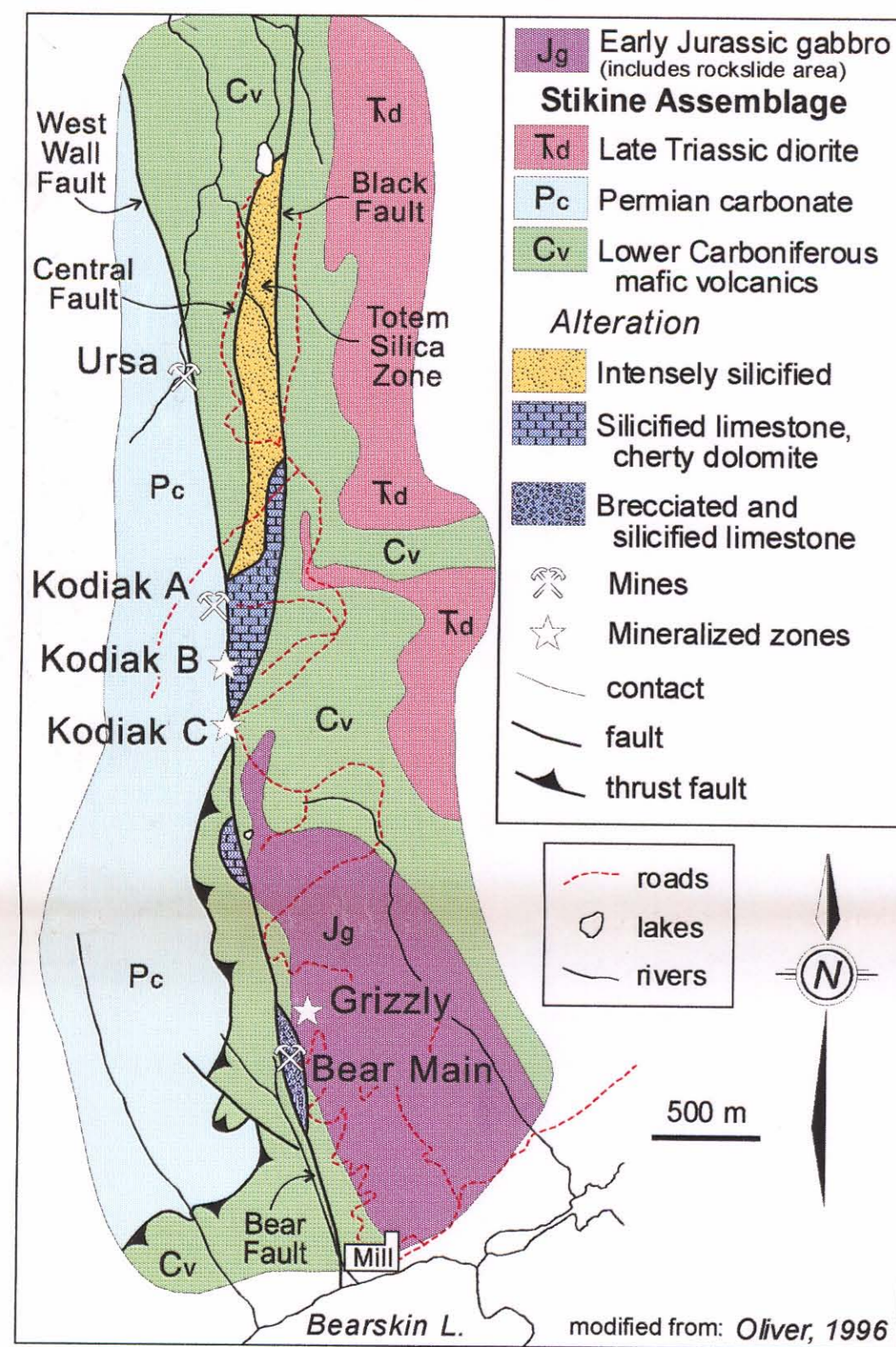


# Golden Bear (104K/1) -- sediment-hosted, disseminated gold deposit

D. Brown, A. Hamilton<sup>2</sup>, D. Lefebure, and W. McClelland<sup>3</sup> 2. North American Metals Corp., 3. University of Idaho

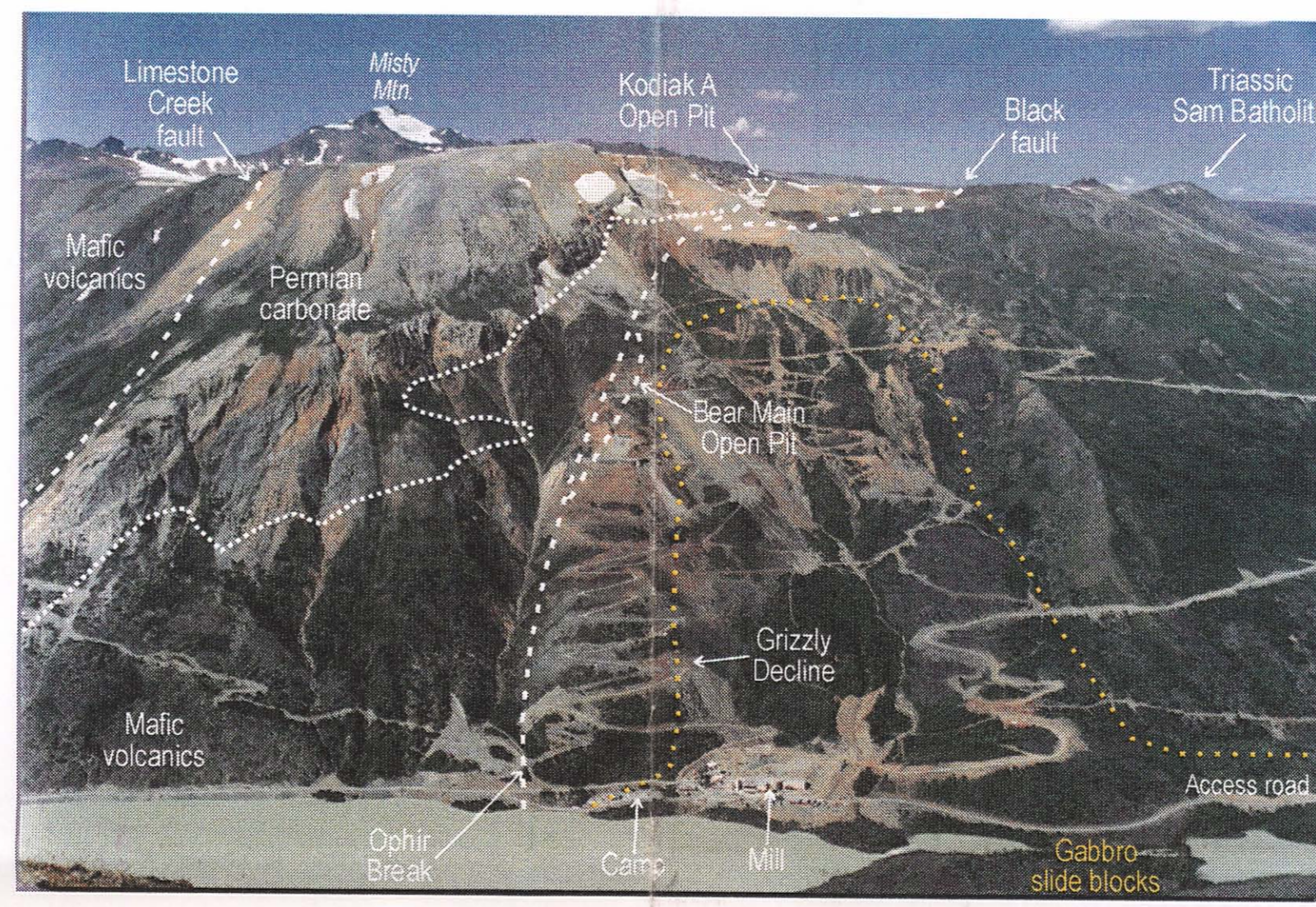
Tom Schroeter  
(University of Idaho)



