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FROM BOB BLAKESTAD,
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Item 10

REPORT ON THE
CORNUCOPIA SILVER PROJECT
ELKO COUNTY, NEVADA

INTRODUCTION

The Cornucopia Mining District is located at the north edge of the Tuscarora mountains in sections 18 and 19, T 42 N, R 51 E, Elko County, Nevada. Access from Elko is by sixty-six miles of paved road and eight miles of gravel and fair to poor unimproved dirt road. The mine is situated at an elevation of 6,100 feet in an area typified by sparse grass and sagebrush. No timber or permanent streams exist on the property.

HISTORY

Cornucopia was discovered in the early 1870's and had a short life during which the enriched, high-grade portion of the deposit was mined. The district is credited with approximately \$1,250,000 of production from 30,000 tons of ore. Approximately 10,000 tons of tailings were shipped from the mill site on Deep Creek during the period from 1937 to 1940. Values in the tailings were reported to have averaged .13 ounces of gold and 9 ounces of silver per ton. No mining is known to have been conducted after the early 1880's, and when H. W. Emmons visited the district in the early 1900's, all producing areas were caved and inaccessible.

PROPERTY

El Plata Mining Corporation controls the productive portion of the district with property holdings of one patented and one hundred and four unpatented lode claims. A lease-option agreement between El Plata Mining Corporation and [REDACTED] was signed on [REDACTED]. Considerable overlap exists in the unpatented claim group and the total area covered by claims probably is less than 1,000 acres.

A group of fifty-four unpatented claims staked by J. S. Dodge during 1975 adjoin the El Plata claim group to the east and south. No other valid claims are known in the district.

GEOLOGY

The Cornucopia Mining District lies on the northeast trending ridge that is bounded on the north by the Owyhee Desert

and separated from the main body of the Tuscarora Mountains to the south by the canyon of the west flowing south fork of the Owyhee River.

The district is underlain by a few small outcrops of Ordovician siliceous sediments and Eocene to Miocene age volcanics. The Ordovician sediments and Eocene volcanics occupy a highland that is either a horst or the result of doming with subsequent structural adjustment along north to northwest trending faults on the east and west margins of the highland. Erosion has removed most of the Miocene volcanics from the highland and has exposed altered and mineralized Eocene volcanics.

Sedimentary rocks in the Cornucopia District are observed as small outcrops of intercalated chert, argillite, quartzite and flow breccia containing numerous fragments of the above siliceous sediments. The chert-argillite sequence resembles the Ordovician Valmy formation. Several small outcrops of a different coarse grained, clear quartzite (?) occur on the ridge southeast of the mine and near the workings on the south side of Silver Peak. Age of this quartzite (?) and its relationship to the volcanics cannot be determined from the limited outcrops available.

The Eocene volcanics consist of andesite tuffs and flows and hypabyssal dacite intrusions. Surface mapping and drill hole data indicate an aggregate thickness for the tuffs and flows in excess of 500 feet. Pervasive alteration and faulting have made determination of the internal character of these older volcanics difficult. Rock types identified include medium to coarse grained andesite flows, a fine grained andesite tuff and a fragmental andesite observed in a drill hole. The volcanics are intruded by dacite and by a coarse grained quartz-feldspar porphyry. Dacite crops out in a road cut near drill hole RH-6 and also is observed in drill holes RH-6, RH-9, and in the adit that is located 100 feet east of the Hussey shaft. A texturally different dacite occurs in and near the shallow workings located on the south side of Silver Peak approximately 4,000 feet south of the drill holes.

The quartz-feldspar porphyry occurs about 1/4 mile east of the Leopard shaft as a discontinuous series of north-south trending outcrops that probably represent a 20 to 30 foot wide dike. Several other isolated, small outcrops of quartz-feldspar porphyry may represent poorly exposed dikes or small intrusive plugs.

Overlying the altered volcanics is a sequence of Miocene rhyolite to rhyodacite flows, ignimbrites and air fall tuffs.

