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REPORT
on the
GEOLOGY & MINING ECONOMICS
of the
FRISCO MINE
in the
SAN FRANCISCO MINING DISTRICT
of
MOHAVE COUNTY, ARIZONA

for
C.F. MILLAR LIMITED, VANCOUVER, B.C.

by
W.M. Sharp, P.Eng.
Consulting Geological Engineer,
North Vancouver, B.C.

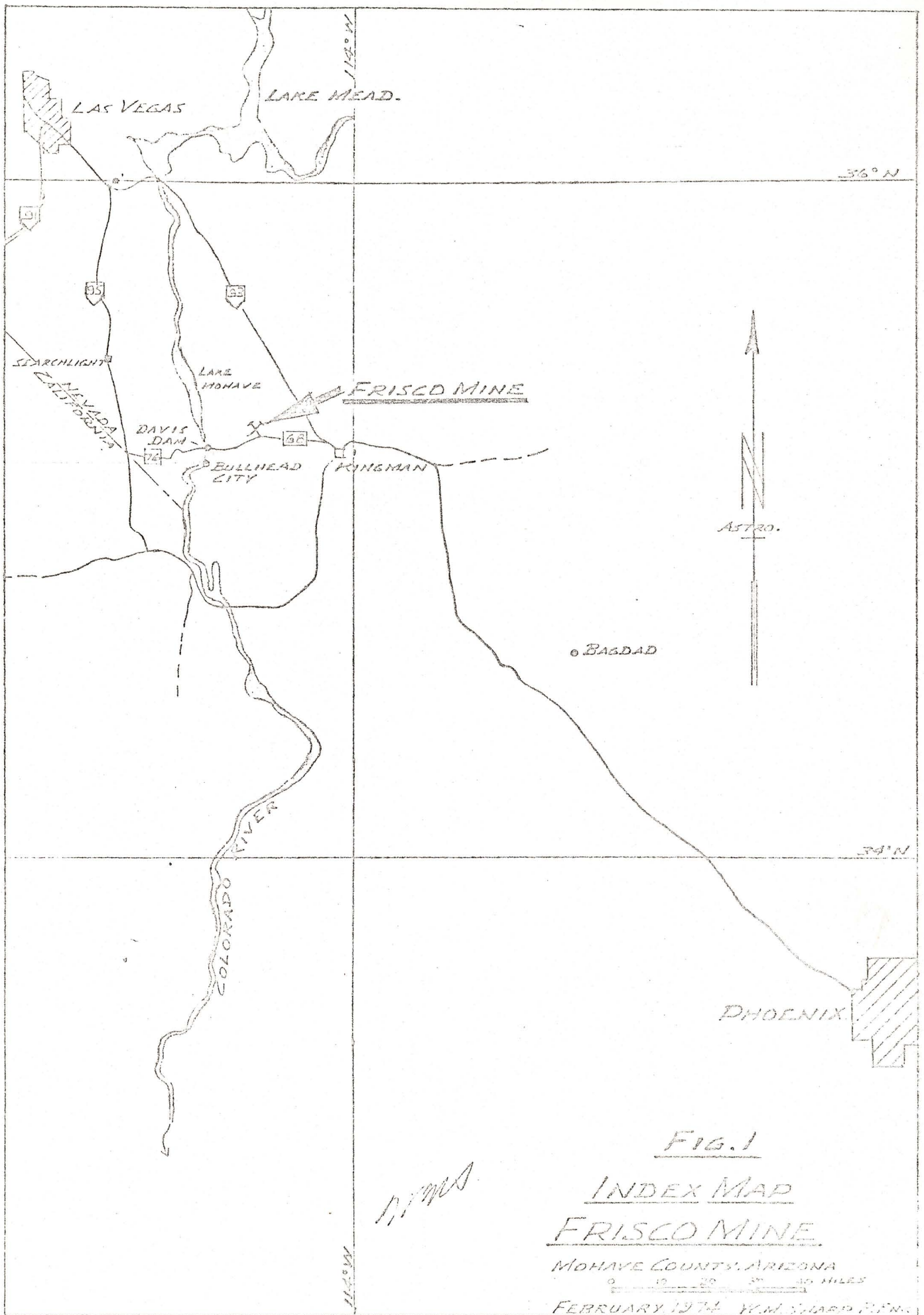
February 27, 1974

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REPORT DRAWINGS:

Fig. 1, INDEX MAP	bound with text
Fig. 2. PLAN - WORKINGS & ASSAYS	" " "
Fig. 3 CROSS - SECTIONS - DRILL HOLES, ASSAYS, & ORE BLOCKS	" " "



SUMMARY & CONCLUSIONS

The Frisco Mine property locates about 10 air-miles east of Davis Dam, Arizona. Access from Bullhead City, the operating base, is by way of some 10 miles of paved road and about 1 1/2 miles of gravel road. The property, comprising 9 patented claims with a total area of about 164 acres, is held by way of a 10-year mining lease granted by a Nevada company. The mine area is relatively flat and very arid.

The mine workings locate within a low isolated hill. These comprise open stopes, connecting drifts, crosscuts and raises, and a low-level haulage tunnel. The workings are only locally inaccessible.

The main production period of the mine was between 1900 - 1916. This plus production in 1932 resulted in a gross output of free-milling ore amounting to about 50,000 tons at an estimated average gold content of about 0.6 oz. per ton. There is no evidence of mining or exploratory work having been done at the property between 1932 and 1973.

In October, 1973 Mr. Millar, via Red Dog Mining Inc., negotiated a 10 - year metal-mining lease on the property. During January 1973 he carried out surface percussion - drill exploration, and sampling of extensions of the flatly-dipping ore structure and delineated a near-surface ore block on its northeasterly extension.

The Frisco Au/Ag mineralization occurs in a thick, flatly-southeasterly-dipping layer or lens of firm, quartz-rhyolite breccia. The more significant gold values occur where this has been successively fractured and mineralized, with the

gold occurring mainly in veinlets, rims, and patches of banded aphanitic quartz and calcite. The ore-breccia pinches and swells from a few feet to, commonly, about 30 feet in thickness.

The N.E. ore block has been fairly well delimited, by percussion - drill sampling on a 20' x 20' grid, within an approximate 100' x 60' area. Drill-indicated thicknesses range between 15 and 30 feet. Allowing for 20% mining dilution, the writer estimates that the block contains 9750 tons averaging 0.29 oz. per ton. With a waste - to - ore ratio of about 1:1, it appears that the ore can be mined quickly and cheaply.

The planned mining operation envisages open-pit mining, crushing the ore to the required fineness, heap-leaching in approximately 300-ton batches, and recovery of the dissolved gold/silver by circulating the pregnant solution through fragments of activated charcoal.

The writer estimates that, with a total capital cost of \$25,000.00 and mining and treatment costs totalling \$10.25 per ton, the gross mining cost will be \$13.03 per ton. The potential profitability of the operation is indicated via the following table:

Gold Price, Per Ounce	Ore Value @ 70% Recovery	Operating Profit	Break-Even Grade
\$180.00	\$36.54 per ton	\$23.51 per ton	0.103 oz. per ton
\$160.00	\$32.48 per ton	\$19.45 per ton	0.116 oz. per ton
\$140.00	\$28.42 per ton	\$15.39 per ton	0.113 oz. per ton
\$120.00	\$24.36 per ton	\$11.33 per ton	0.155 oz. per ton
\$100.00	\$20.30 per ton	\$ 7.27 per ton	0.186 oz. per ton

In the writer's opinion, the proposed operation is both feasible and economically sound. Also the indicated range of profitability of the operation would provide a cushion against such adverse effects as lower grade ore, lower gold recovery, or higher mining costs.

RECOMMENDATIONS

STAGE 1

- (a) Install mining plant and strip waste cover from ore block.
- (b) Mine and treat 900 tons (3 batches) of ore.
- (c) Sample other local exposures of ore breccia that are potentially minable by surface methods.
- (d) Geologically map and cross-section local surface and underground exposures of ore breccia with potentially minable extensions.
- (e) Explore section at depth for parallel breccia zone(s).

ESTIMATED COSTS

STAGE 1

(a) Capital Cost as estimated	\$ 25,000.00
(b) Mine and treat 900 tons @ \$13.03 per ton	11,727.00
(c) Sampling direction & labour, shipping	\$275.00
Assaying, 24 samples @ \$3.50	84.00 359.00
(d) Provision for max. 2 days by geologist and assistant.	350.00
(e) Provision for 500 l.f. percuss.-drill @ \$1.50 ft.	750.00
(f) Omissions and contingencies @ 15% items (c), (d)	
(e).	294.00

TOTAL, STAGE I \$ 38,480.00

Respectfully submitted,

W. M. Jones

INTRODUCTION

During October, 1973 Mr. C.F. Millar, P.Eng., on behalf of Red Dog Mining, Inc. of Arizona, and on the basis of his appraisals of the property's remaining ore potential, negotiated a 10-year lease on the Frisco gold property. During January, 1973 he carried out surface percussion - drill exploration and sampling of extensions of the flatly-dipping gold-bearing structure. The principal result of this work was the delineation of a near-surface ore block, comprising a northeasterly extension of mineralization beyond the walls of the old open stope. Subsequent feasibility estimates by Mr. Millar indicated that a small surface mining operation on this block could be profitable at the present, or even substantially lower gold prices - particularly if the new heap-leaching methods of gold extraction could be employed to minimize the investment in mine plant.

At the conclusion of the above drill-sampling program Mr. Millar requested the writer to inspect the Frisco showings and accrued data and, contingent on the results of this appraisal, submit his report. The latter would include the writer's own interpretations of the mine geology, mining feasibility estimates and recommendations pertaining to geological exploration and mining.

The writer examined the Frisco mine and inspected neighboring geologically-similar prospects during the period Feb. 9 - 12, 1974. The examination of the Frisco mine included a general inspection of the workings and geology, local detailed surveying and mapping, and check-(chip)sampling of mineralized exposures in and adjacent to the drill-indicated (N.E.) ore block. The foregoing was accomplished under the guidance and

assistance of Mr. Millar, who also furnished records of his recent surveys and drill-sampling and made available certain relevant Government reports.

The impressive record of gold production from some half dozen 'small' but successful mines in the San Francisco Mining District during a period when the gold price never exceeded \$20.67 per oz. is, in itself, an indicator of the present potential of the district. Ore potentials becomes more specific when it is realized that substantial tonnages of mineralized vein material, which could comprise ore at present gold prices, must have been left un-mined or unexplored at the then-prevailing price level.

Publications comprising references for the field examination and for the preparation of this report are as follows:

- (1) Ore Deposits of the Western States, Lindgren Vol, pub. A.I.M.E. 1933
- (2) Arizona Lode Gold Mines, Bull. 137, Arizona Bureau of Mines, Revised 1967.
- (3) Geology and Ore Deposits at the Oatman and Katherine Districts, Arizona, by Carl Lawson; Bull. 131, Arizona Bureau of Mines, 1931.
- (4) U.S.B.M. Information Circulars, Sept. & Dec. 1973 re: heap-leaching methods of gold extraction.

LOCATION & ACCESS

The Frisco mine situates about 10 air-miles east of Davis Dam, Arizona and closely north of State Route 68. Its land-map location is Secs. 9/16, T21N, R20W.

From Bullhead City, Arizona, the local base of operations, the property is reached via 10 miles of Route 68; thence by about 1 mile of now-abandoned highway and 1/2 mile of narrow unimproved mining road.

Phoenix, Arizona, at about 200 miles to the southeast via paved road, is the regional centre for mining equipment and supplies.

The property situates within the outer westerly foothills of the Black Mountains. The local terrain is one in which low residual mounts (loc. buttes) and ridges rise from a generally flat, but locally hummocky plain, typically, this has a relatively shallow cover of bedrock debris and coarsely stratified alluvial material.

The local climate, like that of the general region is, arid. The sparse desert vegetation is also typical of the region. Generally, deep wells or mine workings below the water table provide the water required for mine operations.

Rainfall averages less than 12 inches per year, but, locally produces flash-flooding. The highest and lowest temperatures recorded (1967) in Mohave Country are plus 3 and 117 degrees.

PROPERTY

The Frisco Mine property consists of the Gold Dome, Standard, Protection, Dip, Gold Crown, King Edward, Fraction, Watchman, and Site patented mining claims. The gross area of this block of 9 contiguous claims is approximately 164 acres.

The property is presently held by Red Dog Mining Inc. - in turn held by C.F. Millar Limited, via a 10-year lease, granted by Frisco Land and Mining Co. of Nevada. The terms of the lease permit the lessees to mine gold and silver in return for a small monthly rental and a royalty on the net mill or net smelter value of gold and silver produced - the royalty to be scaled to the net returns per ton of ore.

There do not appear to be any private or public restrictions on mining operations or land use which might adversely affect the economics of the contemplated mining operation.

MINE WORKINGS & INSTALLATIONS

The principal working is the large open stope which reaches the surface on the north side of the hill. Most of the Frisco ore production derived from this stope. It rakes flatly southwest within the general ore structure, and is roughly rectangular in plan-outline. Its length, width, and height are, very approximately, 175' x 100' x 20' - 40'. No serious caving of its back or walls has occurred since it was last mined over 40 years ago.

During the former mining operation the broken ore was drawn off via draw points (mill-holes) connecting with a haulage tunnel at less than 20 feet below the stope floor. From here it was moved to the former mill on the lower S.W. slope of the hill via successive tunnels and transfer raises.

Several flat exploration and/or ventilation raises were driven to the surface from the higher mine workings.

The narrow mine access road climbs around the west slope of the hill to the current working area on its north side.

The local source of water for mine operations is an old shaft on the flats to the south of the Frisco knob.

HISTORY

The first discoveries of gold/silver mineralization in the region were made in the early 1860's. Some production from near-surface occurrences of high-grade gold/silver mineralization ensued until about 1866, after which the area lay dormant until about the turn of the century. Between 1897 and 1932 three 'small' mines in the ad-

adjacent Oatman Mining District produced gold and silver to the value of about \$36,000,000.00 - at a gold price of \$20.67 per ounce, or lower.

