

0040 0021

DOG

ITEM 25

GEOLOGICAL REPORT

SMITH COPPER CLAIMS
PINE NUT MINING DISTRICT
MAJID SHOKOHI
CONSULTING GEOLOGIST
506 Humboldt Street
Reno, Nevada 89501
322-0466
June 19, 1971

I ABSTRACT.

The structurally complex formations of the Pine Nut Mining District of the Basin Range Province in Western Nevada has created an ideal spot for copper deposits. The geological similarity with the Yerington copper deposits in many respects is a strong indication that the porphyry copper deposits in the Pine Nut formations exist.

The host rocks consist of triassic volcanoes and quarternary sediments with intrusives of granodiorite and quartz monzonite of perhaps the cretaceous age. The porphyritic variety of quartz monzonite and granodiorite are the agents of the ore body deposits. The tertiary volcanics have added another layer of deposits in porphyry intrusive. The depositions have taken place in the form of malachite chalcopryite, cuprite, chrysocolla and sulfide zones associated with altered rocks.

II INTRODUCTION.

The intent of this report is to provide geological information concerning the Smith copper properties located in the Pine Nut Mining District. The request was made by Mr. I. J. Smith, John Smith and Paul Gerken, his associate, in March of 1971.

III LOCATION AND OWNERSHIP.

The copper properties are located on the northwestern portion of Mineral Peak, Sections 19, 20, 30, Township 14 North, Range 22 East and Sections 24, 25, Township 14 North, Range 21 East, of the Pine Nut formations in the Pine Nut Mining District, about 22 miles east of Carson City, in Douglas County, Nevada.

The property is a Federal property and the mineral rights are owned collectively by the above-mentioned individuals who have agreed to be represented by this firm for any honorable agreements which are settled upon by both parties. The annual assessment work has been done up to date in compliance with the Federal and State mining laws.

IV ACCESSIBILITY AND ELEVATION.

The general elevation ranges from 6,910 feet to 6,334 feet, with an average of 6,500 feet. The property is easily accessible all year around with county roads from both Lyon and Douglas counties.

V HISTORY.

There is no record of any copper production from this property and the preliminary prospecting has been done by the owners for gold and silver. There is a potential discovery of bigger and more productive veins of gold and silver according to indications of samples assayed by different companies. The samples contain values of between \$12 and \$14 per ton of gold and silver scattered in the northern portion of the property.

VI REGIONAL GEOLOGICAL SETTING.

The Pine Nut formations are composed of tertiary intrusives which have been intruded by a large mass of granodiorite and quartz monzonite. The intruded body has capped the older rocks in an east-westerly direction in the northwestern portions of the property. Outcrops consist of interbedded masses of granodiorite and quartz monzonite which are following the structural patterns of the formations and dipping in the easterly direction.

The distribution of the ore bodies reflect the major stratigraphic and structural controls of the Pine Nut formations. The underlying formations seem to be siliceous and mesozoic volcanic of the same age where the younger formations are tertiary intrusives belonging to the epigenetic group. The Pine Nut formations are within the same district as the metallogenic belt from Virginia City to Tonopah and are also parallel with the Yerington Copper deposits.

Like most porphyry copper deposits the Pine Nut district, especially these claims, are oxidized and the process of secondary mineralization is apparent. This is true in both oxidized and sulfide zones. Much of the oxidized and sulfide zones seem to be in place with secondary enrichment.

VII DEPOSITIONAL ENVIRONMENT.

The general conditions in Western Nevada during the early Jurassic led to a pattern of sediment transport and deposition to represent continental alluvial fan where the continental fan is not exposed in many areas in Western Nevada. The relations between the products of these two environments can be seen from Virginia City to Tonopah and has contributed to the richness of the ore deposits despite the disturbances. Differential environment and structurally controlled areas are now associated with post cretaceous faults.

VIII MINERALIZATION.

1. Chrysocolla is secondary and was formed by the alternations of earlier copper minerals by solutions working downward from the surface which has enriched other sulfides disseminated through large masses of rocks by replacing them with chalcocite to form a porphyry deposit.

2. Chalcopyrite is a common mineral and the most wide spread of copper sulfide. It occurs in veins associated with pyrite and other copper minerals.

3. Cuprite of secondary origin has been formed near the surface by the oxidation process of sulfide veins. Its fine crystals have been disseminated and are covering the surface of the property.

4. The carbonated area resulting from secondary mineralizations has been formed near the surface by the actions of carbonated water. It is associated with minerals of similar origin.

The weathering processes have caused the cap rock of copper bearing sulfide veins to free the copper where this free copper has been scattered over the property and ore oxidized. The mineralization also has occurred as disseminated grains and in stock works of quartz veinlets

resulting from hydrothermal solutions in granite intrusive rocks. Both quartz monzonite and granodiorite zones are hydrothermally altered and strike the same general direction as their structural patterns. The control points of these zones is believed to be at the joint zones. (See Profile 1)

The summary of mineralization may be classified as follows:

- a. as disseminated grains
- b. as stock works in hydrothermally altered granitic intrusives and later interbedded bodies
- c. as oxidized
- d. as sulfides genetically related to the altered portions of mesozoic rocks.

