Potosi
Humboldt Co.

1978 Copy by J. Hopkins
to Utah Int.

(136)

Item 60

HISTORY AND PRODUCTION

The Getchell area was first prospected in the late 1800's for silver, copper, and gold, and the first recorded mention of mining activity concerned a silver discovery. The September 17, 1874 edition of the Winnemucca "Silver State" notes that the Crystal Mining District was newly organized in the Fremont Range (as the Osgood Range was then called) to include discoveries of silver, lead, and antimony made on the Louisa claim. The name "Crystal" was derived from the plentiful quartz crystals found in cavities near the prospects. This same area, occuring on the northwestern margin of the Osgood granite stock, later became the Richmond tungsten property, and crystals may still be found there in cavities in a massive garnet tactite.

By 1878, the name "Crystal" had been abandoned in favor of "Potosi", a then popular name more in keeping with the hopes of the district's miners. The next flurry of activity in the Osgood Range was reported in 1899 when a copper strike on Granite Creek in the southern portion of the range received attention. The copper occurrences were in a granite contact zone, later mined for tungsten as the Granite Creek Mine.

In 1915, a molybdenum discovery was reported from the district with ore containing "18% moly", being reported from the Jacks Mine. No "moly" production was recorded from the prospect, but the name persists as the "Moly" part of the Moly-Tonopah tungsten property.

Tungsten was first discovered in the Osgood Range in 1916, with the first claims being recorded in July of that year. These first tungsten claims were at Granite Creek, and by 1918, most of the presently known tungsten occurrences had been claimed and were under development. This period of tungsten activity resulted from high prices due to wartime demand (WWI). With the end of the war, demand and price dropped, and work on the Getchell tungsten properties ceased without any production being recorded. The properties were maintained, however, and the production on the Granite Creek and

Riley mines was first recorded in 1942 when part of the Getchell Gold mill[1/] was converted to process tungsten ore. In 1945, Union Carbide Corp. (then known as U.S. Vanadium Corp.) entered the district and purchased both the Riley and Richmond properties. The major periods of tungsten production were from 1942 to 1945, and from 1950 to 1957. No tungsten ore has been produced since 1957. Total tungsten production credited to the district is 2,015,804 tons of ore with a calculated average grade of 0.44% WO_3. Of this total production, 574,306 tons originated from properties now under lease to General Electric, and 1,433,472 tons came from properties mined or now controlled by Union Carbide Corporation.

During the period from 1957 to 1975, the tungsten occurrences in the Osgoods received little attention. In 1970, Cypress Mines formed a joint venture with Goldfield Corporation to explore Goldfield's ground for gold. The Cypress staff was encouraged by both the gold and tungsten potential of the Goldfield property, and plans were made to further explore the deposits. Cypress, however, for unknown reasons,

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1/ The Getchell gold deposit was discovered in 1933, purchased by George Wingfield and Nobel Getchell in 1934. Getchell Mines, Inc. was formed to mine this deposit, and production of the Getchell gold mine began in 1938. Getchell Mines quickly purchased all of the fee land covering the gold district (from Southern Pacific Co), and laid mining claims on some of the intervening public sections. Since the Getchell gold occurrence was essentially superimposed on the geologically older tungsten properties, Getchell Mines obtained ownership of most of the tungsten occurrences in this manner - as an unintentional result of their gold acquisition. During WWII, portions of the Getchell gold mill were converted to process tungsten to enable the mill to continue to operate (tungsten was "strategic", gold was not). Later, during the Korean War, the mill actually ceased gold production and again milled tungsten ores. During this latter period, tungsten ores from many other Nevada properties were milled under government contract at the Getchell mill and the resulting concentrates were sent to government stockpiles.

left the district in late 1971 abandoning their gold exploration project as well as any thoughts they may have had of pursuing the tungsten potential.

Cordilleran Explorations (Cordex), a Canadian-backed company, entered the district in 1969 to explore a gold property south of Granite Creek. With the departure of Cypress, Cordex was able to option a portion of the Goldfield property which was adjacent to the Cordex ground. The Goldfield ground obtained by Cordex, and later passed on to John Livermore and Pete Galli, vested representatives of Cordex, also included the Granite Creek, Pacific, and Tip Top tungsten properties. In this manner, a large portion of Goldfield's potential tungsten property passed from Goldfield's ownership. In 1972, Continental Oil Company leased the remainder of the Goldfield ground to explore for gold, opening the door for General Electric's entrance into the district in 1975. In March of 1976, Union Carbide Corp., their interest in the district renewed by General Electric's presence, leased the former Goldfield ground now owned by Galli and Livermore, and began an exploration program.

As it now stands, General Electric has held its Getchell properties for almost three years, and has been active for two of those three; Union Carbide has held their ground for almost two years, and has completed one season of active exploration.

General Electric, through Utah International who is now managing General Electric's tungsten program, anticipates an active program at Getchell during 1978. Union Carbide's plans are unknown.

Postscript:

Carbide left, still owns patented ground

GE-Utah left, after one-two more holes

Conoco (Dupont) purchased the Goldfield ground, removing Goldfield from the district completely

Conoco is now (1983) trying to sell

Humboldt County
Potosi Mining District

CHASE PROSPECT

Location ---------- S4,T38N,R42E
U.T.M. 4,561,400N, 478,500E
Lat. 41°12'15"N, Long. 117°15'30"W
Base map ---------- Osgood Mountains 15' quadrangle (1945)
Tungsten production --- None recorded

The Chase prospect is on the east side of the Osgood Range, about 1 mile south of the Getchell Mill, at an altitude of about 5,600 feet. The property was explored by small trenches and pits in 1943 and again in the early 1950's but no production was reported.

Scheelite and powellite occur in small tactite bodies and sheared argillite along the granodiorite contact. A few feet of ore containing about 0.5 percent WO_3 was exposed by the early development work but the quantity and grade of ore was too low to be profitably mined.

TUNGSTEN DEPOSITS OF NEVADA

Humboldt County

Potosi Mining District

Mine Name: Chase Prospect

Other Names: _____

Location: Sec. 4, T. 38 N. or S., R. 42 E.

U.T.M. 4561100 N. 0478870 E.

Long. _____ W., Lat. _____ N.

Base Map: Osgood Mts. 7½', (15'), 2° Quad.

Tungsten Production: _____ units WO_3

Geologic Type: _____

Description of Deposit: (Geology, mineralogy, mine workings, history, ownership, etc.)

References:

KIRBY MINE

Other names ---------- Fayant & Blaine
Location ---------- S17,T38N,R42E
U.T.M. 4,557,700N, 477,200E
Lat. 41°10'30"N, Long. 117°16'15"W
Base map ---------- Osgood Mountains 15'quadrangle (1945)
Tungsten production --- Estimated 24,000 units WO_3 (1942-43, 1952-53)

The Kirby Mine is on the east side of the Osgood Mountains, about 4.5 miles south of the Getchell Mill, at an altitude of about 6,300 feet. It is near the narrow central part of the granodiorite stock and the main workings are on the south side of the upper valley of Kirby Creek (also called Julian Creek ~~or Ranch Creek~~). The tungsten deposit was known as early as 1917, on claims held by Fayant & Blaine, but it was not mined until 1942 when it was relocated by Mr. Kirby and sold to Getchell Mine, Inc. During 1942-43 Getchell first mined the deposit by 2 glory holes from an adit 315 feet long. The glory holes were subsequently connected to form a single open pit from which ore was loaded by power shovel into trucks. Production during this period was 32,000 tons of ore containing 0.43 percent WO_3 from which about 12,000 units of WO_3 was recovered. The deposit was again mined during the period 1952-53 when an additional 34,600 tons of ore was mined from open pits, yielding another 12,000 units of WO_3 (estimate).

The Kirby ore body is a tabular mass of tactite that lies nearly parallel to the hill slope and is capped by a thin layer of limestone. The outcrops are broad, but the tactite is actually thin, and neither it nor the limestone capping extend more than 60 feet beneath the surface. The deposit ends downward, to the east, against a lobe of granodiorite that cuts across the limestone beds. The haulage adit, 80 feet beneath the lowest outcrop is entirely in granodiorite.

Other bodies of scheelite-bearing tactite occur northeast of the mine, where the creek crosses the contact zone, but the tungsten content is only

in places extends as much as 40 feet out into the limestone. The hillside slopes gently in the same direction as the tactite, thus permitting stripping of overburden from large areas. Drilling has shown that the tactite extends about 500 feet down the dip, and is cut off at the lower end by the Getchell fault zone. This major frontal fault also cuts off the surface extension of the contact zone at the south end of the property.

Four major ore bodies occur in the deposit, through a strike length of 1,700 feet along the contact. These bodies are localized by the lithology of the limestone and by the structure of the contact. Massive, granular, pure limestone adjoining the granodiorite intrusive is favroable to the formation of tactite, whereas the platy, thin-bedded impure limestone is unfavorable. The granodiorite contact is not precisely confomable to the bedding in the limestone for great distances; so unfavorable beds may replace favorable ones along the strike or dip of the contact, and consequently the tabular ore bodies lens out laterally or down the dip. Also, the granodiorite contact in places bends sharply across limestone beds for short distances, creating troughs that plunge eastward and localize ore shoots that are elongated down dip.

In 1945, Hobbs estimated that the indicated and inferred reserves totaled 578,500 tons of ore that would average about 0.7 percent WO_3 and contain about 404,700 units WO_3. These estimates were based on surface exposures and the results of drilling by the U.S. Bureau of Mines. Production from 1945 to 1957 totaled about 430,000 tons of ore that yielded an estimated 280,000 units of WO_3 after milling.

A small tonnage of ore remains unmined below the lowest level of the mine, between that level and the adjacent Riley Extension property line.

ADD

RILEY MINE

Other names ---------- Dernan property
Location ---------- S9,T38N,R42E
U.T.M. 4,559,400N, 478,900E
Lat. 41°11'15"N, Long. 117°15'00"W
Base map ---------- Osgood Mountains 15' quadrangle (1945)
Tungsten production --- Estimated 337,000 units WO_3 (1943-57)

The Riley Mine is on the east side of the Osgood Range, about 2 miles south of the Getchell Mill, at an altitude of about 5,500 feet. The property consists of ~~60~~ 80 acres of patented ground that is part of the Tom Dernan estate. It was leased to Mr. J. E. Riley of Reno in the Fall of 1942 and was developed and operated by him in 1943-44, yielding about 80,000 tons of ore, averaging 0.53 percent WO_3, that was sold to Metals Reserve Co. for the nearby Getchell stockpile. A mill was built on the property in the winter of 1944-45 and an additional 8,000 tons of ore was mined and milled before the property was sold to the U.S. Vanadium Corp. (later Union Carbide Corp.) in October 1945. All of the ore produced to the end of 1945 came from 8 open pits along the outcrop. In 1945 the U.S. Bureau of Mines explored the deposit by 15 diamond drill holes, having an aggregate length of 2,630 feet, and added greatly to the known ore reserves.[1] From late 1945 to 1948 and from 1952 through 1957 the property was operated by U.S. Vanadium Corp. and then Union Carbide Nuclear Corp. with a large production of ore from open pits and underground workings.

The property is along the east contact, between the granodiorite stock and limestone interbedded with argillite. The contact strikes north and dips 30°-60° E., generally conformable to bedding in the limestone. A band of tactite 3 to 20 feet thick is present along much of the contact, and tactite

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[1]Holmes, G. H., Jr., 1946, Exploration of the Riley Tungsten Mine, Humboldt County, Nevada: U.S. Bur. of Mines Rep. Inv. 3947, 7 p.

in places extends as much as 40 feet out into the limestone. The hillside slopes gently in the same direction as the tactite, thus permitting stripping of overburden from large areas. Drilling has shown that the tactite extends about 500 feet down the dip, and is cut off at the lower end by the Getchell fault zone. This major frontal fault also cuts off the surface extension of the contact zone at the south end of the property.