The Frisco gold/silver deposit was discovered about the year 1900, and prior to 1916 produced some 44,000 tons of ore with an estimated average grade of about 0.6 ounces per ton. A short period of production in 1932 increased the gross output of the mine to about 50,000 tons of ore of about the same grade. There is no direct or indirect evidence of subsequent production, or that any significant or systematic exploration for new ore or extensions of the former orebody took place between 1932 and the fall of 1973.

GEOLOGY & MINERALIZATION

In general, the region is underlain by a thick, gently eastward-dipping succession of Tertiary volcanics on a basement of Pre-Cambrian granite and gneiss. The Tertiary rocks comprise rhyolite, trachyte, latite, andesite, and basalt. Bodies of granite porphyry and quartz monzonite porphyry intrude the Pre-Cambrian and lower (older) Tertiary rocks - most frequently as dykes and sills.

In late Tertiary time the gross bedrock assemblage was tilted and block-faulted and the regional mineral deposits were emplaced in the more 'open' fractures - principally those within the volcanic rocks. Vein and breccia-vein fillings are typical epithermal assemblages, usually comprising bands of quartz, calcite, adularia, and fluorite. Native (free) gold occurs as minute grains in a banded gangue matrix or within small fractures (seams) traversing the latter. Locally, vein fillings include minor amounts of pyrite and/or chalcopyrite and chrysocolla, plus more

or-less iron, and manganese oxide. Vug, comb and crustiform structures characterize some of the veins. Frequently they are closely associated, structurally and/or genetically, with the Tertiary intrusive (dike and sill) rocks. One reference, Ore Deposits of the Western States, page 629 notes that the gold/silver ratio of the total dollar-production is about 2:1.

At the Frisco property, where the old mine workings situate within a low isolated hill or knob, the existing exposures indicate that the bulk of the hill comprises layered rhyolite porphyry, granite porphyry, and rhyolite. An erosional remnant of massive white rhyolite (tuff?) forms a 100-200' thick cap. The local gold/silver mineralization occurs within the upper 100 feet of the rhyolite/porphyry section, topping at some 20-60 feet below its contact with the white cap-rock.

The host structure comprises a thick, tabular, flatly-dipping mass of breccia composed of fragments of rhyolitic rocks in a matrix of chalcedonic quartz and aphanitic calcite. Gold-bearing veinlets and stringers within the breccia have banded chalcedonic fillings. These are creamy white and light brown to light green in colour. Reportedly the better grades of ore occurred in the iron-stained lower part of the layer with, locally, some ore occurring in fractured iron-stained footwall "granite" (granite porphyry?) The 'ore breccia' comprises a fairly distinct tabular layer or flat lens which pinches and swells from a few feet to possibly 40 feet in thickness - judging by the height of the principal stope. It appears to have a general northeasterly strike, and rather low dip to the southeast. Several faults cut the breccia zone, but effect only slight normal displacements.

SAMPLING & ORE ESTIMATES

The writer's calculations and ore estimates are based on the plan and cross-sectional detail and interpretations contained in report Figs. 2 and 3.

Sampling of the northeasterly extension of the ore breccia was done by a standard Airtrac percussion drill. Vertical holes were drilled at 20' x 20' spacing on 3 lines of holes, and the cuttings from either 5 foot or 10 foot consecutive runs were collected. Representative portions of these were obtained by coning - and - quartering. All samples were assayed for gold at a custom laboratory in Phoenix. Stope sample no. 3, testing the inner side of the ore block was included with the percussion-drill sample data in the writer's ore calculations - summarized as follows:

Net reserve in X-Sec 3-6 block	= 8122 tons @ 0.34oz/ton
Plus allowance for mining dilution @ 20%	= 1628 tons @ 0.04oz/ton
<hr/>	
Gross assured minable ore, Sect. 3 - 6 block	= 9750 tons @ 0.29oz. ton

In the writer's opinion, some check-sampling of the north-westerly walls of the stope is warranted. The minimum objective here would be the delineation of an area of 0.20oz/ton material with possible surface extensions.

PROPOSED MINING OPERATION

This specifically relates to the mining and metallurgical treatment of the assured 9750 tons of ore grading 0.29 oz/ton gold content. Preparatory work will include the removal of 8,000 to 10,000 tons of waste overlaying the ore block, road construction, and excavation for stockpile areas and plant machinery.

1. Drilling: Standard G.D. Airtac, 10' sect.-steel, 2-1/2" bits.
2. Explosive: Mainly ammonium nitrate - fuel oil mixture.
3. Loading ore and hauling to crusher: Caterpillar 955 loader.

4. Crushing: Jaw-type or cone-type as required.
5. Hauling ore to leaching plant: via rented truck or by contract.
6. Heap-leaching: by percolation of dilute NaCn solution through 300-ton batches of ore.
7. Gold recovery: by activated charcoal in contact with circulating pregnant solution.

The required equipment is presently at the site, or is available by rental or contract, in Bullhead City; hence the capital investment for mining plant will be minimized.

PRODUCTION ESTIMATES(A) CAPITAL COSTS

(Scheduled for amortization over 9,000 tons of production)

Road construction & rehabilitation; estim. 1/2 mile	\$2,500.00
Excavation of stockpile & treatment areas	1,500.00
Excavation of crusher site & installation	1,000.00
Lay asphalt pads over old concrete slabs	2,000.00
Construct 10' x 20' concrete block building (storage & lab)	2,000.00
Purchase & Install electric power plant	2,500.00
Purchase & Install lab, equipment, plant pumps & piping	6,000.00
Provision for water supply (tank truck, etc.)	1,500.00
Provision for supervision of plant installations	2,000.00
Removing waste over ore block (ore:waste @ 1:1)	4,000.00
	<u>\$25,000.00</u>

Unit Capital Cost

2.78/ton.

(B) OPERATING COSTS

Drilling and blasting ore	\$ 0.45/ton	
Loading and hauling ore to crusher	0.55/ton	
Crushing and hauling to leaching plant	1.00/ton	
Removing leached ore from treat. pads	0.25/ton	
Leaching chemicals, extraction agents, etc.	1.00/ton	
Mining and leaching labour & supervision	2.00/ton	
Provision for royalties and rentals	3.50/ton	
Provision for equipment maint. & repairs	0.50/ton	
Provision for local travel, misc. supp. & conting	1.00/ton	<u>\$10.25/ton</u>

Gross Mining Cost

\$13.03/ton

(C) MINING ECONOMICS

Per U.S. Bureau of Mines data, expected gold recovery = 70%
 Estim. unit recovery per ton of ore @ 0.29 oz./ton = 0.203 oz./ton
 Also, break-even grade = gross mining cost = \$18.60 per ton
 70%

Summary, Production Statistics:

<u>Gold Price</u>	<u>Ore Value</u> <u>@70% Recovery</u>	<u>Operation Profit</u>	<u>Break-Even</u> <u>Grade</u>
@ \$180 per oz.	\$36.54 per ton	\$23.51 per ton	0.103 oz. per ton
\$160 " "	\$32.48 " "	\$19.45 " "	0.116 " " "
\$140 " "	\$28.42 " "	\$15.39 " "	0.133 " " "
\$120 " "	\$24.36 " "	\$11.33 " "	0.155 " " "
\$100 " "	\$20.30 " "	\$ 7.27 " "	0.186 " " "

W. M. Sharp

The above statistics indicate that a profitable operation is rather well assured at current or even substantially lower gold prices, and on ore grades appreciably lower than have been indicated by the recent drill-sampling program.

Respectfully submitted

W.M. Sharp

W.M. Sharp, P.Eng.

WMS.

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CERTIFICATE

I, WILLIAM M. SHARP, with business and residential addresses in North Vancouver, B.C. DO HEREBY CERTIFY THAT:

1. I am a graduate of the University of British Columbia with an M.A.Sc. (1950) degree in Geological Engineering.
2. I am a registered Professional Engineer in the Province of British Columbia.
3. I have practised my profession for 24 years, including 10 years as a geological and mining consultant.
4. I personally examined the Frisco Mine property in Mohave County, Arizona and available reference data before preparing this report of date February 27, 1974.
5. The Frisco Mine property comprises nine surveyed and patented mining claims.
6. I have no direct or indirect interest in the properties of C.F. Millar Limited or Red Dog Mining, Inc., nor do I expect to acquire any such interest.

W.M. Sharp

W.M. Sharp, P.Eng.

W.M.S.

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W.M. Sharp

W.M. Sharp, P.Eng.

W.M.A.

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 78

CERMET

MUST BE CALCINED. USE WITH DISINTEGRATED MATRIX METAL. USE PARTICLE GEOMETRY DELINEATED IN BULLETIN BON-140 REFRACTORY TOOLING FOR BONNELLI MINERAL GROG.

NOTE: NO READY SURFACE WETTING, THEREFORE, GROG IS UNDER STRESS SHARPLY RAISING THE UNIFORM BEAM. P.S.I. CORALLARY, INVESTIGATE THE MORE DUCTILE ALLOYS.

COMPRESSION MOLD. CRUSHING NOT ENCOUNTERED BEFORE MATRIX OFFSET. NO APPARENT CONTAMINATION. BOTH HEAT FLOOD AND ELECTRODIATHERM OR DISCHARGE EFFECTIVE FOR MATRIX BINDING.

NOTE: UNDER HIGH FREQUENCY LOAD NO ARCING NOTED.

MOST NEEDED MARKETING AREA. KINETIC LOADING. BOB DAY AT G.E. POINTING BLADES AND BUCKETS. SCHWANESKAMP SUGGESTED MARINE WHEELS AND ESPECIALLY PISTONS.

DOES NOT LEND TO POURING.

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO.183

PRODUCTS

DOLLAR VOLUME IN MILLIONS/YEAR

1. FIREPROOF HI-RISE FLOORS	7.0
2. REFRACTORIES	14.8
3. CERMETS	< .27
4. PIGMENTS	1.3
5. CERAMIC GROG	L.A. 1.1
6. STRUCTURAL ABLATIVES FOR FIRE STORM	< 9.0
7. FIRE FLOOD OIL WELL	3.2
8. FOAM ADDITIVE	.37

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 92626

TECHNICAL BULLETIN
BONNELLI MINE: NO. 213

MINERALOGICAL COMPOSITION:

STUDIES BY X-RAY DIFFRACTION TECHNIQUE SHOW THAT SUBSTANTIALLY ALL OF THE ALUMINA IS COMBINED WITH THE REQUIRED AMOUNT OF SILICA IN THE FORM OF KAOLINITE. THE EXCESS SILICA APPEARS TO BE ALPHA QUARTZ AND ALPHA CRISTOBALITE. DIFFERENTIAL THERMAL ANALYSIS (DTA) OF THE GROUND ROCK CONFIRMS THE FINDINGS OF THE X-RAY METHOD. DTA INDICATES THAT THE CRISTOBALITE AND QUARTZ ARE NOT IN ANY HYDROUS FORM.

CHEMICAL PROPERTIES:

1.1% MOISTURE IN SAMPLE AS RECEIVED AND DRIED AT 100 °C.

COMPOSITION	FROM FIELD	IGNITED BASIS
SiO ₂	73.2%	79.5%
Al ₂ O ₃	18.48%	20.14%
Fe ₂ O ₃	0.08%	0.09%
CaO	0.04%	0.04%
MgO	0.06%	0.07%
K ₂ O	0.15%	0.16%
LOSS ON IGNITION	7.91%	
	99.9 %	100%

THERMAL PROPERTIES:

EXCELLENT RESISTANCE TO THERMAL SHOCK FROM 2000 DEG. F.
NO COLOR CHANGE WHEN FIRED TO 2100 DEG. F (WHITENESS INTENSIFIED).

GLAZES AT ABOVE 3100 DEG. F.

MELTING POINT AT 3100 DEG. F ON EDGES AND 3600 DEG. F IN CONE.

COEFFICIENT OF THERMAL EXPANSION--(FIRST FIRING) INCREASING COEFFICIENT BETWEEN 212 DEG. F AND 1112 DEG. F, DECREASES SLIGHTLY TO 1832 DEG. F, AND BEYOND THIS TEMPERATURE THE COEFFICIENT INCREASES AGAIN; (SECOND FIRING) COEFFICIENT INCREASES UNIFORMLY THROUGHOUT TEMPERATURE RANGE FROM 212 DEG. F TO 2552 DEG. F; COEFFICIENT ONLY SLIGHTLY HIGHER THAN THAT OF FUSED ALUMINA.

CONTINUED PAGE 2

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SPECIFIC GRAVITY
APPARENT SPECIFIC GRAVITY
BULK DENSITY 4-FINE
G.E.

2.39
1.67
56.1#/CU. FT.
91.3

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET ■ NEWPORT BEACH, CALIFORNIA ■ 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 214

INDUSTRIAL PROCESS

A COMPARISON BETWEEN:

INTERPACE

1. OVERBURDEN REMOVAL
2. MINE
3. SLUDGE & WASH
4. CENTERFUGE & WRING
5. EXTRUDE & BILLET
6. KILN & MELT
7. CRUSH
8. SCREEN
9. BAG OR MIX

BONNELLI

MINE

CRUSH

SCREEN

BAG OR MIX

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 215

MINING COSTS

THE FOLLOWING INFORMATION INCLUDES THE APPROXIMATE COSTS INCURRED IN PRODUCING A TON OF PROCESSED ORE, DELIVERED IN THE LOS ANGELES AREA:

MANPOWER - 2 MEN @ \$600/MONTH EACH	\$1,200
MACHINERY RENTAL - MINING EQUIPMENT/MONTH	1,450
INCIDENTALS - MAINTENANCE, REPLACEMENT, & REPAIR/ MONTH	<u>500</u>
TOTAL FIXED OVERHEAD	\$3,150
MINING COST PER TON ON 4,000 TONS/MONTH BASIS	\$ 0.79
POWDER FOR BLASTING	.35
CRUSHING COSTS	1.50
CRUSHING AND BAGGING LABOR	1.50
BAG COSTS USED	1.75
FREIGHT TO RAILHEAD	.75
FREIGHT TO LOS ANGELES	<u>5.25</u>
TOTAL COST OF PROCESSED ORE, DELIVERED	\$12.14

IF THE ABOVE PROCESSING WAS CONTRACTED OUT, THE MINING CONTRACTOR WOULD EXPECT TO ADD ABOUT \$2 OR \$3 PROFIT TO THESE COSTS, AND THE CRUSHING AND BAGGING CONTRACTOR WOULD EXPECT ABOUT \$2 PER TON PROFIT.

