801636

REPORT ON

GEOLOGICAL INVESTIGATION & TRENCHING PROGRAM

at the

CENTRAL ZEBALLOS - SONNY CLAIMS GROUPS,

Zeballos Area, B.C.

for

SILVER STANDARD MINES LTD. — SILVER STANDARD - GRANBY PROSPECTING SYNDICATE

Vancouver, B.C.

July, 1964

# INDEX



Accompanying Maps

1. Geological Plan Central Zeballos - Sonny Groups, 1" = 50'
2. Sample Plan, East and West Zones, 1" = 50'
3. Plan Stripping and Trenching - 1964, 1" = 50'

SUMMARY and RECOMMENDATIONS

Mineralization throughout the mapped extent of the East Zone follows a rather simple and uniform structural pattern and wall rock association. Eastward extensions towards the Nomash River may be similar and should be prospected by similar mapping and stripping. The base for this work might be located near the river. Within the mapped extent of the East Zone there are probably other unexposed short lenses of possible ore-grade mineralization. Within the upper East Zone area possible occurrences within wider sections of the skarn silicate sections south of the lime-skarn contact should be further investigated -- possibly by employing ~~university of Alaska~~ geochemical techniques.

The West Zone -- particularly the strong crumple structures at the east fork slide and, secondarily, the interfingering lime-skarn zones westward to Brunton sta. 12 should be investigated at depth by a series of diamond drill holes to provide an adequate vertical range of 400' - 500' below the higher mineralized exposures. A heliport and base camp for this work would be best located at the currently-selected site on the east part of the saddle. The prospectors report that good quantities of water were available here until late August of last year.

Drill exploration of the West Zone could be done from a pair of set-ups below the main exposures. These would be situated within an estimated distance of 150' - 250' below the outcrop zone, giving an opportunity for testing over a considerable strike length and vertical range. There is a fair possibility that ore occurrences within this contorted structural zone would be relatively 'fatter' but more localized than those typifying the East Zone; hence the recommendation for drill exploration rather than additional surface work.

For purpose of depth evaluation of the upper East Zone diamond drilling should be done from set-ups on the south flat and/or slope of the saddle. Drilling here normal to the strike, at collar elevations of from 70' - 100' below the outcrops, would adequately cross-section the zone at the -200 foot and -300 foot horizons with 200-foot and 400-foot drill holes. Drilling of this section should logically precede that of the West Zone as definite extensions are more expectable.

The original intention to prospect the north contact of the 'south' lime band and to generally prospect the wider north lime band was not carried out due to time limitations and required concentration of effort within the current exploration zone. However, for an overall evaluation of the property the original plan should be followed, as well as that of extending exploration eastward and westward from the presently-defined limits of the current zone.

Calculations of sampling results indicate that three closely situated 'shoots' within the upper East Zone give a combined figure of ~~600'~~ 760' x 6.6' @ 2¼% copper. 4500 □' → 10,080 □'-%.

The lower East Zone computes at:

225' x 7.1 @ 2.44% copper, 1600 □' → 3,905 □'-%.

The West Zone mineralization has not, by reason of its irregular mode of occurrence within mixed-contorted rock structures, been adequately tested to arrive at an estimate of its potential, but is specifically recommended as a major exploration target.

1000' w. complex contorted ls-shale structures

(A) 760' x 6' @ 2.24% Cu (Σ Blocks E-1; E-2, E-3.

(B) 225' x 7.1' @ 2.44% Cu ( Block Lower East Zone.

Σ = 985' x 6.2' @ 2.3% Cu.

E. Zone S. Ls. Band { Bal of 1600' unprospected on S. Contact of S Band
Bal of 3000' " " N. Contact

E. Zone N. Ls. Band. 6500' of S. Contact of N. Band.

Lime Sel Zone 5000' x 800' unprospected.

GENERAL REMARKS

Progress on stripping and trenching during the final period of this initial program was highly satisfactory. The "Cobra" drill operated without any appreciable down-time. Excavation of some of the later trenches, where overburden was fairly deep, required more than the usual amount of handwork due to a shortage of "Amex" explosive and the lower efficiency of 70% Forcite on this particular duty.