## Introduction

The poster panel represents a distillation of internal company reports by Hamilton, augmented with new field data collected by Brown, Lefebure and Spence in July and August, 1998. We present an overview of the Golden Bear deposits and highlight numerous similarities to sediment-hosted gold (Carlin-type) deposits of Nevada.

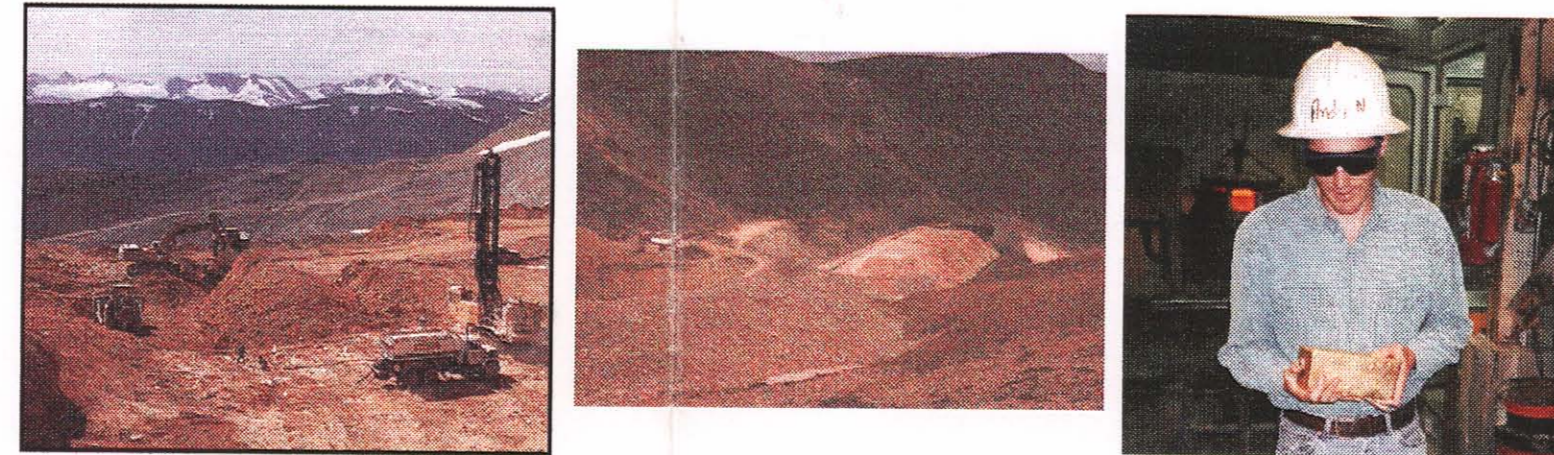
The Golden Bear sediment-hosted, disseminated gold deposit includes a series of six mineralized zones along the Ophi Break, a north-trending structure within the Stikine terrane, northwestern B.C. The collective resource of the six zones is 2.5 MT of ore, grading 10.31 g/t with 24,865 kg contained gold (see Table). Mineralization is hosted in fault-bound carbonate pods and structural zones in variably silicified Permian Stikine Assemblage carbonate and a sequence of hornblende-plagioclase porphyritic andesite to basalt flows and/or sills intercalated with massive to bedded tuff of uncertain age. New U-Pb (zircon) age dates and an Ar-Ar date further constrain interpretations of the age of mineralization and volcanic host rocks.



View northwest to Golden Bear area  
Trace of Ophi Break and Bear Main deposit is illustrated.  
Bearskin Lake formed by gabbro rock avalanche that occurred about 2500 years ago.

## Discovery history

In 1981, reconnaissance soil samples taken at 300 m spacing returned one value of 700 ppb gold and follow-up contour soil traverses at 100 m spacing produced a 9200 ppb gold anomaly. The outcrop of silicified limestone breccia, located directly above the soil sample, yielded grab rock samples assaying up to 24.0 g/t Au.