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 216

COMPARISON GENERAL PURPOSE REFRACTORY CASTABLES

PHYSICALS:

B&W OR GLADDING-MCBEAN OR KAISER

BONNELLI MINERAL

MAXIMUM TEMP. 2600° F

2600° F

1. "K" FACTOR @500° F 4.00

.44

2. COMPRESSIVE STRENGTH 990-1170 PSI

2850 PSI

3. WEIGHT/CUBIC FOOT 124

85

COST SAVINGS USING BONNELLI MINERAL FOR:

1. CONTAINMENT OF HEAT

SAVE

80%

2. STRENGTH

SAVE

60%

3. AREA FILL

SAVE

25%

LOWEST SELLING PRICE OF ANY CASTABLE/TON

\$145

COSTS:	3/4 TON BONNELLI	\$ 8.75
	1/4 TON BINDER	22.50
	LABOR TO MIX & SACK	10.00
	SACKS	<u>2.00</u>
		\$43.25

PROFIT BEFORE SALES EXPENSE:

\$101.75

COSTS FOR OIL WELL (HOT)

3/4 TON BONNELLI	\$ 8.75
1/4 TON BINDER	5.00
SACKS	2.00
LABOR (CONTRACT)	<u>10.00</u>
	\$25.75

BONNELLI REFRACTORY CASTABLE SHOULD BE SOLD ON A CUBIC FOOT BASIS

~~OR AT THE VERY LEAST \$182/TON~~

THE DATA CONTAINED WITHIN THIS TECHNICAL BULLETIN IS BASED ON THE BEST AVAILABLE INFORMATION AND IS BELIEVED TO BE CORRECT.
HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE USE OF THIS PRODUCT.

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET ■ NEWPORT BEACH, CALIFORNIA ■ 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 217

SALIENT POINTS OF SUPERIORITY

1. NO SHRINKAGE UPON SETTING
2. 1/2" " OF FIREBRICK
3. 1/8 "K" OF STRUCTURAL CASTABLES
4. HIGH LIGHT REFLECTIVENESS
5. GREATER STRENGTH
6. NO VOLUMETRIC INVERSIONS AS WITH HALIBURTON'S SILICA
7. EXTREMELY LOW IRON CONTENT
8. MITIGATED REBOUND FROM SPRAYING
9. MITIGATED SEGREGATION
10. EXTREMELY HIGH SHEAR FOR MECHANICAL AIR ENTRAINMENT
11. POROSITY 25 OR MINUS MICRONS
12. INSTANT CHEMICAL REACTION BETWEEN THE VEGA CEMENTS AND BONNELLI MINERAL. WELL WITHIN FIVE MINUTE GELATION PERIOD OF THE HIGH ALUMINATE CEMENTS.

Technical Bulletin

VEGA CHEMICAL

8955 BIRCH STREET

NEWPORT BEACH, CALIFORNIA

546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 218

PLASTIC REFRACTORY

ALL BENEFITS OF BONNELLI CASTABLE REFRACTORIES OBTAIN WITH THESE ADDED BENEFITS:

GLAZES AT AMBIENT TEMPERATURES.
OTHERS AT 1600°F TO 2400°F.
FIXES IRREVERSABLY AT 1400°F.

IT CAN BE USED "AS IS" FOR INVESTMENT PROCESSES, WHICH SELL FOR A MINIMUM OF \$500/TON. PLASTICS SELL FOR \$165/TON.

COROLLARY TO THE DEVELOPMENT OF REFRACTORY PLASTICS BONNELLI MINERAL DEMONSTRATED ITS COMPATIBILITY WITH CERAMIC CLAYS. ITS USE IS INDICATED IN HEAVY TOILET FIXTURES (i.e. AMERICAN STANDARD) EFFECTING A SIGNIFICANT SAVING IN FREIGHT AS WELL AS IMPARTING SELF-STRESS RELIEF. WHITE CHINA CLAY COSTS \$40/TON TO IMPORT FROM GEORGIA PLUS (+) \$23.80 FREIGHT.

PLASTICS MARKETS-20,000 TONS/YEAR

- STEEL MILLS
- ALUM. FOUNDRIES
- ACID TANK LININGS
- METAL CASTING MOLDS
- INVESTMENT CASTING

COROLLARY MARKETS - 150,000 TONS/YEAR

Technical Bulletin

VEGA CHEMICAL

3955 BIRCH STREET NEWPORT BEACH, CALIFORNIA 546-2268

TECHNICAL BULLETIN
BONNELLI MINE: NO. 219

LIGHT WEIGHT CONCRETE FLOORS

33.75 CUBIC FEET OF DRY MATERIAL IS REQUIRED TO PRODUCE 27 CUBIC FEET OF FINISHED FLOOR, BECAUSE OF THE 20% (16% TO 17% ACTUAL) COMPACTION OF THE MATERIAL.

4 PARTS AGGREGATE TO 1 PART CEMENT, IS THE VOLUME RATIO.
8 PARTS AGGREGATE TO 3 PARTS CEMENT, IS THE WEIGHT RATIO.

1600 POUNDS OF AGGREGATE AND 600 POUNDS (ABOUT 6 SACKS) OF CEMENT ARE REQUIRED TO PRODUCE 1 CUBIC YARD OF FINISHED FLOOR ON THE ABOVE BASIS.

1 TON OF AGGREGATE AND $7\frac{1}{2}$ SACKS OF CEMENT WILL PRODUCE ABOUT 33.75 CUBIC FEET OF FINISHED FLOOR.

1 TON OF AGGREGATE COSTS F.O.B. LOS ANGELES.
 $7\frac{1}{2}$ SACKS OF CEMENT COSTS \$6.75.

1 CUBIC YARD (27 CUBIC FEET) COSTS ABOUT FOR MATERIAL
ON ABOVE BASIS, FOR FINISHED FLOOR.

DENSITY WILL BE LESS THAN 85 POUNDS PER CUBIC FOOT.
COMPRESSION STRENGTH WILL BE GREATER THAN 2800 POUNDS PER SQUARE INCH.

"K" FACTOR WILL BE 0.30 OR LESS.

THIS WILL PASS 6 HOUR FIRE TEST.

Technical Bulletin

VEGA CHEMICAL

8955 BIRCH STREET

NEWPORT BEACH, CALIFORNIA

546-2268

BULLETIN: 82067

AN EXPERIMENTAL ABLATIVE REFRACTORY CEMENT

DESIGNATION: VEGA 3000

DESCRIPTION: FAST SETTING, HIGH EARLY STRENGTH ABLATIVE REFRACTORY CEMENT. READILY POURED OR SPRAYED. ACCEPTS ALL COMMON REINFORCEMENTS. EASILY WETTED FOR QUICK ~~MOULDING~~. MIXES WITH ANY CLEAN WATER. LOW COST.

SPECIFICATIONS: THIS FREE FLOWING POWDER, WHEN MIXED WITH WATER, HAS ALL THE SAME HANDLING AND SETTING PROPERTIES OF FLOROK. POURS AND GENERATES ITS STRENGTHS AT THE LOW VISCOSITY OF 90 TO 200 SPC. CONTAINS ITS INTEGRATED DEBUBBLER TO INSURE A SMOOTH WETTED SURFACE TO HELP MITIGATE WIND EROSION. MIXES WITH SEA WATER. NO EXPLOSION.

DENSITY (APPARENT IN SITU) 87#/CUBIC FOOT

COMPRESSIVE P.S.I. $\frac{1}{2}$ HOUR ³⁰⁵⁰ ~~3000~~

1 HOUR 5200

24 HOURS 8900

ENTHALPY 25°C-250°C 65.0 CAL/G

SPECIFIC HEAT 90°C .466

1 CUBIC CENTIMETER WILL ASSUME 323.4 CAL BEFORE RISE TO 250°C

1 SQ. FT. X 1" WILL ASSUME 3031.2 B.T.U. BEFORE RISE TO 250°C

USES: VTOL PADS, FIRE WALLS, FIRE DOORS

AVAILABILITY: MOST ORDERS SHOULD BE COMPOUNDED TO SATISFY THE PROPOSED APPLICATION; THEREFORE, REQUIRED QUANTITIES MUST BE PRODUCED FOR EACH ORDER.

LONG BEACH
3310 AIRPORT WAY
BOX 16026, LONG BEACH 90806
FROM DIAL
LONG BEACH (213) 426-3355
LOS ANGELES (213) 636-2386
ORANGE COUNTY (714) 828-6432

SANTA ANA
1514-D N. HARPER ST. 92703
JEFFERSON 1-2045



INSPECTION & MATERIAL ENGINEERING

CHEMICAL & PHYSICAL ANALYSIS

RESEARCH & ENVIRONMENTAL TESTING

CORROSION RESEARCH & ANALYSIS

May 5, 1966

Examination CH66-338

Daedal Chemical Company
3955 Birch Street
Newport Beach, California

Attention: Mr. Earl Friedmeyer

SUBJECT: Testing of special mortar samples delivered to Twining Laboratories of Southern California on April 25, 1966 by Mr. Friedmeyer.

TEST RESULTS:

Compressive Strength

PSI

1 - A	3,066
1 - B	3,437
1 - C	3,501
2 - A	3,278
2 - B	3,374
2 - C	3,406
3 - A (Heated to 1500°F)	813
3 - B (Heated to 1500°F)	966
3 - C (Heated to 1500°F)	717

Modulus of Rupture

PSI

3 - 1 - A	625
3 - 1 - B	500
3 - 1 (Heated to 1500°F)	125

TWINING LABORATORIES OF SOUTHERN CALIFORNIA, INC.

T. M. Dunkle

T. M. Dunkle, Chief Chemist

TMD:jg

cc: 3

LONG BEACH
3310 AIRPORT WAY
BOX 16026, LONG BEACH 90806
FROM DIAL
LONG BEACH (213) 426-3355
LOS ANGELES (213) 636-2386
ORANGE COUNTY (714) 828-6432

SANTA ANA
1514-D N. HARPER ST. 92703
JEFFERSON 1-2045



INSPECTION & MATERIAL ENGINEERING

CHEMICAL & PHYSICAL ANALYSIS

RESEARCH & ENVIRONMENTAL TESTING

CORROSION RESEARCH & ANALYSIS

August 2, 1966

Examination CH66-338 A

Daedal Chemical Company
3955 Birch Street
Newport Beach, California

ATTENTION: Mr. Earl Friedmeyer

SUBJECT: Certification of Thermal Conductivity K Factor

TEST RESULTS:

<u>Temperature °F</u>	<u>K Factor</u>
100	0.47
250	0.48
500	0.495
750	0.52
1,000	0.54
1,250	0.56
1,500	0.59
1,750	0.63
2,000	0.67

Very truly yours,

TWINING LABORATORIES OF SOUTHERN CALIFORNIA, INC.

T. M. Dunkle

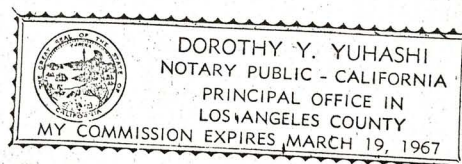
T. M. Dunkle, Chief Chemist

TMD/bq

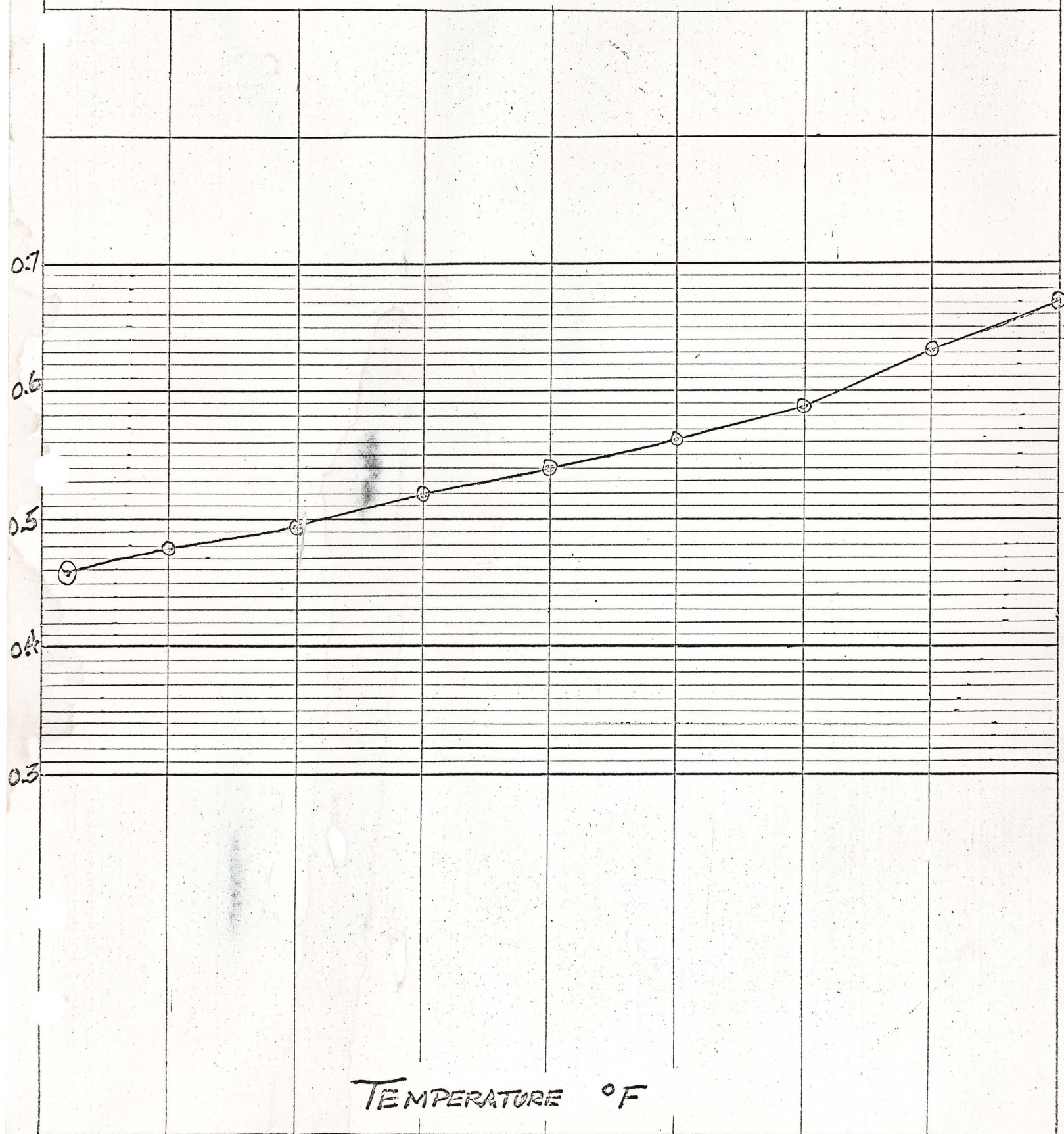
cc: 3

Subscribed and sworn to before
me this 2nd day of August 1966.