Four major ore bodies occur in the deposit, through a strike length of 1,700 feet along the contact. These bodies are localized by the lithology of the limestone and by the structure of the contact. Massive, granular, pure limestone adjoining the granodiorite intrusive is favroable to the formation of tactite, whereas the platy, thin-bedded impure limestone is unfavorable. The granodiorite contact is not precisely confomable to the bedding in the limestone for great distances; so unfavorable beds may replace favorable ones along the strike or dip of the contact, and consequently the tabular ore bodies lens out laterally or down the dip. Also, the granodiorite contact in places bends sharply across limestone beds for short distances, creating troughs that plunge eastward and localize ore shoots that are elongated down dip.

In 1945, Hobbs estimated that the indicated and inferred reserves totaled 578,500 tons of ore that would average about 0.7 percent WO_3 and contain about 404,700 units WO_3. These estimates were based on surface exposures and the results of drilling by the U.S. Bureau of Mines. Production from 1945 to 1957 totaled about 430,000 tons of ore that yielded an estimated 280,000 units of WO_3 after milling.

A small tonnage of ore remains unmined below the lowest level of the mine, between that level and the adjacent Riley Extension property line.

Humboldt County
Potosi Mining District

RILEY EXTENSION MINE

Location ---------- S4,T38N,R42E
U.T.M. 4,560,000N, 478,800E
Lat. 47°12'N, Long. 117°15'W
Base map ---------- Osgood Mountains 15' quadrangle (1945)
Tungsten production --- Estimated 10,000 units WO_3 (1951-54) — NO

The Riley Extension Mine is on the east side of the Osgood Range, about 2 miles south of the Getchell Mill, at an altitude of about 5,700 feet. Mined from underground workings, starting in 1951, and by open pit in 1953-54. Owned and operated by Getchell Mine, Inc. the principal production was 27,900 tons of ore mined by power shovel from the open pit. — NO — NO

Scheelite bearing tactite occurs along the contact of granodiorite with limestone lenses in hornfels. Three ore bodies have been mined; an eastern body that is a continuation of a body mined in the Riley Mine; another body that was discovered underground about 125 feet west of the Riley ore body and does not crop out at the surface; and the westernmost ore body that was mined from the surface. The tonnage and grade of the ore mined was not reported separately from other Getchell Mines production, but the ore mined from the adjacent Riley Mine during this period averaged from 0.6 percent to 1.0 percent WO_3.

See attached report.
most of prod. was underground

I have marked sections in an old report of mine (1978, to Utah Int.) that may contain info. you would like to use. - please don't write any drill hole No's, assays or grades, just general stuff.
JF.

east of the Getchell fault. Results of this work indicated that a zone of dense rock, interpreted as silicated rock (possibly tactite), was present at depth along the contact.

One core hole was planned to gain geologic information on the zone. The hole was positioned to test the general area where limestones in the nose of the fold would intersect the intrusive. This hole, G-15, was collared in rubble and fault breccia, passed out of the Getchell fault at 230 feet, drilled a section of silicated hornfels with some marble interbeds, and bottomed in granodiorite at 686 feet (See Figure 7). Two intervals of silicated limestone and marble were cut which apparently correspond with the two units charted by surface mapping. The position of the lime intervals in the hole indicates that the dip of the sediments is flattening toward the east, and both sediments and the granodiorite contact dip east at approximately 45°. The Getchell fault, however, seems to be dipping east at 55°, and would therefore cut out the limestone units entirely several hundred feet east of the hole location. Between the Getchell fault and granodiorite, the entire sedimentary section was silicated, with lime sections being largely replaced by wollastonite, and hornfels sections showing spots of cordierite and dissemination and clots of both pyrite and pyrrhotite. Neither of the two limestone intervals showed the presence of tactite or scheelite, however.

It is felt that the one drill hole in this area was well placed, and tested the exploration concept under consideration. No ore indications were found, and sufficient, unexplored space exists in the area to harbor undiscovered ore zones. No further work is recommended for this area.

Riley Extension

The Riley Extension property is located on the eastern edge of the northern lobe of the Osgood stock, in the southern portion of Section 4, T38N, R42E. The name of this occurrence derives from the deposit being the northern extension of ore zones mined on Union Carbide's Riley Mine across the section line to the south in Section 9. The Riley property itself was one of the earliest tungsten properties developed in the district, and produced some 666,800 tons of 0.6% WO_3 ore during its production

periods of 1943-1945 and 1951-1957. Union Carbide's property is essentially mined out to its property lines, but about 70,000 tons of ore are rumored to be left unmined at depth near the eastern property line.

Goldfield Corporation (actually Getchell Mines Inc.) always held the ground to the north and east of the Riley, but Goldfield did not elect to pursue the extension of the Riley ore body which lay within their property until 1951. Between 1951 and 1957, Getchell Mines produced some 229,000 tons of 0.37% WO_3 from the Riley Extension ore body. Mining was done through a 400 foot vertical shaft, and through an inclined winze from the 400 level to the 800 level. Levels were on the incline to follow the inclined contact zone and the 800 level is only about 350 feet below surface. A steel head frame is still in place over the shaft, and the shaft and workings should be in relatively good shape although water now covers everything below the 200 level.

In a report prepared for Goldfield Corporation in 1961, Trollope calculated proven ore reserves remaining in the mine to be 41,700 tons of 0.4% WO_3. These reserves are located between the 400 and 800 levels of the mine, and are felt to be a fair, if not actually conservative, assessment of the proven ore reserves of the Riley Extension.

Geology:

Tungsten-bearing tactite zones at the Riley-Riley Extension deposit formed where lime members of the Preble formation came into contact with, and preferrably embayed, the eastern contact of the Osgood stock. At this point in the district, four limestone horizons have been mapped within the exposed portion of the Preble. The most important of these lime units is the 200-foot thick Riley limestone. This unit is thin-bedded with shaley partings, has been silicated to massive, felted wollastonite in most areas where seen in outcrop, and serves as the host rock for the large tactite ore bodies in the Riley and Riley Extension mines. Down section (or to the west) of the Riley lime, three additional limestone units have been mapped. At least two of these have been mineralized, and have produced tungsten ore. The "West Vein" of the Riley Extension represents one such unit, and the lenticular tactite body mined in the Riley Extension pit represents another. At surface within the Riley Extension property, this and 2

other limestone beds are well exposed. The important Riley limestone crops out in one small area between the southern property line and the ravine west of the Riley Extension shaft, but north of this point the unit is obscurred beneath a fault block.

The sedimentary section displays gentle, low-amplitude folding along its outcrop from south to north, and the sediments generally dip from 30° to 60° to the east.

The granodiorite contact is generally conformable to both strike and dip of the intruded sediments. At the south end of the Riley property, the contact and conformable Riley limestone both strike northwest and dip 50° to the northeast. At approximately coordinate 7600 north, the sediments are intersected by a pre-granodiorite, northeast-trending structure which cuts and offsets the sediments to the northeast. Granodiorite apparently intruded out along this structure in the form of a dike. Beyond this point, the main granodiorite contact swings west across bedding, forming a crescent-shaped outcrop which again swings northeast on the ridge above Hansen Creek.

The granodiorite has metasomatically altered all of the intruded sediments, but the effects are most pronounced in the limestones. Where the Riley lime is in direct contact with the intrusive, a layer of garnet tactite 5 to 50 feet thick has usually formed. This zone, when also mineralized with scheelite, formed the ore bodies at the two mines. Moving up section, away from the contact, garnet rock grades into dense, wollastonite-rich rock which in turn grades into bleached marble. The wollastonite zone usually contains scattered blebs and pods of garnet, and the marble zone contains patches of wollastonite, bearing out the concept that silication is gradual and becomes less intense as distance from the contact increases.

Three major sets of structures have been mapped within the limits of the Riley-Riley Extension properties. The oldest of these structures is inferred to have pre-dated intrusion of the granodiorite and may have actually influenced the shape of the contact and controlled emplacement of the northeast-trending dike exposed in the underground workings of the Riley Extension. This structure cuts through at an angle of approximately north 40° east, forming the north boundary of the Riley Extension ore shoots. As seen from surface geologic mapping, the sedimentary section is offset

across this feature, and the Riley limestone is inferred to have been offset to the northeast across it. This break not only offset the lime section, but also provided access for emplacement of the Riley granodiorite dike and may have provided access for tungsten-rich mineralizing fluids to travel from the granodiorite into the reactive sediments. The cross-cutting dike contact may also have served as a structural trap which served to concentrate the mineral-bearing fluids into an ore zone which appears to follow the dike-limestone contact to the northeast. Other northeast-trending structures with corresponding offsets have been mapped north and south of the Riley-Riley Extension area. These structures may pre-date the intrusive, or may be contemporaneous with it reflecting forceful intrusion where the sedimentary blocks were pushed aside to make room for the intruding granodiorite mass.

Other structures mapped in the area are post-intrusive, but at least initially pre-date the Getchell arsenic-gold deposits and may be associated with uplift responsible for formation of the present mountain range. One such fault zone can be traced from the Riley property line north to the north end of the Riley Extension. The feature appears to merge into or be cut by the main Getchell fault zone on both its north and south ends. This feature is felt to be a simple gravity slide feature which cross-cuts bedding in the sediments at a small angle. The feature post-dates the granodiorite intrusion, since wollastonite-rich rocks have been cut and rotated out of their normal position by the fault. This fault is probably related to the main Getchell fault, and represents an area where a block of ground has slid down to the east into the Getchell zone in response to movement on the Getchell itself. Drilling results have given insight to the relationship of this fault zone to the main Getchell. On Section RE-2, only half of the Riley limestone section was present below the fault, but on Section RE-4, the fault was not cut, and the full Riley section was found to be present. On Section RE-1, again no footwall fault was cut and the full Riley section is present. The structure (footwall fault) merges into, or is cut by, the Getchell fault west of the G-4, G-5 drill intersections, and the fault must flatten to the east as would be expected with a gravity or slump feature.

The major structural feature of the east side of the Osgood range is the Getchell fault system. The system is composed of from one to three main fault strands, with more parallel strands inferred to exist under alluvial cover to the east. The Getchell zone is a curving, sinuous fault zone which strikes generally north-south following the east foothills of the Osgood range. Where exposed in outcrop or mine workings, the Getchell is characterized by a wide crushed zone composed of slickensided hornfels and shale, black, carbonaceous clay gouge, fragments of altered limestone, and rather persistant but erratic arsenic-gold mineralization. The fault zone appears to conform to the dip of the Preble sediments in many areas, but drill information indicates that the zone may steepen to the east and cross-cut bedding (See Sections RE-1 and RE-4). At the south end of the Riley property, the fault zone actually intersects granodiorite, but this fact is believed to be due to the sedimentary rocks striking into the fault, then again being offset to the east, allowing the fault to pass into granodiorite.

Tungsten mineralization at the Riley-Riley Extension is entirely confined to tactite formed in the Preble limestones. Tactite appears to have formed in certain areas along the contact in response to subtle, local controls, and the thickest sections of garnet tactite formed only where the Riley limestone member of the Preble is in direct contact with the intrusive. Where hornfels is in direct contact with granodiorite, any overlying limestones are usually silicated, but tactite is either thin or not formed at all. As can be seen from Riley and Riley Extension underground geologic maps, tactite ore shoots appear to have formed where limestone was embayed into granodiorite, possibly where the granodiorite was emplaced around the points of synclinal folds.

In the Riley Extension, several distinct ore shoots have been mined from surface down dip to the lowest levels of the mine. These zones have the shape of fans, concave to the east, whose apexes dip to the east. To the south, along the down-dip extension of the Riley Mine, the granodiorite contact appears to be dipping east at a steeper angle than is the limestone section, with the net effect of the granodiorite

dipping down, away from the favorable limestone and putting hornfels on the contact. To the north, as shown on Sections RE-1 and RE-5, this situation is again in evidence. The granodiorite contact is below the base of the Riley limestone section, and an increasing thickness of hornfels is appearing on the contact. Tactite is thin or entirely absent in these areas and little, if any, economic potential exists to the east of them. In other areas along the Riley-Riley Extension contact, however, the reverse of this situation may exist, and a temporary flattening of the granodiorite dip appears to be allowing granodiorite to move up-section, back into contact with the Riley lime. This situation can be seen on Sections RE-2, RE-4, RE-6 and RE-7.

