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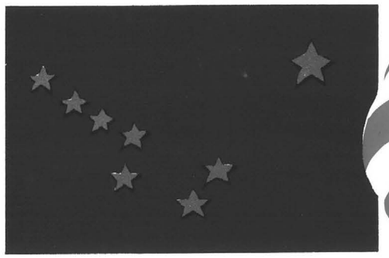
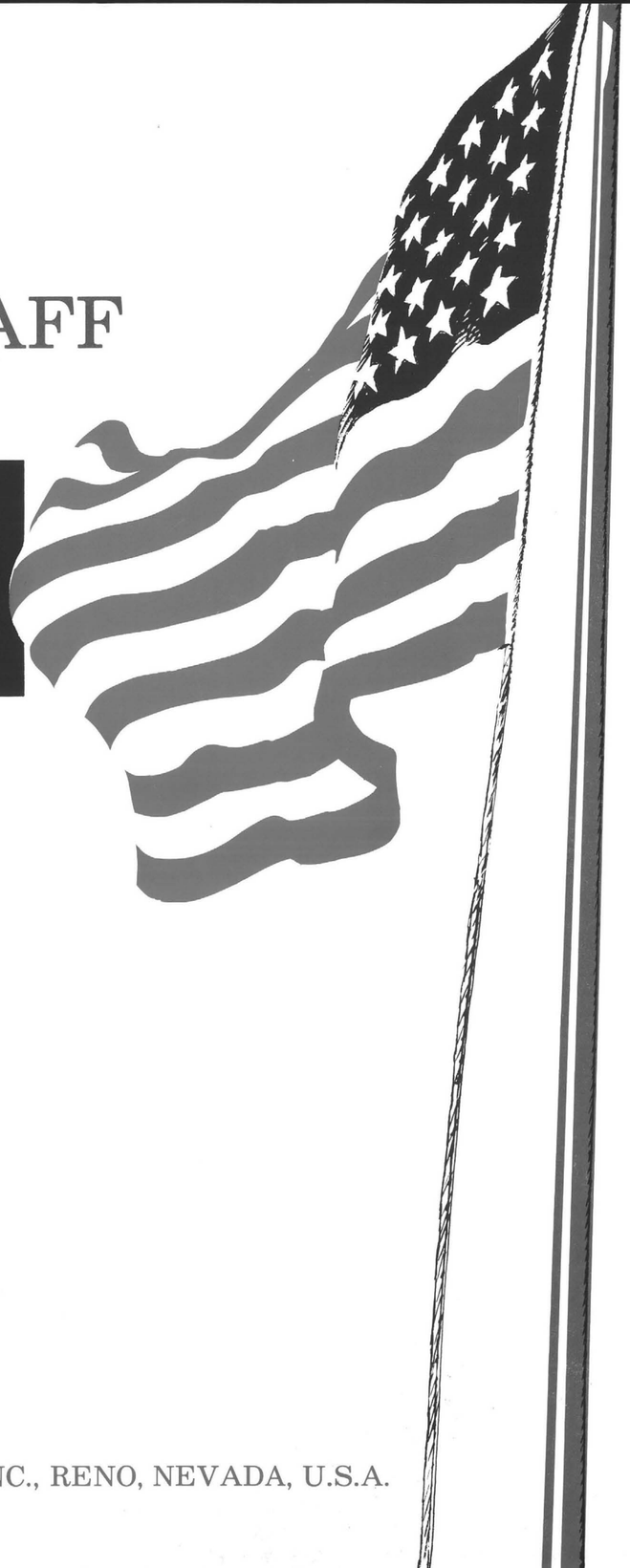
# FLAGSTAFF
## GOLD PROPERTY
## ALASKA



A PROPOSAL



ORELL RESOURCES INC., RENO, NEVADA, U.S.A.

# A
# JOINT VENTURE
# PROPOSAL

Km 100 0 100 200 300 400 Km

Miles 100 50 0 100 200 Miles

| ORELL RESOURCES INC. | | | |
|---|---|---|---|
| FLAGSTAFF PROJECT | | | |
| LOCATION MAP | | | |
| PLAN No. 324 | DRAWN R.S.L./C.D. | DATE AUG. 1981 | FIGURE 1 |
| Revised | | CRAIG C-2,C-3 15' Quadrangles | |

ORELL RESOURCES, INC.

MINERAL CLAIM LEASES

MINERAL CLAIMS OWNED

STATE OF ALASKA

1. Flagstaff #1 to #7 Lode Claims
Ketchican Recording District
State of Alaska Record Nos. 75-1546-7
75-3365-69
Bureau of Land Management
U.S. Department of Interior Record Nos. AA32495-32501

| | |
|---|---|
| Expiry Date: | September 30, 1982 |
| Leased from: | SEAX (an Alaska general partnership)<br>% Mr. Mark F. Murdock<br>SRB 301A<br>Palmer, Alaksa 99645 |
| Term: | 5 years from May 15, 1980 |
| Rental: | First Year: $100 U.S. (paid)<br>Second year: $1,000 U.S. (paid)<br>Third year: $5,000 U.S. - Due May 15, 1982<br>Fourth year: $10,000 U.S.<br>Fifth year: $20,000 U.S. |
| Royalties: | 2½% to SEAX of the net smelter return and 2½% to El Paso Mining & Milling Company of the net smelter returns |
| Option to Purchase: | Orell can purchase claims for $500,000 U.S., but royalty remains. Price escalates by Consumer Price Index. |
| Area of Interest: | Area of one mile from any portion of claims is subject to agreement. |

2. Prince of Wales Island
Tongass National Forest
Ketchikan Recording District

Flagstaff #8-46 (39 claims)
Record Nos. 81-2925 - 81-2963 (inclusive)

Expiry Dates: September 30, 1982

Bureau of Land Management Rrcord Nos. still to come.

Held subject to agreement dated May 15, 1980 with SEAX (an Alaksa general partnership).
% Mr. Mark F. Murdock
SRB 301A
Palmer, Alaska 99645

* Figures #2, #3 and #4 Included at Back

* Figures #5, #6 Available Upon Request

# INTRODUCTION

Orell Resources Ltd. is a public trading company listed on the Vancouver Stock Exchange, Vancouver, British Columbia, Canada.

The property is located on Granite Mountain, Prince of Wales Island, Alaska, and is operated under Orell Resources, Inc., Reno, Nevada. There are 46 claims staked.

The purpose of this proposal is to inform interested parties, who after examination of the following information, may be interested in a joint program for further development of the property. Such a joint program could commence with further drilling on the Flagstaff, Buckhorn, Cross and the Clipper-Cutter veins.

Quartz veins bearing base and precious metals on Granite Mountain were discovered in the early 1900's. Mining and exploration continued into the 1940's resulting in the discovery of several other mineralized veins.

These veins are of good width and length, some over 10,000 ft. in length, with gold and silver values ranging from low to high. Previous workings have left 1100 ft. long adits at 1400 ft. elevation. Several raises have been driven up and a winze is also present.

The following information was compiled for Orell Resources, Inc. by R. M. St. Louis, B. Sc. Geologist, R. James Black, PhD. P.Eng., and David Kuck, P. Geologist.

This report describes the geologic mapping, geochemical sampling, and potential of the Flagstaff group of claims on Granite Mountain. The information contained herein was gathered in July and August 1981 by Mine-Quest Exploration Associates for Orell Resources, Inc.

## Location

The Flagstaff group of claims is on Granite Mountain, within all or parts of sections 7, 8, 9, 16, 17, 18, 20, 21, Township 73 South, Range 84 East. The mountain is south of Salmon Lake and north of Hollis, on the east side of Prince of Wales Island, Alaska (Figure 1). The entire claims area is within the Tongass National Forest.

## Topography

The claims cover much of Granite Mountain, which is characterized by steep, rugged topography. Above timberline (elevation 800 m) the ground consists of benches separated by short cliffs. In addition, there are many large, inaccessible cliffs, steep slide areas, and numerous talus fields. The potential for rock and debris slides is great; one rock slide was heard during the field work. Outcrop is plentiful, although most of the major lineaments tend to be recessive and filled with debris.

Below timberline the slopes are steep to about 300 m. elevation, where they begin to flatten into the valleys. Mature and overmature spruce, hemlock and low bush thickly wood the area. Deadfall and blow-down are common. Outcrops are fairly numerous below treeline, but are largely inaccessible due to the cliff-forming nature of the bedrock.

## Access

There are no roads on or into Granite Mountain, so transport is by helicopter. An arrangement was made with Temsco Helicopters of Ketchikan, whereby the field crew was picked up at the Camp Hollis Forestry helispot. This area is conveniently located near the main road between Klawock and Hollis. The road is unpaved but is kept in good condition. It should be noted that this road is very dusty in dry weather.

