

OAK SPRING DISTRICT

The main part of the Oak Spring mining district is on the southern edge of the Belted Range, just north of Yucca Flat on the Nevada Test Site. Mineral deposits in this area are in Paleozoic and Precambrian sediments that have been intruded by granites and then covered, unconformably, by Tertiary volcanics. The Paleozoics are mostly limestones and dolomites of the Ordovician Pogonip Formation while the Precambrian rocks are predominately quartzites, shales, siltstones, and limestones of the Wood Canyon Formation and Sterling Quartzite. The geology of the Oak Spring and Jangle Ridge 7 1/2' quadrangles were mapped by Barnes, et al. (1963 and 1965). These two quadrangles cover most of the Oak Spring district.

Mineralization within the sediments in the district is related to Mesozoic intrusive granites that crop out near Oak Spring and six miles to the southeast at Twinridge Hill. Using extensive geologic and geophysical data Maldonado (1981) offers convincing evidence that the Climax Stock and Twinridge Pluton form a continuous crystalline body at depth. An associated zone of mineralization and alteration approximately 3 1/2 miles long extends to the southeast from the Climax Stock. Included within and along this alteration zone are the mines contiguous to the Climax Stock and the Michigan Boy and Rainstorm Mines to the southeast near the Twinridge Pluton. In addition to these main properties, there are many smaller properties within the district where shallow shafts, adits, prospect pits and trenches explore mineralization associated with tactite or with quartz vein systems.

West Side of District:

The initial activity in this district began about 1905 in the general vicinity of Oak Spring on the northwest side of the Climax Stock. These early efforts were directed at developing quartz veins reported to be carrying gold values, some silver, and gem quality chrysocolla (Ball, 1906). Lincoln (1923) reported that a shipment of copper ore containing a little silver was made from the area in 1917 but no other production was reported. The only structure now still standing from the early mining period is a stone cabin, below Oak Spring, that was later reoccupied by George Tamney in the 1930's. This then became known as Tamney's Camp (Witt, 1938).

The area above the Tamney's Camp is shaped like an amphitheater and the mine workings within it are found along an arcuate shaped contact between limestones and granodiorite at approximately the 5900 foot elevation. Here the granodiorite of the Climax Stock has been highly fractured and shows local zones of argillic, chloritic and silicic alteration. Included within the large granitic mass are lens-shaped dikes of fine-grained feldspathic igneous rock that are commonly red from iron staining. Up slope, above the mine workings is a highly visible skarn zone of dark-brown garnetiferous ledges.

The major mine workings in this part of the district are two inclines that are partially caved and three adits, only two of which are accessible. The easternmost adit has an M-9 designation on the entrance, and has the most extensive underground workings. The other accessible adit is located at sample site 1827 (see enclosed maps).

Selected dump samples from this area contained galena, chalcopyrite, bornite, sphalerite, wulfenite, pyrrhotite, malachite, azurite, as well as copper, iron, and manganese oxides and unidentified sulfides. Most of this mineralization occurs in quartz. The quartz occurs as veins along shears in bedding planes along the contact zone and as quartz replacement in limestone. Some of the veins display boxworks or open spaced cockade structures, others were brecciated.

Five of the six dump samples assayed were anomalous in silver, three contained close to an ounce or more silver and two had over 8 ounces silver. All of the samples had high values for copper, lead zinc, and molybdenum, and three were high in antimony. Gold was detected in all of the samples but the values were very low.

The M-9 adit had some minor caving at the entrance, but even without timbering the ground stands well because so much of the contact zone is silicified. The main M-9 adit bears N20°E for approximately 240 feet. At this point, near the face, a sample was taken of marble rock containing small flecks of scheelite and powellite. The sample assayed high in molybdenum, lead zinc, and tungsten. Another sample from the southeast bearing drift, off the main adit, was anomalous in copper with minor molybdenum. The 195 foot, north-trending adit at sample site 1728 was sampled along a fault and near the face. Assays from both samples showed low concentrations of tungsten and molybdenum. Clearly, there has been postdepositional movement along the fault as there are coarse, ghost-like blebs of scheelite smeared on slickensides on the fault trace.

Wyant (1924) reported "The tunnels and prospects in the vicinity of Tamney's Camp have been dug for silver and do not contain scheelite according to George Tamney". Oddly enough, this seems to have been an accepted conclusion, as none of the previous workers reported tungsten in this part of the district. However, our samples and UV traverses in two of the older adits showed the presence of scheelite (and probably powellite) in both. If there was an awareness by earlier workers of this tungsten mineralization it is clear from our examinations that no attempt was ever made to mine or develop it.

Our samples 1872 thru 1876 were taken from veins and outcrops in an area of intense silicic alteration that caps the north end of the Climax Stock. The altered area was identified by Houser and Poole (1960) and is outlined on their geologic map of the area (Map I-328). A sample of reddish-purple iron stained quartz vein material from this area was high in molybdenum but was generally low in other elements. The only other anomalous sample in the silicic zone was a hematite stained, partially brecciated vein outcrop that was high in arsenic and molybdenum and contained lesser amounts of lead, antimony and tungsten. The sample

