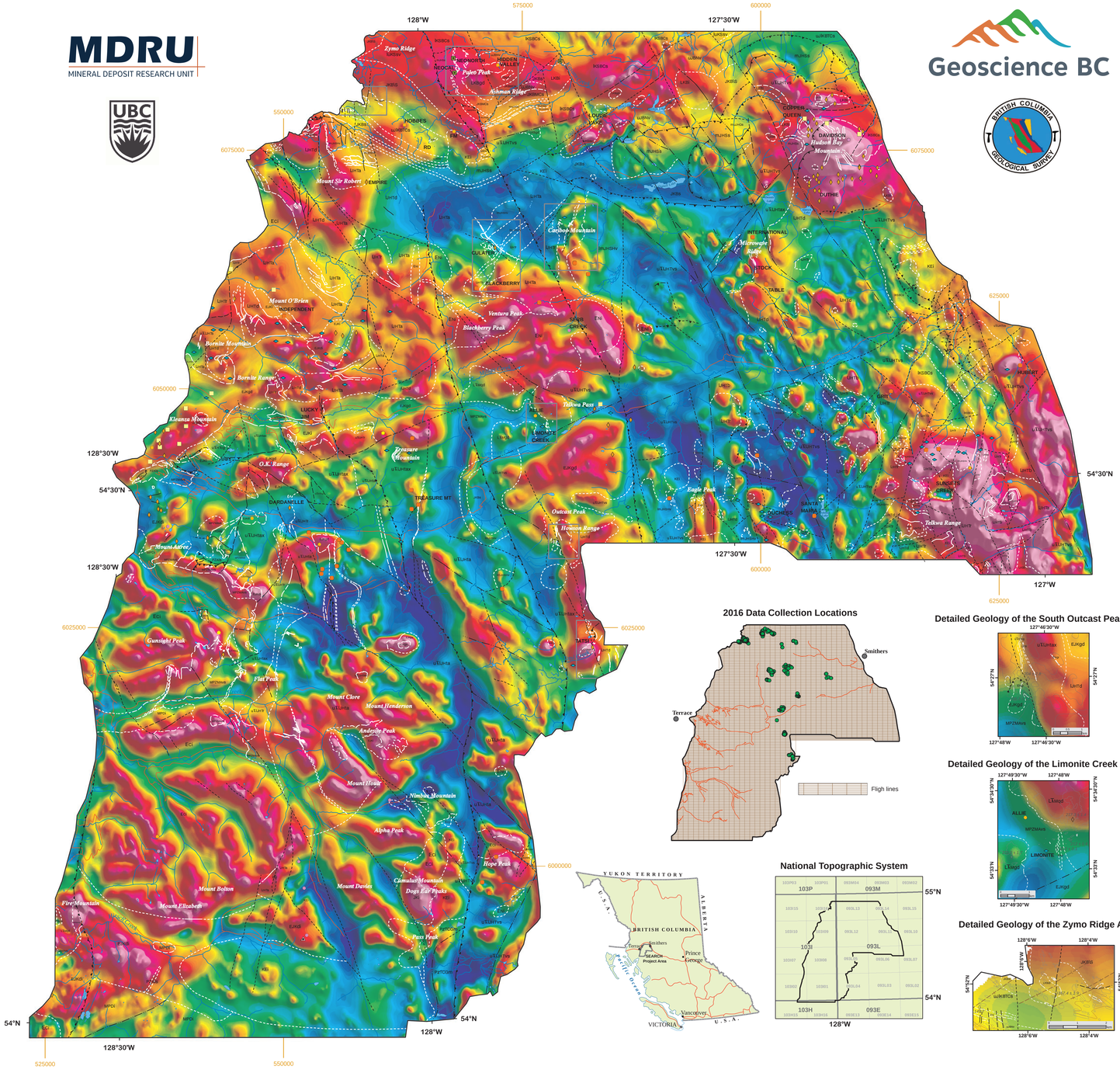
# AEROMAGNETIC CORRELATION WITH BEDROCK GEOLOGY, SEARCH PHASE I PROJECT AREA, WESTERN SKEENA ARCH, WEST-CENTRAL BRITISH COLUMBIA