Although helicopter landing sites are numerous above timberline, there are very few below. A muskeg above and north of the Flagstaff mine was used for work in the mine area. The muskeg has been cleared and a trail flagged from there to the adit. Landing at the adit is not recommended.

At present there are no accommodations in the Hollis area. Lodging is available in Klawock, 40 km west of Hollis. During the field season the crew stayed at the Fireweed Lodge in Klawock, which offers excellent rooms and meals.

Gasoline is available in Craig and Klawock. It is best to have a vehicle that uses regular gasoline. Unleaded is available in Craig but cannot always be obtained. A spare gasoline can is helpful.

## Climate

Prince of Wales Island normally receives about 5 m. of precipitation per year, much of which is snow. The precipitation can prove to be a hindrance to field operations as the mountain tends to be under dense cloud during rain. In addition, the deep (up to 7 m.) snowpack often remains well into August, making many outcrops inaccessible. However, the summer of 1981 proved to be exceptionally dry, so a minimum of time was lost to weather. Most of the snowpack had melted by the end of July, making many additional outcrops available for observation.

Summer temperatures can be as high as 25°C on clear days. In cloudy weather, the air temperature ranges from 5° to 15°C.

The steep topography, limited soil cover, and bedrock fracturing all contribute to drastically limit the amount of water that can be held on the mountain. These factors combined with the unusually dry conditions in 1981, resulted in a situation where there was not enough insitu water for drilling. Generally it can be expected that the deep snowpack and rainfall will be abundant enough to supply water for drilling and camp needs.

## Ownership and Claim Status

During the 1981 field season, the original group of seven Flagstaff claims was increased to a total of 46. The surveying and staking was performed

by Richard Skinner and his assistant, Larry Kuzniar. All of these claims are known as Flagstaff, owned by Orell Resources, Inc.
The claims lie on un-patented ground.

The entire claims group has been staked so that there is continuity between all claims. End lines have been kept parallel to make use of extralateral rights. All of the claims are currently active.

## History and Previous Work

The Flagstaff claims were originally staked before 1905 as the Treasure group. By 1905 two adits, one 50 feet (15 m.) long and the other 400 feet (121 m.) long had been driven. The claims were restaked as the Last Chance group in 1912. In 1915 another 50 foot (15 m.) adit was driven above the first two, at elevation 730 m. In 1937, with the formation of the Flagstaff Mining Company, the main adit was extended and various buildings constructed in addition to those already on the site. Production continued from 1937 to 1941.

Although the presence of mineralized veins on Granite Mountain has been known for almost a century, very little has been published concerning anything other than the Flagstaff mine itself. A number of USGS and company reports are available, but these are typically very vague and of limited scope.

Perhaps the most frustrating point about the literature is the tendency to avoid specifying exact locations. This becomes apparent in literature concerning claims, claim lines, and in the location of specific points of interest.

As a result, although traditional and historical claim/vein names are used in this report, there is no means of knowing for certain that their present use is correct.

The mapping, sampling, and assaying of the Flagstaff adit itself have all been done by other workers (El Paso Mining and Milling Company, USGS). It is the opinion of the author that this information is suitable for the present, so no further work was done in the Flagstaff adit in 1981 other than a one-half day examination.

## Work Program

The main thrust of the field work was to map the geology of Granite Mountain, paying particular attention to quartz veins. Diabase dikes with widths of 5 m. or more and major structural lineaments were also mapped. The granitoid composition was checks, and alteration in the granitoid examined.

All quartz veins were sampled on a 20 m. sample spacing where possible. Channel, chip, and grab samples were sent for analysis for Cu, Pb, Zn, Ag, Au, and in two cases, for Mo.

All trenches, test pits, adits and workings that could be found were mapped. A trail from the helispot above the Flagstaff mine to the portal was cut and flagged.

The staking of additional claims was directed from geological mapping results to cover all potentially mineralized vein systems. A program of diamond drill holes to test the most attractive veins was planned.

## Regional Geology

The most abundant rocks on Prince of Wales Island are early Paleozoic eugeosynclinal rocks, all of which have undergone deformation and varying grades of metamorphism. The major lithologies are greywackes, andesitic lavas, andesitic greywackes, black slates, limestones, dark siltstones, and some conglomerate. The main pulse of deformation and metamorphism most likely took place in the mid-late Paleozoic or early Mesozoic. The intrusion of numerous granitoid plutons, stocks and plugs occurred in Jurassic-

Cretaceous time. Contact metamorphism is associated with many of these intrusions. During the Tertiary, basic dikes (andesitic, diabasic, gabbroic, basaltic) intruded the sedimentary and igneous rocks.

The Palezoic-Mesozoic deformation, mainly in the form of thrusting from the southwest, resulted in a pronounced NW-SE structural grain. In addition, there are a number of east-west trending faults that cut across the island. Two faults trending NNW-SSE and WNW-ESE may define the western and southern contacts of the Granite Mountain pluton*(Figure 5).

Deformation, metamorphism, intrusion and late thermal events resulted in the emplacement of quartz veins throughout much of the island. Many of these veins are gold-bearing, and have been mined sporadically for 100 years.

Local Geology

* Figure 5 is the bedrock geologic map of Granite Mountain, as prepared from information obtained both in the field and from the USGS bedrock map of the Craig quadrangle.

Granite Mountain consists of a quartz diorite-tonalite pluton of Cretasceous (?) age. The typical lithology is dark green-gray when fresh, and weathers to a buff or cream colour. Quartz and plagioclase are the dominant primary minerals; very little alkali feldspar was observed in the field. Biotite, hornblende, chlorite, and epidote are the major secondary minerals and typically constitute 5 to 20 volume percent of the granitoid. In general, biotite is predominant over the other mafic minerals. However, any of the above mafic minerals can be observed to dominate the others.

Two sets of major lineaments are found on the mountain, trending NW-SE and NE-SW. Most of the minor lineaments are oriented parallel to or sub-parallel to the major ones. The principal structure in the granitoid is a fault trending 015$^{o}$. It is apparently a left-lateral fault with displacement of about 10m. In addition there are three other major faults, all trending NW-SE.

* Available Upon Request

There are numerous diabase and lamprophre dikes on the mountain. These weather to rusty or olive colours; on fresh surfaces they are dark green to black. The mapping scale allowed only for dikes with widths of 5 m. or more to be mapped. Three such dikes have been mapped. All three of these dikes trend along the NE-SW structural grain.

A second set of lineaments trends almost at right angles to the diabase dikes. These NW-SE trending lineaments contain the majority of quartz veins and veinlets. Most of the lineaments are faults and shears, but many are joints.

The quartz veins are highly variable in mineralization, thickness and attitude along strike, a condition seen in the Flagstaff adit. Quartz veins in contact with diabase such as Flagstaff tend to be the exception. Cross-cutting relationships show that the quartz veins are usually younger than the diabase dikes.

A brief examination of the secondary mineralogy and alteration intensity within the granitoid shows that the most intense alteration zone corresponds with the zone in which biotite is the major mafic mineral (Figures 2 and 3). The hornblende zone is taken as representing the primary, essentially unaltered granitoid. The chlorite zone is interesting in that is very nearly parallels the Flagstaff vein. The chlorite zone is also rather close to the Flagstaff vein on surface (Figure 3)

## Mineralization

### Major Veins

Four major quartz veins (Flagstaff, Cross, Buckhorn and Clipper-Cutter) were observed in the field (Figure 4). As no drilling could be done during the July-August field season, it was not possible to fully delineate these veins. However, the probable extensions of the veins themselves or the lineaments along which they trend have been mapped. A total of 20 old trenches, adits or test pits were located, the majority being on the Cross vein, north of the Flagstaff vein.

The names "Buckhorn" and "Clipper-Cutter" are used to maintain continuity with the literature. Because of the vagueness and inconsistency of literature references, these names may not be applied to the same locations as in the past.

In general, the majority of the mineralization in the veins is concentrated near the vein margins in horizons that parallel the contacts. Disseminated mineralization does occur throughout the veins, but it is typically of lower concentration than that at the margins.

Of the four veins, the best surface mineralization was observed on the Clipper-Cutter vein. Pyrite, galena, malachite, azurite, covellite, and chalcopyrite were all observed in samples from a test-pit (location A1-1, Figure 4). Unfortunately, only three exposures of the Clipper-Cutter vein were located. At the other two outcrops, which are north of the A1-1 location, the mineralization is less polymetallic, consisting of pyrite and possibly some galena. The vein thins to the north, from about 1 m. at A1-1 to 0.7 m. at A10-1.

