



Location/Identification

MINFILE Number: 082FSW290

Name(s): KATIE
JIM

Status: Prospect

Regions: British Columbia

BCGS Map: 082F014

NTS Map: 082F03W

Latitude: 49 08 53 N

Longitude: 117 20 13 W

Elevation: 1892 metres

Location Accuracy: Within 500M

Comments: Located at the headwaters of Hellroaring Creek, approximately 8.0 kilometres southwest of Salmo (Assessment Report 20331).

Mining Division: Nelson

Electoral District: Nelson-Creston

Resource District: Selkirk Natural Resource District

UTM Zone: 11 (NAD 83)

Northing: 5443969

Easting: 475428

Mineral Occurrence

Commodities: Copper, Gold, Zinc, Molybdenum, Silver

Minerals

Significant: Pyrite, Chalcopyrite, Bornite, Pyrrhotite, Sphalerite, Tetrahedrite, Chalcocite, Molybdenite, Arsenopyrite, Specularite

Significant Comments: Trace bornite.

Associated: Quartz, Magnetite

Associated Comments: Also biotite, malachite and azurite.

Alteration: K-Feldspar, Albite, Quartz, Epidote, Sericite, Chlorite, Carbonate, Goethite

Alteration Comments: Also malachite.

Alteration Type: Potassic, Propylitic, Oxidation

Deposit

Character: Disseminated, Stockwork

Classification: Porphyry

Type: L03: Alkalic porphyry Cu-Au

Host Rock

Dominant Host Rock: Plutonic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic	Rosslund	Elise	-----
Jurassic	-----	-----	Nelson Intrusions

Isotopic Age	Dating Method	Material Dated
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Lithology: Monzodiorite, Monzonite, Monzonitic Gabbro, Gabbro, Andesitic Tuff, Basaltic Tuff, Latite Tuff, Rhyolite, Feldspar Porphyry Dike

Geological Setting

Tectonic Belt: Omineca

Physiographic Area: Selkirk Mountains

Terrane: Quesnel, Ancestral North America

Inventory

Ore Zone: DRILLHOLE
Category: Assay/analysis

Year: 2008
Report On: N
NI 43-101: N

Sample Type: Drill Core

Commodity	Grade
Gold	0.25 grams per tonne
Copper	0.17 per cent

Comments:

Reference: Drillhole VKT08-068, Assessment Report 32551, page 12

Ore Zone: DRILLHOLE
Category: Assay/analysis

Year: 1994
Report On: N
NI 43-101: N

Sample Type: Drill Core

Commodity	Grade
Gold	0.2 grams per tonne
Copper	0.168 per cent

Comments:

Reference: Assessment Report 32551, page 11

Ore Zone: DRILLHOLE
Category: Assay/analysis

Year: 1992
Report On: N
NI 43-101: N

Sample Type: Drill Core

Commodity	Grade
Gold	1.027 grams per tonne
Copper	0.041 per cent

Comments:

Reference: Assessment Report 22200, page 19

Capsule Geology

The Katie alkaline porphyry deposit is situated northwest of Hellroaring Creek, west of the Salmo River and approximately 7 kilometres southwest of Salmo.

The Salmo area is underlain by an arcuate belt of sedimentary and volcanic rocks of the Lower Jurassic Rossland Group, in fault contact with Paleozoic Kootenay Terrane rocks to the south and the Late Jurassic Nelson Batholith to the north, east and west. The Rossland Group includes the Archibald Formation clastic sediments—a thick sequence of volcanic and epiclastic rocks of the Elise Formation and Hall Formation clastics. They are cut by synvolcanic intrusives, Middle Jurassic to Cretaceous granitic intrusions of the Nelson Batholith, the Middle Eocene Coryell intrusions and felsic to mafic Tertiary dikes.

The Katie claims cover intermediate to mafic flows and tuffs of the Elise Formation. These include andesite to basalt flow breccia, lapilli tuff, crystal tuff and latite fine tuff. Synvolcanic intrusive rocks underlie a large portion of the property and range in composition from monzonite to monzodiorite through to monzogabbro and gabbro. Younger intrusive rocks include feldspar porphyry, rhyolite, lamprophyre and diabase.

Drilling has outlined widespread alkaline porphyry copper-gold mineralization within a 1.75 by 2.5-kilometre area, focused on three zones: Main, West and 17. From 1 per cent to greater than 10 per cent pyrite and chalcopyrite occur as disseminations, fracture fillings and veins associated with contacts between monzodiorite dikes and volcanics. Weathering effects have been noted to a depth of 20 metres or more, with secondary malachite, azurite and local chalcocite. Traces of bornite, pyrrhotite, sphalerite and tetrahedrite have also been noted.