The three-man field crew continued to operate from the camp at the south heliport. At the completion of this program the drills, drill-steel, sharpener, and chain-saw were packed out. The more valuable items of equipment and camp supplies, including the cook-tent, were put aside for eventual helicopter pick-up. The less valuable hand-tools, gas and oil, provisions, extra powder, and two old crew tents were left on the site for possible future use. The writer has a fairly complete list of the latter material.

Mapping accomplished during the final week has allowed some expansion and clarification of the geological plans -- particularly within the Saddle-West Zone areas.

PROGRESS DETAILS

June 13-29 Field crew complete excavation of fill-in trenching and stripping on East Zone below saddle.

June 30 Field crew on West Zone trench excavation. W. Sharp flies to Zeballos and walks to field camp.

July 1 Sharp and Tickner sample trenching and stripping on Lower East Zone and 'fill-in' cuts from #7 westward to #1-A (?) as requested including checks on H. Gilleland - K. Fabrni sampling.
M. Zulps and E. Eadie continue West Zone trenching.

July 2 Zulps and Eadie complete west zone trenching.
Sharp and Tickner complete sampling and additional geological mapping of west zone.

July 3 Zulps and Eadie complete 'Saddle' trenching; Sharp and Tickner complete sampling and geological mapping in general vicinity of saddle and make brief reconnaissance of north contact of the south 'lime band'.

July 4 Operations completed; W. Sharp completes geological and sampling notes and returns to Vancouver.

July 5-6 M. Zulps, J. Tickner, and E. Eadie return to Vancouver with truck and certain equipment.

## GEOLOGICAL DETAILS

### (a) Lower East Zone

The general limits of this are the strike interval of the altered-mineralized zone between Brunton stations 9G and 9R -- the latter being the present easterly limit of geological mapping. The section of particular interest at present occurs through 9L to 9N in which the indicated extent of possible ore-grade mineralization, as exposed at the surface, is approximately 7 feet by 225 feet. Structurally the zone is characterized by a more easterly trend and a slight northerly warp in dip. Bunchy to disseminated chalcopyrite and lesser bornite occur within finely cross-fractured garnetite with irregular cherty to limy banding. Mineralization is typically better close to the lime-skarn contact and decreases rather rapidly southward into the dense interbanded chert-lime silicate wall rocks. Mineralization within the latter rock types is comprised of sparse fine-grained pyrite and magnetite with minor copper minerals -- particularly favouring certain thin dark tuffaceous bands throughout the cross-section. There is a suggestion that the rather weak extension of the zone -- or a split of it -- swings southeasterly in general conformity to local structural trends. However, more exploratory work in this heavily-overburdened area would be required to establish this.

Through 9L westward the zone swings northwesterly across the creek -- conforming to a local jog in the lime band and then follows the general WNW trend, with only weak local undulations, to the Upper East Zone station 9C. Mineralization within this 9K - 9C interval appears generally weak and largely concentrated within a narrow dark tuffaceous (?) band closely paralleling the lime contact. Also, throughout the greater part of this section the quartz diorite (sheet) converges and closely parallels the lime contact and markedly reduces the width of the general favourable skarn zone. It is possible that one or more short lenses of worthwhile mineralization may occur under the locally heavy cover of overburden and trash -- particularly where the intrusive may locally diverge from the limestone contact.

(b) Upper East Zone

In general extent this zone occurs between Brunton stations 9D and 24(b) -- the latter at the west end of the structure within the 'saddle' area. The principal section of interest is within the interval sta. 9+00 to sta. 24(b) or as generally delimited by the series of trenches within the No. 9 - 22 trench interval.

Throughout most of the Upper East Zone the limestone contact is noticeably undulating and characterized by a northerly to southerly dip warp, the reversal being close to sta. 6+00 -- which is also the focus of considerable strike flexuring and crumpling within the adjacent lime band (and skarn zone ?). It should be noted that this warp may be apparent only by reason of mapping over a considerable vertical range, and may not actually express a warp as much as a general reversal of dip situated about a rather flatly-plunging (E - W) axis. It also appears that mineralization is structurally controlled by this apparent dip roll (or warp) associated with pronounced strike-flexuring. Also, within this zone, the more distant quartz-diorite contact provides room for a wider zone of skarn-lime silicate development. Coincident with this there are also significant indications of other copper replacement zones within the mixed lime silicates and altered tuffs considerably to the south of the optimum contact zone.