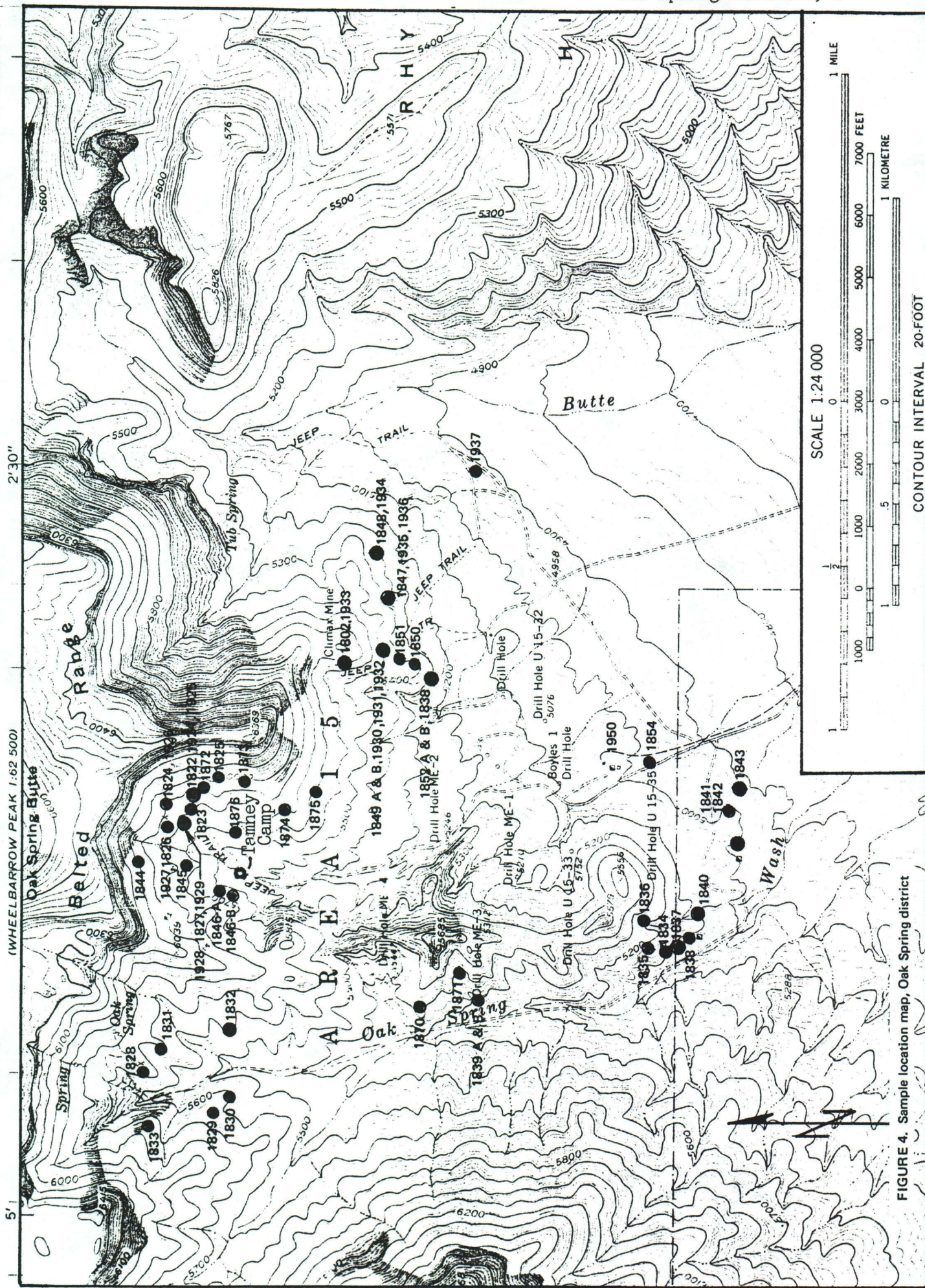
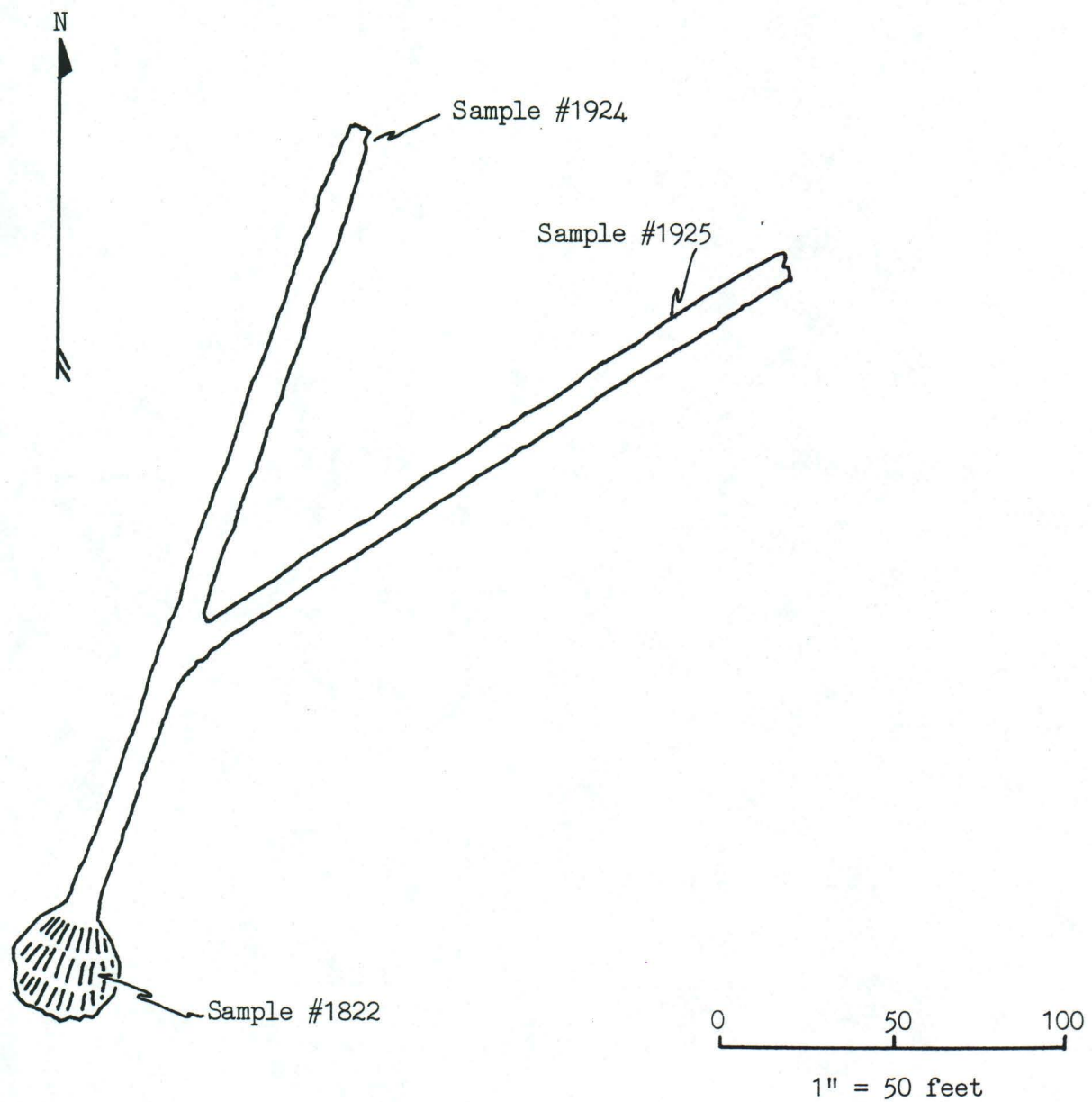


FIGURE 4. Sample location map, Oak Spring district

M - 9 ADIT
Oak Spring District
(Older, West Section of the District)
Nye county, Nevada

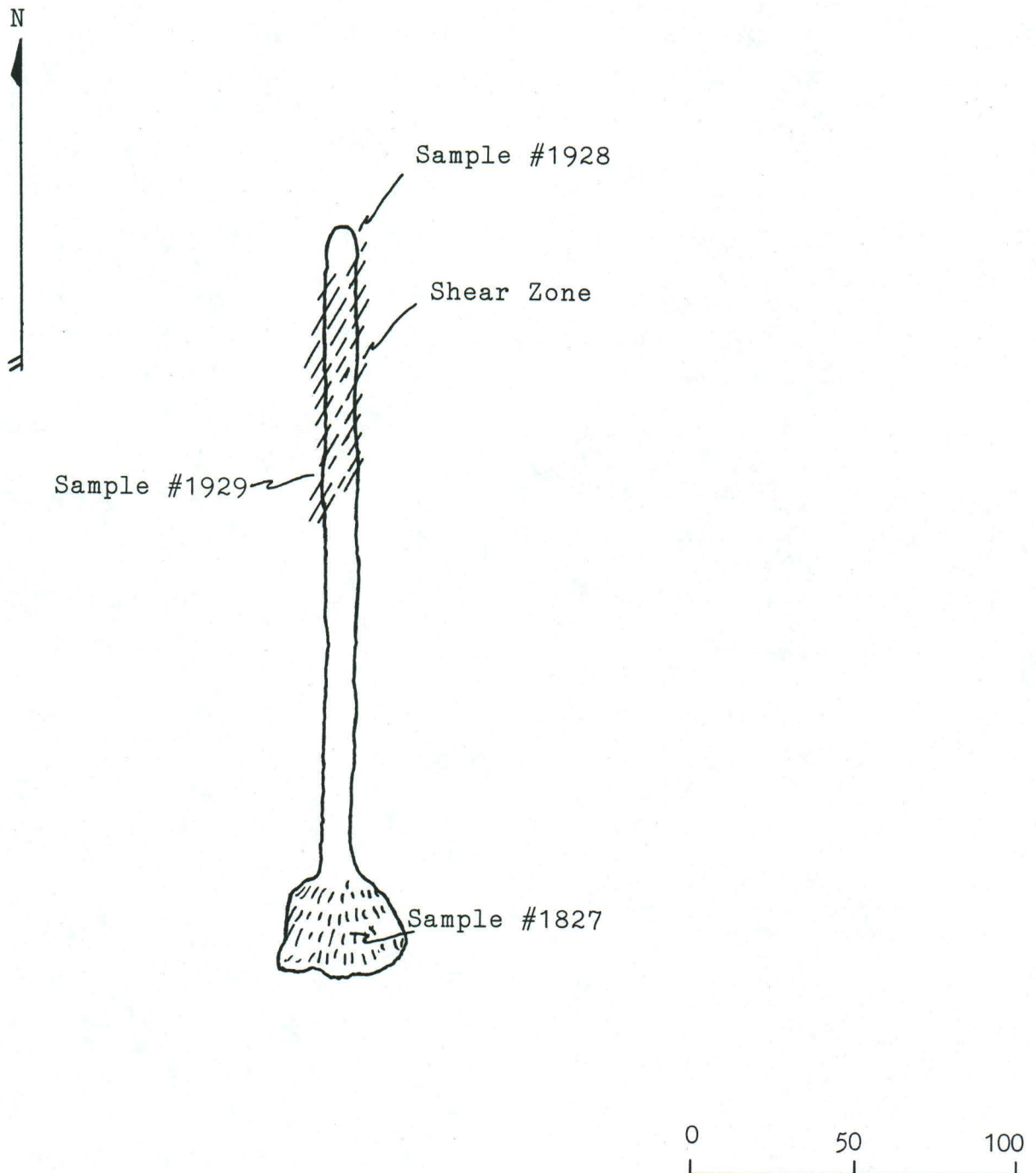


Map by Jack Quade 1983

FIGURE 5.

