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# THE WHITECAP TUNGSTEN MINE

## WASHOE COUNTY, NEVADA

By JOHN W. GOURLEY
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# THE WHITECAP TUNGSTEN MINE

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## ABSTRACT

The Whitecap Tungsten Mine is located at the southeast corner of Winnemucca Lake Valley, Washoe County, Nevada. It is owned by Fred Crosby of Sutcliffe, Nevada. The ore deposit is a typical contact-metamorphic type. Granodiorite has intruded limestones of Mesozoic (?) age, and the tungsten is found in the tactite zone around the intrusion. The ore mineral is scheelite and it occurs disseminated throughout the tactite. The tactite is a coarse grained, silica rich metamorphic rock composed mostly of quartz, garnet, epidote, calcite and pyroxene. The richest ore comes from two stopes; one right on the contact and the other entirely within the tactite. Nothing is known about the grade and tonnage of the reserves.


## INTRODUCTION

The Whitecap, or Crosby, Tungsten Mine is located at the southeast corner of Winnemucca Lake Valley, Section 21, T. 24 N., R. 24 E., Mount Diablo base and meridian, Washoe County, Nevada. The property is owned by Fred Crosby of Sutcliffe, Nevada.

The mine is at an elevation of 4,600 feet on the west slope of a small peak of the Truckee Range. It is most easily reached by following the gravel road which forks east off of State Route 34, just north of Nixon, which follows Mud Lake Slough and then proceeds