The air fall tuff is approximately 200 feet thick and contains a 20 to 30 foot thick mud flow and/or lapilli tuff near its base. The rest of the tuff is a weakly consolidated crystal tuff to rhyolite composition. Conformably overlying the crystal tuff is a sequence of rhyolite to rhyodacite ignimbrites and flows.

STRUCTURE

The Cornucopia district is complicated by high angle faulting and block sliding. North trending high angle faults form the boundary of, or are approximately parallel to, the east and west margins of the highland containing the exposed Eocene rocks. Higher grade precious metal mineralization has a close spatial relationship with the high angle fault on the west side of the highland. This high angle fault either traverses the better mineralization or down drops the mineralization along with the post-mineral Miocene rocks. Only Miocene rocks are known to be exposed in the downdropped block east of the highland. Within the uplifted block several north-west trending high angle faults exist. Relationship of the north and northwest trending faults is not known due to poor exposures.

Several recent or currently active slide blocks are indicated by district mapping within the uplifted block. One slide block exposed in the adit near the Hussey shaft has offset the mineralization a short distance (probably less than 100 feet) to the northeast.

Gross features of the highland block suggest it is either a west tilted horst, a dome, or a north-south trending anticlinal structure.

ALTERATION

Alteration of the pre-Miocene rocks varies from propylitic to argillic with local sericitization. Propylitic alteration characterized by the formation of chlorite, pyrite, montmorillonite group clays and calcite was probably widespread as all exposed Eocene volcanics in the district are so altered. Pervasive argillic alteration, thought to be supergene, is superimposed on the propylitic alteration in areas where sulfide mineralization is strong. The apparent decrease in argillic alteration intensity with depth of several of the drill holes supports the suggestion of supergene clay development. Dickite (identified by x-ray diffraction)

in the argillic altered rocks near the precious metal mineralization suggests primary hydrothermal argillic alteration. The extent of the hydrothermal argillic alteration is difficult to identify because of the superimposed supergene argillic alteration probably resulting from oxidation of sulfides. It is observed and may be localized near quartz veins and intrusions. The more intense argillic alteration occurs in the area near the Leopard shaft and has an apparent close spatial relationship with the precious metal mineralization. Local sericitization occurs 600-1,000 feet east of the Leopard shaft in areas of strong pyrite mineralization. Minor propylitic to argillic alteration is observed in portions of the post-mineral Miocene tuffs and mud flows. This alteration and local silver mineralization in post-mineral rocks is thought to result from supergene processes.

MINERALIZATION

Goethite and jarosite after pyrite are widespread in the pre-Miocene rocks and indicate a significant area of pyrite mineralization. Beginning approximately 300 feet east of the Leopard shaft is a 2,000 X 4,500 foot, north-south trending area that contains the more pervasive jarosite mineralization. This area is bounded on the west by a north-south trending normal fault and to the east by an apparent close spatial relationship with the quartz-feldspar porphyry dike. The north and south boundaries of the stronger jarosite mineralization are covered by younger volcanics or alluvium. Goethite is common throughout the remainder of the pre-Miocene rocks and indicates a pyrite content of from one to two percent.

Although silver values of one p.p.m. or more are common in the pre-Miocene rocks, significant values are restricted to quartz veins and definite structures except in the area near the Leopard shaft. In this area, which is approximately 400 X 1,000 feet, the silver values appear to be more pervasive. Within this area is a 300 X 700 foot area that averages more than .25 ounces of silver per ton. A 125 X 600 foot area defined by a one ounce per ton contour line averages 2.44 ounces per ton in surface rock outcrop samples. ✓

No silver minerals were positively identified but a fine grained dark metallic thought to be argentite or acanthite accompanies all the high grade values associated with quartz veins. Pyrargyrite and cerargyrite are mentioned in old reports and argentojarosite may occur in some of the supergene zones.

In the sulfide zone significant silver values appeared to be closely associated with quartz veins rather than the pervasive or disseminated occurrences in the oxide zone. Two drill holes, CRD-11 and CD-17, intersected silver values up to 34.6 ounces per ton in rocks considered to be the basal part of the Miocene volcanics. This mineralization may be either supergene or a mechanical accumulation of fragments of the older mineralized rocks.