Exploration Program:

In addition to surface geologic mapping and extensive study of old maps and records, exploration work at the Riley Extension has consisted of drilling six deep core holes to test downward extensions of tactite bodies exposed in the old workings and to test other favorable areas developed from study of the property. One seismic survey line was also conducted across part of the property to test for the presence of tactite beneath the Riley Extension pit, and down-dip beneath limestone outcropping between this pit and the main mine area. The seismic data was not exceptionally conclusive, and was of no real value in planning the drill program.

The first Riley Extension drill hole, G-1, was drilled at 8200 North, 6414 East to test a potentially favorable area along the projected down-dip extension of the Riley limestone contact with the northeast-trending, granodiorite-filled structure which appears to limit the Riley Extension property on the north. Hole G-1 cut 4.9 feet (true thickness) of tactite assaying 1.34% WO_3 at a depth of 468.5 feet below surface. The tactite is separated from granodiorite by 4.5 feet of hornfels. Hole G-5 was drilled east of G-1 at 8437 North, 7063 East and G-14 was drilled north of G-1 at 8813 North, 6847 East to test the extent of the G-1 tactite zone. G-5 intersected 0.9 feet of tactite containing 0.39% WO_3 at 872 feet, followed by 4 feet of hornfels and intersected granodiorite at 877 feet. Although the tactite was thin, it was mineralized proving that mineralized tactite extends to this depth, 700 feet

Humboldt County
Potosi Mining District

TONOPAH MINE

Other names ---------- Moly, Moly-Tonopah, Jacks
Location ---------- S33,T39N,R42E — see attached sheet.
U.T.M. 4,562,100N, 478,500E
Lat. 41°12'45"N, Long 117°15'30"W
Base map ---------- Osgood Mountains 15' quadrangle (1945)
Tungsten production --- Estimated 8,000 units WO_3 (1950-56)

The Tonopah Mine is on the east side of the Osgood Range, about 1/2 mile south of the Getchell Mill, at an altitude of about 5,700 feet. The property was explored in 1943 by an open pit dug with a power shovel but the tungsten content of the tactite was too low to justify mining at that time. In 1950-51 and again in 1955-56 the Getchell Mine, Inc. mined 24,600 tons of ore from an open pit and treated it in their nearby mill. Underground workings were developed in 1953.

The Tonopah pit is on a scheelite-bearing tactite zone, that is about 1,000 feet long, along the east side of the granodiorite stock. Tactite extends down dip in tabular bodies that are continuous to at least the 500-foot level.

Attached segment of 1976 report to Utah Int contains some geologic observations which may be of use in your description

TUNGSTEN DEPOSITS OF NEVADA

Humboldt County

Potosi Mining District

Mine Name: Moly - Tonopah

Other Names: Moly; Tonopah, Jacks

Location: Sec. 32 33, T. ____ N. or S., R. ____ E.

U.T.M. 4562550 N. 0478200 E.

Long. ____ W., Lat. ____ N.

Base Map: Osgood Mountains 7½', (15'), 2° Quad.

Tungsten Production: ____ units WO_3

Geologic Type: ____

Description of Deposit: (Geology, mineralogy, mine workings, history, ownership, etc.)

UTM is for approx center of M-T pit.
- Tunnel is now destroyed by ground slump into Getchell South pit.

References:

1. Hole northeast of G-4, to define the down-dip extent of the G-4 ore shoot, hole should be near 8000 North, 6900 East, and would need to be at least 700 feet deep.
2. Hole north of G-1, G-5, at approximately 8530 North, 6820 East, to test the area between G-1, G-5 and the projected northeast-trending structure. This hole would need to be 850 to 900 feet deep.

Moly-Tonopah

The Moly-Tonopah portion of the Getchell tungsten district lies immediately east of the large South Pit gold occurrence and is in the east half of Section 32 and west half of Section 33, T39N, R42E. The name used herein was derived from two names applied to separate areas of the same deposit. The Moly tunnel and Moly workings are on the southeast side of the occurrence, in the footwall of the gold pit. The original workings on the Moly are are among the oldest in the district, dating back to the 1915-era Jacks Mine on the same property. The Tonopah name was applied to the north end of the deposit where a small open pit was started in the early 1940's.

Due to its low grade, and the presence of molybdenum, production from the Moly-Tonopah was not high. No production is credited to the 1915-1951 period, although old underground workings give evidence of some rock having been mined. Between 1951 and 1957, the (Moly)-Tonopah is credited with producing 42,900 tons of 0.29% WO_3 ore. Trollope, 1961, calculated "proven" ore of 144,000 tons of 0.46% WO_3 and "inferred" ore of 171,000 tons of 0.36% WO_3 giving a total, initial reserve figure for the property of 345,000 tons of 0.37% WO_3. This tonnage lies between surface and the "650 level" of the old mine, the 650 level being approximately 300 feet below surface.

Geology:

The Moly-Tonopah occurrence covers the Osgood granodiorite-Riley limestone contact in the footwall of the Getchell South Pit. At the south end of the South Pit, granodiorite extends into the Getchell fault and is cut and offset by it. Midway along the pit, the contact swings to the west, away from the fault, and the Riley limestone moves into and occupies the footwall side of the fault. This is the first

outcrop of Riley limestone north of the Riley Extension. Here the Riley unit appears to be thicker than at the Riley-Riley Extension area, and it contains thicker and more numerous shaley interbeds. The sedimentary section, along with the generally conformable intrusive contact, strikes northwest at the Moly-Tonopah and the beds dip 30° to 45° to the northeast. On the north end of the contact, the intrusive turns sharply west, forming a deep embayment before again turning north along the slope west of the Center Pit. The western embayment extends west a sufficient distance that the hornfels unit underlying the Riley lime is exposed on the contact, but limestone again comes onto the contact to the north.

North of the east-west ravine that separates Moly-Tonopah hill from the hill slope west of the Center Pit, the intrusive contact trends north, then abruptly swings east, forming a thin, dike-like projection across the sedimentary section. South of this feature, the northwest-trending lime section can be projected into contact with the dike somewhere on the slope north of the ravine. To the north of the dike, the section appears to be offset, with the main lime units having been moved west across the structure. Although details of the geology of this area are not known (colluvium covers the slope, masking surface outcrops), this feature could be another major offset similar to those features noted to the south at the Riley and Riley Extension properties. Further to the north, up the hill, the lime section disappears completely and outcrops are composed mainly of hornfels. To the northeast, in the footwall of the Center Pit, a thick limestone unit can be seen emerging from the Getchell fault zone and crossing into the footwall. If this thick lime is the Riley unit again reappearing, its offset can be explained by yet another major northeast structure which has offset the section to the east. This last bit of lime section, however, is beyond the north border of the intrusive, so no contact relation exists.

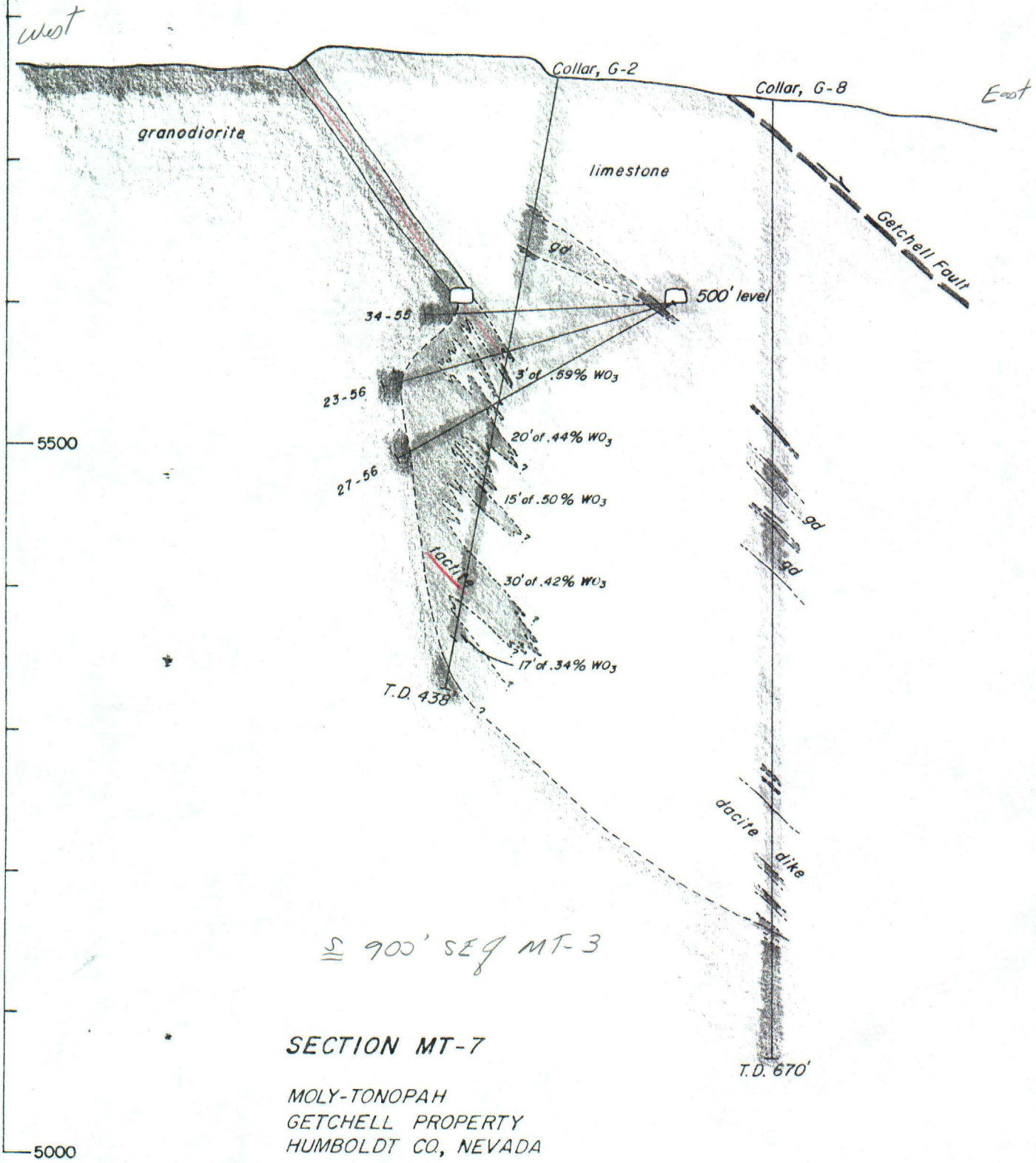
An interesting feature within the limestone section was noted from core obtained during drilling. The feature, seen in holes G-6, G-8 and G-9, is a thick breccia zone in limestone which has been silicated after brecciation. The zone is 50 to 60 feet thick, usually has fault boundaries, and has a mottled appearance due to dark

silicate minerals forming around the breccia fragments. The breccia zone appears to correlate in all three holes, but it does not occur at the same point within the lime section in each hole. This would indicate that brecciation was due to faulting, and was not a feature of the original sedimentation. The drill holes within which the brecciation was seen are those holes drilled closest to the Getchell fault and it is felt the breccia may be evidence of a much older, pre-intrusive period of faulting on that structure.

Limestones at the Moly-Tonopah have been silicated near the granodiorite, and display the same zonal silication present at the Riley Extension and at other tungsten occurrences within the district. Tactite is present along the entire length of the Moly-Tonopah contact, but the thicker sections appear to have formed at rolls and indentations in the contact.

At the Moly-Tonopah, the tactite formed has a different appearance from that at most of the other properties within the district. It is banded, is much finer grained, and is higher in sulfides. The best ore zones seen are composed mainly of fine-grained garnet, epidote, and quartz, with large clots of pyrite, pyrrhotite and molybdenite present in addition to scheelite. Away from the contact zone, up section to the east, tactite gives way to silicated limestone interbedded with calc-silicate hornfels, then to bleached, marbleized limestone.

At depth beneath the Moly-Tonopah outcrop, the contact dips east, then reverses and dips west, then again reverses to resume the dip to the east which is then maintained. Where the western dip cross-cuts limestone, thick sections of tactite have formed. The tactite bodies, however, tail out down-dip, and the resulting ore shoot is a tactite lense along the contact with one boundary smooth and parallel to the contact and the other boundary jagged and irregular down-dip away from the contact. This can be seen on Sections MT-7 and MT-8. To the east, down-dip, the contact drops below the favorable lime section, and the potential ore zone is limited by this condition. This boundary occurs somewhere east of the G-9 intersection, and west of G-6. (See Section MT-4).