The cross vein carries substantial amounts of pyrite in places, but not much else was observed. The Flagstaff vein has good pyrite and hematite as does the Buckhorn. Although there are repeated claims of free gold in the veins, none was observed during the field work. It seems most likely that the Flagstaff vein may have held free gold in the high grade, which has been mined. Most of the gold values are probably contained in pyrite and chalcopyrite; the silver is considered to be carried by galena.

Minor Vein Systems

In addition to the four major veins, numerous other veins were observed *(Figure 5). Again, without drilling it is not possible to delineate these veins with certainty. It appears that there is a very high concentration of narrow ($<$ 30 cm thick) veins in a belt approximately 300 m. wide on either side of the Flagstaff vein. In almost every instance the small quartz veins carry some pyrite and hematite.

* Available Upon Request

A large number of small (< 10 cm thickness) veins were observed in the area around the summit. These veins show a preferred westerly or northwesterly trend, and are not as concentrated as those in the north. Although some pyrite was observed in these veins, they do not appear to be very well mineralized.

Overall, less than 10% of all quartz localities visited are what might be termed strongly mineralized (e.g. location A1-1), while approximately 30% are poorly mineralized. The thickness and local trend of the veins is variable and in addition, the veins often split into two or more parallel or sub-parallel veins.

Three textural varieties of vein quartz were observed. The most common is vuggy, open-space filling quartz. Massive, compact quartz is also common. The third texture observed is that of an aggregate of coarse quartz crystals (often greater than one cm in length.). The coarsely crystalline variety is often coincident with the vuggy variety. All three textures can be observed in any vein at any location, but one variety is usually predominant over the other two.

Field observations indicate that more of the veins pinch out along their continuations as they are traced down slope to timberline. Drilling is required to determine the nature of the veins at depth in these areas as the veins cannot be observed in outcrop in many places.

Alteration Related to Quartz Veins

In almost every instance, the granitoid country rock has suffered some degree of alteration near the quartz veins. The alteration is variable in intensity, but appears to be most intense in footwall granitoid associated with relatively flat lying veins. In these situations the alteration is typically intense silicification and removal of mafic minerals in a zone that can be as much as 1 m wide. Samples of this material did not show any significant precious metal concentrations. Kaolinization is more common than silicification. In general, almost all of the veins have some degree of kaolinized granitoid associated with them.

Fault gouge and slickensides on the quartz contacts are common, indicating a fair amount of post-emplacement movement. Meteoric water circulation has probably caused much of the leaching around the veins. Most of the silicification is related to the hydrothermal event that produced the quartz veins. It is not known what effect this hydrothermal event had on the kaolinization of the granitoid.

Sampling and Assays

A total of 53 samples were taken by MineQuest Exploration and analyzed for Au, Ag, Pb, Zn, Cu and in two cases, Mo. The results for these samples are presented in Table 1. Each vein was sampled at 20 m spacing along the vein wherever possible. In some locations, the quartz and the altered rock were both sampled, usually separately. The locations of the samples are plotted on Figure 6. * Available Upon Request

Veins: Three major veins have been sampled. West of these the Clipper-Cutter, which is somewhat narrower, has been sampled by MineQuest.

Numerous other vein occurrences have been sampled by MineQuest. Most of them are narrow; some have relatively high values.

Buckhorn: This vein is exposed at trenches west of the north summits of Granite Mountain. It is about 30 cm wide and is rusty. It appears to have been sparsely mineralized. It is expected that it continues southeastward under talus slopes to near the saddle south of the False Summit. It is exposed again in a steep gulley southeast of the False Summit where it was sampled by myself along a length of 15 m. It strikes northwestward and dips northeastward.

Buckhorn Vein Results

| | Cm | ppm | | | % | | ppb | ppm | Oz./Ton | |
|---|---|---|---|---|---|---|---|---|---|---|
| | width | Cu | Pb | Zn | Pb | Zn | Au | Ag | Au | Ag |
| 28476 | 16 | 36 | 100 | 73 | | | 100 | 2.1 | 0.0027 | .052 |
| 28477 | 39 | 13 | 12 | 80 | | | 40 | 0.5 | 0.001 | .012 |
| 28569 | 20 | 9 | 110 | 1 | | | 180 | 2.7 | 0.0045 | .067 |
| 25704 | 40 | | | | .01 | .01 | | | 0.009 | .17 |
| 28575 | 20 | 11 | 28 | 18 | | | 320 | 1.1 | 0.008 | .027 |

Cross Vein: This is exposed in a creek, a short distance south of the presumed located of the Flagstaff vein. It was followed northward for 500 m, up and around a nose that extends eastward from the north summit of Granite Mountain.

This is a strong vein with well-developed walls. It strikes northward and dips westward at about $15^{o}$ to $25^{o}$. This vein appears to be continuous and extensive. In the south, it has not been explored by trenches and in the north it is possibly covered by 5 m of overburden. At this point it appears, from vein material on the dump, that it has been reached by an inclined shaft, possibly 5 m deep.

The vein has dark laminae parallel to the walls which cause it to have a banded or ribboned appearance. It is as much as 1 m thick, though in places it is only 1/10 of that.

The vein is very rusty and it has many voids, some of which appear to have been caused by the weathering out of sulphides (probably pyrite, galena and sphalerite and possibly chalcopyrite). It also has numerous vugs, many of which are lined with the terminations of quartz crystals. A few dark shiny particles appear to be the remains of galena or sphalerite.

It would appear that in the extremely wet conditions that prevail here, sulphides which were abundant have been weathered away near the surface. Gold and silver probably associated with the sulphides probably also have been weathered away. If gold and silver minerals were present, they probably fell out of the vein as rust formed.

The results of samples taken from this vein are tabulated below.
The MineQuest samples were treated as geochem samples and the results were reported in ppm or ppb. These have been converted to oz/ton. These converted results have not been determined by fire assays.

Cross Vein Results

| | Cm width | ppm Cu | ppm Pb | ppm Zn | % Pb | % Zn | ppb Au | ppm Ag | Oz./Ton Au | Oz./Ton Ag |
|---|---|---|---|---|---|---|---|---|---|---|
| 28555 | 100 | | | | <.01 | <.01 | | | .04 | .44 |
| 25701 | 60 | | | | .02 | .01 | | | .022 | .32 |
| 28596 | 15 | 7 | 12 | 10 | | | 80 | 0.9 | .002 | .023 |
| 28597 | 50 | 29 | 40 | 12 | | | 270 | 2.1 | .007 | .05 |
| 28566 | Grab | 275 | 60 | 25 | | | 820 | 11.2 | .02 | .27 |
| 28554 | 100 | | | | <.01 | <.01 | | | .005 | .28 |
| 28595 | 10 | 7 | 492 | 2 | | | 260 | 6.1 | .006 | .15 |
| 25703 | 100 | | | | .04 | .02 | | | .01 | .35 |
| 28590 | 20 | 50 | 37 | 9 | | | 140 | 1.8 | .0035 | .045 |
| 25705 | 40 | | | | .04 | .02 | | | .016 | .35 |
| 28589 | 22 | 17 | 118 | 3 | | | 1100 | 7.4 | .027 | .18 |
| 25707 | 50 | | | | .06 | .02 | | | .065 | .52 |
| 25706 | 40 | | | | .08 | .02 | | | .138 | 1.63 |
| 25702 | Grab | | | | .09 | .03 | | | .04 | .64 |

The presence of gold and silver in every sample is an indication that mineralization is consistent.

There appears to be a relationship between high lead and high silver (and gold) in the last three samples listed. These were the most northerly samples taken. They also have a slightly higher zinc content. These results may indicate that these samples are less completely weathered or alternatively that the grade of the un-oxidized vein is higher here.

The area has been intensely glaciated so it is expected that any pre-glacial oxidized zone has been removed. However, oxidation and rusting has been proceeding rapidly where air and water have access. It is estimated that this extends down possibly 15 m; any drilling done needs to be directed to core the vein below that depth.

Flagstaff: Samples were taken by MineQuest from this vein at the surface and the results are tabled here. Some are from above a well mineralized

shoot in the vein. Generally the results are somewhat lower than from surface samples from the Buckhorn and Cross veins. From this it may be inferred that the grade of the Buckhorn and Cross veins may be somewhat higher than the grade of the Flagstaff.

