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3-16-82

REPORT ON

BS&K CLAIMS

for

Heinrichs Geoexploration Company

by

John E. Kinnison
Chief Geologist

Geo-Comp Exploration, Inc.
1706 W. Grant Road
Tucson, Arizona
(602) 623-5448

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EXPLORATION FOR NATURAL RESOURCES

March 26, 1970

Mr. Grover Heinrichs
Heinrichs Geoexploration Company
808 W. Grant Road
Tucson, Arizona 85705

Dear Mr. Heinrichs:

On the 24th of this month, you inquired if I was familiar with the Silver Bell Mining District, and in particular, with the area between the El Tiro Pit operated by American Smelting and Refining Company, and land held in the vicinity of the Atlas Mine by the BS&K Company. As I then informed you, I have had considerable acquaintance with the Silver Bell district in general, gained while employed by ASARCO. This company, as you are aware, has accumulated much knowledge concerning the geology and mineralization of this area, gradually collected during exploration and operation of the Asarco mines. Although I am not ethically free to divulge details of ore occurrence on Asarco ground, I have drawn freely on my general experience in the district. Also, as I informed you, I had not previously been into the specific area of BS&K ground which is now under consideration, and thus made a brief field inspection to establish certain geologic features in the subject area.

You informed me that a client of yours was considering the acquisition of BS&K claims north of El Tiro, and that this client desired to have an independent geologic evaluation of the exploration possibilities within these claims, with special emphasis on the possibilities to be found at considerable depth beneath the surface.

I herewith present my findings and conclusions.

SUMMARY AND RECOMMENDATIONS

The "corridor" of BS&K claims, as shown on the attached sketch, is without question a part of the same structural block as the area of the thin chalcocite blanket drilled by Asarco near the Old Silver Bell Camp. The character of the leached capping is similar in both areas, and the presence of a chalcocite blanket beneath the BS&K claims is thus not surprising. The total sulphide content, estimated from the leached capping, is less than 3%.

The I.P. anomaly shown by Hanna's work lies to the north of the BS&K claims, and does not appear to be reflected by the outcrops on those claims.

Our Mr. Fink has briefly examined the Hanna I.P. data, and in his opinion the psuedo section plot of this data suggests that the strong anomaly is associated with sulphides at relatively shallow depths, and that the sulphide content may decrease with increasing depth. He also notes that the strongest response is on ASARCO's ground to the north of the BS&K "corridor", and that the area of strongest response is probably limited in areal extent. However, I.P. data indicate that the rock surrounding the I.P. anomaly also contains sulphides, but of lesser concentration. This conforms to conditions I observed in the field.

In any event, it is questionable whether I.P. methods could respond to the only ore-grade target at the probable depth involved, say, 1500 feet or greater.

I see no chance for ore at depth within the dacite porphyry, below the near surface chalcocite blanket.

There is a remote possibility the Mescal limestone may underlie the dacite at a depth of 1500 feet. If this is actually the case, the limestone might have responded, within the limits of pervasive mineralization, as a favorable host rock. Limestones near the El Tiro pit average a little under 1% copper. The Mescal limestone in this area (if present at all) would not exceed 150 feet in thickness. Such a thin host rock, at depths of 1500 feet or more, would have to be of considerably higher grade to have intrinsic mining value.

I must emphasize that the geologic hazards are extremely great. The only hope of improved mineralization at depth lies with the Mescal limestone, and its mere presence is only a theoretical possibility. Therefore, I cannot recommend investment in the subject property, if such investment is predicated on deep exploration possibilities.

FIELD EXAMINATION

Tuesday, March 24, 1970, I made a brief inspection of the southern corridor of claims held by BS&K to determine the nature and extent of rock and alteration. This corridor is, according to claim maps furnished me by Grover Heinrichs, shown to be encircled by ground held by the American Smelting and Refining Company.

I first revisted an area on ASARCO ground to the south, near the old Silver Bell campsite, with which I was already familiar. In this area I am aware that ASARCO has drilled out a medium grade - about 0.6% Cu - chalcocite blanket about 50 feet beneath the level of the old Silver Bell camp. The rock is here made of dacite porphyry, which in this area is known to have a sill-like configuration, and which on the basis of a few deep drill holes on ASARCO ground is apparently about 1500 feet thick. The leached capping over the chalcocite zone on ASARCO's ground is strongly altered, but with relatively little indication (by the color and nature of the limonite present) that chalcocite is in fact beneath this capping. The primary mineralization, consisting of chalcopyrite, is relatively low, however, usually grading about 0.1 to 0.2% copper.

