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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: FLYING SAUCER GROUP

ALTERNATE NAMES:
KINNON
LA MINA

MARICOPA COUNTY MILS NUMBER: 264

LOCATION: TOWNSHIP 6 N RANGE 6 W SECTION 12 QUARTER C
LATITUDE: N 33DEG 52MIN 33SEC LONGITUDE: W 112DEG 50MIN 13SEC
TOPO MAP NAME: VULTURE MOUNTAINS - 15 MIN

CURRENT STATUS: EXP PROSPECT

COMMODITY:
TUNGSTEN
COPPER
MOLYBDENUM
CALCIUM

BIBLIOGRAPHY:
DALE V USBM RI 5516 P 37
ADMMR "U" FILE
MEEVES H C USBM RI 6828 P 58
HICKS C ADMMR MOLYBDENUM REPORT 1979 P 17
CONFLICTING LOC. SEC 6-T6N-R5W "U" FILE
ADMMR LA MINA MINE FILE

USBM RI 5516, 1959 p. 32, 36, 37
(Flying Saucer Claims)

La MINA MINE
Maricopa County
Vulture Dist.

July 27, 1961 - Bill Kinnon's La Mina property (10 Flying Saucer claims - (Tungsten - Moly.)

TRAVIS P. LANE - Weekly Report - 7-29-61

Mr. Wm. Kinnon was in relative to the LaMina claims (Old Flying Saucer) where he has powellite in profusion. He wants to separate the molybdenum from it. He has drilled 5 holes there, the average being 365 to 400 feet deep. The powellite content is especially heavy under a rhyolite porphyry dike and lies in a zone that is 12 feet thick.

LAS WR 12/10/65

A visit was made to the Flying Saucer Group of 16 claims, with Mr. Wm. Kinnon, one of the owners, December 29, 1965. The Flying Saucer (Called La Mina) is 12 miles by road SW of Wickenburg, and 1½ miles W of the Vulture road. (A report will be submitted later on when Mr. Kinnon brings in the maps.

LAS WR 12/31/65

Wm. Kinnon was in with cores and other samples from the Flying Saucer, that showed strong fluorescence from powellite and much less from calcite and scheelite. Some contained oxidized copper and rare chalcopyrite. He also had maps and drill logs from four holes drilled during the last two years. His angel is agreeable to sinking 2 more holes.

LAS WR 4/1/66

Stopped to talk to Bill Kinnon in Wickenburg. He plans to do some diamond drilling on the old Flying Saucer Group of claims to locate either pomellite or copper deposits or both. He wanted me to examine the structure on the claims, but time was not available. VBD WR 2/4/75

Ken Phillips and I drove to lode claims owned by Bill Kinnon and others in Wickenburg area. VBD WR 3/5/75

REFERENCES:

SEE: USBM RI 5516 19[illegible] pp-32, 36-37 (Flying Saucer C[illegible]ms)

"U" File

USBM RI 6828 p. 58

ADMR Molybdenum Report 1979, p. 17

MILS Sheet sequence number 0040130282

Grey Metals (file)

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine La Mina (Moly-Tungsten) Date July 7, 1961

District Vulture Engineer Travis P. Lane

Subject: Visit of June 5, 1961

Property: The property comprises 10 contiguous unpatented lode claims in Sec.12, T6N, R6W, in the Vulture Mining District. It is 11 miles by road southwest of Wickenburg and about 2 miles north of the Vulture mine.

Ownership: The claims were located some 3 to 4 years ago by Wm. Kinnon, 28 East Catalina St., Phoenix, Arizona.

Deposit: The country rock is a medium to coarse-grained granite intruded by masses of porphry and occasional broad pegmatite dikes, also by a system of rhyolite and andesite dikes trending in an east and northeasterly direction. The moly-tungsten mineralization occurs in shear zones and sometimes in thin quartz veins in both the granite and the porphry. The mineralization seems to be related to dike intersections of the shears and veins. The tungsten mineral is principally Powellite accompanied by some scheelite. The principal moly mineralization appears to be ferrimolybdite and minor other oxidized moly minerals. The moly and tungsten minerals occur generally in close association and in fairly uniform ratio with each other and for this reason fluorescence of the tungsten serves to indicate the presence also of moly minerals.