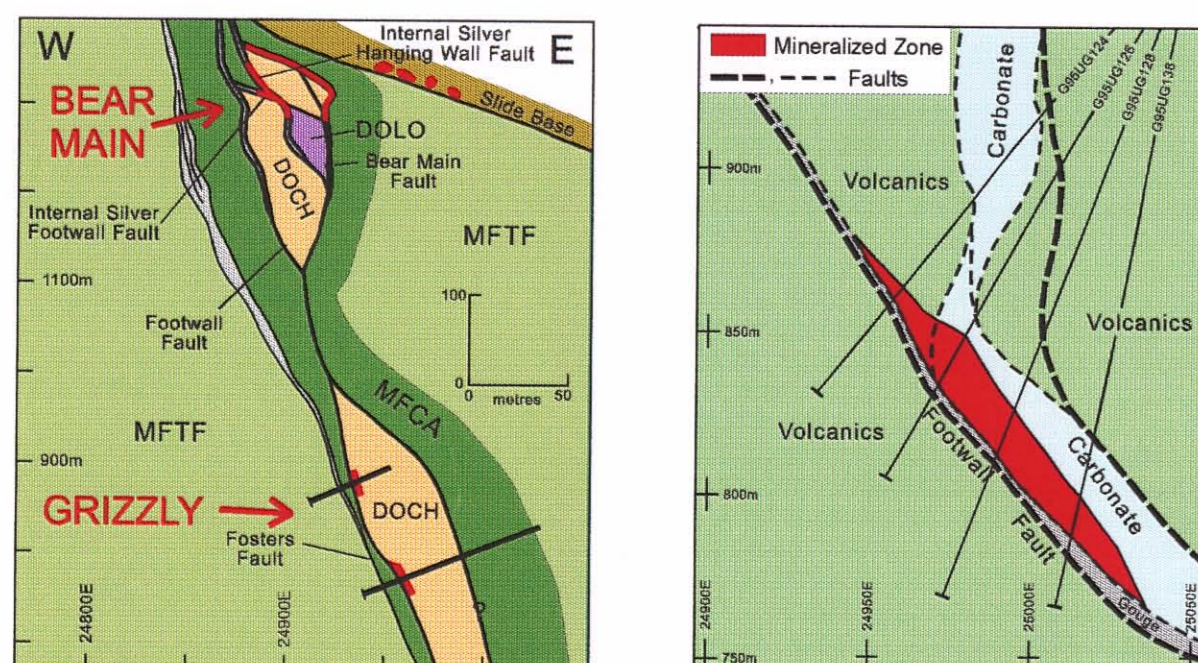
## Mineralized tonnes and grade

Deposit	Ore type	Mining method	Tonnes	Grade (g/t Au)	Status
Bear Main	sulfide	Open pit/UG	535,277	12.67	Mined
Grizzly	sulfide	Underground	152,900	20.50	Resource
Kodiak C	oxide	Underground	276,000	7.80	Resource
Kodiak B	oxide	Underground	183,900	8.70	Reserve
Kodiak A	oxide	Open pit	824,000	3.30	Mined
Ursa	oxide	Open pit	519,400	6.90	Reserve
<b>Total</b>			<b>2,491,477</b>	<b>9.98</b>	

## Bear Main and Grizzly deposits

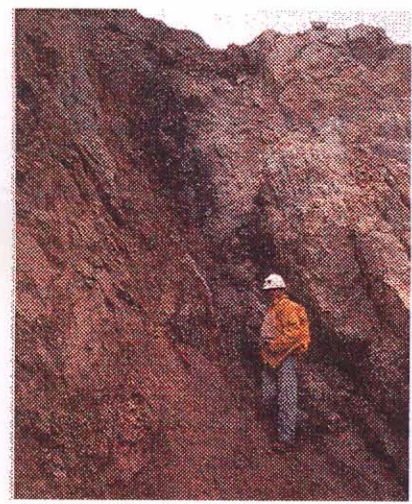


View north to Bear Main open pit -- tear-shaped, fault-bounded, partially silicified carbonate cut by Miocene basalt dike.

