



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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PROJECT EI-114.5
FOR
ESSEX INTERNATIONAL

MAGNETIC SEPARATION OF SIX SAMPLES

October 20, 1970

METCON Research, Inc.
Post Office Box 50225
1796 West Grant Road
Tucson, Arizona 85703

*Supporting material
4004*

PROJECT EI-114.5

FOR

ESSEX INTERNATIONAL

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PROCEDURE

Nine samples were presented to METCON Research for sample preparation with six of them to be separated magnetically.

Explicit instructions were prepared by Mr. J. R. Burke of the Essex International office and were followed carefully.

Samples E-332, E-333, E-334, E-335, E-336, and E-339 were reduced in size to 100 percent minus 65 mesh. Two hundred gram aliquots were made of each sample after assay portions had been removed. A 200 gram aliquot from each sample was then subjected to magnetic separation. In every case the separated materials were viewed under the low-power stereo microscope and appeared to present relatively clean products.

In no case was it necessary to use more than the initial 200 grams to generate sufficient product for assay. One sample contained only 15.1 grams of magnetics, but this was adequate where only iron assays were required.

Assay pulps were prepared of all nine head samples and also of the magnetic fractions of the six treated samples. The non-magnetic fractions were saved but no assays made. Magnetic fractions were assayed for iron only. Eight of the head samples were assayed for gold, silver, copper, tungsten, and molybdenum; the ninth for silver, lead, and copper.

October 10, 1970

TABLE I

MAGNETIC SEPARATION

<u>332</u>	<u>Weight</u>	<u>Weight Percent</u>	<u>Assay No.</u>	<u>Iron Assay</u>
Magnetic	57.7	28.96	5420	62.4
Non-Magnetic	$\frac{141.5}{199.2}$	71.03		
<u>333</u>				
Magnetic	125.2	62.64	5421	62.0
Non-Magnetic	$\frac{74.7}{199.9}$	37.36		
<u>334</u>				
Magnetic	108.1	54.19	5422	62.6
Non-Magnetic	$\frac{91.4}{199.5}$	45.81		
<u>335</u>				
Magnetic	57.0	28.61	5423	62.2
Non-Magnetic	$\frac{142.2}{199.2}$	71.39		
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Magnetic	58.3	29.21	5424	62.4
Non-Magnetic	$\frac{141.3}{199.6}$	70.79		
<u>339</u>				
Magnetic	15.1	7.54	5425	62.6
Non-Magnetic	$\frac{185.2}{200.3}$	92.46		

Tabulation of head assays follow in Table No. II.

TABLE II

HEAD ASSAYS

<u>Essex No.</u>	<u>Sample No.</u>	<u>Assays</u>					
		<u>Au</u>	<u>Ag</u>	<u>Pb</u>	<u>Cu</u>	<u>Wo</u>	<u>Mo</u>
332	5425	Nil	Trace	---	1.430	Nil	0.013
333	5427	Nil	0.04	---	0.356	Nil	0.007
334	5428	Nil	0.04	---	0.495	Nil	0.008
335	5429	Nil	0.06	---	0.438	Nil	0.010
336	5430	Nil	0.06	---	1.410	Nil	0.010
337	5414	Nil	Trace	---	0.175	0.013	0.008
338	5415	Nil	Trace	---	0.095	0.050	0.010
339	5431	Nil	0.08	---	0.690	0.070	0.012
340	5416	---	1.54	1.52	0.836	-----	-----

October 10, 1970

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Phil Allen by R. Fisher
Phil Allen, President
METCON Research, Inc.

vas

October 19, 1970

PROJECT EI-114.5
FOR
ESSEX INTERNATIONAL
MAGNETIC SEPARATION OF SIX SAMPLES



October 20, 1970

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Phil Allen, President
METCON Research, Inc.

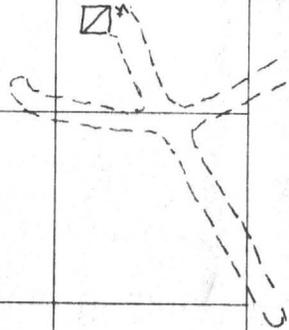
vas

October 19, 1970

NORTH



MAIN SHAFT



PLAN OF PRINCIPAL WORKINGS
COPPER QUEEN
MILFORD, UTAH

SCALE 1" = 50'

Note: 300' LEVEL EXTENDING FROM
GRANITE SHAFT NOT MAPPED



DH 20

GRANITE SHAFT

INCLINE

DH 3

A

± 100' LEVEL

DH

DH 12

DH 19

AREA 11
3612

Area 10

25' air width

9040

AREA 5
3600

5300

7,750 tons

DH 11



DH 9

AREA 3

7,220

14,440 Tons

19,136 tons

23' air width

AREA 4

4730

AREA 1

5400

25' air width

AREA 2

6300

20' air width 12,600 tons

20' air width 5435

23' air width

18,500

DH 7

DH 18

DH 5

AREA 6

3210

2000

AREA 7

15,000

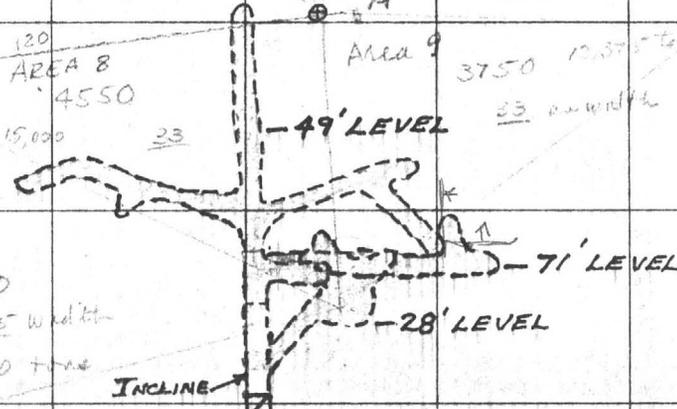
23

Area 9

3750

12,375 tons

23' air width



-49' LEVEL

-71' LEVEL

-28' LEVEL

INCLINE

TUNGSTEN SHAFT

Total calculated tonnage
150,000 (approx)

DH 2

DH 4

WILLIAM N. BOOTH
GEOLOGIST

PHONE: AREA CODE 602
753-6408

2017 MOTOR AVE.
KINGMAN, ARIZONA 86401

THE COPPER QUEEN MINE

This report outlines the nature of the geology, and the results of a magnetic survey, at the Copper Queen Mine. The property is located six miles West of the town of Milford, in Beaver County, in Southwestern Utah. It is reached by travelling Westward on paved State Highway 21, for six miles, then Southwesterly for one mile on a good dirt road. The mine is at an elevation of 5,700 feet, on gently sloping terrain, covered with sagebrush and scattered junipers.