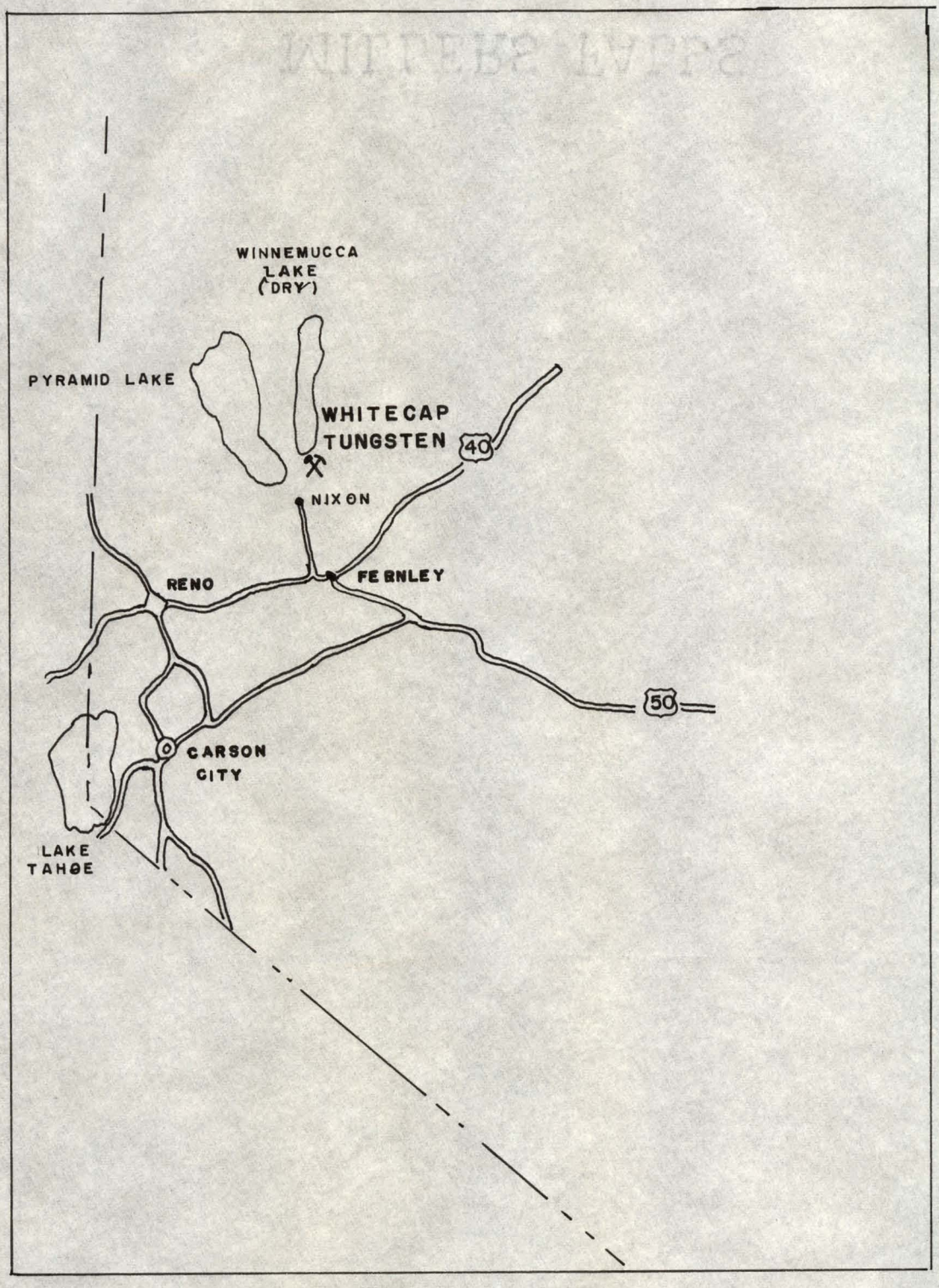


Figure 1.--Location map, Whitecap Tungsten Mine.

along the south end of Winnemucca Lake Valley.

The ore body is a typical contact-metamorphic deposit, as described by Hess and Larsen (1921)[1].

Exact production figures are not available. It is known, however, that from 1 to 10 tons of 60% $WO_3$ concentrates were shipped while the mine was in operation during the early 1950's.

## GEOLOGY

The geology of the Truckee Range is essentially the same as that described at the Nightingale District a few miles to the north. Although no detailed geology was done, it is believed that Mesozoic (?) limestones and shales were intruded by a large granodiorite body during late Mesozoic or early Tertiary times. Unconformably on these surfaces lie Tertiary basalts and tuffs.

There are no volcanic rocks exposed at the mine. The granodiorite forms most of the mountain in which the mine is located. The contact between the granodiorite and the tactite is quite distinct and

1. Hess, F. L., and Larsen, E. S.,: Contact-metamorphic tungsten deposits of the United States.: U.S. Geol. Survey Bull. 725-D, 1921.