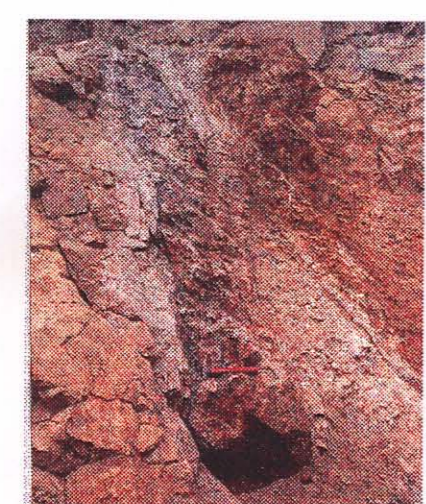


Bear Main & Grizzly

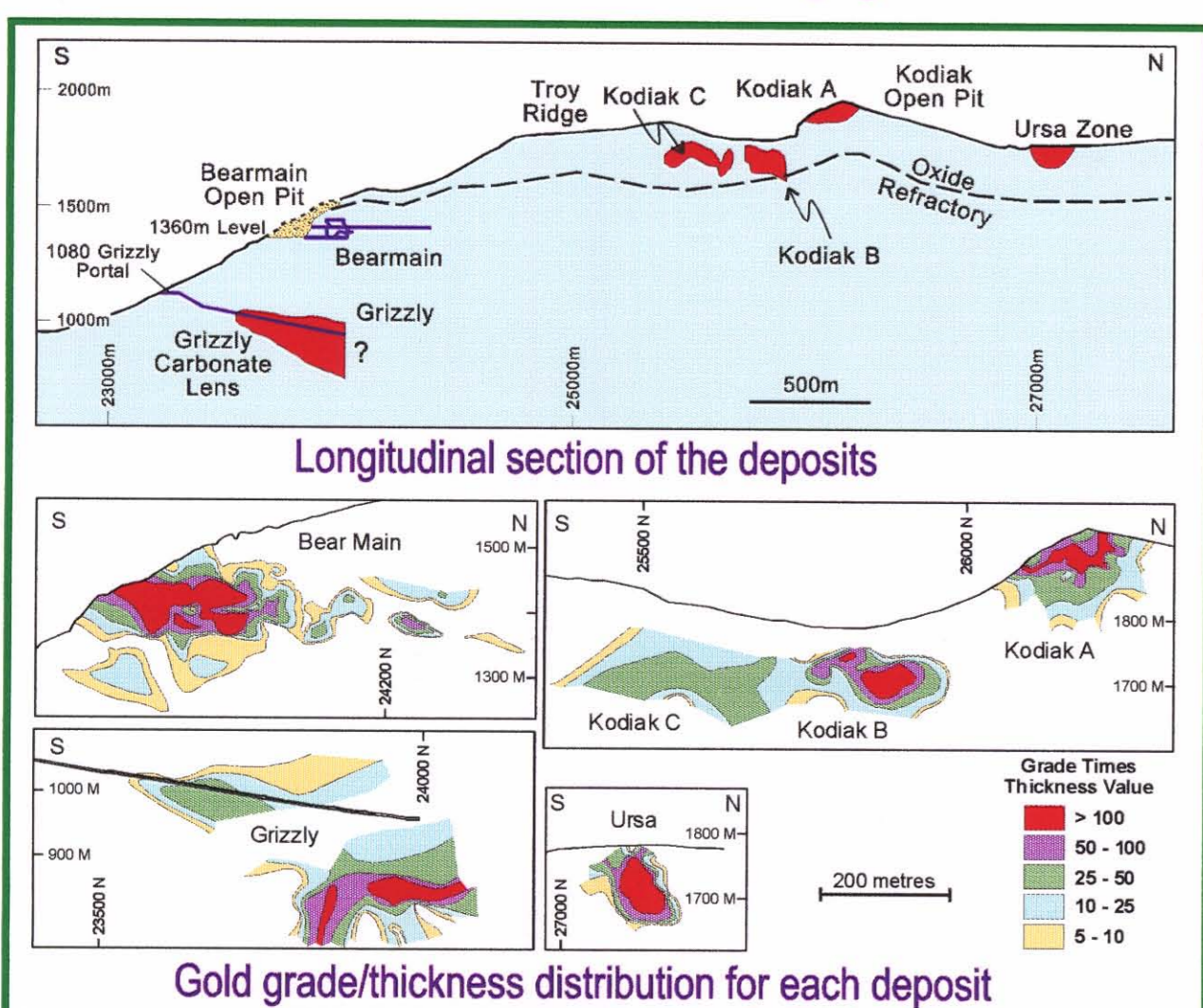
Grizzly -- section 23850N



Internal Sliver fault



Bear fault zone high grade ore



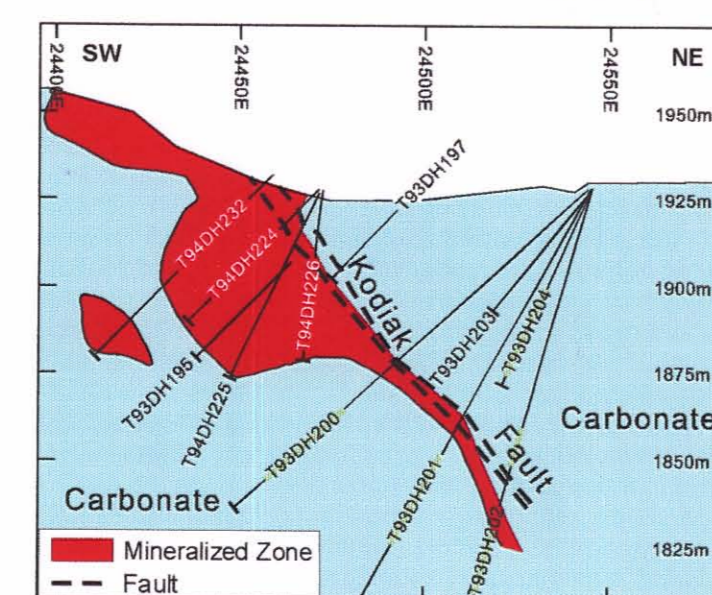
Longitudinal section of the deposits

Gold grade/thickness distribution for each deposit

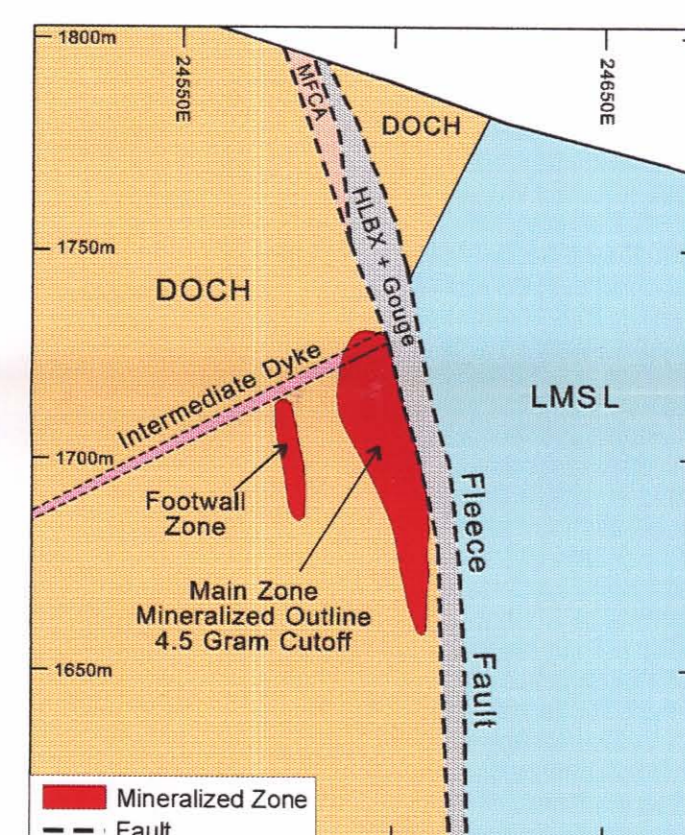
## Kodiak deposits



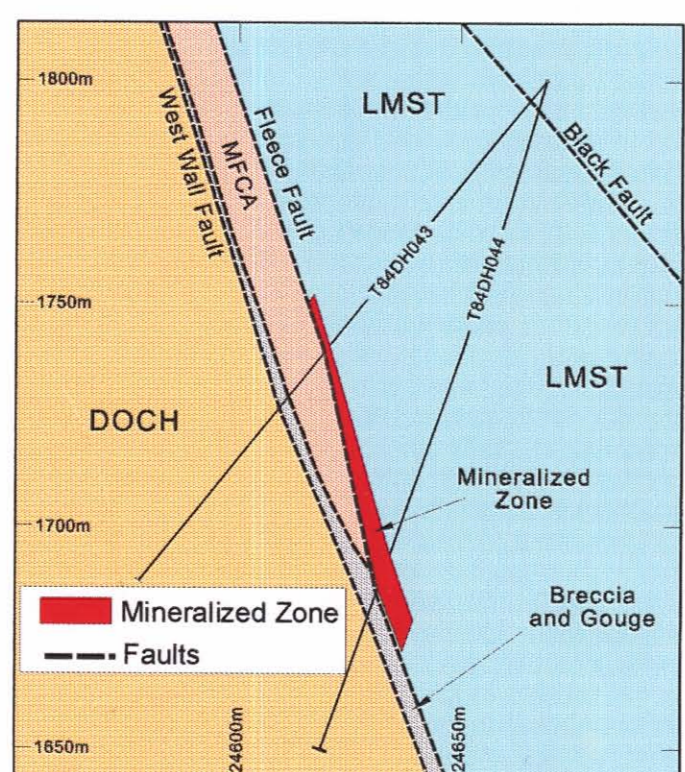