Dorothy Y. Yuhashi



THERMAL CONDUCTIVITY - K FACTOR



BURCH, HERSHEY & WHITE
Consulting Engineers
Crocker Building, San Francisco, Cal.

THIRD GEOLOGICAL REPORT ON THE FRISCO GOLD MINES

By Oscar H. Hershey

Needles, California,
June 7, 1920

THE FRISCO GOLD MINES COMPANY
P. O. BOX 647,
KINGMAN, ARIZONA

RECEIVED

MAR 29 1979

DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

Gentlemen:

This morning I visited your property near Union Pass and inspected the development work in progress. Since my November visit the cross-cut on the 100-foot level from the Main shaft has been advanced 380 feet in a north-northeast direction. All of it is in the porphyritic rhyolite that underlies the ore horizon. In places it is fairly solid and light-colored, but usually it is much fractured and iron-stained. I noted on my field-map nine faults, but as they do not mark much displacement and are of no importance in the search for ore, I did not indicate them on a sketch left at the office. Toward the face the rock acquires many small calcite seams which Mr. Dimmick says are gold-bearing and he interprets their presence as an indication that the vein horizon is coming down to the level of the cross-cut. I do not know whether it is the top or bottom of the rhyolite sheet that is being approached, but I suspect the latter.

At a point about 240 feet from the Main shaft a raise was put up on a steep inclination and at 41 feet from the floor of the cross-cut it cut the strong gouge of the low-dipping fault that has cut out the vein in this area. It dips southward

about 6°. Internal evidence indicates that the rock over it has moved southward. The upper formation is the rhyolite tuff with calcite seams and much iron stain locally.

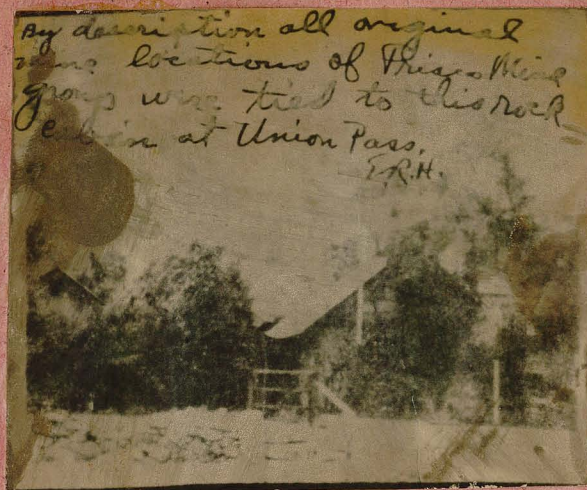
With the information gained from the cross-cut and raise we are not better able to understand the surface. It seems probable that a line drawn from a point 100 feet south of churn-drill hole No. 3 to the south end of the Contact trench on the Protection claim is the approximate northeast limit of the area barren of vein by reason of the low-dipping fault. The southwest limit is probably against the Frisco fault. It appears probable, also, that the low-dipping fault passes over the quartz cut in the churn-drill holes.

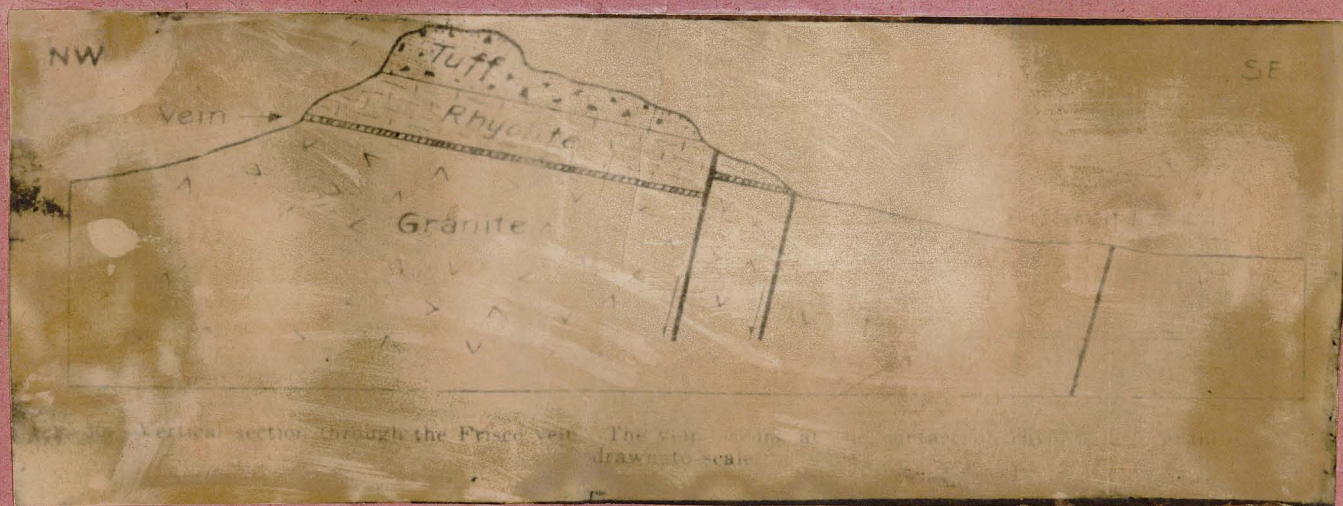
The cross-cut has been driven on a course more eastward than we had anticipated, but it seems likely now that this will prove an advantage in a general scheme of development. Mr. Dimmick proposes to drive from near the present face of the cross-cut toward churn-drill hole No. 5. This I strongly endorse. He also wants to deflect the cross-cut toward the right and drive to the King Edward fault, if he does not strike the granite before the fault is reached. This I endorse with a little less enthusiasm than the drift. However, it is the best way of exploring a section that probably has the vein. If the ore horizon has not come down to the level, raises will have to be put up to it.

In short, the situation in that part of the property is clearing up and we are better able to make an effective plan of development than we were before.

Respectfully submitted,

MINING & APPRAISAL REPORT
FRISCO MINE GROUP
Union Pass Section of S. F. Mining
District
May 10, Mohave County, 1964
E. Ross Hausholder





18
RESUME QUALIFICATIONS AS APPRAISER AND INSPECTOR

E. Ross Housholder, P.O. Box 1107
(431 E. Spring St.), Kingman, Arizona

Is approved as an appraiser and inspector of land and improvements by:-

- (a) FHA, Phoenix, Arizona
- (b) Veterans Administration, Federal Bldg., Phoenix, Arizona
- (c) Valley National Bank, Kingman (and Phoenix), Arizona
- (d) Various Insurance and Mortgage Companies
- (e) Was also appraiser for the Home Owners Loan in Arizona
- (f) Listed and has been used as a qualified (civil service) appraiser by U.S. Dept. of Interior. (check list in Washington, D.C.)
- (g) Arizona Registered Professional Engineers #257.
- (h) Arizona Registered Land Surveyor #3065.
- (i) California Licensed Land Surveyor #2641.
- (j) Has had over 40 years experience as an appraiser, inspector, professional engineer and land surveyor, especially in Arizona, California and Nevada.
- (k) Graduate Bowling Green, Ohio High School. Attended Case Institute in Cleveland Ohio 1912-1914, Graduate 1918 Univ. of Missouri; School of Mines, Rolla, Mo. Professional Engineering Degree, School of Mines, Rolla, Mo. in 1930.
- (l) Com. Officer in U.S. Engr. Corp. World War I
Com. Officer in SHAEF, G4 in World War II
Retired 1953 as L/Col. U.S.A.R.
- (m) Have built buildings, homes, etc., for mining and industrial organizations. Also built 10 houses for myself. Know what building requirements and costs are today.

I, E. Ross Housholder, hereby certify that the above statements are true and correct.

E. Ross Housholder

E. Ross Housholder

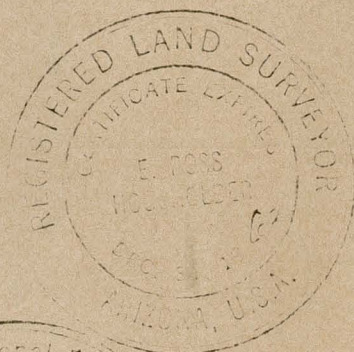
E. ROSS HOUSHOLDER
— APPRAISER —

P. O. BOX 1107 (431 E. SPRING ST.)
KINGMAN, ARIZONA

E. ROSS HOUSHOLDER
INSPECTOR

P. O. Box 1107 (431 E. Spring St.)
KINGMAN, ARIZONA

Dated: November 10, 1962



1142 HOWARD STREET • SAN FRANCISCO 3, CALIFORNIA
UNDERHILL 3-8575

Submitted by Mr. Peter Joralemon
315 Montgomery Street
San Francisco, California

Date April 27, 1964

Sample of White Mineral

Qualitative Spectrographic Analysis
METALS FOUND AND PERCENTAGE RANGE

LESS THAN 0.01%	0.1 TO 1.0%	1.0 TO 10.0%	10 TO 10.0%	MAJOR	LAB NO.
Manganese	Calcium	Sodium	Aluminum	Silicon	1500
Strontium	Magnesium	Potassium			
Chromium	Iron				
Lead	Titanium				
Copper	Zirconium				
Zinc	Vanadium				
Boron					
Nickel					

REMARKS:

METALLURGICAL LABORATORIES

By _____
SPECTROCHEMIST

Examinations, Surveys
 Appraisals, Assays
 Blue Prints
 Confidential Reports

STATEMENT

Residence-Office

E. ROSS HOUSHOLDER

Registered Professional Engineer No. 257, Arizona
 Registered Land Surveyor No. 3065, Arizona
 Licensed Land Surveyor No. 2641, California

P. O. Box 1107
 431 E. Spring Street
 Telephone SK 3-2097

Buena Vista Oil Co.,
 935 Locusts Place
 San Rafael, California

Former Mohave County Engineer
 Professional Appraiser Since 1919
 Kingman, Arizona, 86401

May 10, 1966

Refer: Letter dated April 11,
 1964 Reg. Appraisal
 Report on Fisco Mine

1964	Services Rendered as Requested	Service	Expenses
April 15	Search records, interview persons familiar with Fisco Mine group, with view of finding past activity. Record and arrange pertinent data for subject report including mine and real estate worth	\$35.00	
16	Business and personal expenses	\$60.00	\$8.05
11	Business and personal expenses	\$35.00	\$2.35
24	Business and personal expenses		\$2.35
25	Business and personal expenses		\$2.35
30	Business and personal expenses		\$2.35
7	Business and personal expenses		\$2.35
7	Business and personal expenses		\$2.35
Inclusion	Business and personal expenses		\$2.35
	Total Exp. Pd. Out.	\$54.42	\$4.42
	Total Services	\$130.00	
	Total fee	\$184.42	

I CERTIFY THAT THE ABOVE FEE IS CORRECT AND JUST AND THAT
 PAYMENT THEREFOR HAS NOT BEEN RECEIVED

Witness my hand and seal this date

Dad:
 add this to
 each of Fisco
 mine appraisals
 report
 E.R.H. died 7/8/1965
 Ray Dimmick died 4/28/66

LAWYERS TITLE of PHOENIX

321 N. Central Avenue

Phoenix, Arizona

Representing

Lawyers Title Insurance Corporation

PRELIMINARY REPORT FOR TITLE INSURANCE

NO. B657130

To: BENJAMIN P. BONELLI, Attorney
935 Loovens Place
San Rafael, California

TITLE NO. 2736-M

Type of Policy OWNERS
Amount

Agreeable to your order for title insurance covering the property described under Schedule A hereof, Lawyers Title Insurance Corporation, acting through LAWYERS TITLE OF PHOENIX will issue its regular form of Title Insurance Policy in the amount set forth above upon satisfactory compliance with the requirements set forth under Section 1 of Schedule B of this Preliminary Report and upon payment of all charges and disbursements (provided nothing affecting the title adversely shall arise subsequent to the date hereof and prior to the issuance of said title insurance) showing the record title to said property to be vested in:

Subject only to those items shown under Section 2 of Schedule B of this Preliminary Report, against which the Company does not insure.

If, within 30 days from the date of this Report the applicant shall have failed to comply with the requirements set forth in Section 1 of Schedule B of this Report, unless further time is granted by the Company, the Company shall have the option of issuing its regular form of Title Insurance Policy, at its scheduled rate, including in Schedule B of said Policy as exceptions all unsatisfied requirements, or to make a charge commensurate with the services incidental to the issuance of this Report.

This Preliminary Report for Title Insurance shall not be binding until it shall have been countersigned by LAWYERS TITLE OF PHOENIX, agent for the Corporation.

Search was made on the property described in Schedule A hereof to April 23, 1964, at 7:00 o'clock A. M., which shall be deemed the date of this Report.