Oak Spring District, 5
Sample Locations 1827, 1928 and 1929

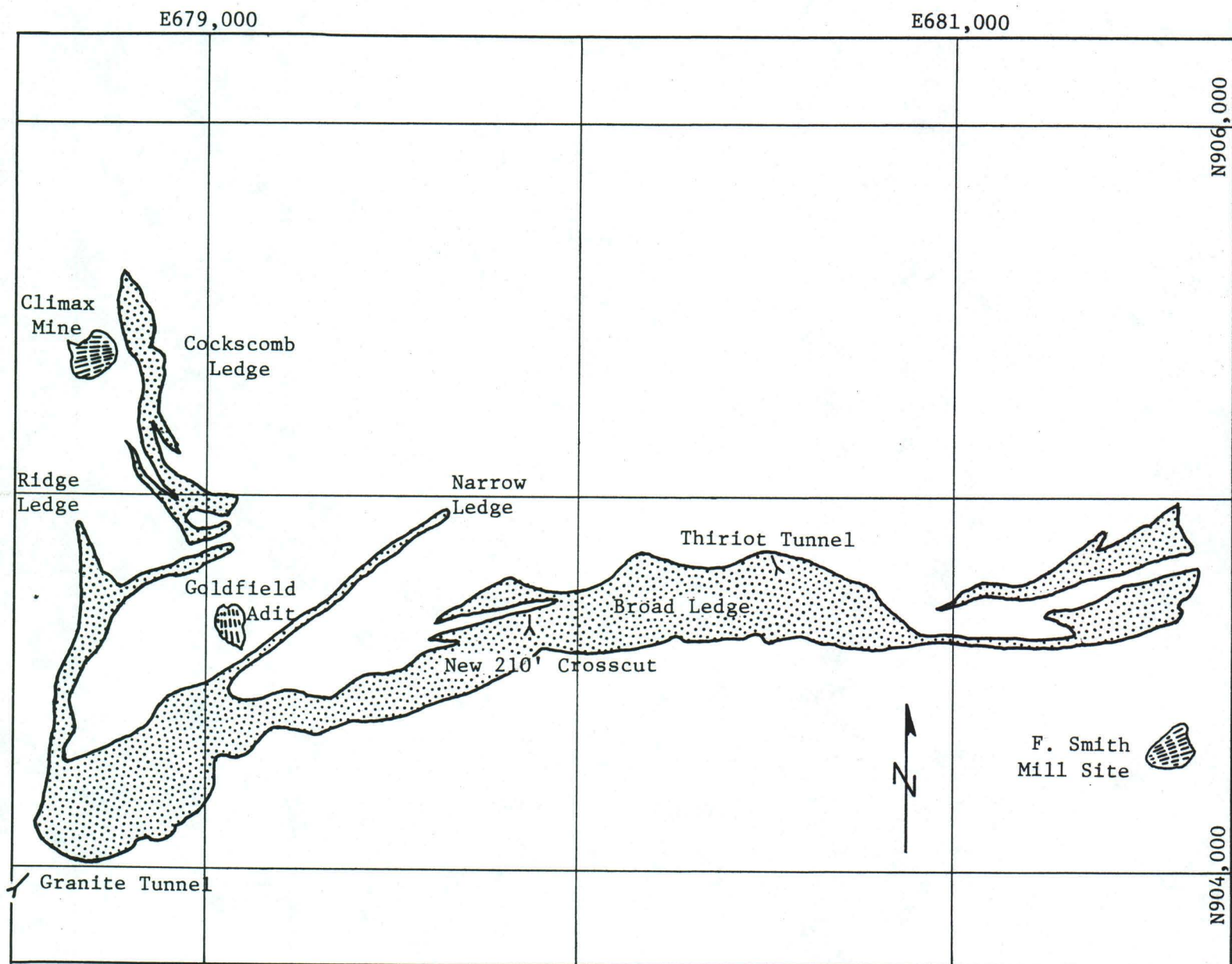
Oak Spring District
(Older, West Section of the District)
Nye County, Nevada



Map by Jack Quade 1983

FIGURE 6.

TAMNEY PROPERTIES
 showing location of
 Tunnels and Ledges
 Oak Spring District (East Portion)
 Nye county, Nevada



tactite-modified from outline shown on map GQ-328, Houser and Poole, 1960.

0 400 800
 1" = 400 ft.

Base map from Dept. of Interior and
 U.S. Geological Survey map I-328, 1960

Jack Quade, 1983

FIGURE 7.

also assayed nearly one ounce of silver.

The gem quality chrysocolla reported by Ball (1906) came from three shallow shafts and numerous prospects along the north half of Oak Spring Wash. The chrysocolla was in veins along fractures in the limestones and tactites. Many of the veins had a strong hematite or gossan-like alteration and the secondary mineralization oxides associated with them included malachite, jaspery chrysocolla, quartz, azurite, manganese oxides and calcite. Samples 1828 thru 1833 and 1871 were from chrysocolla properties. With the exception of a sharp decrease in molybdenum, the results were very similar to the Tamney Camp samples; high copper, lead and zinc values, lesser antimony and silver values.

A small shaft about 800 feet southwest of Oak Spring yielded an exceptional sample. It was anomalous in copper, lead zinc, arsenic, bismuth, nickel, tin, molybdenum and silver. It had the highest nickel value detected on the Test Site by our sampling and values were above the detection limits for copper and bismuth. The silver content was 8.75 ounces. The high degree of oxidation and iron staining masked the metal content of these samples in the field.

East Side of the District:

A second period of activity in the district began in 1936 when George Tamney and son staked the northeast portion of the Climax Stock for tungsten. The Tamney's were acting on information supplied by Wesley Koyen and George Thiriot and Tamney acknowledged the favor by staking claims for Koyen and Thiriot as well as for himself.

The Tamneys leased their property to the Goldfield Mining Company in 1937, who, in turn subleased the property to the U.S. Vanadium Corp. The Vanadium Corp. did an extensive sampling of the outcrops and decided the tungsten grade was too low for an open-pit operation and dropped their option. Apparently, Goldfield Mining liked the the assays and dug several adits to explore the main tactite bodies, the Cockscomb and Broad Ledges. Goldfields' efforts were discontinued in 1940 and the property reverted to the Tamneys who then leased it to Howard Melaney, a former Goldfield employee. Mr. Melaney interested the Pacific Bridge Company in the property and they drove the Carlisle Adit which intersected the main Cockscomb orebody. The mine then produced about 1000 tons of ore that averaged .54 percent WO_3 . Most of this ore came from the Gould Stope developed off the Carlisle Adit. Shortly thereafter, the area was incorporated into the Air Force Gunnery Range and was closed to mining.

Operations at the eastside tungsten properties were resumed in 1956 when George Tamney and his partners W.A. Kinney and A.J. Wright, co-owners of the Climax Tungsten Corp., entered into a co-use agreement with the A.E.C. The company started work under a DMEA contract on December 11, 1956 but discontinued operations on May 8, 1957 due to nuclear testing. Work did not resume thereafter and the contract was terminated in December 1957. During the contract the company operated entirely from the Carlisle Adit, drifting and winzing 237 feet and drilling 190 feet of test holes. The work was along and below the adit level and within the

