Province of British Columbia

Ministry of Energy, Mines and Petroleum Resources

Bag 5000
Smithers
British Columbia
V0J 2N0

Snip 887749

July 21, 1988

Imperial Metals Camp

Dear Sir:

RE: Bronson Creek Mapping Project

Last year Mike Gunning and I spent approximately 2 1/2 weeks mapping in the immediate vicinity of Bronson Creek. This will be followed up with another week of field work from August 6th to August 12th, 1988. The objective of the project is to produce a preliminary open file map at a scale of 1:25,000 in 1989.

I have been and will continue to draw on the company mapping and expertise to help me complete this project. We will be camped on Bronson strip at Keewatin Engineering Inc. camp.

Enclosed you will find a short article which resulted from the work last year.

Sincerely,

David Lefebure

David Lefebure
District Geologist

DVL/jh

cc: V.A. Preto
W.R. Smyth

Encl.

LOG NO: 0802 T /
ACTION:
→ Tom
FYI.
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Letter Sent To:

D. Alldrick
c/o Limar - Stewart

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Province of
British Columbia

NEWS RELEASE

MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

FOR IMMEDIATE RELEASE

1990:08

March 2, 1990

SNIP GOLD PROJECT GETS GOVERNMENT OK

Victoria, B.C. - The B.C. government's Mine Development Review Process has given approval-in-principle to the proposed SNIP gold project 320 kilometres northwest of Smithers, Mines Minister Jack Davis announced today.

"SNIP is one of a number of northwest B.C. projects now in the review process, and we expect continued interest in the region's excellent geological potential," the minister said.

The 13-year project has completed Stage I of the Mine Development Review Process, which ensured that environmental concerns over Iskut River water quality and fishery stocks were addressed. The 200-workforce gold mine is now obtaining the detailed licences and permits needed to begin development.

The minister noted that B.C.'s Mine Development Review Process is internationally recognized for integrating environmental, social and economic factors in decision-making. It provides a "single-window" contact point for involved parties, including provincial, federal, and local governments, mining companies, native groups, interest groups and the general public.

The SNIP project is currently accessible only by air. Government assistance was recently given for environmental studies to expedite route planning of the proposed Iskut road, which would provide access to an important part of B.C.'s remote northwest. Joint company/government cost-sharing options are being discussed with several mining companies active in the area.

- 30 -

For further information:

Irwin Henderson
Director of Communications
and Public Affairs
(604) 387-5178

SNIP

FAME '87

#16748

REGIONAL GEOLOGY

Forest Kerr mapped the regional geology of the Iskut River area in the period 1926-1929 and published GSC map 311A in 1935. Kerr's memoir 246 on the area was published posthumously in 1948. The Geological Survey of Canada's "Operation Stikine" in 1956 mapped the Stikine-Iskut area on a regional basis, published as the 1"=4 mile GSC Map 9-1957. Past Cominco work, Mawer (1964), Parsons (1964, 1965), Nagy (1966), Bagshaw (1968) discusses the regional geology and mineralization in the vicinity of the SNIP claims.

GSC mapping shows the area is underlain by Permian and Triassic metasedimentary and metavolcanic rocks. Andesitic lava and tuff, plus argillite and greywacke, are dominant rock types in the area. Orthoclase porphyry occurs as a stock north of the SNIP claims and as a northwesterly trending subvertical dyke in the southeast portion of the claim group.

Recent work by E.W. Grove for Skyline has concluded that the host rocks for Skyline's gold zones are similar to members of the Lower Jurassic Unuk River Formation (Hazelton Group), while unconformably overlying rocks are correlative to the Middle Jurassic Betty Creek Formation (Hazelton Group). Grove feels he can take detailed stratigraphy from the Stewart area and correlate it to the Iskut River area.