The dacite extends northerly to the BS&K ground, in their isolated

corridor, and is there similarly altered. Progressing eastward across this corridor however, the rock alteration and mineralization fades and then terminates. The attached sketch shows the approximate eastern limits of strong mineralization with indication of the presence of sulphides prior to oxidation and leaching. Although there are a few scattered fissure zones which have been mineralized, easterly of the contact which I have drawn, these are isolated from the main zone of alteration. Thus, it appears probable that the chalcocite zone will not extend much further east than the line which I have shown as the margin of strong mineralization. Any possibility of ore occurrence at depth must be considered with respect to the limits of pervasive mineralization as exposed at the surface.

I noted a single breccia pipe with a larger quantity of oxidized sulphide cavities than the surrounding dacite. The limonite filling these cavities is indicative of derivation from copper sulphides, and may well represent a higher copper content than that of the surrounding dacite porphyry. Unfortunately, the breccia is too small to be of commercial interest.

DISCUSSION

ASARCO had, during the time I was employed by them, done interspaced drilling to substantiate values from old churn drill holes sunk prior to 1920, in the vicinity of the old Silver Bell camp. In this area, a relatively low grade chalcocite blanket, fairly thin, lies approximately 50 feet beneath the surface of the old Silver Bell campsite. The mineralization occurs in dacite porphyry. The leached capping over this zone of chalcocite on ASARCO's ground is not, in itself, diagnostic of the existence of this chalcocite blanket, although strong pervasive rock alteration and evidence of former sulphides is present in the leached capping. The narrow corridor of BS&K claims now in question lies on an extension of the structural block containing this dacite porphyry, and the leached capping is similar to that near the old Silver Bell camp. It is not surprising, then, that drill holes on the BS&K ground show low to medium grade chalcocite at a shallow distance below the surface.

The following points are pertinent to consideration of possible deep exploration targets.

1. The dacite porphyry, as known through mining and drilling in the Silver Bell area, is one of the less favorable host rocks for disseminated mineralization. The grade of primary copper, as chalcopyrite, is

generally less than 0.2% copper, and is frequently less than 0.1%. Drill holes which have penetrated considerable distance into some of the dacite porphyry bodies do not show any tendency to increase in grade with increasing depth. Further, I should point out that, in the general case of porphyry copper deposits, an increase in grade with depth can be found in a very few deposits only. The vast majority may show vertical variations in grade, but rarely is there a significant increase or decrease in the amount of copper when explored vertically. I see no reason to expect an improvement with depth of copper content in the dacite on the BS&K claims.

2. The dacite porphyry in the vicinity of the old Silver Bell camp, and probably also on the BS&K claims, is evidently a low-dipping sill, rather than a plug with a great vertical depth. A few deep ASARCO drill holes near the El Tiro pit suggest that this sill is over 1500 feet thick.

The general habit of the dacite porphyry at Silver Bell is to intrude along bedding planes of the sedimentary rocks, and thus split the sedimentary section.

On Jesuit Peak, west of the old Silver Bell camp, the dacite porphyry appears to have intruded beneath the Cambrian Bolsa quartzite. Throughout much of southern Arizona, the Bolsa quartzite rests on the pre-Cambrian Apache group sedimentary series, of which one member - the Mescal limestone - is a favorable host for copper mineralization in many districts. In the Silver Bell area, the Apache group has been partly eroded prior to deposition of the Bolsa quartzite. Thus, across the

valley to the northwest the full section of Apache group is present, while about 5 miles north of the Atlas mine a much thinner section is present, and in the Waterman mountains south of Silver Bell the Apache group is absent. There is a remote chance, therefore, that on the BS&K ground the Apache group and Mescal limestone might have been present, and thus been split from the Bolsa quartzite by the intervening dacite porphyry sill. If the Mescal limestone was preserved from pre-Bolsa quartzite erosion, and is actually present beneath the sill, there is a possibility that it might be mineralized with grades approaching 1% Cu. If it is assumed that the boundary of mineralization as seen at the surface may be projected vertically downward, then the potential for mineralized limestone at depth would occupy that portion of the BS&K corridor to the west of the limits of mineralization as shown on the attached sketch.

Even if the Mescal limestone is present beneath the sill, and is mineralized by chalcopyrite approaching the average of the mineralization in limestone at El Tiro - about 1% - its value, other than as a negotiating lever with ASARCO, is doubtful. It is my opinion that expenditure of option money, to say nothing of the cost of drilling, is an unwise investment in view of the geologic uncertainties listed above, combined with the questionable value of deep mineralization in the Mescal limestone.

I trust that this letter will satisfy the purposes of your client.

