



**MUDDY LAKE PROSPECT
(104K/1W)**

By T. G. Schroeter

INTRODUCTION

The Muddy Lake gold property consists primarily of the Bear and Totem group of claims and is located 137 kilometres west of Dease Lake at latitude 58 degrees 13 minutes north and longitude 132 degrees 17 minutes west. The claims lie immediately north of Bearskin Lake (locally called Muddy Lake), approximately 10 kilometres due south of Tatsamenie Lake (Fig. 121). Access is by float plane to Muddy Lake, or by helicopter from either Dease Lake or Atlin. A winter tote route connects the property with Telegraph Creek, approximately 75 kilometres to the southeast. The claims are owned by Chevron Canada Limited who have been actively involved in the region since 1980. They own several other claim groups in the vicinity of Tatsamenie Lake, including Misty, Nie, Iver, Highliner, Grand, Slam, Pole, and others. During 1983, 30 diamond-drill holes were completed, mainly on the Bear Main Zone (Bear claim), utilizing one to three drills. During 1984, a further 56 holes totalling approximately 10 000 metres were completed on two zones of interest using three to four drills. The base camp housed approximately 35 people and included an assay lab. The writer spent one and one half days on the property in late August 1984.

PROPERTY GEOLOGY

The zones of interest are within an assemblage of pre-Upper Triassic oceanic sedimentary and volcanic rocks and Triassic dioritic rocks (Souther, 1971). The pre-Upper Triassic rocks are comprised of pelagic sediments (mainly argillites and shales), carbonate bank limestone (mainly crinoid debris) and mafic volcanic and volcanoclastic rocks. The limestones have yielded Permian age dates from fusulinids (Geological Survey of Canada identification; H. Wober, personal communication) and are considered to be part of the Stikine Terrane assemblage rather than Cache Creek Group.

The western third of the property is predominantly limestone while the eastern two-thirds is predominantly greenstone and chloritic phyllite. The limestone unit is relatively pure and massive (compare, Carlin, Nevada) and thus may have been a very difficult rock unit for mineralizing solutions to penetrate. It occurs in varying shades of grey to white to black to pink - probably reflecting various concentrations of organic material and/or hematite. Limestone outcrops exhibit a homogeneous, sugary texture, almost unfractured but with a distinct layering which is best observed at a distance. Fossils are not abundant. Primary breccias occur as conformable layers within the limestone section and