CARLISLE ADIT
CLIMAX MINE
Oak Spring District
Nye County, Nevada

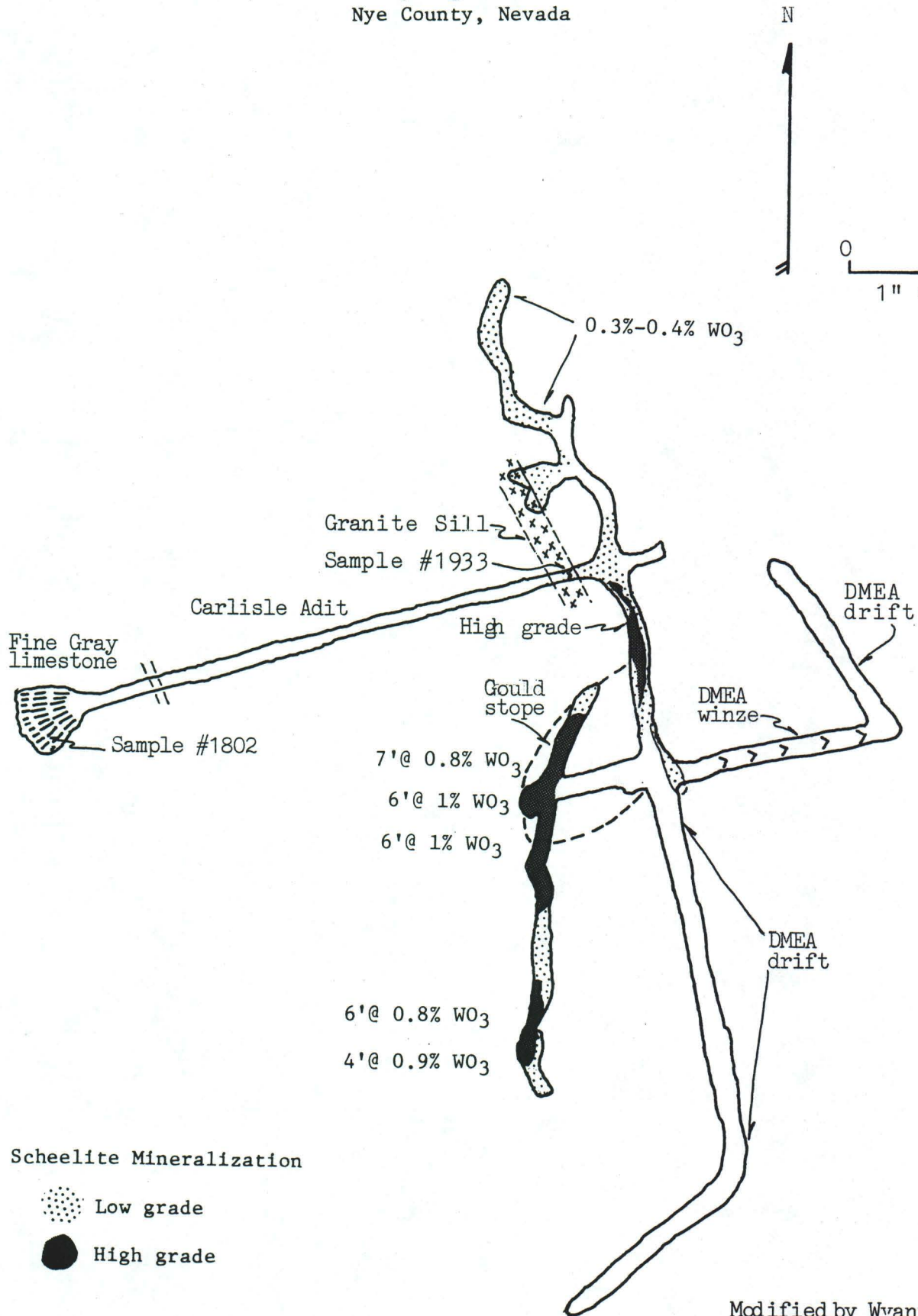


FIGURE 8.

Cockscomb ledge. No ore was produced during the contract nor was any new ore developed (Gentry and Stager, 1958).

In December, 1982, permission was obtained to enter the Climax Mine and adjacent underground workings as part of our evaluation effort. During these examinations a UV lamp was employed and samples were taken. A set of maps and sketches (some original and some modified) of the underground workings was available from Wyant and Byers (1941).

The Carlisle Adit bears N80° E for a distance of 180 feet to a wooden bulkhead which completely blocks the passage way. The first 30 feet of the adit is in limestone that is in fault contact with a tactite body that extends the remaining 150 feet to the bulkhead. The bulkhead is near a granodiorite intrusive which is itself cut by an oxidized vein with strong tungsten shows. The vein also follows a contact between the granodiorite and a marble. Sample 1933 is from the vein system and assayed high in tungsten as well as in copper and zinc.

According to a map by Wyant (1941) the wooden bulkhead is very near the orebody that the Pacific Bridge Company intercepted when they drove the adit in 1941. At this point the adit level is only 75 feet below the surface and crosscuts the orebody at an angle close to 90 degrees. The north-south trending orebody divides at depth into three parts with a total length of 135 feet and a width of 6 feet and an average grade of 1 percent WO₃. (See enclosed maps)

The Goldfield Adit is approximately 250 feet below the Climax Mine at an elevation of 5475 feet. It was dug in Pogonip limestone by the Goldfield Mining Company in 1939. The 900 feet of workings were intended to explore the north-south trending main Cockscomb Ledge at depth but failed to do so. Later workers suggest the orebody may be 10-15 feet beyond the face of the east drift (Wyant, 1941). The adit trends north for about 450 feet then splits with one drift going to the northeast and another to the northwest. Several 50-foot drifts trend to the east of the west drift. A 60-foot raise was dug off the main adit about 400 feet north of the portal. (See enclosed maps)

Three tactite zones were encountered when the adit was dug, all of them were along faults. The first is a coarse garnetiferous-tactite-scheelite vein system about 140 feet north of the portal. The 7-foot vein bears E-W at a high angle and was sampled across its width. The second tactite was cut by the adit about 430 feet north of the portal. The zone is about 25-30 feet wide and has low-grade scheelite dispersed throughout. The third zone is parallel to the west bearing drift starting at the intersection and extending 50-60-feet to the northwest. The tungsten mineralization appeared to be unevenly dispersed throughout the zone and would probably average out as low-grade. Both of the tactite zones assayed high tungsten, zinc and cadmium. No attempt has been made to mine and or to develop this exposed tungsten mineralization. Because a quartz vein in the marble carried visible sulfides it was sampled (1930) but the assays showed only minor copper, lead and zinc.

Considering how long the adit has been here and the fact that it has no timbers and is within a few miles of Yucca Flat, it is

GOLDFIELD ADIT
(Goldfield Tunnel)
Oak Spring District
Nye County, Nevada

Oak Spring District, 10

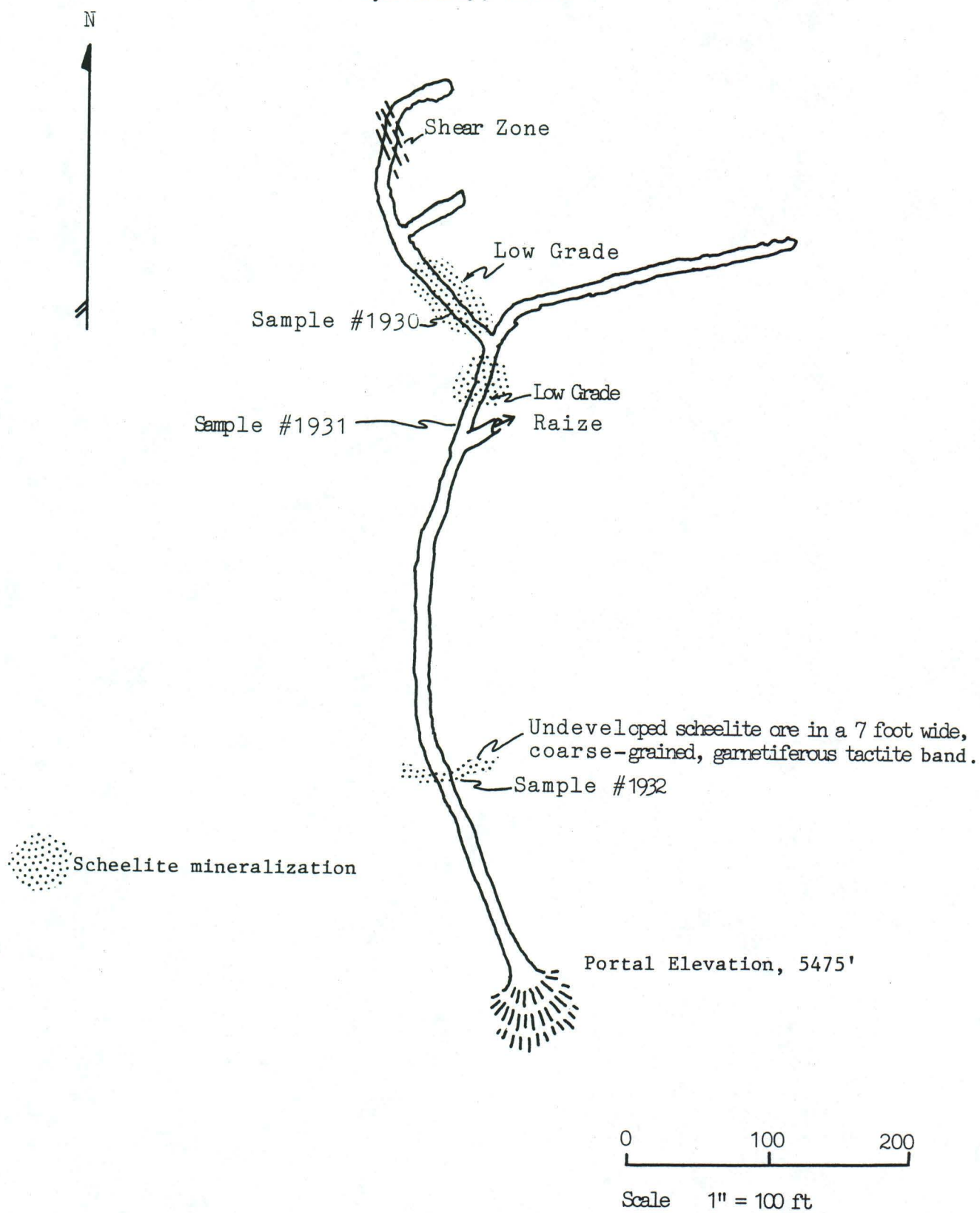
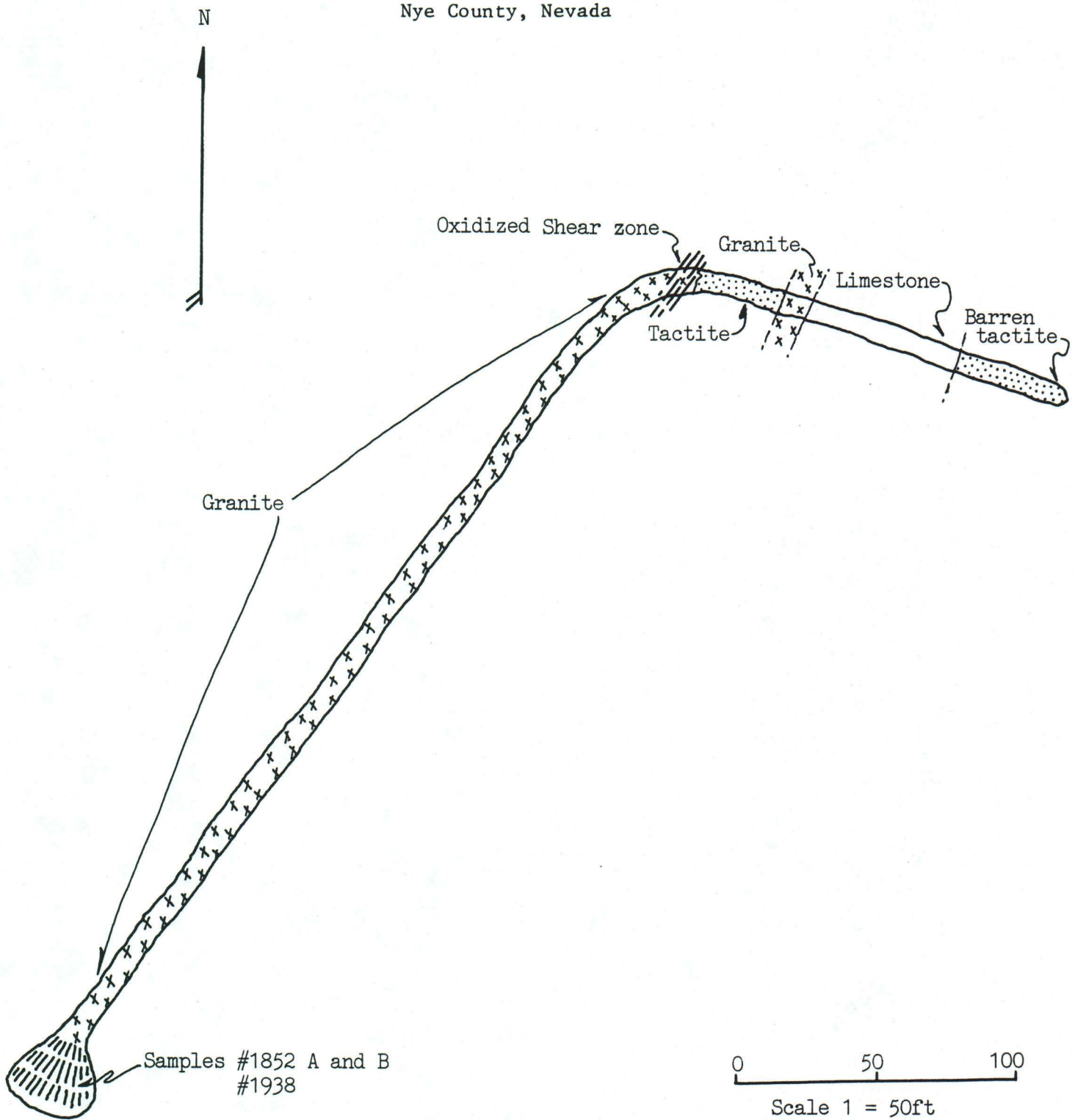