The land involved comprises 240 acres of patented lode mining claims, and 880 acres in 44 unpatented lode claims, totalling 1120 acres, all contiguous. In the past years the mine has been profitably operated for copper, tungsten and silver, from the shafts, drifts and stopes shown on the accompanying map.

To the North and East of the area of interest, granitoid rocks are in outcrop. A Paleozoic metasediment, the light gray to tan Talisman quartzite, is exposed to the South. At the area of mineralization, between the granite and the quartzite is a thin section of older Paleozoic, the Callville limestone. Both the quartzite and the limestone outcrops show a gentle Northerly dip. Although there are many outcrops of granite and quartzite surrounding the area of the mine, most of the area around the old workings is covered with an overburden of sand, gravel, and angular pieces of quartzite.

Portions of the limestone have been invaded by irregular intrusions of two igneous rocks, one a medium-grained, dark andesite, and the other a fine-grained gabbroid rock, classified as a diabase. Contact metamorphism and high temperature mineralization occurred with the invasion of these igneous rocks. The limestone was marmorized, and the primary minerals, diopside, garnet, chalcopryrite, argentite and scheelite were deposited. Deuteric and alteration effects produced magnetite, olivine, hematite, limonite, epidote, chalcocite, bornite, cuprite, malachite, azurite, cerargyrite and clays.

A magnetic survey consisting of continuous line traverses (dotted lines 1 to 10 on the map) was run with a maximum station interval of 100 feet, with 50, 25, and 12½ foot spacing where more detail was desirable. The instrumentation used Ruska Temperature-compensated Vertical Magnetometers. In the mined area, a portion of each traverse across the trend showed extremely high, off-scale values above the magnetite and iron silicate concentrations. This zone is indicated on the map by cross-hatching. More traverses were run to the East, where correlation between the igneous and the magnetic highs indicated a broadening of the magnetic complex to the East, until it terminated abruptly against a large North-South fault defined by traverses 10 and 11. This fault marked "A", shows topographic expression in the valley to the South. The characteristics of the fault anomalies expressed on traverses 10 and 11, indicate that the displacement is a normal fault, with its plane dipping to the West. A second fault, entirely within the granite, and not affecting the immediate problem, was found to the North, at "B".

THE COPPER QUEEN MINE - Continued

The extension of the highly magnetic zone to the East infers that under the overburden lies a large mineralized tactite body, untested either by mining or by drilling. Trenching in this area has confirmed the presence of ore obviously rich in copper. The tactite zone is not only larger to the East, but increased values can generally be expected in the zone of contact with a major fault. All of the data available indicates that this occurrence is one that is unusually worthy of development. A drilling program to check out the dotted area on the enclosed map is recommended.

William N. Booth

REPORT ON THE COPPER KING GROUP SITUATED NEAR MILFORD, UTAH.

January 31st, 1919.

Messrs. Hill & Felt:

According to your request, I herewith report the results of my observations and inspection of the above group of mining claims which I visited January 26th, 1919.

My examination was only cursory but careful enough to convince me that the property has a great deal of merit. The purpose of my visit was to check up some glowing statements that have been made in regard to the present showing of the claims and to verify if the facts warrant it, the reports made by Messrs. Janney and Hutchins, Mining Engineers.

LOCATION:

The Copper King Group is situated about four miles West of Milford, Utah and consists of twelve full mining claims which have been patented; six thousand feet of the vein is covered by the group.

VEIN FORMATION:

Contact between a coarse extensive area of eruptive granite and quartzite. The vein outcrops in a broad belt 100 feet wide, considerably wider in some places and is plainly marked on the ground for two or three thousand feet. It is a strong vein cutting through the granite following the contact with the quartzite. The ore bearing rock is the granite altered in places to calcite and serpentine. Near the surface the ores have undergone oxidation and a great deal of the values, both copper and silver, have leached to lower levels. At and near the surface is a mixture of oxides and carbonates of copper which will probably continue to a depth of a number of hundred feet. Below this depth the ores will be sulphides and it can be presumed they will run well in silver.

DEVELOPMENT:

One vertical shaft 300 feet deep, one incline shaft 100 feet deep and a number of hundred feet of cross cuts, drifts, etc. In the incline shaft near the surface I saw in place, January 26th, large bodies of low grade carbonate copper ore. I was unable to get down the 300 foot shaft on account of the caving and lack of ladders, therefore, was unable to inspect a great deal of the workings, but what I saw convinced me that the reports of Messrs. Hutchins and Janney were mainly correct. I am attaching their reports to mine and I suggest you give them a careful perusal for knowing Mr. Janney personally, I can vouch for his ability as a mining engineer. Messrs. Hutchins and Janney had access to all the workings and made an extensive study of the property and although I was on the property only a short time, I can endorse what they have written.

If you should become interested in the property, I would recommend that the property be thoroughly prospected and examined for the purpose of seeing if a cross fissure could not be found. At the

intersection of any cross fissure which the main fissure of this valuable property a big deposit of ore I have every reason to believe will be found.

The market for copper and the present temporary settling price is rather disturbing but even with this to contend with, the increased values of silver which I think will be found at a depth of 500 feet, will offset the low price of copper.

One from the upper workings and also near the surface can be shipped today but not with a profit; that is, if only 12¢ a pound is received for copper. The above price is not the actual price of copper and it may be months before an increased price will be agreed upon, therefore, I do not believe it a good business judgment to ship what is in sight. In the past, considerable ore of a good grade has been shipped from this property. A leaser by the name of W. W. Crone is working the claims at present. Mr. Crone has made one shipment of ore which material he encountered in cleaning out part of the caved portions of the drifts.

