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GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

NOTES

This map is a composite image of regional magnetic anomaly and lithology data. The magnetic anomaly data are displayed in shaded-relief and lithologies are shown as coloured polygons.

The magnetic data were acquired in three separate airborne surveys flown under contract to the Geological Survey of Canada between 1961 and 1968. The flight lines were oriented east-west in the western map area and north-south in the eastern map area. In each survey flight lines were flown at a mean terrain clearance of 305 m approximately 800 m apart. Data from the individual surveys were subsequently merged to form a single data grid. When magnetic data are displayed in shaded-relief, shallow magnetic sources are enhanced at the expense of deep-seated sources, and as a consequence, these images are useful for exploring correlations between the mapped geology and magnetic response. Although magnetic anomalies should be directly related to lithology, mismatches can result from a number of factors including shallow, contrasting lithologies that do not outcrop, alteration zones associated with large structures and hydrothermal systems, or inappropriate lumping of the variable lithologies within a given geological unit. Despite this, magnetic data can be a valuable aid to traditional mapping methodologies and mineral exploration programs. This is especially true in the Fort Fraser map area where glacial deposits are extensive and often as little as 5% of the bedrock is exposed.

The coloured lithology polygons shown in this image reflect the most abundant rock type mapped within the more than 60 geological units known for the Fort Fraser map area (MacIntyre and Schiarizza, 1999; Struik, 1998a, 1998b; Struik et al. 2000). The boundaries of the geological units from which the lithology polygons are derived have been preserved on this map for cross-referencing. As discussed below, the predominant structural grain in the Fort Fraser is northwest-oriented. Consequently, in this image the magnetic data are illuminated from the northeast to preferentially enhance faults and magnetic lithologies with a northwest strike.

Magnetic susceptibility is the ratio of magnetization to magnetic field. It reflects the amount of magnetizable material present in a rock. Iron and titanium oxides are the primary magnetic minerals in rocks, but these minerals rarely constitute more than 2% of any given rock. Consequently, specific lithologies may exhibit a wide range of magnetic susceptibility and the ranges overlap significantly, such that susceptibility alone is not diagnostic of lithology. More than 3600 magnetic susceptibility readings were taken on rock outcrops in the map area using a hand held Exploranium Kappameter KT-9 (Figure 1). Measurements covered all lithologic groups (Table 1).

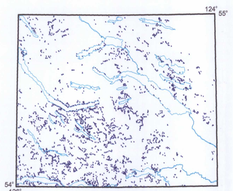


Figure 1: Distribution of measured magnetic susceptibilities.

Sedimentary rocks, with the exception of immature clastics, usually have low magnetic susceptibilities and produce low-relief magnetic anomalies. For the most part, the calcareous (polygon 1) and mafic clastic (polygon 3) rocks which underlie much of the northeastern portion of this map are typical of these characteristics (Table 1). However, isolated, high-relief, magnetic anomalies are observed within these lithologic units. For example, a narrow, 15 km long, northwest-trending anomaly parallels the Prince George fault near 54° 42' N. This anomaly closely resembles (in width, length and magnetic amplitude) those observed over ultramafic rocks (polygon 8) exposed further to the west and southwest. It is interpreted as either an ultramafic body at shallow depth beneath the clastic rocks, or as a mafic intrusion associated with the Quesnel terrane (Figure 2). Several small (< 5 km diameter), sub-oval anomalies are imaged to the northeast of this elongate anomaly where clastic sedimentary rocks are mapped. As discussed later, these small anomalies are thought to reflect the presence of mafic plutonic rocks at shallow depths beneath the clastic rocks.

Igneous rocks generally have increasing magnetic susceptibility with decreasing silica content. Ultramafic rocks such as pyroxenite and harzburgite, typically have very high magnetic susceptibilities and produce high amplitude magnetic anomalies. However, few ultramafic bodies are completely anhydrous, most show some level of serpentinization. Magnetite, produced from iron-bearing olivine and orthopyroxene, is an almost ubiquitous secondary phase that is present in variable amounts up to 10-15% by volume in most serpentinites (Burch, 1965; Saad, 1969; Coleman and Keith, 1971). Magnetite production typically increases with increasing serpentinization. Consequently, serpentinites usually have higher magnetic susceptibilities relative to their unaltered source rocks and their susceptibility increases with increasing serpentinization and metamorphic grade.