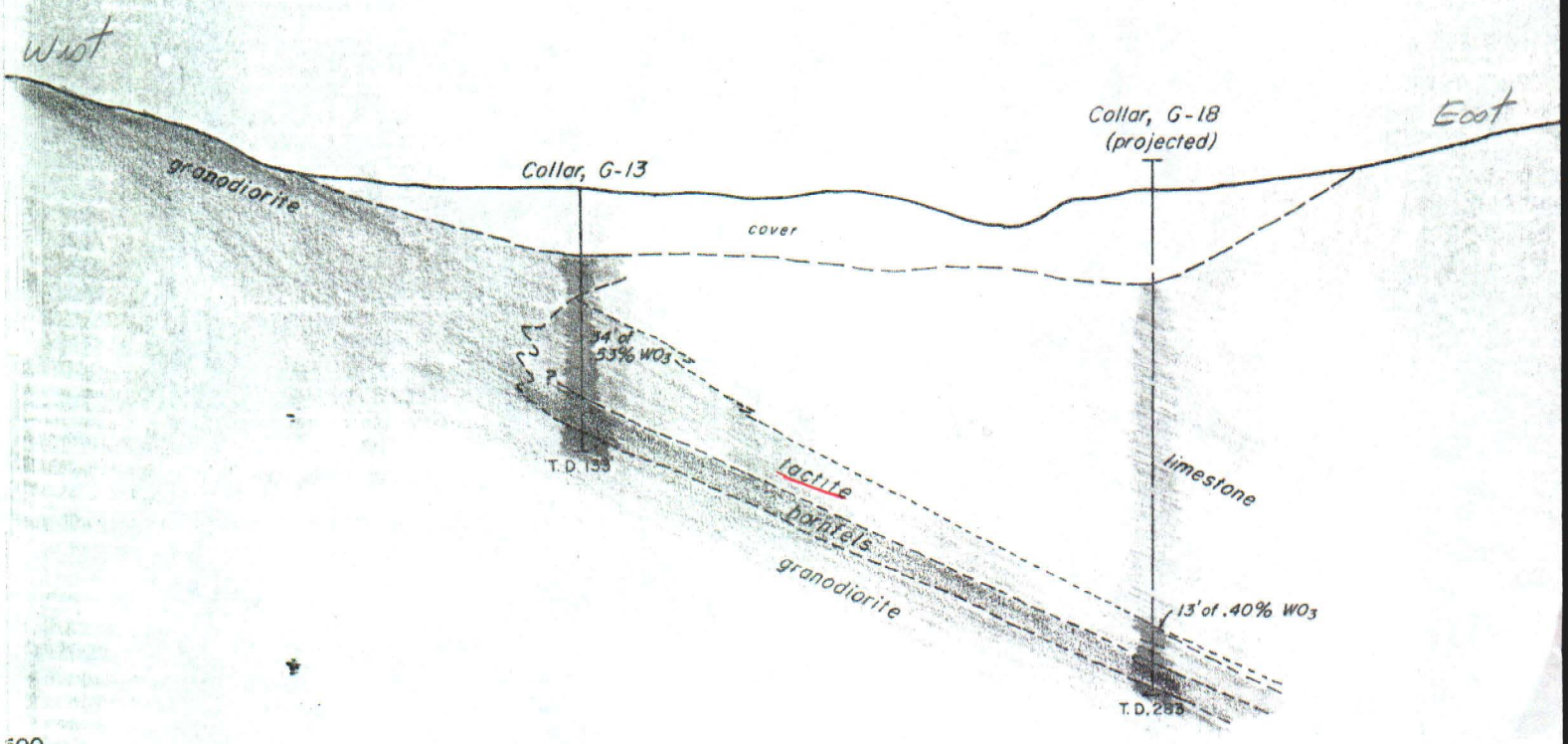
≅ 900' SE of MT-3

SECTION MT-7

MOLY-TONOPAH
GETCHELL PROPERTY
HUMBOLDT CO, NEVADA
Scale: 1" = 100'

N 45° E section

Plate 4G



≤ 900' N W ∫ See MT-7

See MT-3
Moly-Footpads

N45°E section

1"=100'

Getchell Group Mines

	Estimated Production
~~Getchell Good Hope~~	
Getchell Sec. 5 Pit	?
Alpine	25,000 units
Granite Creek (Tip Top)	70,000 "
Kirby	24,000
Marcus	10,000
Pacific	150,000
Tonopah	8,000
Riley Extension	10,000
Top Row	900
	297,900

Total Output of District to 1947 was 182,540 units from 424,000 tons of ore.

Production	Tons Mined	Purchased	Grade	(Units) Conc. Shipped
1952 -	115,464	16,007	0.39	47,210
1953 -	128,295	~~0~~	0.35	35,598
1954 -	47,611 (OP) 144,089 (UG)	—	0.27	47,901
1955 -	183,205	—	0.3 ·	52,865
1956 -	202,000	—	0.55	68,617
1957	56,020	—	0.40	—
1958	0	—	—	22,552
1959	0	—	—	—
	876,684	16,007		274,743
				24,125
1961			0.3	561
1962				299,429

900,000 OR ITS
(1 – 460,000
RA. MINE

	Units
Bloody Run Mine –	270
Golconda –	84,080
Saddle	113
Potosi Dist. –	800,000
Ch. Hill –	2
Gr. North.	34
Ledger	156
Badger	51
Gold. Sch.	3
Ashdown	16
Defense	3,800
Last Chance	5
Total	888,450

PRE 1952 — NON GRETCHELL MINES

100	MTN. QUEEN
14,000	RICHMOND
57,855	RILEY
13,063	VALLEY VIEW
84,028	

182,540 DIST
84,028 NON GRETCHELL
98,512 GRETCHELL
299,429 "
397,941

398,000 UNITS GRETCHELL GROUP MINES
401,126 " NON-GRETCHELL " "
799,126

NON GRETCHELL

10,746	MTN. KING
600	MTN. QUEEN
15,100	RICHMOND
337,000	RILEY
37,680	VALLEY VIEW
401,126	

Potosi District Mines

✓	Alpine	G
✓	Chase	
✓	Durfee	
✓	Eyraud	
✓	Getchell Sec. 5 Pit	G
✓	Granlor Creek (Tip Top)	G
✓	Kirby	G
✓	Knight	
✓	Marcus	G
✓	Mountain King	
✓	Mountain Queen (T.N.T.)	
✓	Pacific	G
✓	Richmond	
✓	Riley	
✓	Riley Extension	G
✓	Tonopah	G
✓	Top Row	G
✓	ValleyView	

Riley's Lease (Dernan tungsten property), Humboldt County, Nev.

By S. E. Clabaugh and S. W. Hobbs

July 5, 1943

The Dernan property consists of 60 acres of patented ground in the northern part of sec. 9, T. 38 N., R. 42 E. in the Potosi mining district, Humboldt County, Nev. It is part of the Tom Dernan estate. The property was leased to J. E. Riley of Bishop, Calif. in the fall of 1942. It is located 2 miles south of the Getchell mill in the low foothills on the east side of the Osgood Range, and very little road construction has been necessary to make the deposit easily accessible. There has been little or no production from the property, but in May 1943, Riley had broken and stockpiled several hundred tons of ore. Two open pits in ore had been started, and Riley had a power shovel, trucks, compressors, and other equipment on the property. Active production of ore awaits completion of plans to operate the Getchell mill as a custom tungsten mill for Metals Reserve Company. If this cannot be arranged, it is reported that Metals Reserve Company will purchase and stockpile the ore locally.

In addition to the two open pits, there are several short adits and numerous pits and trenches on the property. The tactite has been extensively sampled in the past by several engineers, including C. M. Heron and J. H. Eggers. Copies of their sample results were in Riley's possession, and he kindly made this information available to the writers.

Geology

The Dernan property is located on the eastern margin of a granodiorite stock. The geology of the area is shown by the map and sections, figure 11.

Limestone occurs adjacent to the igneous rock, and the limestone-granodiorite contact dips 30 to 60° to the east. Bedding of the limestone is generally parallel to the contact, and a band of tactite 3 to 20 feet wide usually occurs against the granodiorite. The trace of the contact is roughly north-south, but it is not a regular line. The hillsides slope gently in the same direction as the dip of the contact, and topographic irregularities combine with "rolls" in the contact to give the tactite zone a zig-zag trend. Because the dip of the tactite layer is only slightly greater than the slope of the surface, the outcrop width is much greater than the true thickness of the tactite. The richest tungsten ore is located in two small valleys which follow marked breaks or "rolls" in the contact zone. This suggests that certain irregularities of the contact localized the mineralization. The general trend of irregularities of the contact suggest that ore zones may pitch to the northeast down dip, but continuity and regularity of ore bodies are not to be expected in this type of deposit.

A few exposures of sheared argillite in the stream valleys and in a short adit 500 feet southeast of Riley's south pit indicate that a north-south fault zone occurs about 300 feet east of the tactite band. This is the wide fault zone in which the Getchell gold ore occurs to the north. At the Getchell mine the fault has a dip of about 60° to the east. The average dip of the tactite zone on the Dernan property is less than 60°. Therefore it is probable that the fault cuts across the tactite zone at depth.

Ore bodies

Riley's two open pits are located on the north sides of the two small valleys in which the best ore occurs. The north pit is at the lower end of a tactite body which is exposed for a distance of over 100 feet, and which has a true thickness of about 10 feet. On the south side of the valley in which the pit is located, there is an adit which follows the granodiorite-tactite contact for about

50 feet. There are good exposures of tactite above the adit. It is estimated that the tactite exposed by the adit and by outcrops and pits within 100 feet south of the adit contains an average of 0.4 percent WO_3. The tactite in and adjacent to the north pit contains 0.4 to 0.6 percent WO_3. Small areas of the tactite contain much more scheelite than the average, and certain layers contain also variable amounts of bismuthinite, sphalerite, and molybdenite.

Beginning 250 feet northwest of the north pit, there is a band of tactite exposed at intervals for 300 feet. This band varies from 2 feet to 10 feet in thickness, some of the tactite is barren, but other portions contain as much as 1.5 percent WO_3. It is estimated that a 4-foot width of tactite carries an average of 0.4 percent WO_3 throughout a distance of 150 feet.

The tactite layer exposed in the south pit is between 15 and 20 feet thick. It outcrops for a distance of 120 feet up the hillside west of the pit, and for 100 feet of this distance the average WO_3 content is about 0.7 percent. The tactite between the north and south pits contains very little scheelite except in the vicinity of the two pits. A rather thin layer of garnet rock parallel to the surface forms a prominent outcrop area south of the south pit, but about half of the rock is nearly barren of scheelite, and the average thickness is probably not more than 3 to 8 feet. Smaller zones of tactite with scheelite are partly exposed by pits several hundred feet southeast of the south pit, but no ore body of importance is indicated there.

Reserves

It is estimated that the two larger pits, the adit, and the outcrops described above block out 18,600 tons of measurable ore (0.4 to 0.8 percent WO_3) containing 9,300 units of WO_3. Another 20,000 tons of ore containing 9,000 units is indicated adjacent to the areas of tactite outcrop. An additional 72,000 tons of ore containing 30,000 units of WO_3 is inferred. This inferred ore is calculated on the assumption that each of the known ore zones extends down dip about 250 feet

beyond the lowest surface exposures. The limit of projection of known bodies (250 feet) was chosen because it corresponds with the lowest level which can be reached from the surface by relatively short adits (200 to 400 feet long). There is no reason to doubt that these or similar ore shoots extend to greater depth.

Recommendations

It is recommended that the U.S. Bureau of Mines explore the downward extent of ore zones on the Dernan property. The surface extent of ore shoots has already been adequately delimited by sampling. Downward extension of the ore bodies can be tested either by adits at shallow depth or by short diamond drill holes, since the dip of the tactite zone is only 20° to 40° greater than the slope of the hillside. A relatively inexpensive exploration program will probably test the existence of 50,000 to 70,000 tons of ore. The areas for which exploration is recommended are marked on the map, figure 11. At an elevation of 5,500 feet, 100 to 300 feet of crosscut will be necessary to reach the ore zone. Drill holes located so as to intersect the ore zone at elevations between 5,450 and 5,500 feet will average slightly more than 100 feet in length (see sections, fig. 11). If an exploration program is successful, it may be desirable to locate the ore shoots at greater depth than is suggested by the diagrams.