When I was on the property January 26th, I saw a number of tons of copper ore in the ore house which had been obtained from the above places. There is no wood or water on the property. The ground is easily worked and it has the advantage of being situated close to Milford and being connected with a fine wagon road.

I do not think that the property is a gamble for the reason that the mineralization is very strong at the surface and the ore looks and appears as if it will go to a depth. It will not take much money if it is carefully expended to prove the value of the property. It will be necessary to have a hoist and either the main shaft should be sunk to a depth of 500 feet or a winze sunk from one of the drifts on the 500 foot level. Of course there will be some drifting to be done. The main thing is to follow the ore zone down to the water level where along the lines of least resistance will be found in the veins the concentrated ore of copper and silver.

(Signed) H. W. Horne, M.E.

4628 Citadel Street
Salt Lake City, Utah
84120
November 9, 1966

GEOLOGIC REPORT-COPPER QUEEN PROSPECT
Beaver County, Utah

INTRODUCTION

During the period October 18 through 27, 1966 mapping of the surface and underground was carried out at this property. A surface map on the scale of 1" to 50' was made and underground workings were mapped to the same scale. Also, logs were compiled on all drilling to that date. All shafts, pits, trenches, and drill holes were surveyed in at that time. Since the topography is rather smooth, no attempt was made to make a topographic map.

GEOLOGY

Most of the surface is covered by alluvium over the mapped area and only a few natural outcrops are present. The workings in the area afford the best exposures of the mineralized zone. The geology of the mapped area is rather simple and consists of contact metamorphosed limestones and marbles which dip gently, generally to the north and west. These metamorphosed and mineralized rocks lie adjacent to a coarse grained granite and the contact between the two rocks strikes generally SW-NE. Generally, the metamorphosed, calcareous rocks consist of a typical tactite made up of garnet, magnetite, epidote, tremolite, diopside?, with lesser amounts of copper carbonates, copper oxide (cuprite?), and scheelite. From present data there appears to be a definite zonation of the scheelite as the mineral weakens to the west within the tactite zone and occurs only in minor amounts in the area of the Main shaft. In the Tungsten shaft workings scheelite occurs throughout the tactite zone and the richer portions may be controlled in part by faulting. Below the 49' level the rock type gradually changes to impure quartzite in which scheelite occurs sparingly, marbles showing very sparse contact-metamorphic alteration and very limited, faulted portions of garnetized limestones showing strong scheelite. On this level faulting appears stronger and definitely controls the position of the tungsten mineralization. Generally speaking, quartzite rocks underlie the marbles and all of the area to the south of the workings consist of quartzite and the calcareous rocks have evidently been eroded away there.

Underground mapping of the levels which connect the Main shaft to the Granite shaft disclosed strongly sheared zones at or near the contact of granite to tactite zones. Along these NE striking shears were found very strong magnetite and, in places, copper oxide (cuprite?) and copper carbonates.

Geol.
for
Rept.

These levels are at 100 feet plus from the surface and appear to have been driven along the contact of the granite to the tactites. Since granite is found on both sides of these workings, the metamorphosed rocks in this area appear to be part of a roof pendant. Dr. Davie states that a 300' level extends south east about 450 feet from the granite shaft and is all in granite. This level was not mapped by the writer.

The mineralized zone as exposed by workings, drilling, and outcrops is 1200 feet long and at least 300 feet wide in places.

Sampling

Fourteen grab samples were taken from dumps and sample No 8, which was taken from the ore pile near Tungsten shaft was gathered by taking about 300 pounds of material from around the pile, then reducing the sample by quartering and re-quartering to about 20 pounds.

Drilling samples for assay were selected where the predominant rock type was found to be tactite. Twenty five of these were sent in for assay making a total of 39 samples gathered. One sample (No 13) was lost, making a total of 38 samples sent in for assay.

Ore Calculation

The writer is due to leave the country shortly and cannot wait for the results of assaying. Instead a rough calculation will be made of the amount of potential ground where the best tungsten is found by drilling and underground workings. By taking into account all drill holes which intersected tactite, plus the underground workings, a potential area may be calculated. Since the drill holes are irregularly spaced, triangles may be drawn to connect three holes. Then an average width of ore may be worked out for each triangle since these are fairly flat lying beds (see sheet # 3 of Principal Underground Workings). Total volume may then be calculated.

Since magnetite, garnet, etc. of tactite rocks are heavier than ordinary intrusives or sediments, an estimate of 10 cubic feet to the ton would not be too optimistic and the following calculations are based on this figure:

Area 1	5400 sq ft	X	average thickness	25'	=	$\frac{135000}{10}$	=	13,500 tons	
Area 2	6300	X		20	=	$\frac{126000}{10}$	=	12600	
Area 3	7220	X		20	=	$\frac{144400}{10}$	=	14440	
Area 4	5435	x		23	=	$\frac{125000}{10}$	=	12500	
Area 5	8320	X		23	=	$\frac{191360}{10}$	=	19136	
Area 6	5210	X		33	=	$\frac{171930}{10}$	=	17193	
Area 7	6620	X		25	=	$\frac{166500}{10}$	=	16650	
Area 8	4550	X		33	=	$\frac{150000}{10}$	=	15000	
Area 9	3750	X		33	=	$\frac{123750}{10}$	=	12375	
Area 10	5300	X		15	=	$\frac{79500}{10}$	=	7950	
Area 11	3612	X		25	=	$\frac{90400}{10}$	=	9040	
									$\frac{150,000}{10}$ tons (approx)

The following was not taken into account in this rough calculation:

1. Dip of beds (calculation of true thickness).
2. The method of drilling and sampling precludes the possibility of every 5' interval as being entirely representative of the rock drilled at that interval since sluffing and contamination from up-hole must take place in holes that are not cased.

The above calculation is believed to be a conservative one and it is obvious from observation of the positions of the drill holes that more potential areas could be found to the east and west of the area calculated.

