3430 0033

(243)

2927 Item 38

MEMORANDUM

THE GOLDFIELD CONSOLIDATED MINES COMPANY

SAN FRANCISCO, CALIFORNIA

SUBJECT HEISER-MINNIS PROPERTY Oak Springs District, Nye Co., Nevada

DATE July 7, 1938

TO Mr. Julian

FROM H. N. Witt

Ch. for n.s.s.

This property lies to the westward of the Tamney Property in a series of limestone on the west side of the granitic area. At Mr. Minnis' invitation during his visit to the Tamney camp and because of Mr. John Heiser's statement that these claims were for sale I made a short examination of this group.

The limestones appear to be different than those exposed on the Tamney property. Ore showings are in garnet zones within these limestones not far from granitic contacts. One ore showing is on a fissure in limestone with limited garnetization. The ore occurs in spectacularly rich kidneys containing coarse scheelite crystals. The total volume of ore is small, the streak is narrow and is of little interest except as "chloriding" operation for prospectors.

A second garnet ledge is somewhat larger, but appears to be poorly mineralized and is of doubtful interest.

So far as I can determine from a rapid reconnaissance of the area surrounding the Tamney group, the center of mineralization appears to be on the Tamney property and the outlying areas are of doubtful interest.

H. N. W.

Orig to GW with Eng memo 7/1/38

Mine Name: Oak Springs Tungsten prospect

MILS Sequence No.: 3202300132

Location: Sec. 2, T 8 S, R 53 E

County: Nye

Commodity: Tungsten

Production: Between 5,000 to 6,000 tons were reportedly mined in 1941; about 80 pounds of scheelite were produced.

Mining District: Oak Spring

Geology: Scheelite accompanied by powellite occurs associated with a quartz vein in limestone. In places the mineralized zone extends out into the limestone, forming small irregular pods. Sample material assayed 0.22 percent WO3. Estimated reserves published in 1957 were: 35,000 tons of probable and possible ore at 0.5 percent or higher WO3 and 6,000 tons of possible "marginal and submarginal" ore at 0.1 to 0.49 percent WO3 (15, p. 381).

Development: Workings include a 1,000-foot adit, trenches, and test pits along a vein for about 200 feet.

Period of Activity: Seventeen claims were located in 1937. All activity apparently ended around 1941.

References: (16, pp. 380-381) (25)

Mine Name: Indian Trail group

MILS Sequence No.: 3202300017

Location: Sec. ~~18~~ 25, T 8 S, R 53 2 E

County: Nye

Commodity: Tungsten

Production: Kral (4) reported 110 tons of ore containing 0.94 percent WO_3 was mined in 1940. Recovered concentrates were valued at $1,150.

Mining District: Oak Spring

Geology: Unknown; presumably similar to the Crystal claims.

Development: Workings include a shallow inclined shaft which has been developed into an open pit.

Period of Activity: It is unknown when the claims were first located; apparently mining ceased after 1940.

Reference: (4, p. 140)

Ore with a grade of 0.5 to 1.0 percent of WO_3 is exposed at the surface in 7 other bodies somewhat smaller than the main ~~Cockscomb~~ Cocks ore body. Widths of ore range from 5 to 30 feet, and lengths, from 60 to 150 feet. From the aggregate area of ore exposed at the surface, it is inferred that reserves per foot of depth are 750 tons containing 0.7 percent of WO_3. It is believed that the favorable ore zones extend to depths of many hundred feet, but there is no proof that individual ore shoots are continuous with depth. The distribution of this ore in many small, irregular shoots, coupled with the low content of WO_3, would result in high-cost production. It is believed that material available for large scale open pit mining contains only 0.1 to 0.2 percent of WO_3.

Thiriot

The Thiriot property adjoins the Tamney claims on the west, and is on an extension of the widest tactite belt. The ore contains only about 0.3 percent of WO_3 in a belt 200 feet long and 6 feet wide.

Ore treated in the Smith dry mill came from a pit 25 feet long, 12 feet wide, and 10 feet deep.

Other prospects

Scheelite is also found at several localities on the west side of the granite stock, but no wide bands of tactite are present comparable to those on the Tanney property. On a claim owned by the Nevada-Massachusetts Co., irregular small bodies of tactite are aligned along sheared beds of limestone. No commercial ore was found in an adit 260 feet long (fig. 135) with a 100-foot open cut at the portal, although numerous specimens of euhedral scheelite crystals were recovered from gouge. Considerable powellite pseudomorphous after molybdenite is present. Similar mineralized prospects are found farther northwest on claims held by W. A. Smith, by O. R. Speirs, and by Sam Warrett and M. A. Stewart.

TUNGSTEN DEPOSITS NEAR OAK SPRING
NYE COUNTY, NEVADA

by

Donald G. Wyant

TUNGSTEN DEPOSITS NEAR OAK SPRING, NYE COUNTY, NEVADA

By Donald G. Wyant

Contents

Illustrations

Tungsten Deposits near Oak Spring, Nye County, Nevada

by Donald G. Wyant

Abstract

Scheelite and some powellite occur near Oak Spring, Nye County, Nevada in large masses of tactite occupying premineral faults and folds in Paleozoic limestone. Tactite was formed by a granitic intrusion into the limestone. The limestone is part of a thick series of conglomerate, limestone, shaly limestone and quartzite, which is capped to the north by flows of volcanic rocks and by tuff beds, and blocked out to the south and east by basin and range type normal faulting. The district has produced an unknown amount (possibly 10 tons) of scheelite concentrate from the time of its discovery in 1936 to December 1941.

Ore reserves at Oak Spring

	tons	units WO_3	tons	units WO_3
Probable ore 1/			10,119	11,435
Possible ore 1/			25,798	24,030
Possible marginal ore 2/	14,855	6,026		
Possible submarginal ore 3/	45,724	10,850		
Total marginal and submarginal possible ore			60,579	16,876
Total			96,496	52,341

1/ grade 0.5% of WO_3 or higher

2/ grade 0.3% to 0.49% of WO_3

3/ grade 0.1% to 0.29% of WO_3

Tungsten Deposits near Oak Spring, Nye County, Nevada

by Donald G. Wyant

Introduction

The Oak Spring district, Nye County, Nevada is 60 miles by poor desert road east of Indian Springs, which is on the main Beatty-Las Vegas highway, and 103 miles north of Las Vegas. It is 60 miles West of Tem Piute, Lincoln County, Nevada by fair desert road. The district is in the Fourth Army Air Corps Gunnery Range.

Previous reports on the area have been made by the following men:

H. N. Witt for Goldfield Consolidated Company

G. Donald Emigh for the U. S. Vanadium Company

Henry C. Carlisle for Pacific Bridge Company

Maps have been prepared by Witt (Brunton), Emigh (based on Witt's map), and by Van O. Eastland, who made a transit-tape survey for Pacific Bridge Co.

The original discovery of scheelite in the district was made in 1936 by George Tamney and his father who acted upon information supplied by Wesley Koyen and George W. Thiriot, Sr., of Tem Piute, Nevada. The Tamneys staked claims for Koyen and Thiriot on the less promising part of the tactite bodies; Thiriot later obtained ownership of these claims. The Tamneys immediately interested Goldfield Consolidated Mining Company, which optioned the Tamney property, and in 1938 re-optioned it to U. S. Vanadium Corporation. The U. S. Vanadium Corporation thoroughly sampled the tactite masses, and finding them of too low a grade for open pit operation dropped their option. Goldfield Consolidated then unsuccessfully attempted to develop ore in a 900 foot crosscut beneath

the cropping of the Main Cockscomb ore body. This work was discontinued in the spring of 1940 and the property then reverted to George Tamney, whose father's death made him sole owner. Howard Melaney, a former employee of Goldfield Consolidated, immediately secured a 20 year lease, interested the Pacific Bridge Company, and drove the Cockscomb tunnel, which intersected the Main Cockscomb ore body 75 feet beneath the average elevation of the cropping, thus indicating a probable 11,435 units of WO_3. Melaney developed a well seven miles east of the property, which is reported to supply 20 gallons of water a minute, and had mill tests run. He was frustrated before having the opportunity of building a mill by the incorporation of the Oak Spring District into the Fourth Army Air Corps Gunnery Range.

The Thiriot property meanwhile remained undeveloped until the fall of 1940 when I. Foster Smith, Raymond E. Stolle, and Joe E. Riley leased the Thiriot claims and constructed a dry mill. Smith bought the interest of the other partners in December, 1940 and continued operations until May, 1941. He reported a good grade of concentrates, a probable 60% extraction, a successful separation of scheelite and powellite by air-flotation, and a nearly profitable operation with ore containing 0.25% of WO_3. Near the end of Smith's operation he was treating ore from properties leased from Thiriot, Nevada-Massachusetts Company, and from W. A. Smith.

Production may have been 7 or 8 tons of concentrate containing 50% of WO_3.

When Goldfield Consolidated Company optioned the Tamney property in 1936, the Nevada-Massachusetts Company became interested

in the district, and drove a 360 foot tunnel and trench on a shear zone in limestone. The company is not now working in the dis-
district.

Production may have been 2 or 3 tons of concentrate.

Other property in the district is owned by O. R. Speirs.

Total production of scheelite concentrate from the Oak Spring District has been 9 or 10 tons containing 50 to 60% of WO_3.

Since May 1941, when D. M. Lemmon and I visited the property, various other people have examined the area including Fred Johnson in May 1941 for American Smelting and Refining Co., Rove of the Bureau of Mines, Van der Cook and others of the General Land Office, and Prince and Permatel for the Quartermaster Corps, U. S. Army.

Frank Byers and I spent seven days between December 10th and 19th in the district. Due to foul weather and the lack of photo-enlargements only two days and three nights were spent on the surface; the more important surface features were, however, plotted on the aerial photo contact prints, and checked on Eastland's map of the Tamney property. The underground workings were mapped in detail and most of the tactite bodies were "lamped", as a result of which I see no reason for not accepting U. S. Vanadium Company's assays.

The accompanying maps, sections, and projections are derived from an interpretation of Witt's geologic map, Eastland's map, aerial photos and our maps of underground workings. Eastland's map is apparently 100 feet in error, vertically and horizontally.

Geology

The somewhat complicated geology of the Oak Spring District is clearly exposed.

To the north, Tertiary volcanics (rhyolite flows and tuff beds) forming Oak Spring Butte lie in normal and fault contact upon granitic rocks (granite, granite pegmatite, diorite) of unknown age, and upon a series of folded and faulted Paleozoic limestones, marbles, shaly limestones, quartzites, and conglomerates intruded by these granitic rocks. Tactite, granitic sills, and dikes occupy bedding planes and faults in the limestone.

Granite divides the sedimentary rocks into two large masses, the one to the west containing the prospects of the Nevada-Massachusetts company, Sam Werrett and M. A. Stewart, O. R. Speirs, and W. A. Smith, and the one to the east containing the Tamney-Thiriot properties.

Most of the large tactite masses have been found parallel to bedding or premineral faults from 100 to 500 feet from any granite contact. West of the junction of the Ridge ledge, Narow ledge, and Broad ledge tactite occurs where granite intruded limestone, and south of the Broad ledge below Thiriot tunnel a thin tactite zone occurs in a similar position. Minerals found in the tactite in approximate order of abundance are garnet, quartz, pyroxene (?), calcite, idocrase, scheelite, powellite, epidote. Control of scheelite concentrations within tactite bodies is obscure; probably cross fractures and irregularities of the contact are factors in localization. For the most part it is impossible to state how far the ore zones extend beneath the surface. Diamond drilling could be

used advantageously to indicate continuity and depth of the ore zones, which are probably sporadically spaced through the tactite bodies.

Post-volcanic faults of basin-range type have blocked out the range. One of these faults cuts off the northern extension of the Main Cockscomb ledge. Possible continuations are covered by down-faulted volcanic rocks (figs. 1, 2, and 3).

Figure 1. Map of Oak Spring district
Figure 2. Map of Tamney property
Figure 3. Vertical projection of Main Cockscomb ledge.

Ore bodies, development, and reserves

Ore has been subdivided on the basis of grade into "ore" (0.5% WO_3 or higher), "marginal ore" (0.3 to 0.49% WO_3), "submarginal ore" (0.1 to 0.29% WO_3). Unless otherwise stated it is assumed that 10 cubic feet of ore in place weigh one ton, and that because of lenticularity only one-third of an indicated shoot is ore.

The Cockscomb group of ore bodies

The Cockscomb group of ore bodies consists of 7 unconnected ore shoots in the Cockscomb ledge, the West Split of the Cockscomb ledge, the Middle Cockscomb ledge, the West Split of the Middle Cockscomb ledge, the West Cockscomb ledge, the South Cockscomb ledge, and the South Split of the South Cockscomb ledge. Some of these ore bodies have been prospected by the Cockscomb tunnel and the Goldfield tunnel (also known as the Main tunnel).

Main Cockscomb ledge

The Main Cockscomb ledge contains the most continuous ore zone

in the district. The ore shoot, which occurs in a bed of tactite that dips 43° east, probably rakes northward (see figs. 3 and 4).

Figure 3. Map and vertical projection of Main Cockscomb ledge
Figure 4. Cross section through Main Cockscomb ledge

On the surface the ore averages 1.13 percent of WO_3 for a length of 139 feet and a width of 7 feet. The same ore body is intersected 75 feet lower in the Cockscomb tunnel (fig. 5) 200 feet from the por-

---

Figure 5. Map of Cockscomb tunnel showing geology

---

tal. At this level, the ore body is divided into 2 parts by barren tactite, and contains good values for a length of 140 feet out of the 260 feet of drift along the vein.

The Goldfield tunnel, planned to locate the Main Cockscomb ledge still deeper, may not be long enough to prove the absence of the ore shoot on this level. The tunnel (fig. 6) is approximately

---

Figure 6. Map of Main tunnel showing geology

---

900 feet long and has one inclined raise 70 feet long. According to projections based on Eastland's uncorrected survey, the ore should lie 10 or 15 feet beyond the face of the east fork of the tunnel. However, faults that offset the ore zone may have thrown it still farther east.

There are three tactite bodies in the Goldfield tunnel, but only the one nearest the portal contains scheelite ore. All three tactite bodies are cut on the south side by faults, and the two bodies near the fork in the tunnel may be the same bed repeated by

faulting. It is reported that tactite was found in the raise, now caved near the top.

Probable ore above drift:

Grade, 1.13%; 10,119 tons; 11,435 units--

length, 139 feet; heighth along dip, 104 feet; width, 7 feet.

Possible ore:

Grade, 1.13%; 10,703 tons; 12,094 units--

length, 139 feet; depth along dip, 110 feet; width, 7 feet; lenticularity factor omitted; (see fig. 3)

Possible submarginal ore:

Grade, 0.25%; 18,563 tons; 4,640 units--

area south of main ore zone: length, 330 feet; vertical depth, 165 feet; width, 5 feet gives 13,581 tons; 3,395 units; area north of main ore zone: length 245 feet; vertical depth, 122 feet; width, 5 feet gives 4,982 tons; 1,245 units.

West Split of Main Cockscomb ledge

The West Split of the Main Cockscomb ledge is a replacement of limestone by tactite along bedding. Although two distinct bodies, for convenience they are treated as one. Tactite averaging 12 feet in width contains 0.6% of WO_3 for 82 feet along the strike (fig. 7).

Figure 7. Vertical projection of West Split of Main Cockscomb ledge

---

Possible ore:

Grade, 0.6%; 1,345 tons; 807 units--

this is probably a small lens of ore: length, 82 feet; depth, 41 feet; width, 12 feet.

Possible marginal ore:

Grade, 0.3%; 852 tons; 256 units--

length, 80 feet; depth, 40 feet; width, 7 feet gives 747 tons; 224 units;

length, 30 feet; depth, 15 feet; width, 7 feet, gives 105 tons; 32 units.

Middle Cockscomb ledge

The Middle Cockscomb ledge is another replacement of limestone by tactite along bedding. The outcrop clearly reflects a fold in the surrounding limestone (fig. 2). U. S. Vanadium Company's assays over the length of 103 feet and width of 10 feet averaged 0.7% of WO_3 (fig. 8)

Figure 8. Vertical projection of Middle Cockscomb ledge

Possible ore:

Grade, 0.7%; 1,777 tons; 1,243 units--

average length, 102.5 feet; depth, 52 feet; width, 10 feet.

West Split of the Middle Cockscomb ledge

The West Split of the Middle Cockscomb ledge is a tactite body 150 feet long and 15 feet wide. The tactite is discontinuous; 10 feet of the limestone bed were not tactitized (fig. 9).

Figure 9. Vertical projection of West Split of Middle Cockscomb ledge

---

Possible submarginal ore:

Grade, 0.25%; 8,452 tons; 2,119 units--

northern part: average length, 52.5 feet; depth, 30 feet;

Possible submarginal ore (continued):

width, 15 feet gives 788 tons; 197 units;

southern part: average length, 171 feet; depth, 96 feet;

width, 14 feet gives 7,664 tons; 1,916 units.

West Cockscomb ledge

The West Cockscomb ledge is a thin tactite body, 392 feet long and averaging 5 feet in width, which shows only marginal and submarginal ore on the surface (fig 10). The ledge is a replacement of

Figure 10. Vertical projection of West Cockscomb ledge

limestone but not entirely of one bed. It is at the base of the ridge formed by the Cockscomb group of tactite bodies.

Possible marginal ore:

Grade, 0.48%; 5,929 tons; 2,846 units--

length, 154 feet; depth, 77 feet; width, 5 feet.

Possible submarginal ore:

Grade, 0.2% and 0.22%; 2,677 tons; 548 units--

Grade, 0.22%; length, 81 feet; depth, 40 feet; width 6 feet gives 648 tons; 142 units;

grade, 0.2%; average length, 156.5 feet; depth, 96 feet; width, 4 feet gives 2,029 tons; 406 units.

South Cockscomb ledge

The South Cockscomb ledge may be the continuation of the West Cockscomb ledge; the tactite may extend to the Goldfield tunnel where it is probably repeated by faulting. (fig. 3)

Possible submarginal ore:

Grade, 0.2%; 6,900 tons; 1,380 units--

length, 120 feet; depth, 230 feet; width, 15 feet.

South Split of the South Cockscomb ledge

This tactite bed apparently extends downward at least to the Main tunnel level, where a reported 2% assay was obtained.

Possible ore:

Average grade, 1%; 800 tons; 800 units--

length, 80 feet; depth, 120 feet; width, 5 feet.

Other tactite bodies

Ridge ledge

The Ridge ledge is a tactite body 800 feet long with an average width of 50 feet. In the northern half the tactite is parallel to a premineral fault dipping about 70° north, which here nearly parallels bedding; in the southern half it is controlled by a granite contact, partly intrusive and partly faulted.

The Ridge ledge contains 5 isolated pods of good ore (fig. 11)

Figure 11. Vertical projection of Ridge ledge

---

and three of lower grade, two of which are calculated as one.

Possible ore:

Grade, 0.5% WO_3 or better; 10,068 tons; 8,436 units--

grade, 1.36%; length, 72 feet; depth, 36 feet; width, 35 feet gives 3,024 tons; 4,112 units;

Possible ore (continued):

grade, 0.74%; length, 42 feet; depth, 21 feet; width, 9 feet gives 265 tons; 196 units;

grade, 0.5% (?); length, 22 feet; depth, 11 feet width, 9 feet gives 73 tons; 36 units;

grade, 0.58%; average length, 125 feet; depth, 77 feet; width, 17 feet gives 5,454 tons; 3,163 units;

grade, 0.74%; average length, 74.5 feet; depth, 42 feet; width, 12 feet gives 1,252 tons; 928 units;

Possible marginal ore:

Grade 0.45%; 996 tons; 446 units--

average length, 65.5; depth, 38 feet; width, 12 feet.

Possible submarginal ore:

Grade, 0.26%; 2,465 tons; 641 units--

length, 86 feet; depth, 43 feet; width, 20 feet.

Narrow ledge

The Narrow ledge is apparently a bedding replacement of limestone, which dips nearly vertically or steeply south. It contains three pods of ore and submarginal ore scattered through 1,200 feet. Average width of the Narrow ledge is 30 feet.

Possible ore:

Grade, 0.5%; 183 tons; 93 units--

length, 52 feet; depth, 26 feet; width, 3 feet gives 135 tons; 68 units;

length, 38 feet; depth, 19 feet; width, 2 feet gives 48 tons; 25 units.

Possible submarginal ore:

Grade, 0.26%; 2,146 tons; 559 units--

length, 57.5 feet; depth, 32 feet; width, 35 feet.

Broad ledge

Figure 12. Cross section through Broad ledge and New 210 Foot Crosscut
Figure 13. Cross section through Broad ledge and Granite tunnel

---

The Broad ledge is apparently another bedding replacement of limestone. It is approximately 2,400 feet long and 175 feet wide. It contains several small pods of submarginal ore, one observed pod of ore, and possibly a large tonnage of very low grade submarginal ore (0.1% to 0.2%) not included in the present estimate.

The Broad ledge has been crosscut by two tunnels: the Granite tunnel and the New 210 Foot Crosscut. Thiriot's prospect is also in this tactite body.

The New 210 Foot crosscut (fig. 14) is entirely in tactite

Figure 14. Map of New 210 Foot crosscut showing geology

---

except for 10 feet of limestone and marble at the face. The crosscut 25 feet from the face was dug on ore which may run 0.6% over a width of 5 feet.

The Granite tunnel, 520 feet long, cuts three barren tactite bodies near the face (fig. 15). At the bend in the drift granite

---

Figure 15. Map of Granite tunnel showing geology

---

has been faulted against tactite.

Thiriot's prospect adit, 40 feet long, contains low grade tactite ore (fig. 16). Most of the ore (reported to have yielded 0.25% WO_3) milled at Smith's dry mill came from banded tactite and marble exposed in an open cut 25 feet long, 12 feet wide, and 10 feet deep.

Figure 16. Map of Thiriot tunnel showing geology

Possible ore:

Grade, 0.73%; 420 tons; 307 units--

length, 60 feet; depth, 30 feet; width, 10 feet.

Possible marginal ore:

Grade, 0.30% to 0.43%; 7,078 tons; 2,478 units--

grade, 0.39% (?); average length, 50 feet; depth, 105 feet; width, 7 feet gives 1,126 tons; 440 units;

grade, 0.43%; length, 114 feet; depth, 57 feet; width, 9 feet gives 1,949 tons; 836 units;

Thiriot property (not on Eastland's map)--grade, 0.30%; length, 200 feet; depth,100 feet; width, 6 feet gives 4,000 tons; 1,200 units.

Possible submarginal ore:

Grade, 0.23% to 0.26%; 2,021 tons; 469 units--

grade, 0.26%; length, 42 feet; depth, 21 feet; width, 5 feet gives 147 tons; 38 units;

grade, 0.23%; length, 93 feet; depth, 46.5 feet; width, 13 feet gives 186 tons; 432 units.

Tactite body east of the portal of Main tunnel

The tactite body east of the portal of Main tunnel is an isolated

lens. Although adequate facts are not available it may contain 2,500 tons of possible submarginal ore (0.2%) or 500 units of WO_3.

Speirs prospect

O. R. Speirs' prospect consists of three small pits on a tactitized shear zone in limestone, possibly the same structure on which the Nevada-Massachusetts Company dug. If its grade is 0.5%; width, 4 feet; length, 100 feet; depth, 50 feet; and ½ the outlined shoot be considered ore, there may be 500 tons of ore containing 250 units.

Nevada-Massachusetts prospect

The Nevada-Massachusetts Company drove a tunnel 260 feet long and a trench 100 feet long, 9 feet wide, and 4 to 20 feet deep on a tactitized shear zone in limestone (fig. 17). It is reported that

Figure 17. Map of Nevada-Massachusetts tunnel showing geology

several tons of concentrate were produced, but there is no evidence of much production; certainly very little reserve exists. The dump contains a few tons of marginal ore. There is considerable powellite in coatings near the portal. More drifting might indicate more ore. Possible ore: 2 tons containing one unit of WO_3.

Other prospects

In the vicinity of Tamney's camp several tunnels and prospect pits have been dug for silver. They were made before scheelite was discovered in the district and do not contain scheelite according to Tamney. They were not examined by the writer.

Sam Werrett and M. A. Stewart of Alamo, Nevada hold one claim on what is probably the same shear zone as Speirs' prospect. This undeveloped claim is between Speirs' prospect and Tamney's cabin.

Between Speirs' prospect and the Nevada-Massachusetts tunnel is another prospect owned by W. A. Smith of Kelly Mine. In the spring of 1941 this prospect was leased to I. Foster Smith (no relation to W. A.), who hauled some ore to his dry mill on the Thiriot property shortly before moving the mill.

Summary and Recommendations

In the Oak Spring district scheelite occurs in bodies of sufficient size and grade to warrant a commercial operation that would probably be successful. If additional water supply were available, the large tonnage of marginal and submarginal ore might justify a larger operation than the 50 ton mill unit planned by Howard Melaney for Pacific Bridge Company.

If this area is withdrawn from the Aerial Gunnery Range, a Bureau of Mines project might be advisable to determine additional reserves. Surface sampling over much of the area is not necessary, for the U. S. Vanadium Company samples were entirely adequate where taken. The Broad ledge should be sampled at 75 or 100 feet intervals, expecially to the east of the Tamney property. Diamond drill holes would be advantageous in determining downward extensions of surface ore zones. The first drill holes should be placed beneath the level of the Cockscomb tunnel in the main Cockscomb ore body, beneath several of the splits of the

Cockscomb near its southern end, and beneath two of the pods of ore in the Ridge ledge.

If the Bureau of Mines should plan a project in the district, The Geological Survey should first make an accurate, detailed surface map.

3430 0033

Shoshone, Nevada
May 31, 1941

(243)
Jtan 38

Memorandum to T. B. Nolan

Tungsten deposits at Oak Spring, Nevada

On May 29, Don Nyant and I, guided by Messrs. Knickerbocker, Holt, and Dunn of Tem Piute, drove from Tem Piute to Oak Spring. We stayed until late afternoon, and then continued to Indian Spring and Las Vegas. (Because of the 10-gallon capacity of US 4071, our gas supply was insufficient for return direct from Oak Spring, even though we carry an extra 5-gallon can.)