Flagstaff Vein Results

| | Cm width | ppm | | | % | | ppb | ppm | Oz./Ton | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Cu | Pb | Zn | Pb | Zn | Au | Ag | Au | Ag |
| 28588 | 20 | 6 | 13 | 3 | | | 30 | 1.2 | .001 | .03 |
| 28552 | 50 | | | | .01 | .01 | | | <.003 | .02 |
| 28558 | 15 | 28 | 84 | 11 | | | 120 | 1.6 | .003 | .04 |
| 28559 | 25 | 800 | 265 | 3 | | | 40 | 2.0 | .001 | .05 |
| 28560 | 100 | 33 | 95 | 16 | | | 90 | 1.3 | .002 | .03 |
| 28562 | 50 | 300 | 1 | 2 | | | 130 | 2.6 | .003 | .06 |

The possible continuation of the Flagstaff west of the Cross Vein was followed up to the saddle in the ridge at the north part of Granite Mountain. No vein was seen, though much of the area traversed is covered with talus. Near the saddle two small trenches have been made. Stringers less than 2 cm wide are exposed in these and they do not resemble the Flagstaff vein. It appears that the Flagstaff has not been recognized west of the Cross Vein.

Other Veins: Some samples from the Clipper-Cutter vein run moderately high in copper and gold. Samples from some of the minor veins run relatively high in gold and they are not accompanied by high copper values.

Conclusions: The Flagstaff and the Cross veins are strong and underground. The Flagstaff contains shoots of high grade mineralization. The consistent presence of gold and silver values in samples from the surface of the Cross and Buckhorn veins suggest that similar shoots may occur in them. The ratio of gold and silver in the surface samples is generally close to 1:10 as in the higher grade samples from primary mineralization, exposed and sampled underground.

TABLE 1: SAMPLING AND ANALYTICAL RESULTS

| Vein Name | Tag Number | Sample Number | Location | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Au ppb | Width (cm) |
|---|---|---|---|---|---|---|---|---|---|
| Flagstaff | 28552 | 81-7502 | J18-1 | <0.01* | 0.01* | 0.01* | 0.02* | <0.003* | 50 |
| | 28558 | 81-7508 | J23-1 | 28 | 84 | 11 | 1.6 | 120 | 15 |
| | 28559 | 81-7509 | J23-1 | 800 | 265 | 3 | 2.0 | 40 | 25 |
| | 28560 | 81-7510 | J23-2 | 33 | 95 | 16 | 1.3 | 90 | 100 |
| | 28562 | 81-7512 | J24-1 | 300 | 1 | 2 | 2.6 | 130 | 50 |
| | 28588 | 81-7538 | A12-2 | 6 | 13 | 3 | 1.2 | 30 | 20 |
| | 28594 | 81-7544 | A14-4/J28/2 | 7 | 12 | 35 | 0.5 | 130 | 20 |
| Cross | 28567 | 81-7517 | J30-3 | 30 | 135 | 1 | 0.98* | 0.156* | G |
| | 28597 | 81-7547 | J20-3/A14-7 | 29 | 40 | 12 | 2.1 | 270 | 50 |
| | 28555 | 81-7505 | J21-3 | <0.01* | <0.01* | <0.01* | 0.44* | 0.040* | 100 |
| | 28566 | 81-7516 | J30-2 | 275 | 60 | 25 | 0.30* | 0.024* | G |
| | 28589 | 81-7539 | A13-3 | 17 | 118 | 3 | 0.28* | 0.04* | 22 |
| | 28590 | 81-7540 | A13-4A | 50 | 37 | 9 | 1.8 | 140 | 20 |
| | 28554 | 81-7504 | J20-2/A13-4 | <0.01* | <0.01* | <0.01* | 0.28* | 0.005* | 100 |
| | 28596 | 81-7546 | J20-3/A14-6 | 7 | 12 | 10 | 0.9 | 80 | 15 |
| | 28595 | 81-7545 | A14-5/J20-2 | 7 | 492 | 2 | 6.1 | 260 | |
| Buckhorn | 28569 | 81-7519 | J31-2 | 9 | 110 | 1 | 2.7 | 180 | 20 |
| | 28476 | 81-7551 | J31-2 | 36 | 100 | 73 | 2.1 | 110 | 16 |
| | 28477 | 81-7552 | J31-3 | 13 | 12 | 80 | 0.5 | 40 | 34 |
| | 28576 | 81-7526 | A6-7 | 62 | 155 | 17 | 0.65* | 0.014* | 10 |
| | 28577 | 81-7527 | A6-8 | 16 | 16 | 2 | 1.82* | 0.098* | 6 |
| | 28578 | 81-7828 | A7-1 | 8 | 5 | 3 | 1.5 | 90 | 10 |
| | 28579 | 81-7529 | A7-2 | 6 | 16 | 6 | 1.9 | 60 | 20 |
| | 28580 | 81-7530 | A7-3 | 7 | 2 | 3 | 1.5 | 320 | 10 |
| | 28478 | 81-7553 | A15-1 | 32 | 2 | 9 | 2.5 | 600 | 20 |
| | 28591 | 81-7541 | A14-1/A6-7 | 47 | 35 | 10 | 1.8 | 200 | 20 |
| Clipper-Cutter | 28556 | 81-7506 | J22-5 | 61 | 24 | 10 | 1.8 | 140 | 30 |
| | 28557 | 81-7507 | J22-5 | 21 | 2 | 55 | 0.2 | <10 | 20 |
| | 28600 | 81-7550 | J22-5 | 200 | 184 | 32 | 1.8 | 50 | 3 |
| | 28571 | 81-7521 | A1-1 | 1100 | 1800 | 80 | 0.78* | 0.100* | 30 |
| | 28572 | 81-7522 | A1-1 | 64 | 55 | 76 | 2.1 | 70 | 30 |
| | 28573 | 81-7523 | A1-1 | 350 | 3300 | 2600 | 2.8 | 30 | G |
| | 28599 | 81-7549 | A1-1 | 0.82* | 0.72* | 250 | 1.34* | 0.012* | G |
| | 28585 | 81-7535 | A10-1 | 17 | 20 | 18 | 0.8 | 100 | 7 |

| Vein Name | Tag Number | Sample Number | Location | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Au ppb | Width (cm) |
|---|---|---|---|---|---|---|---|---|---|
| Un-Named | 28551 | 81-7501 | J17-1 | 0.02* | 0.29* | 0.03* | 0.18* | 0.026* | 20 |
| | 28553 | 81-7503 | J20-1 | <0.01* | 0.06* | 0.01* | 0.32* | 0.005* | 65 |
| | 28563 | 81-7513 | J26-2 | 29 | 1 | 2 | 0.7 | 50 | 5 |
| | 28564 | 81-7514 | J29-1 | 44 | 25 | 7 | 3.2 | 480 | 20 |
| | 28565 | 81-7515 | J29-2 | 12 | 2 | 6 | 0.13* | 0.052* | 20 |
| | 28568 | 81-7518 | J31-1/J21-4 | 13 | 3 | 6 | 6.9 | 400 | 60 |
| | 28570 | 81-7520 | J31-9 | 6 | 6 | 12 | 0.9 | 40 | 5 |
| | 28574 | 81-7524 | A1-5 | 27 | 82 | 52 | 1.2 | 140 | 7 |
| | 28581 | 81-7531 | A7-4 | 14 | 32 | 4 | 0.20* | 0.03* | 5 |
| | 28582 | 81-7532 | A9-1 | 11 | 10 | 10 | 3.6 | 540 | 3 |
| | 28583 | 81-7533 | A9-2 | 5 | 2 | 15 | 1.9 | 100 | 15 |
| | 28584 | 81-7534 | A9-2 | 4 | 2 | 6 | 1.3 | 140 | 3 |
| | 28586 | 81-7536 | A10-3 | 6 | 2 | 1 | 0.5 | <10 | 45 |
| | 28587 | 81-7537 | A11-1 | 10 | 6 | 1 | 1.0 | 90 | 15 |
| | 28592 | 81-7542 | A14-2 | 11 | 70 | 1 | 0.24* | 0.064* | 6 |
| | 28593 | 81-7543 | A14-3 | 19 | 14 | 9 | 5.4 | 840 | 2-10 |
| | 28598 | 81-7548 | A14-8 | 19 | 210 | 32 | 1.2 | 260 | 3-10 |
| Flagstaff-X | 28561 | 81-7511 | J23-2 | 29 | 2 | 6 | 4.0 | 340 | 20 |
| Buckhorn-X | 28575 | 81-7525 | A6-7 | 11 | 28 | 18 | 1.1 | 320 | 20 |

NOTES:

* Assay results Cu %, Pb %, Zn %, Ag oz/ton, Au oz/ton

G Denotes grab sample; usually consists of several rock chips of varying size.