No attempt was made to calculate tonnage of the total tactite zone, since at the west end the geology is more complicated by faulting and granite dikes, bosses, etc. Sampling which was done on the dumps should give a rough estimate of the potential, however. **XX**

CONCLUSIONS AND RECOMMENDATIONS

At the eastern edge of the prospected area drill hole No 6 encountered mixed tactite and quartzite and ended in quartzite at 40 feet. However, more drilling is recommended in this direction since it was noted that in mapping of the 71' level of the workings, that intense post mineral faulting has occurred and the occurrence of quartzite in the drill hole does not preclude the possibility of the presence of tactite with tungsten-copper mineralization to the east. All of the ground extending for at least 3000 feet to the east is covered with alluvium.

More precise sampling of the underground workings may be desirable and this may be done by taking channel samples at 10 foot intervals in the drifts and also within the stopes.

Because of the presence of magnetite within the tactite zone and the pervasive cover in the area, a ground magnetic survey would be very useful in delineating possible mineralized areas.



CHARLES W. SMITH, GEOLOGIST

Sample No	Depth, ft	
# 20	30-35	Quartzite, epidatized, with sparse garnet
	35-40	Garnet with sparse magnetite, sparse quartz and quartzite
	40-55	Quartzite, epidatized with sparse to moderate garnet, sparse magnetite.
	55-65	Quartzite 50%, garnet with magnetite 50%.
	65-90	Quartzite 80%, garnet with magnetite 20%
	90-100	Garnet-magnetite 60%, quartzite 40%.
# 21	100-115	Sandstone, epidatized, sparse garnet-magnetite.
	115-130	" " with stronger garnet
# 22	130-170	Garnet with sparse magnetite
# 23	170-230	Quartzite, 70% - garnet with magnetite 30%.

Drill Hole # 4

# 24	0-30	Mixed quartzite and garnet-magnetite
	30-200	Quartzite.

Drill Hole # 5

# 25	0-70	Quartzite with increasing amounts of garnet, magnetite, epidate to 70'
# 26	70-100	Garnet to 50% with magnetite, remainder is epidatized quartzite
# 27	100-140	Garnet with 20% quartz, sparse magnetite.
# 28	140-200	Quartzite and garnet with quartzite becoming progressively stronger (to 90%) at end of hole.

Drill Hole # 6

Page 3

Sample No	Depth, ft.	
0-20	0-20	Overburden
	20-25	Quartzite 60%, garnet 40%
# 29	25-35	Quartzite 60% with increasing amounts to 35 feet.
	35-40	Quartzite 90% - garnet 10%

Drill Hole # 7

	0-20	mostly overburden, mixed quartzite and garnet.
	20-30	Quartzite 50%, garnet 50%
# 30	30- ⁴⁰ / 35	" 80% " 20%
# 31	40-50	Quartzite decreases to about 10% at 50.0'
	50-65	Garnet-magnetite, strong epidote, mod. quartz, weak copper oxide.
# 32	65-90	Garnet and quartzite with quartzite becoming increasingly stronger to 90% quartzite, 10% garnet at end of hole.

Drill Hole # 8

	0-5	Quartzite fragments (overburden)
	5-10	" " , with 5-10% garnet.
	10-15	Quartzite 50% - garnet-magnetite 50% with sparse copper oxide.
# 33	15- 30	Garnet-magnetite
	30-35	" " , magnetite becoming weaker, sparse copper oxide
	35-40	Epidotized limestone? mod garnet
	40-45	Quartzite 90% partially epidotized, 10% magnetite-garnet.

Drilling - Copper Queen Claims
 Milford, Utah

Drill Hole # 2

Sample No	Depth - Ft.	
# 15	0-5	Overburden? - very strongly garnitized
	5-10	Strong garnit with minor magnetite - much copper ox.
	10-15	mod garnit with epidote, few chunks copper oxide - 20-30% quartzite
	15-20	Garnit with a little magnetite, also impure quartzite - moderate copper oxide.
# 16	20-25	Garnit 50% - quartzite 50% - some of the impure quartzite is garnitized - very sparse CuO.
	25-30	As above
	30-35	Few quartzite, more garnit, few chunk limonite
	35-40	Quartzite, epidatized, sparse garnit
# 17	40-45	Predominantly garnit with epidote, a little quartz, few chunks yellow mineral with weak copper oxide.
	45-50	Garnit 90%, epidote and very sparse copper oxide. No quartzite.
	50-55	Epidote with dark gray to black crystalline material (?)
# 18	55-60	Quartzite, epidatized, with minor garnit
	60-65	Quartzite 80%, garnit and magnetite 20%
	65-130	Quartzite
	130-140	Quartzite, weakly ferruginous

Drill Hole # 3

	0-15	Garnit with epidote
# 19	15-20	Garnit, epidote with 30% white quartz
	20-25	" " " 5% " " , sparse CuO.
	25-30	" " weak to moderate, 10% white quartz weak copper oxide

Drill Hole # 9Sample NoDepth, ft.

- 0-10 Large quartzite fragments (overburden)
 10-15 Quartzite 90%, garnet-magnetite 10%
 15-25 " 70%, " " 30%, few
 flakes of biotite.
 25-30 mostly granite with a few chunks garnet
 and quartzite.
 30-35 " " "
 35-40 Granite
 45-50 Granite with few chunks quartzite, garnet
 magnetite.
 50-55 mostly quartzite with magnetite-garnet,
 20% granite.
 55-60 " " "
 60-70 Quartzite 50%, garnet magnetite 50%
 70-75 Granite 50%, quartzite with sparse
 biotite 50%
 75-115 - Granite

Drill Hole # 10

- 0-20 Quartzite with 5% magnetite-garnet.

Drill Hole # 11

Page 5

Sample No	Depth-ft	
	0-5	Quartzite (overburden)
	5-20	Quartzite 75% - rest is magnetite, garnet epidote.
# 34	20-40	Garnet with sparse magnetite 10 to 20% Quartzite.
	40-45	Mixed garnet, Quartzite with few chances of granite.

Drill Hole # 12

	0-10	Quartzite (overburden)
	10-15	Mixed quartzite, garnet, granite
	15-20	Quartzite 50%, garnet 50%
# 35	20-40	Garnet, quartz, magnetite, maroon Feo with few flakes of magnetite at 35'.
	40-80	Granite

Logged by CW Smith

October 1966.