FIGURE 9.

Map by Jack Quade 1983

GRANITE TUNNEL
Oak Spring District
Nye County, Nevada



Map by D. G. Wyant and F. M. Byers, 1941

FIGURE 10.

in remarkable condition. The minor caving that has occurred is within the fault zones.

Below the Goldfield adit the sediments and granodiorite form a near ninety degree contact. This corner is also the intersection between the south trending Ridge Ledge and the western end of the Broad Ledge. It was in the direction of this junction that the Granite Tunnel was dug. The workings were started in 1939 by the Goldfield Mining Company and finished in 1941. The portal is now completely caved but a subsurface map by Wyant and Byers (1947) was available and was used to provide information on the property. (See enclosed map) The portal is in granodiorite below the contact at an elevation of 5280 feet. It was driven N35°E for 350 feet in the granodiorite before contact was made with the sediments. At approximately 340 feet, the tunnel makes a gradual turn to about 75 degrees to the southeast. It continues another 200 plus feet in tactite and limestone through a granitic dike and minor displacements. Mineralization was limited to abundant pyrite near the turn and to minor shows of scheelite and powellite. Assay results from three dump samples were all low.

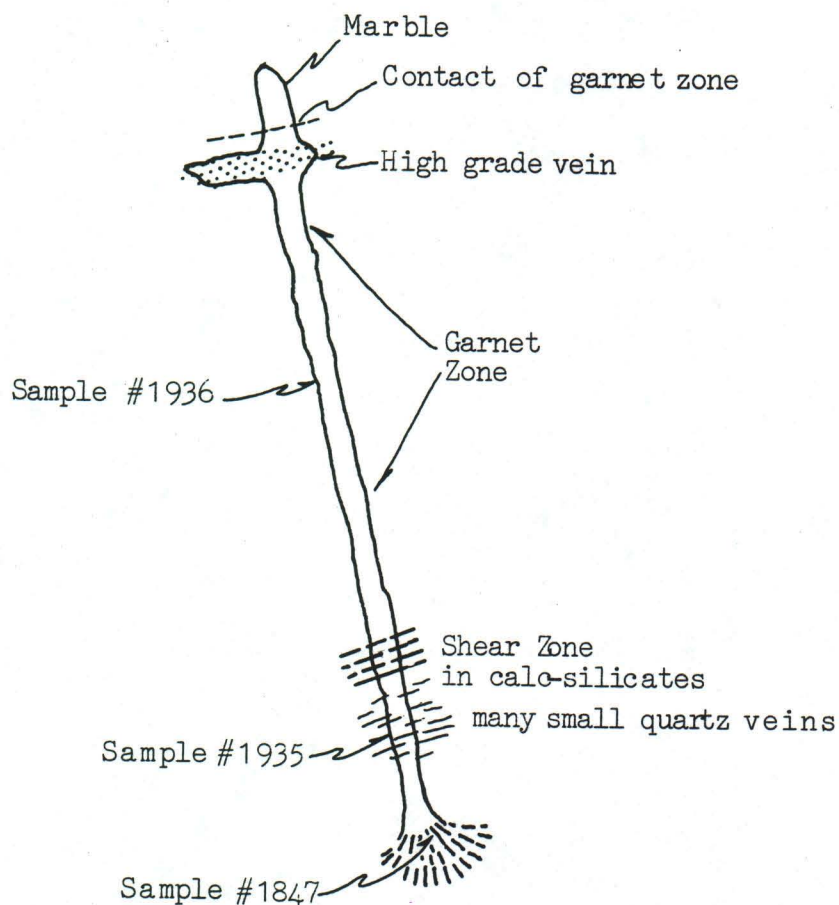
The New 210' Crosscut is another of the north trending adits dug in the early forties to test the potential of the Broad Ledge, a bedding plane replacement of limestone that forms a prominent reddish-brown cliff of garnetiferous tactite which has an outcrop about 175 feet wide and about 2400 feet in length. The adit crosscuts the east-west trending tactite zone about 350 feet north of the granite contact at an elevation of 5380 feet. The adit starts in fractured tactite cut by quartz and calcite veins, passes through a garnetiferous zone with low-grade scheelite and passes into a marble for about the last ten feet. There is a 20-foot long west-bearing crosscut about 190 feet north of the portal that was dug on a 5 to 6 foot vein of good looking scheelite mineralization. (See enclosed map) A representative sample of the garnet-tactite zones assayed as low-grade tungsten. The quartz-calcite-tactite zone assayed a little higher in tungsten and was moderately anomalous in zinc and copper. A selected sample from the dump assayed high in tin and zinc, fair in tungsten and low in copper and lead. In addition there was almost one ounce of silver, which turned out to be the highest precious metal value on the eastern side of the Climax Stock.