Ultramafic rocks exposed in Fort Fraser map area (polygon 8) have relatively high average magnetic susceptibilities (Table 1) and most produce high amplitude magnetic anomalies. The degree of serpentinization increases westward across the map area, and as expected, so does the amplitude of the magnetic anomalies associated with these rocks. The ultramafic bodies were structurally emplaced along northwest-trending thrust faults (Struik et al., 2001) and serpentinization is often most intense along the faults. The series of sub-parallel northwest-trending magnetic anomalies observed within the ultramafic body north of Trembler Lake may reflect a series of internal thrusts as yet unmapped within this large body.

S-type granites, which form from the anatexis of sedimentary rocks, typically have high $^{87}Sr/^{86}Sr$ ratios and are preferentially enriched in illmenite. They do not typically produce high amplitude magnetic anomalies. On the other hand, I-type granites, which have mafic rich sources tend to have low $^{87}Sr/^{86}Sr$ ratios. They are preferentially enriched in magnetite and often have an associated magnetic anomaly. The intensity of the anomaly is inversely correlated with silica content. The Endako Batholith, located in the area of Francois and Fraser lakes, is typical of this latter category (Whalen et al. 2001). As expected, the silica-poor mafic rim phases (polygon 7) of this batholith are associated with higher relief magnetic anomalies than the more silicia-rich core phases (polygon 5; Table 1).

Polygon number	Susceptibility x 10^{-3} SI		number of samples
	Range	*Mean*	
1	-0.66 - 129.0	1.69	174
2	-0.02 - 67.2	5.74	147
3	-0.66 - 84.0	2.17	553
4	-0.15 - 46.7	7.52	239
5	0.00 - 59.7	11.45	255
6	-0.32 - 91.6	12.72	1243
7	-0.80 - 120.0	17.85	748
8	-0.05 - 143.0	16.52	91
9	0.00 - 117.0	9.89	226
10	-0.02 - 13.7	2.10	8

Table 1: Measured magnetic susceptibilities. Measurements were conducted on rock outcrops using a hand-held Exploranium Kappameter KT-9 susceptibility meter. See Fig. 1 for distribution of measurements.

Volcanic rocks, like granitic rocks, typically exhibit an increase in magnetic susceptibility with a decrease in silica content. Large areas of the Fort Fraser map area are underlain by thin felsic or mafic lava flows of Eocene age. The magnetic signature observed over these rocks is variable and thought to be due, in part, to underlying units because the volcanics are so thin. The underlying units also include a variety of lithologies. North of Fraser Lake, where Mesozoic plutonic suites are thought to lie at shallow depths beneath the volcanic rocks, very high-relief magnetic anomalies are observed suggesting that the underlying plutonic rocks are quite mafic. The chaotic nature of the anomalies in this area suggests that the plutonic rocks are relatively undeformed. Jurassic and Cretaceous mafic volcanic and volcaniclastic rocks are thought to underlie the Tertiary volcanic rocks southwest of central Babine Lake. Here, magnetic anomalies have comparatively lower relief.

Structurally, the Fort Fraser map area has been dissected by northwesterly-, northeasterly-, and easterly-trending fault systems (Struik and Wetherup, 1997). For the most part, northwest-trending faults record a strike-slip sense of displacement, whereas northeast- and east-trending faults have a predominantly normal sense of displacement. These faults systems are thought to have developed in the Tertiary in response to a transtensional deformation event that affected much of central British Columbia. However, earlier deformational events also resulted in the development of northwest-trending faults and folds in the Fort Fraser map area. This predominant northwest-trending structural grain is well-reflected in the shaded-relief magnetic data. Many high-relief anomalies, particularly those associated with upper Paleozoic and Triassic ultramafic bodies to the north of Babine Lake, are elongated in a northwesterly direction. The younger, northeast-trending normal faults truncate many of these ultramafic bodies and their associated magnetic anomalies.

