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THE NIGHTINGALE DISTRICT

Pershing County, Nevada

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ABSTRACT

The Nightingale District is located in Nevada just within the western border of Pershing County. The District was discovered in 1917 by Alex Ranson and his associates.

Some of the youngest rocks in the Nightingale District are faulted and Tertiary basalt flows and tuffaceous beds. These rest unconformably upon metamorphosed limestones and shales which have been invaded by a large intrusive body of granodiorite and small bodies and dikes of quartz manzonite.

Scheelite is the main mineral and is white or cream colored, with a glossy luster. This scheelite mostly comes from the coarse grained layers of rock.

The limestone along the granodiorite contact have been altered to silicate rocks. The granodiorite next to the tactite is also somewhat altered, for it contains a lot of pyroxene, epidote, and quartz.

Location--importance as a producer

The Nightingale district is located in Nevada just within the western border of Pershing County. The district extends for about three miles along the north-trending crest of the Nightingale Range that borders the eastern shore of Winnemucca Lake.

The area is accessible from two roads. One is just off U.S. Highway No. 40 across from a hot springs. The other road follows Winnemucca Lake and then takes off across the Nightingale Range. This road is steep and sometimes impassable due to washouts and snow.

The principal tungsten deposits at Nightingale were discovered in 1917 by Alex Ranson and his associates, who sold them in 1929 to the present owner, the Gold-Silver-Tungsten Co., Inc., of which J. G. Clark of Boulder, Colorado is president. This Company built a mill which was designed to handle 100 tons of ore a day, but which, except for short trial runs, has never been operated. Small lots of ore from the district have been shipped to the tungsten mill at Taulon at various times since 1918. No detailed record of production is available, but according to Clark,¹ \$200,000 worth of concentrates have been produced from the district. According to the above figure and from what I have observed while investigating the workings in the Nightingale District, I have concluded that this

1 In Vanderburg W.O., Reconnaissance of mining districts in Pershing County, Nevada: U.S. Bur. of Mines Inf. Circ. 6902 p. 24, Oct. 1936

area was of little importance as a major tungsten producer.

Geologic Setting

Some of the youngest rocks in the Nightingale District are faulted and tilted Tertiary basalt flows and tuffaceous beds. These rest unconformably upon metamorphosed limestones and shales, which have been invaded by a large intrusive body of granodiorite and small bodies and dikes of quartz monzonite. The tungsten deposits are scheelite-bearing masses of dark silicate rock that were formed from limestone by intense metamorphism at the granodiorite contact.

The granodiorite exposed in the eastern half of the district is the marginal part of an intrusive body which extends more than 15 miles northward and forms the northern part of the Nightingale Range. The granodiorite is a gray crystalline rock of medium grain, made up chiefly of the light-colored minerals plagioclase orthoclase, and quartz. The plagioclase is the most abundant mineral.

The sedimentary rocks exposed in the northwestern part of the district and in a narrow strip in the south are part of a section of nearly vertical beds of unknown thickness, which continues westward to Winnemucca Lake, a distance of about 4 miles. These are the oldest rocks in the district and are probably of Triassic age. These sedimentary rocks are mainly slaty shales, with interbedded crystalline limestones; one outcrop of cross-bedded quartzite was found west of the district. The slaty rocks, where they are metamorphosed, grade into siliceous hornfels and mica schist, which are common near the

granodiorite but also occur far from it. Near the granodiorite, the limestones grade into the silicate rocks which contain tungsten are bodies of the district.

The altitude of Nightingale is from 5500 to 6500 feet. The winters in this area are not severe enough to close the roads for more than a day or two. There is a problem however, in the summertime. The water supply is very limited, although there is a well about a mile from the district that could keep an ample supply on hand.

The sedimentary rocks in the district strike about N. 30° W. and dip between 75° E and 75° W. There is some local folding but not too much is evident from the surface. The sedimentary, granodiorite, and the tactite bodies seem to be nearly vertical. Some small faults are seen in the mine workings, but are all of small displacement.

Features of the Ore Deposition

Ore Minerals

Scheelite is the main mineral and is white or cream colored, with a glossy luster. The ore is a disseminated tactite and consists of a coarse grained quartz, epidote, and scheelite, with some calcite.

Gangue Minerals

Some of the gangue minerals obvious in the workings were: garnet, epidote, pyrite, and hornblende. In the tactite zone itself were found some small amounts of: calcite, pyroxine, tremolite, some malybdenite, chalcoppyrite, and arsenoppyrite. Some of these mineral occurances were not large enough to sample, although some samples

were taken.

Textures

The textures of the rocks in the mine workings seemed to range from very fined-grained to very coarse-grained layers. Most of the showing of scheelite came from the coarse-grained layers of rock.

Fracturing, structural control

The proportion of scheelite in the tactite zone does not seem to be uniform. There are some places that are richer than others in the same general area. From the looks of the stops and tunnels, not too much fracturing has taken place, although some minor faulting is evident. It seems that one of the most important structural controls was the curves in the bedding or in the contact between the granodiorite and the beds. Some coarse-grained rocks would permit some circulation, but this would probably be limited.

Hydrothermal alteration

The limestones along the granodiorite contact have been altered to silicate rocks, dark silicates seem to be located closest to the contact indicating intense heating or baking and light silicates are located further away from the contact.