PRIMARY ROCK TYPES:

(a) Sediments

Most of the rock types exposed on the SNIP claims appear to be metasediments of volcaniclastic origin. They have been subdivided into four lithological types which are probably interbedded: siltstones, wackes, calcareous wackes, and pebbly wackes. The rocks are generally massive bedded and bedding is only seen in silty units between turbidites. Unaltered siltstones and greywackes are composed mainly of albitic plagioclase with a variable content of calcite. Metamorphic recrystallization has formed biotite from the clay component. This biotite generally parallels a weak foliation. The coarser grained wackes and the pebbly wackes contain clasts of (a) plagioclase, (b) K-feldspar, (c) porphyry with plagioclase and orthoclase phenocrysts, (d) biotite + augite andesitic porphyry, and (e) fine grained andesite. Quartz clasts are only rarely present. All clasts

are subangular and poorly sorted indicating immature sedimentation. Source rocks would appear to be intermediate volcanics and associated syenitic intrusives.

(b) Intrusive Rocks

Syenitic orthoclase porphyry occurs as a dyke-like intrusive along the northeastern flank of Johnny Mountain. The porphyry contains 40% orthoclase phenocrysts, from 5 to 15 mm in diameter, set in a fine grained grey matrix composed of plagioclase, sericite and disseminated magnetite. This unit is enveloped by an extensive alteration halo in adjacent metasediments (described later).

Biotite + pyroxene lamprophyre was intersected in a number of drill holes and also seen in trenches and in outcrop in gullies on the northeast flank of Johnny Nose. The dykes are a few metres in thickness and have 20-30° (NNE) azimuth. In outcrop the contacts dip 85°W.

In thin section, the dykes are seen to contain biotite, K-feldspar, plagioclase and pyroxene phenocrysts in a fine grained matrix consisting of biotite, K-feldspar, sericitized plagioclase, and two pyroxenes (one aegeritic). The plagioclase phenocrysts are reddish coloured in hand specimen.

Leucocratic syenitic feldspar porphyry is present in DDH 86-1 at 60.3 m. This unit forms a thin dyke (2 m true thickness) consisting of 15% plagioclase phenocrysts (3 mm max.) in a fine grained K-feldspar matrix. Minor disseminated pyrite (up to 4%) is present. This unit may be similar lithologically to the feldspar porphyry which is closely related to mineralization on the Skyline ground.

ALTERED ROCKS:

The metasediments on Johnny Nose have commonly undergone metasomatic alteration, giving rise to brown weathering pyritic rocks which are white or buff on fresh surface. The intensity of the alteration appears to be proportional to distance from the syenitic porphyry exposed on the northeast flank of Johnny Nose. Alteration "modes" are also present on the northwest flank of Johnny Nose, but are of limited extent. Altered rocks were also noted in all of the drill holes.

Two main alteration types are present which commonly may overlap in hand specimen. The earliest is a pervasive K-

feldspathization which may constitute up to 60% of the metasediment and gives rise to a grey, fine grained rock which may be confused with silicification if a stain is not used. Some coarse grained wackes contain clastic K-feldspar grains, and it is sometimes difficult to separate detrital K-feldspar from metasomatic K-feldspar.

The second alteration type is characterized by the assemblage sericite + pyrite + ankerite $\pm$ pyrite and commonly completely obliterates detrital textures and mineralogy. The sericitic alteration is best developed around the syenitic orthoclase porphyry on the northeast flank of Johnny Nose. In places, especially on the northeast side of the syenite, abundant stringers of magnetite are present in the sericitic rocks (up to 10%).

A third type of alteration was noted where a greenish-black, fine grained rock containing abundant calcite veins comprises 40% biotite and 30% chlorite. It is not known whether this mineralogy formed as a result of chloritic metasomatic alteration or is a result of contact metamorphism of a peculiar primary bulk composition.

METAMORPHISM

The metasediments on Johnny Nose have been hornfelsed presumably because of the proximity to the syenitic orthoclase porphyry. The most obvious effect of the metamorphism and deformation on the metasediments has been the recrystallization of biotite in the matrix between detrital clasts and formation of a weak foliation.

The mineral assemblage formed during metamorphism in rocks which were not affected by metasomatic alteration is biotite + albite + epidote + calcite + sphene + pyrite. Recrystallization probably took place in the albite-epidote-hornfels facies.

