Energy, Mines and Resources Canada Énergie, Mines et Ressources Canada

Earth Sciences

Sciences de la Terre

Geological Survey of Canada 601 Booth Street Ottawa, Ontario K1A 0E8 Commission géologique du Canada 601, rue Booth Ottawa (Ontario) K1A 0E8

December 4, 1986

Your tile Votre référence

Our file Notre référence

Mr. D. Lefebure,
District Geologist,
Min. of Energy, Mines & Pet. Res.,
Bag 5000,
Smithers, British Columbia,
VOJ 2NO.

Dear Dave,

Thank you for your letter of November 10, 1986. The samples have also arrived and they are being crushed-ground and ball-milled. The samples are split into three groups and control reference and duplicate splits are inserted every 10th and 20th sample number respectively. Each sample and vial weighs approximately 15-20 gms and they will analyzed both in-house and by outside contracts in the following manner.

1) Method AA-AirACET, attack HF-FUM HNO $_3$  under pressure - this is a new and very total method at GSC.

element detection limit				Co 2	Ag 0.2	Mn	Fe
		Cd 0.5	V 10		Bi 5		

- 2) AA-Graphite furnace, Au AR-MIBK at GSC, 1 ppb
- 3) X-Ray Fluorescence Lab whole rock at GSC SiO<sub>2</sub>, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Cr<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>T, Fe<sub>2</sub>O<sub>3</sub>, FeO, MnO, MgO, CaO, Na<sub>2</sub>O, K<sub>2</sub>O, H<sub>2</sub>O<sub>T</sub>, CO<sub>2</sub>T, P<sub>2</sub>O<sub>5</sub>, S, Ba, Rb, Sr, Zr

XRF-Energy Dispersive System using Compton Scatter As, Br, Mo, Nb, Pb, Rb, Sr, Th, U, Y, Zr

4) Neutron Activation Analyses by Bondar-Clegg on a test weight of 10 grams or more.

element detection limit	Na 0.02%		Fe m0.2 %		Ni 20	Zn 100	As 0.5	Se 5
	Мо	Ag	Cd 2	Sb	Ba	La	Hf 1	Ta 0.5
		Ir 50	Au 2 ppb		U 0.2			

**Canada** 

The above is a standard package being offered as a gold plus 20 element deal. Gold pathfinder elements such as Ag (too high of a D.L.) Ba, Mo, As, Sb, Se, W yield excellent data at low to high concentrations. Combined with Bi, Ag and the base metal results of the HF total digestion and AA determinations we should have a reasonable elemental association package to investigate alteration, mineralization and halo signatures around and through the various zones that you sampled. Hopefully, the majors and minors will give some clues about the parenthood of your intensely altered samples as well as define the intensity of alteration and/or overprinting of alteration styles.

The GSC check analysis of gold versus NAA gold values have shown very similar results over the concentration range of 1 ppb - 23 ppm. We therefore should be fairly confident in reporting these gold numbers if the control reference material assays are within the previously defined limits.

I have taken your request seriously and I am pushing for analysis well in advance of your January presentation. Depending on what comes back first, I could do some processing here. Maybe some down hole X-Y plots of the variation of total sulphur versus precious metals and other pathfinders would be useful? I'll give you a ring to check on your needs before proceeding. I will of course send you all data sets as soon as they come out of the lab and I'll let you pass on these results to the different company officials as you see fit.

I'm presently building up a data base on Tl contents of various rock types and precious metal deposits in the Cordillera. Presently the analysis is quite costly but an in-house method is expected soon. However, I don't think we will have time before the forum to give you thallium results.

Best of luck with your talk; I hope to get out for the forum but one never knows these days. It would be a great time to discuss logistics with Dan, yourself, and the companies, but this, of course, is tied to receiving our management's blessing to go ahead with a cooperative program including well funded lithogeochemical studies.

In the meantime thank you for the samples and have a happy Xmas and an golden New Year.

Yours sincerely

S. Bruce Ballantyńe

Exploration Geochemistry Subdivision

Mineral Resources Division

SBB/mab