IN WITNESS WHEREOF, the said Corporation has caused these presents to be signed in accordance with its by-laws.

Lawyers Title Insurance Corporation

LAWYERS TITLE of PHOENIX

COUNTERSIGNED:

JG:meh

AUTHORIZED OFFICER

President.

Secretary.

SCHEDULE A

Legal description of the land referred to in this Preliminary Report for Title Insurance.

Situate in Mohave County, Arizona:

The following Patented Mining Claims in the San Francisco Mining District, located in Townships Nineteen (19) and Twenty-one (21) North, Range Twenty (20) West of the Gila and Salt River Base and Meridian:

Watchman, Site, Standard, Gold Crown, Dip, King Edward, Gold Dome, Protection and Fraction.

(Arizona Land Title and Trust Company hereby reserves the right to change the above legal description to conform with the Patents to be recorded herein upon examination of said Patents.)

Section 1. Showing requirements to be complied with; defects and objections to be removed or eliminated; and liens and encumbrances to be satisfied and discharged of record before policy of title insurance will be issued without exception thereto.

Item 1. Proper instrument creating the estate or interest to be insured must be executed and duly filed for record, to-wit:

DEED by CROWN MINING CO., a Nevada corporation, to _____.

2. RELEASE by WM. G. BONELLI and MARY P. BONELLI, his wife, of Mortgage executed by CROWN MINING CO., a Nevada corporation, dated August 3, 1948, recorded August 13, 1948, in Book 15 of Mortgages, page 432.
3. RECORDATION of Patents to said premises from the United States of America, and disposition of any matters disclosed thereby.
4. PROPER SHOWING that Crown Mining Co., is qualified and authorized to do business in the State of Arizona.
5. CERTIFIED COPY of Resolution by the Board of Directors of CROWN MINING CO., a corporation, authorizing the execution and delivery by the proper officers of all instruments required for the consummation of the transaction to be insured herein.
6. IDENTITY STATEMENT of "BUYERS", and disposition of any matters disclosed thereby.

NOTE: 1963 taxes assessed to CROWN MINING CO., under Assessment No. 2746. Real Estate 1640.00. Total tax \$80.87. Paid in full.

Section 2. Showing objections, liens and encumbrances, if any, to be shown as exceptions under Schedule B of the policy, against which the Company does not insure.

Item 1. Exceptions Nos. 1 to 5, both inclusive, as shown on rider attached hereto and made a part hereof.

2. Rights of way for roads, transmission lines, canals, laterals and ditches.
3. Taxes for the year 1964, a lien but not yet payable.
4. Reservations contained in Patents to be recorded.

This rider made a part of the attached Lawyers Title Insurance Corporation B657130

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.

E. ROSS HOUSHOLDER

Registered Professional Engineer No. 257, Arizona
Registered Land Surveyor No. 3065, Arizona
Licensed Land Surveyor No. 2641, California
and Mohave County Engineer
P. O. Box 1107

Kingman, Arizona

Residence - Office
431 E. Spring Street
Telephone Green 87

DUPLICATE

May 10, 1964

Refer: **FRISCO MINES
APPRAISAL**

**Buena Vista Oil Company
935 Lootens Place
San Rafael, California**

Gentlemen:

As requested in your letter dated April 11, 1964, I have completed a preliminary inspection of the Frisco Mining Group, Union Pass Section, San Francisco Mining District, Mohave County, Arizona, and prepared the following appraisal, including a resume of the mining activities since the original location in 1894.

Included is data of the milling results, history, geology, maps, and present status of the 164.082 acres, including nine patented claims, with information concerning roads, power lines, telephone lines, etc. available to the property.

Also there is included data pertaining to the present REAL ESTATE value of this said 164.082 acres.

Various maps and photographs are included. Each page is signed.

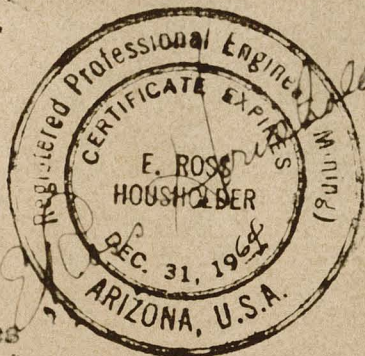
Respectfully yours,

E. Ross Housholder

**E. Ross Housholder
Registered Professional
Mining Engineer No. 257 and
Appraiser**

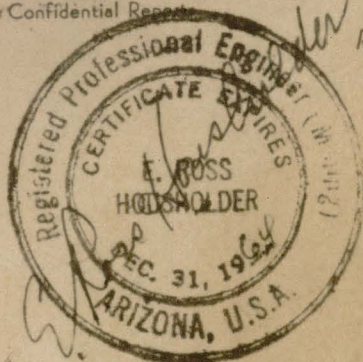
**E. ROSS HOUSHOLDER
— APPRAISER —**

**P. O. BOX 1107 (431 E. SPRING ST.)
KINGMAN, ARIZONA**



ERH:edm
Enclosures

Examinations, Surveys
Appraisals, Assays
Confidential Reports



E. ROSS HOUSHOLDER

Registered Professional Engineer No. 257, Arizona
Registered Land Surveyor No. 3065, Arizona
Licensed Land Surveyor No. 2641, California
and Mohave County Engineer
P. O. Box 1107

Kingman, Arizona

Residence-Office
431 E. Spring Street
Telephone SK 3-2097

Refer:

1. HISTORY:

When in 1862, General J. R. Carelten and the Fifth California volunteers occupied Arizona, to prevent it from falling into the hands of Confederate irregulars, many of his men who were experienced miners varied the monotony of garrison duty by prospecting. These soldiers were stationed at Camp Mohave on the Colorado River, a few miles southwest of the Katherine Section, the Secret Pass section, and the Oatman section, soon became known as the San Francisco Mining District.

The first discovery of any importance in the Union Pass-Katherine section was made in 1865 at the Sheeptrail, by Capt. Jack Mellen, a steamboat operator running on the Colorado River. Much ore was subsequently mined and milled from this property which lies to the West of the Frisco mine. Following the close of the Civil War, activity in prospecting subsided in the entire San Francisco Mining District. Several other important gold bearing ledges were discovered between 1893 and 1896 in the eastern portion of what was later to be known as the Union Pass and Katherine sections of the San Francisco Mining District.

2. MATERIAL AND STRUCTURE OF THE UNION PASS VEINS:

The Union Pass section veins are mineralogically of simple character, consisting mainly of quartz, calcite, and adularia, associated, in the ore shoots, with free gold. As a rule only quartz and calcite are recognizable with the naked eye. The adularia occurs generally in microscopic crystals, and gold is visible only in unusually rich ore. Fluorite occurs in some of the veins, but apparently is not particularly significant as to the presence of gold. The proportion of quartz and calcite in the veins varies widely. A wide range may also be found in different parts of the same vein. As a rule, the gold is found where both minerals are present. Much of the quartz that was deposited nearly or contemporaneously with the gold has clearly replaced older calcite. Some of it moreover, appears to have crystallized simultaneously with calcite. This indicates at least three generations of calcite. The conclusion reached is that during the middle stage of vein formation quartz and calcite were repeatedly deposited alternately and that during this period also were at times deposited simultaneously and some calcite was replaced by quartz. Deposition of calcite has probably continued up to the present time. The cause of the tint and lustre accompanying the gold bearing quartz has not

yet been ascertained. The granite, a coarse porphyritic rock, is sheeted and made shistose along the zone of contact at the FRISCO mine.

In the Union Pass Section the ores are believed to have been deposited by hot, ascending solutions which originated at considerable depths below the surface. The exact sources of the solutions, however, cannot be determined. They were, however, derived from a cooling magma. The more volatile constituents, including water vapor, were concentrated by differentiation upward through cracks in the earth's crust.

Veins in the Oatman and Katherine Section and Union Pass frequently branch and interseat; yet no ore shoots have been found at such intersections which are ordinarily favorable places to search for ore. Although no ore has been found at such intersections in the past, it does not mean that ore will be found under such conditions in the future.

Ore has been found in various kinds of rocks. In the Union Pass Section, primary ore shoots occur in latite at the Gold Road and Gold Ore Mines and in andesite along the Tom Reed fracture. A small ore shoot at the Sunnyside Mine on the 500 ft. level had tracyte for the footwall. The very rich ore shoot worked in the early days at the Moss Mine was in quartz monzonite.

The chemical composition of the rock, therefore, does not appear to have been an important factor in the localization of the ore shoots, and would be hardly expected to be of prime importance unless the ore bodies were formed largely by a process of replacement. A physical property of the various rocks, such as their ability to shatter and remain open rather than to form a tight gauge, may have contributed to the localization of the ore shoots, where they are now found. As was stated previously, a reopening of the veins by later faulting was essential for the introduction of the later and richer stages of vein formation.

3. CLIMATE:

The Union Pass Section, including the Frisco Mine Group, has a healthful climate with mild winters, although the summers are hot, which permits good working conditions the year round. The rainfall is about 8 inches a year. The vegetation is typical of semi-arid regions.

4. GEOLOGY OF THIS FRISCO GROUP:

The country rock is red, coarse grained pre-Cambrian pressed granite and consists essentially of orthoclase, quartz, biotite, and microcline; belonging to that group of rocks known as the Pre-Cambrian complex, which is typical of the Union Pass Katherine Sections of the San Francisco Mining District. It has apparently been intruded by a micropegmatite which is to some extent altered, and forms a portion of the Frisco Veins.

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JPH

Examinations, Surveys
Appraisals, Assays
Confidential Reports

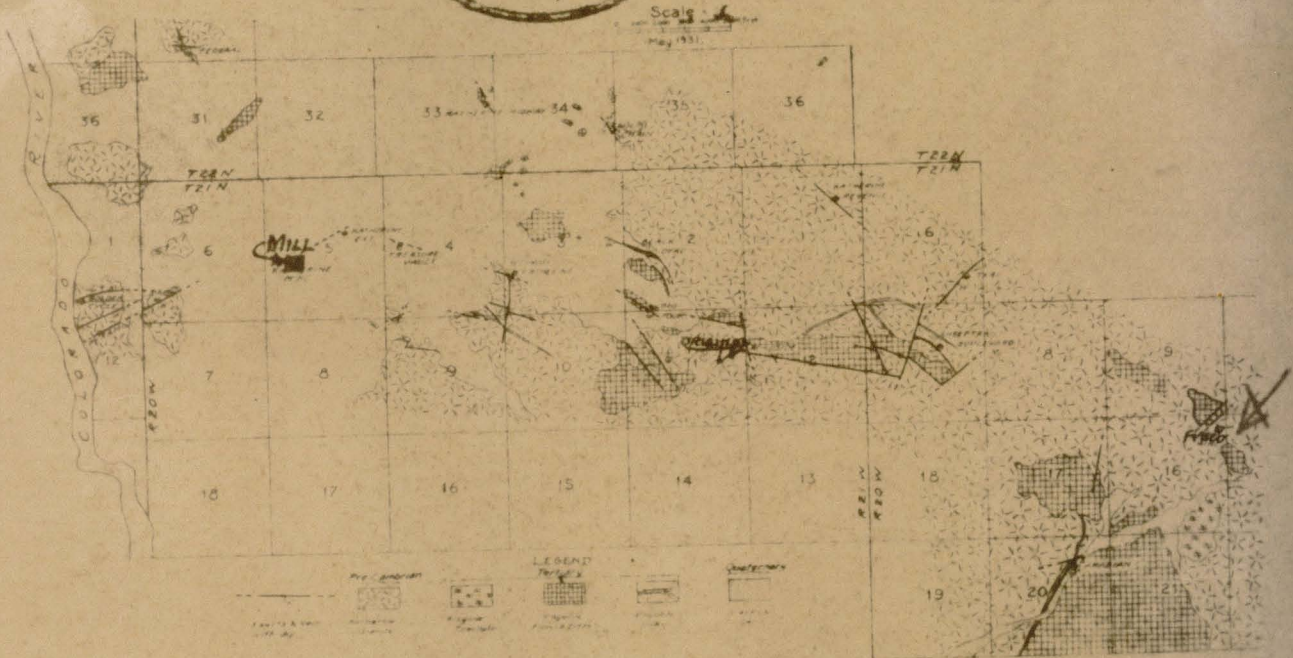
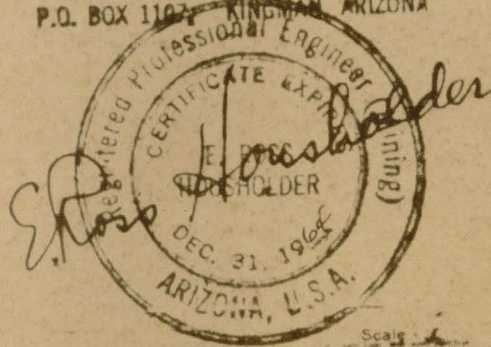
E. ROSS HOUSHOLDER

Registered Professional Engineer No. 257, Arizona
Registered Land Surveyor No. 3065, Arizona
Licensed Land Surveyor No. 2641, California
and Mohave County Engineer
P. O. Box 1107

Kingman, Arizona

E. ROSS HOUSHOLDER
ENGINEER & LAND SURVEYOR Refer:
P.O. BOX 1107 KINGMAN, ARIZONA

Residence - Office
431 E. Spring Street
Telephone Green 87



Geological Map Of The Union Pass Section of the San Francisco Mining District, Mohave County, Arizona.
(From Arizona Bureau of Mines Bulletin #131-1931 by Carl Lausen, page 21, plate II.)

To Accompany Report By: *E. Ross Housholder*
E. Ross Housholder E.M.
Registered Professional Engineer
Kingman, Arizona

MAPS

BLUE PRINTS

BLACK AND WHITE PRINTS

MINE, RANCH & COUNTY MAPS

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CRH

The veins of the San Francisco Mining District, including the Union Pass Section and the Frisco Mine, consist largely of quartz and calcite, together with smaller amounts of adularia and fluorite.

Vein formation probably took place in the latter half of Tertiary time.