MDRU
MINERAL DEPOSIT RESEARCH UNIT

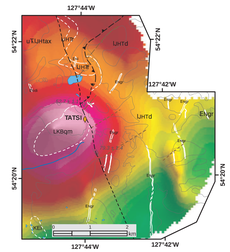
UBC

Geoscience BC

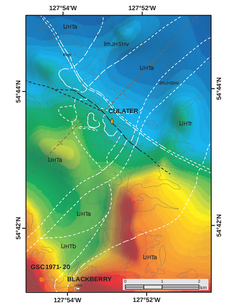
BRITISH COLUMBIA GEOLOGICAL SURVEY



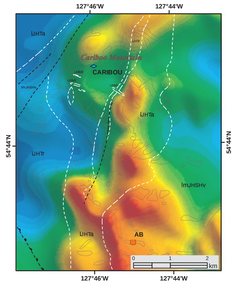

## Detailed Geology of the Tatsi Creek Area




## Detailed Geology of the Venture Peak Area




## Detailed Geology of the Cariboo Mountain Area




## 2016 Data Collection Locations




## Detailed Geology of the South Outcast Peak Area




## Detailed Geology of the Limonite Creek Area




## National Topographic System



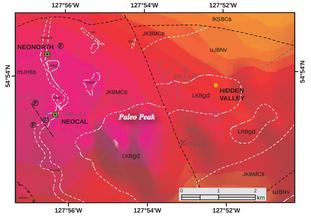

## Detailed Geology of the Zymo Ridge Area




## Faults / Contacts

- Thrust fault, defined / approximate / inferred / interpreted from geophysics
- Normal fault, defined / approximate / inferred / interpreted from geophysics
- Dextral fault, inferred / interpreted from geophysics
- Sinistral fault, interpreted from geophysics
- Unknown fault / strike-slip, defined / approximate / inferred / interpreted from geophysics
- Contact, defined / approximate / inferred / interpreted from geophysics
- Fold axial trace, inferred
- Outcrop Boundary

## Detailed Geology of the Paleo Peak Area




## VOLCANIC AND SEDIMENTARY ROCKS

**Lower to Upper Cretaceous**

**Skeena Group**

**Rocky Ridge Formation**

lukSRRv — Dark green-grey to brown basalt to basaltic andesite flows and breccia; augite-, plagioclase- and hornblende-phyric to aphanitic; flow-banded rhyolite to dacite domes, breccia and lapilli tuff; intercalated sedimentary rocks including sandstone, siltstone and shale

**Bulkley Canyon Formation**

lKSBCs — Sandstone, siltstone, mudstone and coal; sandstone is typically medium- to thick-bedded; local flaser bedding, laminated siltstone and sandstone; abundant plant fossils; ubiquitous detrital muscovite; local chert pebble and volcanic-derived conglomerate and tuff

luKSsv — Undivided Skeena Group sedimentary and volcanic rocks

**Jurassic to Cretaceous**

**Upper Jurassic to Lower Cretaceous**

JKB/S — Undivided Bowser Lake Group and Skeena Group sedimentary rocks

**Bowser Lake Group**

**Trout Creek assemblage**

uJlKBTCs — Thick-bedded granule to boulder conglomerate, sandstone, calcareous sandstone, siltstone and shale; thick-bedded conglomerate with volcanic, plutonic and sedimentary rock derived clasts including sandstone and chert predominates; contains marine and nonmarine fossils

**Netalzul volcanics**

uJBNv — Dark grey to green feldspar- and hornblende-phyric andesite flows, breccia and tuff; intercalated mudstone, sandstone and pebble conglomerate; minor marine fossils

**Muskaboo Creek assemblage**

JKBMCs — Sandstone, siltstone, and conglomerate; fine- to medium-grained, grey to brown to green sandstone in thin to thick planar beds predominates; interbedded with dark grey siltstone; rare granule to pebble conglomerate; common ripple marks, trough and hummocky cross-bedding, bivalve coquina and trace fossils

JKBs — Undivided Bowser Lake Group sedimentary rocks

**Triassic to Jurassic**

**Hazelton Group**

**Quock Formation**

muJHQs — Thin-bedded dark grey siliceous mudstone and tan to pale pink tuff with feldspar fragments; locally massive mudstone and lapilli tuff

**Smithers Formation**

mJHSs — Tuffaceous sandstone, siltstone, shale and granule conglomerate; thin to thick planar beds of green to grey to brown sandstone and dark grey to black shale; abundant marine fossils

**Saddle Hill Formation**

lmJHSHv — Maroon to brick-red tuff; well-bedded crystal-lithic, ash and lapilli tuff and breccia; locally contains limestone fragments that weather recessively; minor aphanitic basalt

