

File: "Terrace"

TEL.: BUS. 682-4144

RES.: 987-9520

801405

WILLIAM M. SHARP, P. ENG.  
CONSULTING GEOLOGICAL ENGINEER

Note Nov 8/66 - Norm Rummel's gechem plot indicates a geo Mo anomaly. ( $\pm 30-40$  ppm) over intrusives & also indicates that "high" can be quite local - i.e. Mo is not significantly mobile -

STE. 808, 900 WEST HASTINGS ST.  
VANCOUVER 1, B. C.

August 24, 1966.

**REPORT**

**PRELIMINARY GEOLOGICAL EXAMINATION**

**BIG-JOE GROUP**

**CEDAR RIVER, TERRACE AREA, B.C.**

**-SKEENA M.D., COAST DISTRICT**

*Terrace Blanche*

**President and Directors,  
Silver Standard Mines Ltd.,  
808 - 602 West Hastings Street,  
Vancouver 2, B.C.**

**Attention: Messrs. A.C. Ritchie, P. Eng.  
Wm. St. C. Dunn, P. Eng.**

**Dear Sirs:**

The following report summarizes my recent examination of the Big Joe Group in accordance with your preliminary authorization and general directives.

Field work consisted of a rather general reconnaissance, supplemented by localized detailed geological mapping and sampling, of a south-easterly section of the group on which the preliminary exploratory efforts of the prospector-owners have been focused.

This report embodies a considerable amount of general information pertaining to the property and area, as compiled by Mr. Dunn, and made available by Mr. Ritchie. The writer is grateful for the provision of this, and also for the accommodation and helpful guidance and field assistance supplied by Messrs. E. R. Anderson and L. Remillong.

## INTRODUCTION:

Authorization to proceed with a preliminary field examination of mineral showings recently uncovered by the owners, and of general features of the local geology and mineralization was provided by Mr. Ritchie on August 3, 1966. At the same time he provided the writer with data incidental to, and resulting from Mr. Dunn's initial inspection of the property. This file consisted of a coloured G.S.C. (preliminary) map 11-1956; a photo-print, from the B.C.D.M. record map, of the Big-Joe claims; a sketch plan of the group at 1" = 1,500'; a tracing - "N.W. Corner Map 11-1956"; and of descriptive notes, "Big Joe Group", July 8, 1966, by Mr. Dunn.

The amount of field time to be devoted to this assignment was left to the writer's discretion. The scope of the actual examination, accomplished during August 8-9, 1966, and which consisted of a general geological reconnaissance of the more thoroughly prospected parts of the property and supplementary detailed mapping, soil sampling, and sampling of a few, possibly representative exposures of quartz-molybdenite mineralization, appears sufficient until a more extensive general prospecting program has been carried out. With regard to the latter item, the writer concurred with the owner's plans to prospect the upper easterly sections of the property - this to be expedited by helicopter transportation (at such a time as a machine was in the locality) to the ridge area east of the claims. The ground could then be covered most easily and rapidly by down-hill traversing.

The writer did not schedule additional specific work to be done by Messrs. Anderson and Remillang - preferring to defer any such directives until after the receipt of reports pertaining to his preliminary soil, and outcrop sampling.

Illustrations accompanying and supplementing the text of this report are:

Fig. 1; Big Joe Claim Group; scale 1" = 2000'.

Fig. 2; Road-side Exposures, Big Joe Group; scale 1" = 50'.

Fig. 3; Big #5 Exposures, Big Joe Group; scale 1" = 50'.

### LOCATION & ACCESS (Fig. 1)

The property is situated 32 miles north-northwest of Terrace, B.C. on the north fork of the Cedar River. The long, or east-west dimension of the 4 by 10 claim group is approximately bisected by the local north-south course of Cedar Creek. The ground rises rather steeply out of Cedar Creek canyon for approximately a claim length on each side of it.