Samples of width <10cm are composite samples or chip samples taken along strike. The same is true for samples with widths given as a range (2-10).

X An "X" after a vein name indicates samples from an intersecting vein

Recommendations: 1. That both veins (Flagstaff and Cross) be explored late in the spring and early summer when the weather is dry and before all the snow is gone, and when water will be available for drilling.

2. That the Flagstaff be drilled at intervals along its length and for one interval beyond the length of the adit, with the object of coring the vein where it may be ore grade.

3. That the Cross vein be drilled at intervals along its length, including one hole in the vicinity of its possible intersection with the Flagstaff vein. A second deeper hole can be drilled from each set-up if the upper hole cores show interesting vein material.

4. That points where high gold values were obtained from rock geochem samples from other veins be prospected by stripping and sampling.

# APPENDIX

FLAGSTAFF PROSPECT
Sec. 16, T. 73 S.; R. 84 E.
Prince of Wales Island
Alaska

Prepared for

ORELL RESOURCES LTD.
Salmon Arm, B.C.
Canada

David L. Kuck
Geological & Mining Consultant
P. O. Drawer 369
Oracle, Arizona 85623

November 25,1980

## ABSTRACT

The Flagstaff Mine, on Granite Mountain, Prince of Wales Island, Alaska, produced before World War II. Since then the property has been relocated and explored by El Paso Minerals Co.. More recently the area has been designated a Wilderness by the U. S. Forest Service. This was in spite of abundant evidence of mining activity in both State and Federal publications and public recordings.

Two high grade siliceous ore shoots exist in the adit level visited June 9, 1980. These two ore shoots appear to be of such a grade as to be able to finance development of the property into a small producing Gold-Silver mine.

## INTRODUCTION:

This property was visited June 9, 1980, in the company of:

Cec Kane, C.G.A., President
ORELL RESOURCES LTD.
Box 1386
Salmon Arm, B.C. VOE 2TO  Telephone (604) 832-4939

and

David Park, Geologist
P. O. Box 5473
Ketchikan, Alaska 99901  Telephone (907) 225-2874.

The trip was made with and at the request of Cec Kane for the benefit of ORELL COPPER MINES LTD., now ORELL RESOURCES LTD..

June 10 and the morning of of June 11, 1980, were spent by David Kuck and Cec Kane, visiting various State and Federal Agencies. This was for the purpose of determining the ownership and land status of the claims. It was found that the claims predate and lie within a small Wilderness. This will provide difficulties in exploiting the gold-silver resources on the property.

Flagstaff.

LOCATION:

This group of seven lode mining claims is mostly in the south half of section 16, and extends into sections 17 and 21, Township 73 South, Range 84 East, Prince of Wales Island, Alaska. The adit is on the east slope of Granite Mountain at an elevation of about 1400 feet. This adit portal may be hard to find as it is under a waterfall on the west wall of Flagstaff Creek valley. This glacial valley is tributary to Karta Lake, the Karta River and Karta Bay. Karta Bay is an arm of Kasaan Bay, which opens into Clarence Strait which bounds the east side of Prince of Wales Island.

SAMPLING & ASSAYING

A (One inch equals ten feet.), "Sampling" map of the adit level of the Flagstaff Mine was supplied by the owners. On site examination of the adit indicates the map is quite accurate. Three check assay samples were taken of vein material. These are compared with corresponding assays from the "Sampling" map.

| Sample Number | Thick-ness | Gold Oz/t | Silver Oz/t | Lead % | Copper % | Zinc ppm. | Arsnic ppm. | |
|---|---|---|---|---|---|---|---|---|
| F-1 | 24" | <.001 | .06 | .01 | .01 | 26 | 8 | 1100', Calcite vein |
| map | 2.5' | .00 | .15 | | | | | 1100', end of drift. |
| F-2 | 24" | 1.185 | 8.95 | 1.56 | 1.03 | 66 | 16 | 830', near winz. |
| map | 2' | 1.82 | 9.04 | | | | | 830' |
| F-3 | 2' | .385 | 2.55 | .12 | .19 | 48 | 22 | 660' |
| map | 2.2' | .32 | 1.75 | | | | | 660' |

The agreement between the assays is quite good. Thus it is probably safe to to rely on the assays reported on the "Sampling" map.

MAPS

The Flagstaff Mine is shown on the Craig (C-2), Alaska 15' Quadrangle, with a scale of 1:63360 or one inch equals one mile, dated 1949 with revisions of 1973. This map shows two adits, the lowermost is possibly the one shown on the "Sampling" map. The 15' Quadrangle also shows the aerial tramway, mine camp buildings (now in ruin.), a four mile access road from Karta Bay to the mine camp and a ferry crossing of Karta Lake.

A claim map at a scale of 1 inch = 1 mile was supplied by the owners. This was made by splicing the southwest corner of the Craig (C-2) and the southeast corner of the Craig (C-3) Quadrangles. This shows a group of seven unpatented lode mining claims.

A photogeologic interpretation map shows the Flagstaff Mine at a scale of 1 inch = 2000 feet with 500 foot contours. This is map I-232, Miscellaneous investigations of the United States geological Survey by C. L. Pillmore and Kathleen McQueen, dated 1956.

A map of the main level of the Flagstaff mine, at a scale of 1 inch = 50 feet, is from the Geological Survey Bulletin 963, Plate 1. This map shows the geology associated with the vein. It also establishes the elevation of the adit level as being at 1400 feet above sea level.

A geologic map furnished by the owners, at a scale of 1 inch = 10 feet, may be a copy of the above map from Geological Survey Bulletin 963.

A "Sampling" map, showing the vein at a scale of 1 inch = 10 feet, displays the results of channel sampling and assaying.

David L. Kuck, Geological & Mining Consultant, P. O. Drawer 369, Oracle, Arizona 85623

Flagstaff.

RESERVES

Two small high grade ore shoots occur at 610 to 688.5 feet and at 823 to 864 feet from the portal in the main adit. This adit is at an elevation of about 1400 feet above sea level. If another adit is driven from from the break in slope at the 1000 foot elevation to the ore shoots, it will be about 1600 feet long. Since the mineralization is known to extend at least 800 feet above the main adit level, it is reasonably safe to assume that it extends at least 800 feet below the main adit level.

The high grade portion of the first ore shoot, between 610 and 688.5 feet, if mined to a width of five feet, will give 7.008 short tons of high grade siliceous ore per vertical foot. An additional 17.79 short tons of milling ore will be produced per vertical foot. This milling ore can be stored as fill in the stopes to serve as ground support and a working platform. This broken milling ore may be recovered at a later date.

The second high grade ore shoot, between 823 and 864 feet, can be mined in a similar manner. It will produce 4.064 short tons of high grade siliceous ore per vertical foot. This shoot will produce an additional 13.54 short tons of milling ore per vertical foot.

The above development should make available 4400 tons of siliceous ore containing about 3400 ounces of Gold and 18,000 ounces of silver. This should also produce an additional 12,500 tons of mill ore containing about 2900 ounces of gold and 15,400 ounces of silver.

If possible, the high grade siliceous ore should be shipped to a copper smelter for converter flux. Japan is the most likely market for such flux.

If the mineralization, reported on the "Sampling" map, continues below the adit level for 400 feet, the high grade siliceous ore in this block should have a gross value of about 2.9 million U. S. dollars. The mill ore left as gob in the stopes should have a gross value of about $ 2.0 million. This is with gold at $ 600.00/oz. and silver at $ 15.00/oz.

The sale of the siliceous vein material as converter flux, is proposed as a way getting a quick return on mining before permitting problems further exploration, design and construction of milling facilities allow milling to begin. This 4400 tons of high grade siliceous ore is a small enough tonnage to even be hauled to seaboard by helicopter. This should only be done as an initial step to achieve a quick return on mining development.

Three lower grade ore shoots occur in the first 600 feet of the adit. These have milling grade ore, but are not calculated at this time. They should not be regarded as insignificant as they will be of value if a mill is built.

Since the data available is essentially two dimensional, and the third vertical dimension can only be guessed at, the above estimates are only approximations. Also, the cross section indicates that the mineralization mined at and above the 2400 foot elevation is far west of the end of the 1400 foot elevation adit.

MINING

Mining may be done by a method of cut and fill stoping, by which the rather thin siliceous vein is broken separately from the igneous wall rock. The wall rock can serve as fill until milling facilities are built. Since the stopes will be rather small and the old stopes above the adit level are standing quite well, no permanent ground support will be necessary. (See sketch.)

All drifts and raises adjacent to open stopes should be timbered to protect workmen from rock falls.