Metamorphic rocks have magnetic susceptibilities significantly influenced by metamorphic grade and source composition. Regional metamorphism of mafic sources to greenschist or amphibolite grade tends to lower the susceptibility. A further increase to granulite grade may result in the growth of secondary magnetite and increase the magnetic susceptibility. At eclogite grade metamorphism, magnetite is destroyed and the susceptibility is once again lowered. In the Fort Fraser map area, metamorphic rocks (polygons 9 and 10) are mainly upper greenschist grade and, as expected, correlate with low-relief magnetic anomalies. Blueschist grade metabasalts exposed near Pinchi Lake also have low magnetic susceptibilities (Table 1) and generate low-amplitude magnetic anomalies.

There are 104 mineral occurrences in the Fort Fraser map area recorded in the British Columbia MINFILE database (Table 2). Relative to other lithologic units mineral occurrences within the mafic clastic rocks which underlie much of the northeastern map area are relatively few. Of those which do occur here, most are either on, or proximal to, the isolated high-relief magnetic anomalies discussed above. We note that in several cases hornfelsing of the country rocks has been identified (Nelson et al., 1991) supporting the interpretation that the magnetic anomalies in these areas are due to shallow mafic intrusions. In fact, trenching and/or drilling at two localities (Hz-1, 54° 51.35'N 124°18.32'W and Hat Lake, 54° 46.62'N 124°22.55'W) intersected dioritic and gabbroic intrusions. Copper is the primary economic mineral in all of these cases.

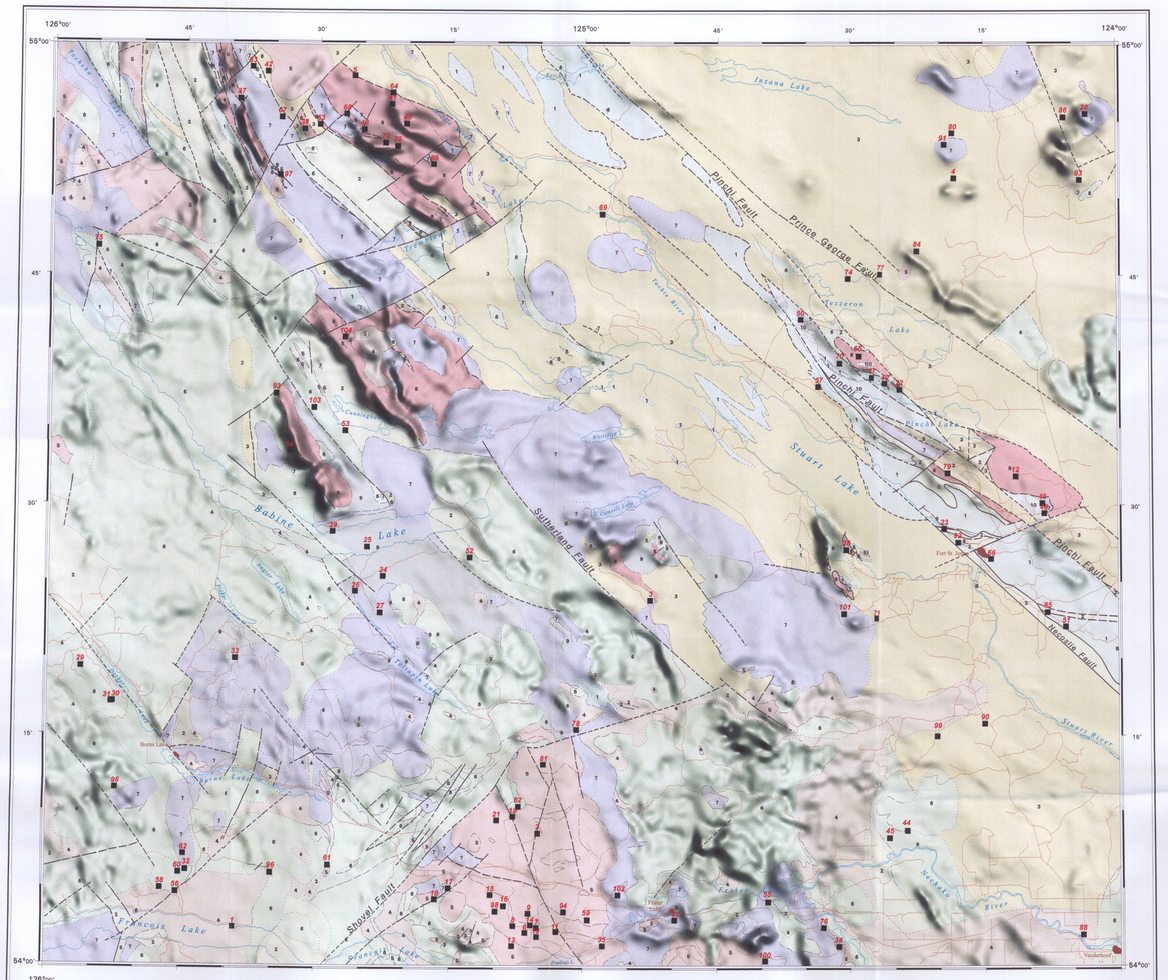
The most economically significant mineral occurrences within the Fort Fraser map area, however, are porphyry Mo ± Cu occurrences. More than twenty, including the Endako molybdenum mine, are recorded in the provincial MINFILE database (Table 2). These porphyry occurrences are, for the most part, restricted to the felsic core phases of the Endako batholith. As discussed above, magnetic data allow felsic phases of the batholith to be readily distinguished from the mafic rim phases. The latter correspond with high-relief magnetic anomalies.