Oak Spring is 60 miles from Tem Piute by a fair, ungraded, desert road that can be travelled in 2 hours. It is 58 miles from Oak Spring west to the highway 12 miles north of Indian Spring, and 108 miles to Las Vegas.

The major features of the geology seem plain. Scheelite and powellite occur in very wide zones of tactite that lie on the contact between granite and Carboniferous limestone or follow beds or faults a few hundred feet from the contact. Flat-lying volcanic rocks cap part of the 5 mile contact.

The known tungsten deposits are on the south side of Oak Spring Butte (Thiriot and Tanney properties) and on the north edge of Oak Spring canyon (Nevada-Massachusetts).

In the fall of 1940, I. Foster Smith, Raymond E. Stolle, and Joe E. Riley leased the Thiriot claims and constructed a dry mill. Smith bought the interest of the other partners last November, and continued operation until May 1941. At the time of our visit the mill was being dismantled and trucked to the Pilot Mountains for use on another tungsten property by Smith. According to Smith, he had rebuilt the mill so that it finally made a "good" recovery. He claimed that he "nearly" made a profitable operation with heads of 0.25% of WO_3. He owned no mine in the district, but leased from the Thiriots, from Nevada-Massachusetts Co., and from a prospector who owns claims west of the Nevada-Massachusetts Co. holdings. It is reported

that Smith produced a good grade of concentrate without impurities, and that he successfully separated scheelite and powellite by air flotation.

The original discovery in the district, adjoining the Thiriot claims on the west, was made by George Tamney and his father in 1937 (?). Goldfield Consolidated Mining Co. optioned the property, and in 1938 re-optioned it to U. S. Vanadium Corporation. The U. S. V. Corp. paid Goldfield Con. $16,000 cash, and spent $11,000 more in sampling the property. Their sampling indicated only a moderate tonnage of ore, and showed that the great masses of tactite were too low grade for open pit operation. Another payment of $40,000 was due; so U.S.V.Corp. dropped its option. Goldfield Con. then unsuccessfully attempted to develop ore in an 800 foot crosscut 350 feet beneath the cropping of the Coxcomb orebody. This work was discontinued in the spring of 1940 and the property reverted to the Tamneys. Howard Melaney, a former employee of Goldfield Con., immediately secured a 20-year lease, interested the Pacific Bridge Company, and is now preparing to block out the tonnage indicated by surface assays. Don Emigh of U.S.V. Corp. spent a week on the property in May, and, in a report dated May 18, 1941, estimated an ore reserve of 28,630 tons averaging 0.83% of WO_3. If the Pacific Bridge Company succeeds in blocking out this ore (under Melaney's direction), they plan to erect a 50 ton mill. Water, available in a well 7 miles away, will be piped to the mine.

Melaney (Pacific Bridge Co.) is now the only operator in the district. He has all of Goldfield Con's. and U. S. Vanadium's maps and assay data, and will give us copies of everything. These maps cover only the Tamney property. No regional map connecting the known deposits has been made.

The Nevada-Massachusetts Co. claims lie 2 miles south of the other deposits. They are developed by a drift several hundred feet long. The tactite appears to follow a fault zone away from the granite.

The control of ore shoots is obscure and perhaps not decipherable. The known deposits have been thoroughly sampled, and the district does not seem to merit core drilling at present. Rove of the Bureau of Mines visited the area last year. Melaney reports that the Bureau recently asked for and received a complete set of maps and reports from H.N. Witt.

The Oak Spring district is to be included in the new southern Nevada army bombing range.

In my opinion, the facts presented indicate that Pacific Bridge Co. will have a moderately successful operation with total production of 15,000 to 20,000 units of WO_3. Development may show downward extensions of the orebodies, leading to larger production and profits.

Dwight N. Lemmon

3430 0033

Shoshone, Nevada
May 31, 1941

(243)
Item 38

Memorandum to T. B. Nolan

Tungsten deposits at Oak Spring, Nevada

On May 29, Don Wyant and I, guided by Messrs. Knickerbocker, Holt, and Dunn of Tem Piute, drove from Tem Piute to Oak Spring. We stayed until late afternoon, and then continued to Indian Spring and Las Vegas. (Because of the 10-gallon capacity of US 4071, our gas supply was insufficient for return direct from Oak Spring, even though we carry an extra 5-gallon can.)

Oak Spring is 60 miles from Tem Piute by a fair, ungraded, desert road that can be travelled in 2 hours. It is 58 miles from Oak Spring west to the highway 12 miles north of Indian Spring, and 108 miles to Las Vegas.

The major features of the geology seem plain. Scheelite and powellite occur in very wide zones of tactite that lie on the contact between granite and Carboniferous limestone or follow beds or faults a few hundred feet from the contact. Flat-lying volcanic rocks cap part of the 5 mile contact.

The known tungsten deposits are on the south side of Oak Spring Butte (Thiriot and Tamney properties) and on the north edge of Oak Spring canyon (Nevada-Massachusetts).

In the fall of 1940, I. Foster Smith, Raymond E. Stolle, and Joe E. Riley leased the Thiriot claims and constructed a dry mill. Smith bought the interest of the other partners last November, and continued operation until May 1941. At the time of our visit the mill was being dismantled and trucked to the Pilot Mountains for use on another tungsten property by Smith. According to Smith, he had rebuilt the mill so that it finally made a "good" recovery. He claimed that he "nearly" made a profitable operation with heads of 0.25% of WO_3. He owned no mine in the district, but leased from the Thiriots, from Nevada-Massachusetts Co., and from a prospector who owns claims west of the Nevada-Massachusetts Co. holdings. It is reported

that Smith produced a good grade of concentrate without impurities, and that he successfully separated scheelite and powellite by air flotation.

The original discovery in the district, adjoining the Thiriot claims on the west, was made by George Tamney and his father in 1937 (?). Goldfield Consolidated Mining Co. optioned the property, and in 1938 re-optioned it to U. S. Vanadium Corporation. The U. S. V. Corp. paid Goldfield Con. $16,000 cash, and spent $11,000 more in sampling the property. Their sampling indicated only a moderate tonnage of ore, and showed that the great masses of tactite were too low grade for open pit operation. Another payment of $40,000 was due; so U.S.V.Corp. dropped its option. Goldfield Con. then unsuccessfully attempted to develop ore in an 800 foot crosscut 350 feet beneath the cropping of the Coxcomb orebody. This work was discontinued in the spring of 1940 and the property reverted to the Tamneys. Howard Melaney, a former employee of Goldfield Con., immediately secured a 20-year lease, interested the Pacific Bridge Company, and is now preparing to block out the tonnage indicated by surface assays. Don Emigh of U.S.V. Corp. spent a week on the property in May, and, in a report dated May 18, 1941, estimated an ore reserve of 28,630 tons averaging 0.83% of WO_3. If the Pacific Bridge Company succeeds in blocking out this ore (under Melaney's direction), they plan to erect a 50 ton mill. Water, available in a well 7 miles away, will be piped to the mine.

Melaney (Pacific Bridge Co.) is now the only operator in the district. He has all of Goldfield Con's. and U. S. Vanadium's maps and assay data, and will give us copies of everything. These maps cover only the Tamney property. No regional map connecting the known deposits has been made.

The Nevada-Massachusetts Co. claims lie 2 miles south of the other deposits. They are developed by a drift several hundred feet long. The tactite appears to follow a fault zone away from the granite.

The control of ore shoots is obscure and perhaps not decipherable. The known deposits have been thoroughly sampled, and the district does not seem to merit core drilling at present. Rove of the Bureau of Mines visited the area last year. Melaney reports that the Bureau recently asked for and received a complete set of maps and reports from H.N. Witt.

The Oak Spring district is to be included in the new southern Nevada army bombing range.

In my opinion, the facts presented indicate that Pacific Bridge Co. will have a moderately successful operation with total production of 15,000 to 20,000 units of WO_3. Development may show downward extensions of the orebodies, leading to larger production and profits.

Dwight M. Lemmon

COPY

3430 0033

(243) Item 38

GEOLOGY OF THE TAMNEY TUNGSTEN PROPERTY

Nye County, Nevada
by

Herbert N. Witt

July, 1938

Introduction

This report is a summary of geologic studies made on three visits to this property since the original sampling investigation in April, 1938.

The property contains six prominent garnet ledges which for convenience in description have been named as follows: Coxscomb, Middle, South, Ridge, Narrow and Broad. The two most important faults have been named Climax and Guard. All are shown on the accompanying map and cross sections.

Stratigraphy

The rocks found on the Tamney property are a series of calcareous sediments, probably Paleozoic, intruded by granitic rocks, both overlain in part by a series of Tertiary volcanics.

The volcanics are largely rhyolitic tuffs overlain by massive rhyolite flows, which form Oak Springs Butte and the surrounding mesa. These rocks have not been examined in detail. They are subsequent to the ore deposition.

The granitic rocks are a biotite granite or granodiorite with accompanying aplite and pegmatites. They have not been studied in detail. As shown on the attached sketch map of the Oak Springs district, the granitic area is about 2 miles long and one mile wide. It is probably the top or cupola of a granitic batholith underlying the region.

The series of calcareous sediments, in which are found all of the ore bearing garnet ledges, are probably of Paleozoic age. No fossils have been found, however, and this age is assigned solely because of the prevalence of Paleozoic limestones in this portion of southern Nevada. The age of these rocks is of no immediate economic importance.

Deciphering the stratigraphy of these sediments is made difficult by the similarity of some of the members, and by strike faulting. The group has been divided into four members, described below beginning with the oldest and lowest member.

Lower Marble This is in most part a uniformly white fine grained crystalline marble with a chert horizon near its upper boundary. Its total thickness is unknown due to the fact that the lower contact is against the granitic rocks, which have probably engulfed a portion of the beds. Its thickness is probably in excess of 400 feet. It is exposed in the foot-wall (west) of the Coxscomb Ledge (see map and sections) where it lies in a recumbent fold with some duplication of beds. It also lies in the foot-wall of the Broad Ledge which is a replacement of this member. In the upper portion of this member thin chert beds appear and increase markedly in number in approaching the overlying Lower Chert. The marble beds in this horizon often contain much Wollastonite in white radiating needle-like crystals. The Middle, South and Broad Ledges as well as the foot-wall portions of the Coxscomb Ledge are all replacements of the Lower Marble.

Lower Chert This cherty limestone lies conformably above the Lower Marble. It is composed of innumerable thin beds of chert between thin beds of marble. This rhythmic banding is characteristic of both the Upper and Lower Cherts. The outcrops are characteristically brown or deep tan and the float is usually in slabs or elongated pieces. In fresh fracture the rock is nearly white, the thin chert beds having a faint tan color. In the lower portion (75') the marble beds vary from 1" to 6" in thickness. Above this near the middle of this member is an horizon of small lenticular quartzite beds. Above this horizon the marble beds increase in thickness and the chert beds become fewer and less regularly spaced. Thus this member grades upward into the Upper Marble. This Lower Chert is found only in the hanging-wall of the Coxscomb Ledge. It terminates southward against the Climax Fault. This fault has thrown the southward continuation to the west where it has been engulfed by the granitic invasion. The thickness of this member is approximately 150 feet. The greater part of the Coxscomb Ledge is a replacement of this Lower Chert.

Upper Marble Hand specimens of some of the Upper Marble would be difficult to distinguish from the Lower Marble. In large outcrops, however, it is distinguished by its varicolored beds, white, blue-grey, and brown, and by its coarser crystallization. Thin chert beds are scattered at irregular intervals. Its

coarser beds have a characteristically crumbly outcrop. Its total thickness exposed along Section A between the Lower and Upper Chert is approximately 500 feet. This member also outcrops in a wedge shaped area between the Climax Fault and Narrow Ledge. The Ridge Ledge and a portion of the Broad Ledge (near the Location Monument of Climax #1 claim) are replacements of parts of this member.

Upper Chert This is similar in many respects to the Lower Chert, but is distinguished by coarser bedding, larger and more blocky float, and by a basal slate bed. The total thickness is unknown for the upper boundaries have not been found during the field work thus far. It probably exceeds 200 feet. The basal slate member has a maximum thickness of 100 feet, but apparently is not uniform and pinches out westward along the Upper Marble contact, just north of the Narrow Ledge. The lower portion of these basal beds is an intricately contorted and badly broken slate with a few thin sandstone beds. The upper portion is rhythmically banded with alternating slate and sandstone beds about an inch thick. The balance of the Upper Chert member is similar to the Lower Chert. The Narrow Ledge is a replacement of a portion of this chert just above the slate horizon.

Structure

The sedimentaries have been subjected to some folding and considerable faulting, most of it apparently premineral.

In the northerly portion of the property, near Section A, the beds lie in a simple monocline striking about N 25 W and dipping 30 to 50 N.E. Southward of this section the beds are folded into a sharp nose (at Section B). Most of the south limb of this fold has been cut off by the Climax fault, but a portion is preserved northward of the fault in the Lower Marble, where there is an apparent duplication of beds in a recumbent fold. The axis of this fold is apparently plunges to the N.E. It is probable, therefore, that the Middle and South Ledges may yet prove to be at the same horizon and in depth may be continuous around the nose of this fold.

The Climax fault in its western portion is a bedding or strike fault and hence difficult to trace. It has, however, been found where expected in the New Tunnel. Its presence is also indicated by a marked difference in structure

in the Ridge Ledge and South Ledge where they abut at the Climax Fault. Eastward of the new tunnel the fault becomes transverse to the structure and is easily traceable eastward to the Upper Chert where it again becomes obscure. Its probable pre-mineral age is indicated by the presence of a granitic dike with frozen walls, injected along the fault where it cuts the Lower Chert.

Southward of this fault the beds strike in a northeasterly or easterly direction and dip N.W. or S.E. at steep angles. The apparent simple structure on the map is complicated by two (and possibly more) strike faults (see Sections C, D, E and F). The most important of these, which brings the Lower Marble into contact with both Upper Marble and Upper Chert, has been named the Guard Fault. These faults also appear to be pre-mineral. They form the walls (in part) of the Narrow and Broad Ledges.

Some small cross faults, (apparently of post-mineral age) have been found, as shown at the isolated garnet outcrop just east of the South Ledge. Another cross fault with similar strike crosses the Upper Marble between the Narrow Ledge and the Ridge Ledge west of the new tunnel. It also appears to be post-mineral. The displacement on all these is small.

There is considerable low angle jointing throughout the property in general striking N.W. and dipping N.E. It is more conspicuous in the cherts and the garnet ledges and is sometimes closely spaced and gives rise to a false bedding.

Granitic Invasion

The granitic contacts have not as yet been studied in detail. The contact west of the garnet ledge apparently dips steeply east. It is much silicified and apparently is not faulted. The contact south of the garnet ledges apparently dips steeply north. Irregular intrusions of granite occur in the Lower Marble just above this contact, but there is little or no alteration of either limestone or granite along the contact. This may be a fault contact, but field work has not been sufficient to determine this.

Within the sedimentary block are dikes and sills of granite. The dike along the Climax Fault has already been mentioned. It varies in thickness from one to five feet. Approaching the foot-wall of the Lower Chert this dike diverges from the fault, cuts across the chert beds and terminates abruptly at the isolated garnet ledge on the foot-wall contact. Within the Lower Chert are at least three granitic sills, varying from a few inches to three feet in thickness. The contacts are frozen. They apparently occur only at the synclinal and anticlinal axes, pinching out in both directions from these axes. One small lenticular sill has been found in the Lower Marble on the synclinal axis at an horizon about midway between the South and Middle Ledges. The position of these sills and their lenticular character suggest their injection after the folding at points where the beddings planes afforded open lenticular spaces. Irregular granitic masses intrude the Lower Marble in the foot-wall of the Broad Ledge east of the new camp, and one small dike intrudes the garnet ledge west of camp. No granite has been found in the Upper Marble or Upper Chert.

Aside from the Climax Fault dike, and the isolated garnet outcrop in which it terminates, there appears to be no direct relation between the garnet ledges and these small granitic apophyses. They are, however, indicative of lines of fracturing or of open spaces along which mineralizing solutions may have traveled. The garnet ledges were probably formed by solutions emanating from the larger granitic body.

Garnet Ledges

These ledges are all metasomatic replacements of portions of the marbles or cherty limestones, resulting from the granitic invasion. This type of deposit is usually referred to as a "contact metamorphic". The term is a misnomer. The proximity of granitic or other deep seated intrusives is apparently essential to the formation of deposits of this type, but actual contact with the intrusive is not. Of the 6500 lineal feet of garnet ledges exposed on this property barely 1000 lineal feet is in actual contact with the granite. None of the ore bodies are in contact with granite, but invariably occur on the limestone side of garnet ledges that are in contact with granite.

Often the garnet replacement has preserved all the original structure of the replaced limestone. In places

the garnet is massive, flinty and structureless. The bulk of the ledge material is dark brown garnet. Some pinkish garnet is found associated with quartz. A greenish cast to some of the ledge material suggests the presence of epidote but none has been identified in the field. Quartz and calcite are common, particularly near the ore bodies. Both are later than the brown garnet. Small outcrops of heavily iron-stained garnet, almost black in color, are found scattered in the ledges. The material approaches a gossan in iron content and is usually associated with copper stains. A few sulphides (pyrite?) have been found in panning samples. They may reasonably be expected to accompany the ore below the zone of oxidation. Tongues and horses of unaltered marble and cherty limestone occur within the ledges.

Scheelite occurs scattered in small blebs in the garnet and probably contemporaneous with it, but the bulk of the scheelite, along shear zones parallel to the bedding, is obviously later than the brown garnet. Several periods of garnet, quartz and scheelite mineralization have obviously overlapped.

Ore Bodies

Neither surface sampling nor ultra-violet lamp examination has been thorough enough to determine the size or shape of the scheelite ore bodies. The following description of possible ore bodies is based on the partial sampling of the original examination and on a very general reconnaissance with the ultra-violet lamp on subsequent visits.

Broad Ledge This ledge has not been sampled but has been examined with the lamp in all of the gulleys cutting across it and in its outcrops between gullies. It is the longest and widest ledge on the property, extending across the Climax #1, 2 and 4 claims and most of the length of the Garnetyte claim. Its total length is about 1500 feet and maximum width about 200 feet. Throughout its length it dips steeply northward. Except for the northwest portion near the Climax #1 Location Monument this ledge is a replacement of the Lower Marble. For the most part the ledge is barren with a few low grade spots. However, near the northeast corner of the Climax #2 claim are some high-grade streaks in the hanging wall splits of this ledge. The extent of these cannot be determined without trenching because of the blocky float from the Upper Chert which outcrops above. Westward near the junction of the Broad Ledge and Narrow Ledge are a few spots of high-grade ore which appear to be

small and bunchy.

That portion of the Broad Ledge near the #1 Location Monument and extending northeastward toward the Narrow Ledge is a replacement of the Upper Marble. It dips steeply southeastward. It is not properly a portion of the Broad Ledge but probably a continuation of the Narrow Ledge mineralization into the adjoining marble. Within this ledge are several bunches of very high-grade ore (probably 10% or better), occurring in lenses up to 3 feet in width and 10 to 20 feet long. They occur in a relatively narrow zone near the limestone wall for a distance of 300 feet northeastward of the location monument. Their richness invites further prospecting in spite of their lenticular character.

Narrow Ledge This ledge has not been sampled but has been examined with the lamp. The only ore body disclosed is near the highest outcrop where the ledge crosses the common end line of the Climax #2 and #3 claims. This ore body is about 200 feet long, varies in width from 3 to 8 feet and may average close to 1/2%. It is of doubtful interest, except during a period of high priced tungsten.

Ridge Ledge Northward from the #1 Location Monument, there are indications of an ore zone along sheared garnet close to the limestone wall in this ledge. It was sampled in part during the original examination. This ore occurs for a distance of about 350 feet, but interrupted by a gap of unaltered marble about 100 feet long. The ore zone appears to be 3 to 10 feet wide and may average 1% or better. The westerly side of this ledge against the granite is massive, flinty and barren.

South Ledge This ledge was sampled in part during the original examination. Some excellent ore of considerable width occurs on this ledge where it abuts the Ridge Ledge at the Climax fault. Eastward narrow streaks of fair ore are indicated on both hanging and foot-walls. Near the eastern end are widths of 8 to 10 feet of good ore (1% or better) on the hanging wall. This hanging wall is irregular, fingering out into the limestone and then making again further on at the same horizon. This ledge will be the first cut in the new tunnel. Its outcrop should be studied in detail with the lamp.

Middle Ledge Only one sample was taken on this ledge during the original examination. It showed 7' of ore panning

1% scheelite. Scheelite is visible in the foot-wall side of this ledge where it parallels the South Ledge, but the balance of the ledge to the northwest appears barren. Its outcrop should be studied in detail with the lamp

Coxscomb Ledge This ledge is the most important on the property. It was sampled in part during the original examination and portions of it have been examined with the lamp. However, because of its bold outcrop, often in nearly vertical cliffs 50 feet high, it has not yet received the detailed study which it warrants. The south tip of this ledge is barren, but ore apparently occurs throughout the ledge northward either on the hanging-wall, foot-wall, or in the middle, and occasionally at all three horizons on some sections. Near Section A there is nearly 20 feet of good ore near the middle of the ledge with streaks also on the hanging-wall and foot-wall. This ore apparently persists to the location monument. Northward of this, the ledge has not been sampled or examined with the lamp, but appears to be barren. It is mantled northward by the Tertiary volcanics. Because of the fact that the new tunnel is designed to cut this ledge on its dip near the synclinal axis it is important that the shape and size of the surface ore bodies be determined. Ladder, ropes, and moonlight will be necessary to properly outline these ore bodies with the lamp.

The small garnet outcrop just east of the South Ledge on the contact of the Lower Marble and Chert contains some good ore, probably .7% or better. It is at the same horizon as the Coxscomb Ledge and merits some underground exploration from the new tunnel level.

Discussion

The studies on the last visit to this property revealed the stratigraphy of the sedimentary group and gave a partial solution to the Climax fault. Previously, before the recognition of the Lower Chert as distinct from the Upper Chert, it appeared that the Narrow Ledge was at the same horizon as the Coxscomb Ledge. The stratigraphy now indicates that the horizontal component on the Climax Fault is to the westward on the south side and that the Coxscomb contact does not exist southward of the Climax Fault.

The ledges northward of the Climax fault will apparently contain most of the ore on the property. The Ridge Ledge and the ledge at the #1 Location Monument contain some ore of high-grade but probably bunchy. The Narrow Ledge and the Broad Ledge are very doubtful prospects, although some prospecting is warranted at the hanging wall splits of the Broad Ledge. This ledge in the Garnetyte claim has but little promise. The immediate acquisition of this claim is not important. Its value, if any, is purely a nuisance value.

Deposits of the contact metamorphic type are characteristically erratic, but the scheelite ores appear to be less erratic than other types such as copper. It is to be expected that the garnet ledges and the ore may end abruptly at horses or fingers of marble or chert and make again beyond them. The depth to which this type of high temperature mineralization will persist is limited only by the granite. From the attitude of the granitic contacts, and the attitude of the ledges within the relatively large sedimentary block on this property, it is unlikely that these ledges will bottom against granite within the limits of profitable mining. As the ledges, such as the Coxscomb, get further away from the main granite body on their dip the mineralization may fade, but I believe they will at least persist to the level of the lowest tunnel entry that is practicable on the property.

Recommendations

The tunnel now being driven should be turned as indicated on Section E so as to cross cut the formation and reach the Coxscomb Ledge at a point beneath a favorable surface

showing. Instead of continuing the cross cut horizontally after passing the Middle Ledge, it is desirable to raise at 60° in a direction N 40 E to cut the Coxscomb Ledge in a shorter distance and at a lesser distance below the outcrop. Further prospecting of this ledge can probably best be accomplished by continuing the level cross cut to the foot-wall, drifting northward and southward along the foot-wall and cross cutting at intervals with raises from this foot-wall drift.

The westerly portion of the South Ledge warrants exploration at an early date to determine the size and extent of the good ore indicated by surface sampling near the junction with the Ridge Ledge. A short tunnel from the southeast at about the horizon of the new tunnel now being driven would quickly explore this ore body.