DEVELOPMENT: Work on the property is confined to pits and bulldozer cuts and trenches mostly done at places showing greatest surface mineralization.

COMMENT: Except for several assays of pieces no sampling has been done., The extent of the mineralized area is indicated by fluorescense of the tungsten minerals, powellite and scheelite, and measured in this manner the deposit appears to be roughly 1 mile long in an E-W direction and upwards of 2000' wide. While many places of intensive fluorescense are noted most of the area shows only sparse fluorescense. Until some systematic sampling is done and corresponding fluorescense noted thus permitting correlation of degree of fluorescense with actual assay it will be impossible to make an appraisal of values. It is particularly difficult because the principal tungsten mineral, powellite, is soft and powdery, and thus often deceptive as to the volume indicated by lamp.

Mr. Kinnon recognizes the need for sampling and assaying now that he has fairly well delineated the area of mineralization, He proposes this sampling as a next step in proving the deposit.

LA MINA MINE

MARICOPA COUNTY
VULTURE DIST.

June 5, 1961 - Visited Wm. Kinnon's La Mina property (moly-tungsten) in the Vulture district some 10 miles SW of Wickenburg and 4 miles north of the Vulture Mine. The 10 unpatented contiguous claims of this group are located in Sec. 12, T.6N., R.6W. The country rock is granite intruded by masses of porphyry and occasional dikes of pegmatite and also by a system of rhyolite and andesite dikes trending east and northeast. The valuable minerals (principally powellite and oxidized moly minerals) occur in shear zones and in narrow quartz veins in the granite and the porphyry. Development consists of numerous cuts and dozer trenches, and appraisal of the valuable content is by fluorescent lamping. This is possible because of the usually uniform mixture of the fluorescent mineral powellite with the non-fluorescent moly minerals. No systematic sampling has been done.

TRAVIS P. LANE - Weekly Report - 6-10-61

MEMORANDUM

March 16, 1961

THe LaMina Molybdenum - Tungsten Deposits

The property is located in section 12, T6N,R6W in Maricopa County, Arizona, at an elevation of about 2,900 feet in the Wickenburg Mountains. It consists of 10 unpatented lode mining claims in a contiguous group. The property lying southwest of Wickenburg, Arizona, is reached over 4 miles of black-top and 7 miles of County maintained gravel road. The area is of moderate physical relief cut by numerous dry washes which flow southerly. Approximately 4 miles south is the Vulture Mine.

Geologically this portion of the range consists of medium grained granite intruded by porphyry dikes and occasionally by pegmatite. Dikes of rhyolite and andesite trending east and northeast have intruded the mineralized area. The deposits are genetically connected with these dikes and particularly with the diabasic and lamprophyric later phases. The deposits occur in both the granite and the porphyry within shear zones and veins, along which wall rock alterations have developed principally of carbonates, sericite, chlorite and hydrothermal clays.

Powellite, $Ca(W,MoO_4)$ the principle ore mineral fluoresces creamy to golden yellow. Minor amounts of scheelite fluoresces white to bluish-white. The mineralization is easily traced with ultra-violet (UV) light except where tungsten is absent and non-fluorescent ferrimolybdite is the representative mineral. In ordinary light the powellite varies from white to yellowish and is difficult to discern even in highgrade specimens.

The minerals occur in fine to medium size grains (up to quarter-inch cubes) and in flakes, disseminated in the rock and as filling in the fractures. The gangue mineral associations include coarse to fine-grained quartz, feldspar, cubic hematite and mica with minor epidote, magnetite and fluorite. Powellite is a secondary mineral, usually an alteration product of the stable molybdenite. It together with ferrimolybdite, also an alteration product of molybdenite, indicates that the sulfide mineral lies below the outcroppings.

According to Dr. Vincent C. Kelley (1), molybdenite the principal hypogene molybdenum mineral appears to form and be stable in a wide range of pressure and temperature conditions. It may be termed a "persistent" mineral like pyrite or chalcopyrite and occurs in deposits formed at shallow as well as great depth.

The porphyry dikes appear to be the source or to have formed the channels for the hypogene mineralization. In places the porphyry seems to have thermally conditioned the adjacent granite for the ore minerals.

At increasing depth and greater temperature the thermal conditioning should be more extensive possibly producing larger deposits.