Chromium is an important mineral occurrence in many ultramafic bodies within the Fort Fraser map area (Table 2). Its distribution is most likely related to the original dunitic composition of these rocks. Although we do not fully understand the relationship between serpentinization and chromium distribution, we note that the majority of documented chromium occurrences occur on the flanks of intense magnetic anomalies. This is particularly evident for those occurrences documented in the large ultramafic body exposed north of Trembleur Lake, as well as that exposed southeast of Pinchi Lake.

Figure 2. Terrane map from Struik et al. (2001).

#	Names	Status	Commodities	Latitude	Longitude	Deposit Type
1	Francois	Past Producer	Perlite	54 02 33 N	125 38 59 W	Volcanic glass - perlite
2	Ken	Showing	Mo, Cu	54 08 35 N	125 05 10 W	-
3	Kid	Prospect	Mo, Cu, W	54 23 49 N	124 52 31 W	Porphyry Mo (Low F- type)
4	Hz-1	Showing	Cu	54 51 21 N	124 18 18 W	-
5	Canusa	Past Producer	Jade?nephrite, Gemstone	54 58 03 N	125 26 41 W	Jade
6	Endako	Producer	Mo, Cu, Zn, W, Bi	54 02 10 N	125 06 20 W	Porphyry Mo (Low F- type)
7	Gr	Showing	Mo	54 02 28 N	125 05 16 W	Porphyry Mo (Low F- type)
8	Denak (endako)	Past Producer	Mo	54 02 40 N	125 07 58 W	Porphyry Mo (Low F- type)
9	Deer	Showing	Mo	54 03 24 N	125 06 13 W	Porphyry Mo (Low F- type)
10	Bell	Showing	Mo	54 01 53 N	125 05 15 W	Porphyry Mo (Low F- type)
11	Cm	Showing	Mo	54 02 13 N	125 03 01 W	Porphyry Mo (Low F- type)
12	Murray Ridge	Showing	Cr	54 31 53 N	124 11 24 W	Podiform chromite
13	Fran	Showing	Mo	54 01 16 N	125 08 00 W	Porphyry Mo (Low F- type)
14	Mo	Showing	Mo	54 02 39 N	125 05 57 W	Porphyry Mo (Low F- type)
15	Ron	Showing	Mo	54 04 36 N	125 10 25 W	Porphyry Mo (Low F- type)
16	Gem	Showing	Mo	54 03 53 N	125 08 56 W	Porphyry Mo (Low F- type)
17	Lorne	Showing	Mo, Cu	54 05 01 N	125 15 06 W	Porphyry Mo (Low F- type)
18	Qtm	Showing	Fluorite	54 04 19 N	125 16 37 W	-
19	K 14	Showing	Mo	54 09 40 N	125 07 57 W	Porphyry Mo (Low F- type)
20	Max	Showing	Cu, Au	54 55 30 N	124 03 23 W	Alkalic porphyry Cu-Au
21	S	Showing	Mo	54 08 26 N	125 09 45 W	-
22	Pinchi Lake Limestone	Showing	Limestone	54 37 30 N	124 24 30 W	Limestone
23	Fort St. James North	Past Producer	Limestone	54 28 30 N	124 19 27 W	Limestone
24	Radio Gold	Showing	Cu, Mo	54 25 23 N	125 22 35 W	-
25	Silver Island	Prospect	Ag, Cu, Zn, Pb, Barite	54 27 17 N	125 24 22 W	-
26	Silver Fox	Past Producer	Ag, Au, Cu, Zn, Pb	54 24 28 N	125 25 37 W	Porphyry Cu ± Mo ± Au
27	Anderson	Showing	Pb	54 22 59 N	125 22 53 W	-
28	Boling	Showing	Ag, Pb, Zn, Au, Cu	54 28 18 N	125 28 12 W	Polymetallic veins Ag-Pb-Zn ± Au