A limb of an eroded anticline of rhyolite flows of which the section at the Frisco group is the Southern limb. The structure is monoclinial, with the dip gently to the South.

The capping rhyolite is massive and white, but its lower 3 or 4 feet are streaked reddish. The older rhyolite porphyry is a highly altered reddish-brown iron-stained rock. It contains lime carbonate and much quartz, and in places it completely gives way to quartz. Its upper 3 or 4 feet is silicified and banded parallel with its contact with the rhyolite above.

The vein or ore bed, consisting of quartz and iron-stained altered and silicified rock containing the values, occurs in the upper 30 or 40 feet of the older rhyolite porphyry. The ore may have originally been deposited in this rock, but was probably subsequently enriched by circulation of thermal solutions that attended and followed the eruption of the younger rhyolite.

The occurrence of gypsum in the outcrop has no bearing on the deposition of gold.

Small pockets of rich ore at the Frisco vein, according to R. H. Dimmick, occurred in the footwall and were heavily stained with iron oxide. Some of this ore assayed over \$1000 per ton. So constant was the association of gold and fluorite were followed in the search for additional ore. Sometimes where gold and fluoride are found, there is also manganese dioxide, almost without exception, such gold ore bodies occurred relatively close to the surface. This fact suggests that such ore bodies were probably enriched by supergene solutions. This association of secondary gold with fluoride may be of more than casual interest. Chemically, fluorine is similar to chlorine in its properties, and may possibly be a solvent for gold under certain conditions. None of such enriched veins in the San Francisco Mining District have been observed to extend over 100 feet below the surface. Gold found in such and near the surface deposits carry little silver.

The ores in the Union Pass Section which includes the Frisco Mine belong to nine general groups of deposits sometimes referred to as the "bonanza type". In such types, gold is often concentrated to form exceptional high grade ores. Such deposits have been formed at relatively low temperatures, that is, not over 175° C.

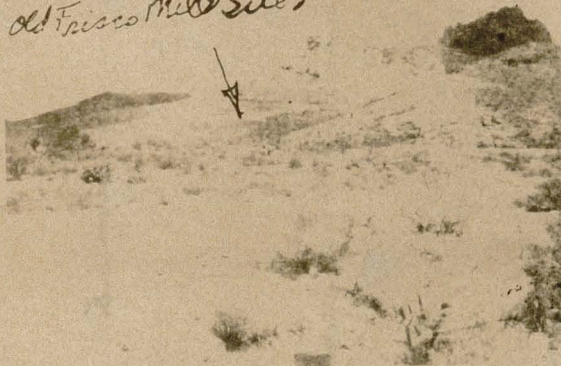
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The smooth slicken-sided walls found in the main stope indicate that there had been considerable movement along this wall at the time of the fissure formation.

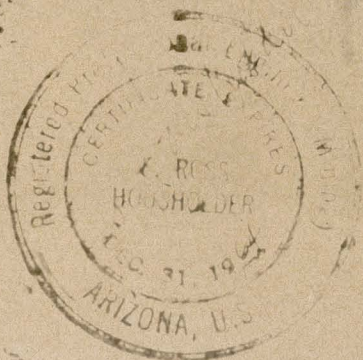
Where this vein has been opened by open cuts, samples have been obtained that show good gold content for surface rock in the District. The deposits were probably formed by circulating thermal solutions and accompanied and followed the invasion of the intrusives.

Frisco Mine croppings consist of quartz and silicified rock stained by iron and manganese. The vein is composed principally of quartz with bunches of light colored crystalline calcite and occasional spots of fluorspar, together with some altered rock, which seems to be a micropegmatite. Much of the quartz, as shown in the croppings, especially on the Gold Crown Fraction, Gold Dome, and King Edward lode claims, has replaced calcite, after which it is pseudomorphic. The occurrence of what seems to be altered micropegmatite in association with the vein suggests that the fissure now occupied by the vein may formerly have been occupied by a dike of the micropegmatite, which the vein later replaced.

Old Frisco Mill Site.



*Looking Westward from
Frisco Mill Site showing
tailing dump extending
down wash (LRT)*



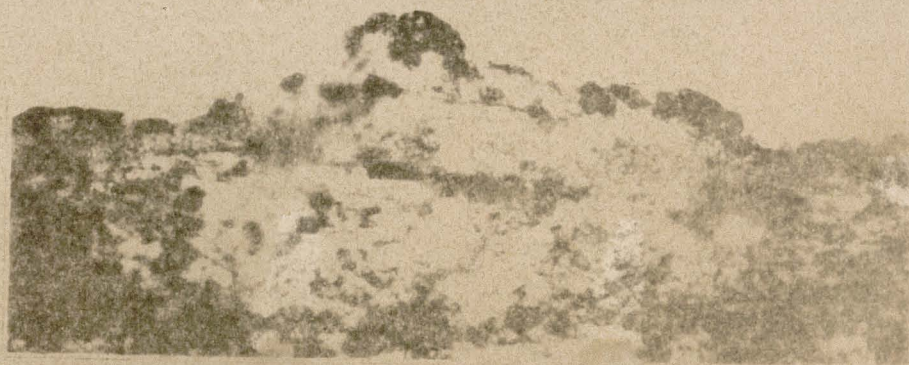


Fig. 29. View of the Frisco Mine showing the contact of the rhyolite and granite.

FRISCO MINE

The Frisco Mine is situated in the eastern part of the Katherine District, about eight miles in an easterly direction from the Katherine Mine. The vein occurs in a low hill, the base of which is granite, and above the granite is a deposit of rhyolite and some rhyolite tuff. The Frisco Mine was discovered in 1914 and the mine closed in 1914.

The vein occurs at the contact of the rhyolite and granite. It strikes N. 55° E. and dips to the southeast at 12°. A number of small faults cut the vein, and, in nearly all cases, the offset is only a few feet. At the south end, however, one fault displaces the vein about 100 feet. A fault with a northwest trend drops the west side of the mineralized zone about 35 feet. A vertical section through the mine is shown as Fig. 30. The outcrop of the vein is quite conspicuous because of the abundance of iron oxide which occurs at the contact of the granite and the rhyolite.

Banding is a characteristic feature of the quartz that occurs in this vein. The color is from cream to light brown, and the texture is chalcedonic. The vein consists of many small stringers which cut the rhyolite. The appearance of much of the ore suggests that the lower portion of the flow was shattered by faulting prior to the introduction of the quartz. Banding occurs around these fragments of rhyolite, and the space between them is not always entirely filled with quartz, but may be a vug lined with quartz crystals. In places, the vein was eighteen feet thick, but most of it was narrower. In the lower portion of the vein, some sections were heavily stained with iron oxides, and these portions of the vein constituted the ore shoots. Iron oxide also occurred in the granite, and some of the iron-stained granite was mined for ore. Frequently it carried high concentrations of gold. Some of this enriched ore, according to R. H. Dimmick, carried \$3 per pound in gold.

A second vein, which strikes northeast and dips to the northwest at 65°, occurs in the flat to the southeast of the hill. A shaft was sunk to a depth of 300 feet to explore this vein. All the lateral work was done on the 200-foot level. The vein, which here consists of a mineralized lode with a width up to 59 feet, occurs in granite. The ore is, however, too low grade to mine.

Dimmick estimates the production of the Frisco Mine at 44,000 tons with an average value of \$14 per ton, equivalent to \$516,000.

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5. LOCATION AND HISTORY OF FRISCO MINE AND MILL OPERATION:

The Frisco Mine Group of nine patented claims, partly in sections 9, 15, and 16, of Township 21 North, Range 20 West, Gila and Salt River Meridian, Mohave County, Arizona, originally was known as the Tragedy Group, and was located about two miles southwest of Union Pass, in 1894. It is situated 8 miles East of the Colorado River and at Lake Mohave. It is directly West of Kingman. The elevation is about 3,200 to 3,400 feet above sea level.

Most of the underground mining work at the Frisco Mine was done while the cyanide mill was in operation. The first mill was completed about 1909. The ores were first crushed, and then put through a Hardinge ball mill.

The main trouble encountered was in crushing this ore, which was very hard, due to the heavy quartz. After primary crushing, the ore was directed through several sets of rolls, and then sent to the Hardinge ball mill for fine grinding, necessary to free the fine gold. The ore was ground in a cyanide solution. A mechanical classifier was the next unit in the milling process. The heavier material was returned to the ball mill for further grinding. The finely ground ore in a cyanide solution was agitated using compressed air to aid in the agitation in the four Pachucya tanks. Then the fine ore, after agitation, was sent to a Birt-filter, resulting in a fairly clear cyanide solution which was next directed through boxes containing zinc shavings, where the gold was precipitated out, and recovered as a black powder. This "black gold" was properly fluxed and melted in graphite crucibles and cast into V-shaped molds where the gold settled to the bottom. Once a month the gold was further refined by melting and poured in a cast iron mold in the shape of a "brick".

This gold brick was sent to the U. S. Mint at San Francisco, California, after being hauled to the railroad shipping point at Union Station, and thence by the A. T. & Santa Fe Railroad via Kingman, Arizona. These monthly gold brick shipments netted around \$8,000 each month until the operation stopped about 1914, after a production, estimated by * R. L. Dimnick at 44,000 tons with an average value of \$14 per ton, equivalent to about \$516,000.

* This estimate recorded by Dr. Carl Lausen, in a thesis written in partial fulfillment of requirements for a degree of Doctor of Philosophy at University of Arizona (at Tucson) in May, 1931, and published as an Arizona Bureau of Mines Bulletin, No. 131, page 113, dated June 15, 1931.

7

The two Hardinge ball mills mentioned above were driven by a Metz & Weitz semi-deisel (hot head) twin engine unit. The concrete bases of these engines were constructed of, in excess of 19 tons of, concrete for each). The capacity of these ball mills was rated at 200 tons in 24 hours (3-shifts), and installed in 1912.

Note: In a publication dated 1959, Charles H. Dunning writes: "The Frisco Mine production in gold up to 1933 has a recorded production of \$400,000.

TUBE MILL INSTALLED 1914:

In 1914 a tube mill replaced the Hardinge ball mills at which time Bill Tanner was mill superintendent, and Tom O'Brien was mine foreman, under R. L. Dimmick. Demmick's partner was Sam Bethour. The ore treated in the new tube mill apparently came mostly from the incline leading into the stope underneath the "white-tuffa" outcropping above the mill site. This big stope was about 200 feet long, and about 100 to 150 feet below the surface with a working face up to 55 feet high. The ore value per ton was \$8, \$12, and \$14 per ton, and reminded the miners of the Goldroad ore.

The better values followed the slick foodwall. Ore recovered, gave assay returns from \$10 to \$100 per ton. Incidentally, air drills were used to drill the hard ore encountered during the Frisco operation.

LAST ORE SHIPPED 1939-1940:

Again in 1939 and 1940 some of the ore left in this stope was mined and transplanted about 9 miles Westerly to the then operating "counter-current decantation cyanide mill" at the Katherine. This large stope caved in, and stopped operation on the recovery of the ore.

During the operation of the Frisco Mill, the camp there became an important oasis for the mines in the district. A well-stocked general store and post office was provided. It might be well here to record some of the men working at this Frisco Mine during its production years: There was Jasper Brewer in the mill; Con Falvey was the storekeeper, assisted for awhile by Herb I. Alexander; Tom O'Brien as Mine Foreman; Eugene S. Walker, freighter in charge of the 10 to 20 horse freight wagon, hauled supplies from Union Station to the Valley, East of Union Pass, on the Chloride Branch of the A. T. & Santa Fe Railroad from Kingman on the main line; Bill Turner as mill superintendent; "Finger-off" Barton from New York State attended the installation of the engines; the shaft was sunk largely under the direction of Howard Squires. These, and other men, besides Dimmick and Bethour, were instrumental in the early day operation of this well known gold producing Frisco Mine.

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5. AREA OF MINE GROUP OF NINE LODE CLAIMS:

The Nine patented claims in the FRISCO Mine group are:

Protection	19.085 acres
King Edward	20.3 acres
Fraction	4.37 acres
Gold Crown	20.661 acres
Watchman	19.015 acres
Standard	20.661 acres
Dip	19.015 acres
Gold Dome	20.214 acres
Site	20.661 acres.

Total 164.082 acres

6. ELECTRIC POWER AND HAULAGE ROADS:

Electric power lines, as well as telephone lines of the Citizens Utilities Company, traverse the mine group, and would be readily available for any contemplated mine or mill use. There are several miles of graded, dirt, mine roads on this Frisco Mine Group, besides the present oil cake paved Arizona 68 Highway that is immediately available.

7. There is none of the former operating units on the property, for either mining or milling. The foundations are all that is left. Buildings were even removed to save on annual taxes.

8. Time did not permit a study of the cost for equipment and work necessary to recover the known parts of the ore body, now unavailable due to caved portions in the underground workings, and prepare for further exploration. It is evident that all of gold bearing ores was not completely exhausted with the past endeavors up to the present time. At a more favorable future time, I anticipate that underground exploration of the known ore bodies, and their mill treatment, will be justified.

9. COMMENT:

The above part of this report is the result of my study of the record, and physical features, of the subject Frisco Mine, in the Union Pass Section of the San Francisco Mining District in Mohave County, Arizona. As a qualified registered professional mining engineer No. 257, with years of experience involving professional engineering and management in the business of metal mining, and milling, in the western part of the United States, and especially in Mohave County, Arizona, I have here recorded the important facts about this Frisco Mine Group and the historical data collected from my personal knowledge and research in my mining library, both of mining reports, and maps, as well as recording data furnished by qualified personnel familiar with the facts. Also, the geological features, of which I am familiar, is here included.

Dated: May 10, 1964

Respectfully submitted: E. Ross Housholder

11. A. APPRAISAL OF REAL ESTATE VALUE:

Being a qualified mining appraiser as well as a registered professional mining engineer, and a licensed land surveyor (Arizona # 3065) and (California # 2641), I am recognized as a qualified appraiser of land and improvements by government agencies including the U. S. Department of Interior and Veteran's Administration, various banking institutions, insurance companies, Arizona, California and Nevada state courts, et al.