View south into Kodiak A open pit



Kodiak A -- section K600+80

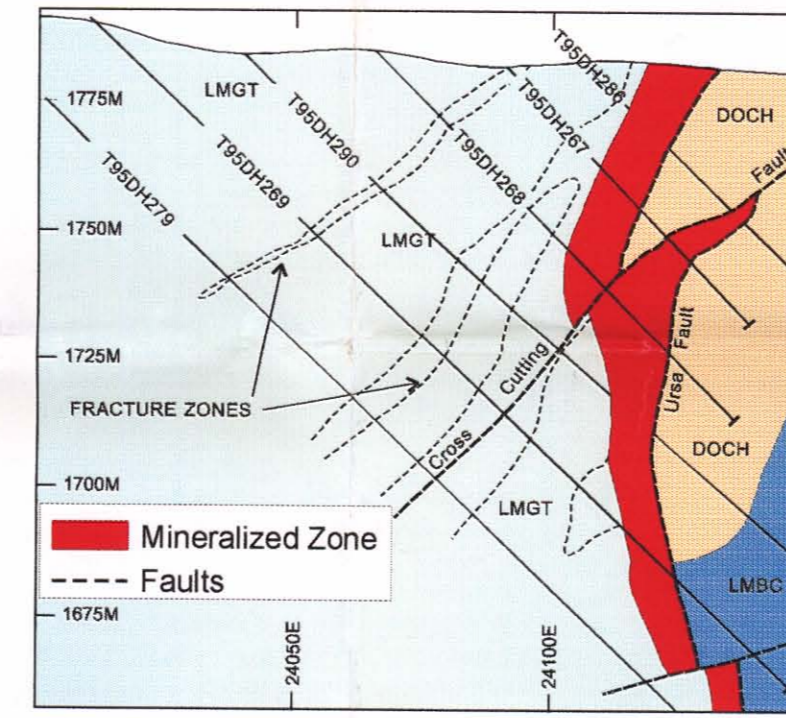


Kodiak B

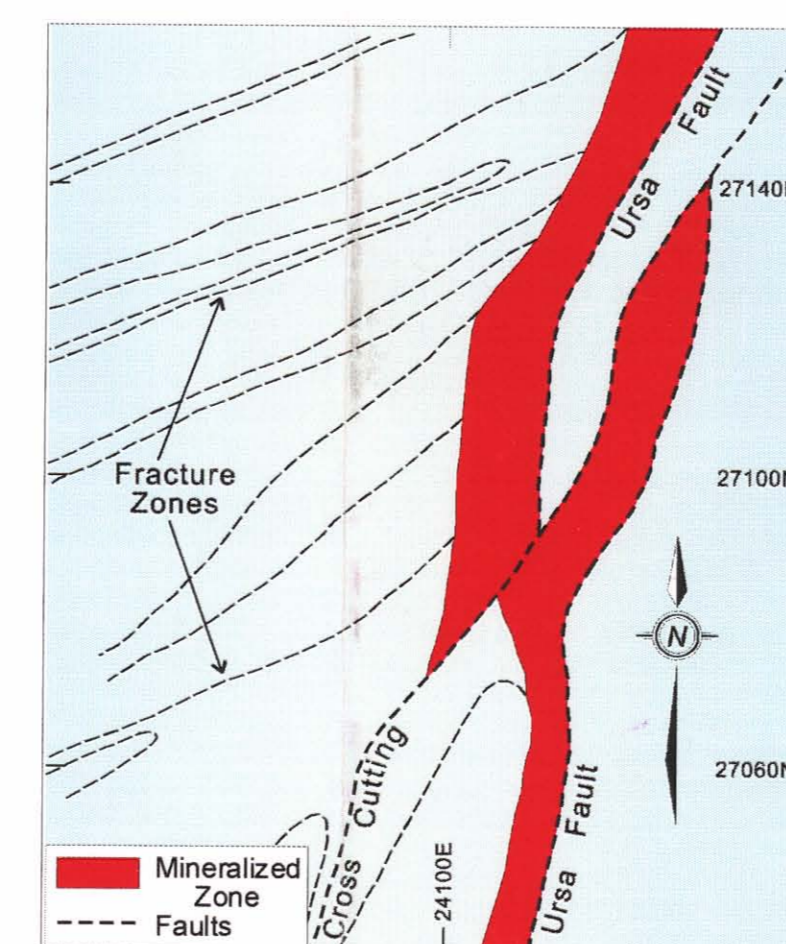


Kodiak C -- section 25600N

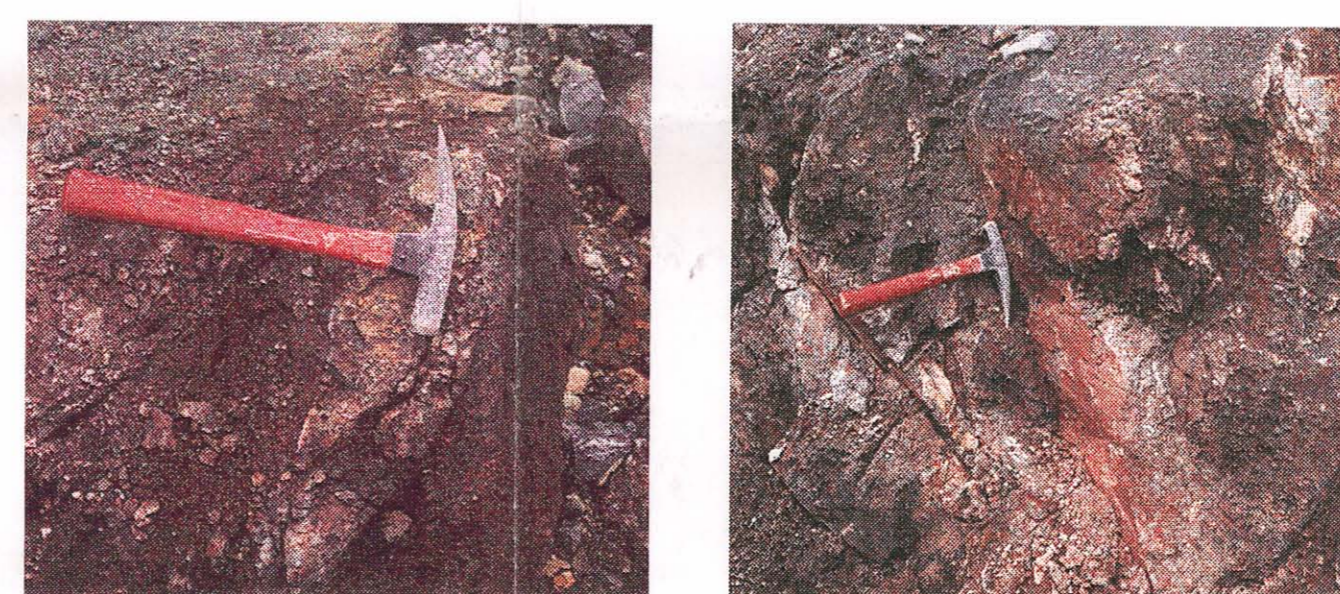
## Ursa Deposit



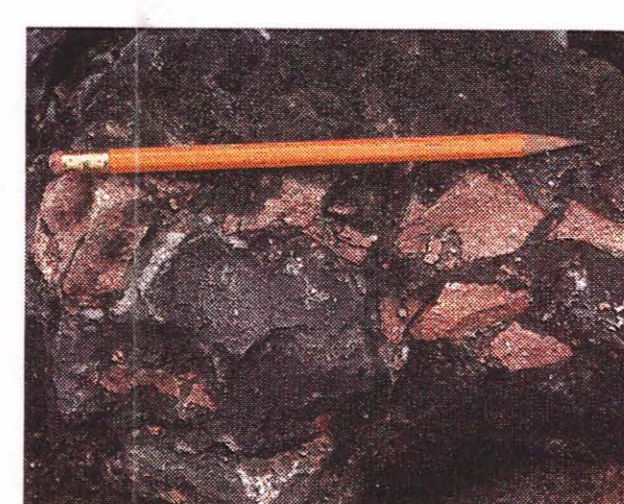
Ursa - section 27120N



Ursa - level plan 1750m



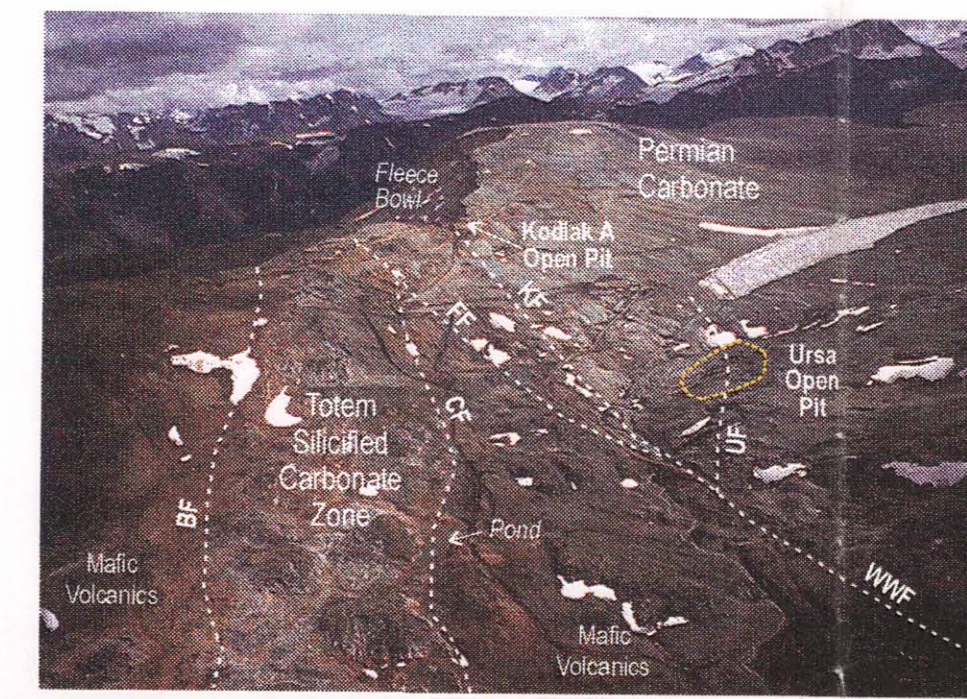
Ursa fault zone = ORE