The enrichment in the sulfide zones are as the result of replacement of pyrite and chalcocite. The leaching processes also have contributed to the formation of cuprite.

IX ESTIMATED TONNAGE.

The areas of mineralization have covered about two thirds of the entire property from the peak of the Sun Rise at an elevation of 7,300 feet from the north southward at about a distance of one half mile.

This ore body consists of malachite chalcocite to chrysocolla. The width of this ore body has been measured at from 20 feet to one hundred and forty feet with the average per cent of one and three quarters or better. The calcopyrite zone is believed to be extending downward from the surface in veins through the northern portion of the property as far as 600 feet in depth. The grayish sulfide zones are scattered on the lower elevations with secondary enrichments containing 0.11 per cent copper. The oxidized zones with 0.13 per cent copper ore also covered the property at shallow depths of a few feet and extending south and eastward crossing the road and pushing upwards towards the southern part of Mineral Peak. However, the facies are changed over the surface with constant copper content at depth.

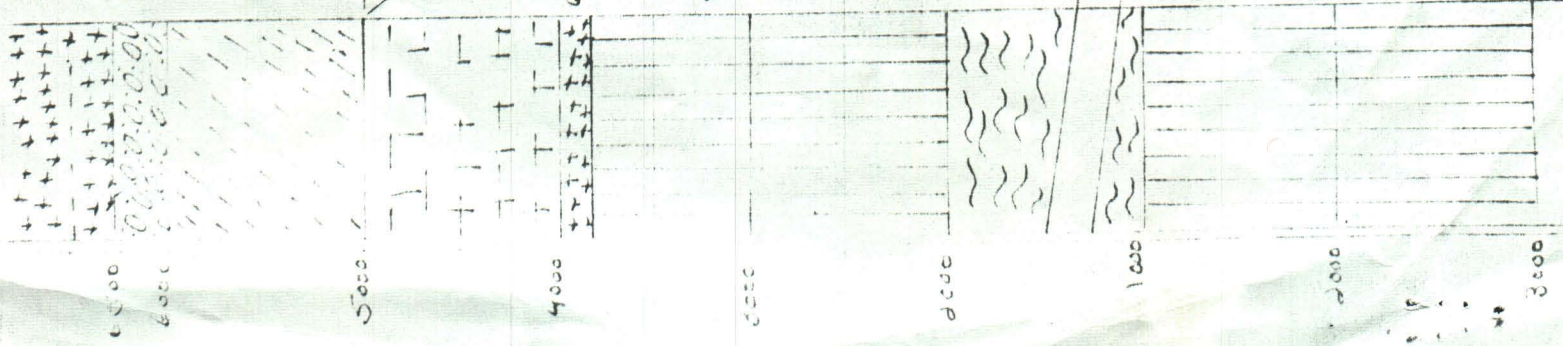
Based on the surface and the profile of the structural information available, the tonnage has been calculated at a conservative figure of 18 million tons of copper ore of different kinds with one per cent of copper content or better. Since both gold and silver are associated with

chalcopryrite, granite and quartz monzonite, and sample analyses have clearly shown the per cent of gold and silver in several localities, it is assumed the value of these two minerals will be in the neighborhood of an average of ten dollars per ton. The overall value of the property is estimated at \$216,000,000.

X CONCLUSIONS.

The copper deposit and occurrence is similar to the occurrence in the Yerington district and are very much the same, therefore it is not difficult to predict that the Pine Nut formations could be another district. To confirm my views, therefore, I recommend the following:

1. There are enough ore bodies of copper, gold and silver on hand in the property to start a moderate size of operation without a detailed exploration program.
2. The value of gold and silver can effectively reduce the cost of operations but by all means cannot be the basis for operations to promote copper.
3. The drilling along the control areas of the property should be done in order to reach the maximum depths of ore bodies. The drilling sites should be selected along the road where ore bodies are dipping toward.
4. Drill sites should also be selected at the eastern portion of the property on both sides of the road to determine the extension of the ore bodies. However, if the ore extends beyond the predicted limit and is lower in depth, the estimated tonnage could be triple both in quality and in quantity.
5. Some of the trenching already done does not represent the geological interpretations of the particular section and should therefore be reconsidered.
6. The trenching or drilling should be done for new discovery.
7. The method of operation would be an open pit.



MINERALIZED ZONES OF
CHRYSOCOLLA, CHALCOITE
COPRITE INTERBEDDED BY
MINOR CALCARENITE

CONTROL AREA

ROAD

EXTENDED MINERALIZATION?

ROAD

GRANITE

SULFIDE SEC.

CLAY (RED)
COPALITE, OXIDE

GRAY SULFIDE SEC.

SILTY PAKSTONE

TERTIARY ALUVIAL

SILICEOUS SEC.

INTERBEDDED BY

MALACHITE, CHALCOITE

MINERALIZED SEC.

CHRYSOCOLLA, CHALCOITE

INTERBEDDED BY

SULFIDE, OXIDIZED

GRANITE

QUARTZ

MIXED SULFIDE, OXIDE

VOLCANO FRAGMENTS

MIXED COPPER OXIDE,

IRON DIOXIDE

CLAY, SULFIDE, OXIDE

IRON DIOXIDE

COPPER DIOXIDE