From Highway 16 the river, or road-side principal showings are reached by some 40 miles of Columbia Cellulose (Celgar) main-haul road located along the lower slopes west of Kitsumkalum River and Lake, thence via a branch haul road closely following up the east bank of the north fork of Cedar Creek. Following recent, but rough repairs to washed-out sections of the road closely south of the road showings, the latter are accessible - with cautious driving - to ordinary passenger vehicles.

A route to higher easterly showings on the claim group is currently provided by a flagged reconnaissance line extending east-northeasterly from the road within the south-central part of Big #1 M.C. The westerly half of the claim group is reached via the old bridge and trail departing from the main access road at roughly a mile south of the Big Joe group, or by fording the strongly-flowing creek at broader, shallower intervals.

Considerable commuting was saved by the owner's provision of trailer accommodation at only a few miles south of the property. This comfortable, well equipped 38-foot unit, owned by a local contractor, has been temporarily loaned to Messrs. Anderson and Remillong.

### PHYSICAL FEATURES

In general the topography is only moderately rugged - the exceptions being localized to creek and river courses and adjacent slopes.

The general forest cover consists of a mature growth of good-sized hemlock and balsam and occasional black spruce and yellow cedar. Undergrowth

is patchy in distribution and consists, typically, of blueberry brush, salal, fern, and, locally, thick alder, willow and devil's club. A moderately thick moss blanket covers well-shaded ground surfaces. Overburden is variably thick - the shallower sections generally occurring on steep, bluffy slopes along the Cedar River and tributary drainages; a fairly uniform moderately thick cover of raw earthy to sandy soil and drift occurs within the more gently-sloping areas above previously-noted valleys and draws. The soil cover is rather closely knit by root growth. This latter feature probably contributes the major obstacle to rapid, positive soil-sampling or hand-trenching.

#### PROPERTY & OWNERSHIP (Fig. 1)

The 40-claim property is comprised of Blg #1 to #20 - forming the initial group staked east and west of Cedar River, and the subsequent 20 "Joe" claims staked to cover ground east and west of the original group. Record dates are from November 16th to December 14th, 1965. The claims are held on a partnership basis by:

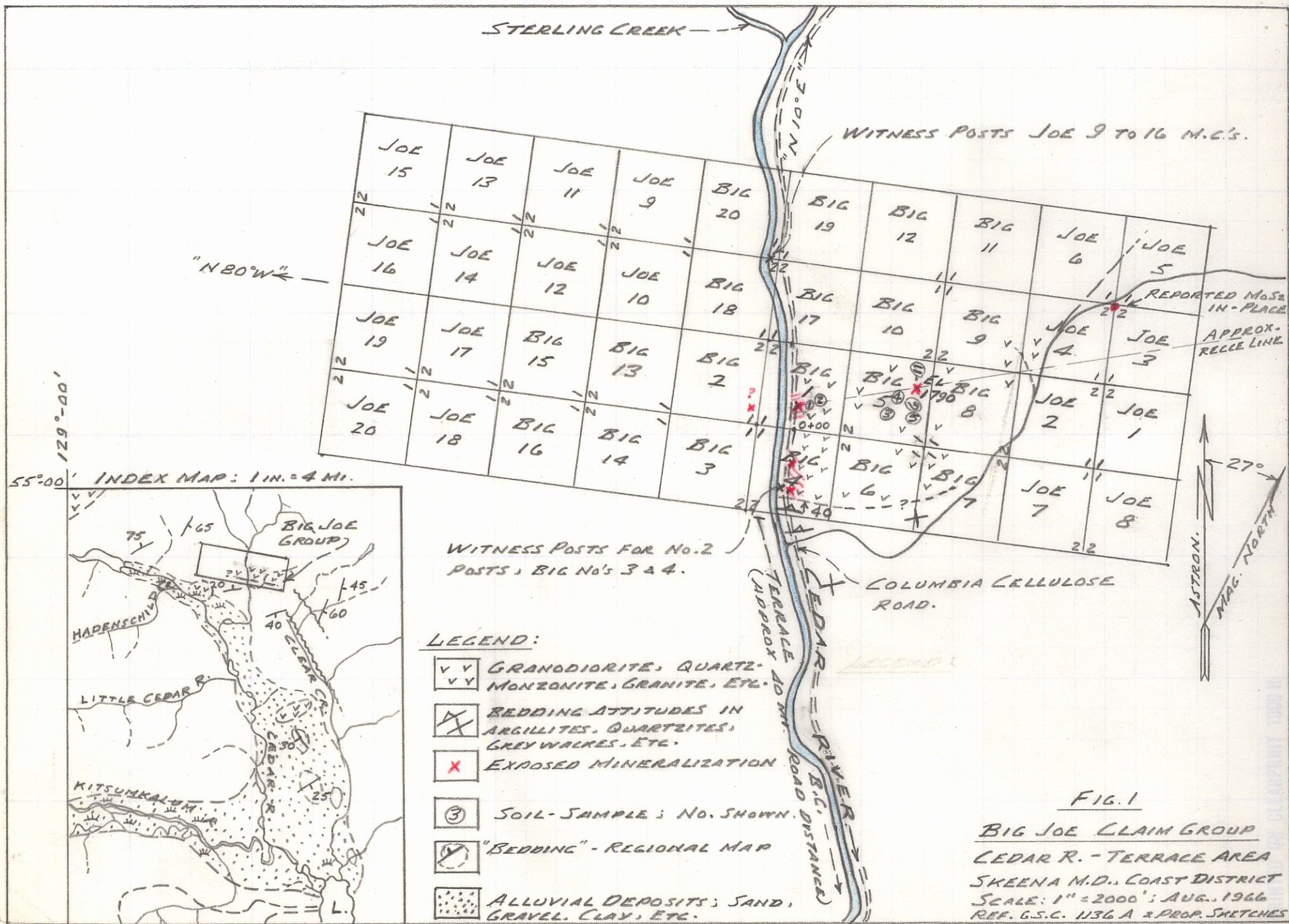
E.R. Anderson, Box 251, Terrace, B.C. and  
Louis Remillong, Box 1243, Terrace, B.C.

The claims have been located by both direct - and witness - post staking. Although this appears to have been done with reasonable care along general N 10 E- and N 80 W-bearing location lines, some open fractions may exist between separate claim blocks.

#### GENERAL GEOLOGY (Fig. 1)

This part of the Cedar River area is generally underlain by argillites, quartzites, greywackes, and graded variations of these, of the regional Bowser Group. The age of these is given as Upper Jurassic and (?) Lower Cretaceous. Throughout the map area they also unconformably overlie the upper volcanic division of the Lower (?) to Middle Jurassic Hazelton Group.

Within the claims area the sedimentary rocks have been intruded by a locally extensive body of "granitic" intrusive rocks - tentatively designated



as of quartz monzonite composition.

On the basis of its rather concordant contacts with the bedded rocks - as observed at its southerly contact within road-side exposures and exposures along the main easterly tributary creek, the body is also tentatively classified as a major sill. The southerly contact of this has an apparent east-west strike and moderate to flattish northerly dip. Sediments adjacent to the contact are variably sheared, fractured, silicified and/or hornfelsized.

*or elongate stock.*

The distinct feature of this northwesterly corner of the Terrace map area is the apparently frequent occurrence of east-westerly to east-northeasterly trends of both intrusives and bedding structures. Coinciding with this is a generally similar trend pattern of mineralized fractures and shears. Also coincident with this is a related (conjugate?) system of major regional faults to minor fractures striking within the general northwesterly quadrant.