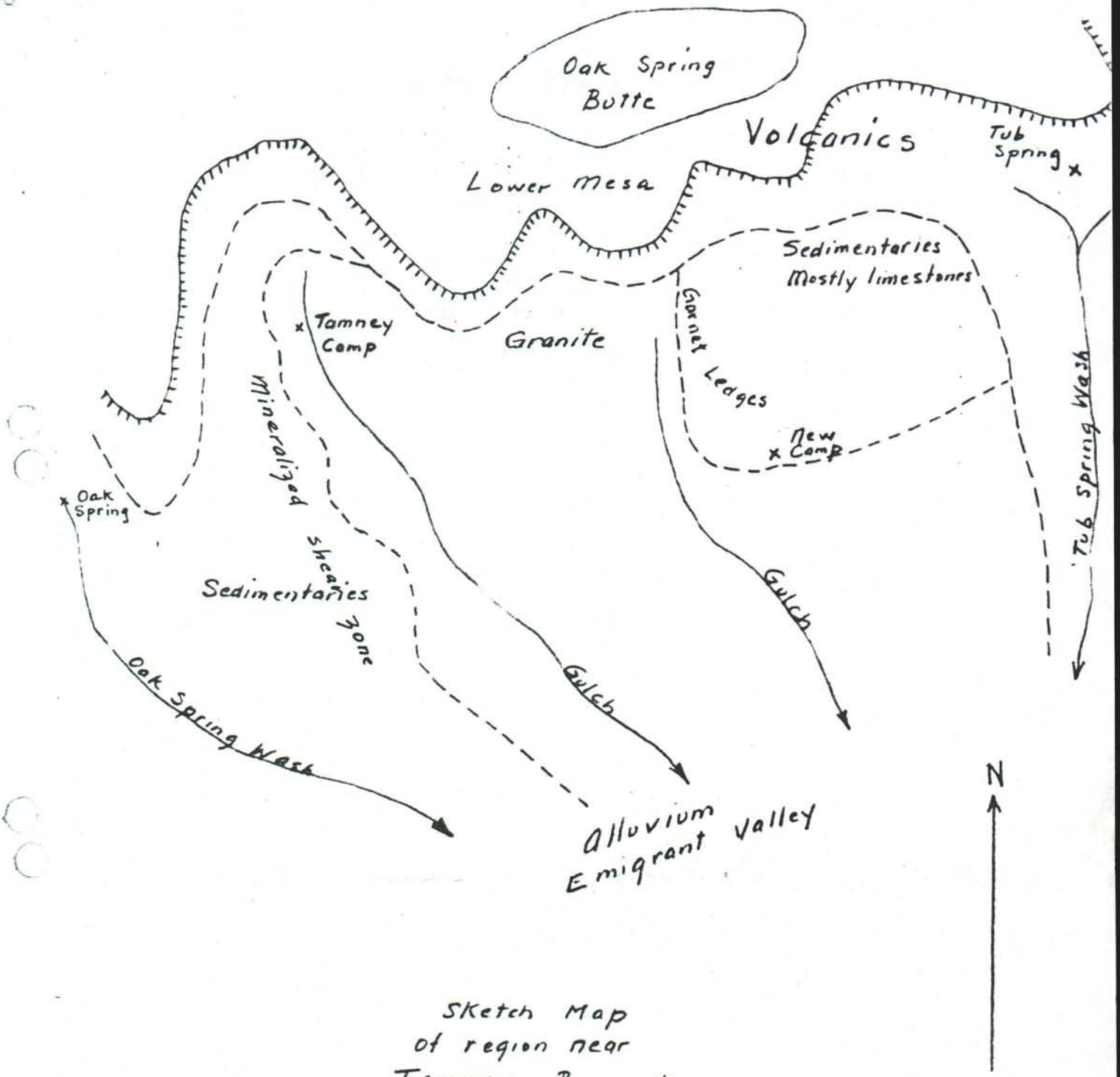
The Ridge Ledge and the Location #1 Ledge can be explored at a depth of about 150 ft. below the outcrops, by extending the old tunnel whose portal is southwest of #1 Location Monument. This tunnel is in the granite but the face has reached or is close to the garnet contact.

I believe it important that the size, shape and relative value of the ore shoots in the South, Middle and Coxscomb Ledges be determined and mapped at an early date by ultra-violet lamp examination. This should, for maximum efficiency and safety of the observer, be done during periods of new and full moon. Some assistance and the use of ladders and ropes will be necessary for mapping the ore in the Coxscomb Ledge.

It is my opinion that this property has sufficient promise to warrant thorough study and exploration.

Respectfully submitted,

/s/ Herbert N. Witt



Sketch Map
of region near
Tamney Property
Nye Co. Nevada
H. N. W. July '38
Scale 2" = 1 mile (approx)

3430 0033

243
Item 38

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION II

FINAL REPORT

DMEA-4301, Contract Idm-E1028 (Tungsten)
Climax Tungsten Company
Climax mine, Nye County, Nevada

by

Glenn G. Gentry
U. S. Bureau of Mines

H. K. Stager
U. S. Geological Survey

August 28, 1958

CONTENTS

ILLUSTRATIONS

INTRODUCTION

The Climax mine, Nye County, Nevada, was explored by the Climax Tungsten Company, 1229 Latham Square Building, Oakland 12, California. Part of this exploration was done in cooperation with the Defense Minerals Exploration Administration, docket DMEA-6301, contract Idm-E1028 dated October 30, 1956.

The total cost of the DMEA project was $19,082.50, of which the Government's share at 75 percent was $14,311.38 (subject to audit).

Work was begun on December 11, 1956 and was terminated by mutual consent as of December 24, 1957 by an agreement signed August 12, 1958. An examination of the property to evaluate the completed work was made on December 4, 1957 by Glenn G. Gentry, U.S. Bureau of Mines, and H. K. Stager, U.S. Geological Survey. The operator's representative was not present to accompany the examiners.

Several engineering and geologic studies have been made of the property and reports have been written by Witt[1/].

Emigh[2/], Wyant[3/], and Wright[4/].

1/ Witt, H. N., Geology of the Tamney Tungsten Property: Private Report for Goldfield Consolidated Mining Company (copy in files of Climax Tungsten Company).

2/ Emigh, G. D., The Oak Springs Tungsten Property: Private Report for U.S. Vanadium Corporation (copy in files of Climax Tungsten Company).

3/ Wyant, D. G., The Oak Springs Tungsten Property: War Minerals Investigation Report (in files of U.S. Geological Survey).

4/ Wright, L. A., Tamney Tungsten Property: Private Report for the Climax Tungsten Company.

SUMMARY

The purpose of the project was to explore the downward and lateral continuations of four tungsten-bearing tactite bodies known as the Coxcomb Ledge, the South Coxcomb East, South Coxcomb Middle, and South Coxcomb West, that crop out on the property (fig. 2).

The project was justified by past production of 1,000 tons of ore that averaged 0.54 percent WO_3, by inferred reserves of 36,750 tons of ore averaging about 0.71 percent WO_3, and by a favorable geologic setting.

An exploratory drift was driven 173 feet and 168.74 feet of test hole was drilled on the Carlisle Adit Level in the main Coxcomb Ledge area, but no scheelite-bearing tactite was found (fig. 3).

One hundred feet of exploratory winzing, 25 feet of test hole, and 64 feet of drifting were completed below the Carlisle Adit Level to test the main Coxcomb Ledge at greater depth, but no ore was found (fig. 3).

No reserves of ore resulted from the DMEA exploration. No ore was mined during the exploration and no royalty is due the Government.

CONCLUSIONS AND RECOMMENDATIONS

Exploration on and below the Carlisle Adit Level was not completed and the work that was done was not adequate to positively determine the absence of other minable ore bodies in the Coxcomb Ledge. However, the work that was done in this area indicates that if ore bodies are present they are of smaller size than was inferred prior to the start of the DMEA work.

No exploration was done in the Goldfield Adit to test the South Coxcomb Ledges and geological targets still exist in this area.

Additional exploration from the Carlisle and Goldfield Adits is justified and Government participation in this exploration, if requested, should be given favorable consideration.

Although no new ore deposits were found by the DMEA exploration, numerous favorable and untested geological targets remain to be explored. These targets, coupled with the future exploration value of the completed work justify certification of a development which has been so provided in paragraph 5 of the Termination Agreement.

The operator did not submit a final report and we recommend that it be waived as pertinent data, in addition to that on hand, could not be expected from the operator.

LOCATION, ACCESSIBILITY, AND LOCAL FACILITIES

The Climax mine is in an unsurveyed part of north-central Nye County, Nevada (fig. 1), and within the boundaries of the U.S. Atomic Energy Commission Tonopah Bombing and Gunnery Range. It is in the Oak Springs mining district, on the southwest flank of the Belted Range at an altitude of 6,121 feet.

From Las Vegas, Nevada, the mine is reached by traveling northwest 58.9 miles on U.S. Highway 95, an all-weather road, then turn right (north) 42.4 miles on the AEC all-weather road, then turn left (northwesterly) 4.2 miles on the unimproved mine access road. Highway 95 is maintained by the Nevada State Highway Department, the Bombing Range roads are maintained by the AEC, and the mine access road is maintained by the operator. The mine is accessible

by ordinary passenger car except during infrequent heavy snow storms that cause temporary blocking of the mine road.

There are no milling facilities at the property or in the immediate area. Mine labor, equipment, and supplies, are usually available in Las Vegas, Tonopah, Caliente, or Pioche, Nevada. The closest railroad, telegraph, and truck service is at Las Vegas. Telephone and mail services are available at the AEC town of Mercury, approximately 37 miles south of the mine. A limited supply of water for mining and camp use is hauled from company-owned springs approximately 1-1/2 miles east of the mine. Mining equipment utilizes gasoline and diesel fuel for power.

THE PROPERTY

History and Ownership

The first mining activity in the Oak Springs district was in 1905 when gold, silver, copper, and turquoise were discovered on the west slopes of the Belted Range. Some copper ore was shipped in 1917. Tungsten was discovered by V. A. Tamney in 1937. Mr. Tamney located the claims, built a dry concentrator, and mined a small tonnage of ore.

During 1938, and again in 1940, the property was under lease to the Goldfield Consolidated Mines Company; during 1939 to the U.S. Vanadium Corporation; and in 1941 to the Pacific Bridge Company.

Mr. T. M. Tamney inherited the claims upon the death of his father, and in 1942 the Pacific Bridge Company surrendered their lease when the area was closed to mining by the Government order establishing the Tonopah Bombing and Gunnery Range. This order prevented operation of the mine until December 1, 1952 when a co-use agreement for a five-year period was signed with the AEC. Subsequent to 1952, T. M. Tamney entered into a partnership with Willard A. Kinney and Allen J. Wright, and the Climax Tungsten Company was formed. The property was idle from 1942 until December 11, 1956 when the company started work on the DMEA contract. Exploration was discontinued on May 8, 1957 owing to a series of tests, conducted by the AEC, that lasted until October 7, 1957. Work was not resumed after the end of the AEC tests and the DMEA contract was terminated, effective December 24, 1957.

Claims:

The property consists of 11 unpatented mining claims, held by location and recorded in Nye County, Nevada. The DMEA contract is confined to five of the claims (fig. 2), recorded as follows:

Claim name	Book	Page
Climax	94	94
Climax No. 1	94	95
Climax No. 2	94	95
Climax No. 3	94	96
Climax No. 4	94	97

The operator owns the land, subject to the AEC co-use agreement, which has been extended to December 1962. The agreement allows the owners to operate the property except during periods of nuclear devices testing which occurs every two years for 1-1/2 to 3 months.

Development:

The property is developed by 882 feet of drifts in the Goldfield Adit and by 625 feet of drifts, 91 feet of raises, and 69 feet of stopes in the Carlisle Adit. There is no connection between the two adits. The Goldfield Adit is about 246 feet below the Carlisle Adit (fig. 2).

Mining was done in open, stulled stopes. The workings require little support, and all were in good condition and accessible at the time operations were suspended on May 8, 1957. Compressor capacity is about 365 cubic feet. A mucking machine was used in the drifts and tramming was done by manpower. Housing facilities consist of two house trailers and a combination cookhouse and workroom.

Production:

The Climax mine has produced about 1,000 tons of ore that averaged 0.54 percent WO_3. Most of this ore came from the Gould stope in the Carlisle Adit (fig. 3). No ore was produced during the period of the DMEA contract.

THE DMEA PROJECT

The work proposed in the contract consisted of a two-stage project. Stage I consisted of rehabilitation of the Carlisle Adit, drifting 300 feet on the Adit level, 500 feet of long-hole drilling, and 400 feet of diamond-drilling from the drift. From the adit level a winze was to be driven 100 feet and from the bottom of the winze 100 feet of drifting was to be completed. The work under Stage II consisted of rehabilitation in the Goldfield Adit, 500 feet of crosscutting, and 1,100 feet of diamond drilling.

Under Stage I, 300 feet of the Carlisle Adit was rehabilitated and 173 feet of drifting and 168.74 feet of long-hole drilling was completed on the Adit level. A 100-foot winze was sunk from the Adit level and 64 feet of drifting from the bottom of the winze was completed. A 25-foot long-hole was drilled from the winze (fig. 3). This work did not discover ore and indicated that the Concomb Ledge target area was not as favorable as had been inferred. No work was done under Stage II.

On May 8, 1957 the operator discontinued all exploration, in accordance with instructions from the AEC to evacuate the property not later than May 12. On June 3, 1957, Amendment No. 1 was issued to suspend work from May 8, 1957 to not later than October 30, 1957 because of the necessity to evacuate the premises. On or about

October 7, 1957 the AEC concluded their tests and at a later date they advised the Climax Tungsten Company of permission to resume work.

The operator did not resume work and on November 18, 1957 he requested a five-year extension of time. This request was denied and a mutual Termination Agreement was proposed to the operator. This agreement was signed on August 12, 1958, effective as of December 24, 1957.

The completed part of the exploration was well done and is satisfactory to the Government.

Expenditures

Total approved cost of the project		$66,320.00
Units, Unit Costs, and Total Expenditures		
300 ft. drift rehabilitation @ $3.50/ft.	$1,050.00	
173 ft. of drifting @ $35.00/ft.	6,055.00	
194.75 ft. long-hole drilling @ $2.00/ft.	389.50	
100 ft. of winzing @ $92.20/ft.	9,220.00	
64 ft. of drifting off winze, @ $36.00/ft.	2,368.00	
Total expended (subject to audit)		$19,082.50
Government's share of total expenditures @ 75 percent . .		$14,311.88
Unexpended funds		$47,237.50
Government's share of unexpended funds @ 75 percent. . .		$35,428.12
Value of production during operations, subject to royalty .		None

Equipment

Work performed under this contract was on a unit-cost basis and all equipment was furnished by the operator.

GEOLOGY

Geologic Setting:

The following sections on geology and ore deposits are taken largely from published and private reports listed in the introduction, modified and supplemented by R. G. Reeves in the DMEA Application Report dated August 15, 1956.

The Climax mine area is an inlier of sedimentary rocks of Pennsylvanian(?) age, cut by a granite stock, in Tertiary volcanic rocks (fig. 2).

The sedimentary rocks consist of a lower marble, a lower cherty limestone, an upper marble, and an upper cherty limestone. The possibility exists that the two marble-cherty limestone units are the same, repeated by thrust faulting.

In the northern part of the mine area the sedimentary rocks strike northerly and dip 30 degrees to 40 degrees east. In the southern part of the area the beds strike easterly to northeasterly and dip from 30° to 60° N. Near the portal of the Goldfield adit, the cherty limestone is contorted, and all structures destroyed. Direction of movement appears to be from northeast to southwest, and is suggestive of thrusting.

The sedimentary rocks are cut by two easterly-trending near-vertical cross faults, and several northerly-trending strike faults that dip 30° to 50° E, and are in part bedding plane faults. These strike faults are probably thrust faults, although lack of suitable marker beds prevents confirmation of this.

A granite stock about three-quarters of a mile long and a half a mile wide cuts the sedimentary rocks, and sills and dikes of the granite cut the sedimentary rocks. The dominant effect of the granite on the pure limestone was recrystallization to marble. Some silicification has taken place on the contact. Impure limestone beds were converted to tactite consisting mainly of garnet, epidote, plagioclase feldspar, and magnetite, and in part scheelite-bearing.

Ore Deposits:

The ore occurs in several parallel tactite beds interbedded with marbleized limestone. In the northern part of the mine area the tactite bodies strike north to northwest and dip 30° to 50° E, and are 1 to 50 feet wide. In the southern part of the area the tactite bodies strike easterly and northeasterly and dip 30° to 50° N, and are from 10 to 200 feet wide. The ore is concentrated in layers mostly along the hanging walls.

The ore mineral is scheelite in a gangue of dark brown to black garnet, calcite, epidote, feldspar, and quartz. Scheelite is

uniformly distributed throughout most of the ore layers in the northern part of the mine area, and less uniformly in the ore layers in the southern part of the area. The tactite is cut by cross faults of small displacement, generally 2 to 10 feet, that are evidently pre-mineral. The main Coxcomb ledge ore body is 300 feet long, 2 to 4 feet wide, and averages 3 feet wide. It has been explored by the Carlisle Adit at a depth of about 120 feet down the dip from the outcrop (fig. 2), and was explored to where it pinches out about 20 feet below the adit level by the DMEA winze (fig. 3). The South Coxcomb Middle, and South Coxcomb West ore bodies are 150 feet long, 2 to 4 feet wide, and average 3 feet wide. The down-dip extent of these ore bodies has not been tested. The South Ledge ore body is 300 feet long, is 3 to 5 feet wide, and averages 4 feet wide. It has been cut at 90 feet down the dip by the Goldfield adit.

Sampling:

The following samples were taken during the period of the DMEA contract:

DMEA Sample No.	Width, feet	Percent WO_3	Description
BM-2159	grab	0.01	Core of rock from face of drift
BM-2160	3.5	0.21	Face of old west drift
BM-2161	4.85	0.05	Sludge from LH 2, 13.58-19.25 ft.
BM-2195	1.8	0.05	North side of winze, 59 ft. below collar
BM-2196	1.5	0.08	South side of winze, 57 ft. below collar
BM-2197	grab	<0.01	Muck pile in winze, 77-81 ft. below collar
BM-2369	1.9	<0.01	Face, northwest drift from bottom of winze
BM-2370	grab	0.53	5-ton stockpile of ore at camp (prod. prior to DMEA contract)
BM-2371	2.0	0.80	North side of winze, 8 ft. below collar
BM-2372	5.0	0.89	North side of winze, 4 ft. below collar
BM-2373	2.0	1.32	South side of winze, 3 ft. below collar

Eight long-holes were drilled to test the walls and back of the DMEA drift (fig. 3). All of the holes were in limestone except for a five-foot interval of tactite from 14 to 19 feet cut by long-hole 2 (Sample BM-2161). The sludge samples from the drill holes were examined by mineralight and no scheelite was detected. The drilling is summarized as follows:

LH No.	Location	Course	Inclination	Depth, feet
1	Carlisle adit level	S 36° W	+10°	20.83
2	" " "	S 75° E	+47°	19.25
3	" " "	N 51° E	+50°	21.41
4	" " "	N 85° E	+47°	20.00
5	" " "	N 82° W	+10°	27.25
6	Winze	S 73° W	-01°	25.00
7	Carlisle adit level	S 85° W	+02°	30.00
8	" " "	S 72° W	+03°	30.00
			Total:	193.74

Ore Reserves:

The ore reserves of the Climax mine are summarized as follows:

Area	Tons Indicated	Tons Inferred	Tons Total	Percent WO_3
Level: Carlisle adit to surface				
Main Coxcomb ledge	1,500	6,750	8,250	0.75
South Coxcomb East	--	4,500	4,500	0.65
South Coxcomb West	--	4,500	4,500	0.50
South Coxcomb Middle	--	2,250	2,250	0.7
sub-totals:	1,500	18,000	19,500	0.67 weighted average
Level: Goldfield adit to Carlisle adit level				
Main Coxcomb ledge	--	--	--	--
South ledge	--	3,750	3,750	0.75
Totals:	1,500	21,750	23,250	0.68 weighted average

These reserves are contained in the Coxcomb ledge and the South ledge areas (fig. 2). Indicated ore is considered to extend 10 feet from ore exposures. Based on a length of 300 feet and a width of 3 feet, the Coxcomb ledge at the surface contains 900 tons of indicated ore. Based on 3 layers that aggregate 300 feet long, and average 4 feet wide, and considering that one-fourth of the material is ore, the Coxcomb ledge above and below the Carlisle adit contains 600 tons of indicated ore. No other areas contain indicated ore.

The width and grade figures used in calculated ore reserves were obtained from an assay map by G. Donald Emigh, U.S. Vanadium Corporation engineer, a copy of which is in our files. Samples from the Carlisle adit taken during the DMEA examination before and during the period of the contract confirm his figures.

Inasmuch as the DMEA winze exposed the pinchout of the Coxcomb ledge ore body 20 feet below the Carlisle adit level, no reserves are inferred between this level and the Goldfield level. The 15,000 tons of ore in this block of ground that was inferred prior to the DMEA contract have been deleted from the reserve table for this reason.

3430 0033

HK Stager (243)
Item 38

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION II

FINAL REPORT

DMEA-4301, Contract Idm-E1028 (Tungsten)
Climax Tungsten Company
Climax mine, Nye County, Nevada

by

Glenn G. Gentry
U. S. Bureau of Mines

H. K. Stager
U. S. Geological Survey

August 28, 1958

CONTENTS

ILLUSTRATIONS

INTRODUCTION

The Climax mine, Nye County, Nevada, was explored by the Climax Tungsten Company, 1229 Latham Square Building, Oakland 12, California. Part of this exploration was done in cooperation with the Defense Minerals Exploration Administration, docket DMEA-4301, contract Idm-E1028 dated October 30, 1956.

The total cost of the DMEA project was $19,082.50, of which the Government's share at 75 percent was $14,311.38 (subject to audit).

Work was begun on December 11, 1956 and was terminated by mutual consent as of December 24, 1957 by an agreement signed August 12, 1958. An examination of the property to evaluate the completed work was made on December 4, 1957 by Glenn G. Gentry, U.S. Bureau of Mines, and H. K. Stager, U.S. Geological Survey. The operator's representative was not present to accompany the examiners.

Several engineering and geologic studies have been made of the property and reports have been written by Witt[1/].

Emigh[2/], Wyant[3/], and Wright[4/].

1/ Witt, H. N., Geology of the Tamney Tungsten Property: Private Report for Goldfield Consolidated Mining Company (copy in files of Climax Tungsten Company).

2/ Emigh, G. D., The Oak Springs Tungsten Property: Private Report for U.S. Vanadium Corporation (copy in files of Climax Tungsten Company).

3/ Wyant, D. G., The Oak Springs Tungsten Property: War Minerals Investigation Report (in files of U.S. Geological Survey).

4/ Wright, L. A., Tamney Tungsten Property: Private Report for the Climax Tungsten Company.

SUMMARY

The purpose of the project was to explore the downward and lateral continuations of four tungsten-bearing tactite bodies known as the Coxcomb Ledge, the South Coxcomb East, South Coxcomb Middle, and South Coxcomb West, that crop out on the property (fig. 2).

The project was justified by past production of 1,000 tons of ore that averaged 0.54 percent WO_3, by inferred reserves of 36,750 tons of ore averaging about 0.71 percent WO_3, and by a favorable geologic setting.

An exploratory drift was driven 173 feet and 168.74 feet of test hole was drilled on the Carlisle Adit Level in the main Coxcomb Ledge area, but no scheelite-bearing tactite was found (fig. 3).

One hundred feet of exploratory winzing, 25 feet of test hole, and 64 feet of drifting were completed below the Carlisle Adit Level to test the main Coxcomb Ledge at greater depth, but no ore was found (fig. 3).

No reserves of ore resulted from the DMEA exploration. No ore was mined during the exploration and no royalty is due the Government.

CONCLUSIONS AND RECOMMENDATIONS

Exploration on and below the Carlisle Adit Level was not completed and the work that was done was not adequate to positively determine the absence of other minable ore bodies in the Coxcomb Ledge. However, the work that was done in this area indicates that if ore bodies are present they are of smaller size than was inferred prior to the start of the DMEA work.

No exploration was done in the Goldfield Adit to test the South Coxcomb Ledges and geological targets still exist in this area.

Additional exploration from the Carlisle and Goldfield Adits is justified and Government participation in this exploration, if requested, should be given favorable consideration.

Although no new ore deposits were found by the DMEA exploration, numerous favorable and untested geological targets remain to be explored. These targets, coupled with the future exploration value of the completed work justify certification of a development which has been so provided in paragraph 5 of the Termination Agreement.

The operator did not submit a final report and we recommend that it be waived as pertinent data, in addition to that on hand, could not be expected from the operator.

LOCATION, ACCESSIBILITY, AND LOCAL FACILITIES

The Climax mine is in an unsurveyed part of north-central Nye County, Nevada (fig. 1), and within the boundaries of the U.S. Atomic Energy Commission Tonopah Bombing and Gunnery Range. It is in the Oak Springs mining district, on the southwest flank of the Belted Range at an altitude of 6,121 feet.

From Las Vegas, Nevada, the mine is reached by traveling northwest 58.9 miles on U.S. Highway 95, an all-weather road, then turn right (north) 42.4 miles on the AEC all-weather road, then turn left (northwesterly) 4.2 miles on the unimproved mine access road. Highway 95 is maintained by the Nevada State Highway Department, the Bombing Range roads are maintained by the AEC, and the mine access road is maintained by the operator. The mine is accessible

by ordinary passenger car except during infrequent heavy snow storms that cause temporary blocking of the mine road.

There are no milling facilities at the property or in the immediate area. Mine labor, equipment, and supplies, are usually available in Las Vegas, Tonopah, Caliente, or Pioche, Nevada. The closest railroad, telegraph, and truck service is at Las Vegas. Telephone and mail services are available at the AEC town of Mercury, approximately 37 miles south of the mine. A limited supply of water for mining and camp use is hauled from company-owned springs approximately 1-1/2 miles east of the mine. Mining equipment utilizes gasoline and diesel fuel for power.

THE PROPERTY

History and Ownership:

The first mining activity in the Oak Springs district was in 1905 when gold, silver, copper, and turquoise were discovered on the west slopes of the Belted Range. Some copper ore was shipped in 1917. Tungsten was discovered by V. A. Tamney in 1937. Mr. Tamney located the claims, built a dry concentrator, and mined a small tonnage of ore.

During 1938, and again in 1940, the property was under lease to the Goldfield Consolidated Mines Company; during 1939 to the U.S. Vanadium Corporation; and in 1941 to the Pacific Bridge Company.

Mr. T. M. Tamney inherited the claims upon the death of his father, and in 1942 the Pacific Bridge Company surrendered their lease when the area was closed to mining by the Government order establishing the Tonopah Bombing and Gunnery Range. This order prevented operation of the mine until December 1, 1952 when a co-use agreement for a five-year period was signed with the AEC. Subsequent to 1952, T. M. Tamney entered into a partnership with Willard A. Kinney and Allen J. Wright, and the Climax Tungsten Company was formed. The property was idle from 1942 until December 11, 1956 when the company started work on the DMEA contract. Exploration was discontinued on May 8, 1957 owing to a series of tests, conducted by the AEC, that lasted until October 7, 1957. Work was not resumed after the end of the AEC tests and the DMEA contract was terminated, effective December 24, 1957.

