rock is a leucocratic reddish stained, fine-grained felsite or alaskite that could be in part highly altered versions of the volcanic rocks. Quartz monzonite is reported south of the main areas of mineralization.

Near the two main mineralized areas known as the Hill zone and Creek zone, all the rocks exhibit considerable alteration. Carbonate is widespread throughout and occurs as veinlets. Sericite is distributed as patches. Both the volcanic rocks and feldspar porphyry have been bleached, locally silicified and have widespread iron oxide staining and hematite on many irregular fractures. Chlorite and dense black tourmaline veins occur on fractures in the volcanic rocks. In places, fine grained potassium feldspar occurs in the volcanic rocks. All the rocks locally exhibit cataclastic breccia textures with evidence of deformation.

Structurally, greywacke and mafic volcanic beds exposed to the east of the property dip between 35 and 40 degrees northeast. The rock exposures at the Hill zone are strongly fractured and broken by joints and small faults. In the Creek zone, the rocks are fractured, and in places irregularly schistose in a northwest direction. Drill core information and regional lineaments suggests that major north-striking faults pass through the area.

Two distinctive types of mineralization are present in the Gnat Pass (Hill and Creek zones) occurrence. One is characterized by chalcopyrite-magnetite-hematite with minor bornite as veinlets, fracture fillings and lesser disseminations in Stuhini Group volcanic rocks. Veinlets rarely exceed 1.3 centimetres in width and are often accompanied by chlorite. Local (but rare) replacement of volcanic rocks has produced small, higher

grade lenses measuring up to 0.6 by 0.6 by 0.3 metre in size which copper grades commonly exceed 1 per cent. Rare flecks of molybdenite and locally abundant specular hematite are associated with the replacement-style mineralization.

A second type of mineralization is characterized by chalcopyrite-tourmaline-carbonate breccia zones which occur proximal to or within irregular, eastward-dipping feldspar porphyry and quartz feldspar porphyry intrusions. Brecciation varies from fine mosaic structures to coarse fragments to 5 centimetres across cemented in a fine-grained matrix. Chalcopyrite occurs as fine disseminations in the matrix, often accompanied by chlorite. More rarely, narrow chalcopyrite veinlets cross-cut quartz feldspar porphyry lithologies. Little magnetite is present but fine-grained pyrite was noted locally

Indicated reserves are 30,387,850 tonnes grading 0.389 per cent copper, including 20 per cent dilution with wallrock grading 0.15 per cent copper (CSE Listing Statement November 7, 1972 - Lytton Minerals Ltd., D.W. Ashbury, October 24, 1972).

Work History

The deposit was discovered in 1960 and was worked intermittently until 1964. In 1964, Lytton Minerals Ltd. optioned the June and Stikine groups and staked additional claims. In 1965, Lytton completed geological mapping, geophysical and geochemical surveys and 1380 metres of diamond drilling.

Mitsui Mining and Smelting Company Limited was given the option to acquire an interest in the property and under the terms of agreement Deas Lake Mines Ltd. was incorporated in January 1967. Work during the 1966 to 1968 period included induced polarization, magnetic and geochemical surveys and 92 diamond-drill holes. In 1971, Chapparel Mines completed a 145 line-kilometre airborne magnetic survey on the area.

In 1986, the Troy 1-8 claims were staked by Integrated Resources to cover the two zones. During 1989, a further 8 diamond-drill holes (totalling 935.7 metres) were completed. No further work is reported after 1989.

In 1993, a limited 56 soil and 42 rock sampling program was carried out on the Gnat Creek property by Discovery Consultants for the Predator Syndicate. In 1996, Discovery carried out a larger 577 sample soil program and a magnetometer survey on the property. In addition, 19 drillholes in storage on the Property were logged and 46 holes sampled for gold and copper content. Historic holes were recovered, cross–stacked and/or stored in core racks for future reference. In the early 2000s the building housing a portion of the historic core was vandalized and burnt to the ground.

In 2005, IP and magnetometer surveys were carried out on cut lines on the Gnat Creek property. In total, 34 line-km were surveyed on behalf of Bearclaw. A review and interpretation of the geophysical data were subsequently carried out.

In 2011, Finsbury Exploration Ltd carried out exploration over the Property as part of a soil and silt sampling program over a much larger 168,983 hectare property area known as the Galaxie property. Soil sampling was carried out on a grid immediately west of the Property. Silt sampling was carried out on drainages to the southwest of the Property.

In 2011, a BC Geological Survey crew, who were conducted a mapping project in the vicinity of the deposit, examined the Gnat Pass showings and collected three rock samples for assay.

In 2012, Quartz Mountain Resources Ltd, on the Galaxie property, conducted systematic soil and IP surveys over eight high-priority grids and two target areas identified by the 2011 stream sediment and soil geochemical results. This work included an IP survey over almost the entirety of title 512878 and the southeastern third of title 604847. Also at this time, a two-hole diamond drill hole program, totalling 1,164 metres, was completed with the objective of testing known mineralization to depth at the principal mineralized area on the property, the Hill Zone. Hole GT12001 intersected two intervals of significant copper mineralization, including 56 metres grading 0.44 per cent copper, well below the extent of the historical estimate, demonstrating that porphyry-style copper mineralization in the Gnat deposit extends over a known vertical range of about 500 metres (Bowen, B.K. (2012-07-30): Technical Report on the Galaxie Project). Hole GT12002 did not intersect significant copper mineralization below the extent of the historical estimate. In their lower portions, both holes encountered a major thrust fault which has structurally superimposed older deposit host rocks over younger, Hazelton Group sedimentary rocks.

In 2016, an exploration program, comprising stream sediment sampling (10 samples), rock sampling (28 samples), and soil sampling (93 samples), was carried out on the Gnat Pass Property. The program defined anomalous copper-in-soil values at the western edge of title 512878, in a previously unsampled area.

## *Bibliography*

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|---|---|---|---|---|---|
| **Date Coded:** | 1985/07/24 | **Coded By:** | BC Geological Survey (BCGS) | **Field Check:** | N |
| **Date Revised:** | 2020/05/20 | **Revised By:** | Karl A. Flower (KAF) | **Field Check:** | N |