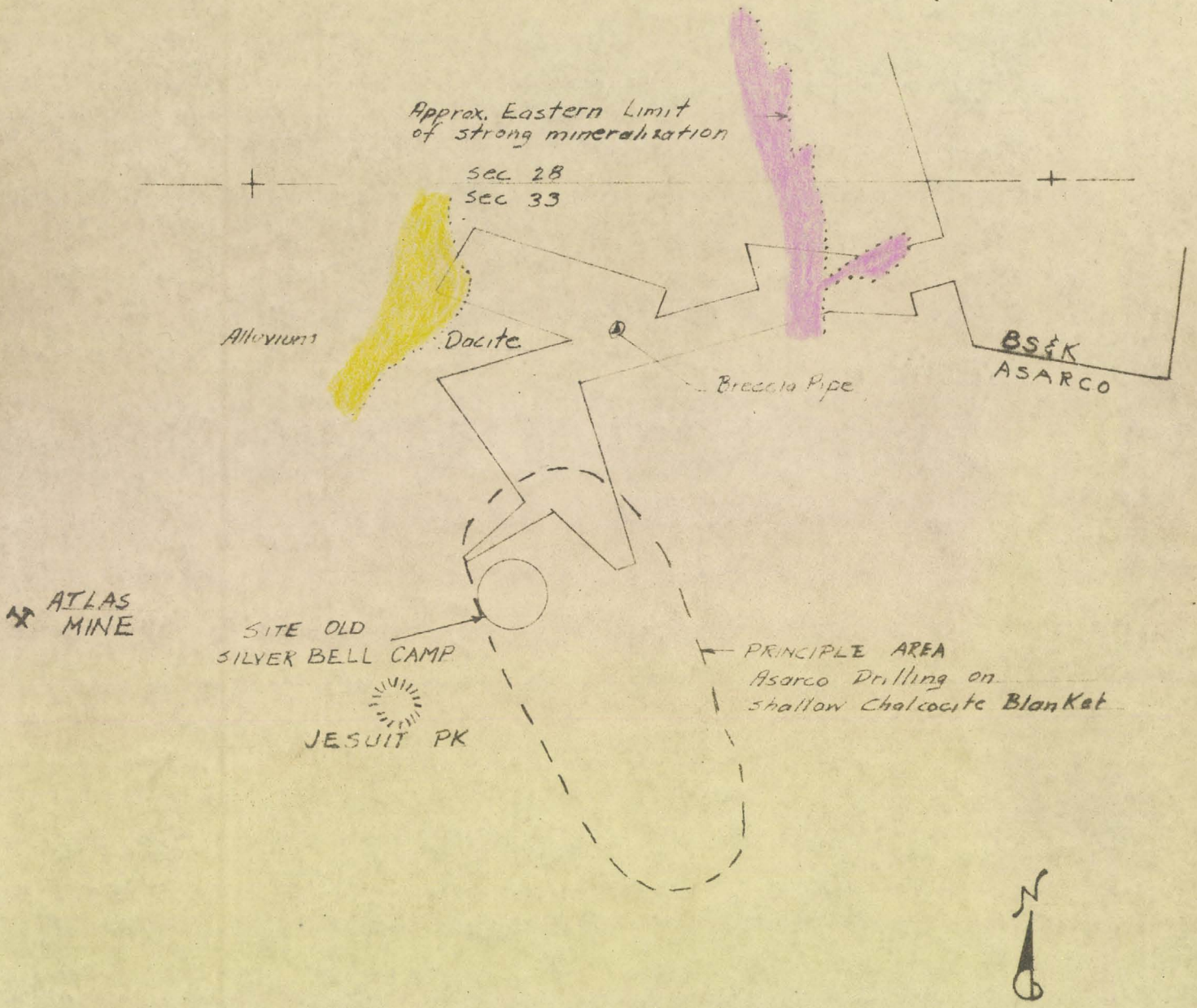
Yours very truly,

John E. Kinnison

Registered Geologist CERTIFICATE EXPIRES DEC. 31, 19 70 ARIZONA U.S.A.

John E. Kinnison
Chief Geologist
Geo-Comp Exploration, Inc.
Registered Geologist No. 4822
State of Arizona

JEK:cc
Attachments



GEO-COMP EXPLORATION

GEOLOGIC SKETCH
BS&K AREA

JE Kinnison March 1970

1" = 1 = 1000'

Registered Geologist
CERTIFICATE EXPIRES
John E.
Kinnison
DEC. 31, 1970
ARIZONA, U.S.A.

3-10-82

BS & K Claims
(J. E. Kinnison Report)
Silver Bell District
Pima County, Arizona