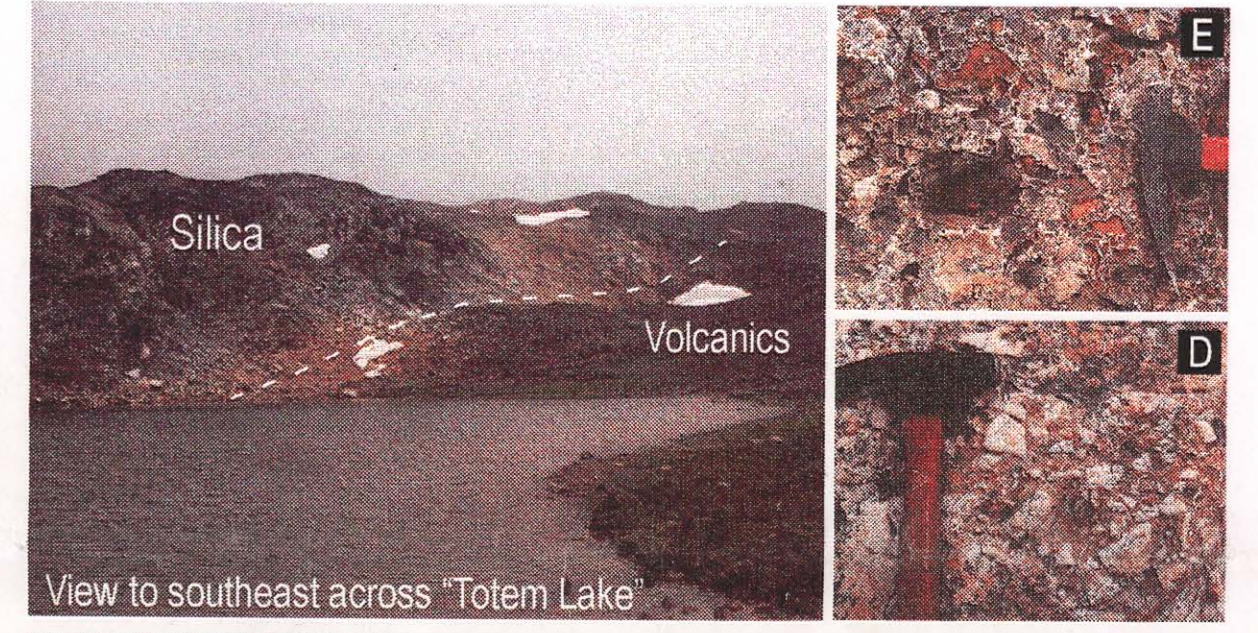
Brecciated intermediate, clay-altered dike (NEW U-Pb date)

## Totem Silica Zone

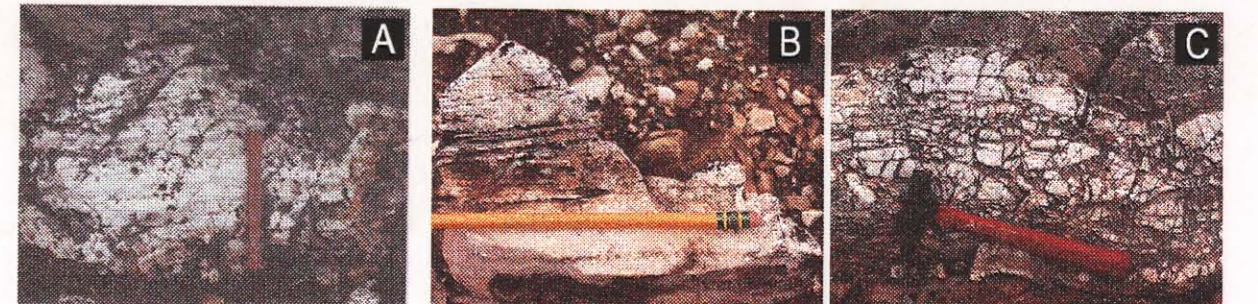
The Totem silica zone, a fault-bounded sliver of completely to partially silicified, limestone and dolomite is a significant but enigmatic alteration zone. Located east of the Ursa deposit, it extends 1.6 km south from Totem Lake and is up to about 250 m wide. Surface