Drill Hole # 13

<u>Sample No</u>	<u>Depth, ft</u>	
0-5	-	Quartzite
5-10	-	" with few chunks granite
10-15	-	" " " "
15-20	-	Quartzite 60%, granite 40%
20-25	-	Granite with a little quartzite
25-60	-	Granite

Drill Hole # 14

0-5	-	Quartzite with few chunks granite
5-10	-	" " "
10-15	-	" " "
15-20	-	Granite coming on stronger - few chunks tactite
20-35	-	Granite

Drill Hole # 15

0-10	-	Large chunk quartzite with few chunks altered granite (overburden)
10-15	-	Granite with minor quartzite and tactite
15-20	-	Granite
20-50	-	Granite, fresh, unaltered
50-55	-	" becoming oxidized, med FeO
55-60	-	" " "
60-90	-	" , fresh, unalt.

Drill Hole # 16

0-10	-	Quartzite with sparse granite (overburden)
10-40	-	Granite

Drill Hole 17

0-10	-	Quartzite with granite (overburden)
10-40	-	Granite

Drill Hole # 18

Sample No	Depth, ft	Description
	0-10	Large quartzite chunks, overhauled
# 36	10-25	Tactite, garnet, epidote, sp magnetite
	25-30	Granite with 10% tactite
	30-35	Granite

Drill Hole # 19

0-15 Quartzite w few pieces garnet, etc (overhauled)

# 37	15-30	Garnet, FeO
	30-35	" " with few chunks granite
	35-40	Granite 90%, tactite 10%
	40-45	Tactite 50%, granite 50%
	45-50	" "
# 38	50-55	" 70% " 30%
	55-60	" 50% " 50
	60-65	Granite

Drill Hole # 20

	0-5	Granite
	5-15	"
	15-20	" , altered w few chunk garnet, etc
	20-60	Granite
	60-65	" w 10% tactite
	65-75	"
	75-80	Granite and tactite
	80-85	" " with white quartz
# 39	85-90	Granite with stronger garnet
	90-95	Tactite with sp granite

Logged by
C. W. Smith
1966

Telephone 363-3302

Hand Sample Serial 54463-54481

ASSAY REPORT
UNION ASSAY OFFICE, Inc.

W. C. WANLASS, President
 L. G. HALL, Vice President
 G. P. WILLIAMS, Treasurer
 LILY M. HOTTINGER, Secretary
 P. O. Box 1528

Mine Eugene Davie, MD
 Beaver County Clinic
 Milford, Utah

Salt Lake City, Utah 84110

RESULTS PER TON OF 2000 POUNDS

Nov. 14, 1966

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Wet on Ore	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent
										Mo	WO ₃
1	Trace	None	None	0.592		1.1				None	
2	0.010	0.5		3.769							
3	0.010	0.2		2.808							
4				0.787							0.01
5				0.636							None
6				0.422							None
7				0.504							None
✓36				✓0.044							0.03
✓37				✓0.018							0.01
✓38				✓0.025							0.01
✓39				✓0.025							0.02
40	Trace	0.1									
41	Trace	0.1									
42			None								

Remarks.....

Charges \$ 93.25

G. P. Williams

(COPE)

WALTER BROCTOR JANNEY, B.M. Ph.D.
Consulting Geologist and Mining Engineer.

Salt Lake City, December 23rd, 1901.

Gentlemen:-

At request, I write the following brief statement respecting the COPPER KING MINE situated near Milford, Utah, owned by the Bluebird Copper-Gold Mining Co., Ltd.

The property includes 12 mining claims, each 1,500 by 600 feet, forming a tract of 285 acres. The title is good.

The geological formation: quartzite, in contact with an extensive area of eruptive granite.

The vein outcrops in a broad belt, 100 to 500 feet in width, plainly marked on the surface for a length of 3,000 feet. At the east end of the outcrop, the surface is covered by gravel wash concealing the vein. The general course of the vein through the unexplored east ground is covered with mining claims for a distance of 3,000 feet beyond the outcrop exposed. It is a strong vein, well mineralized through a broad fissure-vein, or lode, cutting through the granite and for a distance of 600 feet, following the contact of the granite with the quartzite. The ore bearing rock is granite more or less completely altered to calcite and serpentine. The ores were originally deposited as pyrite, chalcopyrite and bornite. Near the surface the ores have undergone oxidization, most of the values, both copper and silver, having been leached from the upper part of the vein, to be reformed and recovered in the deeper levels.

Soon after these mines were discovered, small bodies of high grade ore were extracted from the surface workings and shipped to the smelters at Frisco and Milford. These surface ores are a mixture of the oxides and carbonates of copper with nodules of copper-silver glance assaying 10 to 50% copper, with 20 to 60 ounces of silver per ton.

Only imperfect returns have been preserved of the ore shipments made in early days. The gross value of the first-class smelting ore sold is estimated at \$20,000.00, all taken from a depth of less than 60 feet from the surface. There was also shipped from the outcrop of the vein about 1,200 tons of iron ore, assaying 50% iron, 3% copper, used as a flux by the smelters, and sold at \$6.00 per ton.

It is possible that these oxidized surface ores will be found to continue to a depth of more than 400 to 500 feet. Below that depth the ores will be sulphides reinforced by the silver and copper leached from the vein above. The mines are dry and can be worked at little expense. The location is favorable for the construction of a branch from the railroad at Milford.

December 23rd, 1901.

It is a new mine. The deepest workings in no place are more than 100 feet below the surface. The strength of the vein and ore formation warrant the development of this mine in depth. It is capable of development into a valuable property.

Respectfully submitted,
(signed) Walter P. Janney, E.M. Ph.D.

WILLIAM N. BOOTH
GEOLOGIST

PHONE: AREA CODE 602
753-6408

2017 MOTOR AVE.
KINGMAN, ARIZONA 86401

THE COPPER QUEEN MINE

This report outlines the nature of the geology, and the results of a magnetic survey, at the Copper Queen Mine. The property is located six miles West of the town of Milford, in Beaver County, in Southwestern Utah. It is reached by travelling Westward on paved State Highway 21, for six miles, then Southwesterly for one mile on a good dirt road. The mine is at an elevation of 5,700 feet, on gently sloping terrain, covered with sagebrush and scattered junipers.