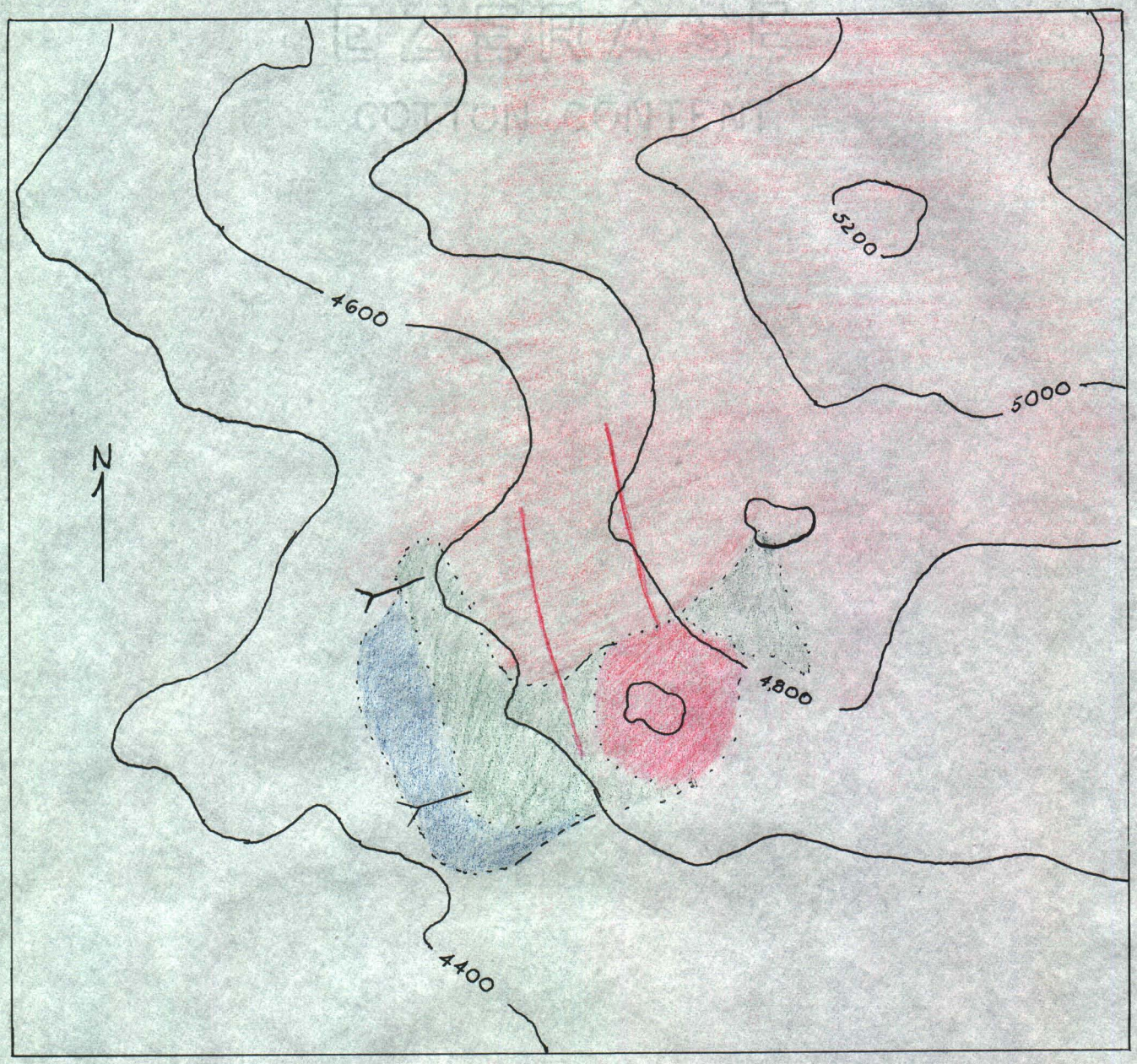


Figure 2. Geologic Map of the Whitecap Mine Area

Granodiorite  Tactite  Limestone

Quartz  Quaternary Sediments

visable from some distance. Sometime after the granodiorite had cooled, a quartz blowout came up along the contact and separated the tactite into two pieces.

There are two prominent quartz veins that cut the tactite and the granodiorite. These veins trend north-south and are probably related to the blowout in age.

The name of the mine is derived from this quartz blowout. It crops just above the workings and is visable for miles.

The limestones that crop at the mine are fine grained and dark gray in color. They appear to have been altered by the heat and pressure from the granodiorite. They occur in beds from 1 to 2 inches thick, strike N. 80 W., and dip 80° S. The limestone becomes massive and more silicic toward the contact, and finally grades into the highly metamorphosed tactite.

The tactite is a coarse grained, greenish-brown rock that is very hard and compact. It is composed mainly of quartz, garnet and epidote. The latter two impart its distinctive color. Other minerals generally found in the tactite include pyroxene, calcite, pyrite, chalcopyrite, magnetite, and perhaps some wollastonite along with the scheelite which is disseminated throughout

the rock.

The granodiorite is composed mainly of plagioclase, orthoclase and quartz. Minor amounts of pyrite and scheelite are found occasionally near the contact. The rock is very coarsly crystalline and is light gray in color.

## STRUCTURE

The rocks around the contact have been highly fractured and falted due to the intrusion of the granodiorite, subsequent cooling and tectonic activity. There seems to have been very little movement along these fractures, however, and displacement can be measured usually in inches.

The contact between the granodiorite and the tactite is nearly verticle where it was exposed in the workings.

The granodiorite is characterized by three fracture patterns. The first strikes N. 40 W. and dips 75° N; the second strikes N. 30 E., and dips 65° NW; and the third trends S. 70 E. and dips 35° NE.

The tactite seems to have no real fracture pattern and the patterns may occur in any direction.

## CHARACTERISTICS OF THE ORE

All of the ore except for a small amount is tactite. The ore mineral is scheelite and occurs disseminated throughout the rock in grains that range in size from 1 mm to 15 mm in diameter. The scheelite is white to buff in color and has a glassy luster. In a hand specimen, it looks much like quartz. It is very easily identified by its bluish-white fluoresence under ultra-violet light.

The ore seems to occur in short lenses and pockets along fractures. The richest samples were taken from the two glory holes that occur in the mine. Although individual samples taken from these holes might be very rich, the average ore probably runs less than 1% $WO_3$. The ore taken from the leaner portions of the mine probably runs less than $\frac{1}{2}$% $WO_3$. These estimates were made by a visual inspection of the walls with a tungsten lamp and are not meant to be taken as assays.

The gangue minerals are simply those which make up the rest of the tactite, ie, quartz, epidote, garnet, pyrite, etc.

Hydrothermal solutions that rose from depth and followed the fractures along the contact were

probably the source of the mineralization. When these solutions reached the favorable chemical and physical conditions offered by the tactite, the scheelite was deposited.

There seems to be no reliable guide to the rich ore shoots, except to follow a fracture and hope for the best.

## MINE WORKINGS

The mine was developed from two tunnels, which are designated as North and South by the author. There is also a shaft, but it was not explored because fire damage to the ladder made investigation dangerous.

The North tunnel consists of about 250 feet of workings and a glory hole along the contact. The glory hole is about 40 feet long and 25 feet wide. The best ore from the north workings comes from this section..