It is not essential that this exploration be done immediately. Production during the next year is assured by ore in sight. About 10,000 to 20,000 tons of 0.4 to 0.7 percent WO_3 ore can be mined cheaply and rapidly from the surface, and an equal amount more can be exposed by stripping a relatively thin limestone cover.

cc: Nolan (2)
Allaman (Burs) (1)
G. Allen " (1)
Hobbs (1)
Clabaugh (1)
Saxby (1)

S. E. Clabaugh

S. Warren Hobbs

U.S. Geological Survey
July 5, 1943.

mailed 2/25/55

Geologist's Contribution to Report of Examination

DMEA-3609 (Tungsten), TNT Inc.
Mountain Queen Claims
Humboldt County, Nevada

by R. M. Smith

CONCLUSIONS AND RECOMMENDATIONS

The tungsten ore bodies on the Mountain Queen claims are pods of disseminated scheelite in zones of silicated limestone or tactite within lenses of metamorphosed limestone. The limestone lenses are erratically distributed and discontinuous. Where these lenses are cut by a granodiorite contact small ore bodies result. Reserves of a few hundred tons of measured and indicated ore and 4,000 tons of inferred reserves averaging 0.5 percent WO_3 are estimated on the Mountain Queen No. 6 claim. The ore reserves justify a small DMEA exploration program although the chance of a significant discovery is small. It is recommended that a project consisting of two 300-foot diamond drill holes be approved.

GEOLOGY

The Mountain Queen claims lie on a granodiorite contact at the north end of the Osgood Range. The sedimentary rock in this part of the range is principally shale of Middle Cambrian age, containing a few quartzite and limestone beds as much as 200 feet thick and a few discontinuous limestone lenses. These rocks have been intruded by a granodiorite stock about 8 miles long and 2 miles wide which forms the core of the range. Near the contact the shales have been metamorphosed to hornfels and the limestones have been silicified or metamorphosed to tactite. Most of the tactite bodies contain

scheelite and a few of large tungsten deposits and several smaller ones border the stock./

/ Hobbs, S. W. and Clabaugh, S. E., 1946, Tungsten deposits of the Osgood Range, Humboldt County, Nev., Univ. Nev. Bull. Vol. XL, No. 5, Pl. 1.

The Mountain Queen claims cover a section of the contact along the northwest side of the granodiorite. In this area the metamorphic rocks are argillaceous hornfels which contain discontinuous lenses of limestone and limy hornfels. In general the bedding strikes northerly and dips steeply and the beds are truncated by the granodiorite, but on the Mountain Queen No. 6 claim bedding in almost all attitudes has been observed, and it is unsafe to project strikes or dips more than a few feet.

ORE DEPOSITS

Scheelite showings on the Mountain Queen No. 5 claim examined in 1954 in response to application DMEA 3203, are the same ones described herein, but restaked as Mountain Queen No. 6.

The ore body revealed in the open pit on the Mountain Queen No. 6 claim is a limestone lens about 50 feet wide and 100 feet or more long which occupies an embayment in the granodiorite (Figure 2). Parts of the limestone contain disseminated pyrite, other parts contain disseminated scheelite, but the best ore is a lens about 5 feet wide of silicated limestone which contains both scheelite and pyrite. In a few places scheelite also occurs finely disseminated in hornfels near the granodiorite contact.

The limestone is not everywhere mineralized with scheelite. The ore that has been mined is reported to have come from a horizontal layer about 20 feet below the surface. The ore body trends generally north and is surrounded by a halo of gossan-like material composed of iron oxide and silica, which is called "capping." This "capping" appears to underlie, overlie, and cut through parts of the ore body. Scheelite ore is reported to have cropped out on the surface above the pit in a very small showing. (DMEA 3203, Sample BM532.) Most of the ore has come from the bottom 6 or 8 feet of the pit, and two 18-foot vertical drill holes in the bottom of the pit are reported to be all in ore averaging .5 percent WO_3 or better.

The best ore that was mined contained from 1 to 1.5 percent WO_3. Total production from this pit is said to be about _____ tons averaging _____ percent WO_3 which grossed about $15,000.

ORE RESERVES

Measured reserves of a few tons averaging 0.56 percent WO_3 are revealed around the edge of the pit on Mountain Queen No. 6 claim, and indicated reserves of a few hundred tons may be found below the pit. The ore body may extend to a depth of 100 feet below the pit in a block 50 by 100 feet, and assuming a tenth of this block is ore then 4,000 tons averaging 0.6 percent WO_3 is inferred.

PROPOSED EXPLORATION

The applicant had no firm proposal for exploration and stated that he wanted the examining geologist and engineer to propose an

exploration program for him. He did, however, suggest drilling diamond drill holes through the granodiorite contact to test the downward and lateral continuation of the ore body mined in the Mountain Queen No. 6 pit. His reason for suggesting this was his belief that 80 percent of the contact of the Osgood stock consists of tungsten ore, ~~but~~ drilling random holes aimed simply to cut the contact without geologic evidence of ore bodies at depth is not justified.

If a section of the granodiorite contact could be found where the strike and dip of the limestone beds are parallel with the contact, then a target for exploration might be inferred, but this parallelism is not likely as bedding planes in all attitudes are observed in the immediate vicinity of the area of proposed exploration.

The method suggested by the applicant is a sound one to test the downward continuation of the ore body mined in the open pit. Considering the erratic nature of tungsten deposits such a project qualifies as exploration.

These considerations were discussed with the applicant who revised his drilling proposal to a less ambitious program consisting of two 300-foot drill holes (fig. 2) to cut the ore zone about 100 feet below the pit.

Current mining operations are being conducted on a deposit on adjoining land owned by the Southern Pacific Railroad which is west of the Mountain Queen claims and is under lease to the applicant. The applicant reports that this deposit is not eligible for a DMEA loan because the owner will not sign a Consent to Lien.

COPY

OFFICE PRELIMINARY MEMORANDUM

VALLEY VIEW TUNGSTEN

Harold's Club

Summary:

The Valley View Tungsten Mine is in Humboldt County, Nevada, on the east flank of the Osgood Mountains and about 7 miles southeast of the Getchell tungsten mill. Ore is present along the contact of granite and limestone, in a zone of garnetized limestone. An estimated 27,000 tons of 0.75 percent WO_3 is present in this zone.

Introduction

The property was examined on April 14, 1943, by an engineer of the U.S. Bureau of Mines. The claims are in Section 20, T. 38N., R. 42 E., M.D.B.&M., Humboldt County, Nevada. To reach the property drive 21 miles northeast from Golconda on the "Getchell Mine" road, turn left on dirt road and go 1.3 miles to the mine.

The Valley View, Toby Lode, Toby No. 1, and Valley View Fraction claims are controlled by the Harold's Club Mining Company, Reno, Nevada.

Ore produced from this property will be milled at the Getchell Mines custom tungsten mill.

History:

No tungsten ore has been produced from this property. The underground development was done by prospectors searching for silver ore. The claims are known locally as the "Saunders Group".

Physical Features

The property is situated in the foothills of the Osgood Mountains. Water sufficient for camp and mine use flows across the claims from a spring. No timber suitable for mine use stands near the mine.

Memorandum:

The present road to the southerly workings of the property is a dirt truck road constructed by the Harold's Club Mining Company. A truck road has been completed nearly to the northerly workings. These roads are impassable in wet weather, due to slippery mud.

Mine plant in April 1943, consisted of a new Sullivan 365 cubic foot compressor driven by a caterpillar Diesel engine, jackhammer, and accessory equipment. Work on construction of ore bins and compressor house was in progress.

Living Conditions

No camp facilities of any kind are located on the property. The present crew are living at a nearby ranch.

Description of the Deposits

Tungsten is present as scheelite along the contact of granite and limestone. This contact trends north-south, and dips approximately 55 degrees to the east. At and near the contact the limestone is metamorphosed into a massive zone of garnet. This zone contains nearly all the scheelite. Traces of copper carbonates, pyrite, and silver are also present. The scheelite bearing zone is from one foot to 30 feet wide. Scheelite is present in commercial quantities in widths of one to fourteen feet. The average will be three feet or more depending on the grade of ore shipped. Some scheelite is present in a fault gouge east of the garnet zone, but no commercial grade ore was found in this material.

The deposit is developed by adits and surface pits and trenches. The main adit is 198 feet long, all on the contact. The south adit is caved. This entry is reported to have been 75 feet long, and this length is indicated by the dump. Ore containing scheelite was panned from this dump and is estimated to contain slightly over 1 percent WO_3. Thirty one hundred feet north of these workings another short adit has been driven on the contact, and scheelite is present in commercial quantities.

The Ore

The ore is composed of garnet, calcite, epidote and scheelite. Scheelite is present in small grains, garnet is both massive and crystaline in habit, epidote is in small crystals, and calcite is present filling the spaces between the other minerals. This ore would be difficult to concentrate by gravity methods, due to the small grain size of the scheelite and the large amount of garnet. It is believed that the flotation process used at the Getchell mill on similar ore will yield a high recovery of scheelite.

Ore Reserves

The development work is not sufficient to calculate any large tonnage of positive ore. Ore is indicated by surface trenches and pits and two short adits, in the amount of 27,000 tons. This ore is estimated to contain 0.75% or more of WO_3, a total of 20,250 units of WO_3, valued at $395,000 after milling and treatment charges. A larger tonnage of geological ore is inferred.

Plan of Company Operation

The Harold's Club Mining Company plan to drive north and south on the southern adits and to start stoping as soon as enough ore is developed. The mining method will depend on the width of ore found. In some wide areas the plan is to "Glory Hole" and in the narrow localities small stopes will be used. The cost of mining will depend on the method used and on the grade of labor available. The average is expected to approximate $6.00 per ton. The cost of trucking to the Getchell Mill will be $0.70 per ton for small shipments, to $0.50 per ton for large shipments.

Conclusion

An important tonnage of commercial grade ore is indicated by surface trenches and short adits. The Valley View Mine is located 7.3 miles from the Getchell custom mill, which provides an immediate market for tungsten ores.

The Harold's Club Mining Company preparing to mine the ore, is a progressive and well-managed concern, with a good reputation and record for production.

Recommendations

The present plan of company operation is believed to be justified by the indicated ore. The road requested by the Harold's Club Mining Company is recommended for approval and work should be started as soon as possible, so that a steady supply of ore from this mine can be trucked to the mill.

(136)
Idem 60

Potosi Dist.

Humboldt County

Osgood Range

A detailed description of tungsten mineralization in the Osgood Range, with maps, has been given by Hobbs and Clabaugh,[1]

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[1] Hobbs, S. W., and Clabaugh, S. E., Tungsten deposits of the Osgood Range, Humboldt County, Nevada: University of Nevada Bull., vol. 40, no. 5, Geol. and Min. Ser. No. 44, 32 p., 1 fig., 11 pls., 1946.

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and the following material is largely abstracted from their report, supplemented by some additional observations made by Hobbs.

The Osgood Range is in eastern Humboldt County, northeast from Winnemucca, and most of it is shown on the topographic map of the Osgood Mountains quadrangle. The tungsten occurrences are in the northern part of the range, and all are within 10 miles of the Getchell gold mine, which is 27 miles by road northward from Golconda.

Scheelite occurrences in the area were prospected during World War I,[1] and the contact zones had been previously prospected for

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[1] Hess, F. L., and Larsen, E. S., Contact-metamorphic tungsten deposits of the United States: U. S. Geol. Survey Bull. 725-D, pp. 300-304, 1922.

silver and copper in the nineteenth century. The Getchell gold mine, established in 1934, was the only important mining activity in the district prior to 1942. In the fall of 1942, a part of the Getchell gold mill was converted to the treatment of the scheelite-bearing ores of the district, which are unrelated to the gold mineralization. Ores were trucked to the mill from the Richmond, Porvenir, Kirby, Granite Creek, and Riley mines. Low-grade concentrates containing 12 to 15 percent of WO_3 were recovered by froth flotation and shipped to Salt Lake City for chemical retreatment in the plant owned by Metals Reserve Co. The Getchell tungsten mill, with a daily capacity of 400 tons, was operated on company and custom ore until June 30, 1944; in August 1945, it was re-opened under contract with Metals Reserve Co. to treat ore from the stockpile near the Getchell mill, and also from small stockpiles a t Winnemucca and Battle Mountain. This contract was completed in April 1946 when the stockpiles had been used up. Some ore was also treated from Getchell's Granite Creek mine during 1946, and from the Riley mine in 1947.