29	Three Star	Showing	Cu	54 19 26 N	125 56 16 W	-
30	Silver Cheese	Showing	Zn, Pb, Ag, Au	54 17 10 N	125 52 51 W	-
31	Golden Glory	Prospect	Cu, Ag, Zn, Pb, Au	54 17 12 N	125 52 40 W	-
32	Mona	Showing	Pb, Zn, Ag, Cu, Barite, Fluorite	54 08 10 N	125 54 18 W	-
33	Ling Lake	Showing	Mo, Cu	54 20 00 N	125 39 00 W	-
34	Nechako	Showing	Cu, Ag	54 01 14 N	124 31 18 W	-
35	Sonya-Jacinda	Showing	Zn, Cu	54 01 37 N	125 37 49 W	-
36	Snowbird	Past Producer	Au, Sb	54 27 10 N	124 30 22 W	Au-quartz veins Silicia vein and disseminations
37	Tsitsutl Mountain Chromium	Showing	Cr	54 56 29 N	125 39 05 W	Podiform chromite
38	Tidesday Creek	Showing	Cr	54 54 31 N	125 31 44 W	Podiform chromite
39	Mt. Sidney Williams or	Showing	Cr	54 53 25 N	125 21 15 W	Podiform chromite
40	Pauline	Showing	Cr	54 54 53 N	125 20 16 W	Podiform chromite
41	Van Decar Creek	Prospect	Cr	54 56 10 N	125 21 55 W	Podiform chromite
42	Tsitsutl Mountain Tin	Showing	Sn, Manganese, V	54 58 17 N	125 36 01 W	-
43	Mt. Sidney Williams	Showing	Asbestos, Au, Ag, Cr	54 54 30 N	125 23 01 W	Ultramafic-hosted asbestos podiform chromite
44	Godwin	Showing	Manganese	54 08 44 N	124 23 42 W	-
45	Toad	Showing	Manganese	54 08 16 N	124 23 38 W	-
46	Sunshine	Showing	Hg	54 30 07 N	124 08 25 W	Almaden Hg. Silica-Hg carbonate
47	Cin	Showing	Hg	54 38 16 N	124 27 45 W	Almaden Hg. Silica-Hg carbonate
48	Calex	Showing	Hg	54 29 28 N	124 08 14 W	Almaden Hg. Silica-Hg carbonate
49	Pinchi Lake Mercury	Past Producer	Hg	54 37 58 N	124 26 08 W	Almaden Hg. Silica-Hg carbonate
50	Toad	Showing	Hg	54 42 07 N	124 35 37 W	Almaden Hg. Silica-Hg carbonate
51	John	Prospect	Limestone	54 22 05 N	124 05 53 W	Limestone
52	J	Showing	Cu	54 26 30 N	125 12 54 W	-
53	Cunningham Lake	Showing	Ag, Pb	54 34 51 N	125 26 53 W	-
54	BI	Showing	Cu	54 33 32 N	125 33 06 W	-
55	Fraser Lake Coal	Showing	Coal	54 04 09 N	124 39 20 W	Lignite
56	Francois Lake Asphaltum	Showing	Phosphate, Bitumen	54 04 44 N	125 45 23 W	-
57	Thor	Prospect	Limestone	54 37 41 N	124 33 35 W	Limestone
58	Bruce	Showing	Au, Ag	54 04 59 N	125 47 07 W	Epithermal Au-Ag: low sulphidation
59	Ice	Showing	Mo	54 03 00 N	124 59 30 W	-
60	Oakla	Showing	Au	54 06 00 N	125 45 06 W	-
61	Kathleen June	Showing	Zn	54 06 30 N	125 28 30 W	-
62	Gamble	Showing	Ag, Au, Zn, Pb	54 07 12 N	125 44 35 W	-
63	Tsitsutl Mountain	Showing	Cu	54 58 34 N	125 37 45 W	-
64	Van Decar Creek Placer	Showing	Au	54 56 54 N	125 21 53 W	Surficial placers
65	Pinchi Lake	Showing	Magnesite	54 39 40 N	124 29 00 W	Ultramafic-hosted talc-magnesite
66	Dickinson Mountain	Showing	Hg	54 26 30 N	124 14 13 W	Almaden Hg. Silica-Hg carbonate
67	Diane	Showing	Cu, Au, Zn	54 55 17 N	125 34 23 W	-