Arsenic values in surface rock samples show a distinct decrease approaching and within the area of the better silver mineralization. Surface rock samples away from the main silver zone average approximately 150 p.p.m. arsenic while those within the main silver zone average only 25 p.p.m. Gold values were quite low to undetectable except where associated with quartz veins. Copper values in fifty-eight character samples ranged from 15 to 95 p.p.m. and did not appear to be useful as an indicator element. Manganese oxides ranged from 1 to 3 percent in the area near the Leopard shaft and had an apparent close spatial relationship with the better silver values.

EXPLORATION PROGRAM

Detailed sampling and geologic mapping in June, 1976, defined strongly anomalous silver mineralization over an area 750 feet by 300 feet and bounded on one side by post-mineral rocks. This work suggested the possibility that the exposed portion of the district represented only the edge of a much larger mineralized area which was concealed by later, down-faulted, post-mineral tuffs and flows. A program of drilling was proposed to test the exposed mineralization and explore for a major extension of the district under post-mineral cover to the west. Nine core and nine rotary holes were drilled totalling 2,267 feet of core and 2,437 feet of rotary at a direct cost of [REDACTED]. Several of the core holes were pre-collared with rotary drilling.

Significant silver values were found consistently at depths of less than 150 feet beneath anomalous surface values in the range of .25 ounce/ton Ag or more. Three 5-foot intervals containing 34.5 to 72.0 oz./ton silver were intersected near some of the old workings, but no significant extensions of this mineralization were found beyond the area of anomalous surface values. Drill holes to the west, testing a possible extension of values beneath cover, did encounter altered and pyritized Eocene rocks but did not cut significant silver values.

MINERAL INVENTORY

Four core holes and five rotary holes cut significant sections of silver values at a grade of 1 oz. or more. Four of these drill holes are on section B-B' where close spaced drilling was undertaken to better define the silver mineralization intersected in CR-2. One hole, CR-6, is located 300 feet northwest of section B-B'; three holes, CR-3, CR-4, and CR-10, are located on section C-C' 300 feet southeast of B-B'; and the ninth hole, CRD-11, is located 600 feet southeast of section B-B'.

Drill holes CR-2, CR-4, CR-6, CD16, and CD-18 in conjunction with surface exposures indicate some degree of continuity to silver mineralization over an area 125 feet X 750 feet and an average thickness of approximately 60 feet. Using the above drill holes and 36 surface samples, this volume would contain 450,000 tons at an average grade of 4.1 ounces of silver per ton. An additional 56,000 tons with a grade of 9.8 ounces per ton are suggested by drill holes CRD-11 and CD-17 in a mudflow at the base of the Miocene rocks. This gives a total of 506,000 tons averaging 4.73 ounces per ton using a cutoff of one ounce per ton. Raising the drill hole cutoff grade to 2.5 ounces per ton and using the same surface values reduces the total tonnage to 326,000 tons and increases the grade to 5.25 ounce per ton Ag.

METALLURGY

In order to determine amenability of silver ores at Cornucopia to milling processes, tests were conducted at the U. S. Bureau of Mines in Reno and at the [REDACTED]. Attached reports summarize the results of these tests which were conducted in both average and high-grade material from drill hole cuttings and core. Briefly, the results of these tests show recoveries ranging from 13 percent to 35 percent of low grade (2.95 oz./Ton Ag) at +1/4 inch size up to 92 percent of high grade (19.0 oz./Ton Ag) ground to 87 percent - 200 mesh.

CONCLUSIONS

Mineral inventory estimates range from 135,000 to as much as 1,000,000 tons at a grade in the range of 3.70 to 5.90 ounces. Approximately 5,000 feet of drilling would be necessary to prove the indicated reserves and to explore for modest extensions of the known mineralization.

[REDACTED]

Reconnaissance geologic mapping and sampling does not suggest the potential for significantly increasing the indicated tonnage and grade. Therefore, the property does not appear to meet Homestake's present requirements and further exploration and development does not appear justified.

[REDACTED]

[REDACTED]

Attachments