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REGISTERED GEOLOGIST
CERTIFICATE EXPIRES
DAVID LAIRD
KUCK
DEC. 31, 1980
ARIZONA U.S.A.

Flagstaff.

SAFETY

In order to make it safe to work men underground at this prospect it will be necessary to improve the portal to protect men entering or leaving the adit from falling rock. It will also be necessary to timber over the bottoms of the open stopes extending up from the adit.

Debris will have to be cleared from the adit to allow safe movement of equipment, men and supplies.

An escape way must be developed in case the adit becomes blocked. This might be done by connection of one or more of the raises with upper levels that must exist above the 1400 ft. elevation adit level. Upper levels are mentioned in several of the references. These upper levels should also be opened for ventilation and an outlet for blasting fumes.

DEVELOPMENT

The winz at 860 feet from the portal of the 1400 foot elevation adit level should be pumped out and examined. It should be deepened to a 400 foot depth. Drifts should be driven at 200 feet and at 400 feet below the adit level. The drift 400 feet below the 1400 ft. elevation adit should be connected to the surface at about the 1000 ft. elevation to serve as a production level. The literature and maps indicate that there might be another adit at about the 1000 foot elevation. If such an adit exists, it would be worth finding. Adit levels at higher elevations, mentioned in the older literature, should be searched for and reopened as escapeways and for ventilation.

EXPLORATION

Exploration drilling should be done with inclined drill holes from the surface. These holes should be collared about 300 to 500 feet north of the adit level and be directed to intersect the ore shoots below the adit level. This will have to be predicated on the receipt of permits to drill within a Wilderness. Drilling from the present workings will be nonproductive since the holes will not cut across the vein.

The workings above the 1400 foot elevation adit level should be mapped, sampled and assayed to find ore that might have been left.

The winz should be pumped out and sampled.

The 1000 foot elevation adit should be found, mapped, sampled and assayed.

OBSERVATIONS

Two small high grade ore shoots occur that might be exploited without disturbing the surface.

The older workings at or near the 2400 foot elevation probably are not sampled or represented in the 1400 foot elevation adit.

Additional ore shoots may exist both east and west of those encountered in the 1400 foot elevation adit.

RECOMMENDATIONS

1. The workings above the adit level be mapped and sampled
2. The 1000 foot elevation adit be found.
3. A trial shipment of high grade siliceous ore be obtained and shipped to a smelter.
4. The old workings toward the top of the mountain should be found and explored.
5. Further work should be predicated upon the above recommendations.

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Flagstaff.

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(2) Ketchikan and Wrangell Mining Districts, Alaska, U. S. Geological Survey Bulletin 347, 1908.

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(4) Mineral Industry in 1938.

(5) Mineral Resources of Alaska, 1939,

(6) Mineral Industry in 1939.

(7) Mineral Resources of Alaska, 1945-46

(8) Geology of the Craig Quadrangle, Alaska, Mineral Resources of Alaska, 1959-1963, U. S. Geological survey Bulletin 1108-B, by W. H. Condon.

David L. Kuck, Geological & Mining Consultant, P. O. Drawer 369, Oracle, Arizona 85623

The preceeding preliminary report is based upon a one day visit to the property, published literature of the State of Alaska and the U. S. Federal Government, an assay map furnished by the owners, three check samples and rough preliminary calculations of reserves calculated from one assay map from one level. This report is purely preliminary in nature and all conclusions and reserve calculations are based upon the data furnished by the owners.

David L. Kuck, Geological & Mining
Consultant.

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DEC. 31, 19
ARIZONA U.S.

Registered Professional Engineer (Mining)
CERTIFICATE NO.
6776
DAVID L.
KUCK
Date Signed
Arizona U. S. A.

David L. Kuck November 28, 1980

Registered Arizona Professional Geologst # 2646
Registered Arizona Professional Mining Engineer # 6776

David L. Kuck, Geological & Mining Consultant, P. O. Drawer 369, Oracle, Arizona 85623

# SOUTHWESTERN ASSAYERS & CHEMISTS, INC.

WIL WRIGHT
ARIZONA REG. NO. 5875

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYERS
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602—884-5811
884-5812

Mr. David Kuck
150 Pedro Place
Oracle, Arizona 85623

JOB # 024689
RECEIVED 6-13-80
REPORTED 6-24-80

| SAMPLE NUMBER | GOLD OZ.* | SILVER OZ.* | LEAD % | COPPER % | ZINC ~~X%~~ ppm | As ppm | MOLYBDENUM % |
|---|---|---|---|---|---|---|---|
| F-1 | <.001 | .06 | .01 | .01 | 26 | 8 | |
| F-2 | 1.185 | 8.95 | 1.56 | 1.03 | 66 | 16 | |
| F-3 | .385 | 2.55 | .12 | .19 | 48 | 22 | |

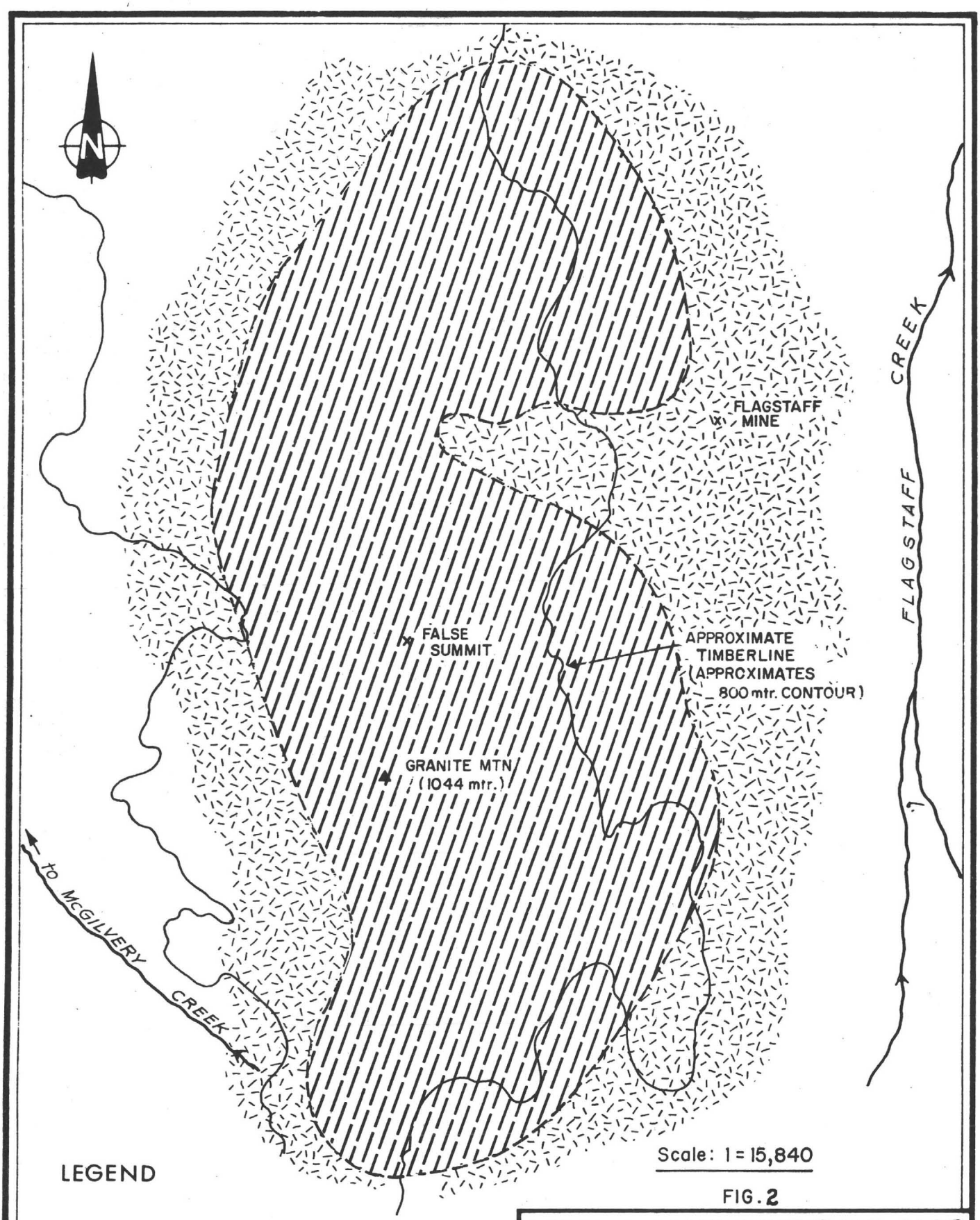
RECEIVED JUN 25 '80

REGISTERED ASSAYER CERTIFICATE NO. 8888 Dnyanendra Amrutlal Shah DATE SIGNED 6-24-80 Arizona U. S. A.