Mineralization is typically disseminated to bunchy chalcopyrite -- bornite within fractured garnetite skarn and lime silicates. As on the other zones the dark (tuffaceous) band at the lime contact is preferentially mineralized -- usually by chalcopyrite. Bornite appears more conspicuous within the upper trenches and exposures along this section.

To the west of No. 1 cut a strong northerly-trending, steeply-dipping fault displaces the mineralized zone roughly 30 - 40 feet. West of this fault and across the saddle into the West Zone the limestones and associated skarns pass through an area of strong shearing and folding with the result that specific lime and skarn bands are not directly identifiable with those of the East Zone. or comparable

(c) West Zone

Recent additions to the geological mapping add considerable detail concerning the distinctive patterns of structure and mineralization along this zone from the saddle to the west fork of Bibb Creek. A major buckle or 'bulge', with associated shearing and fracturing, occurs within the upper east fork area. Associated with this is a splitting up of lime bands and the development of chunkier, more localized patches of skarn-silicate alteration and mineralization to the west of the main crumple separate skarn zones are separated by bands or 'fingers' of highly-crystalline limestone and, further westward, prongs from the main quartz-diorite body. Flexuring persists, in a gentler pattern through to the west fork.

It should be noted at this point that the combined obstacles of overburden, rough topography, and time prevented more detailed examinations and trenching-and-sampling of the saddle - E fork slide area of the zone.

The type and pattern of mineralization is distinctive. Bornite and/or chalcopyrite occurs as patchy disseminations or 'gobs' within fractured garnetites, lime silicates and, frequently, relatively unsilicated crystalline limestone. The latter occurrences were often completely removed during trenching -- indicating a local patchy or pod-like occurrence. Pyrrhotite forms a distinctive constituent and

has probably been mistaken for bornite on occasions.

In summary, it is doubtful that this zone could be adequately exposed by surface stripping and mapping and, that as certain lower horizons may show varying degrees of mineralization, exploration should be done by diamond drill.

TRENCHING and SAMPLING

Thirty-four trenches, through various thicknesses of overburden and into fresh rock, were encountered. Overburden was removed by blasting with 'Amex' and cleaned up by hand. The Atlas 'Cobra' gasoline percussion drill and ⅞" chisel steel were employed on rock work. Forcite 70% was used for breaking and clean-ups were by pick and shovel. Two to three men formed the crew -- the number depending on the assistance required on the various drilling locations. Four 4-foot holes, at 3' - 4' spacing on these side hill rock cuts, in 1½ hours was a fair drilling average.

An estimated total of 279 cy of rock (note 59 cy from No. 1 trench) were excavated. Probably an equivalent amount of overburden was removed. The appended drawing (Stripping and Trenching" details the rock excavation. The writer does not have records of the amount of explosives used.

Sampling was by the 'random-chip' or 'chip-channel' method, by prospect pick or hammer-and-moil, depending on the physical character of individual exposures.

## MINERAL ESTIMATES

Detailed sampling results are shown on the appended drawing "Final Surface Sampling Plan":

(a) **Upper East Zone**

| | |
|---|---|
| Block E-1 : | 310' x 5.6' @ 2.39% copper |
| Block E-2 : | 285' x 5.7' @ 2.45% copper |
| Block E-3 : | 165' x 6.9' @ 1.71% copper |
| Total excluding pillars: | 760' x 6.1' @ 2.19% copper |
| or, with dilution | 760' x 6.5' @ 2% copper |