Potassic core zones with copper grades up to 1 percent and gold in the range of 0.5 gram per tonne are characterized by pervasive, vein and stockwork K-feldspar, with biotite, quartz, chlorite and sometimes coarse magnetite grains. These are enveloped by broad areas of propylitic alteration including pervasive and fracture-controlled epidote, chlorite, albite, hematite (goethite) calcite, sericite and magnetite. The potassic and propylitic alteration largely obliterates primary textures, with the exception of feldspar and pyroxene phenocrysts.

Mineralization and alteration are controlled by northwesterly oriented structures and are zoned outward from highest copper and gold in the potassic cores, followed by lower grade values in the propylitic zone. A late stage of mineralization includes strongly deformed quartz-carbonate-sulphide veins within mylonitic shear structures. Sulphides include pyrite, chalcopyrite, tetrahedrite, molybdenite and arsenopyrite. Specular hematite has been tentatively identified.

Katie shows two styles of mineralization: One is an alkalic porphyry copper-gold, and a later shear hosted a gold-silver-copper-antimony-arsenic stage (EMPR Bulletin 109).

The Lower Jurassic porphyry mineralization consists mainly of pyrite, lesser chalcopyrite and bornite, and traces of pyrrhotite, sphalerite, tetrahedrite and chalcocite. Sulphides occur both disseminated in hosting volcanic beds or intrusive sills or in veins with quartz, calcite, potash feldspar, chlorite and epidote. Magnetite is widespread except in highly altered potash feldspar zones. Propylitic alteration is mainly a mixture of chlorite, epidote, sericite and actinolite. Local calcite epidote and pyrite stringers cut this zone. Potassic alteration is shown by potash feldspar and secondary biotite. The later shear and mylonites with local enrichment of gold, copper, arsenic and antimony cut the earlier porphyritic mineralization. These shears are either pre-Middle Jurassic or Eocene in age.

The Main zone is northwest striking, steeply northeast dipping, 70 to 135 metres thick and at least 500 metres long. It is open in both directions and to depth. Copper grades average from 0.25 to 0.3 per cent, whereas gold values range from 0.15 to 0.45 gram per tonne. The 17 zone is geologically similar to the Main zone and is located 670 metres to the south. It strikes northwest, dips gently to the east and has been outlined by limited drilling over an area 110 by 300 metres. Average grades are 0.28 per cent copper and 0.3 gram per tonne gold (Property File, Carlson, 2002).

The drilling has been mostly directed to the northwest, parallel to the main controlling structure. The identified higher grade potassic core zones have not been fully tested. The Main zone is open to the northwest and southeast, whereas the best results from drillholes in both the West and 17 zones are on the edge of the areas tested. Soil geochemistry and induced polarization define extensions to these zones and a number of other untested targets.

The earliest recorded work on the property occurred in 1980. Amoco Canada Petroleum Company conducted prospecting and a geochemical soil sampling survey. Results of the 390-sample soil sampling survey outlined a 0.4 by 1.2-kilometre, 100 parts per million soil copper anomaly on the Jim claims (Assessment Report 8258, page 4). No further work was completed and the claims were allowed to lapse.

In 1985, Ken Murray staked the Katie claim group to cover the Amoco copper anomaly and then carried out a geochemical soil sampling survey to evaluate the anomaly. Murray was able to define a 400 by 500-metre copper anomaly with 200 to 1200 parts per million copper and a coincident gold soil anomaly, approximately 100 by 500 metres in size, with up to 34 parts per billion gold (Assessment Report 15781, page 6). The sampling grid was later extended to the west and, in 1988, Stetson Resources Limited carried out a very low-frequency electromagnetic and total field magnetic survey.

In 1988, on behalf of International Corona Corporation, Aerodat Limited flew a 2660-kilometre airborne geophysical survey over an area containing the modern Swift Katie property, and Stetson Resources Limited carried out ground geophysical surveys over the Katie claims. That same year, Balloil Lassiter Petroleum Limited optioned the property, the following year conducting an exploration program of drilling, trenching, mapping and sampling. Drilling consisted of four diamond drill holes, three of which reached bedrock, for a total 305 metres.

In 1990, Yellowjack Resources Limited acquired Balloil's interest in the Katie claims. Yellowjacket then formed a joint venture with Hemlo Gold and Brenda Mines. As designated operator, Noranda Exploration Company Limited carried out an exploration program that involved re-establishing and extending the existing grid, soil and rock geochemical sampling, geological mapping, induced polarization and magnetometer geophysical surveying and drilling. A two-phase drill program was carried out from 1990 to 1991. The first phase, carried out in the autumn of 1990, focused on reclamation and preparation of exploration sites as well as drilling. Seven NQ diamond drill holes totalling 1692.1 metres were completed. Phase two, carried out in the summer of 1991, consisted of six diamond drill holes totalling 1581.9 metres. A follow-up drill program was carried out from 1991 to 1992 and consisted of 21 NQ diamond drill holes totalling 4986 metres. In 1991, the Katie grid was extended once again: a total of 13.8 line kilometres of induced polarization resistivity and 5.3 line kilometres of total field magnetometer geophysical surveying were completed.