The present trenching and open cuts have not penetrated to the sulfide zone. The work has exposed numerous highly altered mineralized zones containing sericite, clays, calcite, silicates and minor hematite and fluorite. In these deposits the most abundant ore mineral is powellite. This is a more stable mineral than ferrimalybdite and the other secondary molybdenum minerals. There is evidence that the latter minerals have been leached from the surface deposits while the powellite being friable and mostly fine grained has to quite an extend been removed mechanically from the outcroppings.

The ore deposits already outlined represent a considerable tonnage prospect of molybdenum and tungsten metal. These surface deposits of the oxide ore have commercial possibilities in leaching and the liquid-liquid extraction processes or in flotation and gravity concentration followed by the fused-bath electrolysis process. (2)

In these surface deposits the grade of ore going to a treatment plant could be controlled by means of selective mining using UV lamping to determine the limits. Hand sorting under UV light is another means. Another method would be in the use of heavy media seperation.

Through selective mining means it should not prove difficult to deliver a "mill head" of 0.1% WO_3 and 0.5% MoS_2 which at present metal prices would roughly be equivalent in value to 2.5% copper ore.

The deeper deposits should contain molybdenite which is one of the easiest minerals to recover by flotation and at high recovery. The tungsten mineral will probably be scheelite which could also be concentrated by flotation to a marketable grade.

Pieces of ore from over the property which lamped strongly were assayed by the Bureau of Mines as follows:

				Parts per million	
	WO_3	MO	MOS_2	Re	$CaCO_3$
Quartz Veins	.227%	1.24%	2.07%	1.6%	
Granite	.12	.39	.65	.8	
Porphyry	.06	.13	.217	.5	
Veins, porphyry and granite (KISSOCK)	.095%	.795%			4.27%

The future of molybdenum is excellent as it is one of the most versatile alloying metals in the production of high quality steel. It is one of the best additives for providing high-temperature alloys used in jet and rocket propulsion engines. Its use in stainless steel, lubricants and inks are well known. Extruded billets of arc-cast refractory molybdenum and recent development of a series

of molybdenum-tungsten alloys for the missile industry open up new fields where heavy tonnages of these metals will be required.

W. C. Kinnon,
Registered Mining Engineer
March 16, 1961

nc

References:
(1) Molybdenum New Mexico Miner, Sept. 1952
(2) Bureau of Mines R.I. 5554

La Mina and Grey Metals Claims.
Vulture Mining District.
Wickenburg, Arizona.

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA 85007

March 20, 1975

To: John H. Jett, Director

From: V. B. Dale, Mining Engineer

Subject: Reconnaisance report on the Gray Metals Group of three unpatented Lode Claims in the Vulture Mining District, Maricopa, Arizona and on the La Mina Group of 26 claims.

On March 6, 1975 we also examined the La Mina group of 26 unpatented lode mining claims in Secs. 11 and 12, T6N, R6W, G&SRB&M, also owned by W. C. Kinnon and associates. These claims are relocations in part of the Flying Saucer group of lode claims described in report of Investigations 5516, Tungsten Deposits of Yuma, Maricopa, Pinal and Graham Counties, Arizona, by V. B. Dale, at page 37.

Essentially the same geologic horizon exists here as on the Gray Metals claims. A large mineralized shear zone trending northeast contains copper minerals and powellite.

Workings consist of several shallow surface openings and one shallow shaft. A number (9) of diamond drill holes have been put down to depths of over 500 feet. Assays to 1.9 % MoO_3 have been reported. Three channel samples cut on the surface in 1967 yielded the following results.

#1 - 12' channel - 0.6% MoO_3
#2 - 14' channel - 0.98% Cu
#3 - 12' channel - 1.12% Cu

The oxide ore (powellite) extends to about 400 feet below the surface according to Mr. Kinnon. Some disseminated chalcopyrite with minor barnite. Based on spectrographic analysis, the powellite contains minor copper. Minor tungsten also occurs with the powellite. The powellite is widespread and occurs in all formations of the area, but to very minor extent in the altered lamprophyre dikes. The extent of the copper mineralization has not been determined.

A very small part of the cores have been assayed for MoO_3. I recommend that all core be split and assayed for both copper and molybdenum as a starter to a copper exploration program, after which a surface sampling program be carried out. Then if warranted, more core drilling should be planned to determine the extent and quality of the copper-molybdenum deposit.