Claims:

The property consists of 11 unpatented mining claims, held by location and recorded in Nye County, Nevada. The DMEA contract is confined to five of the claims (fig. 2), recorded as follows:

Claim name	Book	Page
Climax	94	94
Climax No. 1	94	95
Climax No. 2	94	95
Climax No. 3	94	96
Climax No. 4	94	97

The operator owns the land, subject to the AEC co-use agreement, which has been extended to December 1962. The agreement allows the owners to operate the property except during periods of nuclear devices testing which occurs every two years for 1-1/2 to 3 months.

Development:

The property is developed by 882 feet of drifts in the Goldfield Adit and by 625 feet of drifts, 91 feet of raises, and 69 feet of stopes in the Carlisle Adit. There is no connection between the two adits. The Goldfield Adit is about 246 feet below the Carlisle Adit (fig. 2).

Mining was done in open, stulled stopes. The workings require little support, and all were in good condition and accessible at the time operations were suspended on May 8, 1957. Compressor capacity is about 365 cubic feet. A mucking machine was used in the drifts and tramming was done by manpower. Housing facilities consist of two house trailers and a combination cookhouse and workroom.

Production:

The Climax mine has produced about 1,000 tons of ore that averaged 0.54 percent WO_3. Most of this ore came from the Gould stope in the Carlisle Adit (fig. 3). No ore was produced during the period of the DMEA contract.

THE DMEA PROJECT

The work proposed in the contract consisted of a two-stage project. Stage I consisted of rehabilitation of the Carlisle Adit, drifting 300 feet on the Adit level, 500 feet of long-hole drilling, and 400 feet of diamond-drilling from the drift. From the adit level a winze was to be driven 100 feet and from the bottom of the winze 100 feet of drifting was to be completed. The work under Stage II consisted of rehabilitation in the Goldfield Adit, 500 feet of crosscutting, and 1,100 feet of diamond drilling.

Under Stage I, 300 feet of the Carlisle Adit was rehabilitated and 173 feet of drifting and 168.74 feet of long-hole drilling was completed on the Adit level. A 100-foot winze was sunk from the Adit level and 64 feet of drifting from the bottom of the winze was completed. A 25-foot long-hole was drilled from the winze (fig. 3). This work did not discover ore and indicated that the Coxcomb Ledge target area was not as favorable as had been inferred. No work was done under Stage II.

On May 8, 1957 the operator discontinued all exploration, in accordance with instructions from the AEC to evacuate the property not later than May 12. On June 3, 1957, Amendment No. 1 was issued to suspend work from May 8, 1957 to not later than October 30, 1957 because of the necessity to evacuate the premises. On or about

October 7, 1957 the AEC concluded their tests and at a later date they advised the Climax Tungsten Company of permission to resume work.

The operator did not resume work and on November 18, 1957 he requested a five-year extension of time. This request was denied and a mutual Termination Agreement was proposed to the operator. This agreement was signed on August 12, 1958, effective as of December 24, 1957.

The completed part of the exploration was well done and is satisfactory to the Government.

Expenditures

Total approved cost of the project		$66,320.00
Units, Unit Costs, and Total Expenditures		
300 ft. drift rehabilitation @ $3.50/ft.	$1,050.00	
173 ft. of drifting @ $35.00/ft.	6,055.00	
194.75 ft. long-hole drilling @ $2.00/ft.	389.50	
100 ft. of winzing @ $92.20/ft.	9,220.00	
64 ft. of drifting off winze, @ $36.00/ft.	2,368.00	
Total expended (subject to audit)		$19,082.50
Government's share of total expenditures @ 75 percent . .		$14,311.88
Unexpended funds		$47,237.50
Government's share of unexpended funds @ 75 percent. . .		$35,428.12
Value of production during operations, subject to royalty .		None

Equipment

Work performed under this contract was on a unit-cost basis and all equipment was furnished by the operator.

GEOLOGY

Geologic Setting:

The following sections on geology and ore deposits are taken largely from published and private reports listed in the introduction, modified and supplemented by R. G. Reeves in the DMEA Application Report dated August 15, 1956.

The Climax mine area is an inlier of sedimentary rocks of Pennsylvanian(?) age, cut by a granite stock, in Tertiary volcanic rocks (fig. 2).

The sedimentary rocks consist of a lower marble, a lower cherty limestone, an upper marble, and an upper cherty limestone. The possibility exists that the two marble-cherty limestone units are the same, repeated by thrust faulting.

In the northern part of the mine area the sedimentary rocks strike northerly and dip 30 degrees to 40 degrees east. In the southern part of the area the beds strike easterly to northeasterly and dip from 30° to 60° N. Near the portal of the Goldfield adit, the cherty limestone is contorted, and all structures destroyed. Direction of movement appears to be from northeast to southwest, and is suggestive of thrusting.

The sedimentary rocks are cut by two easterly-trending near-vertical cross faults, and several northerly-trending strike faults that dip 30° to 50° E, and are in part bedding plane faults. These strike faults are probably thrust faults, although lack of suitable marker beds prevents confirmation of this.

A granite stock about three-quarters of a mile long and a half a mile wide cuts the sedimentary rocks, and sills and dikes of the granite cut the sedimentary rocks. The dominant effect of the granite on the pure limestone was recrystallization to marble. Some silicification has taken place on the contact. Impure limestone beds were converted to tactite consisting mainly of garnet, epidote, plagioclase feldspar, and magnetite, and in part scheelite-bearing.

Ore Deposits:

The ore occurs in several parallel tactite beds interbedded with marbleized limestone. In the northern part of the mine area the tactite bodies strike north to northwest and dip 30° to 50° E, and are 1 to 50 feet wide. In the southern part of the area the tactite bodies strike easterly and northeasterly and dip 30° to 50° N, and are from 10 to 200 feet wide. The ore is concentrated in layers mostly along the hanging walls.

The ore mineral is scheelite in a gangue of dark brown to black garnet, calcite, epidote, feldspar, and quartz. Scheelite is

uniformly distributed throughout most of the ore layers in the northern part of the mine area, and less uniformly in the ore layers in the southern part of the area. The tactite is cut by cross faults of small displacement, generally 2 to 10 feet, that are evidently pre-mineral. The main Coxcomb ledge ore body is 300 feet long, 2 to 4 feet wide, and averages 3 feet wide. It has been explored by the Carlisle Adit at a depth of about 120 feet down the dip from the outcrop (fig. 2), and was explored to where it pinches out about 20 feet below the adit level by the DMEA winze (fig. 3). The South Coxcomb Middle, and South Coxcomb West ore bodies are 150 feet long, 2 to 4 feet wide, and average 3 feet wide. The down-dip extent of these ore bodies has not been tested. The South Ledge ore body is 300 feet long, is 3 to 5 feet wide, and averages 4 feet wide. It has been cut at 90 feet down the dip by the Goldfield adit.

Sampling:

The following samples were taken during the period of the DMEA contract:

DMEA Sample No.	Width, feet	Percent WO_3	Description
BM-2159	grab	0.01	Core of rock from face of drift
BM-2160	3.5	0.21	Face of old west drift
BM-2161	4.85	0.05	Sludge from LH 2, 13.58-19.25 ft.
BM-2195	1.8	0.05	North side of winze, 59 ft. below collar
BM-2196	1.5	0.08	South side of winze, 57 ft. below collar
BM-2197	grab	<0.01	Muck pile in winze, 77-81 ft. below collar
BM-2369	1.9	<0.01	Face, northwest drift from bottom of winze
BM-2370	grab	0.53	5-ton stockpile of ore at camp (prod. prior to DMEA contract)
BM-2371	2.0	0.80	North side of winze, 8 ft. below collar
BM-2372	5.0	0.89	North side of winze, 4 ft. below collar
BM-2373	2.0	1.32	South side of winze, 3 ft. below collar

Eight long-holes were drilled to test the walls and back of the DMEA drift (fig. 3). All of the holes were in limestone except for a five-foot interval of tactite from 14 to 19 feet cut by long-hole 2 (Sample BM-2161). The sludge samples from the drill holes were examined by mineralight and no scheelite was detected. The drilling is summarized as follows:

LH No.	Location	Course	Inclination	Depth, feet
1	Carlisle adit level	S 36° W	+10°	20.83
2	" " "	S 75° E	+47°	19.25
3	" " "	N 51° E	+50°	21.41
4	" " "	N 85° E	+47°	20.00
5	" " "	N 82° W	+10°	27.25
6	Winze	S 73° W	-01°	25.00
7	Carlisle adit level	S 85° W	+02°	30.00
8	" " "	S 72° W	+03°	30.00
			Total:	193.74

Ore Reserves:

The ore reserves of the Climax mine are summarized as follows:

Area	Tons Indicated	Tons Inferred	Tons Total	Percent WO_3
Level: Carlisle adit to surface				
Main Coxcomb ledge	1,500	6,750	8,250	0.75
South Coxcomb East	--	4,500	4,500	0.65
South Coxcomb West	--	4,500	4,500	0.50
South Coxcomb Middle	--	2,250	2,250	0.7
sub-totals:	1,500	18,000	19,500	0.67 weighted average
Level: Goldfield adit to Carlisle adit level				
Main Coxcomb ledge	--	--	--	--
South ledge	--	3,750	3,750	0.75
Totals:	1,500	21,750	23,250	0.68 weighted average

These reserves are contained in the Coxcomb ledge and the South ledge areas (fig. 2). Indicated ore is considered to extend 10 feet from ore exposures. Based on a length of 300 feet and a width of 3 feet, the Coxcomb ledge at the surface contains 900 tons of indicated ore. Based on 3 layers that aggregate 300 feet long, and average 4 feet wide, and considering that one-fourth of the material is ore, the Coxcomb ledge above and below the Carlisle adit contains 600 tons of indicated ore. No other areas contain indicated ore.

The width and grade figures used in calculated ore reserves were obtained from an assay map by G. Donald Emigh, U.S. Vanadium Corporation engineer, a copy of which is in our files. Samples from the Carlisle adit taken during the DMEA examination before and during the period of the contract confirm his figures.

Inasmuch as the DMEA winze exposed the pinchout of the Coxcomb ledge ore body 20 feet below the Carlisle adit level, no reserves are inferred between this level and the Goldfield level. The 15,000 tons of ore in this block of ground that was inferred prior to the DMEA contract have been deleted from the reserve table for this reason.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA-4301
Idm-E 1028
(Tungsten)

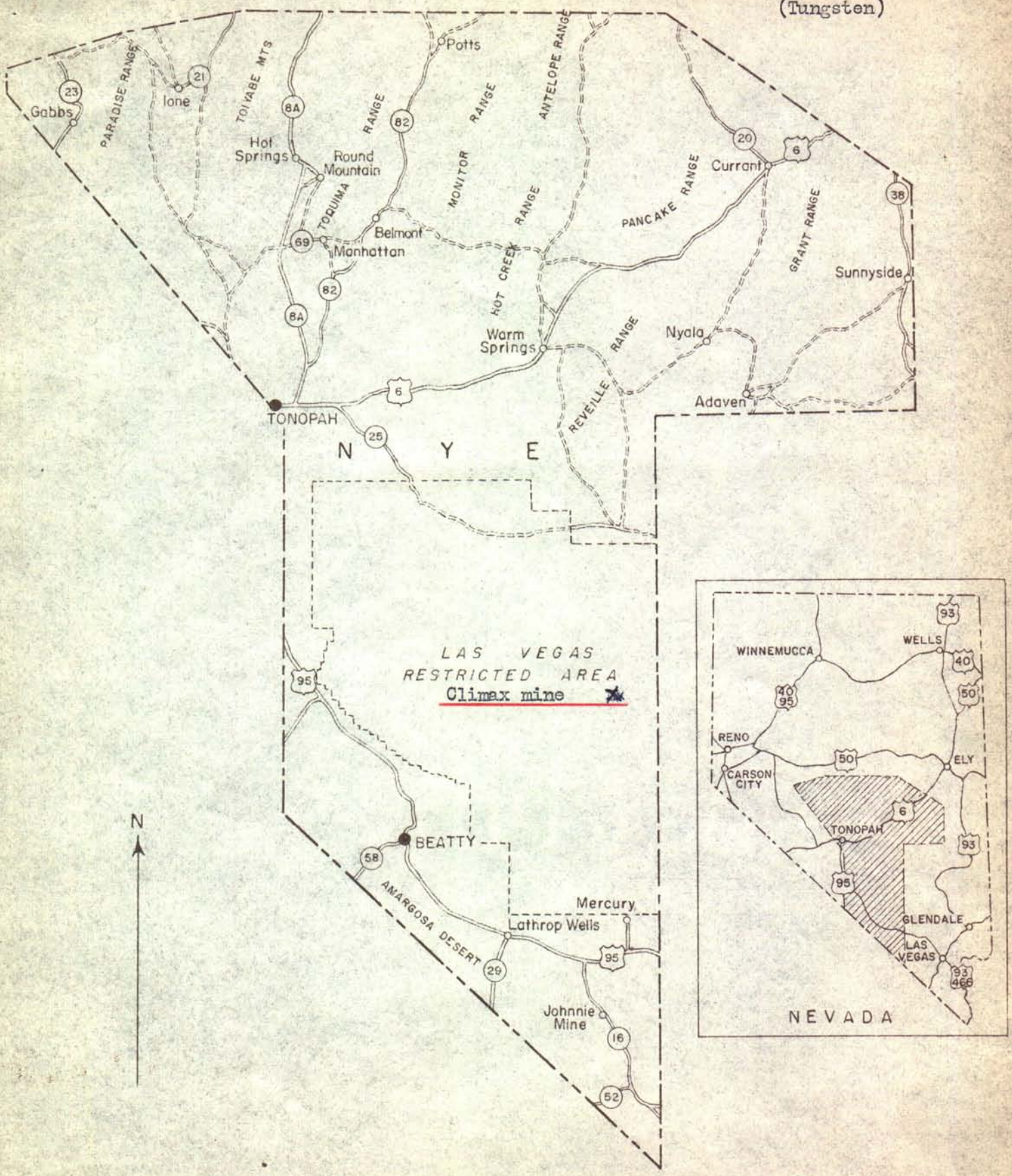


Figure 1. INDEX MAP OF NYE COUNTY, NEVADA

0 25 50 75 Miles

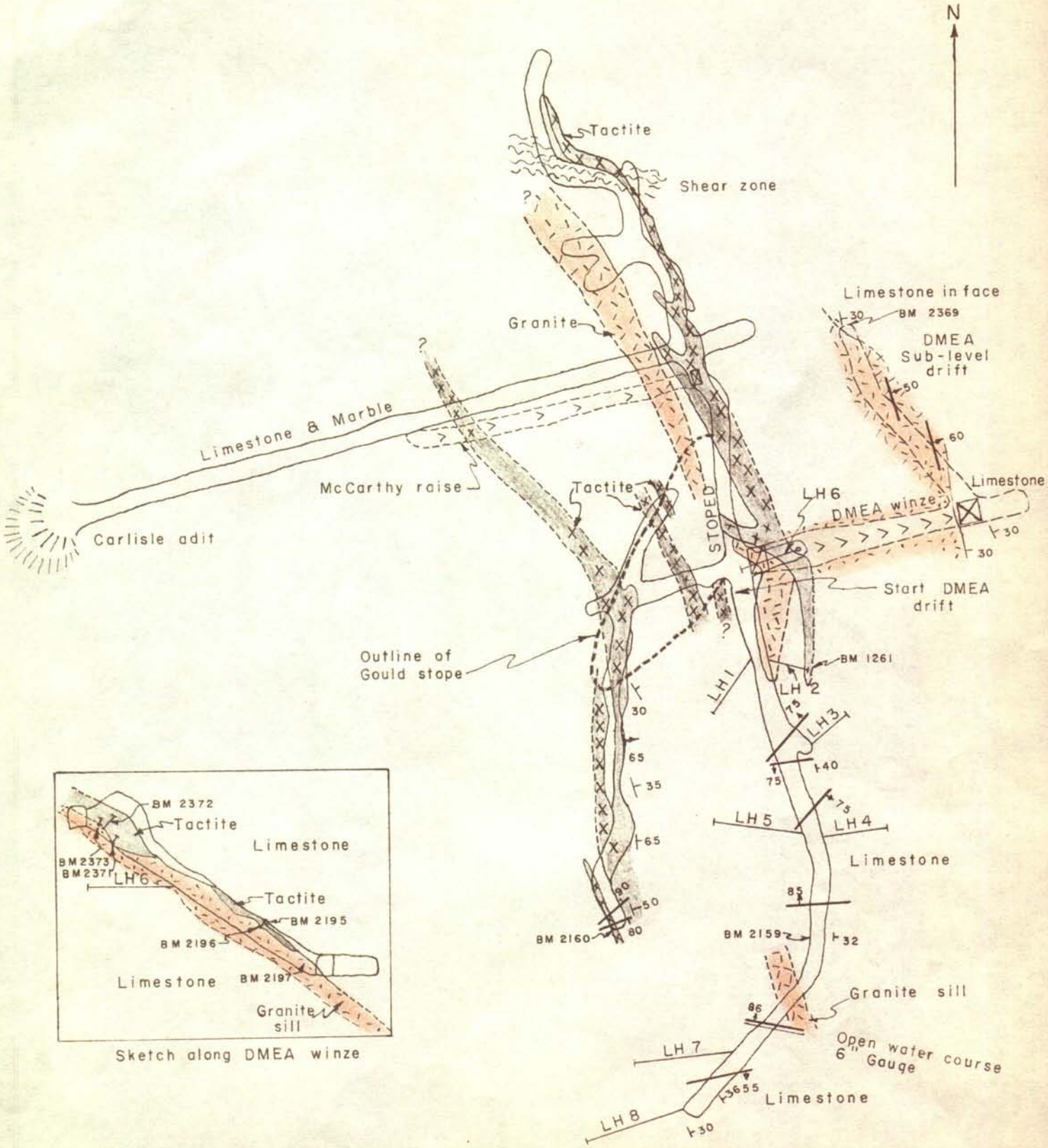


Figure 3 - Geologic sketch map of Carlisle adit, Climax mine, Nye County, Nevada

TUNGSTEN DEPOSITS NEAR OAK SPRING

NYE COUNTY, NEVADA

by

Donald G. Wyant

TUNGSTEN DEPOSITS NEAR OAK SPRING, NYE COUNTY, NEVADA

By Donald G. Wyant

Contents

Illustrations

Tungsten Deposits near Oak Spring, Nye County, Nevada

by Donald G. Wyant

Abstract

Scheelite and some powellite occur near Oak Spring, Nye County, Nevada in large masses of tactite occupying premineral faults and folds in Paleozoic limestone. Tactite was formed by a granitic intrusion into the limestone. The limestone is part of a thick series of conglomerate, limestone, shaly limestone and quartzite, which is capped to the north by flows of volcanic rocks and by tuff beds, and blocked out to the south and east by basin and range type normal faulting. The district has produced an unknown amount (possibly 10 tons) of scheelite concentrate from the time of its discovery in 1936 to December 1941.

Ore reserves at Oak Spring

	tons	units WO_3	tons	units WO_3
Probable ore 1/			10,119	11,435
Possible ore 1/			25,798	24,030
Possible marginal ore 2/	14,855	6,026		
Possible submarginal ore 3/	45,724	10,850		
Total marginal and submarginal possible ore			60,579	16,876
Total			96,496	52,341

1/ grade 0.5% of WO_3 or higher

2/ grade 0.3% to 0.49% of WO_3

3/ grade 0.1% to 0.29% of WO_3

Tungsten Deposits near Oak Spring, Nye County, Nevada

by Donald G. Wyant

Introduction

The Oak Spring district, Nye County, Nevada is 60 miles by poor desert road east of Indian Springs, which is on the main Beatty-Las Vegas highway, and 103 miles north of Las Vegas. It is 60 miles West of Tem Piute, Lincoln County, Nevada by fair desert road. The district is in the Fourth Army Air Corps Gunnery Range.

Previous reports on the area have been made by the following men:

H. N. Witt for Goldfield Consolidated Company

G. Donald Emigh for the U. S. Vanadium Company

Henry C. Carlisle for Pacific Bridge Company

Maps have been prepared by Witt (Brunton), Emigh (based on Witt's map), and by Van O. Eastland, who made a transit-tape survey for Pacific Bridge Co.

The original discovery of scheelite in the district was made in 1936 by George Tamney and his father who acted upon information supplied by Wesley Koyen and George W. Thiriot, Sr., of Tem Piute, Nevada. The Tamneys staked claims for Koyen and Thiriot on the less promising part of the tactite bodies; Thiriot later obtained ownership of these claims. The Tamneys immediately interested Goldfield Consolidated Mining Company, which optioned the Tamney property, and in 1938 re-optioned it to U. S. Vanadium Corporation. The U. S. Vanadium Corporation thoroughly sampled the tactite masses, and finding them of too low a grade for open pit operation dropped their option. Goldfield Consolidated then unsuccessfully attempted to develop ore in a 900 foot crosscut beneath

the cropping of the Main Cockscomb ore body. This work was discontinued in the spring of 1940 and the property then reverted to George Tamney, whose father's death made him sole owner. Howard Melaney, a former employee of Goldfield Consolidated, immediately secured a 20 year lease, interested the Pacific Bridge Company, and drove the Cockscomb tunnel, which intersected the Main Cockscomb ore body 75 feet beneath the average elevation of the cropping, thus indicating a probable 11,435 units of WO_3. Melaney developed a well seven miles east of the property, which is reported to supply 20 gallons of water a minute, and had mill tests run. He was frustrated before having the opportunity of building a mill by the incorporation of the Oak Spring District into the Fourth Army Air Corps Gunnery Range.

The Thiriot property meanwhile remained undeveloped until the fall of 1940 when I. Foster Smith, Raymond E. Stolle, and Joe E. Riley leased the Thiriot claims and constructed a dry mill. Smith bought the interest of the other partners in December, 1940 and continued operations until May, 1941. He reported a good grade of concentrates, a probable 60% extraction, a successful separation of scheelite and powellite by air-flotation, and a nearly profitable operation with ore containing 0.25% of WO_3. Near the end of Smith's operation he was treating ore from properties leased from Thiriot, Nevada-Massachusetts Company, and from W. A. Smith.

Production may have been 7 or 8 tons of concentrate containing 50% of WO_3.

When Goldfield Consolidated Company optioned the Tamney property in 1936, the Nevada-Massachusetts Company became interested

in the district, and drove a 360 foot tunnel and trench on a shear zone in limestone. The company is not now working in the district.

Production may have been 2 or 3 tons of concentrate

Other property in the district is owned by O. R. Speirs.

Total production of scheelite concentrate from the Oak Spring District has been 9 or 10 tons containing 50 to 60% of WO_3.

Since May 1941, when D. M. Lemmon and I visited the property, various other people have examined the area including Fred Johnson in May 1941 for American Smelting and Refining Co., Rove of the Bureau of Mines, Van der Cook and others of the General Land Office, and Prince and Permatel for the Quartermaster Corps, U. S. Army.

Frank Byers and I spent seven days between December 10th and 19th in the district. Due to foul weather and the lack of photo-enlargements only two days and three nights were spent on the surface; the more important surface features were, however, plotted on the aerial photo contact prints, and checked on Eastland's map of the Tamney property. The underground workings were mapped in detail and most of the tactite bodies were "lamped", as a result of which I see no reason for not accepting U. S. Vanadium Company's assays.

The accompanying maps, sections, and projections are derived from an interpretation of Witt's geologic map, Eastland's map, aerial photos and our maps of underground workings. Eastland's map is apparently 100 feet in error, vertically and horizontally.

Geology

The somewhat complicated geology of the Oak Spring District is clearly exposed.

To the north, Tertiary volcanics (rhyolite flows and tuff beds) forming Oak Spring Butte lie in normal and fault contact upon granitic rocks (granite, granite pegmatite, diorite) of unknown age, and upon a series of folded and faulted Paleozoic limestones, marbles, shaly limestones, quartzites, and conglomerates intruded by these granitic rocks. Tactite, granitic sills, and dikes occupy bedding planes and faults in the limestone.

Granite divides the sedimentary rocks into two large masses, the one to the west containing the prospects of the Nevada-Massachusetts company, ~~Sam Werretti and M. A. Stewart~~, O. R. Speirs, and W. A. Smith, and the one to the east containing the Tamney-Thiriot properties.

Most of the large tactite masses have been found parallel to bedding or premineral faults from 100 to 500 feet from any granite contact. West of the junction of the Ridge ledge, Narow ledge, and Broad ledge tactite occurs where granite intruded limestone, and south of the Broad ledge below Thiriot tunnel a thin tactite zone occurs in a similar position. Minerals found in the tactite in approximate order of abundance are garnet, quartz, pyroxene (?), calcite, idocrase, scheelite, powellite, epidote. Control of scheelite concentrations within tactite bodies is obscure; probably cross fractures and irregularities of the contact are factors in localization. For the most part it is impossible to state how far the ore zones extend beneath the surface. Diamond drilling could be

used advantageously to indicate continuity and depth of the ore zones, which are probably sporadically spaced through the tactite bodies.

Post-volcanic faults of basin-range type have blocked out the range. One of these faults cuts off the northern extension of the Main Cockscomb ledge. Possible continuations are covered by down-faulted volcanic rocks (figs. 1, 2, and 3).

Figure 1. Map of Oak Spring district
Figure 2. Map of Tamney property
Figure 3. Vertical projection of Main Cockscomb ledge.

Ore bodies, development, and reserves

Ore has been subdivided on the basis of grade into "ore" (0.5% WO_3 or higher), "marginal ore" (0.3 to 0.49% WO_3), "submarginal ore" (0.1 to 0.29% WO_3). Unless otherwise stated it is assumed that 10 cubic feet of ore in place weigh one ton, and that because of lenticularity only one-third of an indicated shoot is ore.

The Cockscomb group of ore bodies

The Cockscomb group of ore bodies consists of 7 unconnected ore shoots in the Cockscomb ledge, the West Split of the Cockscomb ledge, the Middle Cockscomb ledge, the West Split of the Middle Cockscomb ledge, the West Cockscomb ledge, the South Cockscomb ledge, and the South Split of the South Cockscomb ledge. Some of these ore bodies have been prospected by the Cockscomb tunnel and the Goldfield tunnel (also known as the Main tunnel).