68	Van Decar Asbestos	Showing	Asbestos	54 55 31 N	125 27 01 W	Ultramafic-hosted asbestos
69	Trembleur Lake	Showing	Pb	54 49 00 N	124 58 00 W	-
70	Mount Pinchi	Showing	Hg	54 39 13 N	124 31 10 W	Almaden Hg. Silica-Hg carbonate
71	Sowchea Creek	Past Producer	Au	54 22 41 N	124 27 04 W	Surficial placers
72	Sidney	Showing	Cr	54 53 38 N	125 22 36 W	Podiform chromite
73	Otse-ell Creek	Showing	Cr	54 54 49 N	125 23 59 W	Podiform chromite
74	Tezzeron Lake	Showing	Pb, Zn	54 44 49 N	124 50 12 W	-
75	Mary Ann	Showing	Cu	54 46 53 N	125 54 54 W	-
76	Goodwin	Showing	Cu, Ag	54 02 30 N	124 33 00 W	Porphyry CuMoAuAs
77	Dem	Showing	Arsenic	54 45 00 N	124 26 42 W	Alsikum
78	Hanson Lake	Showing	Cu, Au, Mo, Zn, Pb	54 15 24 N	125 00 46 W	Porphyry CuMoAuAs
79	Dad	Showing	Hg	54 32 00 N	124 19 06 W	-
80	Tas	Showing	Au, Cu	54 54 17 N	124 18 32 W	Alkalic porphyry Cu-Au
81	Endex	Showing	Mo, Cu	54 13 08 N	125 04 39 W	Porphyry CuMoAuAs
82	Loon	Showing	Cu, Au	54 19 20 N	125 07 20 W	-
83	Lynx	Showing	Cu	54 51 13 N	124 04 07 W	-
84	Hat Lake	Showing	Cu	54 46 37 N	124 22 33 W	Alkalic porphyry Cu-Au
85	Nocolle River Limestone	Past Producer	Limestone	54 23 01 N	124 07 51 W	Limestone
86	K-2	Showing	Cu	54 55 18 N	124 05 54 W	-
87	Fraser Lake	Prospect	Clay	54 03 00 N	124 49 45 W	Fuller's Sedimentary Kaolin
88	Vanderhoof	Showing	Clay	54 02 00 N	124 04 10 W	Fuller's Sedimentary Kaolin
89	Baptiste	Showing	Talc, soapstone	54 52 15 N	124 17 10 W	Ultramafic-hosted talc-magnesite.
90	Noble	Showing	Cu, Au, Ag	54 15 45 N	124 14 58 W	-
91	Free Gold Zone	Showing	Au, Cu	54 53 32 N	124 19 24 W	Alkalic porphyry Cu-Au
92	Fort St. James South	Past Producer	Limestone	54 27 37 N	124 17 47 W	Limestone
93	Fort	Showing	Cu, Ag, Mo, Pb, Zn, Au	54 37 14 N	125 34 42 W	Porphyry CuMoAuAs
94	Casey Pegmatite	Showing	Feldspar, Mica, Silica	54 03 30 N	125 02 10 W	-
95	Eagle Creek	Showing	Opal, agate, gemstone	54 11 30 N	125 12 18 W	Volcanic-hosted opal
96	Tchaikinkut Lake	Showing	Agate, zeolite, gemstone	54 06 00 N	125 35 00 W	-
97	Mac	Developed Prospect	Mo, Cu	54 51 36 N	125 34 32 W	Porphyry Mo (Low F- type)
98	Dat	Prospect	Mo	54 03 32 N	125 09 52 W	Porphyry Mo (Low F- type)
99	Dog Creek	Past Producer	Au	54 15 02 N	124 20 16 W	Surficial placers
100	Joseph Lake	Prospect	Vermiculite	54 00 19 N	124 39 41 W	Vermiculite deposits
101	Sowchea Creek Vermiculite	Prospect	Vermiculite	54 22 55 N	124 30 40 W	Vermiculite deposits
102	Jed	Showing	Au	54 04 36 N	124 58 06 W	-
103	Owl	Showing	Cu, Ag, Au, Zn, Pb	54 36 20 N	125 30 22 W	Cu-Ag quartz veins Porphyry CuMoAuAs
104	Rubyrock Creek	Showing	Cu	54 40 57 N	125 26 59 W	Porphyry CuMoAuAs.