(b) **Lower East Zone**

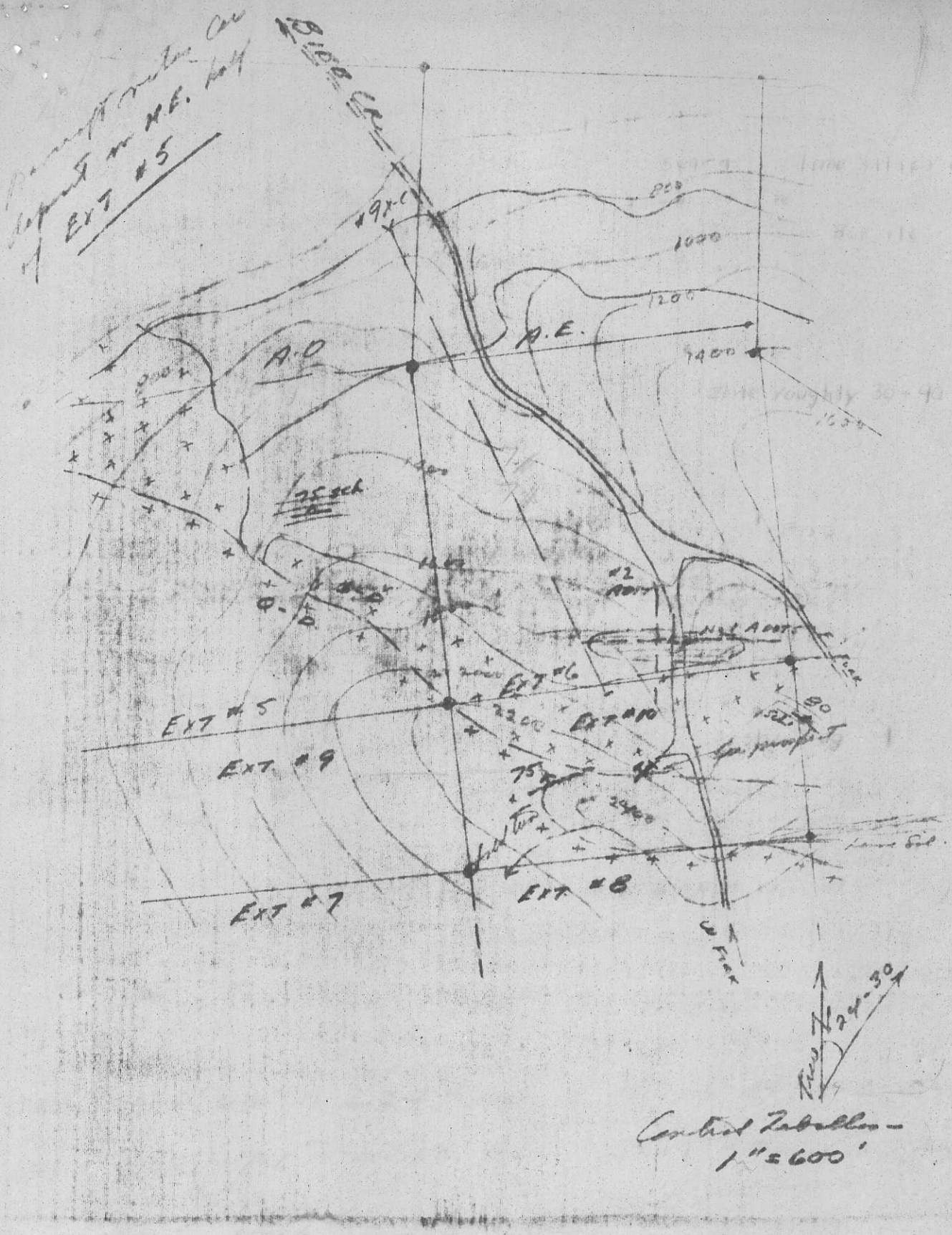
225' x 7.1' @ 2.44% copper

(c) **West Zone**

No possible ore sections were delimited; however the assay results in this highly leached and oxidized mineralization were much lower than expected. This oxidation-leaching is thought to be due to the relatively high pyrrhotite content of this zone and that fresh material would assay considerably better.

W.M. Sharp, P.Eng.
Consulting Geologist

July 20, 1964


Ext #5
Ext #6
Ext #10
Ext #9
Ext #7
Ext #8
N24-30E