Main Cockscomb ledge

The Main Cockscomb ledge contains the most continuous ore zone

in the district. The ore shoot, which occurs in a bed of tactite that dips 43° east, probably rakes northward (see figs. 3 and 4).

Figure 3. Map and vertical projection of Main Cockscomb ledge
Figure 4. Cross section through Main Cockscomb ledge

On the surface the ore averages 1.13 percent of WO_3 for a length of 139 feet and a width of 7 feet. The same ore body is intersected 75 feet lower in the Cockscomb tunnel (fig. 5) 200 feet from the por-

---

Figure 5. Map of Cockscomb tunnel showing geology

---

tal. At this level, the ore body is divided into 2 parts by barren tactite, and contains good values for a length of 140 feet out of the 260 feet of drift along the vein.

The Goldfield tunnel, planned to locate the Main Cockscomb ledge still deeper, may not be long enough to prove the absence of the ore shoot on this level. The tunnel (fig. 6) is approximately

---

Figure 6. Map of Main tunnel showing geology

---

900 feet long and has one inclined raise 70 feet long. According to projections based on Eastland's uncorrected survey, the ore should lie 10 or 15 feet beyond the face of the east fork of the tunnel. However, faults that offset the ore zone may have thrown it still farther east.

There are three tactite bodies in the Goldfield tunnel, but only the one nearest the portal contains scheelite ore. All three tactite bodies are cut on the south side by faults, and the two bodies near the fork in the tunnel may be the same bed repeated by

faulting. It is reported that tactite was found in the raise, now caved near the top.

Probable ore above drift:

Grade, 1.13%; 10,119 tons; 11,435 units--

length, 139 feet; heighth along dip, 104 feet; width, 7 feet.

Possible ore:

Grade, 1.13%; 10,703 tons; 12,094 units--

length, 139 feet; depth along dip, 110 feet; width, 7 feet; lenticularity factor omitted; (see fig. 3)

Possible submarginal ore:

Grade, 0.25%; 18,563 tons; 4,640 units--

area south of main ore zone: length, 330 feet; vertical depth, 165 feet; width, 5 feet gives 13,581 tons; 3,395 units; area north of main ore zone: length 245 feet; vertical depth, 122 feet; width, 5 feet gives 4,982 tons; 1,245 units.

West Split of Main Cockscomb ledge

The West Split of the Main Cockscomb ledge is a replacement of limestone by tactite along bedding. Although two distinct bodies, for convenience they are treated as one. Tactite averaging 12 feet in width contains 0.6% of WO_3 for 82 feet along the strike (fig. 7).

Figure 7. Vertical projection of West Split of Main Cockscomb ledge

Possible ore:

Grade, 0.6%; 1,345 tons; 807 units--

this is probably a small lens of ore: length, 82 feet; depth, 41 feet; width, 12 feet.

Possible marginal ore:

Grade, 0.3%; 852 tons; 256 units--

length, 80 feet; depth, 40 feet; width, 7 feet gives 747 tons; 224 units;

length, 30 feet; depth, 15 feet; width, 7 feet, gives 105 tons; 32 units.

Middle Cockscomb ledge

The Middle Cockscomb ledge is another replacement of limestone by tactite along bedding. The outcrop clearly reflects a fold in the surrounding limestone (fig. 2). U. S. Vanadium Company's assays over the length of 103 feet and width of 10 feet averaged 0.7% of WO_3 (fig. 8)

Figure 8. Vertical projection of Middle Cockscomb ledge

Possible ore:

Grade, 0.7%; 1,777 tons; 1,243 units--

average length, 102.5 feet; depth, 52 feet; width, 10 feet.

West Split of the Middle Cockscomb ledge

The West Split of the Middle Cockscomb ledge is a tactite body 150 feet long and 15 feet wide. The tactite is discontinuous; 10 feet of the limestone bed were not tactitized (fig. 9).

Figure 9. Vertical projection of West Split of Middle Cockscomb ledge

Possible submarginal ore:

Grade, 0.25%; 8,452 tons; 2,119 units--

northern part: average length, 52.5 feet; depth, 30 feet;

Possible submarginal ore (continued):

width, 15 feet gives 788 tons; 197 units;

southern part: average length, 170 feet; depth, 96 feet;

width, 14 feet gives 7,664 tons; 1,916 units.

West Cockscomb ledge

The West Cockscomb ledge is a thin tactite body, 392 feet long and averaging 5 feet in width, which shows only marginal and submarginal ore on the surface (fig 10). The ledge is a replacement of

Figure 10. Vertical projection of West Cockscomb ledge

limestone but not entirely of one bed. It is at the base of the ridge formed by the Cockscomb group of tactite bodies.

Possible marginal ore:

Grade, 0.48%; 5,929 tons; 2,846 units--

length, 154 feet; depth, 77 feet; width, 5 feet.

Possible submarginal ore:

Grade, 0.2% and 0.22%; 2,677 tons; 548 units--

Grade, 0.22%; length, 81 feet; depth, 40 feet; width 6 feet gives 648 tons; 142 units;

grade, 0.2%; average length, 156.5 feet; depth, 96 feet; width, 4 feet gives 2,029 tons; 406 units.

South Cockscomb ledge

The South Cockscomb ledge may be the continuation of the West Cockscomb ledge; the tactite may extend to the Goldfield tunnel where it is probably repeated by faulting. (fig. 3)

Possible submarginal ore:

Grade, 0.2%; 6,900 tons; 1,380 units--

length, 120 feet; depth, 230 feet; width, 15 feet.

South Split of the South Cockscomb ledge

This tactite bed apparently extends downward at least to the Main tunnel level, where a reported 2% assay was obtained.

Possible ore:

Average grade, 1%; 800 tons; 800 units--

length, 80 feet; depth, 120 feet; width, 5 feet.

Other tactite bodies

Ridge ledge

The Ridge ledge is a tactite body 800 feet long with an average width of 50 feet. In the northern half the tactite is parallel to a premineral fault dipping about 70° north, which here nearly parallels bedding; in the southern half it is controlled by a granite contact, partly intrusive and partly faulted.

The Ridge ledge contains 5 isolated pods of good ore (fig. 11)

Figure 11. Vertical projection of Ridge ledge

and three of lower grade, two of which are calculated as one.

Possible ore:

Grade, 0.5% WO_3 or better; 10,068 tons; 8,436 units--

grade, 1.36%; length, 72 feet; depth, 36 feet; width, 35 feet gives 3,024 tons; 4,112 units;

Possible ore (continued):

grade, 0.74%; length, 42 feet; depth, 21 feet; width, 9 feet gives 265 tons; 196 units;

grade, 0.5% (?); length, 22 feet; depth, 11 feet width, 9 feet gives 73 tons; 36 units;

grade, 0.58%; average length, 125 feet; depth, 77 feet; width, 17 feet gives 5,454 tons; 3,163 units;

grade, 0.74%; average length, 74.5 feet; depth, 42 feet; width, 12 feet gives 1,252 tons; 928 units;

Possible marginal ore:

Grade 0.45%; 996 tons; 446 units--

average length, 65.5; depth, 38 feet; width, 12 feet.

Possible submarginal ore:

Grade, 0.26%; 2,465 tons; 641 units--

length, 86 feet; depth, 43 feet; width, 20 feet.

Narrow ledge

The Narrow ledge is apparently a bedding replacement of limestone, which dips nearly vertically or steeply south. It contains three pods of ore and submarginal ore scattered through 1,200 feet. Average width of the Narrow ledge is 30 feet.

Possible ore:

Grade, 0.5%; 183 tons; 93 units--

length, 52 feet; depth, 26 feet; width, 3 feet gives 135 tons; 68 units;

length, 38 feet; depth, 19 feet; width, 2 feet gives 48 tons; 25 units.

Possible submarginal ore:

Grade, 0.26%; 2,146 tons; 559 units--

length, 57.5 feet; depth, 32 feet; width, 35 feet.

Broad ledge

Figure 12. Cross section through Broad ledge and New 210 Foot Crosscut
Figure 13. Cross section through Broad ledge and Granite tunnel

---

The Broad ledge is apparently another bedding replacement of limestone. It is approximately 2,400 feet long and 175 feet wide. It contains several small pods of submarginal ore, one observed pod of ore, and possibly a large tonnage of very low grade submarginal ore (0.1% to 0.2%) not included in the present estimate.

The Broad ledge has been crosscut by two tunnels: the Granite tunnel and the New 210 Foot Crosscut. Thiriot's prospect is also in this tactite body.

The New 210 Foot crosscut (fig. 14) is entirely in tactite

Figure 14. Map of New 210 Foot crosscut showing geology

---

except for 10 feet of limestone and marble at the face. The crosscut 25 feet from the face was dug on ore which may run 0.6% over a width of 5 feet.

The Granite tunnel, 520 feet long, cuts three barren tactite bodies near the face (fig. 15). At the bend in the drift granite

---

Figure 15. Map of Granite tunnel showing geology

---

has been faulted against tactite.

Thiriot's prospect adit, 40 feet long, contains low grade tactite ore (fig. 16). Most of the ore (reported to have yielded 0.25%

Figure 16. Map of Thiriot tunnel showing geology

WO_3) milled at Smith's dry mill came from banded tactite and marble exposed in an open cut 25 feet long, 12 feet wide, and 10 feet deep.

Possible ore:

Grade, 0.73%; 420 tons; 307 units--

length, 60 feet; depth, 30 feet; width, 10 feet.

Possible marginal ore:

Grade, 0.30% to 0.43%; 7,078 tons; 2,478 units--

grade, 0.39% (?); average length, 50 feet; depth, 105 feet; width, 7 feet gives 1,126 tons; 440 units;

grade, 0.43%; length, 114 feet; depth, 57 feet; width, 9 feet gives 1,949 tons; 836 units;

Thiriot property (not on Eastland's map)--grade, 0.30%; length, 200 feet; depth, 100 feet; width, 6 feet gives 4,000 tons; 1,200 units.

Possible submarginal ore:

Grade, 0.23% to 0.26%; 2,021 tons; 469 units--

grade, 0.26%; length, 42 feet; depth, 21 feet; width, 5 feet gives 147 tons; 38 units;

grade, 0.23%; length, 93 feet; depth, 46.5 feet; width, 13 feet gives 186 tons; 432 units.

Tactite body east of the portal of Main tunnel

The tactite body east of the portal of Main tunnel is an isolated

lens. Although adequate facts are not available it may contain 2,500 tons of possible submarginal ore (0.2%) or 500 units of WO_3.

Speirs prospect

O. R. Speirs' prospect consists of three small pits on a tactitized shear zone in limestone, possibly the same structure on which the Nevada-Massachusetts Company dug. If its grade is 0.5%; width, 4 feet; length, 100 feet; depth, 50 feet; and ½ the outlined shoot be considered ore, there may be 500 tons of ore containing 250 units.

Nevada-Massachusetts prospect

The Nevada-Massachusetts Company drove a tunnel 260 feet long and a trench 100 feet long, 9 feet wide, and 4 to 20 feet deep on a tactitized shear zone in limestone (fig. 17). It is reported that several tons of concentrate were produced, but there is no evidence of much production; certainly very little reserve exists. The dump contains a few tons of marginal ore. There is considerable powellite in coatings near the portal. More drifting might indicate more ore. Possible ore: 2 tons containing one unit of WO_3.

Figure 17. Map of Nevada-Massachusetts tunnel showing geology

Other prospects

In the vicinity of Tamney's camp several tunnels and prospect pits have been dug for silver. They were made before scheelite was discovered in the district and do not contain scheelite according to Tamney. They were not examined by the writer.

Sam Werrett and M. A. Stewart of Alamo, Nevada hold one claim on what is probably the same shear zone as Speirs' prospect. This undeveloped claim is between Speirs' prospect and Tamney's cabin.

Between Speirs' prospect and the Nevada-Massachusetts tunnel is another prospect owned by W. A. Smith of Kelly Mine. In the spring of 1941 this prospect was leased to I. Foster Smith (no relation to W. A.), who hauled some ore to his dry mill on the Thiriot property shortly before moving the mill.

Summary and Recommendations

In the Oak Spring district scheelite occurs in bodies of sufficient size and grade to warrant a commercial operation that would probably be successful. If additional water supply were available, the large tonnage of marginal and submarginal ore might justify a larger operation than the 50 ton mill unit planned by Howard Melaney for Pacific Bridge Company.

If this area is withdrawn from the Aerial Gunnery Range, a Bureau of Mines project might be advisable to determine additional reserves. Surface sampling over much of the area is not necessary, for the U. S. Vanadium Company samples were entirely adequate where taken. The Broad ledge should be sampled at 75 or 100 feet intervals, especially to the east of the Tamney property. Diamond drill holes would be advantageous in determining downward extensions of surface ore zones. The first drill holes should be placed beneath the level of the Cockscomb tunnel in the main Cockscomb ore body, beneath several of the splits of the

Cockscomb near its southern end, and beneath two of the pods of ore in the Ridge ledge.

If the Bureau of Mines should plan a project in the district, The Geological Survey should first make an accurate, detailed surface map.

COPY

243

Item 38

3430 0033

GEOLOGY OF THE TAMNEY TUNGSTEN PROPERTY

Nye County, Nevada
by

Herbert N. Witt

July, 1938

Introduction

This report is a summary of geologic studies made on three visits to this property since the original sampling investigation in April, 1938.

The property contains six prominent garnet ledges which for convenience in description have been named as follows: Coxscomb, Middle, South, Ridge, Narrow and Broad. The two most important faults have been named Climax and Guard. All are shown on the accompanying map and cross sections.

Stratigraphy

The rocks found on the Tamney property are a series of calcareous sediments, probably Paleozoic, intruded by granitic rocks, both overlain in part by a series of Tertiary volcanics.

The volcanics are largely rhyolitic tuffs overlain by massive rhyolite flows, which form Oak Springs Butte and the surrounding mesa. These rocks have not been examined in detail. They are subsequent to the ore deposition.

The granitic rocks are a biotite granite or granodiorite with accompanying aplite and pegmatites. They have not been studied in detail. As shown on the attached sketch map of the Oak Springs district, the granitic area is about 2 miles long and one mile wide. It is probably the top or cupola of a granitic batholith underlying the region.

The series of calcareous sediments, in which are found all of the ore bearing garnet ledges, are probably of Paleozoic age. No fossils have been found, however, and this age is assigned solely because of the prevalence of Paleozoic limestones in this portion of southern Nevada. The age of these rocks is of no immediate economic importance.

Deciphering the stratigraphy of these sediments is made difficult by the similarity of some of the members, and by strike faulting. The group has been divided into four members, described below beginning with the oldest and lowest member.

Lower Marble This is in most part a uniformly white fine grained crystalline marble with a chert horizon near its upper boundary. Its total thickness is unknown due to the fact that the lower contact is against the granitic rocks, which have probably engulfed a portion of the beds. Its thickness is probably in excess of 400 feet. It is exposed in the foot-wall (west) of the Coxscomb Ledge (see map and sections) where it lies in a recumbent fold with some duplication of beds. It also lies in the foot-wall of the Broad Ledge which is a replacement of this member. In the upper portion of this member thin chert beds appear and increase markedly in number in approaching the overlying Lower Chert. The marble beds in this horizon often contain much Wollastonite in white radiating needle-like crystals. The Middle, South and Broad Ledges as well as the foot-wall portions of the Coxscomb Ledge are all replacements of the Lower Marble.

Lower Chert This cherty limestone lies conformably above the Lower Marble. It is composed of innumerable thin beds of chert between thin beds of marble. This rhythmic bending is characteristic of both the Upper and Lower Cherts. The outcrops are characteristically brown or deep tan and the float is usually in slabs or elongated pieces. In fresh fracture the rock is nearly white, the thin chert beds having a faint tan color. In the lower portion (75') the marble beds vary from 1" to 6" in thickness. Above this near the middle of this member is an horizon of small lenticular quartzite beds. Above this horizon the marble beds increase in thickness and the chert beds become fewer and less regularly spaced. Thus this member grades upward into the Upper Marble. This Lower Chert is found only in the hanging-wall of the Coxscomb Ledge. It terminates southward against the Climax Fault. This fault has thrown the southward continuation to the west where it has been engulfed by the granitic invasion. The thickness of this member is approximately 150 feet. The greater part of the Coxscomb Ledge is a replacement of this Lower Chert.

Upper Marble Hand specimens of some of the Upper Marble would be difficult to distinguish from the Lower Marble. In large outcrops, however, it is distinguished by its varicolored beds, white, blue-grey, and brown, and by its coarser crystallization. Thin chert beds are scattered at irregular intervals. Its

coarser beds have a characteristically crumbly outcrop. Its total thickness exposed along Section A between the Lower and Upper Chert is approximately 500 feet. This member also outcrops in a wedge shaped area between the Climax Fault and Narrow Ledge. The Ridge Ledge and a portion of the Broad Ledge (near the Location Monument of Climax #1 claim) are replacements of parts of this member.

Upper Chert This is similar in many respects to the Lower Chert, but is distinguished by coarser bedding, larger and more blocky float, and by a basal slate bed. The total thickness is unknown for the upper boundaries have not been found during the field work thus far. It probably exceeds 200 feet. The basal slate member has a maximum thickness of 100 feet, but apparently is not uniform and pinches out westward along the Upper Marble contact, just north of the Narrow Ledge. The lower portion of these basal beds is an intricately contorted and badly broken slate with a few thin sandstone beds. The upper portion is rhythmically banded with alternating slate and sandstone beds about an inch thick. The balance of the Upper Chert member is similar to the Lower Chert. The Narrow Ledge is a replacement of a portion of this chert just above the slate horizon.

Structure

The sedimentaries have been subjected to some folding and considerable faulting, most of it apparently premineral.

In the northerly portion of the property, near Section A, the beds lie in a simple monocline striking about N 25 W and dipping 30 to 50 N.E. Southward of this section the beds are folded into a sharp nose (at Section B). Most of the south limb of this fold has been cut off by the Climax fault, but a portion is preserved northward of the fault in the Lower Marble, where there is an apparent duplication of beds in a recumbent fold. The axis of this fold is apparently plunges to the N.E. It is probable, therefore, that the Middle and South Ledges may yet prove to be at the same horizon and in depth may be continuous around the nose of this fold.

The Climax fault in its western portion is a bedding or strike fault and hence difficult to trace. It has, however, been found where expected in the New Tunnel. Its presence is also indicated by a marked difference in structure

in the Ridge Ledge and South Ledge where they abut at the Climax Fault. Eastward of the new tunnel the fault becomes transverse to the structure and is easily traceable eastward to the Upper Chert where it again becomes obscure. Its probable pre-mineral age is indicated by the presence of a granitic dike with frozen walls, injected along the fault where it cuts the Lower Chert.

Southward of this fault the beds strike in a northeasterly or easterly direction and dip N.W. or S.E. at steep angles. The apparent simple structure on the map is complicated by two (and possibly more) strike faults (see Sections C, D, E and F). The most important of these, which brings the Lower Marble into contact with both Upper Marble and Upper Chert, has been named the Guard Fault. These faults also appear to be pre-mineral. They form the walls (in part) of the Narrow and Broad Ledges.

Some small cross faults, (apparently of post-mineral age) have been found, as shown at the isolated garnet outcrop just east of the South Ledge. Another cross fault with similar strike crosses the Upper Marble between the Narrow Ledge and the Ridge Ledge west of the new tunnel. It also appears to be post-mineral. The displacement on all these is small.

There is considerable low angle jointing throughout the property in general striking N.W. and dipping N.E. It is more conspicuous in the cherts and the garnet ledges and is sometimes closely spaced and gives rise to a false bedding.

Granitic Invasion

The granitic contacts have not as yet been studied in detail. The contact west of the garnet ledge apparently dips steeply east. It is much silicified and apparently is not faulted. The contact south of the garnet ledges apparently dips steeply north. Irregular intrusions of granite occur in the Lower Marble just above this contact, but there is little or no alteration of either limestone or granite along the contact. This may be a fault contact, but field work has not been sufficient to determine this.

Within the sedimentary block are dikes and sills of granite. The dike along the Climax Fault has already been mentioned. It varies in thickness from one to five feet. Approaching the foot-wall of the Lower Chert this dike diverges from the fault, cuts across the chert beds and terminates abruptly at the isolated garnet ledge on the foot-wall contact. Within the Lower Chert are at least three granitic sills, varying from a few inches to three feet in thickness. The contacts are frozen. They apparently occur only at the synclinal and anticlinal axes, pinching out in both directions from these axes. One small lenticular sill has been found in the Lower Marble on the synclinal axis at an horizon about midway between the South and Middle Ledges. The position of these sills and their lenticular character suggest their injection after the folding at points where the beddings planes afforded open lenticular spaces. Irregular granitic masses intrude the Lower Marble in the foot-wall of the Broad Ledge east of the new camp, and one small dike intrudes the garnet ledge west of camp. No granite has been found in the Upper Marble or Upper Chert.

Aside from the Climax Fault dike, and the isolated garnet outcrop in which it terminates, there appears to be no direct relation between the garnet ledges and these small granitic apophyses. They are, however, indicative of lines of fracturing or of open spaces along which mineralizing solutions may have traveled. The garnet ledges were probably formed by solutions emanating from the larger granitic body.

Garnet Ledges

These ledges are all metasomatic replacements of portions of the marbles or cherty limestones, resulting from the granitic invasion. This type of deposit is usually referred to as a "contact metamorphic". The term is a misnomer. The proximity of granitic or other deep seated intrusives is apparently essential to the formation of deposits of this type, but actual contact with the intrusive is not. Of the 6500 lineal feet of garnet ledges exposed on this property barely 1000 lineal feet is in actual contact with the granite. None of the ore bodies are in contact with granite, but invariably occur on the limestone side of garnet ledges that are in contact with granite.

Often the garnet replacement has preserved all the original structure of the replaced limestone. In places

the garnet is massive, flinty and structureless. The bulk of the ledge material is dark brown garnet. Some pinkish garnet is found associated with quartz. A greenish cast to some of the ledge material suggests the presence of epidote but none has been identified in the field. Quartz and calcite are common, particularly near the ore bodies. Both are later than the brown garnet. Small outcrops of heavily iron-stained garnet, almost black in color, are found scattered in the ledges. The material approaches a gossan in iron content and is usually associated with copper stains. A few sulphides (pyrite?) have been found in panning samples. They may reasonably be expected to accompany the ore below the zone of oxidation. Tongues and horses of unaltered marble and cherty limestone occur within the ledges.

Scheelite occurs scattered in small blebs in the garnet and probably contemporaneous with it, but the bulk of the scheelite, along shear zones parallel to the bedding, is obviously later than the brown garnet. Several periods of garnet, quartz and scheelite mineralization have obviously overlapped.

Ore Bodies

Neither surface sampling nor ultra-violet lamp examination has been thorough enough to determine the size or shape of the scheelite ore bodies. The following description of possible ore bodies is based on the partial sampling of the original examination and on a very general reconnaissance with the ultra-violet lamp on subsequent visits.

Broad Ledge This ledge has not been sampled but has been examined with the lamp in all of the gulleys cutting across it and in its outcrops between gullies. It is the longest and widest ledge on the property, extending across the Climax #1, 2 and 4 claims and most of the length of the Garnetyte claim. Its total length is about 1500 feet and maximum width about 200 feet. Throughout its length it dips steeply northward. Except for the northwest portion near the Climax #1 Location Monument this ledge is a replacement of the Lower Marble. For the most part the ledge is barren with a few low grade spots. However, near the northeast corner of the Climax #2 claim are some high-grade streaks in the hanging wall splits of this ledge. The extent of these cannot be determined without trenching because of the blocky float from the Upper Chert which outcrops above. Westward near the junction of the Broad Ledge and Narrow Ledge are a few spots of high-grade ore which appear to be

small and bunchy.

That portion of the Broad Ledge near the #1 Location Monument and extending northeastward toward the Narrow Ledge is a replacement of the Upper Marble. It dips steeply southeastward. It is not properly a portion of the Broad Ledge but probably a continuation of the Narrow Ledge mineralization into the adjoining marble. Within this ledge are several bunches of very high-grade ore (probably 10% or better), occurring in lenses up to 3 feet in width and 10 to 20 feet long. They occur in a relatively narrow zone near the limestone wall for a distance of 300 feet northeastward of the location monument. Their richness invites further prospecting in spite of their lenticular character.

Narrow Ledge This ledge has not been sampled but has been examined with the lamp. The only ore body disclosed is near the highest outcrop where the ledge crosses the common end line of the Climax #2 and #3 claims. This ore body is about 200 feet long, varies in width from 3 to 8 feet and may average close to 1/2%. It is of doubtful interest, except during a period of high priced tungsten.

Ridge Ledge Northward from the #1 Location Monument, there are indications of an ore zone along sheared garnet close to the limestone wall in this ledge. It was sampled in part during the original examination. This ore occurs for a distance of about 350 feet, but interrupted by a gap of unaltered marble about 100 feet long. The ore zone appears to be 3 to 10 feet wide and may average 1% or better. The westerly side of this ledge against the granite is massive, flinty and barren.

South Ledge This ledge was sampled in part during the original examination. Some excellent ore of considerable width occurs on this ledge where it abuts the Ridge Ledge at the Climax fault. Eastward narrow streaks of fair ore are indicated on both hanging and foot-walls. Near the eastern end are widths of 8 to 10 feet of good ore (1% or better) on the hanging wall. This hanging wall is irregular, fingering out into the limestone and then making again further on at the same horizon. This ledge will be the first cut in the new tunnel. Its outcrop should be studied in detail with the lamp.