The land involved comprises 240 acres of patented lode mining claims, and 880 acres in 44 unpatented lode claims, totalling 1120 acres, all contiguous. In the past years the mine has been profitably operated for copper, tungsten and silver, from the shafts, drifts and stopes shown on the accompanying map.

To the North and East of the area of interest, granitoid rocks are in outcrop. A Paleozoic metasediment, the light gray to tan Talisman quartzite, is exposed to the South. At the area of mineralization, between the granite and the quartzite is a thin section of older Paleozoic, the Callville limestone. Both the quartzite and the limestone outcrops show a gentle Northerly dip. Although there are many outcrops of granite and quartzite surrounding the area of the mine, most of the area around the old workings is covered with an overburden of sand, gravel, and angular pieces of quartzite.

Portions of the limestone have been invaded by irregular intrusions of two igneous rocks, one a medium-grained, dark andesite, and the other a fine-grained gabbroid rock classified as a diabase. Contact metamorphism and high temperature mineralization occurred with the invasion of these igneous rocks. The limestone was marmorized, and the primary minerals, diopside, garnet, chalcopyrite, argentite and scheelite were deposited. Deuteric and alteration effects produced magnetite, olivine, hematite, limonite, epidote, chalcocite, bornite, cuprite, malachite, azurite, cerargyrite and clays.

A magnetic survey consisting of continuous line traverses (dotted lines 1 to 10 on the map) was run with a maximum station interval of 100 feet, with 50, 25, and 12½ foot spacing where more detail was desirable. The instrumentation used Ruska Temperature-compensated Vertical Magnetometers. In the mined area, a portion of each traverse across the trend showed extremely high, off-scale values above the magnetite and iron silicate concentrations. This zone is indicated on the map by cross-hatching. More traverses were run to the East, where correlation between the igneous and the magnetic highs indicated

a broadening of the magnetic complex to the East, until it terminated abruptly against a large North-South fault defined by traverses 10 and 11. This fault marked "A", shows topographic expression in the valley to the South. The characteristic of the fault anomalies expressed on traverses 10 and 11, indicates that the displacement is a normal fault, with its plane dipping to the West. A second fault, entirely within the granite, and not affecting the immediate problem, was found to the North, at "B".

The extension of the highly magnetic zone to the East infers that under the overburden lies a large mineralized igneous body, untested either by mining or by drilling. It is recommended that core drilling be initiated at the point shown on the map by a small circle in the cross-hatch, labeled C. H.

William N. Booth

WILLIAM N. BOOTH
GEOLOGIST

PHONE: AREA CODE 602
753-6408

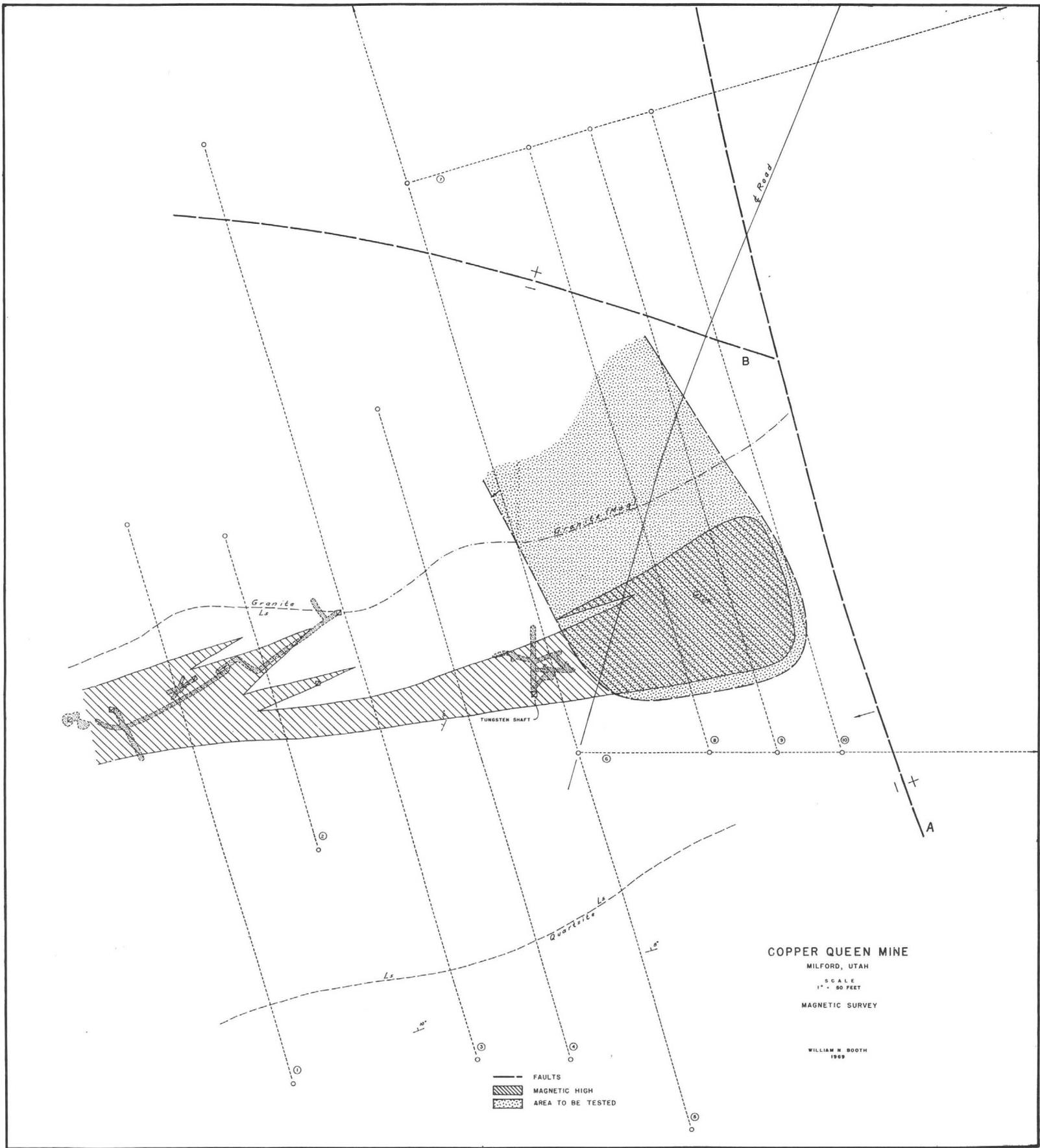
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KINGMAN, ARIZONA 86401

History of the Copper Queen Mine
Milford, Utah

Although much of the copper and silver has doubtless been leached from the oxide zone, this property has been worked at a profit during three different periods when metal prices were favorable.