Table 2: Mineral occurrences in the Fort Fraser map area as recorded in the British Columbia MINFILE database (www.em.gov.bc.ca/Mining/Geolsurv/Minfile/default.htm).



Compilation by C. Lowe, R. Kung and L.C. Struik, 2000

Coordinated through the auspices of the Nechako NATMAP Project

Digital cartography by J.K. Porter and R. Kung, Geological Survey of Canada

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

OPEN FILE 3748

COMPOSITE LITHOLOGY-MAGNETIC ANOMALY IMAGE

FORT FRASER

BRITISH COLUMBIA

Scale 1:250 000/Échelle 1/250 000

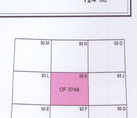
kilometres 0 5 10 15 20 25 30 kilometres

Universal transverse Mercator Projection
North American Datum 1983
© Her Majesty the Queen in Right of Canada, 2000

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983
© Sa Majesté la Reine du chef du Canada, 2000

Digital roads and drainage files from TRIM database, Land Data B.C.

Mineral occurrence data (from the British Columbia MINFILE database



LEGEND

For a complete description of geological units see MacIntyre and Struik, 1999; Struik, 1998a, b; Struik et al., 2000.

SEDIMENTARY BEDROCK

1 *CALCAREOUS: limestone and minor dolostone and minor marble of the Upper Carboniferous to Triassic Cache Creek Terrane; includes lesser amounts of Permian limestone and marble of Stikine Terrane, near Babine Lake and Lower Cretaceous limestone near François Lake (see Terrane map, Figure 2)*

2 *FELSIC CLASTIC: conglomerate, sandstone, siltstone, and slate of Cretaceous or younger units caught in small basins*

3 *MAFIC CLASTIC: andesitic greywacke and volcaniclastic rocks of the Mesozoic parts of Quesnel and Stikine terranes and, in part, Cache Creek Terrane*