I have approached the real estate market value of the land acreage involved in the 9 patented mining claims composing this Frisco Mine Group. The following analysis explains itself.

B. These remarks on the possible real estate value will aid in the answer as to the present worth of this property.

C. REAL ESTATE VALUE ONLY:

Of this 164.082 acres, at least one-third, equal roughly to 55 acres, could be reached by a graded dirt road, or front on the oil cake paved Arizona Highway 68, in case this one-third area could be laid out in building sites, to take advantage of the real estate situation presently existing in Mohave County.

An added acreage would result from a field study of the more mountainous areas that might be laid off for building sites, including an access road to the mountainous parcels. It would be necessary to provide a source of water to such lots or parcels. Electric power could be available from the power (existing) lines now traversing the estate.

D. With a knowledge of the cost of putting such an area (including surveys, maps, with provision for water), in shape to sell it as real estate units, together with price being paid for such acreage, taking into consideration the present availability of the oil cake paved Arizona State '68' highway, together with the other graded dirt roads already on the ground and the present available source of electric power, as well as the very possible telephone service, it is estimated that 55 acres could be sold now for about \$405 per acre, or a total of \$24,750. The 110 acres, more or less, involved in the more mountainous areas of this patented mine group, it is estimated, would be worth about \$22,000 as raw land for cabin sites, etc. This would indicate a total of \$46,750 for the 164.082 acres in the said Frisco Mine group, if considered as rough real estate acreage only, at this time

An assured water supply, such as domestic water piped from a spring would increase this amount by the cost of such a supply, pipe line and a nominal cost of the spring plus 30% of above anticipated cost would well be added to the \$46,750. The sub-divider then would have the cost of surveying and mapping units into the final sales units, which would be approximately \$2,200.00, to be added to the above cost.

12 of 14
E. R. H.

11. The retail sales would be from 115% to 120% of your total, after mapping, recording and title insurance cost. However, the real estate forms have been making money on such ventures in the past few years. Patented Mining claims are recognized as real estate, plus the added feature that such land carries with it the mineral rights.

12. Patented Mining Claims known to contain proven ore deposits ususally bring a price of at least \$5,000 each in a mining group such as this, Frisco Group, with no improvements such as tools or a milling plant. This ten, roughly, would indicate a worth of $9 \times \$5,000 = \$45,000$

13. CALCULATIONS:

Refer 9,C: 164.082 acres estimated value,
Real Estate \$ 46,750.

Refer 10, 9 patented claims estimated to be
worth at least 45,000.

\$ 91,750.

$\$91,750.00 \div 2 =$ (average for est. worth) $\$45,875.00$

14. APPRAISER'S CERTIFICATION:

I hereby certify that I have viewed the land property of the nine patented mining lode claims of the Frisco Mine, in the Union Pass Section of the San Francisco Mining District, Mohave County, Arizona, and described in this report, including the improvements mentioned in this report, and it is the same that is identified by description in my appraisal assignment; I have not received, nor have no agreement to receive, nor will I accept from any party, any gratuity or emolument, other than my appraisal fee, for making this appraisal; that I have no interest, present, or prospective, in any proposed buyer, seller, property or mortgage, without exception.



E. ROSS HOUSHOLDER

— APPRAISER —

P.O. BOX 1107 (431 E. SPRING ST.)

KINGMAN, ARIZONA

130814
208

15. CONCLUSION:

After consideration of the reproduction cost of the lands and the improvements of this property, and together with a value placed on real estate based on my knowledge of sales of similar properties, and considering the characteristics of the neighboring properties in the area, in which this property is located, including the occupational and income groups represented, it is my option that a fair, sound value of these land parcels, which represents an amount that an informed purchaser in the income group appropriate to that of neighboring subdivided real estate parcels would expect to pay for the mentioned lands and property is \$ 46,000.00.

DATE:

May 10, 1964

APPRAISER'S ADDRESS:

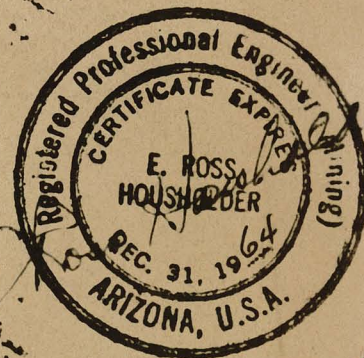
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431 E. Spring Street
Kingman, Arizona

APPRAISER'S SIGNATURE:

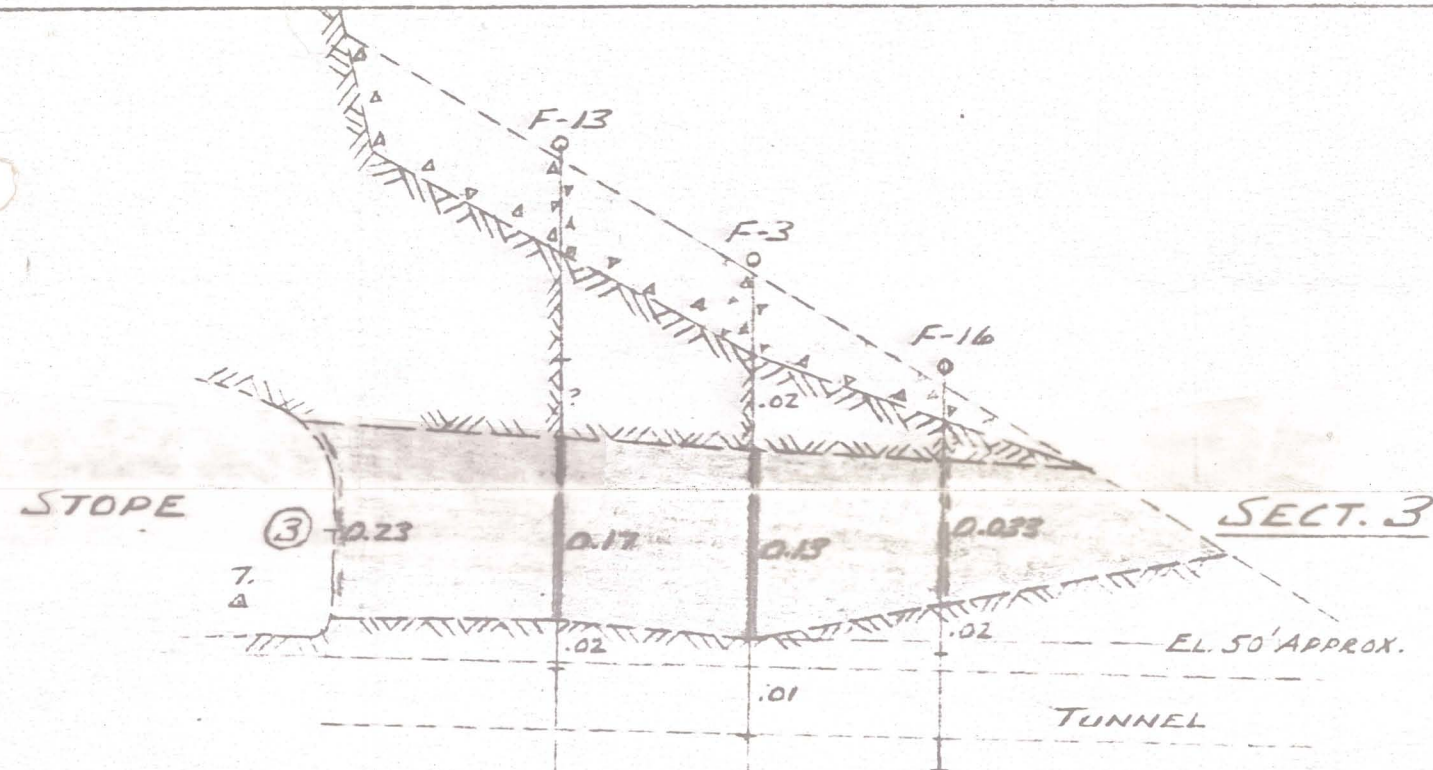
E. Ross Housholder
E. Ross Housholder

E. ROSS HOUSHOLDER
— APPRAISER —

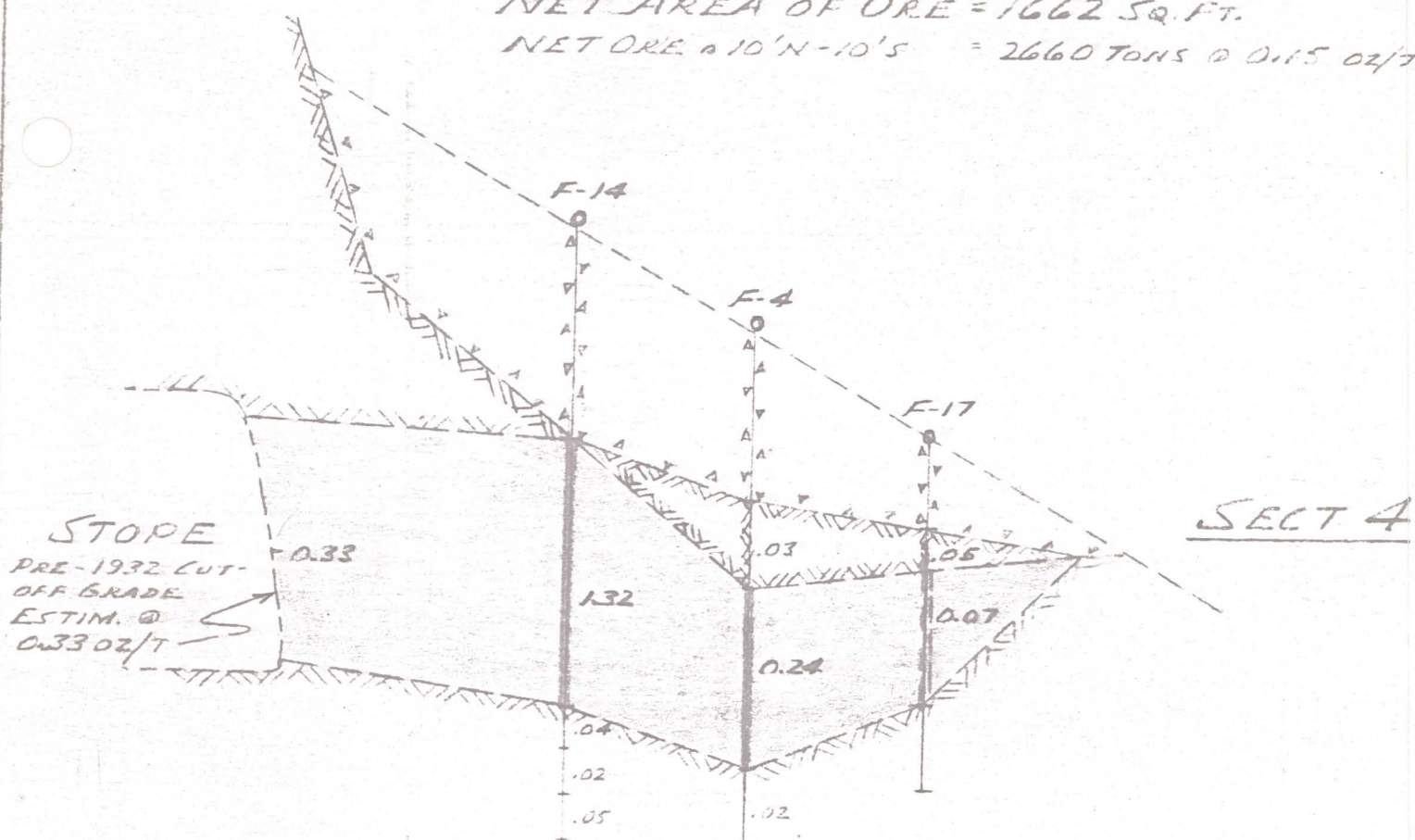
P.O. BOX 1107 (431 E. SPRING ST.)
KINGMAN, ARIZONA



