Province of British Columbia
GEOLOGICAL SURVEY BRANCH
Ministry of Energy, Mines and Petroleum Resources

MEMORANDUM

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CONFIDENTIAL

TO: Bruce McRae
ADMM

September 6, 1989

FROM: W. J. McMillan

RE: VISIT TO CALPINE RESOURCES' ESKAY CREEK PROPERTY AUGUST 16, 1989

Preamble:

If the assay results reported for hole 109 from the Eskay Creek property are valid, then further work may develop minable reserves that will have a tremendous impact on development of the " Golden Triangle". But I have some concerns, detailed following, about the way assay data is handled for the property and suggest caution in dealing with the results.

This report is based on a recent visit to the property and a talk given at the Bronson Minisymposium.

Background:

This joint venture is funded 50% by Calpine Resources Inc. and 50% by Consolidated Stikine Silver Limited.

As of June 1, 1989, Consolidated's annual report cites reserves estimated at 3 million tons of 0.26 ounces/ton gold equivalent in the 21 Zone. They proposed to mine the deposit by open pit. These estimates were prepared by Keewatin Engineering Inc. based on results from 71 drill holes.

Core from drill holes is split on the property and sent out for all further processing. Assay results are reported to the company office in Vancouver. Like the general public, Geologists on the property do not see individual assay results; they first see assay results plotted on a drill hole section.

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Comments:

Before any government funds were committed to infrastructure, sample preparation methods, analytical techniques, and all data for individual assays should be reviewed. I am not suggesting that the assays are incorrect, just that the way they are handled leaves room for questions. For example, hole 109 contains 62 feet of 7.7 ounces/ton gold within a reported intercept of 682 feet of 0.88 ounces/ton gold. Arithmetic averaging was done (see assay data in appended Northern Miner article) but gold values below 475 feet are actually below 0.1 ounces/ton. Contrary to normal practice, they apparently did not cut the high grade section. Thus although the results are spectacular the way they are reported is misleading. Another concern is that we do not know how the gold is distributed within the mineralized sections; is it as nuggets, or uniform? Nuggets are notoriously fickle!

On the positive side, Consolidated Stikine Silver Ltd. reported assays for mineralized intercepts from their first 70 holes in the 21 Zone in their annual report released in June, 1989 and assays are given for mineralized intervals from hole 109 in the appended Northern Miner report. Unfortunately, results from several earlier holes are not yet released.

General Setting:

The property is situated east of Tom McKay Lake (see maps) in northwestern British Columbia's Golden Triangle. It is not new; the first work done on the property was in the 1930's. The mineralization is associated with an extensive zone of pyritic, silicified rocks that stands out as a ridge (see photos). The new zone is in argillites that rarely outcrop (they are easily eroded rocks with resistant rocks above - basalts - and below - rhyolite tuff and dacitic volcaniclastics). The company interpretation is that mineralization is stratabound with footwall stringer zones and hosted by Jurassic Hazelton Group rocks. Ministry mapping correlates the strata with the Mount dillworth Formation of the Hazelton Group.

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Work last year on the 21 zone outlined reserves of mineralogically complex, so-called refractory ores. In addition to precious metals they carry mercury, arsenic, antimony and base metal concentrations. Minerals are stibnite, realgar, orpiment, sulphosalts, galena, sphalerite and chalcopyrite. Silver to gold ration varies from about 5:1 to 200:1 and averages 10:1. The zone is 500 metres along strike, 5 to 45 metres wide and has a dip length of 250 metres.

Processing would be tricky (gold recovery from a preliminary test from the realgar-rich zone was about 70% and environmental problems could be significant.

In places the argillites carry calcareous fossils and sulphides show slump features, debris flow textures and bedding that suggest deposition on the sea floor. Other areas are veined and look epigenetic (stringer zone ore?). The appended photos show some textures for the mineralization and show the setting of the property.

Work is continuing on the 21 zone, which now consists of north and south zones separated by a low grade interval (see section in Northern Miner article and map).

The refractory south zone mineralization is hosted in graphitic argillite below pillow lavas. It has associated magnesian chlorite alteration and slightly younger Ba-muscovite alteration. Gold is associated with stibnite in some holes but is not actually in the stibnite; massive stibnite veins occur in holes 88-21 which contained about 40m of 0.44 ounces/ton gold. Footwall rhyolite is quartz-sericite altered and strongly silicified with local K-Feldspar alterations. Arsenopyrite is present and mercury and silver levels are relatively high.

The north zone, where hole 109 was drilled, has native gold and silver, sulphosalts, sphalerite, galena, chalcopyrite and tetrahedrite (or tennantite). Zinc is higher, volatile metals lower and silver to gold ratio is lower. Although not yet tested, processing should be simpler and environmental problems fewer than the south zone.