The above easterly to east-northeasterly orientation of both mineralization and wall rock structures within this part of the map area has been noted in descriptions of the Silver Plate, - Silver Cup, Belway and Rex, and Martin properties within G.S.C. Memoir 329. Of more local interest is the possibility that the east-northeasterly trending Silver Plate - Silver Cup fractures, shears, and breccias will extend as mineralized zone in to the Big Joe group.

The areal extent of the local quartz-monzonite intrusive is not yet established. However, preliminary observations indicate that it has a width (N-S) of over 2000 feet, and a general length (E-W) in excess of 7000 feet.

#### CURRENT PROSPECTING - EXPLORATION (Figs 2 and 3)

The most extensive, but not necessarily most significant exposures occur within bluffs closely east of Cedar River and the access road. The location of these is referenced to point 0+00 shown on Fig. 1. The "North", or Big #1 showing has been considerably extended since Mr. Dunn's visit. Also, a series

of pits and cuts on the E-N.E. (up-hill) trend of the zone have been excavated by the owners. Additional slashing has also been accomplished on the Big # 4 "North" and "South" showings, also at road elevation.

The underlying quartz monzonite bedrock, with erratic quartz-pyrite-molybdenite - (tetrahedrite) mineralization has been tested along the general reconnaissance line for over 3,000 feet E-N.E. of station 4 + 50 on the access road.

Interesting occurrences of  $\text{MoS}_2$ , associated with a system of small quartz veins and fractures have been exposed by preliminary cuts at the 1790-foot elevation (Fig. 1). Additional pits and cuts for a few hundreds of feet E-N.E. of the "1790" exposures have opened similarly-mineralized occurrences within the quartz monzonite country rock. The writer's preliminary impression is that the upper, possibly better-mineralized occurrences contain less associated pyrite than those near and adjacent to the river.

In general, the current, widely-spaced pattern of small pits and cuts expose only minor areas of bedrock. The resulting exposures show the general nature of the mineralization, but are too localized to permit even generalized estimates of mineralization potential within this more highly prospected section of the claim group.

#### DETAILED GEOLOGY (Figs 2 and 3)

Pyrite-molybdenite, and minor localized tetrahedrite mineralization has been observed within two (conjugate?) steeply-dipping sets of quartz veins and fractures. The apparently more significant mineralization appears to occur with the E-N.E. trending structures (see also general trends described in section GENERAL GEOLOGY). From the somewhat sparse amount of present geological evidence, the writer infers that the S.E.-trending joint-fracture system comprises the conjugate, but subordinate vein system.

Molybdenite mineralization, as observed within the quartz monzonite, occurs predominantly within quartz veins, quartz masses, and fractured siliceous

aplittic sections of the intrusive. The latter appears to have been produced by local hydrothermal alteration rather than by differentiation of the parent quartz monzonite. Also, the better (pyrite)-molybdenite mineralization most apparently favours the narrower quartz veins and related fractures - the wider structures being almost uniformly barren, or containing only coarsely crystalline pyrite.

The detailed geology of the principal showings, forming the basis of the above conclusions, is adequately illustrated by the report figures, hence is not repeated here.

### SAMPLING & ASSAYS (Figs. 2 & 3)

#5901 - Crushed granite with several narrow, discontinuous quartz stringers; minor disseminated  $\text{MoS}_2$  and tetrahedrite.

5.0' @ Au = 0.005 oz/ton.  
Ag = 0.45 "  
 $\text{MoS}_2$  = 0.011%

#5902 - Siliceous quartz monzonite with sparse  $\text{MoS}_2$  and chalcopyrite in quartz veinlets and finely dispersed in Q.M. matrix.

6.75' @ Cu = 0.05%  
 $\text{MoS}_2$  = 0.032%

#5903 - Grab sample of selected  $\text{MoS}_2$ /trace  $\text{FeS}_2$  from showing at 1790' El.

$\text{MoS}_2$  = 0.327%  
Ag = 0.10 oz/ton.