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA 85007

March 20, 1975

To: John H. Jett, Director

From: V. B. Dale, Mining Engineer

Subject: Reconnaisance report on the Gray Metals Group of three unpatented Lode Claims in the Vulture Mining District, Maricopa, Arizona and on the La Mina Group of 26 claims.

On March 5, 1975 in company with Ken Phillips of the Department and William C. Kinnon, one of the owners, I examined the Gray Metals, Gray Metals No. 1 and Gray Metals No. 2, unpatented lode mining claims situated in Sec. 11, T6N, R6W, G&SRB&M.. The claims are owned by Kinnon and associates. Mr. Kinnon's address is Saguaro Drive, P.O. Box P-2, Wickenburg, Arizona, 85358.

Workings consist of a shaft said to be 200 feet deep with a bulkhead at 50 feet, a shaft probably 50 feet deep, and numerous small open cuts and shallow adits and shafts.

A fault zone trending nearly E-W and dipping steeply north is exposed for approximately 1000 feet and varies in width up to possibly 60 feet (not measured). There are three well mineralized, essentially parallel structures within the fault zone that carry enriched oxide and sulphide copper mineralization. According to Mr. Kinnon, chalcocite was determined to be of primary origin by Lamar Evans, former mineralogist with the U.S. Bureau of Mines. Most of the ore production has come from the middle structure. Two settlement sheets for shipments in 1930 and in 1936 are attached along with two assay certificates.

The Arizona Geological map shows the basement rock of the area to be Precambrian granite. I saw only one small exposure of what I felt was Precambrian granite. The fault zone cuts what I velieve is a younger granite, along with probable Tertiary rhyolite and andesite and some probable monzonite. Highly altered basic dikes, probably lamprophyre are evident in all formations. Mr. Kinnon showed me the first drill site location, and I believe it will reveal anticipated data. Based on dips at surface, the hole will be slanted to cut the mineralized fault zone at 150 to 200 feet velow the surface. This will test sulphide mineralization and thinning or widening of the zone. There are indications that at least two of the enriched structures may come together at depth, in which case enrichment probably will occur. A squeesing of the entire fault zone would cause the same effect. The second hole will be drilled after cores from the first hole are analyzed.

June 12, 1967

Mr. Irving F. Moore
Western Ventures
Reno, Nevada

Subject: Reconnaissance Report, La Mina Group, Vulture Mining District, Maricopa County, Arizona

The La Mina property was visited on June 10th and 11th in company with Mr. William Kinnon, one of the property owners. The visit was made at the request of Mr. Steve Congdon, Geologist.

Location

The La Mina Group of 20 claims is located in sections 11 and 12, Twp. 6N, Range 6W, Maricopa County. The property, in the Vulture Mountains, is 4 miles north of the Vulture Gold Mine. The Claim Group is 10 miles from the center of Wickenburg by good county road; about one-third of the road is paved. All of the claim area is accessible by primitive interior development roads. Access to the property is indicated on the U.S.G.S. Vulture Mtns., Arizona Quadrangle topographic map. Figure 1, attached to this report, shows the claims, basic topography and basic geology.

Property

The claims were acquired in the 1950's by Mr. W.C. Kinnon, 1301 E. Lawrence Lane, Phoenix, 85020. Mr. Kinnon began with a few claims and has staked peripheral claims during recent years. The claims have been surveyed by acceptable reconnaissance methods, although not to the precision required for patent. Mr. Kinnon has transferred 51% interest in the claims to a Mr. Hobbs, an affiliate of Mines Exploration Company.

Title to the claims is apparently valid. All are unpatented. Annual labor affidavits have been recorded each year.

Areas adjacent to the LaMina Group were staked by Mr. W.D. Roper of Safford during 1963-64. Mr. Roper's 300 claims are reported to have become invalid due to non-performance of assessment work. Mr. Kinnon stated that Mr. Roper might possibly be still interested in the district -- as a copper possibility -- but that Mr. Roper has many stronger interests in other districts.

Other claims nearby are held by the Renegade Mining Company. These are not immediately adjacent to the LaMina Group.