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

002




LEGEND

Intense (Silicification, Alteration of primary Mafic Minerals)

Moderate (Kaolinization, Saussuritization)

FIG. 2

**ORELL RESOURCES INC**

RELATIVE INTENSITY OF GRANITOID ALTERATION

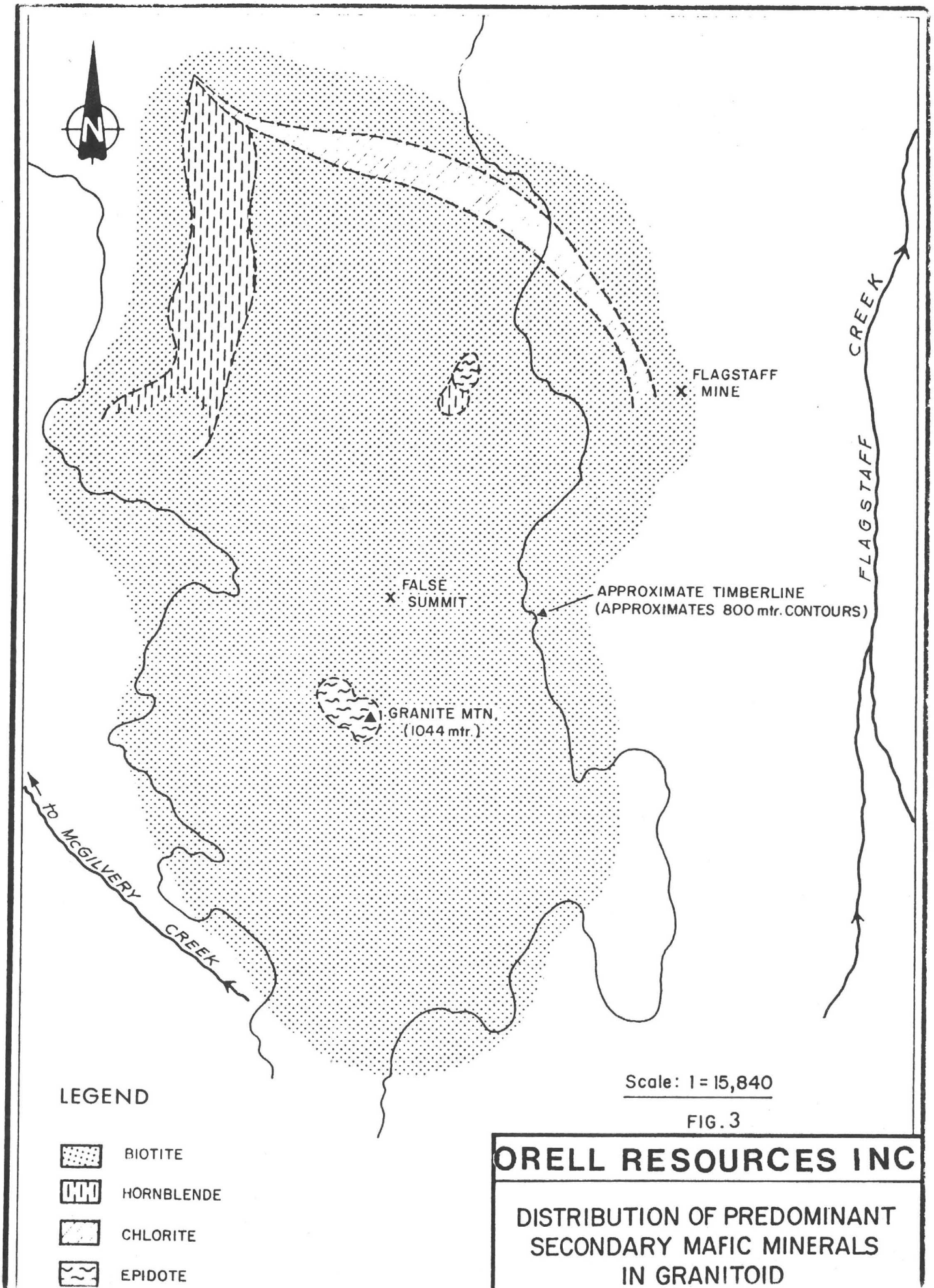
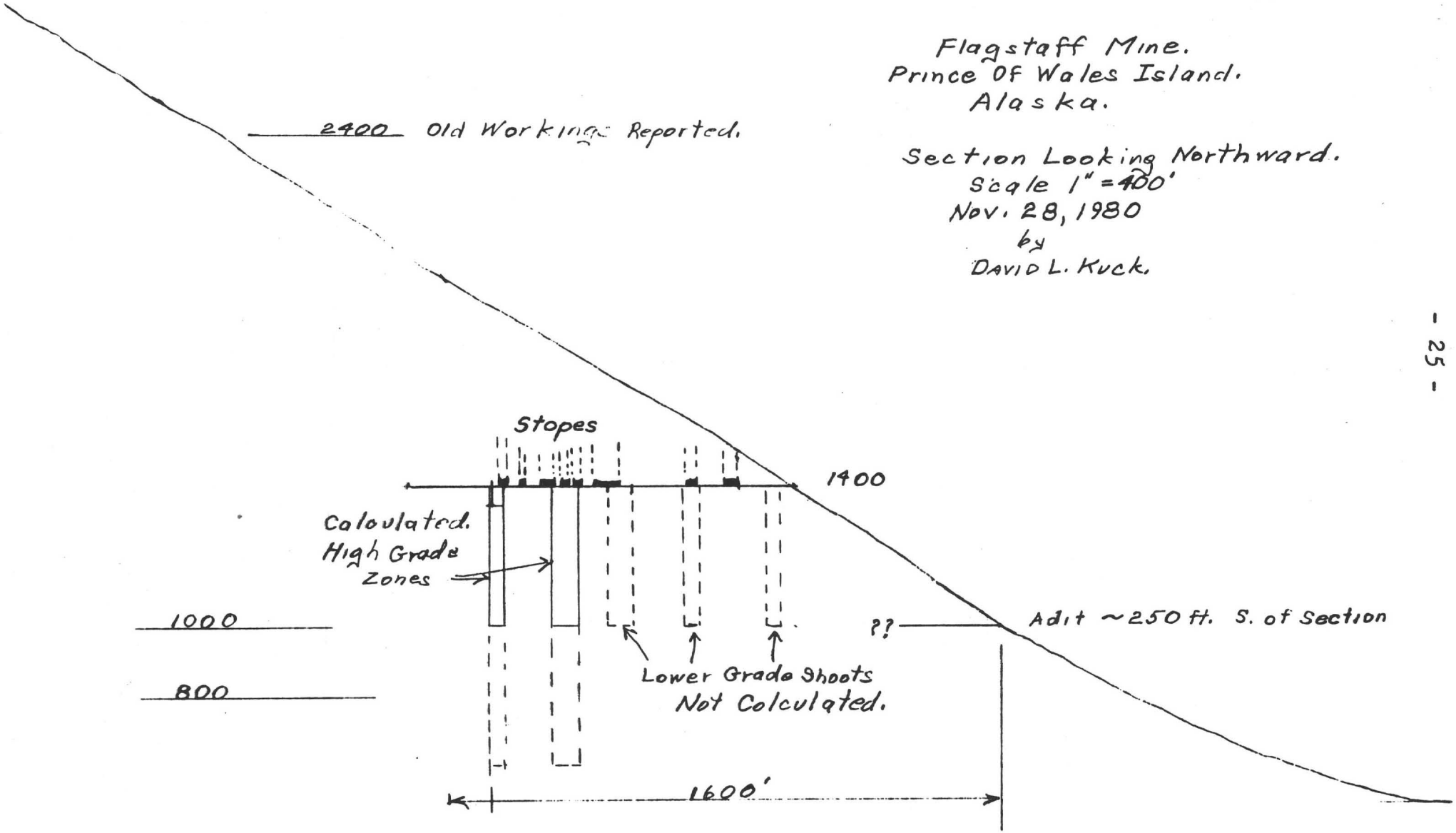



FIG. 3

**ORELL RESOURCES INC**

DISTRIBUTION OF PREDOMINANT SECONDARY MAFIC MINERALS IN GRANITOID


Flagstaff Mine.
Prince Of Wales Island.
Alaska.
Section Looking Northward.
Scale 1" = 400'
Nov. 28, 1980
by
DAVID L. KUCK.
2400 Old Workings Reported.
Stopes
1400
Calculated.
High Grade
Zones
1000
800
??
Adit ~250 ft. S. of Section
Lower Grade Shoots
Not Calculated.
1600'