In 1992, Yellowjack Resources became the operator of the property. Yellowjack drilled 18 diamond drill holes totalling 4477 metres. From 1994 to 1995, Yellowjack completed two diamond drill holes in the Main zone totalling 606 metres. The holes intersected two well-mineralized sections.

In 2001, John A. Chapman and KGE Management Limited restaked the property. Four years later, in 2005, the Katie claim group was merged with the Swift claim group to form the Swift Katie property. In 2005, Chapman and KGE Management Limited located pre-existing drill collars and performed block modeling and resource determination in the Katie area.

In 2006, Valterra Resource Corporation optioned the Swift Katie property. The following year, Valterra compiled historical data, added additional claims and completed an exploration program of reconnaissance mapping and diamond drilling. Three diamond drill holes totalling 1126 metres were completed on the Katie Main and 17 zones. In late 2007 and early 2008, Valterra contracted Fugro Airborne Surveys Corporation to complete 505 line kilometres of airborne geophysical surveying over most of the Swift Katie property.

In 2008, Valterra conducted diamond drilling and prospecting. Drilling was focused directly on the Main Katie zone and consisted of 10 diamond drill holes totalling 2954.21 metres. In July 2007, on behalf of Valterra Resource Corporation, Micon International Limited released a National Instrument 43-101 resource report for the property. The following year, the property was optioned to Tosca Mining Corporation.

In 2010, Valterra, acting as operator for Tosca Mining Corporation, conducted a small drill program focusing on the 17 zone and the Roaring geophysical anomaly. Two NQ2 diamond drill holes totalling 786.25 metres were completed.

In 2011, Valterra Resource Corporation completed historical and recent diamond drill collar location, identification, marking and surveying, commissioning Eagle Mapping Limited to complete a 110-hectare, 1:2500 scale digital map of the main mineralized zone. By the end of 2011, Valterra Resource Corporation had earned a 100 per cent interest in the Swift Katie property.

The best hole from the 1989 program, KT-89-4, intersected 6 metres grading 0.24 per cent copper and 0.2 gram per tonne gold (Assessment Report 20331).

The best results from the 1990 drill program were 16.71 metres of 1.04 grams per tonne gold, 1.3 grams per tonne silver and 0.538 per cent copper from drillhole NKT-90-9; 43.73 metres of 0.25 gram per tonne gold, 2.4 grams per tonne silver and 0.271 per cent copper from drillhole NKT-90-5; 4.36 metres of 0.436 gram per tonne gold, 0.5 gram per tonne silver and 0.145 per cent copper from drillhole NKT-90-7; and 19.41 metres of 0.282 gram per tonne gold, 0.5 gram per tonne silver and 0.212 per cent copper from drillhole NKT-90-10 (Assessment Report 21704).

Significant results from the 1991 drill program included 2.5 metres of 0.382 gram per tonne gold, 0.2 gram per tonne silver and 0.164 per cent copper from drillhole NKT-91-13 and 63 metres of 0.316 gram per tonne gold, 0.9 gram per tonne silver and 0.338 per cent copper from drillhole NKT-91-17 (Assessment Report 21704, page 7). The best result from the 1991 to 1992 drill program was 1.5 metres of 1.027 grams per tonne gold and 0.041 per cent copper (Assessment Report 22200, page 19).

In 1992, holes YKT-92-40 to YKT-92-43 encountered several wide zones ranging from 50 to 150 metres in width that returned an average of 0.12 to 0.36 per cent copper and 0.435 gram per tonne gold (Assessment Report 32551, page 11). In 1994, hole YKT-95-58 returned 0.168 per cent copper and 0.2 gram per tonne gold over 35.5 metres (Assessment Report 32551, page 11).

The best result from the 2007 drill program was 45.41 metres grading 0.23 per cent copper and 0.27 gram per tonne gold, including 14.98 metres of 0.39 per cent copper and 0.6 gram per tonne gold from hole VKT07-060 (Assessment Report 32551, page 11). The best results obtained from the 2008 drill program included hole VKT08-068 with 71 metres of 0.17 per cent copper and 0.25 gram per tonne gold including 7.9 metres of 0.21 per cent copper and 1.25 grams per tonne gold, and hole VKT08-071 with 48.07 metres of 0.2 per cent copper and 0.36 gram per tonne gold including 7.07 metres of 1.73 grams per tonne gold (Assessment Report 32551, page 12).

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Date Coded:	1987/10/09	Coded By:	Laura L. Coughlan (LLC)	Field Check:	N
Date Revised:	2020/06/09	Revised By:	Nicole Barlow (NB)	Field Check:	N