IGNEOUS BEDROCK

4 *FELSIC VOLCANIC: rhyolite, rhyodacite and dacite flows, breccias and pyroclastic rocks of the Eocene Ootsa Lake Formation and minor rhyolite of the Jurassic Hazelton Group in Stikine Terrane*

5 *FELSIC PLUTONIC : granite, granodiorite, quartz monzonite, of Mesozoic and Tertiary age*

6 *MAFIC VOLCANIC: Andesite, basalt, dacitic andesite of upper Paleozoic, Mesozoic and Tertiary age. The most wide spread of the units are basaltic andesite of the Eocene Endako Group and andesite of the Jurassic Hazelton Group.*

7 *MAFIC PLUTONIC: monzodiorite, diorite, tonalite, gabbro and diabase of the upper Paleozoic, mainly Triassic and Jurassic age, and lesser amounts of Eocene age*

8 *ULTRAMAFIC: harzburgite, lherzolite, dunite, pyroxenite, serpentinite, talc and minor listwanite and rodingite of the upper Paleozoic and Triassic parts of the Cache Creek Terrane*

METAMORPHIC BEDROCK

9 *MAFIC: Mafic greenschist rocks: amphibolite, marble, hornblende gneiss, muscovite and biotite schist, meta-rhyolite and quartzite mostly of upper Paleozoic to Jurassic age in Stikine Terrane*

10 *Mafic blueschist rocks: glaucophane schist derived from basaltic tuffs and flows, dolomite and calcite marble, meta- ribbon chert, basalt, lawsonite-bearing greywacke*

Fault (known, approximate, assumed)

Geological boundary (known, approximate, assumed)

Roads

Lakes and rivers

MINFILE locality and number 12

REFERENCES

Burch, S.H.
1965: Tectonic emplacement of the Bruno Mountain ultramafic body, southern Santa Lucia Range, California; Unpublished Ph.D. thesis, Stanford University, Stanford, California.

Coleman, R.G. and Keith, T.E.
1971: A chemical study of serpentinization - Bruno Mountain, California; Journal of Petrology, 12, 311-328.

MacIntyre, D.G. and Schiarizza, P.
1999: Bedrock Geology, Cunningham Lake (NTS 93K); British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1999-11, scale 1:100 000.

Nelson, J., Bellefontaine, K., Green, K., and MacLean, M.
1991: Geology and Mineral potential of Wittsichica Creek and Tezzeron Creek map areas (NTS 93N/1, 93K/16), British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1991-3, scale 1:50,000.

Saad, A.H.
1969: Magnetic properties of ultramafic rocks from Red Mountain, California; Geophysics, 34, 974-987.

Struik, L.C.
1998a: Bedrock geology of Fraser Lake (93K/SE) map area, British Columbia; Geological Survey of Canada, Open File 3559, scale 1:100 000.

struik, L.C.
1998b: Bedrock geology, Tezzeron map area, central British Columbia (93K/NW); Geological Survey of Canada, Open File 3624, scale 1:100 000.

Struik, L.C. and Wetherup, S.
1997: Features of Tertiary crustal extension in central British Columbia; Geological Association of Canada - Mineralogical Association of Canada, Program with Abstracts, 22, A144-A145.

Struik, L.C., Fallas, K., Hrudey, M.G., and Whalen, J.B.
2000: Bedrock geology, Burns Lake, British Columbia; Geological Survey of Canada, Open File 3840, scale 1:100 000.

Struik, L.C., Schiarizza, P., Orchard, M.J., Cordey, F., Sano, H., MacIntyre, D.G., Lapierre, H., and Tardy, M.
2001: Imbricate architecture of the upper Paleozoic to Jurassic oceanic Cache Creek Terrane, central British Columbia; Canadian Journal of Earth Sciences, 38: *in press.*

Whalen, J.B., Anderson, R.G., Struik, L.C. and Villeneuve, M.E.
2001: Geochemistry and Nd isotopes of the Francois Lake plutonic suite, host and possible progenitor to the Endako molybdenum camp, central British Columbia; Canadian Journal of Earth Sciences, 38: *in press.*

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