sampling and minor drilling have shown that much of the Totem Silica zone does not contain anomalous values of gold.



Aerial view south to the Totem Silica zone (photo by Tom Schroeter)

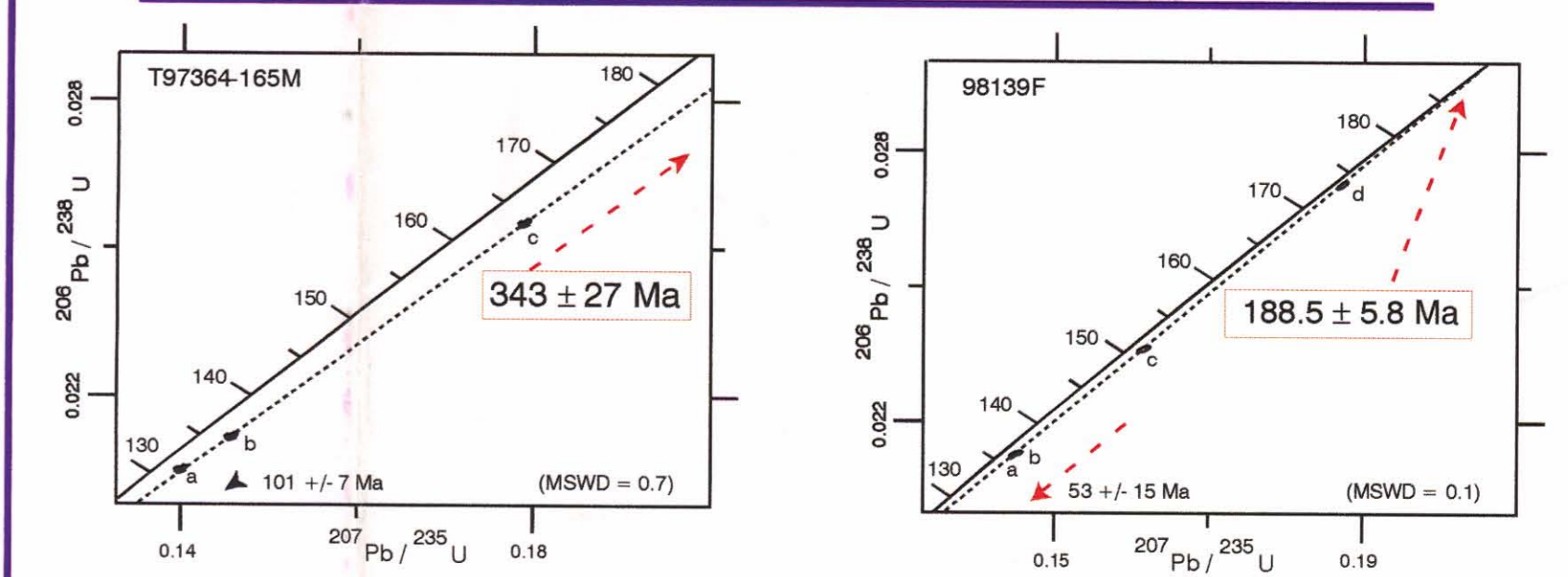


View to southeast across Totem Lake



Silicified limestone textures: (A) bedded jasperoid, (B) partially silicified limestone, (C) jasperoid crackle breccia, (D & E) jasperoid breccia