The timing relationship between metasomatic alteration (K-feldspathization and/or sericite/pyrite) is not well understood. Intuitively it may be assumed that the hornfelsing was essentially contemporaneous with, or closely succeeding the metasomatic alteration.

STRUCTURAL GEOLOGY

1. Bedding (So)
   Bedding measurements can be obtained from silty interbeds in the massive bedded wackes. In the trenches only three convincing attitudes were obtained - 105° strike dipping to north at 35 to 60°. In a gully 150 m to the southwest of DDH 10, bedding attitudes were fairly flat lying (e.g. 70° strike 10° dip; 160° strike, 8° dip.

2. Schistosity (S_1)
   This is poorly developed in the greywackes and is characterized by a fracture cleavage with development of fine grained biotite. At the discovery showing, a zone of well foliated wacke and phyllite is sub-parallel to the main vein structure. This is interpreted as a zone of shear which has accommodated the vein mineralization at a later period. Most of the measured cleavages have southerly or westerly dips. Different generations of cleavage may be present, but are hard to differentiate at this stage.

3. Mineralized Structures (S_1 min)
   Veins are mineralized with pyrite + quartz + sphalerite + galena + arsenopyrite and have 110° to 165° strike and generally dip between 50° to 80° to the southwest. It may be significant that the "Rope Zone", an arsenopyrite lens developed along a fracture cleavage with 90° strike and vertical dip, is somewhat different from the other veins. Several irregular oxidized veins were seen in the footwall of the main shear.

4. Crenulation Lineation (L_2?)

   This was best developed in the foliated rocks bordering the main vein and may be associated with the development of a later cleavage (S_2?). The lineation plunged 25° to northwest. Elsewhere, lineation is not well developed.

5. Late (barren) Quartz Veins
   These veins are generally up to 1 m long, 10 cm wide, and have surprisingly consistent orientation (60° strike, dip 30-50° southeast). They may be useful in helping to orientate drill core.

6. Joints
   Orthogonal joint sets are fairly prominent. The best developed set has orientation of 20°E of N and has been exploited by lamprophyre dykes.

1987 EXPLORATION PROGRAM

Based on the result of the 1986 drill program and the positive indications obtained from the extended geochemistry, an aggressive evaluation program was completed with an initial budget of $1.8 million. The objectives of this program were to obtain sufficient drill information on the mineralized zones to plan a fall/winter underground exploration program.

To support the drill and proposed underground exploration, an airstrip and permanent camp were constructed commencing in early February. Due to snow cover at higher elevations, diamond drilling started near the valley floor to test numerous widely spaced surface targets. The third hole (S-15) of the year intersected what was to be established as the extension of the Twin Zone Structure, 530 metres down slope from the 1986 drilling.

The reconnaissance drill program continued to test widely spaced targets until the assay results for S-15 became available. Hole S-35 was spotted to test halfway between the 1986 drilling and S-15. The positive results of this hole lead to the immediate drilling of S-37 and S-39 on the fence. The surface exposure of high-grade mineralization was also identified in the drill area.

After S-35 was drilled, the majority of the drilling concentrated on filling in and extending the Twin Zone mineralization. By the completion of the initial budget, the Twin Zone was traced over a horizontal distance of 1000 metres and a vertical interval of 500 metres, with fences of holes at 100-metre intervals.

The Twin Zone can best be described as a 1 to 10 m thick shear-vein that cuts through a massively bedded feldsphathic greywacke $\pm$ siltstone sequence. Bedding in the sediments is variable from 045°-100°/10-45° NW-W. The character of the Twin Zone mineralization shows no appreciable change over the vertical range tested to date suggesting a mesothermal style of gold mineralization.

Gold mineralization occurs in centimetre to metre scale alternating bands of, in descending order of abundance: massive (streaky) calcite; heavily disseminated to massive pyrite; biotite-chlorite, as thin bands/streaks; quartz; pyritic to non-pyritic fault gouge.

Pyrite averages 15% throughout the Twin Zone (3.5% to 30%).