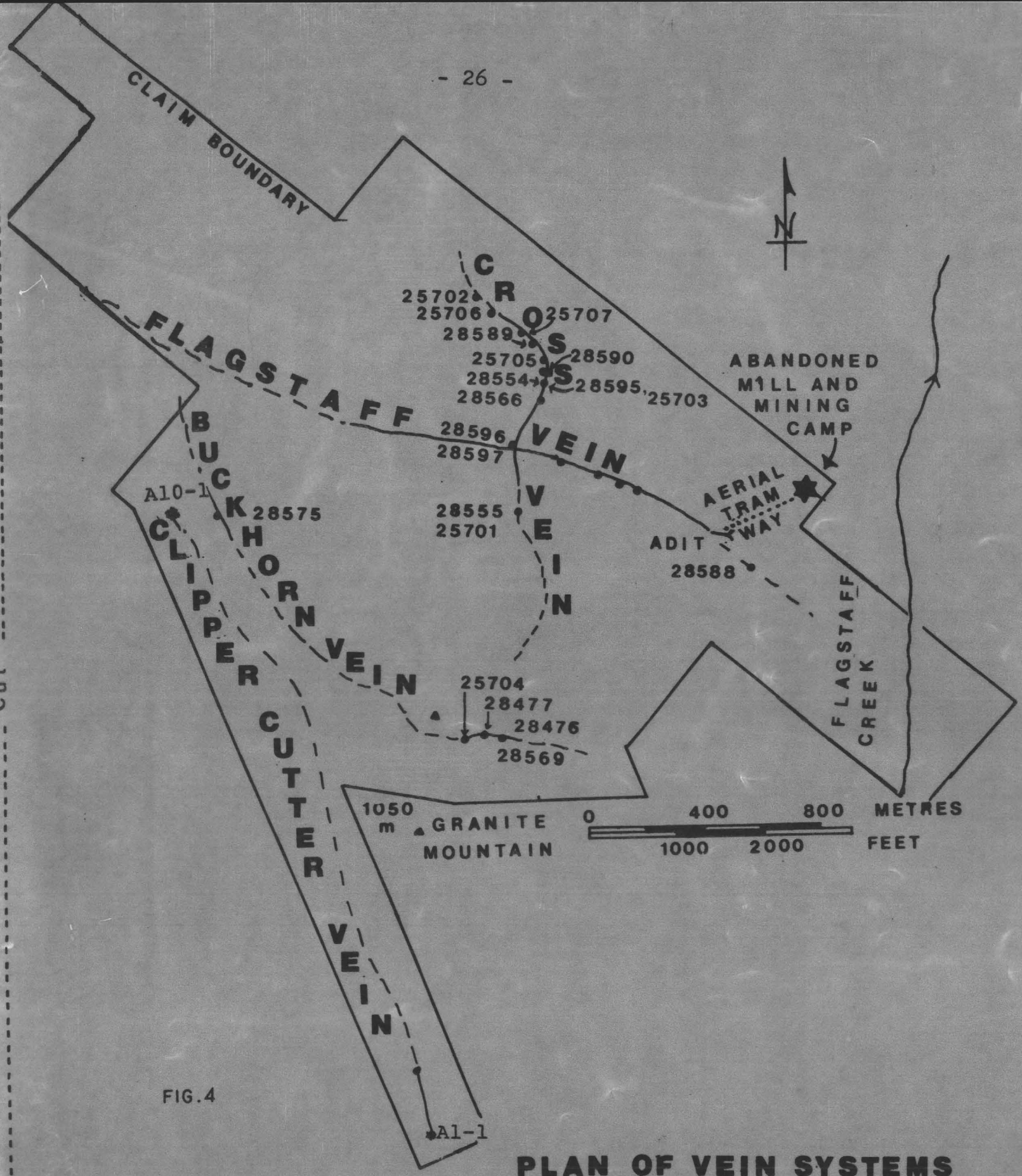
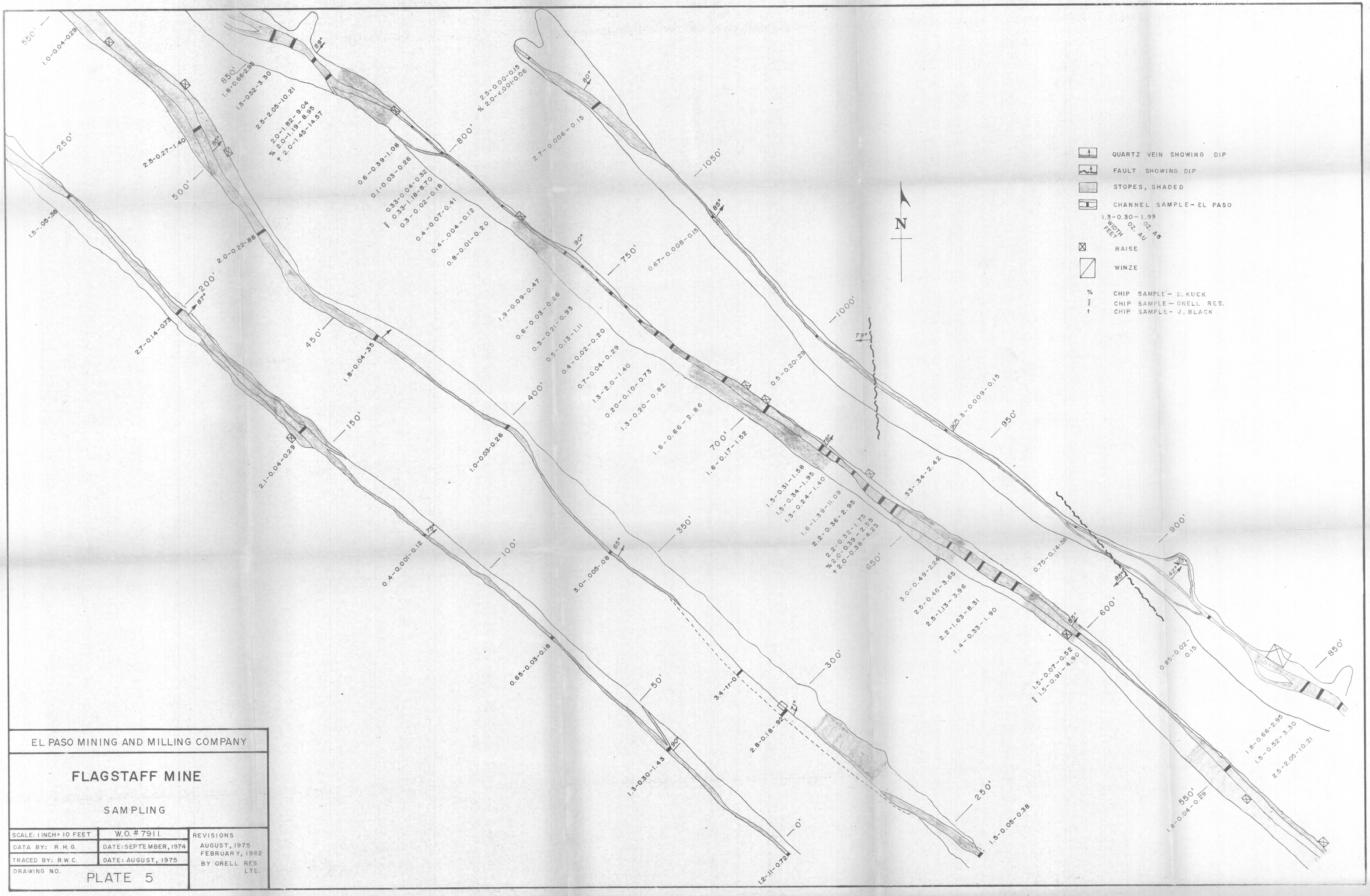



FIG.4

**PLAN OF VEIN SYSTEMS**

# ORELL RESOURCES INC.




EL PASO MINING AND MILLING COMPANY

# FLAGSTAFF MINE

SAMPLING

| | | |
|---|---|---|
| SCALE: 1 INCH = 10 FEET | W.O. # 7911 | REVISIONS |
| DATA BY: R. H. G. | DATE: SEPTEMBER, 1974 | AUGUST, 1975 |
| TRACED BY: R.W.C. | DATE: AUGUST, 1975 | FEBRUARY, 1982 BY ORELL RES. LTD. |
| DRAWING NO. PLATE 5 | | |