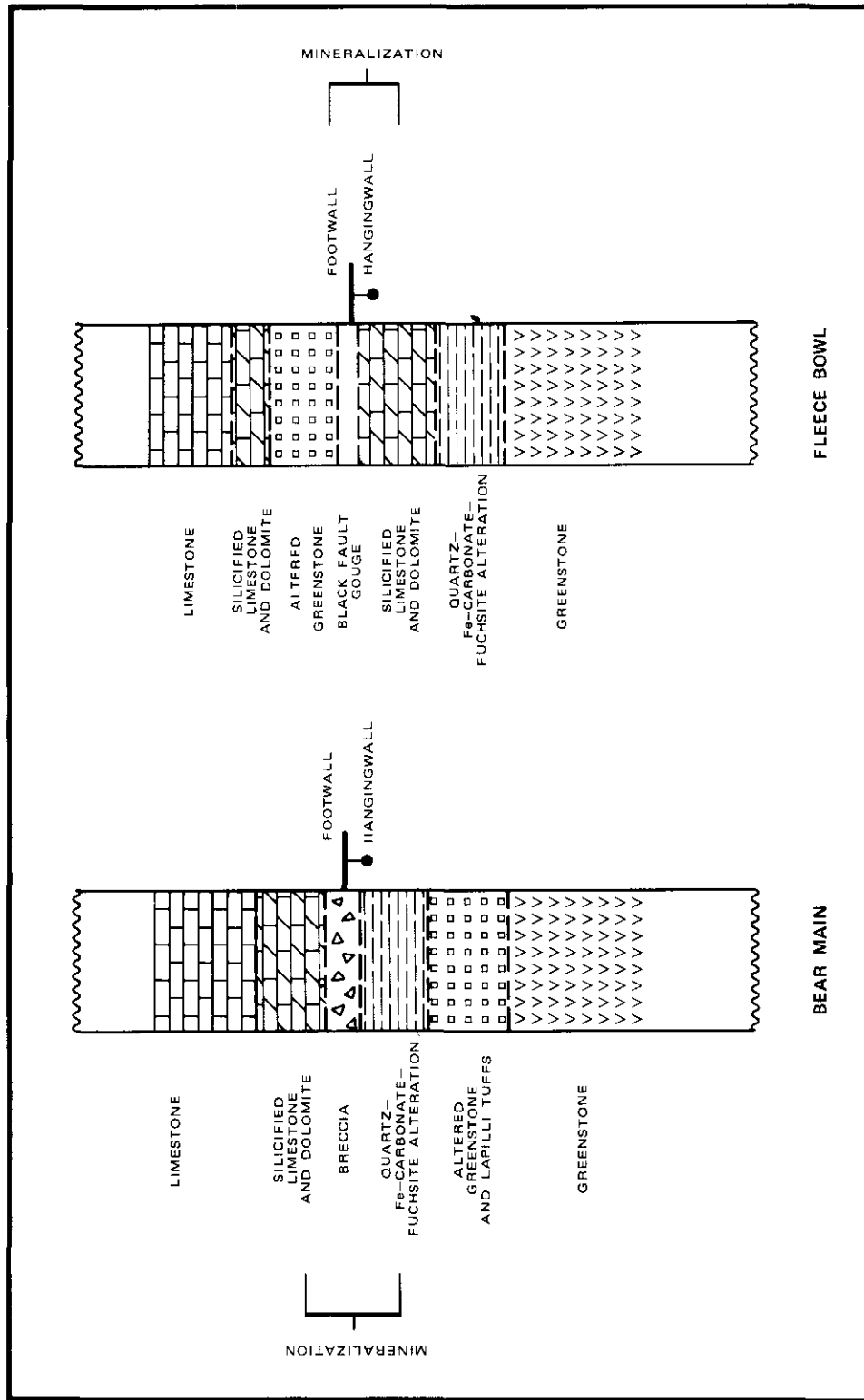


Figure 122. Schematic sections showing relationships of alteration and mineralization, Muddy Lake prospect.

consist of angular to subangular clasts of limestone in a fine-grained carbonate mixture.

The greenstone unit is overprinted with greenschist facies metamorphism; it includes greenstone (overprinting of greenschist facies regional metamorphism), chloritic phyllite, gabbro (dykes and/or sills), augite porphyry, lapilli tuff, and aphanitic tuff. Fractures within the greenstone unit are commonly coated with chlorite, epidote and hematite.

STRUCTURE

A prominent and significant northerly to north-northwesterly trending fault zone (locally referred to as the Ophir Break Zone) extends through the property. It is defined by areas of intense fracturing, abundant slickensiding, and linear alteration zones consisting of Fe-carbonate, quartz±fuchsite and quartz-dolomite. The Ophir Break Zone may be as wide as 1 kilometre and several minor fault structures occur within it (personal communication, H. Wober). The faults appear to control development of the alteration zones; rocks between faults are relatively unaltered. Folding, especially in the limestone unit, has been observed by Chevron personnel.

ALTERATION

Two major alteration types exist:

- (1) A quartz-dolomite assemblage which occurs primarily in the limestone unit;
- (2) A quartz-Fe-carbonate-pyrite±fuchsite assemblage.

Both types are most intensely developed along fault zones.

The quartz-dolomite alteration consists of massive, fine-grained quartz, quartz breccia, and lesser dolomite. Outward from a zone of intense silicification, with or without brecciation, silica decreases and progresses from massive quartz to vein quartz to stringer quartz in a dolomite matrix. Further out, alteration grades into dolomite-limestone and finally to unaltered limestone. The dolomitic alteration may be due to release of magnesium from the adjacent greenstone unit. Brecciation is locally well developed in the quartz-dolomite alteration zone and consists of angular clasts in a fine-grained vuggy quartz matrix.

The quartz-Fe-carbonate-pyrite±fuchsite alteration assemblage is restricted mainly to rocks of the greenstone unit. The width or extent of altered zones depends upon the permeability of the host rocks but can be as much as 20 metres. Rare sericite has been observed.