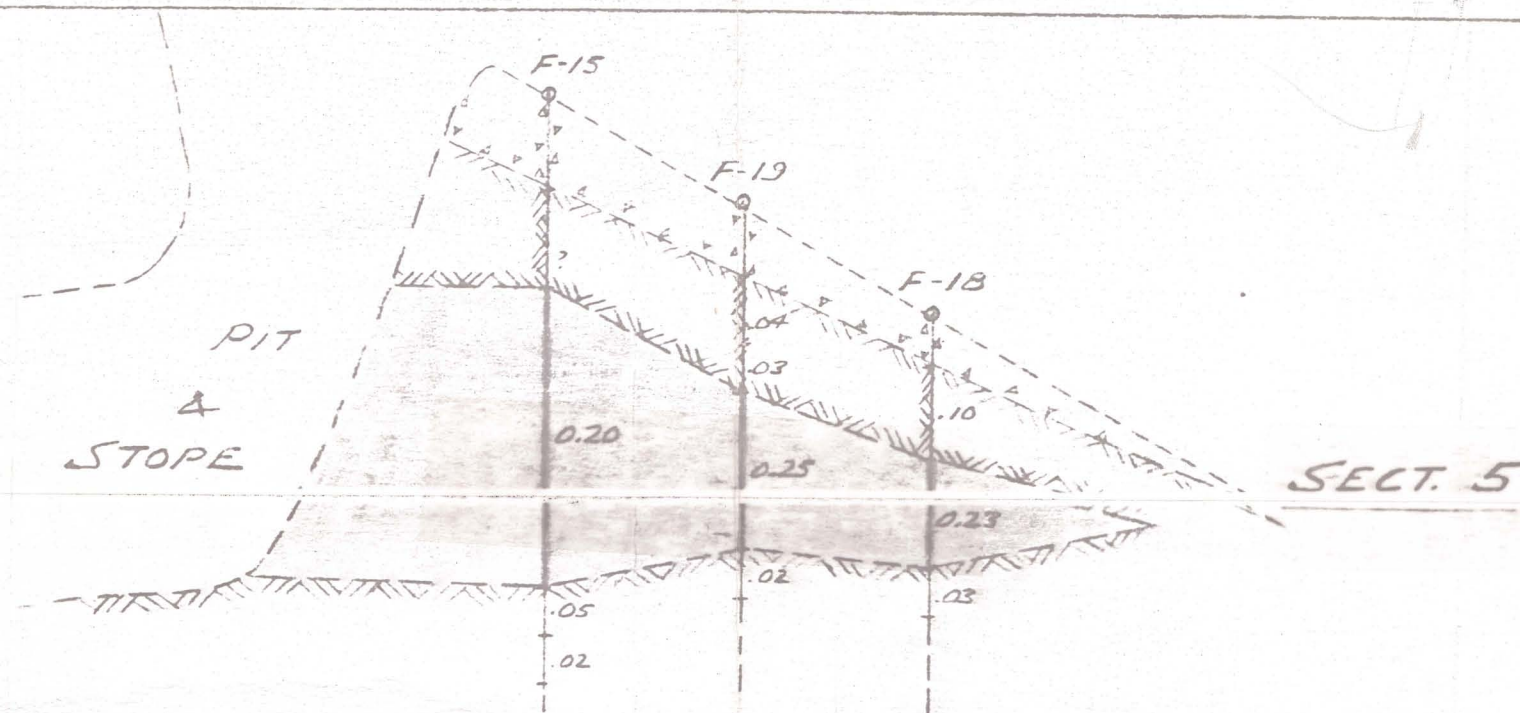
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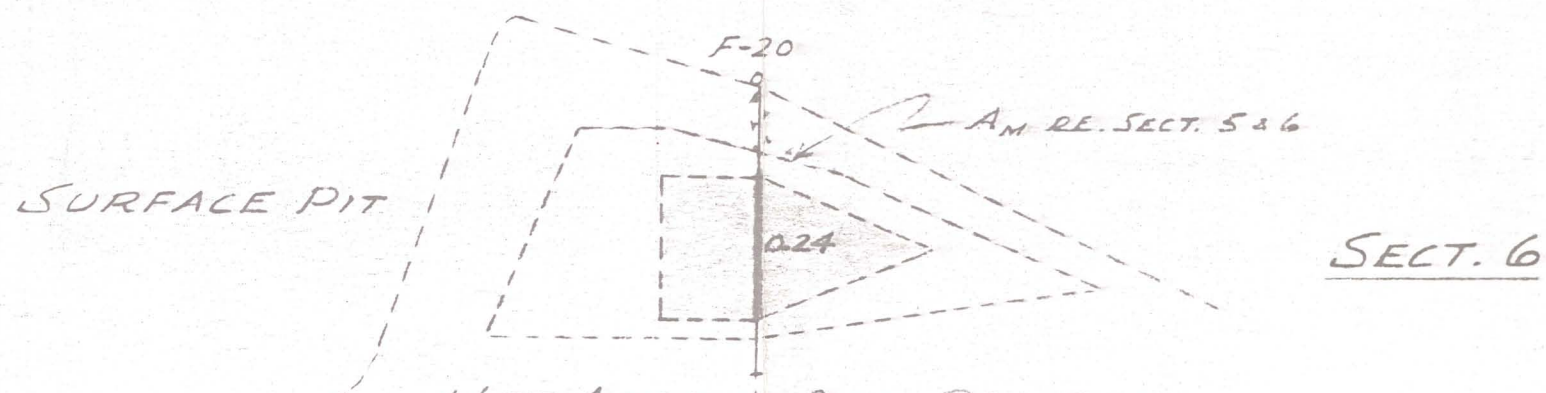
NET AREA OF ORE = 1662 SQ. FT.
 NET ORE 10' N-10' S = 2660 TONS @ 0.15 OZ/TON



NET AREA OF ORE = 1823 SQ. FT.
 NET ORE 10' N-10' S = 2910 TONS @ 0.25 OZ/TON



NET AREA OF ORE = 1490 SQ. FT.
 NET ORE 10' N-10' S = 1190 TONS @ 0.22 OZ/TON



NET AREA OF ORE = 300 SQ. FT.
 NET ORE SECT. 5-6 = 1362 TONS @ 0.262 OZ/TON

- LEGEND:
- F-15 COLLAR OF VERTICAL PERCUSSION-HOLE.
 - /// SPARSELY MINERALIZED VOLCANICS
 - △△△ SOIL & TALUS OVERBURDEN
 - ORE-GRADE MINERALIZATION
 - 0.20 ASSAY, OZ/TON GOLD.

FIG. 3 - CROSS-SECTIONS
 DRILL-HOLES, ASSAYS, & ORE BLOCK

N.E. AREA - FRISCO MINE
 1 INCH = 20 FEET
 FEB. 1974

W.M. SHARP, P. ENG.

NOTE: VOL-TONNAGE FACTOR 12.5 CU. FT./TON

2869
WATCHMAN

2869

2869

2869

MILL

CYANIDE PLANT

GOLD CROWN

STANDARD

FROM MAP FILES OF
E. ROSS HOUSHOLDER, P. E.
BOX 1107 (431 SPRING ST.) KINGMAN, ARIZ.

2869

STANDARD NO. 1

NEUGLAS

SITE

2869

135

2869

PROTECTION

FRACTION

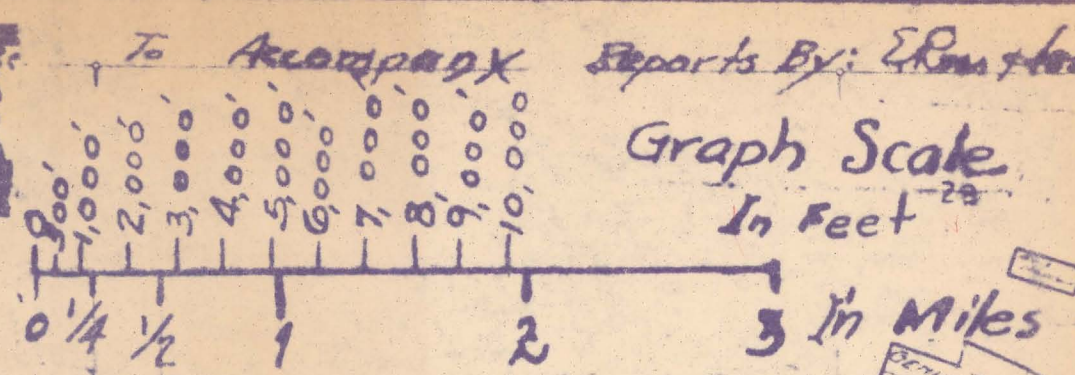
GOLD DOME

2869

KING EDWARD

GEOLOGIC MAP
OF A PORTION OF THE
RISCO GOLD MINES COMPANY
MOHAVE COUNTY, ARIZONA
SCALE: 1 INCH = 100 FEET

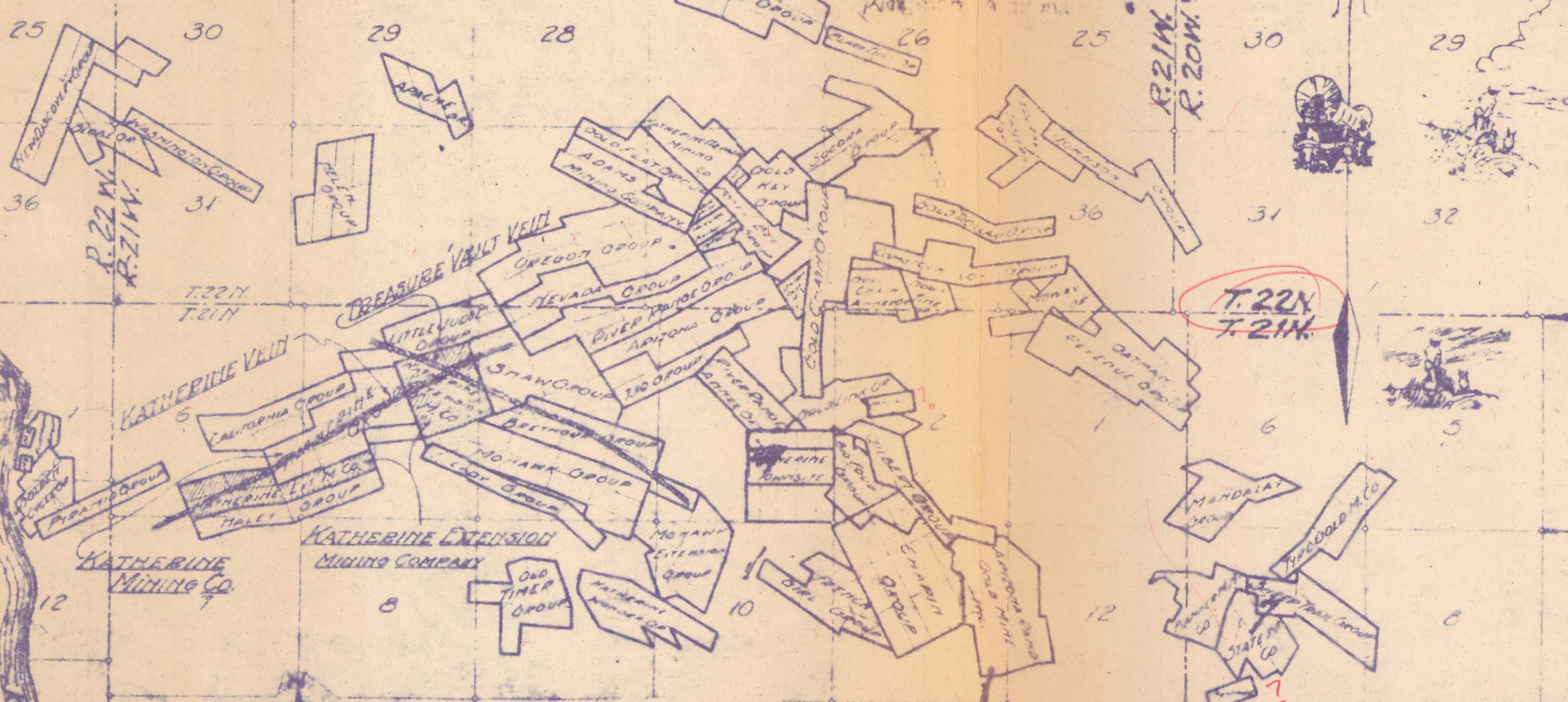
20 feet to square - these maps
points did not mark me at all
today (May 14, 1964) CPN



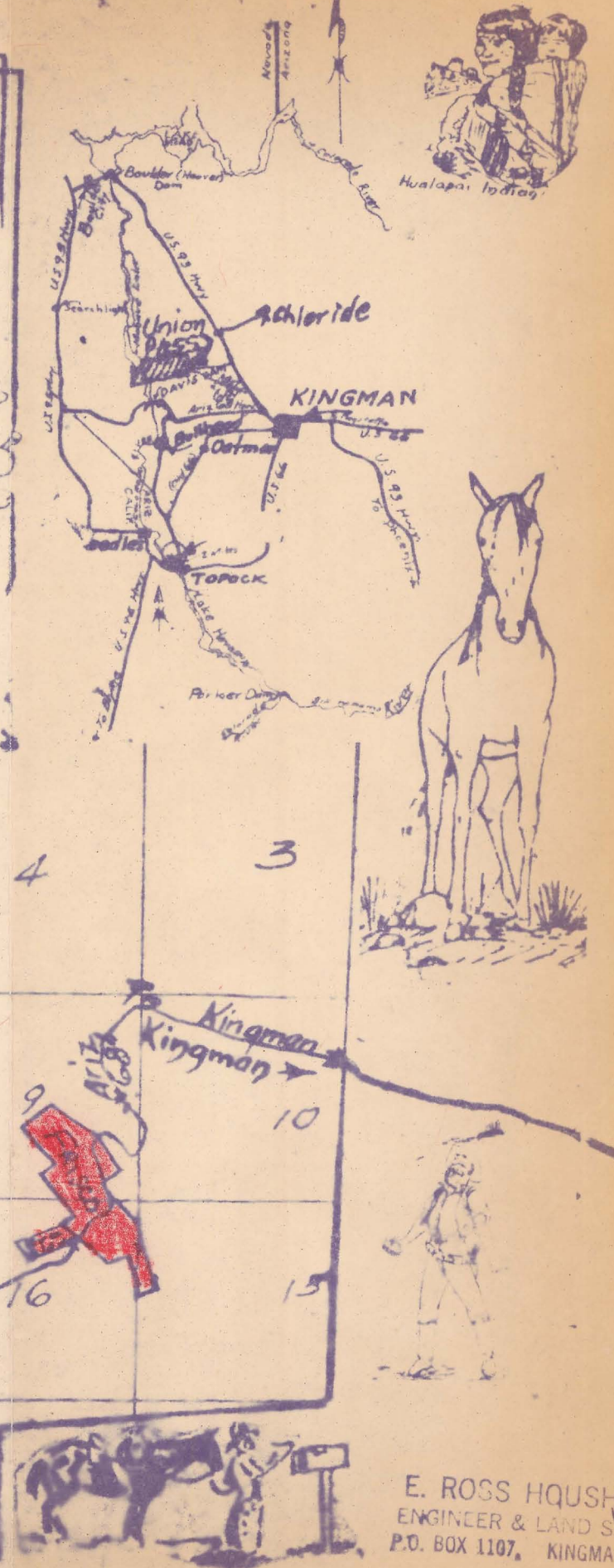
From Map and Reel
E. Ross Housholder
E. ROSS HOUSHOLDER, E. M.
Registered Professional Mining Engineer
P. O. Box 1107, (431 Spring Street)
Kingman, Arizona



Clark County, Nevada
Colorado
Lake Mohave



GROUP MAP
MINES IN KATHERINE SECTION
UNION PASS DISTRICT
San Francisco Mining District
MOHAVE COUNTY, ARIZONA
Compiled from Data in Map Library
Of and By
E. Ross Housholder
E. ROSS HOUSHOLDER, E. M.
Registered Professional Engineer # 257
P. O. Box 1107, (431 E. Spring Street)
Kingman, Arizona - 1964 -



E. ROSS HOUSHOLDER
ENGINEER & LAND SURVEYOR
P.O. BOX 1107, KINGMAN, ARIZONA