The South tunnel is also characterized by a glory hole and has over 450 feet of workings. The south workings lie entirely within the tactite and limestone and do not penetrate to the granodiorite. As is the case with the North, the best ore is found

in the glory hole. Probably the major part of the mine's production came from these two glory holes.

## SUMMARY AND CONCLUSIONS

The largest problem facing the mine is that it simply is not potentially large enough or rich enough to justify the expense of proving up a larger ore reserve.

Another problem for the small operator to face is the lack of a water supply for the mill. The nearest well is miles away over rough roads.

Finally, as the glory holes indicate, the mine has been high graded out. Further operations would have to be carried out with the lower grade ore until new rich shoots could be found.

Since the tactite is highly fractured, there is a possibility that the solutions could have worked their way out into the limestones. If this did happen, there is an excellent chance for replacement to occur. Replacement ore is usually richer, easier to block out and easier to process than the tactite. If the domestic outlook for tungsten should ever improve, I would suggest exploration of the limestone along with the tactite.

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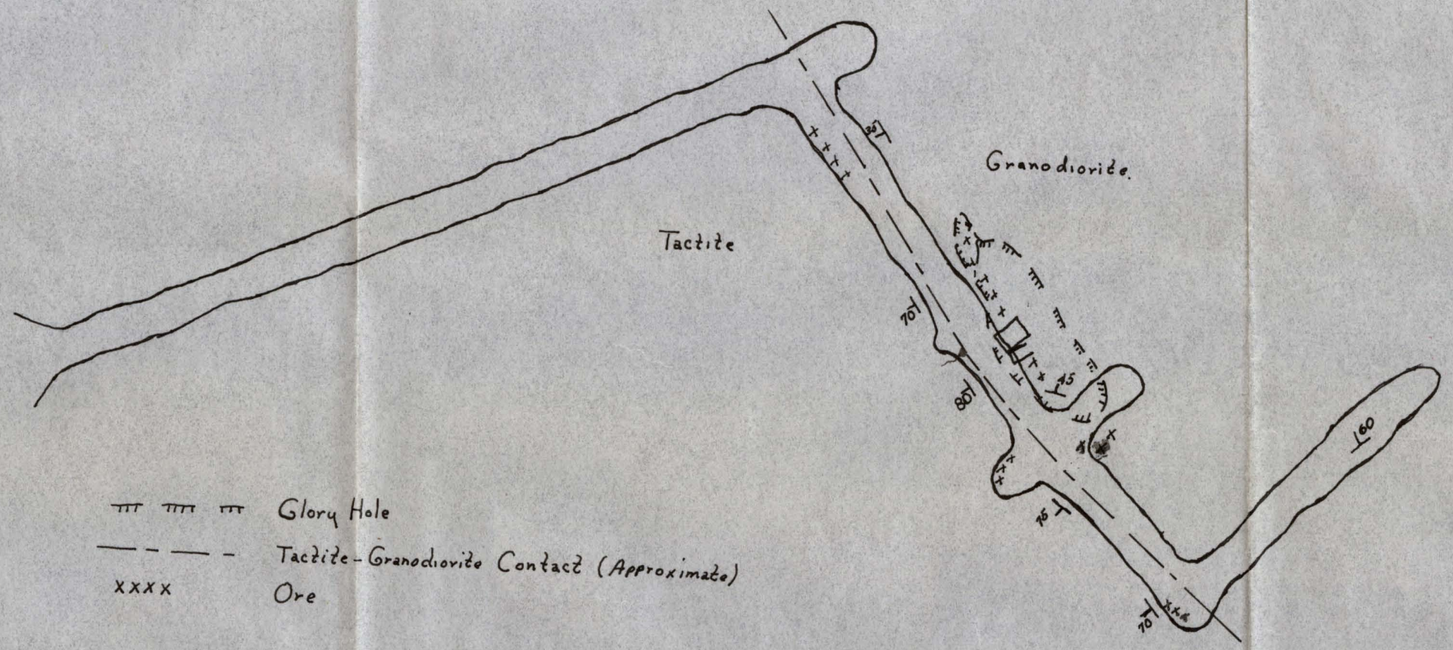
2. Hess, F.L., and Larsen, E.S., Contact-metamorphic tungsten deposits of the United States: U.S. Geol. Survey Bull. 725-D, 1921.

3. Smith, W.C., and Guild, P.W., Tungsten deposits of the Nightingale District Pershing County, Nevada: U.S. Geol. Survey, Bull. 936-B, 1942.