## NEW U-Pb dates (analyses by Bill McClelland)



Based on regional correlation, the mine succession was previously inferred to be pre-Permian to Upper Triassic. Andesite from the Grizzly deposit hanging wall yielded a Carboniferous age of 343 ± 27 Ma which is consistent with regional U-Pb ages ranging from 334 to 355 Ma. The Carboniferous sequence was structurally emplaced over Permian carbonate during a regional contractional event, prior to development of the Ophi Break structure which truncates folded and thrust Paleozoic Stikine assemblage units.

## PIMA Results (conducted by Anne Thompson and Audrey Robitaille)

- alteration consists of illite, kaolinite, dickite, chlorite, calcite, dolomite and jarosite
- some gypsum, supergene alteration product
- SEM - EDS shows chromium-bearing illite at Bear Main zone
- TO DO: integrate these results with the deposit geology

## Microprobe Results (conducted by Bart Cannon)

### HYPOGENE ORE

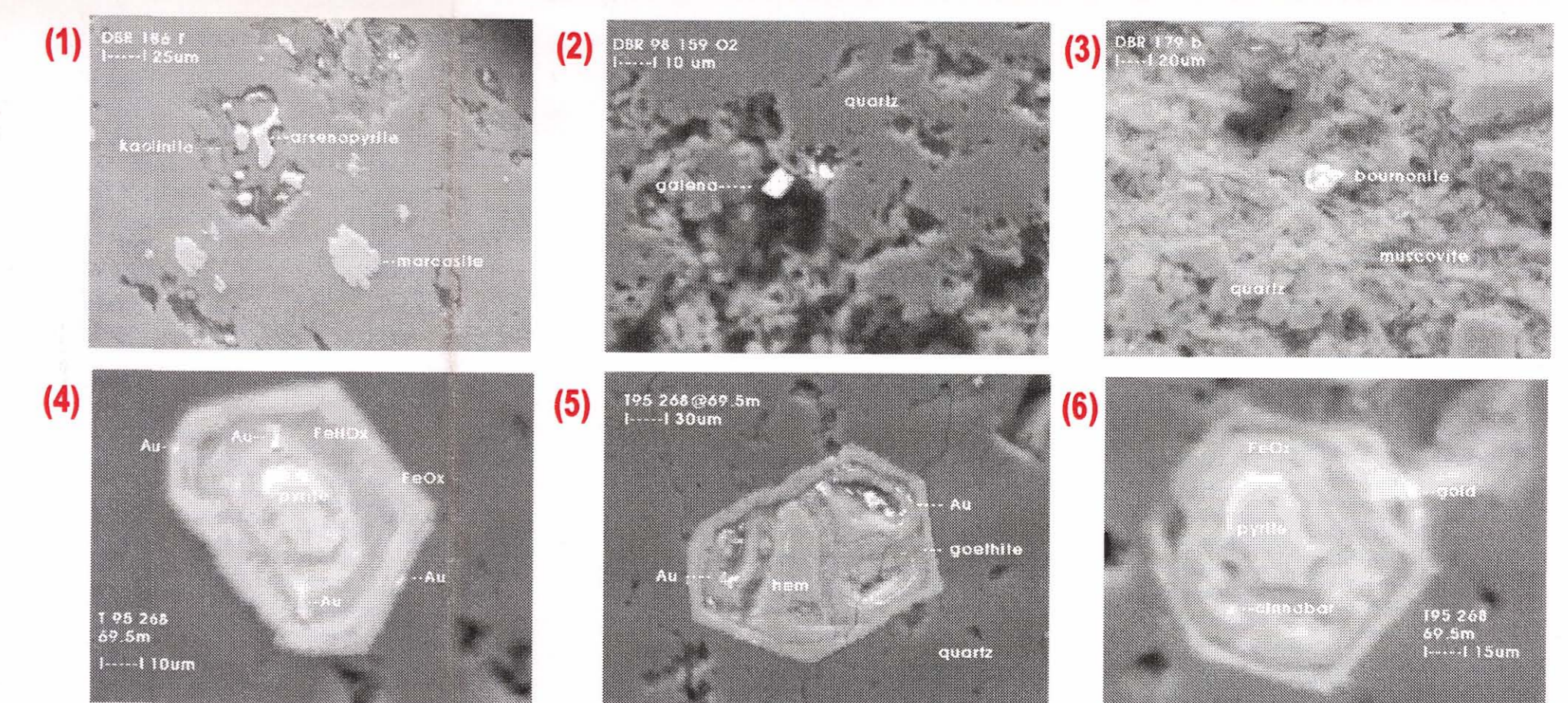
- Bear Main (image 1 to 3)**
- Bear fault pyritic gouge:** Free Au with about 17% Ag; pyrite has trace As; arsenopyrite, rare stibnite, sphalerite, galena (image 2), geocronite, acanthite, bournonite (image 3); sericite and clay (kaolinite) altered.

### Grizzly

- Pyritic fault gouge:** Pyrite with a few 1/10 tenths % As

### OXIDE ORE

- Ursa (images 4 to 6)**
- Hem.-lim. fault breccia:** Free Au (submicron to 4 micron) as ragged grains in hem. & goethite + larger grains enclosed in mu & clay in qtz; pyrite with a few 1/10 tenths % As; rare cinnabar.



## Acknowledgments

Much of the data depicted here stems from exploration projects completed by staff geologists with Chevron Canada Minerals Ltd., Homestake Mining (B.C.), and North American Metals Corp. Petrascanada Inc. (Anne Thompson and Audrey Robitaille) completed PIMA on selected samples. Mike Fournier and Maurice Johnston produced several of the figures and scanned the plates.