Another small adit to the east, known as the Thiriot Prospect or Garnetyte Lode Claims, explores the Broad Ledge starting at 5300 feet elevation. The workings are a northwest-bearing 20 foot long adit with a west bearing drift of another 20 feet and open trench cut about 25 feet long in front of the portal. The mine is reported to have produced about 2500 tons of 0.3 percent WO₃. (Stager, in prep.). The mineralization looks to be low-grade scheelite that occurs along seams in reddish-brown garnet rich tactite with lesser quartz and calcite veining. Samples from the mine and the open-cut confirmed the presence of low-grade tungsten mineralization.

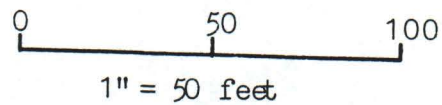
In 1940, I.F. Smith leased the property from Dean Thiriot and Wesley Koyen and built a small dry concentrator southeast of the mine on the west side of Butte wash. Smith treated a small tonnage of ore from the Thiriot, Nevada Massachusetts Co. and W.A.

THE NEW 210' TUNNEL
(D.O.E. Site Designation M-7)
Oak Spring District
Nye County, Nevada

Oak Spring District, 13



Scheelite Mineralization



Map by D.G. Wyant 1941
modified by Jack Quade 1983

FIGURE 11.

THIRIOT PROSPECT
GARNETYTE LODE CLAIM
Oak Spring District
Nye County, Nevada

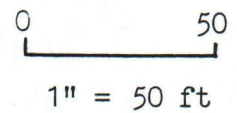
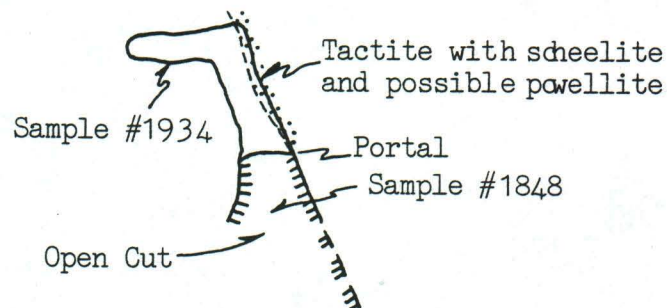


FIGURE 12.

Map by D. G. Wyant 1941
modified by Jack Quade 1983

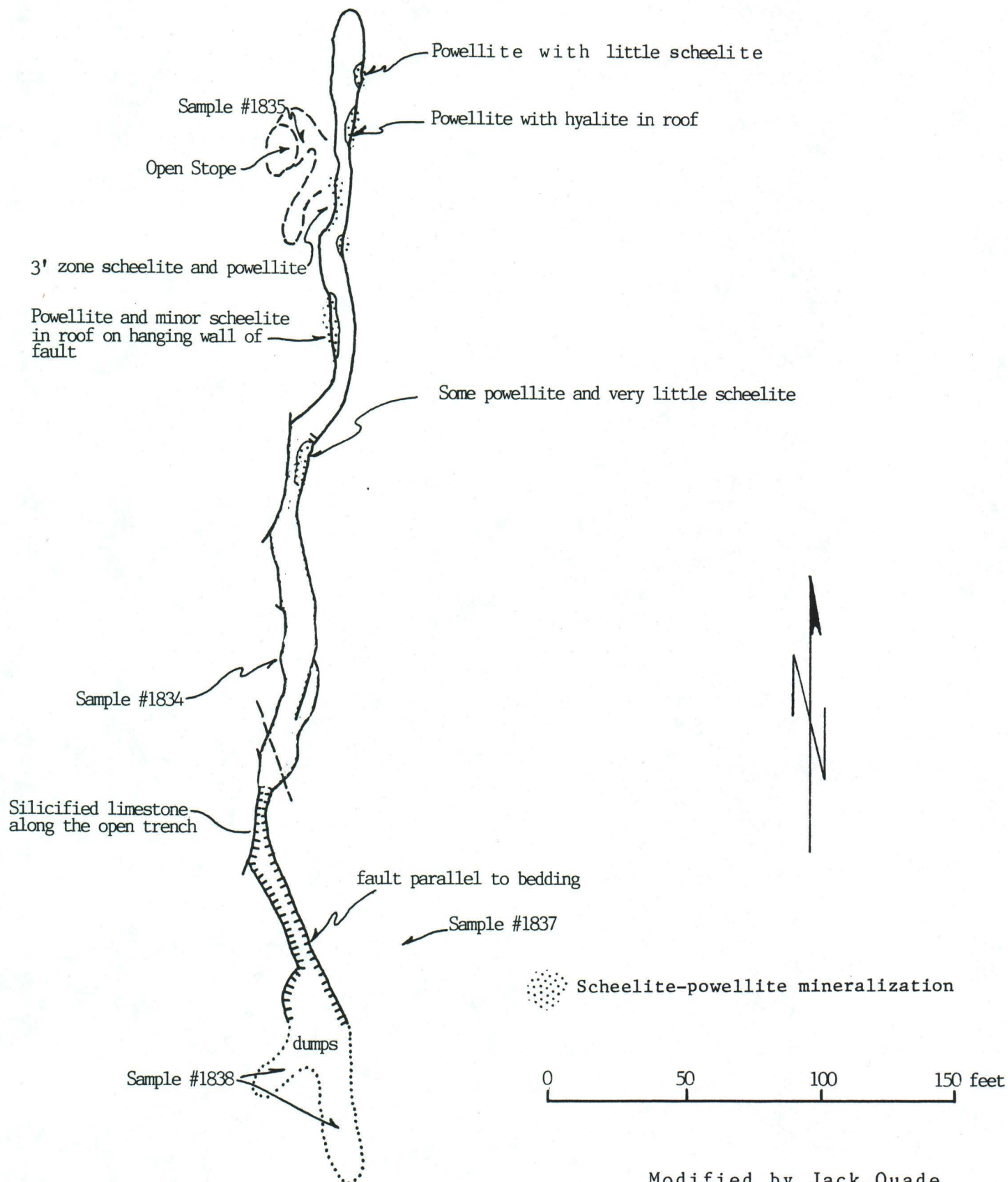
NEVADA-MASSACHUSETTS ADIT-TRENCH
CRYSTAL PROSPECTOak Spring District
Nye County, Nevada

FIGURE 13.

Smith claims before dismantling the mill in 1941.

The Crystal Prospect or Nevada Massachusetts Prospect is on the southwest side of the Climax Stock near the mouth of Oak Spring Wash at an elevation of 5100 feet. The site is thought to have been mined for precious metals as early as 1905. Scheelite, molybdenite and powellite were found here in 1908 (Stager, in prep.). the Nevada Massachusetts Company acquired the property in 1936 and is responsible for the 100 foot long north trending trench that continues underground for another 250 feet as a now inaccessible adit. When Wyant (1941) visited the property the workings were open and he and F.M. Byers produced much of the enclosed map.

The Crystal workings are entirely within a highly fractured and faulted coarse-grained, garnetiferous-tactite that is hosted in Pogonip limestone. The mineralization occurs as scheelite and powellite in small irregular bodies of tactite along the shear zone. Some of the tactite zone is crosscut by quartz stringers which contain minor sulfides. Most of the tactite zone is a mixture of oxidized materials including gouge, iron stained garnet rich tactite and silicified and broken limestone. Very little high-grade ore was seen along the zone or in the dump. Samples 1834, 1835, 1837 and 1838 were all taken from along and within the mine workings. Assay results showed some samples had fair grades of molybdenum and tungsten but most were low. One sample had nearly one ounce of silver, another had more than 4 ounces. No gold was detected. An estimated 200 units of WO_3 were produced from several hundred tons of ore mined before 1940.

Sample site 1840 is 500 feet to the east of the Crystal Prospect next to a small shaft on the contact between the Pogonip limestone and the quartz monzonite. The contact zone is filled with gossan-like material in silicified marble, and the quartz monzonite is coated with Cu-Fe oxides. Assay results from the mine sample were above the detection limit for copper, zinc, cadmium, and bismuth, with lesser amounts of tin and tungsten, and an ounce and a half of silver. The other three shafts and prospects at the mouth of the wash were sampled but the assay results were low.

A small adit and prospect pits on the east side of Oak Spring Wash, two-thirds of a mile north of the Crystal Prospect is the probable location of the W.A. Smith property. I.A. Smith (no relation) is reported to have hauled tungsten ore from this property to his mill near Butte Wash in 1941. The property contains a narrow, highly altered tactite zone which strikes north and dips close to vertical. The tactite zone has a strong dark-brown gossan-like outcrop stained with abundant copper oxides. Samples taken from dumps and prospects assayed high in copper with lesser values for lead, zinc, molybdenum and tungsten.