#5904 - Newly-exposed altered quartz monzonite outward of face of initial northerly road cut; also taken as check on #5901; mainly pyrite in sparsely-veined quartz monzonite; sparse  $\text{MoS}_2$ .

8.0' true @ Ag = 0.10 oz/ton  
 $\text{MoS}_2$  = 0.043%



The above, with the exception of #5903, are merely check samples of local MoS<sub>2</sub>, etc. occurrences within very preliminary prospect excavations. As these sites were either selected at random, or on the basis of rather questionable quartz vein and float occurrences, the resulting samples indicate only the degree of mineralization within that immediate locality. On the other hand the results have a positive value in that they suggest that further test-pitting and trenching procedures should be deferred until preliminary geochemical, and perhaps geophysical prospecting have provided significant target areas upon which these efforts may be systematically directed.

### SOIL SAMPLING (Figs. 1 & 3)

Only eleven samples were taken to provide a preliminary indication of the possible applicability of a much more comprehensive soil-sampling survey. Samples (1) and (2) (ref. Fig. 1 and legend) are of soil overlying occurrences of apparently barren quartz veins within fresh, rather massive quartz monzonite. Samples (3) and (4) are from areas underlain by occasional sparsely mineralized quartz veins within similar "granitic" country rock. Further reconnaissance showed that this particular area was also only a few hundreds of feet downhill of a more appreciably-mineralized section of the claims at 1790' El. on the reconnaissance line. Samples (5) to (11) were taken closely down-slope of an area containing sparse to appreciable MoS<sub>2</sub> in quartz veins and seams over a significantly extensive bench area at about the 1800 - foot elevation.

The samples were submitted to T.S.L. for determinations of total soluble (non-sulphide) Mo. The analytical procedure involved Mo extraction by hot HCl, and its semi-quantitative determination by colorimetric comparison, or titration for higher concentrations, employing dithizone. Results are as follows:

*(dithizone?)*

B.J. - 1	10 p.p.m. Mo	}
2	20 " "	
3	160 " "	}
4	160 " "	
5	40 " "	}
6	105 " "	
7	60 " "	}
8	225 " "	
9	70 " "	}
10	115 " "	
11	20 " "	

*over the intrusion,  
but 1-2 ppm over the floor  
sds.*

- 9. -

As "background" concentrations are evidently within the range of 10-20 p.p.m., and concentrations related to significant  $\text{MoS}_2$  mineralization within the 100 to 200-plus range, the method apparently provides sufficiently significant differences to justify a comprehensive geochemical survey.

## SUMMARY AND CONCLUSIONS

The writer's examination of the Big Joe Group was, for reasons of time and general efficiency, restricted to a rather small part of the 40 - claim property. This preliminary examination, however, provided sufficient evidence that frequent and wide-spread, but rather sparsely mineralized occurrences of  $\text{MoS}_2$  within the apparently well-fractured and silicified minor part intrusive examined provide a fair degree of potential for the occurrence of extensive zones of higher-grade mineralization.

The currently-indicated areal extent of favourable host rock - a quartz monzonite sill (?) - exceeds 2,000 x 7,000 feet. Fracturing and quartz-veining on E.-N.E. and N.W. trends is well developed and within the few rather restricted areas of bedrock exposed. The above-noted fracture-trends, and associated quartz-(pyrite)-molybdenite mineralization, generally coincide structurally with mineralization on other properties within the general Cedar River - Kitsumkalum Lake region.

Beyond the immediate steep valley slopes adjacent to Cedar River, bedrock is generally concealed by moderate to shallow thickness of overburden; however, preliminary geochemical tests indicate that soil-sampling should provide the most rapid and least costly method of prospecting for concealed zones of  $\text{MoS}_2$  mineralization. It is recommended that this be done from a central, approximately east-west base-line at 100-foot intervals on transverse grid-lines spaced at roughly 400-foot intervals. This should be followed by more detailed fill-in soil sampling where indicated by the preliminary survey.