The Metals Reserve Co. stockpile was established in 1943 to purchase crude ore. About 60,000 tons were purchased from the Riley mine, and small amounts from the Granite Creek and Valley View mines, before the stockpile was closed on June 30, 1944.

The total district output to the end of 1947 was about 182,540 units from 424,000 tons of ore treated.

The tungsten deposits are distributed about the periphery of a granodiorite stock which has invaded argillite interbedded with limestone layers a few inches to several hundred feet thick (fig. 103).

Fig. 103. Geologic map of part of the Osgood Range, Humboldt County, Nevada, showing tungsten deposits.

The stock is 6 miles long in a north-south direction, and less than 2 miles wide, narrowing near the center to less than 1,000 feet. On the eastern side of the stock, the contact with the sedimentary rocks dips generally 40° - 60° E., roughly conformable to bedding; where it is exposed on the western side, the contact is nearly ver-

tical, and in large part cuts across the beds. The sedimentary rocks adjacent to the stock have been metamorphosed, the argillite being altered to hornfels and schist, and the limestone to coarse marble, to wollastonite rock, or in places to garnet tactite. Limestone is present along only part of the contact, but of this part, 60 to 70 percent is marked by tactite. The larger tactite masses appear localized by irregularities of the contact, particularly by projections of limestone into granodiorite. The tactite zone rarely extends more than 50 feet from the contact, although exceptionally it may extend as far as 100 feet; the main granodiorite stock forms one wall of each of the ore bodies developed by current mining operations.

The size and tungsten content of the scheelite-bearing bodies range widely. Most of the tactite masses are small, and the content of WO_3 averages only 0.1 to 0.2 percent. Only a small part of the tactite contains more than 0.5 percent. The ore mined before July 1945 averaged 0.5 to 0.6 percent, and ranged in grade from 0.34 to more than 0.8 percent.

Most of the deposits have been worked through open cuts, which permitted mining low-grade ore at low cost. The contact zones are little explored at depth, in attempts either to follow known ore shoots or to find new ones. The Riley mine was tested by drilling, which showed reserves of more than half a million tons between the surface workings and the frontal fault that limits ore downward. Nothing is known about the extent of the ore shoot in the Granite Creek mine below present workings. From the geologic map (fig. 105), it would appear that possibilities of ore shoots at depth exist in sec. 17 (87) west of the central constriction in the stock. In general, the past output of the district and known reserves suggest that large quantities of ore might still be discovered. Exploration and exploitation of such ore bodies would be expensive compared to past operations, and probably would not be feasible under economic conditions similar to those prevalent in World War II.

Mines

The Getchell Mine, Inc., owns the Granite Creek and Kirby mines,

and the Pacific, Chase, and Tonopah prospects. United States Vanadium Corporation owns the Richmond and Riley mines. The most important of the independent properties are the Valley View and Alpine mines, and the Markus claims.

Getchell Mine, Inc.

Granite Creek

The Granite Creek mine is in the southern part of secs. 29 and 30, T. 38 N., R. 42 E., at the south end of the granodiorite stock (fig. 103). It is on the steep south side of Granite Creek canyon about half a mile above the mouth. The mine yielded 88,000 tons of ore averaging 0.5 percent of WO_3 in the period 1942-44, and another 18,629 tons in 1946.

The contact between granodiorite and the sedimentary rocks trends generally westward with numerous minor irregularities, and cuts across the strike of the sedimentary rocks at an angle of about 40°, although in places the contact is parallel to bedding for distances of 550 feet. Irregular and discontinuous bodies of tactite

occur along the granodiorite-limestone contact for a distance of more than 2,200 feet. Scheelite is irregularly distributed, and is entirely absent in much of the tactite. Where the contact and the strike of the limestone are essentially parallel, the tungsten mineralization is more nearly uniform throughout the whole mass of tactite. Where the contact forms an angle with the strike of the sedimentary rocks, the tactite bodies and the ore zones within them are more irregular, and may pitch in the direction of the beds.

The largest and most continuous tactite body is at the eastern end of the property (fig. 104). The main layer has been traced for

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Fig. 104. Maps and sections of the Granite Creek mine, Osgood Range, Humboldt County, Nevada.

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230 feet on the surface, where its width ranges from 5 to 25 feet; on the lower adit level, it has been followed for 200 feet. The average width is between 15 and 20 feet, and the tungsten content is rather uniformly about 0.6 percent of WO_3, which was diluted some-

what in mining. The mine was opened by adits at 2 levels, stopes, and 2 large glory holes that provided most of the ore. Nearly all ore above the lower adit had been removed in 1946. The depth to which ore extends below the adit is unknown.

Several tactite zones distributed along the contact for 2,000 feet west of the main workings are possible ore bodies, but they need more exploration to determine their worth. These outcrops were accessible only by trail in 1945.

Kirby

The Kirby mine is near the narrow, central part of the stock, in sec. 17, T. 38 N., R. 42 E. (fig. 103). The property was worked in 1942-43 with output of about 32,000 tons containing 0.43 percent of WO_3. Operations ceased after exhaustion of the main ore body in 1943.

The Kirby ore body is a tabular mass of tactite that lies

nearly parallel to the hill slope and is capped by a thin layer of limestone (fig. 105). The outcrops are broad, but the tactite is

Fig. 105. Geologic map and sections of the Kirby mine and vicinity, Osgood Range, Humboldt County, Nevada.

actually thin, and neither it nor the limestone capping extend more than 60 feet beneath the surface. The deposit ends downward, to the east, against a lobe of granodiorite that cuts across the limestone beds. The haulage adit, 60 feet beneath the lowest outcrop, is entirely in granodiorite.

The deposit was first worked through 2 glory holes tapped from a 315-foot adit. The glory holes were subsequently connected to form a single open pit from which broken ore was loaded by power shovel into trucks. All ore that could be mined economically through the open pit was removed, but about 5,500 tons remain in the upper part of the deposit, capped by limestone.

Considerable tactite also occurs northeast of the Kirby mine where Kirby Creek crosses the contact zone, but the tungsten content in surface exposures is only about 0.2 percent of WO_3.

Pacific

The Pacific prospect is in the NE¼ sec. 29 near the east base of the Osgood Range. The limestone-granodiorite contact forms an irregular north-south line, with the granodiorite lying beneath the limestone at an angle of 60°. Tactite crops out along the hill surface in lenticular, tabular bodies separated by areas in which exposures are poor and tactite probably absent (fig. 106). Only a small

Fig. 106. Geologic map and sections of the Valley View mine and Pacific prospect, Osgood Range, Nevada. Humboldt County,

fraction of the material contains more than 0.5 percent of WO_3, and much of it contains less than 0.2 percent. A curved band of tactite about 875 feet south of the property line includes a layer of garnet

rock 3 to 5 feet thick which contains about 1 percent of WO_3 through a length of 100 feet.

The contact zone is pierced at a depth of 450 feet by an 800-foot crosscut adit which exposes tactite about 2 feet wide with only a small amount of scheelite. No lateral exploration was done along the contact from the face of the adit. The adit crosses a zone of crushed rock 600 feet wide, and then enters solid limestone. The crushed rock is part of the wide fault zone along the eastern base of the range.

Tonopah

The Tonopah prospect is on the contact between limestone and granodiorite, near the south end of the Getchell gold pits. It was explored in 1943 through an open cut, which did not expose mineralization of ore grade. An ill-defined tactite zone extends south of the pit for a thousand feet, but only locally does the content of WO_3 exceed a few tenths of one percent.

Chase

The Chase prospect, about a mile south of the Getchell mill, was opened in 1943 by a pit that exposed a few feet of ore containing 0.5 percent of WO_3. The mineralization occurs in sheared argillite along the granodiorite contact.

Richmond

The Richmond mine of the U. S. Vanadium Corporation is on the west side of the Osgood Range in the SW¼ sec. 31, T. 39 N., R. 42 E., about 2 miles airline west-southwest from the Getchell mill. In 1942-45, the property was leased to W. C. Rigg, who mined about 51,500 tons of ore which was trucked to the Getchell mill. The average content of WO_3 was about 0.5 percent.

The mine is at the north end of the stock, where granodiorite cuts at right angles across limestone beds with an outcrop width of 900 feet. The limestone band is bordered by much thicker units of argillite, and some of the beds within the limestone are argillaceous.

The beds dip 40° - 85° E., and are somewhat contorted near the contact. The granodiorite contact is nearly vertical.

Quartzose tactite is exposed along the contact in 2 bodies, one on each side of an alluviated gulch (fig. 107). The East body, 210

Fig. 107. Geologic map and sections of the Richmond mine and vicinity, Osgood Range, Nevada. Humboldt County

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feet long and 33 feet wide at the surface, supplied all the ore mined from the property. It was worked largely through an open pit. At an altitude 120 feet below the floor of the pit, a crosscut adit 350 feet long was driven to the contact, and a drift was extended 225 feet northeast along the contact. The only mineralization found at this level was in a small mass of tactite, about 30 feet in diameter, near the east end of the workings. A short sublevel, reached by a vertical raise from the adit, was run at an altitude 65 feet above the adit, and ore was stoped above. Nothing is known about extent of the ore body below the adit.

The West ore body, prospected by 3 short adits and numerous trenches, is in a larger body of tactite than the East body, but the tungsten mineralization is weaker and more erratic. Surface sampling indicates 3 small areas that possibly contain enough scheelite to be ore. These areas had not been explored by underground works in 1945.

Riley

The Riley mine of the U. S. Vanadium Corporation, formerly known as the Dornan property, consists of 60 acres of patented land in the NW¼ sec. 9, T. 38 N., R. 42 E., about 2 miles south of the Getchell mill. The mine was held 1942-45 by J. E. Riley, who sold approximately 80,000 tons of ore averaging 0.63 percent of WO_3 to Metals Reserve Co. for the nearby Getchell stockpile. A mill was built in the winter of 1944-45, and about 8,000 tons of ore were milled before the property was sold to the U. S. Vanadium Corporation. In 1945, the U. S. Bureau of Mines explored the deposit by 16 diamond drill holes having an aggregate length of 2,630 feet,

and added greatly to the known ore reserves.[1]

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[1] Holmes, George H., Jr., Exploration of the Riley Tungsten mine, Humboldt County, Nevada: U. S. Bur. of Mines, ~~Report of Investigations~~ 3945, 7 p., 1946.

All the ore produced to the end of 1945 came from a series of open pits dug along the outcrop.

The property is along the east contact, between granodiorite and limestone interbedded with argillite (fig. 108). The contact

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Fig. 108. Geologic map and sections of the Riley mine, Osgood Range, Nevada. (Humboldt County)

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strikes north and dips 30° - 60° E., generally conformable to bedding in the limestone. A band of tactite 5 to 20 feet thick is present along much of the contact, and tactite in places extends out into the limestone. The hillside slopes gently in the same direction as the tactite, thus permitting stripping of unmineralized overburden from large areas. Drilling has shown that the tactite extends as far as

500 feet down the dip, and is cut off at the lower end by a major frontal fault. This fault also cuts off the surface extension of the contact zone at the south end of the property.

Four more-or-less distinct ore bodies occur in the deposit, distributed through a length of 1,700 feet. These are localized by the lithology of the limestone and by the structure of the contact. Massive, granular, pure limestone adjoining the granodiorite is favorable to formation of tactite, whereas the platy, thin-bedded impure limestone is unfavorable. The granodiorite contact is not precisely conformable to bedding in the limestone for great distances; so unfavorable beds may replace favorable ones along the strike or dip of the contact, and consequently the tabular ore bodies lens out laterally or down the dip. Also, the granodiorite contact in places bends sharply across limestone beds for short distances, creating troughs that plunge eastward and localise small ore shoots that are elongated down the dip.