The mine was first worked prior to 1900, when the recovery was copper and silver, with minor amounts of gold, lead and zinc. A lessee mined in the period prior to World War I for the copper and silver. During World War II, scheelite was produced profitably by the Nevada Massachusetts Mining Company. In recent years, development work consisting of trenching with a dozer has added data to that already available underground. In early 1969, a magnetic survey outlined the major fault features and the positions of the high magnetite zones. A drilling program to verify and evaluate this data is now in order.

William N. Booth



COPPER QUEEN MINE
MILFORD, UTAH
SCALE
1" = 50 FEET
MAGNETIC SURVEY

WILLIAM R. BOOTH
1929

— FAULTS
 MAGNETIC HIGH
 AREA TO BE TESTED

31 32

R. 11 W.

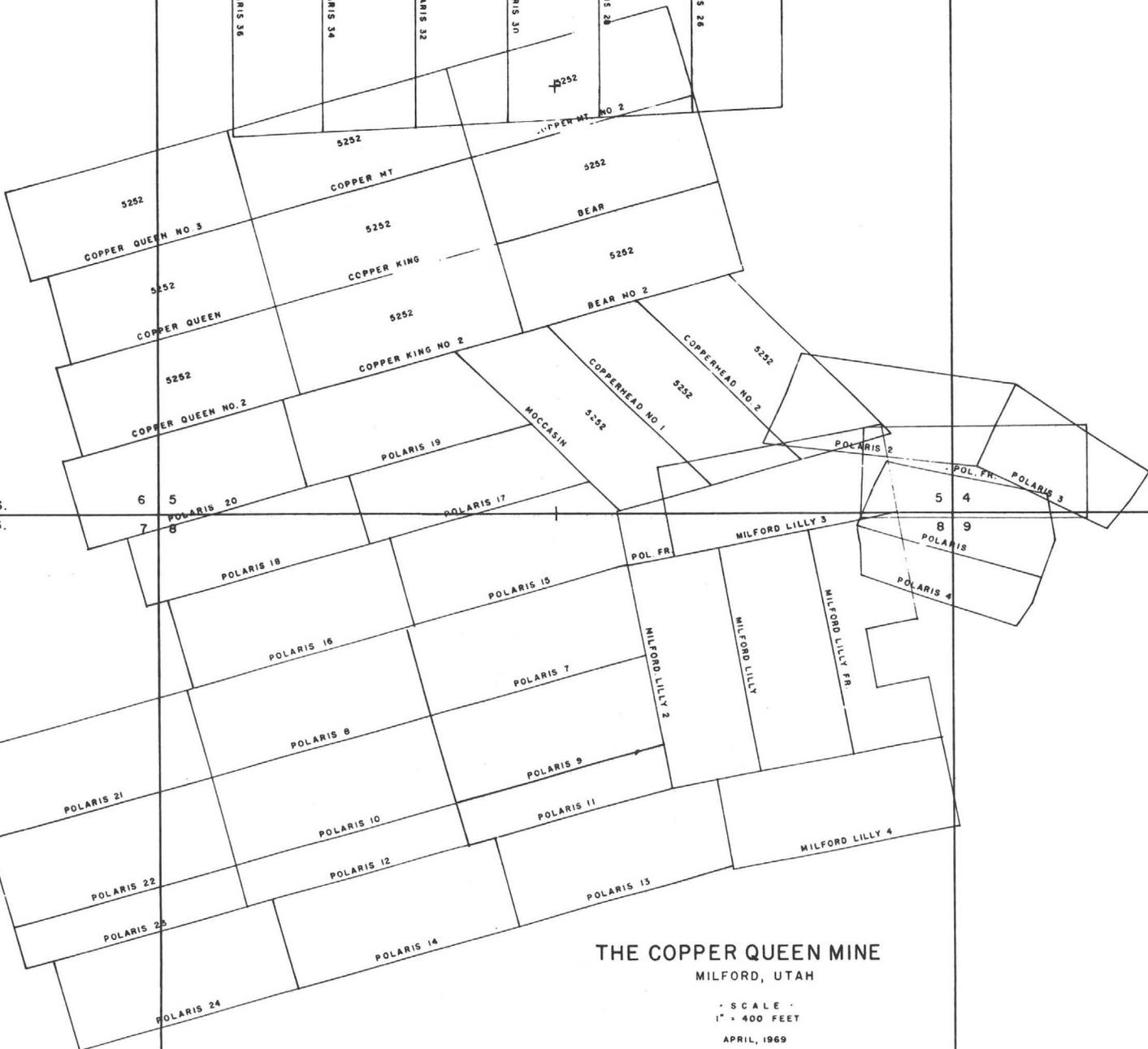
32 33

N



6 5

5 4



T. 27 S.
T. 28 S.

6 5
7 8

5 4
8 9

THE COPPER QUEEN MINE

MILFORD, UTAH

SCALE
1" = 400 FEET
APRIL, 1969

P. M. CRISMON, PRES.

CRISMON & NICHOLS
ASSAYERS AND CHEMISTS
229-231 SOUTH WEST TEMPLE STREET

P. O. BOX 1708

PHONE 363-7417

REPORT OF ASSAY

SALT LAKE CITY, UTAH 84110 May 13, 1968

Austin B. Smith

WE HAVE ASSAYED YOUR three SAMPLES AND FIND them TO CONTAIN AS FOLLOWS:

DESCRIPTION	NO.	OZS. GOLD PER TON	OZS. SILVER PER TON	PER CENT LEAD	PER CENT COPPER	PER CENT ZINC	PER CENT INSOL.	PER CENT IRON	PER CENT Tungsten	VALUE OF GOLD PER TON
Large Plastic Bag		Trace	Trace		7.02				Tri-Oxide (WO ₃)	
Rebel Extension			Trace	None					0.02	
Composite 1 thru 9		Trace	Trace		0.57					

40' cut at South end of Cu King claims - joining Milford Lilly group -

New exposure running west of Tungsten shaft

REMARKS:

CRISMON & NICHOLS

BY

CHARGES \$ 19.50

Dr. Davie:

The sample sent up from Copper King, west of Milford, Utah.