The granodiorite next to the tactite is also somewhat altered, for it contains a lot of pyroxene, epidote, and quartz.

Temperature of Formation

Nightingale is a contact metamorphic deposit, probably of a Mesothermal type.

According to Lindgren, this type of a contact metamorphic deposit, to produce the suite of minerals that is present in this district, was formed at a temperature range from 500-800°C.

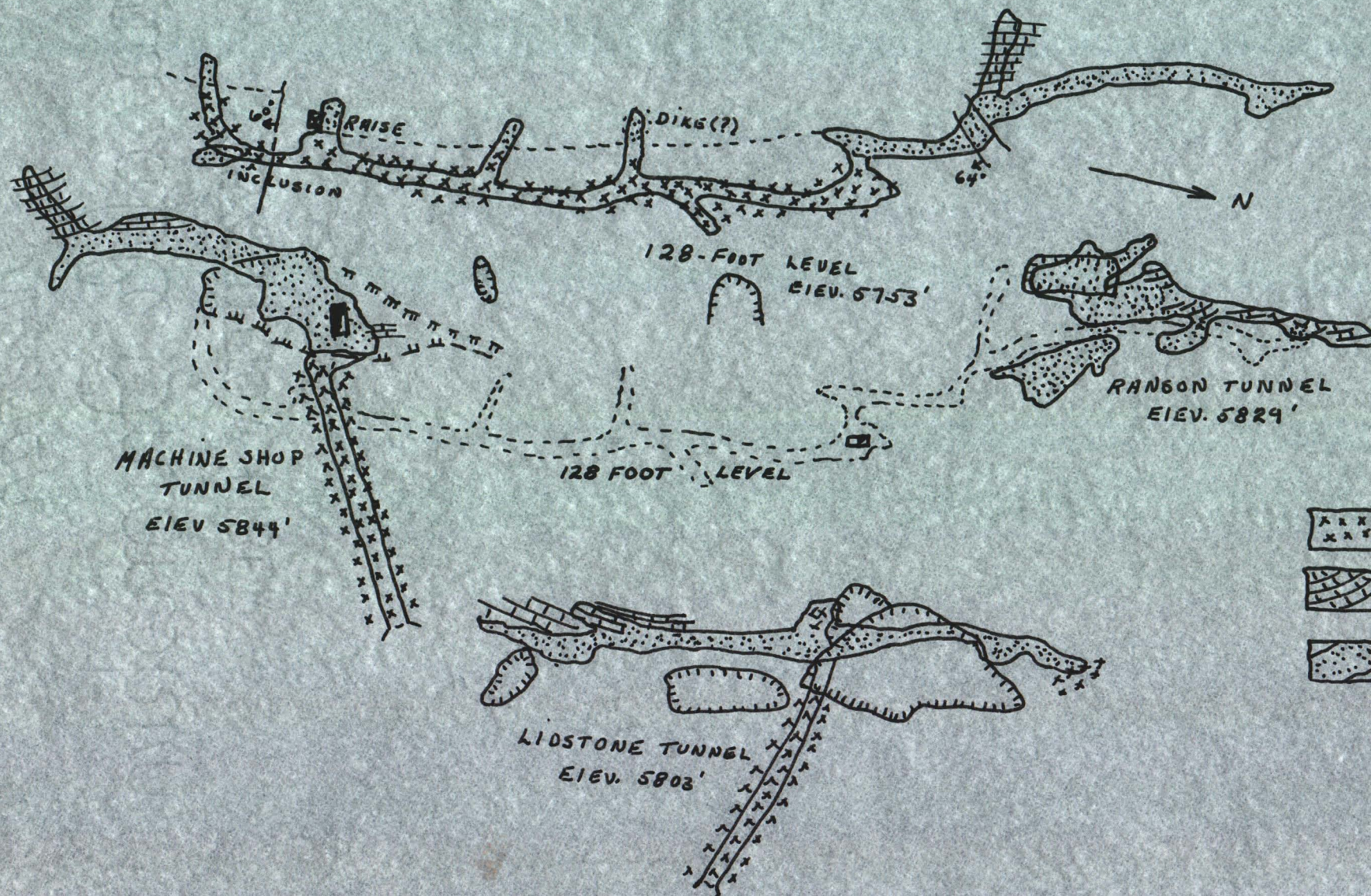
Nature and effect of supergene processes

The only supergene processes that are evident in the Nightingale District are some deposits of the mineral Malachite in the hanging walls of the working. These are minor and don't amount to much.

The granodiorite at the surface is somewhat decomposed and crumbles at the touch.

Conclusion

I doubt if Nightingale will ever again be a producer of Tunsten unless the price is changed considerably or a new high-grade deposit is found.



NIGHTINGALE MINE WORKINGS

SAMPLES

Samples from Nightingale Mine

Sample NMM1

Malachite
Quartz
Molybdenite
Chalcopyrite
Epidote

Sample NMM2

Scheelite
Epidote
Garnet
Quartz

Sample NMM3

White quartz
Clear quartz

Sample NMM4

Molybdenite
Epidote
Quartz

Sample NMM5

Quartz
Some molybdenite

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