**Nilkitkwa Formation**

lJHNs — Well-bedded tuffaceous shale, siltstone, greywacke and limestone

**Upper Telkwa Formation**

lJHTr — Flow-banded rhyolite and dacite domes, lapilli tuff, and crystal tuff; beige, cream, red, maroon, lavender and pink; spherulites locally up to 3 cm in diameter

lJHTd — Red dacite tuff; well-bedded ash and lapilli tuff and breccia, rare coherent flows and welded tuff; minor rhyolite and aphanitic, vesicular basalt

lJHTb — Black to dark green basalt flows and breccia; pyroxene- and plagioclase-phyric

lJHTa — Andesitic breccia, lapilli-tuff, crystal tuff and flows; maroon to purple and plagioclase-phyric; minor basalt, dacite, rhyolite and volcanic sedimentary rocks

**Lower Telkwa Formation**

uTLlHTa — Coherent andesite flows; variably amygdaloidal and plagioclase-phyric, locally megacrystic; minor basalt and dacite

uTLlHTax — Andesitic breccia and lapilli tuff; monomict to polymict; minor flows

uTLlHTr — Rhyolite flows and tuff; flow-banded coherent and lesser thin-bedded tuff

uTLlHTcg — Polymictic conglomerate, sandstone, siltstone and lapilli tuff

**Undivided Telkwa Formation**

uTLlHTs — Volcanic-derived sandstone, siltstone, minor conglomerate and tuff; well-bedded, green to maroon; includes well-bedded and massive reef limestone and calcareous sandstone and conglomerate

uTLlHTvs — Undivided Telkwa Formation volcanic and sedimentary rocks

**Upper Triassic**

**Stuhini Group**

uTSs — Argillite, siltstone and chert; black to dark grey and light grey to beige; typically thin-bedded

**Mississippian to Permian**

**Zymoetz Group**

**Ambition Formation**

PZAls — Limestone, marble, silty limestone, calcareous mudstone, minor green and pink lapilli tuff and volcanic sandstone; locally fossiliferous

**Mount Attree volcanics**

MPZMAvs — Dark green andesitic to basaltic breccia, tuff and flows; aphyric to plagioclase- and augite-phyric; minor rhyolitic and dacitic breccia and tuff; intercalated with thin-bedded limestone, marble, calc-silicate, conglomerate, sandstone and mudstone

## INTRUSIVE ROCKS

**Eocene**

**Carpenter intrusive suite**

Eci — Granodiorite to granite; coarse-grained and equigranular; titanite-, hornblende-, and biotite-bearing; minor rhyolite and andesite dyke complexes; undeformed to foliated

**Nanika intrusive suite**

Engr — Granite; fine-grained, plagioclase-, K-feldspar-, quartz-, biotite- and hornblende-porphyritic; beige to pale pink

Endi — Diorite to gabbro; medium- to coarse-grained, equigranular; black and white; locally pegmatitic

Eni — Undivided Nanika intrusive suite; granite, granodiorite and quartz monzonite; fine- to medium-grained, equigranular to hornblende-, biotite-, plagioclase- and/or quartz-porphyritic

**Cretaceous to Eocene**

KEi — Undivided Cretaceous to Eocene intrusions; granodiorite, granite, quartz diorite, quartz monzonite, tonalite; fine- to medium-grained, equigranular to porphyritic

**Late Cretaceous**

**Bulkley intrusive suite**

LKBgd — Granodiorite and quartz diorite; fine-grained, plagioclase- and hornblende-porphyritic; light to dark grey

LKBdi — Diorite; fine-grained, equigranular to plagioclase-, hornblende- or pyroxene-porphyritic; typically biotite-bearing; dark green to grey

LKBqm — Quartz monzonite, granite, quartz diorite and diorite; equigranular, medium- to coarse-grained; white, pink and black

LKBi — Undivided Bulkley intrusive suite; granodiorite, quartz diorite, quartz monzonite, granite, and diorite; fine- to medium-grained, equigranular to plagioclase-, hornblende-, biotite-, quartz-, and/or K-feldspar-porphyritic

Jurassic to Cretaceous

EJKi — Undivided Jurassic to Cretaceous intrusions in the CPC; diorite, gabbro and minor granodiorite; unfoliated to weakly foliated

**Early Jurassic**

**Kleanza intrusive suite**

EJKdi — Diorite, quartz diorite, gabbro and monzonite; fine- to coarse-grained, equigranular to porphyritic; minor andesite dykes

EJKgd — Granodiorite and granite; equigranular, medium- to coarse-grained

EJKpx — Pyroxenite; equigranular, medium- to coarse-grained; locally layered

EJKi — Undivided Kleanza intrusive suite; granodiorite, granite, quartz monzonite, monzonite, quartz diorite, diorite, gabbro and pyroxenite; fine- to coarse-grained, equigranular to porphyritic