MINERALIZATION

Mineralization is literally 'no-seeum' gold with minor silver values. The main sulphide noted is pyrite, which ranges from 0.1 to 5 per cent in the

TABLE 1
GRAB SAMPLES OF ALTERED ROCKS FROM THE MUDDY LAKE PROSPECT

Sample Number	Description	Zone	Au ppm	Ag ppm	Hg ppb	As ppm	Sb ppm
1.	Bear-84-1 Silicified limestone	Fleece Bowl	2.7	<10	-	30	<2
2.	Bear-84-5 Silicified limestone breccia	Fleece Bowl	<0.3	<10	-	26	<2
3.	Bear-84-7 Silicified tuff limestone	Fleece Bowl	<0.3	<10	125	<5	3
4.	Bear-84-7a Silicified tuff limestone	Fleece Bowl	<0.3	<10	23	56	9
5.	Bear-84-8 Silicified and pyritized greenstone	Fleece Bowl	<0.3	<10	725	0.31%	15
6.	Bear-84-9 Silicified limestone breccia	Fleece Bowl	<0.3	<10	96	48	9
7.	Bear-84-11 Silicified limestone	Bear (Main) (Tr. 1)	15.6	<10	-	114	2
8.	Bear-84-12 Silicified limestone	Bear (Main) (Tr. 1)	27.8	<10	-	95	8
9.	Bear-84-13 Silicified limestone	Bear (Main)	7.9	<10	-	30	<2
10.	Bear-84-14 Silicified limestone breccia	Bear (Main) (Tr. 4)	5.5	19	-	44	<2
11.	Bear-84-15 Silicified limestone breccia	Bear (Main) (Tr. 4)	9.3	26	-	44	5
12.	Bear-84-16 Silicified limestone breccia	Bear (Main) (Tr. 5)	9.3	11	-	167	8
13.	Bear-84-17 Silicified limestone breccia	Bear (Main) (Tr. 5)	26.0	67	-	875	12
14.	Bear-84-19 Black fault gouge breccia between silicified limestone and greenstone	Fleece Bowl	2.4	<10	224	96	12
15.	Bear-84-20 Silicified pinkish limestone breccia	Fleece Bowl	<0.3	<10	25	20	8
16.	Bear-84-22 Quartz-Fe-carbonate-fuchsite alteration with minor arsenopyrite	Fleece Bowl	<0.3	<10	78	96	7
17.	Bear-84-23 Quartz-Fe-carbonate-fuchsite alteration with pyrite	Fleece Bowl	<0.3	<10	224	56	28
18.	Bear-84-24 Quartz-Fe-carbonate-fuchsite alteration with arsenopyrite	Fleece Bowl	1	<10	4000	7.92%	29
19.	Bear-84-25 Quartz-Fe-carbonate-fuchsite alteration with arsenopyrite	Fleece Bowl	Lost in furnace		1800	4.08%	17
20.	Bear-84-26 Silicified limestone with pyrite	Troy Ridge	<0.3	<10	115	168	<3
21.	Bear-84-27 Quartz-Fe-carbonate-fuchsite alteration	Troy Ridge	<0.3	<10	66	88	<3
22.	Bear-84-28 Limestone breccia	Troy Ridge	<0.3	<10	42	<8	2
23.	Bear-84-29 Foliated hornblende-rich gabbroic rock	Troy Ridge	<0.3	<10	13	<8	<3

Bear Main Zone to trace in some Fleece Bowl mineralization. Trace amounts of arsenopyrite were also observed in some drill holes. Chalcopyrite occurs as amygdules in lapilli tuffs in the Bear Main Zone. Mineralization is of the high-level epithermal type with such characteristics as vuggy quartz, high Au to Ag ratios, and direct geochemical correlation between gold, silver, arsenic, antimony, and mercury.

Two main 'zones' were being tested: Bear Main and Fleece Bowl (Fig. 121). Much of the drilling has been done on the Bear Main Zone; it has indicated a pod of mineralization with a strike length of approximately 110 metres, and an average width of 10 metres. There are two host rocks in the Bear Main Zone; one is silicified limestone-dolomite breccia with a matrix of sugary to fine-grained silica; the second is carbonatized greenstone breccia with a matrix of pyrite and fine-grained rock fragments.

Drilling continued during 1984 on the Troy Ridge area and Fleece Bowl Zone where the host rocks are silicified limestone and dolomite in contact with greenstones; there are associated quartz-Fe-carbonate-pyrite-fuchsite alteration zones. Minor arsenopyrite has also been noted.

The Totem Silica area is a large area of pervasive silicification, similar to what one might expect to see near the top of an epithermal system. Assays of grab samples taken by the writer on the Bear Main Zone, Troy Ridge area, and Fleece Bowl Zone are shown in Table 1.

WORK DONE

During 1984, Chevron diamond drilled approximately 10 000 metres in 56 holes utilizing three to four drills. Detailed geological mapping, geophysical and geochemical surveys were also carried out. Road access was prepared from the base camp to the various mineralized zones.