Other sulphide minerals include pyrrhotite, chalcopyrite, sphalerite, galena and arsenopyrite. Molybdenite is also common locally. Minor/trace amounts of bismuth and lead tellurides, including tellurobismuthite, cosalite, hessite, and volynskite have been noted in polished thin sections.

Narrow parts of the zone (+/- 1 metre) often comprise dominantly one of the above types. Thicker sections show repetitive interbanding of all types. The thicker (3 metre +) sections also contain centimetre to meter interbands of weak to highly biotite/carbonate/K-spar-altered/flooded feldspathic wacke. These bands often contain less than 1 g/t gold and have been included as internal low-grade sections in the gold grade/thickness calculations (Table I). Later shearing has imparted a moderate to strongly developed foliation to the zone, which is best developed in biotite-(chlorite)-rich sections. "Geologic contacts" are usually sharp and well defined with gold values in the immediate footwall and hangingwall, mostly up to a few 100 ppb. A few "unexpected" values (1 to 10 g/t range) have been encountered in rocks adjacent to the Twin Zone (Table 2), but these have not been included in the "geologic" tonnage and grade estimates outlined on Figure 3.

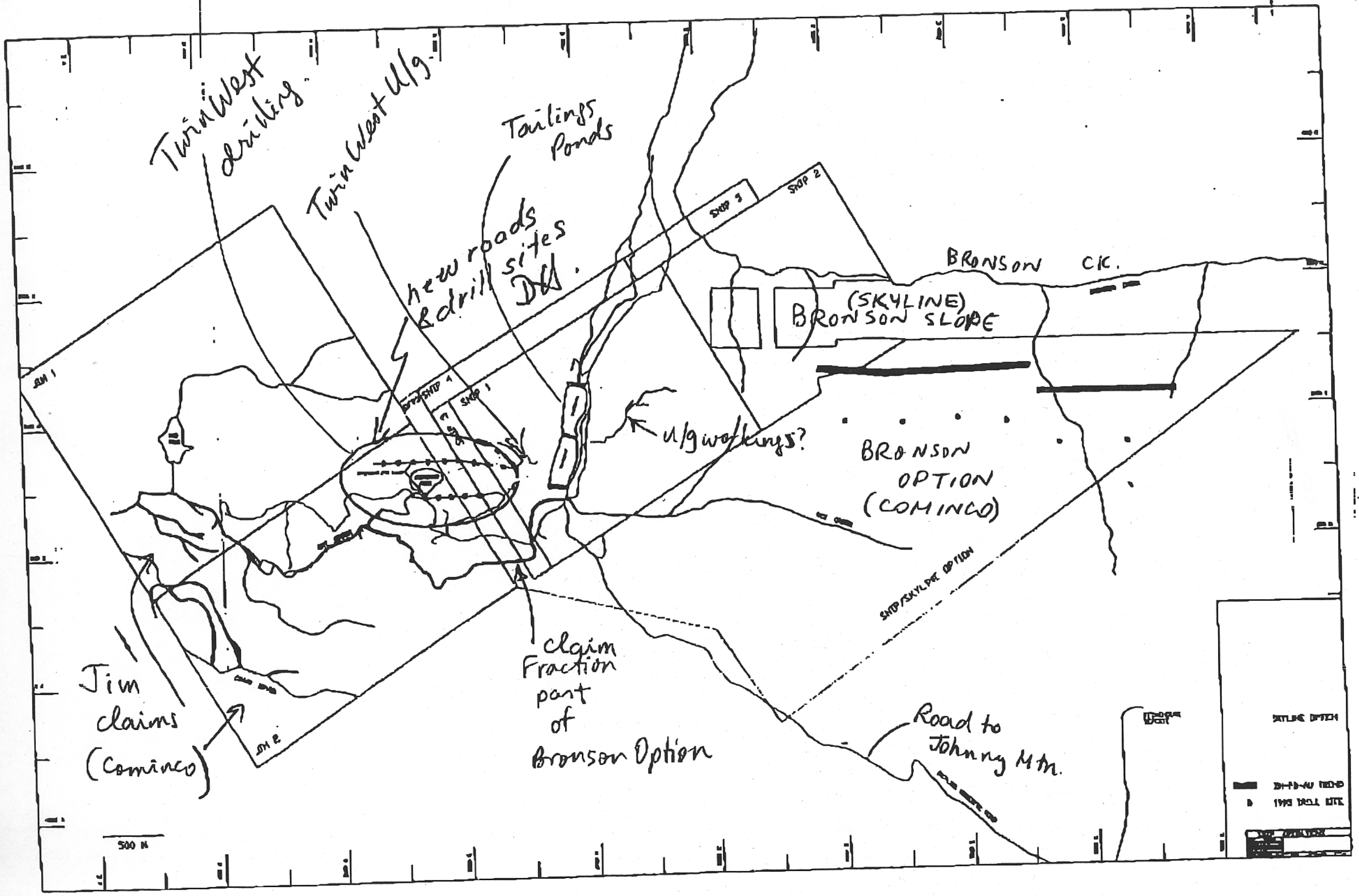
A preliminary cyanidation test, carried out on composites from Hole 86-3, indicates recoveries of 96.9% for Au and 80.8% for Ag. Polished sections reveal that native gold is almost always free. It occurs with gangue minerals (biotite, sericite, quartz) and commonly at the margins of pyrite, arsenopyrite and telluride grains.