Middle Ledge Only one sample was taken on this ledge during the original examination. It showed 7' of ore panning

1% scheelite. Scheelite is visible in the foot-wall side of this ledge where it parallels the South Ledge, but the balance of the ledge to the northwest appears barren. Its outcrop should be studied in detail with the lamp

Coxscomb Ledge This ledge is the most important on the property. It was sampled in part during the original examination and portions of it have been examined with the lamp. However, because of its bold outcrop, often in nearly vertical cliffs 50 feet high, it has not yet received the detailed study which it warrants. The south tip of this ledge is barren, but ore apparently occurs throughout the ledge northward either on the hanging-wall, foot-wall, or in the middle, and occasionally at all three horizons on some sections. Near Section A there is nearly 20 feet of good ore near the middle of the ledge with streaks also on the hanging-wall and foot-wall. This ore apparently persists to the location monument. Northward of this, the ledge has not been sampled or examined with the lamp, but appears to be barren. It is mantled northward by the Tertiary volcanics. Because of the fact that the new tunnel is designed to cut this ledge on its dip near the synclinal axis it is important that the shape and size of the surface ore bodies be determined. Ladder, ropes, and moonlight will be necessary to properly outline these ore bodies with the lamp.

The small garnet outcrop just east of the South Ledge on the contact of the Lower Marble and Chert contains some good ore, probably .7% or better. It is at the same horizon as the Coxscomb Ledge and merits some underground exploration from the new tunnel level.

Discussion

The studies on the last visit to this property revealed the stratigraphy of the sedimentary group and gave a partial solution to the Climax fault. Previously, before the recognition of the Lower Chert as distinct from the Upper Chert, it appeared that the Narrow Ledge was at the same horizon as the Coxscomb Ledge. The stratigraphy now indicates that the horizontal component on the Climax Fault is to the westward on the south side and that the Coxscomb contact does not exist southward of the Climax Fault.

The ledges northward of the Climax fault will apparently contain most of the ore on the property. The Ridge Ledge and the ledge at the #1 Location Monument contain some ore of high-grade but probably bunchy. The Narrow Ledge and the Broad Ledge are very doubtful prospects, although some prospecting is warranted at the hanging wall splits of the Broad Ledge. This ledge in the Garnetyte claim has but little promise. The immediate acquisition of this claim is not important. Its value, if any, is purely a nuisance value.

Deposits of the contact metamorphic type are characteristically erratic, but the scheelite ores appear to be less erratic than other types such as copper. It is to be expected that the garnet ledges and the ore may end abruptly at horses or fingers of marble or chert and make again beyond them. The depth to which this type of high temperature mineralization will persist is limited only by the granite. From the attitude of the granitic contacts, and the attitude of the ledges within the relatively large sedimentary block on this property, it is unlikely that these ledges will bottom against granite within the limits of profitable mining. As the ledges, such as the Coxscomb, get further away from the main granite body on their dip the mineralization may fade, but I believe they will at least persist to the level of the lowest tunnel entry that is practicable on the property.

Recommendations

The tunnel now being driven should be turned as indicated on Section E so as to cross cut the formation and reach the Coxscomb Ledge at a point beneath a favorable surface

showing. Instead of continuing the cross cut horizontally after passing the Middle Ledge, it is desirable to raise at 60° in a direction N 40 E to cut the Coxscomb Ledge in a shorter distance and at a lesser distance below the outcrop. Further prospecting of this ledge can probably best be accomplished by continuing the level cross cut to the foot-wall, drifting northward and southward along the foot-wall and cross cutting at intervals with raises from this foot-wall drift.

The westerly portion of the South Ledge warrants exploration at an early date to determine the size and extent of the good ore indicated by surface sampling near the junction with the Ridge Ledge. A short tunnel from the southeast at about the horizon of the new tunnel now being driven would quickly explore this ore body.

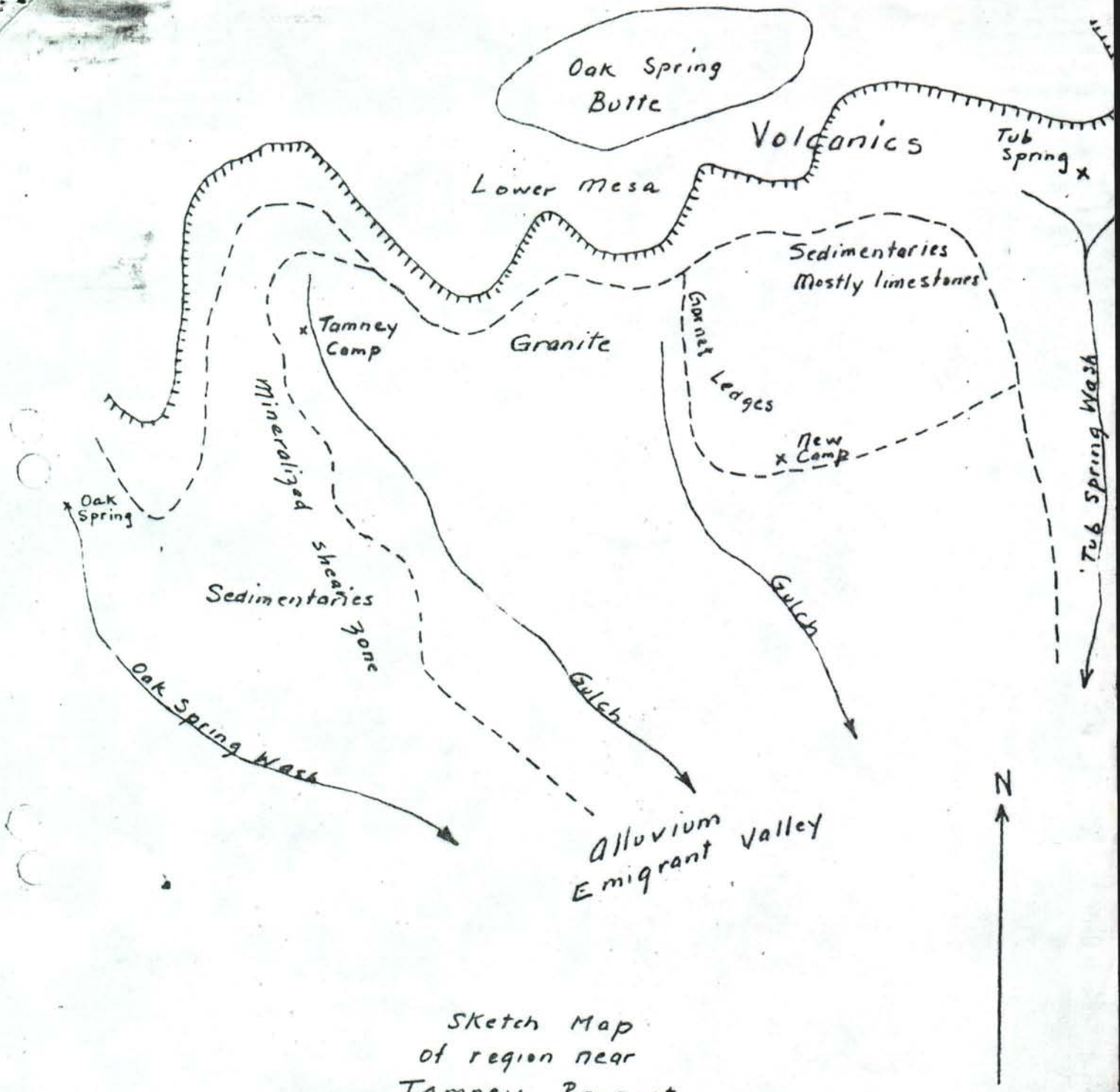
The Ridge Ledge and the Location #1 Ledge can be explored at a depth of about 150 ft. below the outcrops, by extending the old tunnel whose portal is southwest of #1 Location Monument. This tunnel is in the granite but the face has reached or is close to the garnet contact.

I believe it important that the size, shape and relative value of the ore shoots in the South, Middle and Coxscomb Ledges be determined and mapped at an early date by ultra-violet lamp examination. This should, for maximum efficiency and safety of the observer, be done during periods of new and full moon. Some assistance and the use of ladders and ropes will be necessary for mapping the ore in the Coxscomb Ledge.

It is my opinion that this property has sufficient promise to warrant thorough study and exploration.

Respectfully submitted,

/s/ Herbert N. Witt



Sketch Map
of region near
Tamney Property
Nye Co. Nevada
H.N.W. July '38
Scale 2" = 1 mile (approx)

3430 0033

243
Item 38

TUNGSTEN NEVADA 58-27
Nye

Property Oak Springs Tungsten Mine

Location Nye County, Nevada

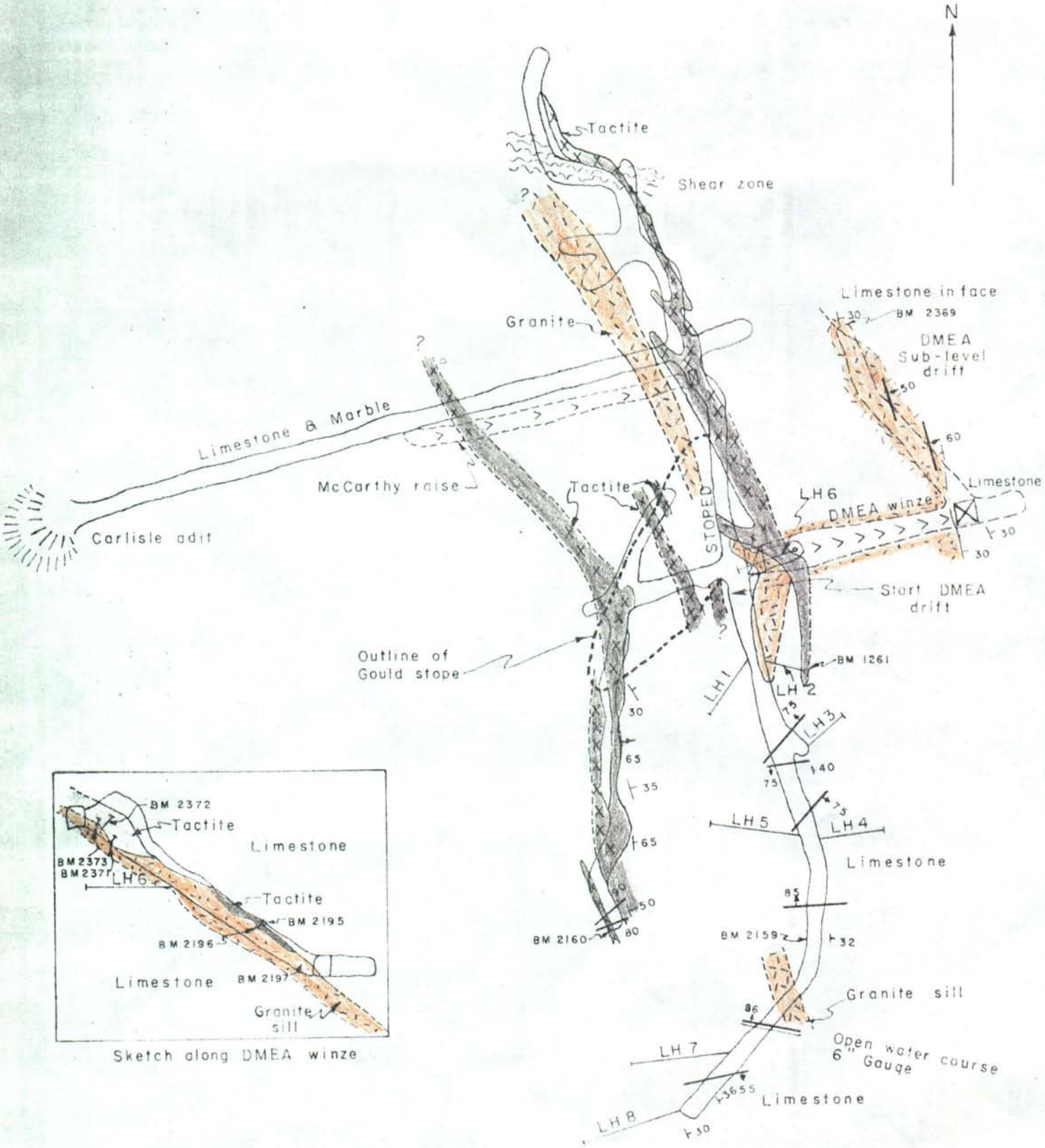
Owner or Agent

Reported by: G. Donald Emigh **Date** 1939, 1941

Remarks Not commercially profitable.
See Climax Guard Group

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA - 4301
Idm - E 1028
(TUNGSTEN)



Sketch along DMEA winze

Figure 3 - Geologic sketch map of Carlisle adit, Climax mine, Nye County, Nevada

0 40 80 120 Feet

TUNGSTEN — Nevada, Nye C county — 58-27

Property FITZPATRICK - GREENAN
SUNLIGHT, CRYSTAL, MYRTLE

Location OAK SPRINGS DISTRICT
75 MILES NORTH WEST INDIAN SPRINGS
SOUTH OF TAMNEY GROUND

Owner or Agent

Reported by: J. M. Hill **Date** Feb. 4, 1939

Remarks Oxidized copper ore along fracture carries big crystals of scheelite.
Several tactite areas in canyon most of them small.
Too small to be of interest.

TUNGSTEN — Nevada, Nye — 58-27

OAK SPRINGS

Property CLIMAX GUARD GROUP
Tamney

Location Oak Springs District (Unorganized)
Belted Range in Eastern Nye County
75 Miles NWly from Indian Springs, Nevada

Owner or Agent V. A. Tamney, P.O.Box 715, Las Vegas, Nev.

Leased to Goldfield Consolidated Company
Oak Springs, Nevada

Reported by: J. M. Hill **Date** Nov. 1, 1938
" Feb 8, 1939
Mar 1, 1939
B. Bennett Apr 20, 1939
May 12, 1939
G. D. Longin May 14, 1939
" June 30, 1939

Remarks Mr. Hill found this property very attractive and worth our serious consideration. Got option from Goldfield Cons. Feb. 1939. Made complete sampling job. As result of detailed examination & sampling was turned down because while a great supply of ore reasonably certain is not assured + operation would be high cost

figure 4

CROSS SECTION A-A'

OAK SPRING

NYE COUNTY, NEVADA

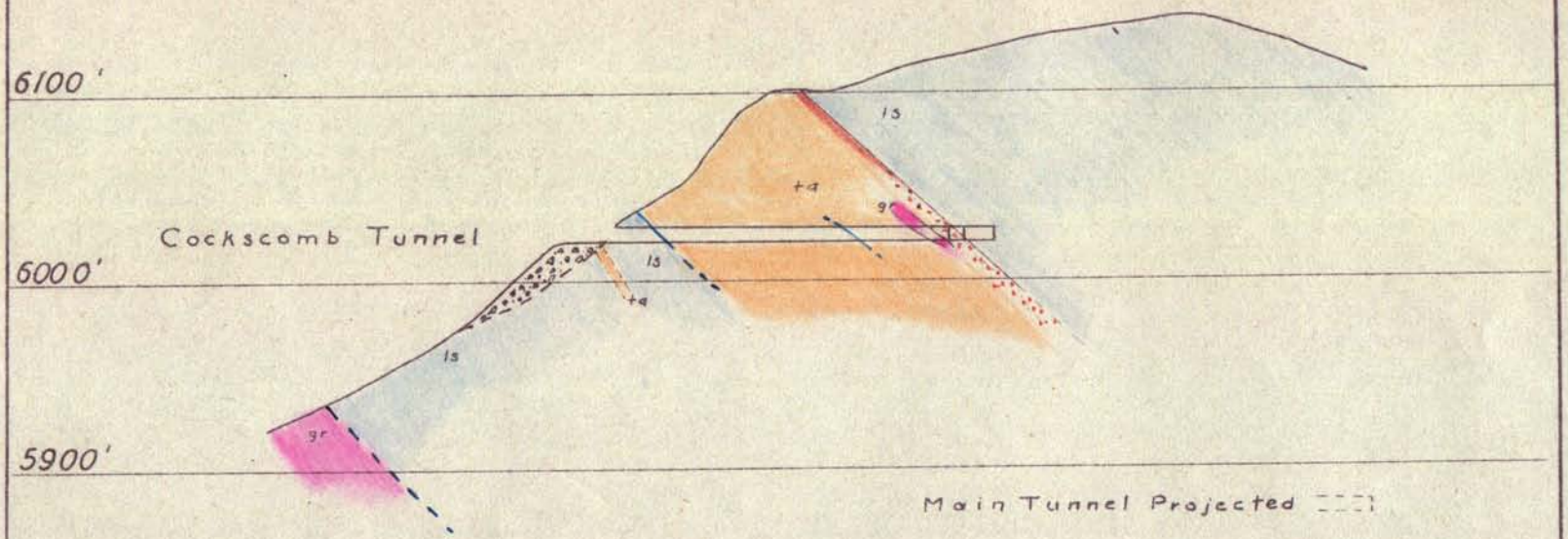
SCALE:

0 100 200 Feet

compiled and interpolated from maps of

Witt, Eastland, Wyant and Byers

12/27/41



D.G. Wyant

243

Item 38

3A30 0033

EXPLANATION

for

MAPS SECTIONS and PROJECTIONS

accompanying OAK SRING report

Tertiary volcanics

grade in % WO_3 :

0.5 & +

0.3 to 0.49

0.1 to 0.29

- 0.1

tactite with scheelite

granite

limestone

contact, known, and projected

fault, known and projected

406 U *block outline of ore showing number of units*

drift

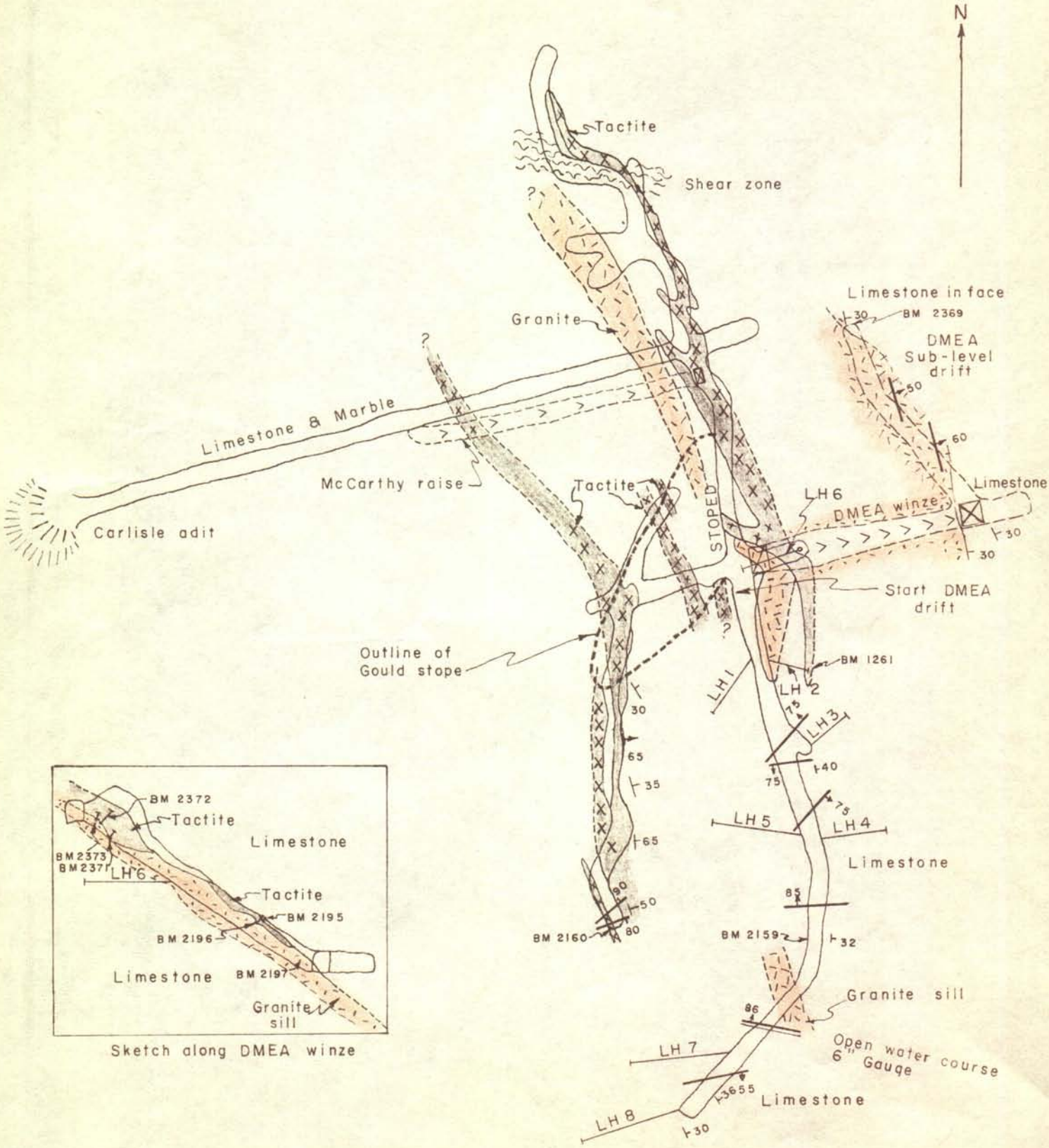


Figure 3 - Geologic sketch map of Carlisle adit, Climax mine, Nye County, Nevada

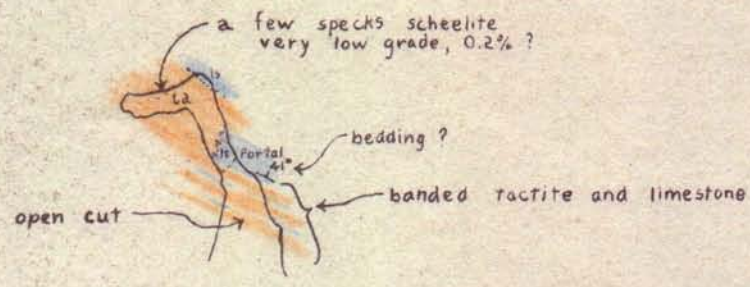
figure 16

EXPLANATION

- t2 Tactite
- ls Limestone
- Fault
- 60° Joint
- Contact
- 50° Strike and dip of beds

N

THIRIOT'S TUNNEL
OAK SPRING
Nye Co., Nev.
December 14, 1941
1" = 50'



0 50 100 150 FEET

D. G Wyant and F. M. Byers

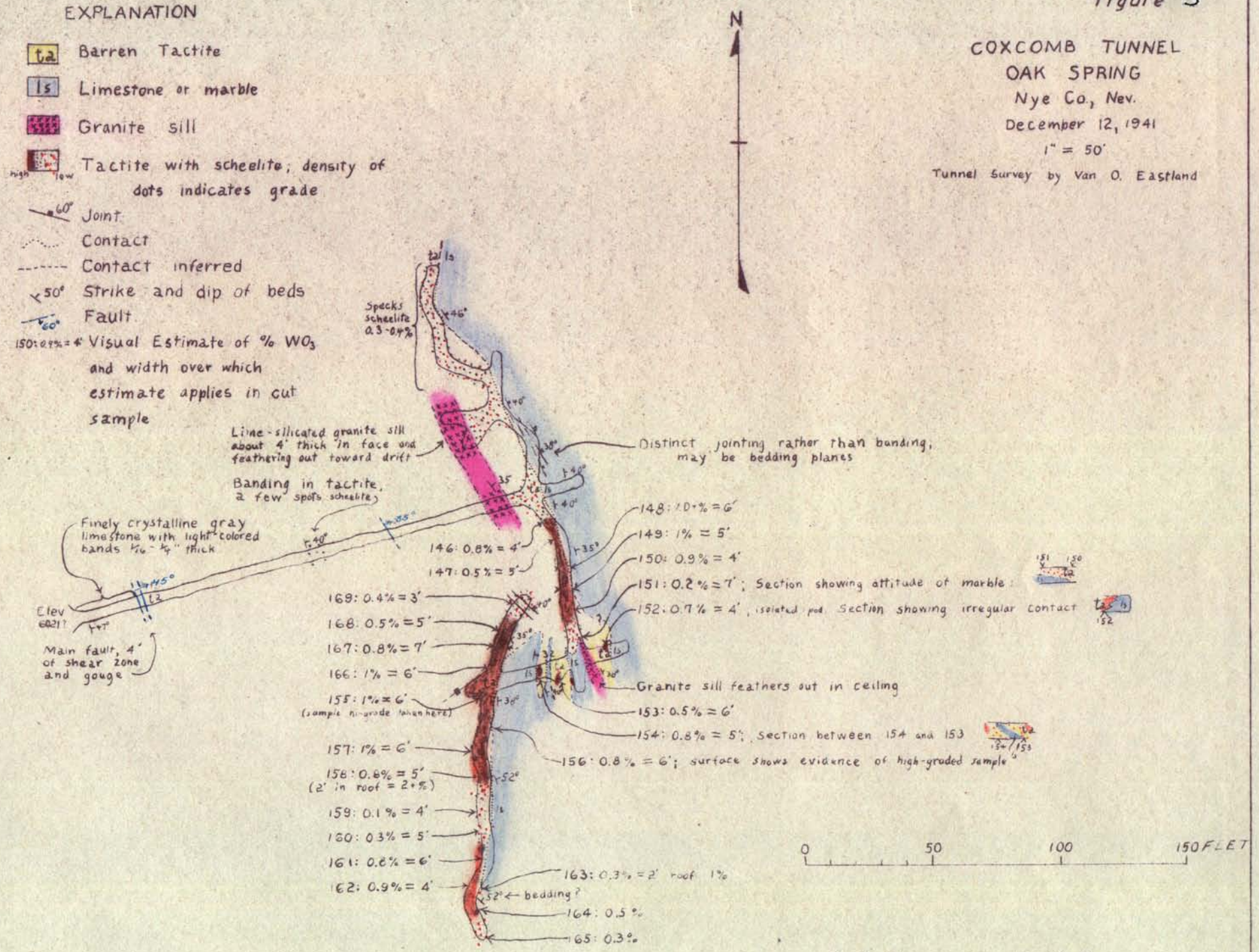
figure 5

COXCOMB TUNNEL
OAK SPRING
Nye Co., Nev.