In 1945, Hobbs estimated that the reserves of indicated ore amounted to 412,500 tons containing 288,700 units of WO_3; of inferred ore, 168,000 tons containing 116,000 units. These estimates were based on surface exposures and results of diamond drilling by the Bureau of Mines.

Valley View

The Valley View mine, formerly known as the Saunders property, is 4.5 miles south of the Getchell mill, in the SE¼ sec. 20, T. 38 N., R. 42 E. Harold's Club Mining Co. operated the property in 1943 and Don Burgner in 1945. In 1945, the property had been prospected by 2 adits along the contact, one extending 255 feet south from a small valley, the other, 315 feet north (fig. 106). The North adit is connected by a raise to an open cut, and also has several small stopes. About 1,500 tons of ore taken from the North workings were sold to Metals Reserve Co. for stockpiling in 1943-44.

The tactite layer is thin along the nearly-concordant, east-

dipping contact between granodiorite and limestone. South from the small valley in which the adits are located, a band of tactite 1 foot to 10 feet thick extends about 550 feet to the property boundary of the Pacific prospect. For half this distance, it is estimated that the tactite is 5 feet wide and averages 0.5 percent of WO_3. North from the valley, the tactite is thin for 525 feet, where it expands into an irregular mass of mixed tactite and hornfels 200 feet long and 50 to 100 feet wide. The North adit explores this part of the contact for 300 feet. Near the portal, the tactite is very thin, but between 50 and 200 feet from the portal, the tactite is 2 to 3 feet thick and contains about 0.7 percent of WO_3. Between 270 and 315 feet, the tactite is 6 or 7 feet thick and contains about 0.5 percent of WO_3.

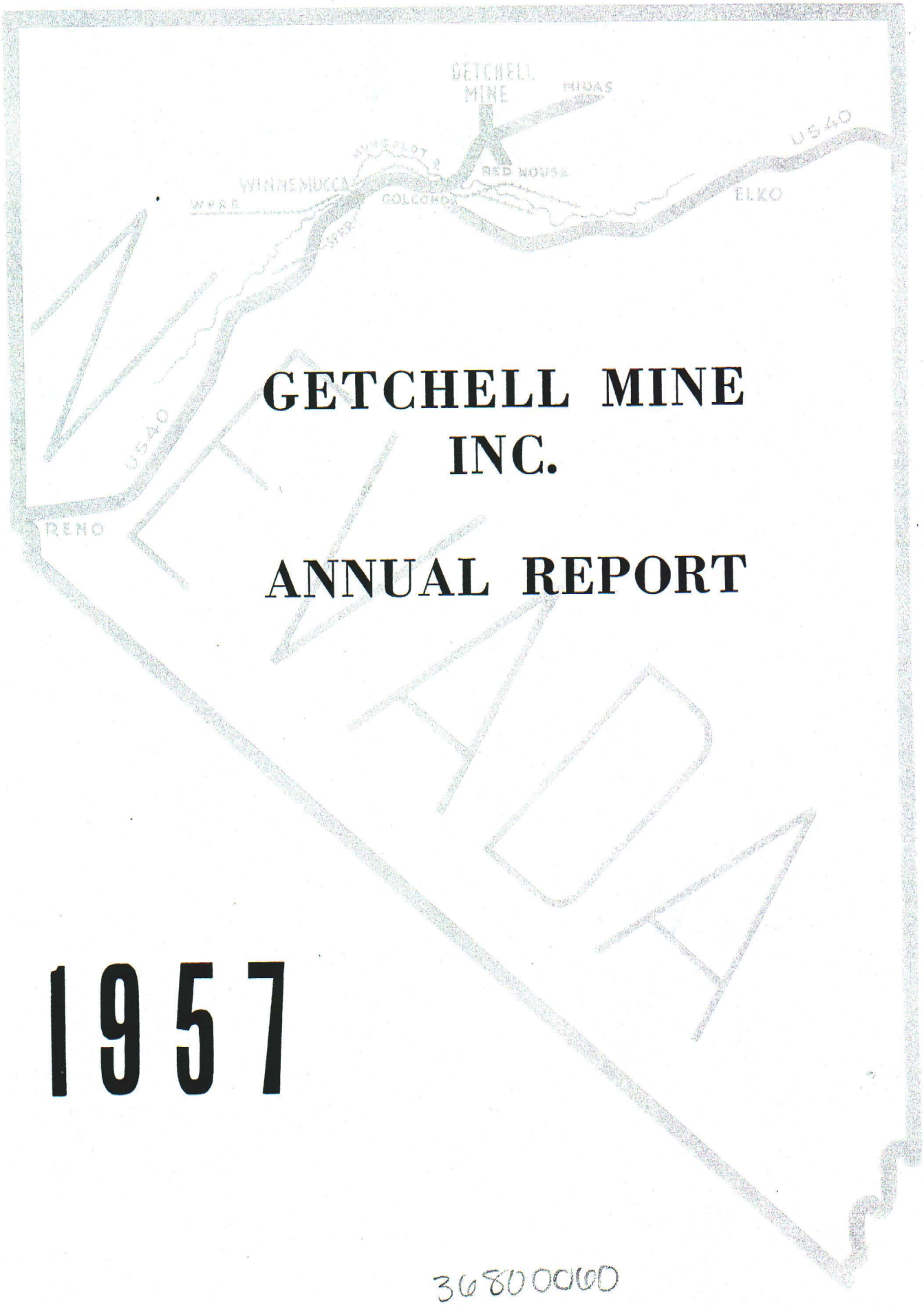
A third tactite some 5 to 10 feet wide and 250 feet long is exposed in a series of pits 1,400 feet northwest from the adits. The content of WO_3 is only 0.3 to 0.4 percent.

Alpine (Porvenir)

The Alpine mine, known in 1943 as the Porvenir, is on the crest of the Osgood Range in sec. 6, T. 38 N., R. 42 E., about 4,000 feet south of the Richmond mine. In 1943, W. C. Rigg, as lessee, trucked about 8,000 tons containing 0.5 percent of WO_3 to the Getchell mill. This ore was taken from an open pit at the south end of the deposit. Little is known about the size of the deposit, for outcrops are poor in the vicinity, and exploration is meagre.

Markus

The Markus claims are near the crest of the range in the NE¼ sec. 24, about 2.5 miles by trail northwest of the Granite Creek mine. Discontinuous, irregular bodies of tactite occur along a contact between granodiorite and sedimentary rocks, which include thin layers of limestone. The richest body is 2 to 10 feet wide, is exposed for a length of 75 feet at the surface, and contains more than 1.0 percent of WO_3. The property has been prospected by 2 short adits and numerous trenches. There has been no production.



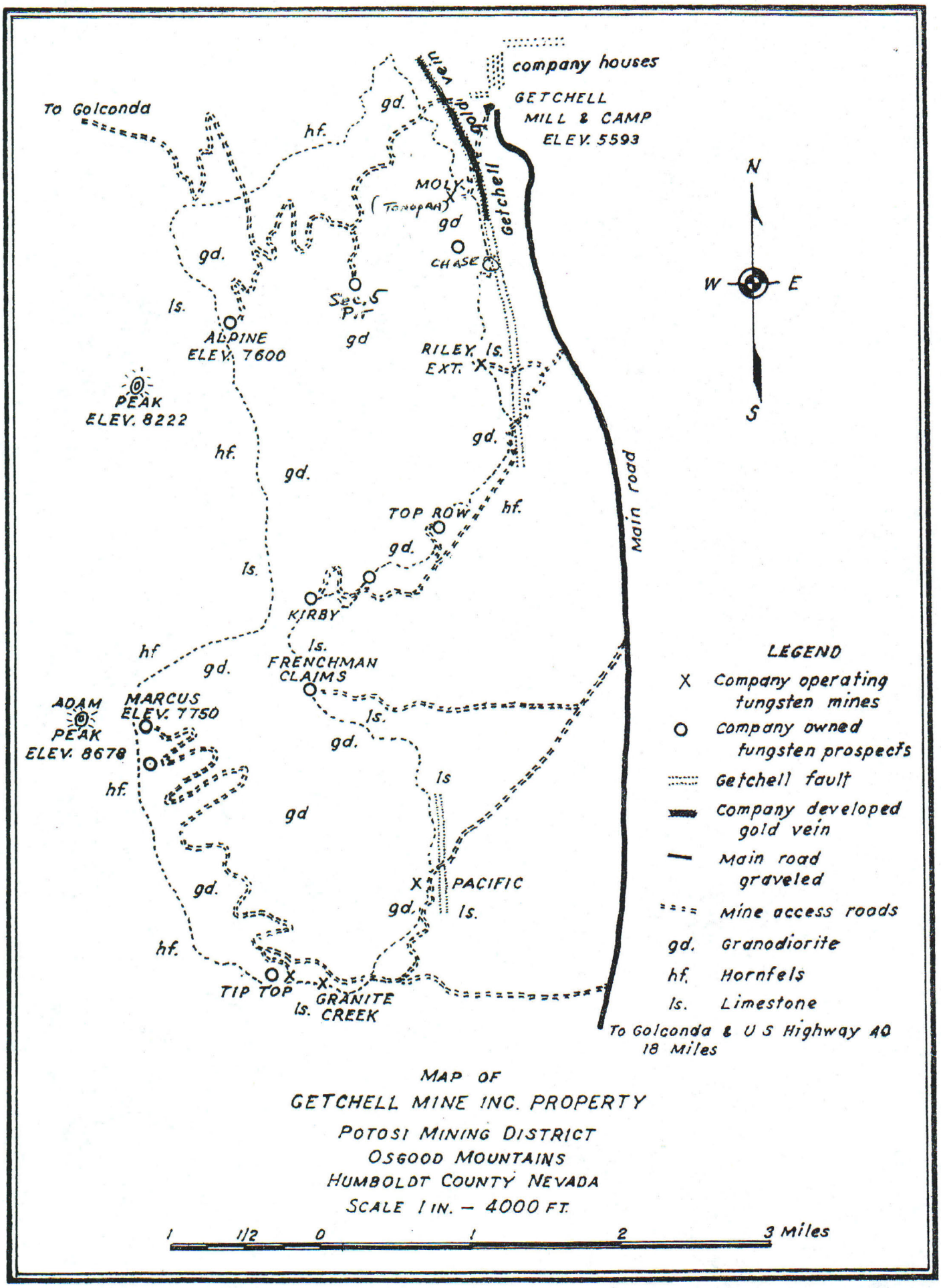
GETCHELL MINE INC.

ANNUAL REPORT

1957

Lemmon

Main Office	206 North Virginia Street, Reno, Nevada P. O. Box 2520, Reno, Nevada
Plant and Mine Office	Golconda, Nevada
Capital Stock	Authorized - 1,500,000 Shares Issued - 1,500,000 Shares
Directors	Geo. Wingfield, Pres. N. H. Getchell, Vice Pres. and Gen'l. Mgr. T. L. Willcox, Secy.-Treas.
Operating Officials	Roy A. Hardy, Vice Pres. and Consulting Engineer P. O. Box 2520, Reno, Nevada Keith Kunze, General Superintendent Golconda, Nevada Wm. J. Newman, Mine Superintendent Golconda, Nevada
Auditors (C.P.A.)	Semenza & Kottinger, 29 East First Street, Reno, Nevada
Annual Meeting	Third Tuesday in March 206 North Virginia Street, Reno, Nevada
Transfer Agent	Getchell Mine, Inc. P. O. Box 2520 Reno, Nevada
Registrar	Nevada Holding Company P. O. Box 2520 Reno, Nevada
Resident Agent	T. L. Willcox P. O. Box 2520 Reno, Nevada



MAP OF
GETCHELL MINE INC. PROPERTY
POTOSI MINING DISTRICT
OSGOOD MOUNTAINS
HUMBOLDT COUNTY NEVADA
SCALE 1 IN. — 4000 FT.

1 1/2 0 1 2 3 Miles

TO THE STOCKHOLDERS OF GETCHELL MINE, INC.

I herewith submit my report of the Getchell Mine, Inc. operations for the year ending December 31, 1957. This is the 21st Annual Report of your Company.