There has been no production from the immediate property. Some copper ore, several hundred tons of 40% Cu ore, are reported to have been shipped by the Bright Angel Mining Company from a mine one mile to the West.

Facilities

Rail, Santa Fe, R.R., is at Wickenburg. Supplies, housing and power are also at Wickenburg. Water is available at Wickenburg and has been sold to drillers at $0.50 per thousand gallons. Water could probably be developed on the flats 3 miles to the southeast of the mine -- as it has been at the nearby Vulture Mine.

Geology

The local area is composed of Precambrian granite plus a variety of fine-grained tertiary intrusives and volcanics. The tertiary rocks range in composition from rhyolite to andesite and are part of the generally andesitic volcanic area of the Vulture Mountains.

As shown on Figure 1, the fine-grained porphyry exposures (dark blue) trend generally to the NE. This is also the trend of the major fracture zones containing copper mineralization (copper in green, powellite in red). Minor fracture zones trend ENE and E -- these contain major powellite and minor copper mineralization. A north-trending zone of powellite-filled fractures occurs at the best surface exposure of powellite; this trend is very localized and not reflected, as apparent at the time, in the rest of the property. The area has a well-developed northwesterly fracture and jointing trend -- not mineralized, but possibly important in offsetting the mineralized zones.

Mineralization

The major mineral of interest is powellite, calcium molybdate. There are minor amounts of scheelite and there is an overall association of oxidized copper mineralization with fracture zones in the claim group.

Powellite occurs on fracture surface and as disseminated flakes. Most of the powellite is apparently associated with the contact zones between granite and andesite porphyry. Mineralized fracture surfaces are closely spaced -- down to fractions of an inch; the disseminated powellite is undoubtedly fracture controlled as well.

It is significant that there are two modes of powellite occurence:

1. In both granite and andesite near contacts -- generally with very minor copper mineralization

2. In granite away from the andesite contacts and with more copper mineralization. In these occurrences, there is noticeable limonite staining and also some limonite casts after pyrite.

The suggestion and the interpretation at this time is that the second, or granitic occurrence is a direct remnant of copper sulfide-molybdenite mineralization. The granite-andesite mineralization is likely to be of secondary origin -- richer in grade within 1,000 feet of the surface but not associated with sulfides at depth.

Molybdenum minerals other than powellite are not widespread; in fact only a small amount of molybdenite was noted (in the granite) and a doubtful identification of ferrimolybdite was made at several places in both granite and andesite.

In an alkaline environment and with minor copper, as in this area, molybdenum complexes are very soluble. As a result, the surface exposures of powellite have been leached -- and there is considerably more powellite at depths of a few feet in dozer cuts than at the surface. The drill-hole intercepts, disucssed later, are also richer than the surface exposures.

Sampling and Grade

The grade of the mineralization is difficult to determine because of leaching at the surface, which tends to diminish the assay values in surface channel cuts. Values are in molybdenum, tungsten and copper -- with each metal behaving differently during weathering.

The localization of mineralization is quite readily seen with short-wave ultra-violet light at night -- but the determination of grade by this method is only relative.

The grade of ore in drill holes is much more reliable -- beneath the zone of shallow leaching.

Sampling at the surface from three channel samples, shown on Figure 1, assayed as follows:

1 - 12' channel - 0.6% MoO_3

2 - 14' channel - .98% Cu

3 - 12' channel - 1.12% Cu

Six core drill holes have been drilled on the property.

Five of the holes have cut ore mineralization. The logs

Mining and Processing

The best ore intercept is at a depth of 340 feet. This intercept undoubtedly ties in with one of the surface exposures dipping about 50 degrees. In all, the readily available ore would be amenable to underground mining with stoping widths of 6 feet to nine feet, depending upon actual dip. Depth to the shallowest level would be on the order of 100 feet.

The processing of the ore is a large question which should be among one of the first things verified.

Three possibilities exist:

1. Concentrate by flotation (apparently feasible) and ship concentrates to Pine Creek, Calif. for processing.

2. Ship flotation concentrate directly to steel companies, following a market survey.

3. Leach flotation concentrates after calcining. A flow-sheet on this could be worked up with one of several organizations.

The proper disposition of the ore would depend very largely upon the reserves and grade to be determined in the high-grade zone. This, therefore, is the prime target.