About halfway through the 1987 program, the assay results confirmed that the Twin Structure was probably the most important zone present. The drill results also indicated that the Twin Zone was one of several shear-vein structures developed over a 150-metre interval. The entire structural zone has been named the SNIP Structural Zone, with the best developed and most continuous structure identified to date named the Twin Zone.

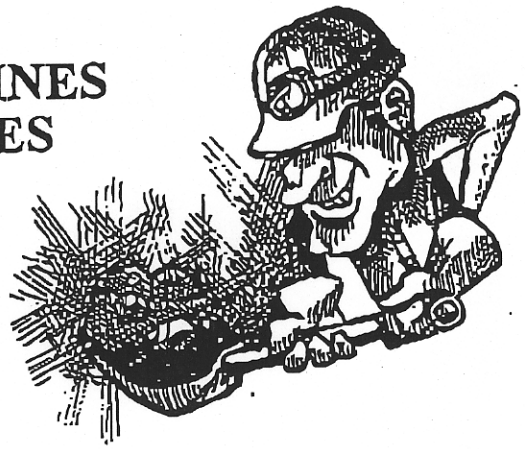
At least four other structures in this trend have returned ore grade intersections.

A supplemental budget was approved to tighten up drill information at 50-metre fences and to complete four deeper holes to confirm the continuation of the Twin Zone at the proposed initial underground access level.

The Twin Zone Structures are open on strike and to depth. Results to date suggest that minor fault disruptions may be anticipated during the extension of the zones.


Twin West drilling
Twin West U/g
Tailings Ponds
new roads & drill sites DDH
BRONSON CK.
(SKYLINE) BRONSON SLOPE
SNIP 1
SNIP 2
SNIP 3
SNIP 4
u/g workings?
BRONSON OPTION (COMINCO)
SNIP/SKYLINE OPTION
claim Fraction part of Bronson Option
Jim claims (Cominco)
Road to Johnny Mtn.
500 M
SKYLINE OPTION
1993 DRILL SITE

MINISTRY OF ENERGY, MINES & PETROLEUM RESOURCES



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Date: Nov 3 **Time:** 7:45

Fax #:

Please deliver message to:
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GSB - Vanc

From:
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Paul Wojdak
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Comments: Copy of map ~~to accr~~ that accompanied surface drilling on Twin West Notice of Work.

You can see the ( ) area straddles the - Snip 1, Snip 3 claims (Snip Mining Lease) + Sky claim (Skyline option to Cominco) + Jim claim (Cominco)

Proposed decline (just approved) is on Snip mining lease

Paul

No. of pages (including this one): 2

If you have any problems receiving this transmission, please call (604) 847-7383.