No additional property was acquired during the year. Your Company owns 17,523.6 acres of patented mining property and 238 mining claims held by location possessory rights. All this property is contiguous, making a total of approximately 22,400 acres, located in the Getchell Mining District, Osgood Mountain Range, Humboldt County, Nevada.

The tungsten mining and milling operations continued throughout the first six months of 1957, then they were discontinued. The mining operations during this period were directed mainly to mining tungsten ore for milling and doing development work in the various tungsten mines of the Company. The development work resulted in the addition of considerable tungsten ore reserves. In addition to the development of substantial tonnages of tungsten ore reserves, a by-product potential of molybdenite in the tungsten ore was developed in the Company's Moly tungsten mine. A recovery process for molybdenum was worked out in the tungsten unit of the Getchell mill.

During this 6 months period 56,020 tons of Company tungsten ore was treated. The resulting tungsten concentrates are stock piled at Getchell mill. In addition 16,912 tons of tungsten ore from the Riley Mine was milled, on a fee basis, for the Union Carbide Nuclear Co. No custom ore was purchased during the year.

Tungsten mining and milling operations at the Getchell Mine paralleled in problems those which beset all tungsten producers in the United States during 1957. Public Law 733 (84th Congress) authorized a Government program

to purchase not over 1,250,000 units of tungsten to terminate on or before December 31, 1958. This program had the approval of the Administration but failed repeatedly to have sufficient funds recommended by the House Appropriations Sub-Committee. It is hoped some further action will be taken in the 85th Congress to implement that law with funds to avoid a complete shutdown of the tungsten industry in the United States.

A section of the gold plant was put in shape for milling pending the probable development of sufficient surface oxide gold ore for a profitable operation. The exploration for gold oxide ore consisted of drilling on the surface above the north sulphide gold ore reserves and to the south in the Getchell gold vein, in Company property. This exploration work is continuing. Several small oxide gold ore bodies have been found at shallow depths. The tonnage, so far, indicated by this drilling is not sufficient to justify resumption of oxide gold ore milling.

The following summarizes 1957 operations:

NET LOSS

Gross loss for year 1957	$ 473,864.93
Less refund of 1955 federal income taxes	246,352.46
Net loss year 1957	$ 227,512.47

NET WORKING CAPITAL

Current assets	$2,631,899.70
Current liabilities	35,525.76
Net current assets	$2,596,373.94

The Secretary-Treasurer's Financial Statement accompanies this report.

GEO. WINGFIELD, President

GETCHELL MINE, INC.

BALANCE SHEET — DECEMBER 31, 1957

ASSETS

CURRENT ASSETS:				
Cash on hand and on deposit			$ 271,937.87	
Accounts receivable			7,804.08	
Due from U. S. Gov't. (Note 1)			246,352.46	
U. S. Treasury Bills at cost			1,388,870.00	
Tungsten concentrates on hand (Note 2)			460,844.51	
Inventory—Materials and supplies			251,316.09	
Commissary supplies			4,774.69	$2,631,899.70
FIXED ASSETS:				
Mine Properties (Note 3)			1.00	
Buildings, Machinery & equipment		$3,462,856.62		
Less: Provision for depreciation (Note 4)		2,978,567.29	484,289.33	484,290.33
DEFERRED CHARGES:				
Prepaid gold mining costs:				
Surface stripping	$ 85,127.69			
Drilling	10,749.31			
Underground mining	347,152.62			
Prepaid tungsten mining costs:				
Underground mining (Note 5)	92,508.16			
Drilling (Note 5)	18,279.84			
Prepaid insurance	6,288.22			
Prepaid property taxes	4,657.85			564,763.69
OTHER ASSETS:				
Deposit - Nevada Industrial Commission				900.00
				$3,681,853.72

NOTE 1. Under appropriate provisions of the Internal Revenue Code of 1954 the loss from operations sustained in 1957 was carried back and applied against operating income for 1955. Reduction of income for that year resulted in a refund claim for taxes paid in the sum of $246,352.46. No action has been taken by the Internal Revenue Service on the claim.

NOTE 2. In 1956, the government terminated the domestic tungsten purchase program which paid $55.00 per S.T.U., F.O.B. milling point to producers of tungsten in the United States. Public Law No. 733, 84th Congress, authorized the purchase of not over 1,250,000 units of tungsten to terminate on or before December 31, 1958 but failed to appropriate sufficient funds to complete the program.

At the close of business on December 31, 1956, the company had available for sale 5,443.53 S.T.U. of tungsten concentrates which were valued at $25.00 per S.T.U. During 1957, 17,109.26 S.T.U. were produced and added to inventory. At December 31, 1957, the inventory on hand of 22,552.79 S.T.U. of concentrates was valued at the estimated market price of $20.00 per S.T.U. which price is based on the present cost of imported tungsten including tariff.

The company also produced 9,788.71 pounds of molybdenum concentrates, which were valued at the approximate market price of $1.00 per pound.

LIABILITIES

CURRENT LIABILITIES:			
Accounts Payable		$ 8,325.72	
Accrued payroll taxes		2,836.50	
Accrued Mine payroll		2,263.46	
Accrued Net Proceeds of Mines Tax		12,701.16	
Accrued Taxes - Other		9,398.92	35,525.76
CAPITAL STOCK AND SURPLUS:			
Capital Stock:			
Authorized and outstanding—			
1,500,000 shares - par value $1.00 per share		1,500.000.00	
Surplus:			
Capital surplus	$ 911,610.00		
Retained earnings	1,234,717.96	2,146,327.96	3,646,327.96
			$3,681,853.72

T. L. WILLCOX
Secretary-Treasurer

NOTE 3. Mine properties owned by the company are reflected at the nominal value of $1.00. Cost of the properties has been recovered in prior years by percentage of income method of depletion, as prescribed in the Internal Revenue Code. No further provision for depletion will be made for book purposes; however, the company may still take depletion for tax purposes on the percentage basis. Since 1957 operations resulted in a loss no percentage depletion is allowable for the year.

NOTE 4. The company adopted the declining balance method of computing depreciation on new assets acquired after January 1, 1954, as permitted for Federal income tax purposes. The provision for depreciation for the year 1957 was $14,513.69 greater than it would have been had the straight line method of depreciation been applied to the same assets. No depreciation on mine and mill property and equipment was provided for the period after September 1, 1957, when mining and milling operations were suspended. Depreciation of other assets for the period after September 1, 1957, was provided at reduced rates.

NOTE 5. During the year the company extended its development work of their tungsten properties. Since no ore was produced from the newly developed areas, the cost of this work has been deferred and will be charged to the cost of ore production when the area is mined.

NOTE 6. Examination of Federal income tax returns has been completed through the year 1953.

GETCHELL MINE, INC.

STATEMENT OF INCOME AND EXPENSE

FOR THE YEAR ENDED DECEMBER 31, 1957

INCOME:		
Gross tungsten production	$324,756.26	
Custom milling income	101,470.57	$426,226.83
DIRECT OPERATING COST:		
Mining costs	297,169.53	
Milling cost	262,726.36	
Depreciation of equipment	162,552.67	722,448.56
		(296,221.73)
GENERAL AND ADMINISTRATIVE EXPENSE		276,066.00
		(572,287.73)
OTHER INCOME:		
Stock transfer fees	371.95	
Interest on U. S. Treasury Bills	54,860.00	
Discounts earned	4,158.00	
Gasoline tax refunds	612.96	
Sale of scrap	28,132.24	
Domestic house rentals	3,903.00	
Miscellaneous revenue	5,686.44	
Gain on sale of equipment	3,819.00	101,543.59
		(470,744.14)
OTHER EXPENSE:		
Settlement of law suit	2,500.00	
Bad debts	620.79	3,120.79
		(473,864.93)
REFUND OF 1956 FEDERAL INCOME TAXES		246,352.46
Net loss for the year		($227,512.47)

THE BOARD OF DIRECTORS

GETCHELL MINE, INC.
206 NORTH VIRGINIA STREET
RENO, NEVADA

Gentlemen:

We have examined the Balance Sheet of Getchell Mine, Inc., as of December 31, 1957, and the related Statement of Income and Expense for the year then ended. In connection therewith, we have reviewed the system of internal control and the accounting procedures of the company, and, without making a detailed audit of the transactions, have examined or tested accounting records and supporting evidence by methods and to the extent we deemed appropriate in the circumstances. Our examination was made in accordance with generally accepted auditing standards applicable in the circumstances, and it included all procedures which we considered necessary, except for the verification of concentrates on hand and materials and supplies. Our engagement did include these procedures and we accepted the values submitted by the company.

The investment in mine properties has been recovered through percentage depletion, as prescribed by the Internal Revenue Code, and is reflected at the nominal value of $1.00. We are advised by company engineers that percentage depletion has exceeded cost depletion, and that substantial ore reserves of gold and tungsten remain to be mined.

In our opinion, subject to the exception with respect to depletion of mine properties as explained above, the verification of concentrates on hand and materials and supplies, the accompanying Balance Sheet and related Statement of Income and Expense present fairly the financial position of Getchell Mine, Inc., at December 31, 1957, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Yours very truly,

SEMENZA & KOTTINGER
Certified Public Accountants
Reno, Nevada

Getchell Mine Inc. Annual Report for 1959.

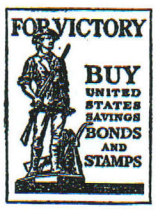
At Dec. 31, 1959, retained 22,541.99 short ton units of WO_3 in concentrates, valued at estimated market price of $20 a unit. No concentrates were produced in 1958 and 1959.

Net loss for 1959 given as $19,266.24 after income tax ~~and~~ credit claim of $19,822.01 carried back to 1956. Mine development on gold ores amounted to 2,168 feet; capitalized as "deferred charges".

Early resumption of production of gold oxide ore expected in view of anticipated further additions to oxide tonnages in 1960. Exploration of sulphide gold ore should be completed by Fall of 1960 to allow decision on production; work underway is 600-foot crosscut from 800 level of North shaft.

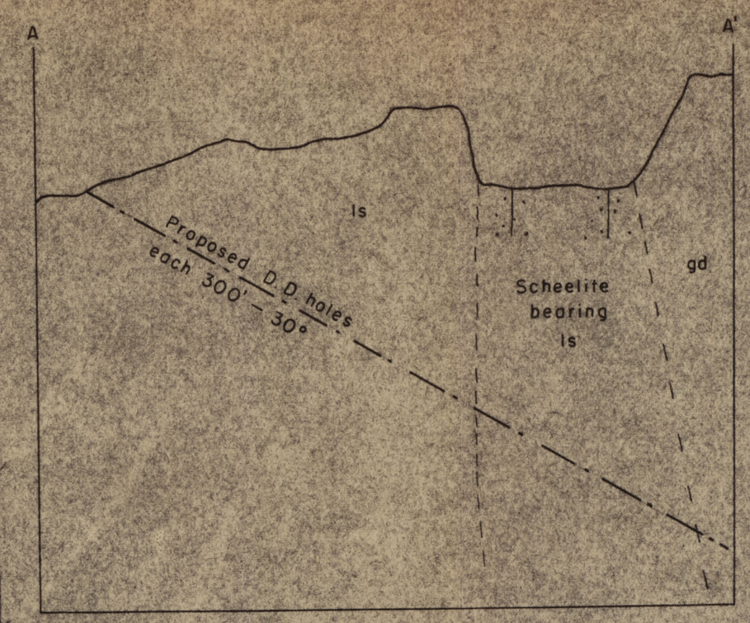
No statement of ore reserves.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA 3609
(TUNGSTEN)



EXPLANATION

- Covered area; bedrock unkown
- Massive sulfide replacement of hornfels *(Contains pyrrhotite, chalcopyrite, pyrite, and sphalerite)*
- Silicated limestone *(Contains disseminated sulfides and scheelite)*
- Silicated limestone *(Contains disseminated sulfides but lacks scheelite)*
- Granodiorite
- Limestone
- Hornfels
- Contact *Dashed where approximately located*
- Indefinite contact
- Concealed contact
- Strike and dip of beds
- Dump
- Cut

Mapped by P. E. Hotz and C. R. Wilden, 1954
Additions by R.M. Smith, 1955

GEOLOGIC MAP OF THE TNT MINE, HUMBOLDT COUNTY, NEVADA

50 0 50 100 150 Feet

Figure 2

3680 00060