The possible application of follow-up geophysical exploration methods may be based on the results of the above general geochemical reconnaissance and subsequent test-pitting and trenching.

ESTIMATED COSTS:

Based on a 2-man grid-preparation crew and one man on soil-sampling;  
2/3 coverage of total property area:

(1) Base-line -	2 miles	
Cross-lines -	28 miles	
Sub-total, "contract" basis	30 miles @ 80.00 =	2,400.00
(2) Soil-Sampling, estimate 30 days @ 30.00		900.00
(3) Mo analyzes; 1,500 samples @ 1.25		1,875.00
(4) Miscellaneous supplies -		200.00
(5) General camp & vehicle operation -		300.00
(6) Personnel transportation estimate 3 @ 100.00		300.00
(7) General allowance for extras and contingencies		<u>900.00</u>
	TOTAL:-	\$ 6,875.00

It is estimated that the above program can be accomplished in an  
over-all time of 6 weeks.

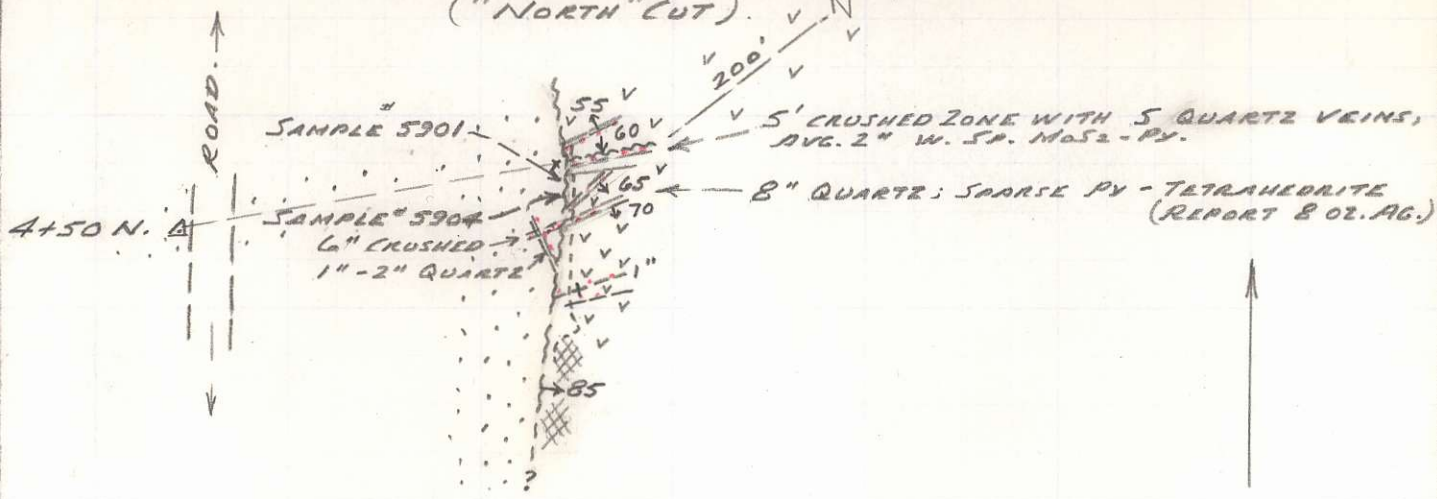
Respectfully submitted,

*W. M. Sharp.*

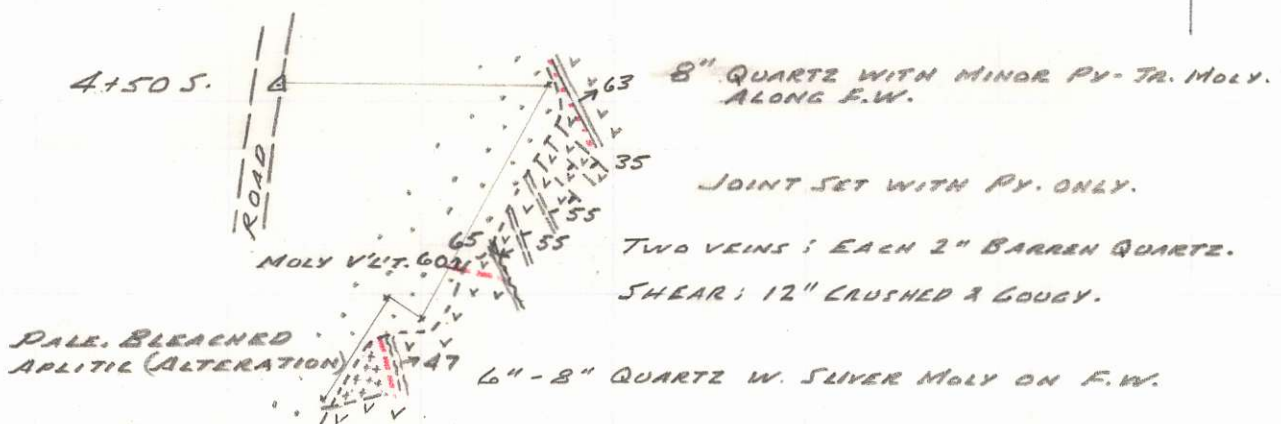
W. M. Sharp, P. Eng.



BIG #1 SHOWING ( "NORTH" CUT ).