Recommendations

While the geologic relationships of the petrology, structure, and ore mineralization are important, the major objective should be more direct -- namely to answer the two questions:

1. Is there enough ore-grade mineralization in the major underground mining zone intersected by drilling to make a profitable operation,?

2. Is there a firm market for this amount of product at a reasonable rate of shipment and at the specifications attainable? What is the value?

The first question cannot be answered by surface mapping and sampling. It can be answered only by penetrating the ore zone and obtaining an ore reserve and grade picture. One drill hole, to about 800 feet can establish the continuity. Two additional drill holes to about 600 feet can give enough of an estimate of tonnage to permit investment in beneficiation and marketing investigations. Mr. Kinnon has a good picture of the geometry of the ore zone and can be depended upon to spot the best drill holes.

The second question will be answered by mill-testing and by negotiations with ore buyers.

The property may have a much larger potential in sulfide ore with molybdenum-copper values than in the secondary powellite mineralization. This investigation would, however, require a very large capital outlay -- on the order of 100 thousand dollars or more, and could be carried on later. The risks in this phase would be high.

I suggest that the following steps be taken in the sequence indicated:

1. Drill hole to 800 feet near the high grade zone to cut the zone.

800' @ $9/ft.	$7,200
Mobilization	200
Assaying	100
Total	$7,500

2. Two drill holes to 600 feet each

1200' @ $9/ft.	$10,800
Assaying	200
	$11,000

3. Mill-testing on core and on selected surface samples ..... $800.

4. Completion of ore reserve drilling and engineering studies.

In my opinion, it will be best to consider the property as a small high-grade proposition requiring a few tens of thousands of dollars to put in operation rather than a large low-grade sulfide property with high risk and requiring hundreds of thousands of dollars for pre-engineering and geology.

W. C. PETERS
(signed)

March 28, 1969

Dear Mr. Kinnon.

Enclosed are the rock reports for the #3 and # 6 D. D. cores and the billing for the work. I am sending by parcel post the sections and rock chips.

It is my opinion that the powellite has been derived from altered molybdenite. The presences of calcite suggest an environment of high pH and low Eh, which are required for the formation of $MoO_4^{=}$ from MoS_2. However, the occurrence of the majority of the powellite in fractured regions (slide 1c) and in calcite veinlets or carbonated plagioclase crystals (slide 1b) suggests that the powellite was mobil and has been transported. Concerning the distance and source area (whether above or below the present location) one can only speculate.

The formation of powellite in place from molybdenite cannot be shown in thin section. No replacement of molybdenite by powellite was observed. Also the disseminated powellite appears to be more disseminated and finer grained than the molybdenite observed. This latter is not very strong evidence as not enough molybdenite in granodiorite was seen.

I would recommend that the D.D. core containing the molybdenite be looked at more closely, especially near the upper portions, for evidence of powellite after molybdenite. It may be that the powellite in the shear or fractured area is due to oxidation and that there may be molybdenite at depth.

If I can be of further assistance feel free to call.

Sincerely

James O. Guthrie

James O. Guthrie
2323 Cameron Vista
Tucson, Arizona 85713

Rock Reports.

#3 D. D. Core.

Slide 1a.

Hand specimen.
The rock is a white, well altered, medium grained granitic rock. The occurrence of powlite is only recognizable under the black light. It occurs as fine, desseminated flakes.

Microscopic.
A highly altered, medium grained, hypidiomorphic-granular granitic rock, probably granodiorite.
Alteration is primarily argillic although minor calcite and epidote are present.

Feldspar. It is mostly clay with some minor clay and epidote.

Biotite. It is fresh appearing, but is quite ragged and exhibits some recrystallization texture (formation of small clusters of fine grained flakes; the ragged, somewhat difuse appearrance of the boundary of the flakes; and the rimming of many of the flakes by leucoxene).

Sphene. It is mostly replaced by leucoxene.

The areas which give florescence under the black light have semi-opaque, fine grained, irregular graines which, under reflected light, are a yellowy white color. These possible powellite graines are locally dissimenated throughout the rock.

Slide 1b.

Hand specimen.
The rock is a moderately altered, medium grained, hypidiomorphic-granular granodiorite and is cut by several calcite veinlets. Under the handlens only a few yellow, fine grained crystals of powelling are observable. Under the black light the powellite is more apparent. It occurs in the calcite veinlets and as fine desseminated flakes or graines in the rock.