The Indian Trail Prospect or O.R. Spiers property starts about 500 feet northwest of drill hole ME-4 on the east side of Oak Spring Wash. The mine workings consist of a line north trending prospect pits in a narrow tactite lense that is hosted in Pogonip limestone. In 1940 about 110 tons of ore, containing 0.94 percent WO_3 , were mined from 3 prospects and milled at a dry concentrator in the district, yielding a net worth of 1150 dollars

(Stager, in prep.). Apparently this milling did not take place at I.F. Smith's mill near Butte Wash.

The tungsten exploration at the Tamney properties has historically followed a pattern of surface sampling to identify anomalies, and then drifting from below at a projected intercept. For such a technique to work, the mineralization and vein (ledge) systems must have continuity from the surface to the projected levels and faulting, which may offset the veins, must be accounted for. In the case of the main Cockscomb ledge, early workers were able to project the mineralized tactite outcrops down 75 feet to the level of the Carlisle Adit, but even at that level, the ledge had split into three smaller veins. The later DMEA work was unable to project or develop these veins at depth, and the same veins, when projected to the level of the Goldfield adit have disappeared. Whether or not the vein systems are too erratic or have been offset by faulting or both are questions that need to be answered before the mining potential of this area can be determined.

A possible course of action might be to resample the surface anomalies to confirm the 1938 data that everyone used to identify the orebodies, re-map the structures using the underground workings and existing surface maps, and then from these data, form a drilling plan.

Using this data base, the area could be expanded to include the mines in Oak Spring Wash and the area north of Tamney Camp, and might also be projected to areas where the contact zone is not exposed.

Climax Stock:

The Pile Driver, Tiny Tot and Hard Hat complex has been the biggest mining project to take place in the Climax Stock and has been the only one to be located totally within the quartz monzonite. This facility was dug for the testing of nuclear systems and is now in use as a high level nuclear storage facility. During the digging of the 1367 foot Pile Driver shaft and adjacent adits, minor mineralization was encountered consisting of chalcopyrite, pyrite, and molybdenite. Some of this mineralization is along fractures, some is in pink potassic alteration envelopes and some is disseminated through the matrix of monzonite. Much of the coarse-grained pyrite, chalcopyrite and molybdenite was associated with the pink potassic envelopes and with minor quartz veins, although some of the mineralization was disseminated in the matrix. Besides the quartz and potassic alteration, some chloritic alteration of biotite was in evidence. Similar mineralization can be seen in the dumps. There has been no attempt made to assess the size and grade of the mineralization. Assays from samples collected in the Pile driver adit and dumps generally had very low metal values.

Michigan Boy Mine:

The Michigan Boy Mine is located in a low swale 2 miles northeast of Yucca Flat and approximately 4 miles southeast of the Climax Stock. The old mine workings are at 4500 feet elevation and occur entirely within the laminated quartzites, siltstones and

shales of the Wood Canyon Formation of lower Cambrian age.

The 50 foot, inclined Michigan Boy shaft, eight prospects pits and another shallow shaft are aligned along a N40°E quartz vein system. Within this system, 6 to 12 inch veins are inclined as much as 60 degrees to the northwest in the southern prospects but appear to flatten out to the north. The veins have been emplaced along and within fault structures evidenced by drag folds in sediments adjacent to the fault. The vein material is vuggy white quartz with abundant copper-iron-manganese oxides, (malachite), pyrite and other sulfides. Alteration products along the brecciated vein-fault zone include limonite, hematite, jasperoid, and silica.

A brunton and tape survey was made of the area around the Michigan Boy shaft (see enclosed map). Assays from the eleven Michigan Boy samples averaged a little over 3 ounces of silver per sample and most had very high values for lead. However, none of the argentiferous galena reported by Kral (1951), was observed in the dumps or mine workings. Most of the samples had high copper values and seven were high in arsenic, barium and antimony.

About a half mile northeast of the Michigan Boy Mine is a group of prospects that were identified by old claim notices as the Prince Claims. All of these claims are located within the Precambrian Sterling Quartzite. The three major prospects that were sampled are in a N55°W alignment along brecciated quartz veins that range in width from 6 inches to 3 feet. In addition to being brecciated, the vein is cut by brown or tan jasper and opaline quartz. Mineralization consists of clots and streaks of malachite, azurite, and hematite after pyrite. Assays for three samples taken here were high in copper, lead and zinc and averaged a little over one ounce of silver per sample.

The mineral potential of the Michigan Boy Mine and area could be better understood by a program of trenching, sampling, and mapping and then drilling if the results were positive. These results might then be expanded to include adjacent prospects.

Twinridge Pluton Area:

The Twinridge Pluton is a quartz monzonite that crops out on the eastern side of Twinridge Hill in the Halfpint Range about 4 miles southeast of the Climax Stock. Maldonado (1981) offered a convincing line of evidence that the pluton may be genetically related to and possibly coalesce with Climax Stock at depth. The pluton intrudes quartzite and siltstone of the Precambrian Johnnie Formation. A zone of contact metamorphism exists along the margins of the pluton where it is in close proximity with sediments of the Rainstorm member of the Johnnie Formation. The exposed contact zone is about one mile in circumference.

A traverse was made of the exposed monzonite and breccia and dike material. No visible mineralization was found along, above, or below the contact zone or within the altered or unaltered monzonite. Assay values were generally low for metal in all three samples but were moderately high for barium.

SKETCH MAP SHOWING SAMPLE LOCATIONS

HALF PINT RANGE, NEVADA TEST SITE, NYE COUNTY, NV.

PRINCE CLAIMS

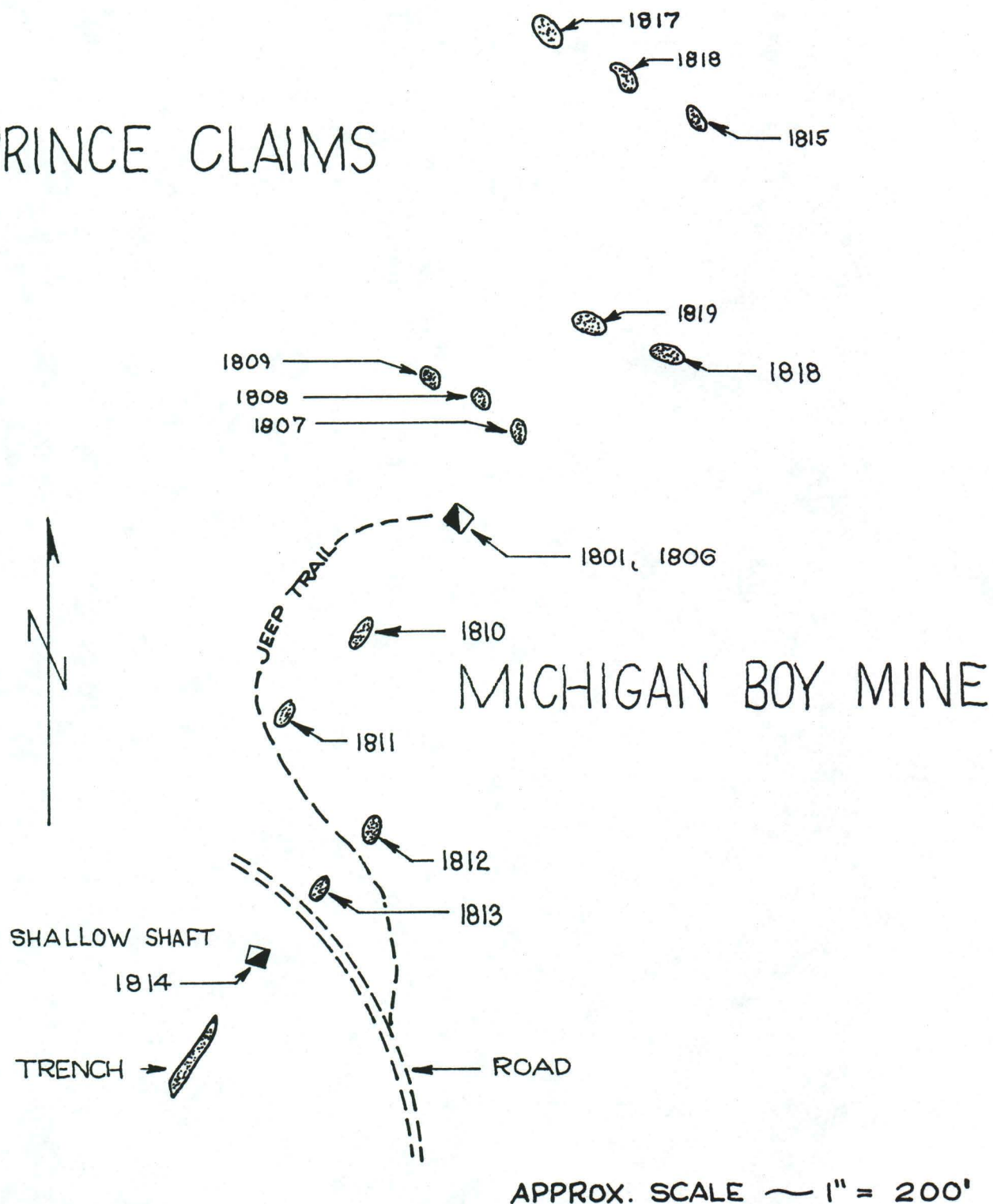


FIGURE 14. Sample location map, Michigan Boy Mine area

Rainstorm Mine Area:

The Rainstorm Mine is about 7 miles southeast of the Climax Stock on the northeast corner of the Test Site. The only access possible is via the Groom Lake Road, 1.4 miles east of Gate 700; then south 3 miles around the Hump to the mine. The mine workings consist of a 220 foot shaft, a 220 foot adit and a 210 foot drift off the main adit four large prospect pits, (see enclosed map) At the mine, the sediments have been identified as Precambrian Johnnie Formation and are composed of interbedded siltstone and some quartzite. The formation is badly fractured and faulted. Brecciation is common in outcrop and along the highly oxidized and silicified vein system.