ACKNOWLEDGMENTS

The writer would like to thank Chevron Canada Resources Limited (especially Helmut Wober and Ken Shannon) for providing access to the property and for their kind hospitality and openness while on the property.

REFERENCES

- B.C. Ministry of Energy, Mines & Pet. Res.:* Assessment Report 10754.
Souther, J. G. (1971): *Geology and Mineral Deposits of Tulsequah Map-Area, British Columbia, Geol. Surv., Canada, Mem. 362.*

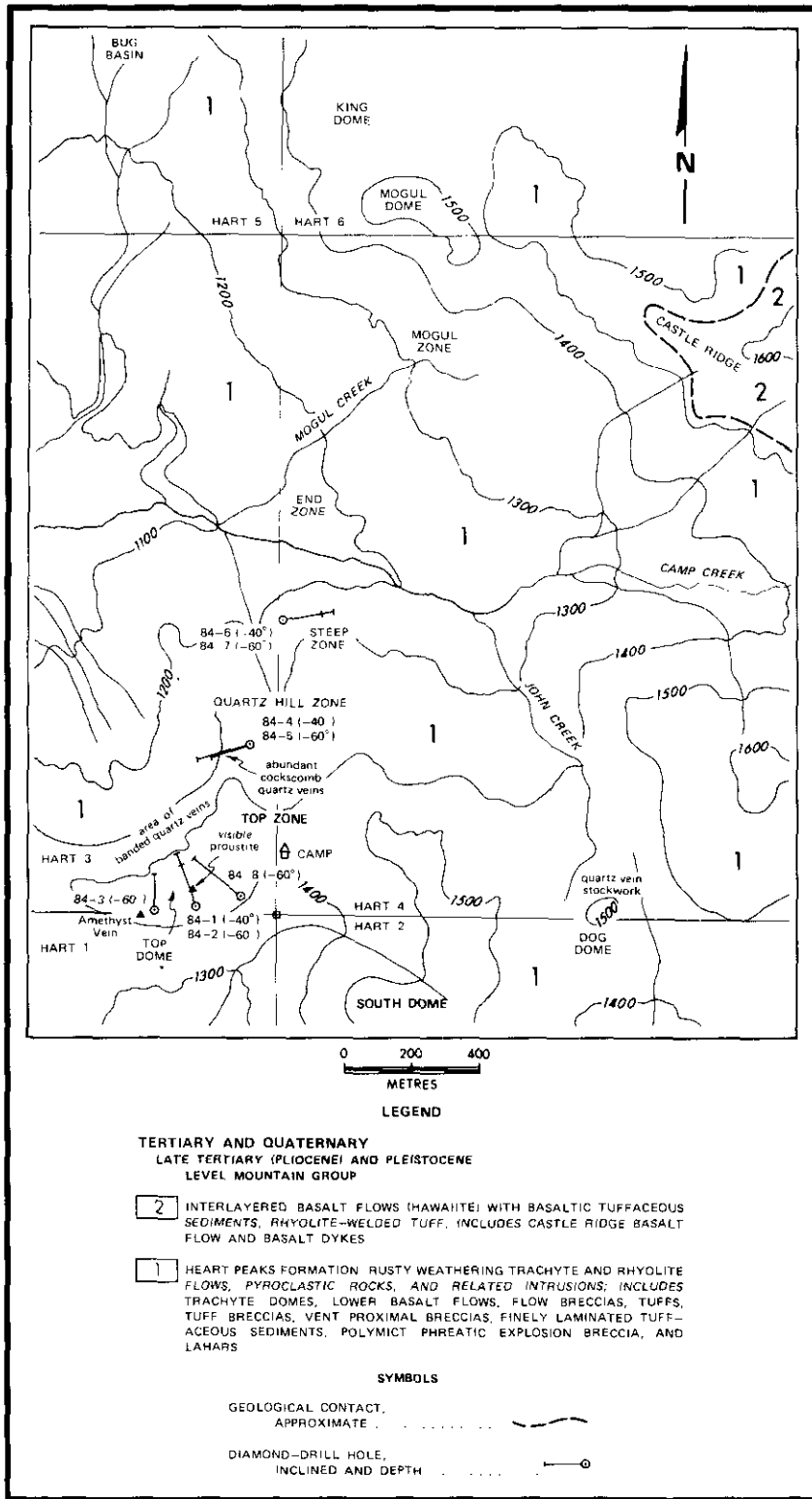


Figure 123. Geological plan of the Heart Peaks prospect (after company plans).