December 12, 1941

1" = 50'

Tunnel Survey by Van O. Eastland



D. G. Wyant and F. M. Byers

figure 7

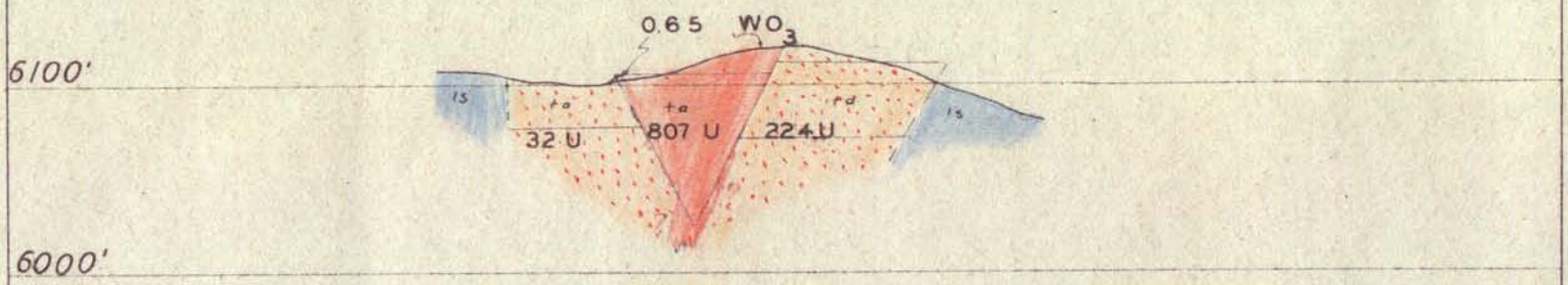
VERTICAL PROJECTION OF WEST SPLIT OF MAIN COCKSCOMB LEDGE

OAK SPRING

SCALE: 0 100 200 300 feet

NYE COUNTY, NEVADA

compiled and interpolated from maps of Witt, Eastland 12/30/41



D.G. Wyant

figure 8

VERTICAL PROJECTION
OF
MIDDLE COCKSCOMB LEDGE

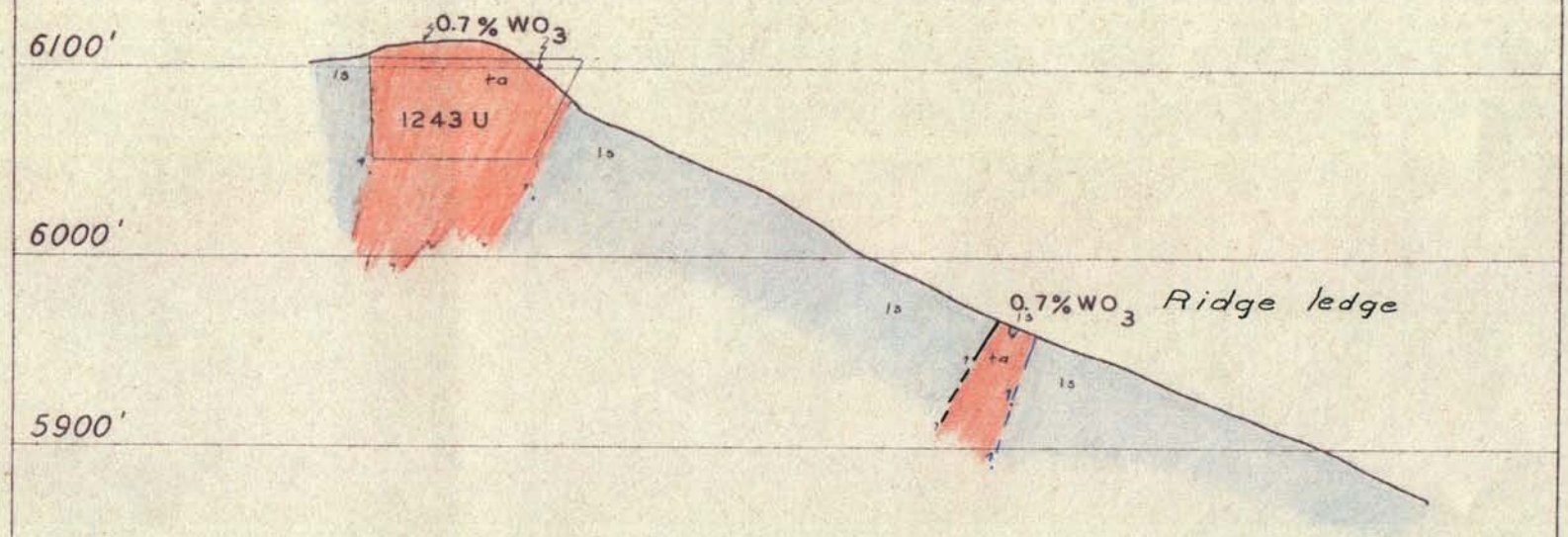
OAK SPRING NYE COUNTY, NEVADA

SCALE:

0 100 200 300 feet

compiled and interpolated from
maps of
Witt, Eastland

12/30/41



D.G. Wyant

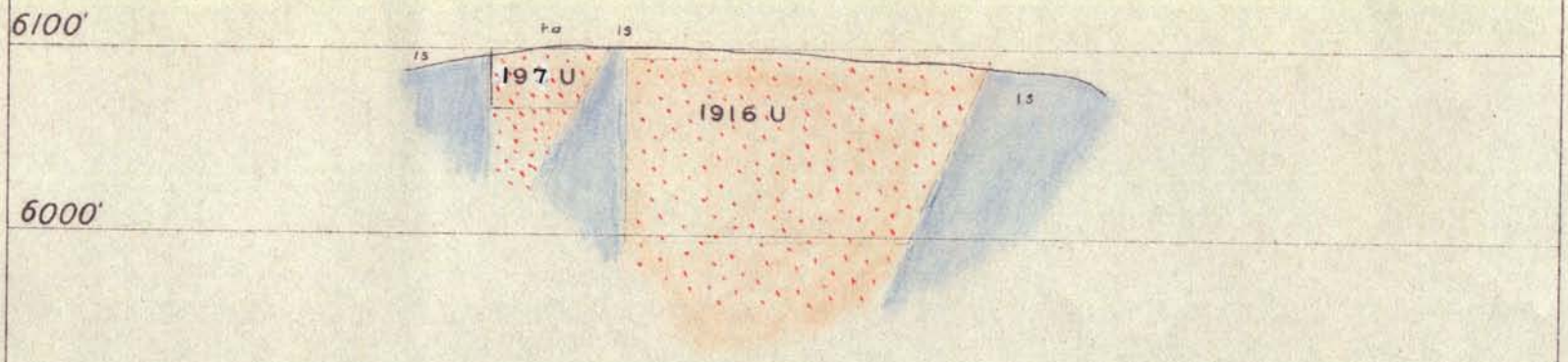
figure 9

VERTICAL PROJECTION OF WEST SPLIT OF MIDDLE COCKSCOMB LEDGE

OAK SPRING NYE COUNTY, NEVADA

SCALE:
0 100 200 300 feet

compiled and interpolated from maps of Witt, Eastland 12/30/41



D. G. Wyant

figure 10

VERTICAL PROJECTION OF WEST COCKSCOMB LEDGE

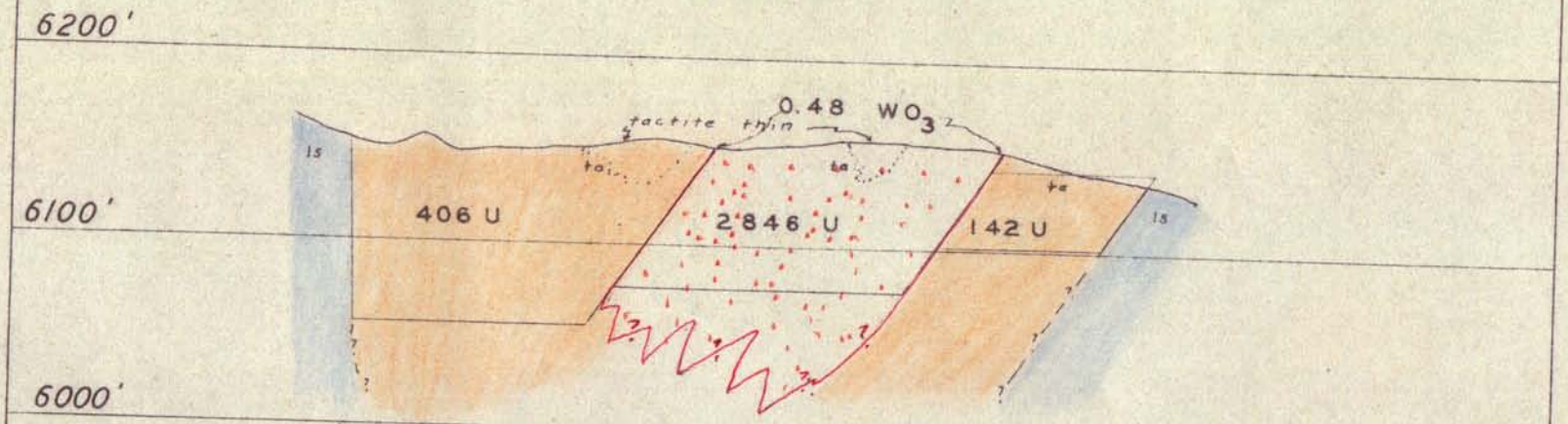
OAK SPRING NYE COUNTY, NEVADA

SCALE:

0 100 200 300 feet

compiled and interpolated from
maps of
Witt, Eastland

12/30/41



D.G. Wyant

figure 11

VERTICAL PROJECTION OF RIDGE LEDGE

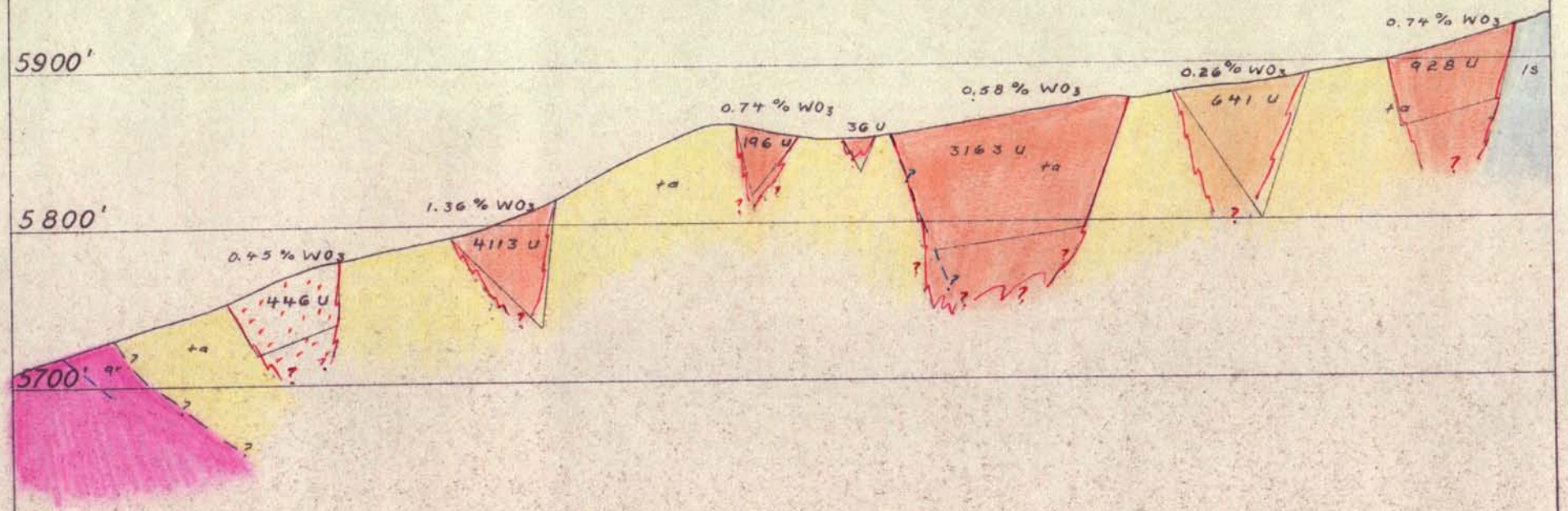
OAK SPRING NYE COUNTY NEVADA

SCALE

0 100 200 300 feet

1/3/42

compiled from maps of Witt, Eastland



D.G. Wyant

34300033

243

Item 38

figure 12

CROSS SECTION B-B' through BROAD LEDGE

OAK SPRING

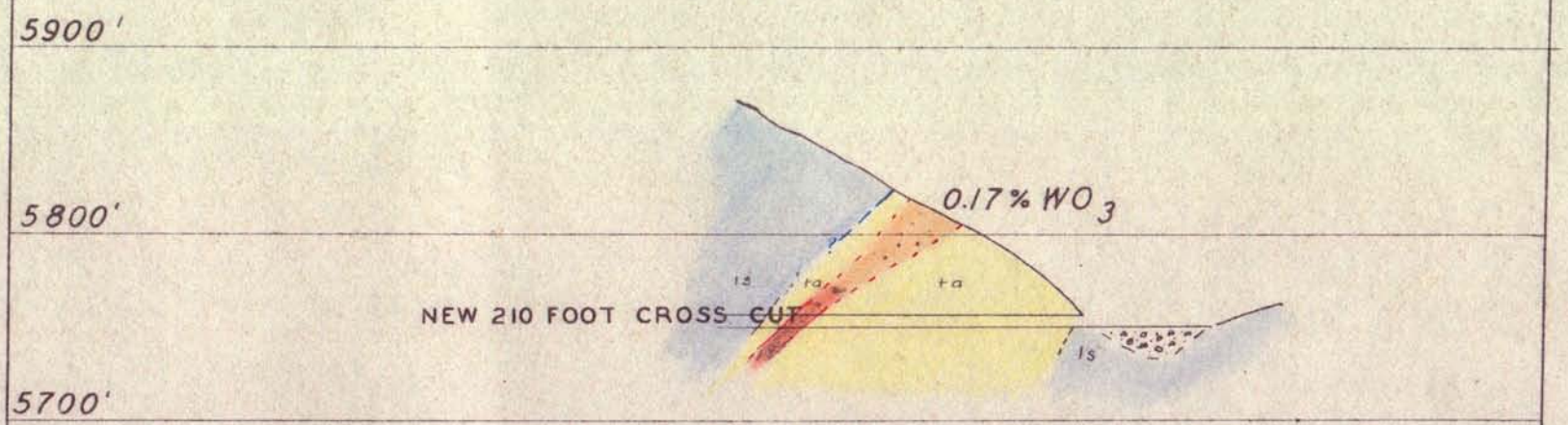
NYE COUNTY, NEVADA

SCALE

0 100 200 FEET

compiled and interpolated from
maps of
Witt, Eastland, Wyant and Byers

12/29/41



D. G. Wyant

figure 13

CROSS SECTION C - C' through BROAD LEDGE

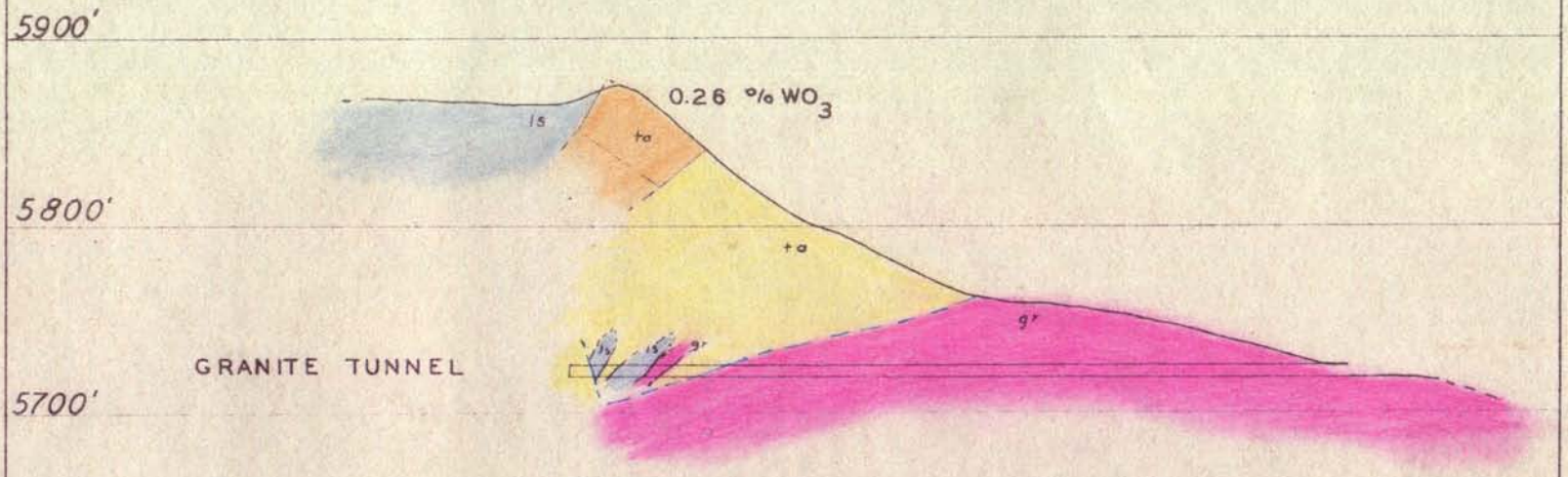
OAK SPRING

NYE COUNTY, NEVADA

SCALE:

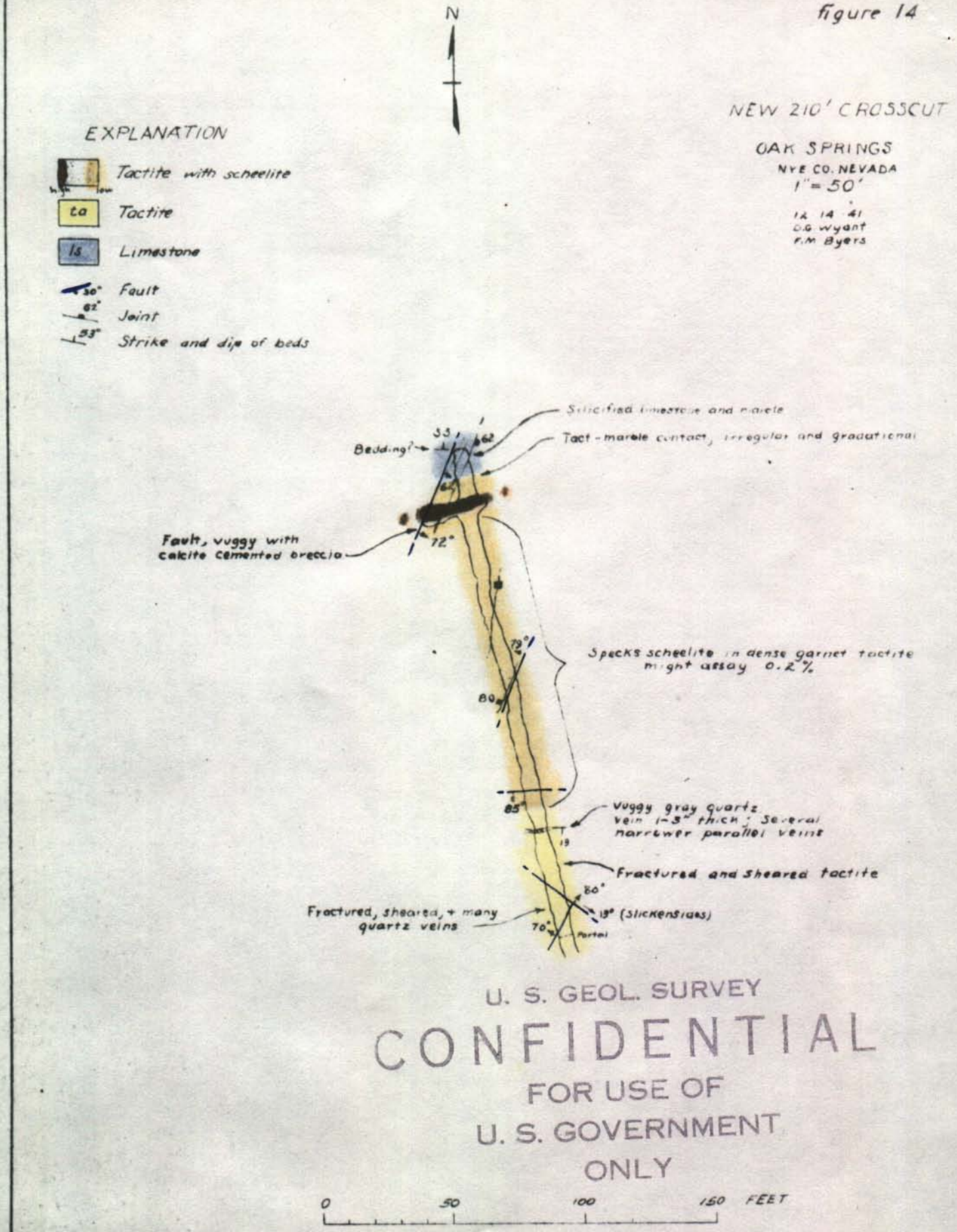
0 100 200 feet

compiled and interpolated from
maps of
Witt, Eastland, Wyant and Byers
12/27/41



D. G. Wyant

figure 14


N
NEW 210' CROSSCUT
OAK SPRINGS
NYE CO. NEVADA
1" = 50'
12 14 41
D.G. Wyant
F.M. Byers
EXPLANATION
Tactite with scheelite
high
low
ta
Tactite
ls
Limestone
50°
Fault
62°
Joint
53°
Strike and dip of beds
Silicified limestone and marble
Tact-marble contact, irregular and gradational
Bedding?
33
62
Fault, vuggy with calcite cemented breccia
72°
72°
Specks scheelite in dense garnet tactite might assay 0.2%
80
85°
Vuggy gray quartz vein 1-3" thick; Several narrower parallel veins
19
Fractured and sheared tactite
80°
19° (Slickensides)
Fractured, sheared, + many quartz veins
70°
Portal
U. S. GEOL. SURVEY
CONFIDENTIAL
FOR USE OF
U. S. GOVERNMENT
ONLY
0
50
100
150 FEET

2

figure 15

GRANITE TUNNEL
OAK SPRINGS

Nye Co. Nevada

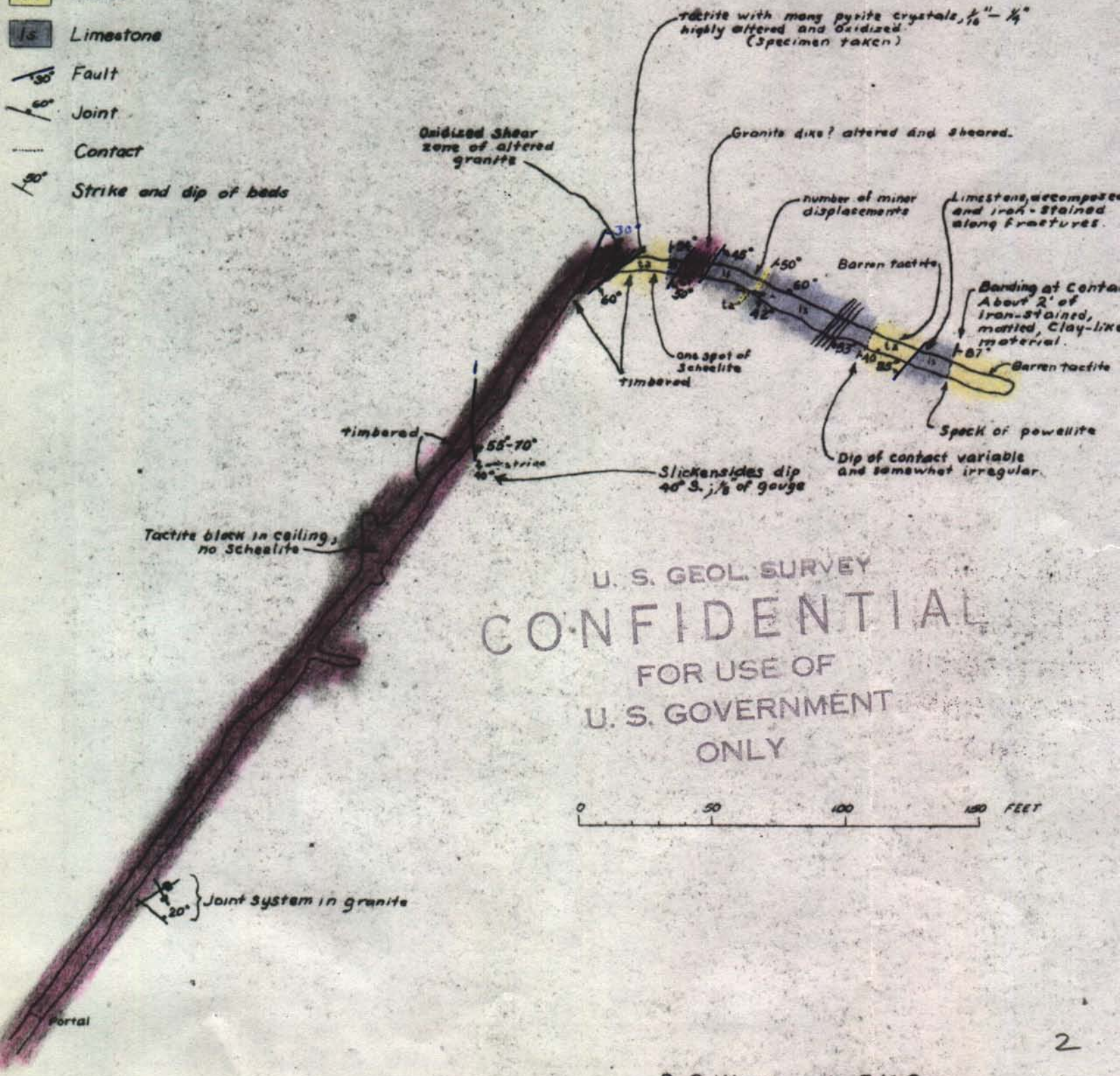
December 18, 1941

1" = 50'