**Late Triassic**

**Miligit intrusive suite**

LTMqd — Quartz diorite to diorite; fine- to coarse-grained, equigranular

LTMgd — Granodiorite; fine- to medium-grained, plagioclase-, biotite- and hornblende-porphyritic

**Mississippian to Permian?**

**Delta intrusive suite**

MPDi — Diorite, granodiorite, tonalite and gabbro; foliated to mylonitic

## METAMORPHIC ROCKS

**Paleozoic to Tertiary**

**Central Gneiss Complex**

PzTCGm — Amphibolite facies felsic and mafic volcanic rocks; tonalitic to granodioritic orthogneiss; minor marble and skarn; schistose and mylonitic

## BC MINFILE Occurrences

- Subvolcanic Cu-Ag-Au (As-Sb)
- Intrusion-related Au pyrrhotite veins
- Epithermal Au-Ag: low sulphidation
- Porphyry Cu ± Mo ± Au
- Porphyry Mo (Low F- type)
- Cu skarn
- Au skarn
- Volcanic Redbed Cu
- Polymetallic veins Ag-Pb-Zn+/-Au
- Polymetallic manto Ag-Pb-Zn
- Noranda/Kuroko massive sulphide Cu-Pb-Zn
- Feldspar-quartz pegmatite

## Geochronology (ages in Ma)

- K-Ar feldspar
- K-Ar biotite
- K-Ar muscovite
- K-Ar hornblende
- K-Ar whole-rock
- FT apatite
- U-Pb zircon
- U-Pb titanite

## General

- River
- Road
- Lake
- Protected area

-174.6 -111.1 -59.2 -44.8 -25.5 -1.8 19.6 46.5 92.1 93.9 107.6 154.3 194.7 262.9 362.4 686.8

Reduction to pole (RTP) layer generated from total magnetic grid. The data used to generate the grid are 2015 Geoscience BC's SEARCH phase 1 magnetic survey, Precision GeoSurveys Inc., 2015, 250 m line spacing, 29,821 line km of magnetic data. http://www.geosciencebc.com/s/Report2016-02.asp

Magnetic declination
Year 2018
Latitude 54.5° N
Longitude 127.9° W
Model used IGRF12
18.12° E changing by 0.23° W per year


Geoscience BC
MAP 2019-03-02
MDRU MAP 18-2018
BCGS OPEN FILE 2019-08



AEROMAGNETIC CORRELATION WITH BEDROCK GEOLOGY, SEARCH PHASE I PROJECT AREA, WESTERN SKEENA ARCH, WEST-CENTRAL BRITISH COLUMBIA


PART OF 1:250 000 NTS SHEETS 093L AND 103I


J.J. Angen, M. Rahimi, J.L. Nelson and C.J.R. Hart


1:150 000
UTM Zone 9; North American Datum 1983

February 2019

0 5 10 20 km
0 5 10 20 mi


Product of the MDRU - Mineral Deposit Research Unit of The University of British Columbia with contributions by the British Columbia Geological Survey (BCGS) as part of Geoscience BC's SEARCH Project. This map comprises new mapping carried out during the summer of 2016 as well as interpretation of aeromagnetic data (Precision Geosurveys Inc., 2016) and compilation of previous mapping (Richards and Tipper, 1976; Handy, 1979; MacIntyre et al., 1989; Desjardins et al., 1990; Ryan, 1993; MacIntyre et al., 1994; Nelson et al., 2006; MacIntyre, 2007; Nelson et al., 2007; Evenchick et al., 2008; Nelson et al., 2008a; Nelson et al., 2008b; AMEC, 2009; Wasteneys and Yang, 2013). Geoscience BC is an independent, non-profit organization that generates earth science in collaboration with First Nations, local communities, government, academia and the resource sector. Our independent earth science enables informed resource management decisions and attracts investment and jobs. Geoscience BC gratefully acknowledges the financial support of the Province of British Columbia. MDRU is a collaborative venture between the mining industry and The University of British Columbia. The unit, which operates on the support and financial assistance provided by the mining industry and the Natural Sciences and Engineering Research Council of Canada, is an internationally recognized research group devoted to solving mineral exploration-related problems. The BCGS is the government agency responsible for providing inventories, assessments, and archives of British Columbia's geology. It links government, the minerals industry, and communities to geoscience information and mineral resources. To stimulate investment and inform decisions about responsible land and resource management in the province, geoscience data are released through MapPlace, the BCGS online web service.



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