Microscopic.
The rock is a medium grained, moderately altered, hypidiomorhic-granular granodiorite cut by calcite veinlets.

Slide 1b.

Alteration is primarily calcite replacing the plagioclase.
Feldspar (mostly the plagioclase) altered to calcite with some minor clay.
Biotite appears fresh, there is some recrystallization with the formation of secondary biotite.
Sphene is relatively unaltered.

Z Opaques.
magnetite minor hematite alteration, fine grained, interstitial.

powellite (semi opaque and is white under the reflected light) It occurs primarily in the calcite vienlets as acicular to irregular, somewhat botuoidal to radial appearring masses. Occassianal fine grains of irregular, radial appearing masses occur in the groundmass associated with the carbonated plagioclase crystals.

Slide 1c.

Hand specimen.
The rock is a moderately altered, medium grained, hypidiomorphic granodiorite. One portion of the sample exhibits a fractured region which containes Hematite and powellite. This area displays fairly abundant powellite. Small, disseminated flakes of powellite throughout the rest of the rock is very apparent under the black light,

Microscopic.
The rock is a well altered, medium grained, locally modified hypidiomorphic-granular granodiorite. Portion of the slide exhibits a brecciated fabric. In this area the rock exhibits recrystallization texture, primarily of quartz, and more alteration than in the unfractured rock. The fractures are filled with hematite and powellite.

Alteration is argillic.
Feldspar is altered to clay.
Biotite appears to be frexh, but exhibits ragged flakes and there is some fine grained, secondary biotite present. Leucoxene occurs associated with it also. Some minor sericitization of biotite occurs in the brecciated region.

The powellite occurs as white to yellowish white, irregular to somewhat prismatic grains under reflected light. They are generally concentrated in the brecciated region. They do occur disseminated as fine, irreguhar flake-like grains throughout the rock.

Rock Reports.

#6 D.D. Core.

Slide 2a.

Hand specimen.

Medium grained, hypidiomorphic-granular, moderately altered granodiorite. Rock contains interstitial pyrite, chalcopyrite and molybdenite. The pyrite and chalcopyrite occur as medium to fine, irregular to oblong grains and appear to be interstital to the silicates. The molybdenite occurs as fine, tabular to irregular grains; it is both disseminated in the silicate matrix and with some of the chalcopyrite.

Microscopic.

Medium grained, modified hypidiomorphic-granular, moderately altered granodiorite. There is minor recrystallization and brecciation which has modified the original igneous texture.

Alteration is primarily argillic.

Feldspar (mostly the plagioclase) - clay (montmorillonite and halloysite)
Biotite - mostly fresh, minor chlorite. In th e area of brecciation fine, secondary biotite has been formed.
Sphene - some leucoxene alteration
Chalcopyrite and pyrite - some minor formation of iron oxide alteration

Opaques.

1. Chalcopyrite and pyrite. fine to medium, euhedral to anhedral, irregular grains. Occur interstitially and in apparent shear areas. (Find elongate or several grains alined; associated healed zones in the silicate matrix). The grains are generally rimmed by hematite.

2. Magnetite. fine, anhedral, interstitial grains.

3. Molybdenite. none apparent in thin section under reflected light.

Rock Reports.

#6 D. D. Core.

Slide 2b.

Hand specimen.

Quartz vein containing chalcopyrite, pyrite and molybdenite. Calcite veinlets criss-cross the quartz matrix. Minor hematite alteration is present.

The pyrite and chalcopyrite occur as medium, irregular grains and appear to be in areas of fracturing. The grains appear to be fractured and are generally being altered to hematite.

The molybdenite occurs as small clusters of fine flakes in areas of fracturing and as small flakes rarely with the chalcopyrite.

Microscopic.

Fractured and trained, fine to medium grained, sutured textured quartz rock criss-crossed by small veins of calcite.

Opaques.

1. pyrite and chalcopyrite. irregular, medium to fine graines, partly altered to iron oxide (limonite-hematite). Some of the iron oxide occurs with the calcite veining.

2. molybdenite. very fine flakes occurring in irregular, shredded clusters and as rare, fine grained flakes. The calcite veinlets cut and disrupted the lager clusters of molybdenite.