N

EXPLANATION

- Granite
- ta Tactite
- ls Limestone
- Fault
- Joint
- Contact
- Strike and dip of beds



2

D. G. Wyant and F. M. Byers

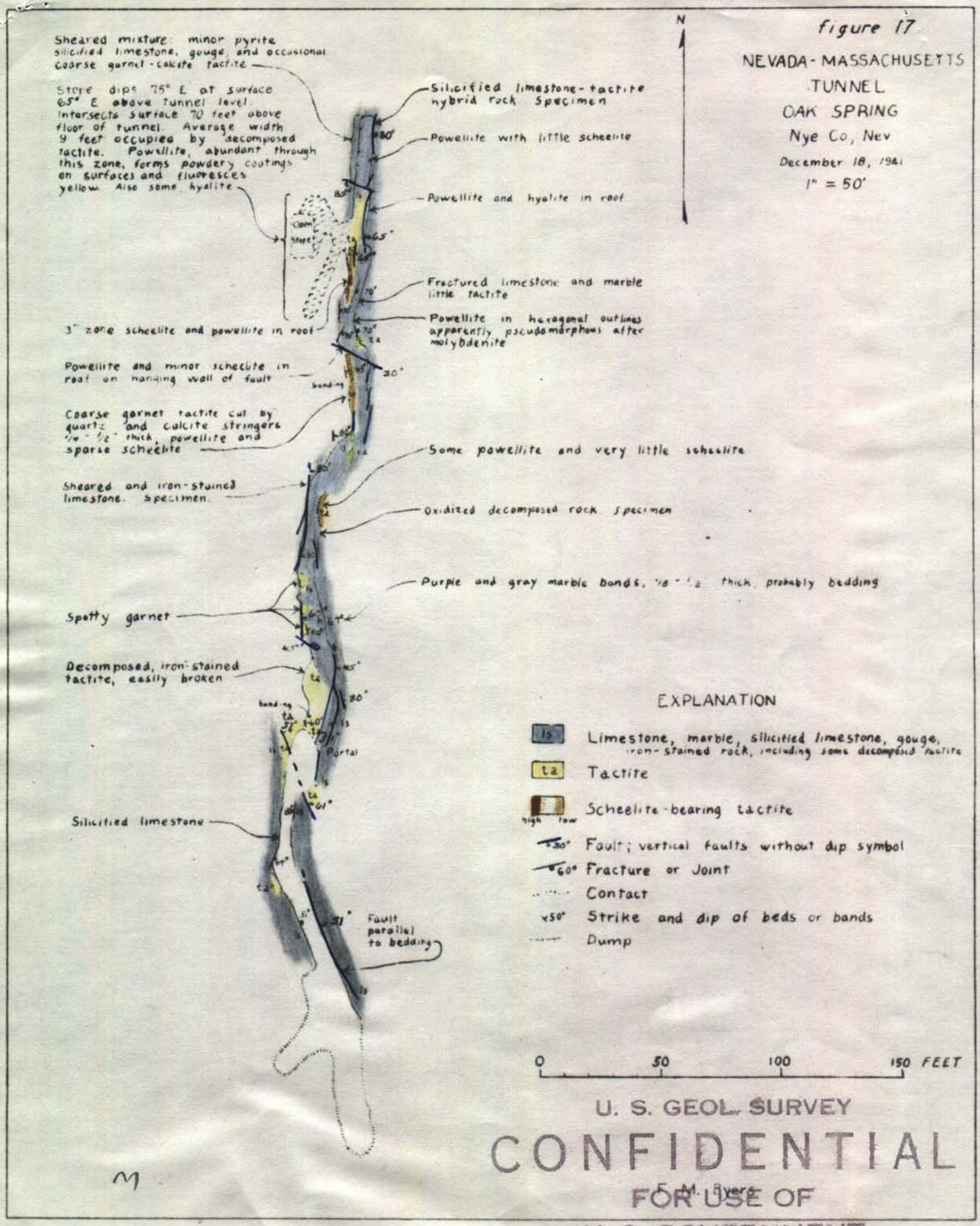
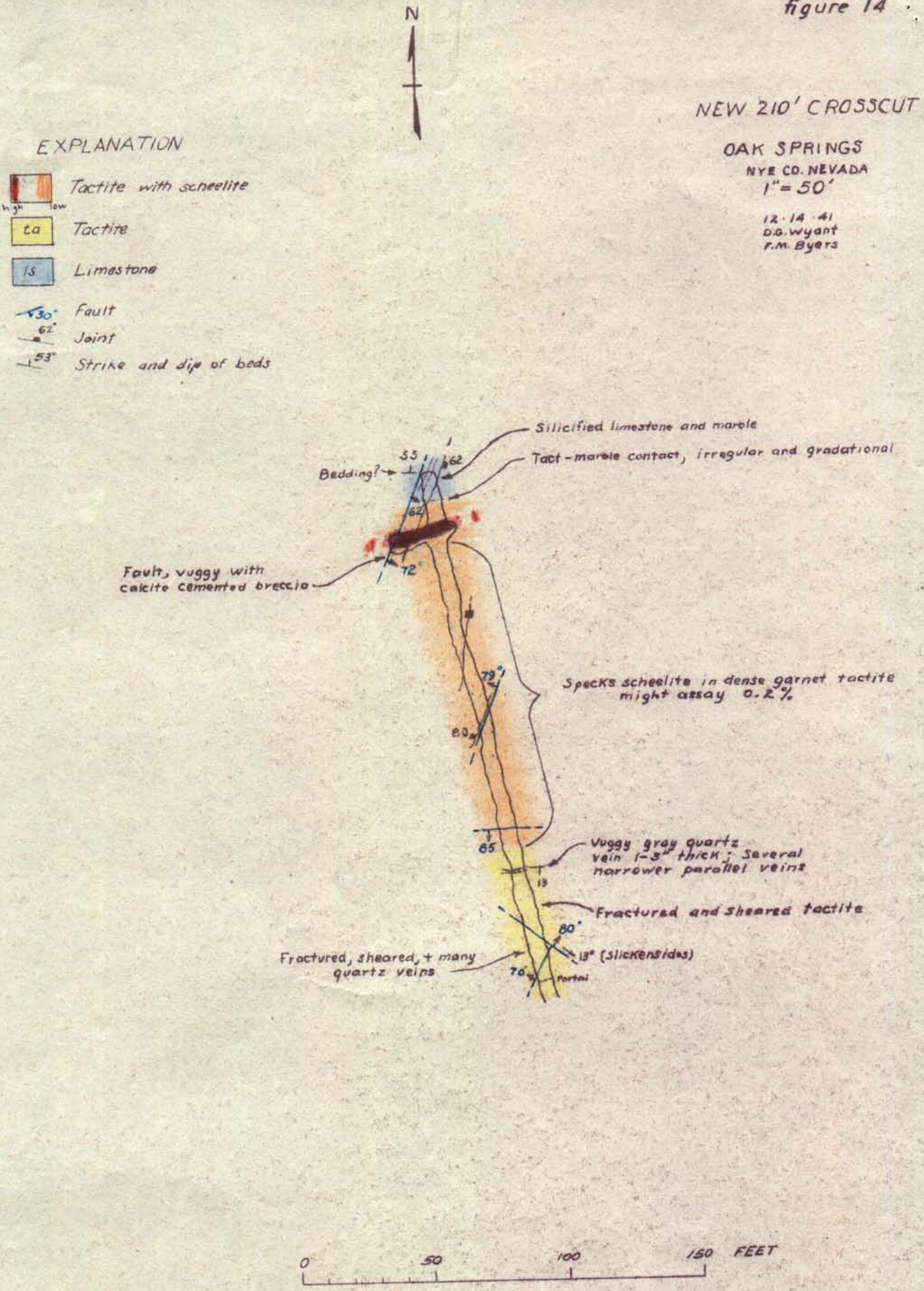


figure 14


N
NEW 210' CROSSCUT
OAK SPRINGS
NYE CO. NEVADA
1" = 50'
12-14-41
D.G. Wyant
F.M. Byers
EXPLANATION
high
low
Tactite with scheelite
ta
Tactite
ls
Limestone
30°
Fault
62°
Joint
53°
Strike and dip of beds
Silicified limestone and marble
Tact-marble contact, irregular and gradational
Bedding?
55
62
62
72°
Fault, vuggy with calcite cemented breccia
79°
80
Specks scheelite in dense garnet tactite might assay 0.2%
65
Vuggy gray quartz vein 1-3" thick; several narrower parallel veins
13
Fractured and sheared tactite
80°
13" (slickensides)
Fractured, sheared, + many quartz veins
70°
horizontal
0
50
100
150 FEET

3430 0033

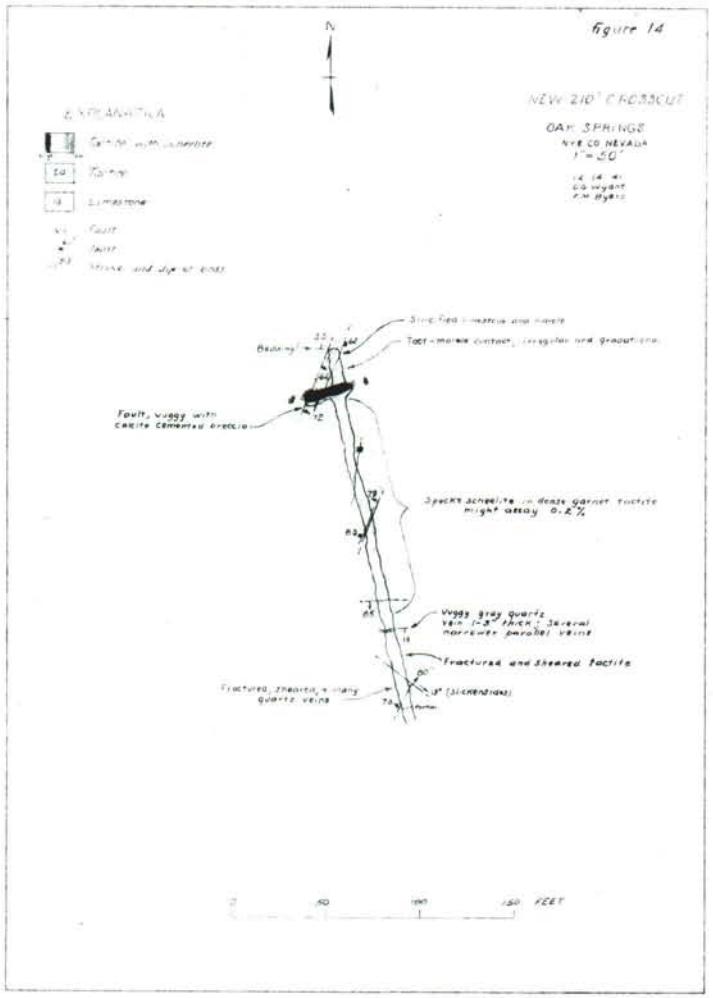


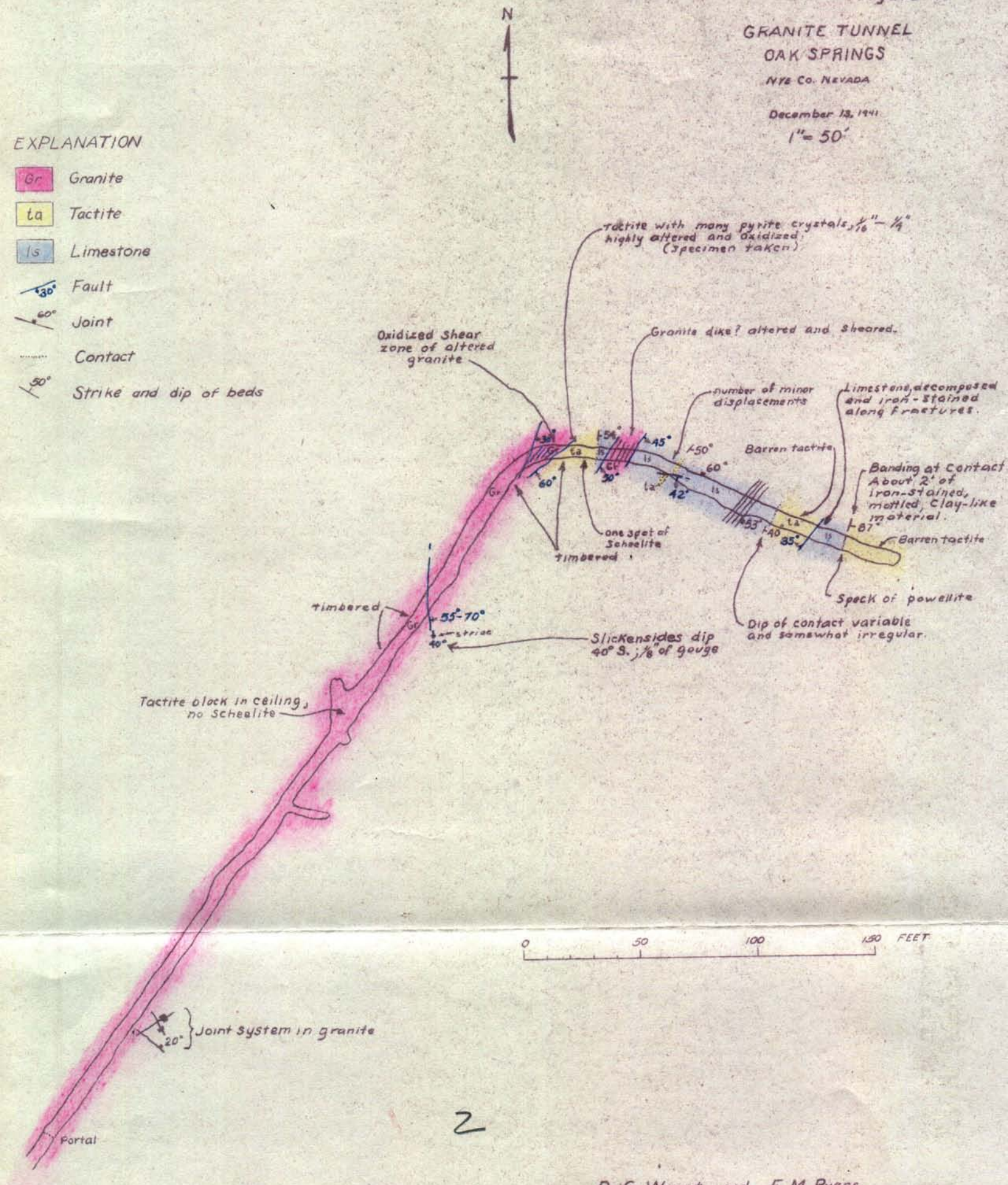
Figure 14
N
NEW 210' CROSSCUT
OAK SPRINGS
NYE CO NEVADA
1" = 50'
EXPLANATION
Fault
Fault
Fault, vuggy with calcite cemented breccia
Specks scheelite in dense garnet tactite
Vuggy gray quartz vein 1-3" thick; Several narrower parallel veins
Fractured and sheared tactite
Fractured, sheared, many quartz veins
3" (SLICKENSIDES)
0
50
100
150 FEET

figure 15

GRANITE TUNNEL
OAK SPRINGS
Nye Co. NEVADA

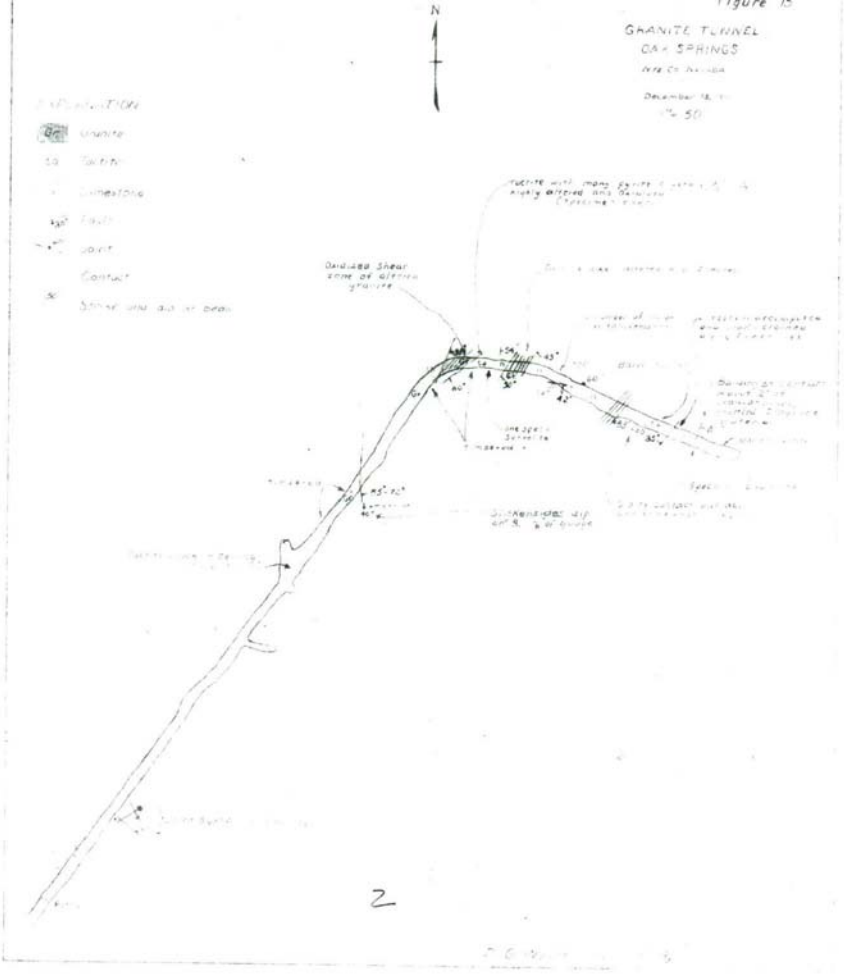
December 13, 1941

1" = 50'



2

D. G. Wyant and F. M. Byers

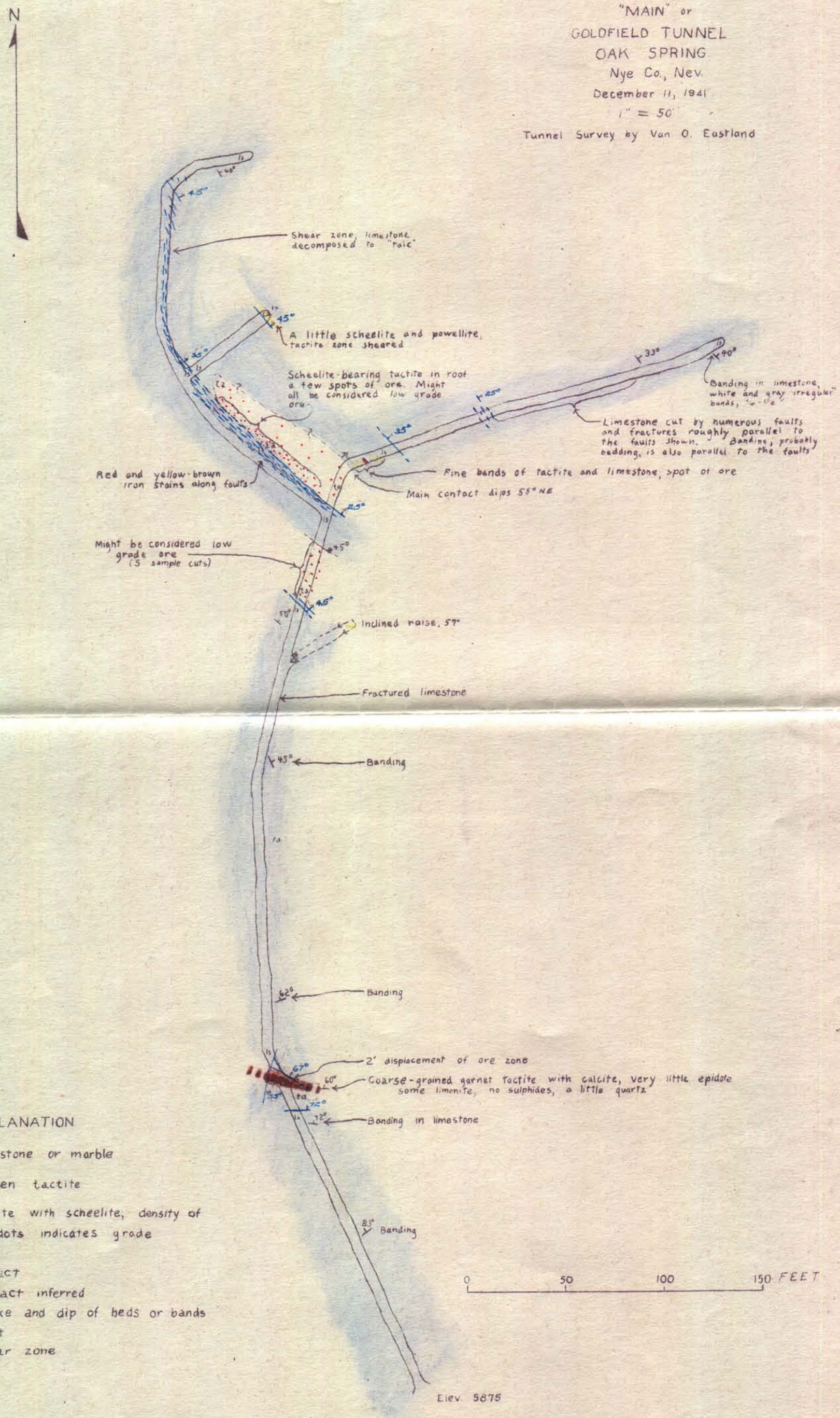


3430 0033

243
Item 58

figure 6

"MAIN" or
GOLDFIELD TUNNEL
OAK SPRING
Nye Co., Nev.
December 11, 1941
1" = 50'
Tunnel Survey by Van O. Eastland



D. G. Wyant and F. M. Byers

243

34300033 Item 38

figure 3

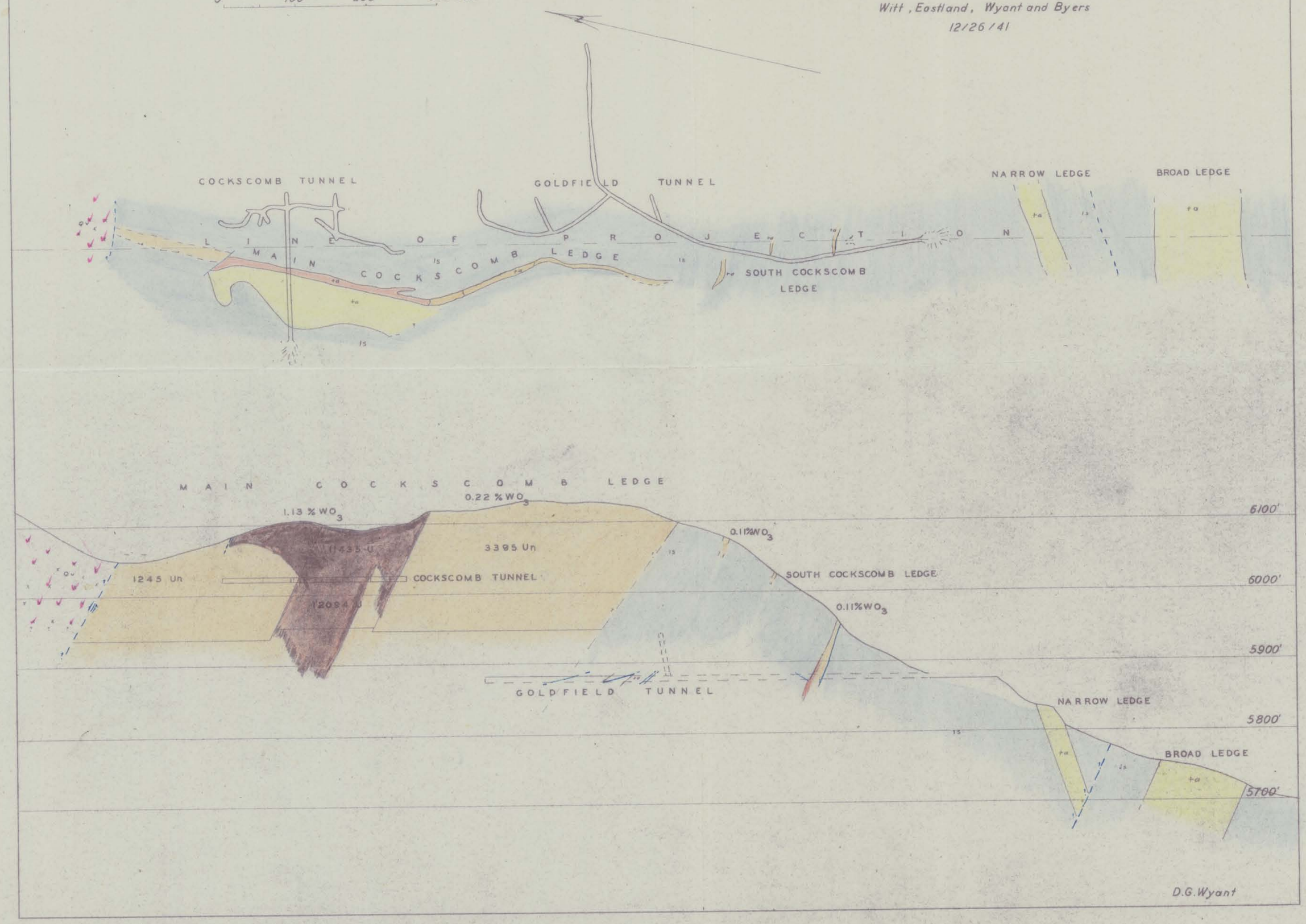
MAP AND VERTICAL PROJECTION OF MAIN COCKSCOMB LEDGE

OAK SPRING NYE COUNTY, NEVADA

SCALE : 1" = 100'

0 100 200 300 feet

compiled and interpolated from maps of Witt, Eastland, Wyant and Byers 12/26/41



3430 0033

243
Jan 58