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CARLIN STYLE ATTRIBUTES OF THE GOLDEN BEAR DEPOSIT, N.W. B.C.

Regional Scale:

*Gerry
FYI.
Dave*

1. Similarities:

A. Regional Structural Complexity.

- Similar early tectonic history; pre-Pennsylvanian deformation, (Humbolt Orogeny), deposition of Stikine carbonate assemblages, early Triassic deformation (Sonoman), deposition of Triassic volcanic arc sequences, Sevier deformation. Most of the pre-Tertiary orogenic events in N.W.B.C. are similar to those in central Nevada.

- The presence of a north to northwest trending structural corridor. Numerous epithermal Au occurrences occur within this corridor of which Golden Bear is the best known.

- A loose, district scale association between regional scale thrust and mineralized zones.

B. Metallogeny:

- A metallogenic province which includes an association with failed or sub-economic porphyries (Icy Pass porphyry, Cu-Mo). Mesozoic magmatic events, multiple age intrusive events are common in the Golden Bear area. Intrusive ages range from 221.3 to 14.9 Ma.

2. Differences:

- Weak relationships to widespread crustal extension. Barton's and Thormans "amagmatic model" is not well suited to the available data for Golden Bear. This tectonic style might be more prevalent due east of Smithers.

- Widespread skarn occurrences are not well documented in the Golden Bear district, they are common in the Carlin trend.

3. Neutral.

A. Plate Tectonic Environment.

Carlin deposits have evolved in passive carbonate margin which may contain semi-allochthonous sequences or autochthonous "western assemblage" siliciclastic rocks. Although the Stikine assemblage is usually viewed as a significantly transported terrane, the U/Pb chemistry suggests that some of the zircon may have continental inheritance. The question is how allochthonous is the Stikine Terrane? This arc sequence may have evolved closer to its present position than is generally thought.

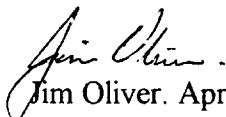
Deposit Scale:

1. Similarities:

- mineralized zones localized by a combination of tight folds, low angle ramps and high angle faults
- solution collapse structures common
- **decalcification of siliceous dolomites, 20-40% silica addition without the development of significant discrete vein systems**
- **multistage pyrite, early stages barren, gold sites on arsenic rims of arsenium pyrites**
- strong spatial relationships with Hg, Tl, As, Sb
- stacked lensoidal mineralized zones
- similar depths and temperatures of formation, greater than 4.0 km's lithostatic load at 230-260 degrees C.
- similar grades to the hypogene ores of deposits of the Carlin trend, > 15 g/T Au.

2. Differences:

- Secondary silica is common at Golden Bear but jasperoid veins are weakly developed. The deposit is likely to have evolved below the depth of the classical high level Carlin occurrences but may be similar to deeper, eg Deep Post systems.
- Sulphidized, intermediate and mafic volcanic rocks, not carbonaceous sediments, are the principle ore host.
- The alteration assemblages at Golden Bear strongly reflect the presence of intermediate and mafic volcanic rocks within the footwall of the deposit. These assemblages include chlorite-zoisite-albite-sericite-+/-potassium feldspar. Clay assemblages are present, but these are largely retrograde.



Jim Oliver. April 3, 1998.