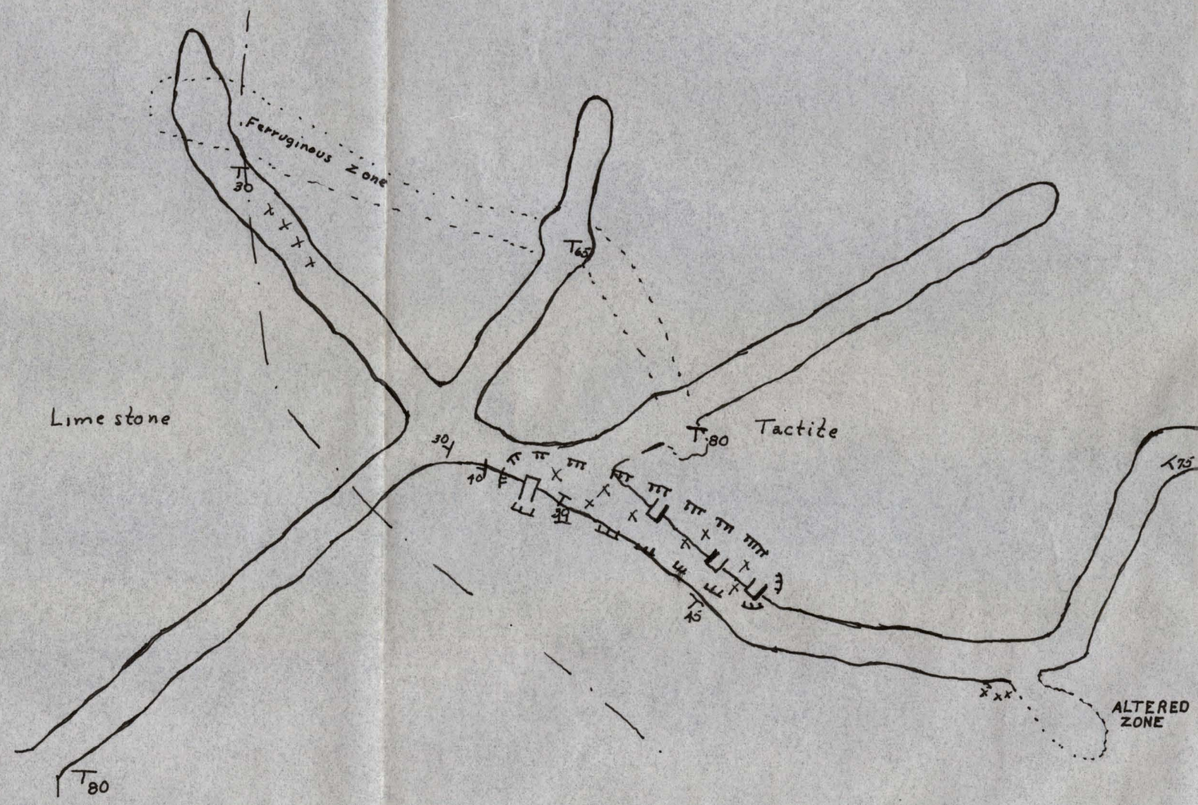


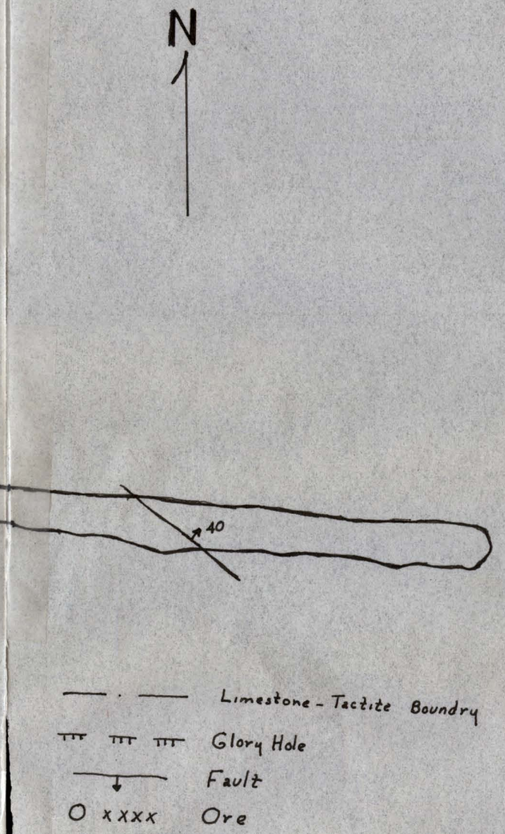

NORTH TUNNEL WORKINGS

SCALE 1" = 20'

PLATE I

0 10 20 ft.




## SOUTH TUNNEL WORKINGS

SCALE 1" = 20'

0 10 20 ft.

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