MINNOVA

823729

MEMORANDUM

To: D. Watkins, A. Davidson 30/12/87

From: B. Friesen

Subject: ORE RESERVES--SAMATOSUM DEPOSIT

The following ore reserves have been calculated for the Samatosum Project incorporating the results of the most recent diamond drill program completed last month:

SECTION 9570NW-9790NW:

	TONNES	%CU	%ZN	%PB	G/T AG	G/T AU
Proven:	178 677	0.96	2.32	1.48	800	1.40
Probable:	72 090	0.87	1.48	1.46	645	1.34
Total:	250 767	0.93	2.08	1.48	756	1.38

SECTION 9790NW-10010NW (open pit consideration):

	TONNES	%CU	%ZN	%PB	G/T AG	G/T AU
Proven:	286 207	1.40	4.36	1.80	1269	2.07
Probable:	60 402	1.35	6.05	2.50	1501	2.13
Total:	346 609	1.39	4.66	2.00	1309	2.08

SECTION 10010NW-10070NW:

	TONNES	%CU	%ZN	%PB	G/T AG	G/T AU
Proven:	4756	0.31	0.08	0.20	310	0.65
Probable:	7682	0.52	0.10	0.24	398	0.68
Total:	12 438	0.44	0.09	0.22	364	0.67

GRAND TOTAL:

	TONNES	%CU	%ZN	%PB	G/T AG	G/T AU
Proven:	469 640	1.22	3.54	1.72	1081	1.80
Probable:	140 174	1.06	3.37	1.84	1000	1.64
Total:	609 814	1.18	3.51	1.75	1062	1.76

MISCELLANEOUS NOTES REGARDING THIS CALCULATION:

This ore reserve estimate is the result of a basic "Perpendicular Bisector" method of calculation. Polygons were created on 1:250 scale cross-sections looking northwest along the geological grid at 20 meter intervals, by constructing bisectors between drill holes. Average grade and tonnes were then calculated for the individual polygons from available drill assays, specific gravity data, and the measured areas of polygons. Where actual specific gravity data were not available, estimates were used of 2.5 for waste and 2.9 for ore.

The results compare very favourably with those obtained by Alex Davidson and Ian Pirie using a similar method of calculation (607 682 tonnes @ 1.23%Cu, 3.46%Zn, 1.76%Pb, 1058.6g/t Ag, and 1.78g/t Au); although the overall volume of the orebody used in the earlier calculation may not have been quite as large. The calculation parameters of this ore reserve estimate attempted to conform as close to that of Alex Davidson and Ian Pirie as practicable. The more important considerations were:

1) Minimum Ore Thickness

The minimum ore thickness utilized was 2.0 meters except on some ore extremities which were drawn to "pinch out" to 0m thickness. Dilution at zero grade was applied to ore areas thinner than 2.0 meters to make up the minimum thickness. NO OTHER EXTERNAL DILUTION WAS APPLIED TO THIS CALCULATION.

2) Minimum Ore Grade

A minimum 250 gram/tonne silver grade was used to establish the ore limits. An exception to this is in a few instances where lower value areas were included to preserve the continuity of the ore horizon along strike and dip, or if marginally lower values were located in the immediate hangingwall or footwall of the ore zone, or if significant metal values other than silver were present in the projected ore area (i.e. gold, copper, zinc or lead). As a rule, low-grade areas between hangingwall and footwall lenses were not included in the estimate even though (especially in an open pit situation) there are probably significant amounts present which could make mill feed.

3) "Probable Ore" Category

Probable Ore is considered for the purpose of this report to include blocks of mineralization projected through "windows" in the ore horizon containing little or no drill coverage. The largest blocks of Probable Ore occur on Sections 9740NW, 9920NW, and 9960NW. The existence of this ore is virtually assured by the occurrence of the ore zone on adjacent sections. Probable Ore was calculated by averaging together one-half of the stated tonnage and grade from the adjacent sections.

4) Ore Continuity

This calculation is actually a summary of what is probably at least three separate ore lenses confined to a relatively narrow stratigraphic interval. These lenses are identified in the individual section summaries. The continuity of ore <u>along</u> these lenses is reasonably certain even though there is variation in ore type within a single ore lens on the same section. The relationships <u>between</u> the individual ore lenses is however, uncertain.

5) Cutting Assay Values

Only one individual grade interval was cut in the entire calculation. In hole RG-108, 13,958 g/t silver was cut to 3248 g/t as per the Davidson/Pirie calculation. The pre-feasibility study of the Samatosum Deposit by Blackwell and Bonham-Carter dated October 6th, 1987 addressed this subject and concluded that erratic high values (above 4000 grams) had no significant overall effect. In view of the most recent drill program, which increased the assay database substantially, this conclusion should be reconfirmed.

6) Faulting

The offsetting effects of faulting on the ore reserve have been largely ignored, considering the overall abundance of fault zones observed and logged in the drill core. Faulting was considered on Sections 9600NW and 9760NW where some interpretive work has been undertaken; however the true effect of faulting on the ore reserve still remains unresolved.

RECOMMENDATIONS

As noted in (4) above on ore continuity, drill hole logging has revealed variations of ore types along strike and dip. We should therefore be prepared for the possibility of ore intersections that are discontinuous between drill holes and/or sections. However, in view of the overall number of ore intersections occurring in their projected positions, the likelihood of any major discontinuities occurring within the deposit is considered to be remote.

It is strongly recommended that in the very near future, a computer block modelling/planning/scheduling study be initiated for the deposit. The current emphasis is on the silver content; however there are significant occurrences of gold, copper, zinc and lead within and adjacent to the main deposit--the value of which has yet to really be considered--especially for the area under consideration for open pit mining (Section 9800NW-10000NW).

The narrow lens of ore reported between Sections 10010NW and 10070NW is poorly delineated by a lack of drill hole coverage, yet remains one area with the potential for increasing ore reserves. Future drilling should take this into consideration.

R. G. Friesen