BIG #4 NORTH SHOWING



BIG #4  
SOUTH SHOWING

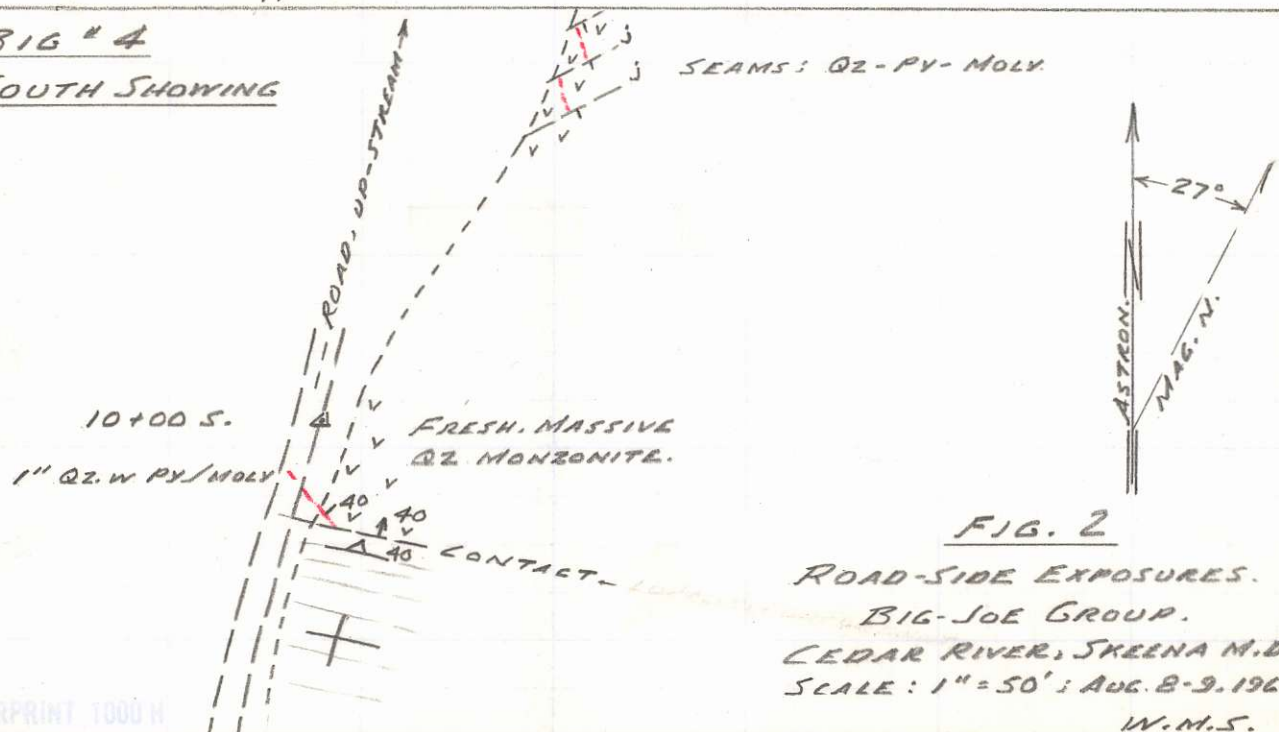


FIG. 2

ROAD-SIDE EXPOSURES.  
BIG-JOE GROUP.  
CEDAR RIVER, SKEENA M.D.  
SCALE: 1" = 50'; AUG. 8-9, 1966  
W.M.S.

⑪  
20 P.P.M.

⑩  
115 P.P.M.

⑨  
70 P.P.M.

\* 225 P.P.M. - ⑧  
OCC.  $\frac{3}{4}$ "  
Q-V'S.  
SP. PY/TR MOLY.

④-160 @ 300'-500'  
DOWN-SLOPE

③-160 P.P.M.

⑦  
60 P.P.M.

⑥  
105 P.P.M.

⑤  
40 P.P.M.

6" QZ. & TR. PY.

3" QZ.  
SPARSE PY/MOLY

3" QZ. VEIN & CLOSE JOINTS  
& SEAMS; SILIC. Q-M.  
DECOMPOSED  
Q-M.

QZ-V'L'T'S.

45  
V'S.