The Rainstorm Mine workings are aligned along a nearly vertical vein system that strikes $N70^{\circ}W$. The biggest dump is next to the shaft which is reported to be 220 feet deep. The shaft was sampled at 40 and 100 feet respectively. Both of these samples were taken from brecciated veins that were highly silicified and contained galena, copper oxides and unidentified sulfides. Two more samples were taken from the dump and a third was collected from the prospect pits above the shaft which exposed a highly oxidized and brecciated vein that was over 2 feet wide in places.

The large adit is below the shaft at the bottom of the hill but the two workings do not connect at depth even though they are both on the same vein, and very near one another. The entrance to the adit is partially caved but access is possible. The adit follows the vein in an irregular fashion but maintains a $N70^{\circ}W$ heading for a distance of approximately 220 feet. Forty-six feet from the entrance the low dipping sediments ($N5^{\circ}E-22^{\circ}SW$) are cut by a high angle fault, $N5^{\circ}E, 75^{\circ}SE$. At approximately 190 feet from the entrance a lateral trends $N25^{\circ}E$ for a distance of 210 feet. The heading at the end of the drift is $N3^{\circ}W$ and is terminated in a fault. A sample was taken from the $N70^{\circ}W$ vein system at the face in the main adit. Two more samples were taken from the dumps. The main adit and the lateral meander over their full length apparently following the vein system. Neither of the workings show any appreciable lateral mining activity and the mineralization appears limited to the $N70^{\circ}W$ vein.

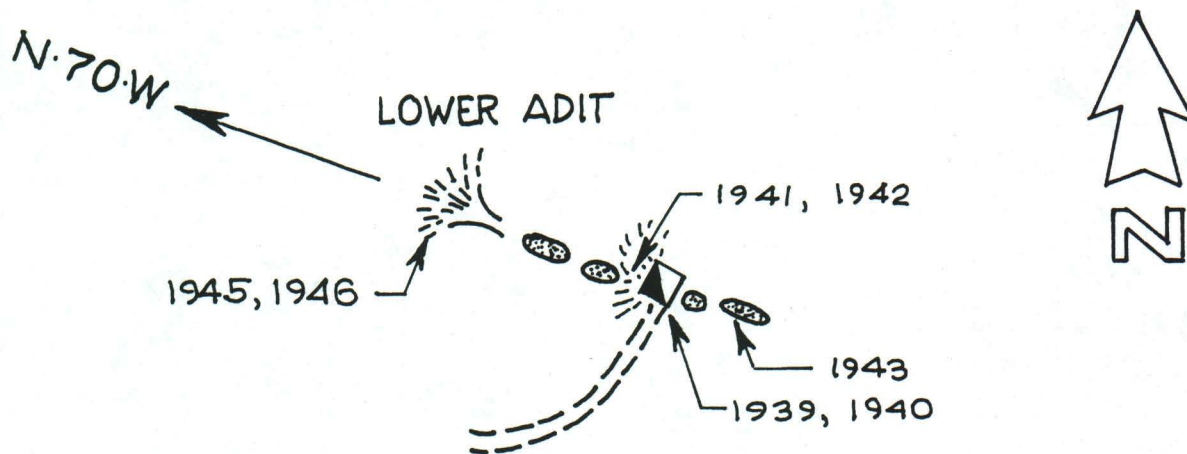
The best looking mineralization at the mine came from the large shaft. Shaft samples were mainly brecciated vein material with visible galena and unidentified dark metallics. Lower adit samples were similar but with more pyrite. Outcrop and prospect samples were highly oxidized breccias cemented with silica.

Assays from the four shaft samples were high in lead and silver with lesser amounts of copper. Silver ranged from 20 to 58 ounces of silver in the four samples. The prospect up the hill, but along the vein, assayed 1.5 ounces of silver from a silicified breccia. The assay results from the lower adit and dump were high in lead with lesser amounts of silver and copper. The highest silver value was 4 ounces. Gold was detected in all the samples but the values were low.

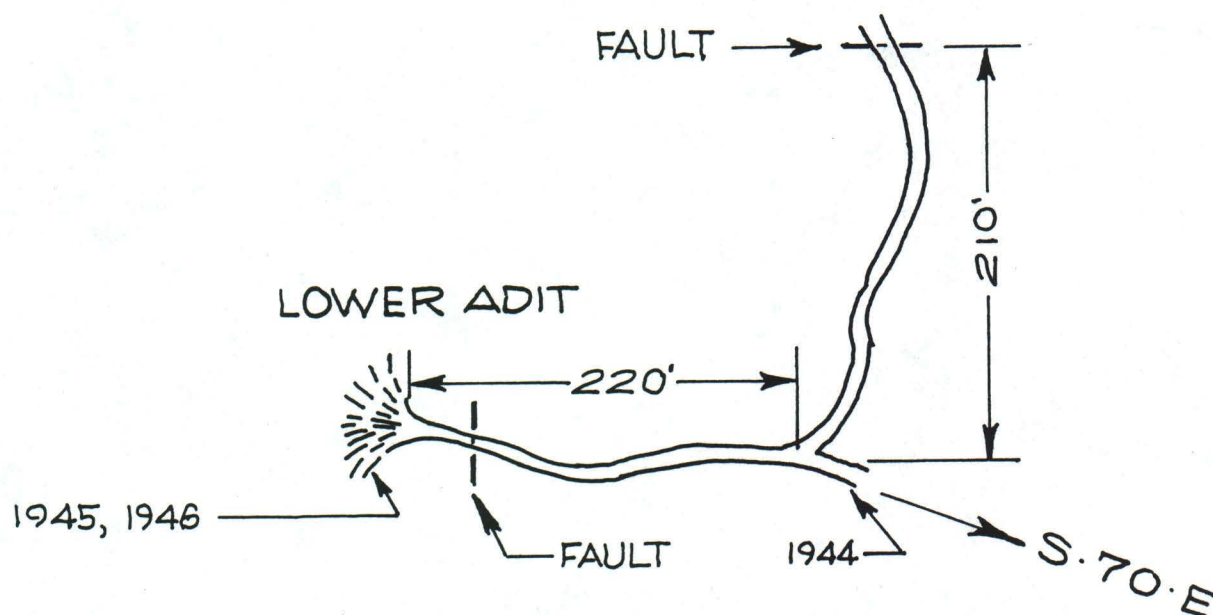
About 1.5 miles to the southeast, several small prospects and a shaft explored highly oxidized and brecciated veins in the Precambrian Johnnie Formation. The workings and the shaft are along a series of veins that strike $N70^{\circ}W$ and are nearly vertical.

SKETCH MAP~RAINSTORM MINE

HALF PINT RANGE, NEVADA TEST SITE, NYE COUNTY, NV.



LOCATION OF SURFACE SAMPLES, NOT TO SCALE ⚠



APPROX. SCALE ~ 1" = 200'

LOCATION OF UNDERGROUND SAMPLES

FIGURE 15. Sample location map, Rainstorm Mine area

The veins are highly oxidized iron-stained quartz that are partially brecciated. Alteration is extensive but most intense within 3-4 feet of the vein. Assays from samples collected near the shaft and prospects were generally very low with only one sample having trace amounts of gold and silver.

Within the area of the Rainstorm Mine and extending several miles to the southeast are numerous highly oxidized, brecciated and silicified veins that crop out along faults or appear as float in the drainages. Most of the veins are similar to those seen at the Rainstorm Mine and carry visible mineralization, but nothing is known of their potential. Mapping and sampling may identify areas of potential that would merit further development.

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