FAIR QZ.-MOLY VEIN.  
SAMPLE # 5908: GRAB. SELECTED  
MATERIAL.  $MoS_2 = 0.327\%$   
 $Ag = 0.10$  OZ./T.

QZ-V'L'T.

RUSTY Q-M.

NOTE: BETTER  $MoS_2$  OCCURRING AS  
SELVEDGES, ROSETTES, & GRAINS  
IN GENERALLY SMALL Q-V'S.  
WIDER BULL-QUARTZ VEINS  
GENERALLY BARREN.

SELECT  $MoS_2$  MINERALIZATION  
CONTAINS VERY LITTLE PYRITE!

SPACING OF FRACT-VEINLETS  $\geq \frac{3}{4}$ "

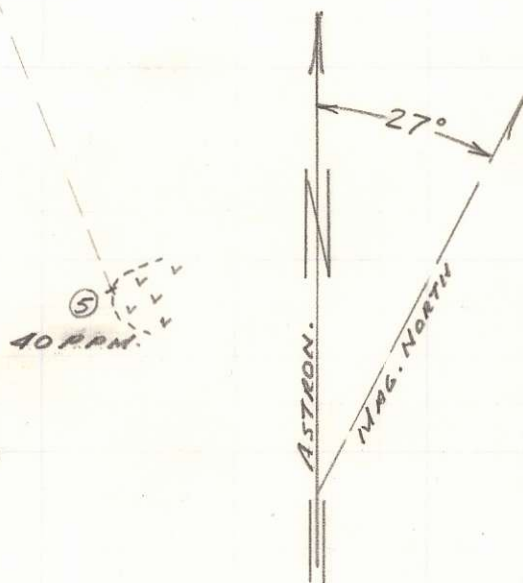


FIG. 3

BIG # 5 EXPOSURES  
EL. 1790' / REF. ROAD 800' EL.  
BIG JOE GROUP,  
CEDAR RIVER, SKEENA M.D.  
SCALE 1" = 50'; AUG 2-9/66  
W. M. S.