ABS 5/16/68

Telephone Elgin 9-9962

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason
160 So. West Temple Street
Salt Lake City 1, Utah

Dr. E. M. Davies
Beaver County Clinic
Milford, Utah

October 6, 1956

ASSAY PER TON OF 2000 POUNDS

WE HAVE ASSAYED 2 SAMPLES

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
14' Vein of ? Copper Ore	1	Trace	1.10	None	0.45						
4' Vein Copper Ore	2	0.22	4.30	None	1.30						

Surface - open cut
Surface - open cut
Polaris

CHARGES \$ 7.00

C. Ivan Nichols

Telephone Elgin 9-9962

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason
160 So. West Temple Street
Salt Lake City 1, Utah

Dr. Eugene N. Davie
Beaver County Clinic
Milford, Utah

October 8, 1956

ASSAY PER TON OF 2000 POUNDS

WE HAVE ASSAYED 1 SAMPLES

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
Speciman 4' down in Heavy Copper Oxide & Malochite in central portion of vein		0.24	48.80	None	38.22						

*Polaris
open cut*

CHARGES \$ 3.50

C. Ivan Nichols

Telephone Elgin 9-9962

Dr. E. N. Davie
Beaver County Clinic
Milford, Utah

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason
160 So. West Temple Street
Salt Lake City 1, Utah

October 11, 1956

ASSAY PER TON OF 2000 POUNDS

WE HAVE ASSAYED 2 SAMPLES

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
	1	None	None	None	None						
	2	0.31	5.20	None	2.62						

*Granite at South end of open cut
Polaris*

CHARGES \$ 7.00

C. Ivan Nichols

Telephone Elgin 9-9962

Dr. Eugene N. Davie
Beaver County Clinic
Milford, Utah

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason
160 So. West Temple Street
Salt Lake City 1, Utah

October 9, 1956

ASSAY PER TON OF 2000 POUNDS

WE HAVE ASSAYED 1 SAMPLES

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
4" Level showing Azurite-Peacock type Copper ore		1.73	30.10	0.3	3.97						
		55	25		28						

Polaris open cut

CHARGES \$ 3.50

C. Ivan Nichols

Telephone Elgin 9-9962

Dr. Eugene N. Davie
Beaver County Clinic
Milford, Utah

Polaris

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason

160 So. West Temple Street

Salt Lake City 1, Utah

November 14, 1956

WE HAVE ASSAYED 1 SAMPLES

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
Vein-Material Fines contain Copper Silver and Garnet Crystals		0.14	4.10	0.2	0.35						
		0.14									

CHARGES \$ 3.50

C. Ivan Nichols

Telephone Elgin 9-9962

Eugene W. Davie, M. D.
Beaver Clinic
Milford, Utah

DEASON & NICHOLS

ASSAYERS & CHEMISTS

C. Ivan Nichols Wm. J. Deason

160 So. West Temple Street

Salt Lake City 1, Utah

October 3, 1956

WE HAVE ASSAYED 1 SAMPLES

ASSAY PER TON OF 2000 POUNDS

DESCRIPTION	NO.	GOLD OUNCES	SILVER OUNCES	WET LEAD %	COPPER %	ZINC %	INSOL %	%	%	%	%
10' open cut above Granite-diorite		0.015	4.80	0.15	0.76						

Polaris open cut

CHARGES \$ 3.50

Wm. J. Deason

BEAVER COUNTY ABSTRACT CO.

C. VICTOR SMITH

REGISTERED AND AUTHORIZED ABSTRACTOR

BEAVER : UTAH

12/30/59

E. N. Davie, A. D.
Milford, Utah

Certified copy of Patent to COPPER QUEEN, et al, Mining
Claims

26 Folio @ 30¢
Certificate

\$7.80

.50

\$8.30

THE UNITED STATES OF AMERICA
TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING.

WHEREAS, In pursuance of the provisions of the Revised Statutes of the United States, Chapter six, Title Thirty-two, and legislation supplemental thereto, there have been deposited in the GENERAL LAND OFFICE of the United States the Plat and Field Notes of survey and the Certificate No. 3610, of the Register of the Land Office at Salt Lake City in the State of Utah accompanied by other evidence whereby it appears that E. W. Genter did, on the twenty-fourth day of December A. D. 1904 duly enter and pay for that certain mining claim or premises, known as the Copper Queen No. 3; Copper Mountain; Copper Mountain No. 2; Bear; Copper King; Copper Queen; Copper Queen No. 2; Copper King No. 2; Bear No. 2; Copper Head No. 2; Copper Head No. 1; Copper Head No. 1; and Moccasin, Consolidated, lode mining claim. designated by the Surveyor-General as Lot No. 5252, embracing a portion of township twenty-eight south, of range eleven west, Salt Lake Meridian, in the North Star Mining District, in the County of Beaver and State of Utah, in the District of Lands subject to sale at Salt Lake City, and bounded, described, and platted as follows, with magnetic variation sixteen degrees and thirty minutes east.

Beginning for the description of the Copper Queen No. 3; lode mining claim at corner No. 1, a pine post four inches square, marked 1-1-5252, with mound of earth and stone, from which the northwest corner of section five in township twenty-eight south, of range eleven west, Salt Lake Meridian, bears north eight degrees and twenty-one minutes west three thousand one hundred and nine and four tenths feet distant and discovery point bears south one degree and forty-six minutes east three hundred and nine and two tenths feet distant.

Thence, first course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 2; a pine post four inches square, marked 2-4-1-1-5252, with mound of earth and stone. Thence, second course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 3; a pine post four inches square, marked 3-5252, with mound of earth and stone. Thence, third course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 4; a pine post four inches square, marked 4-5252, with mound of earth and stone. Thence, fourth course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 1; the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Copper Queen No. 3; Vein or lode.

Beginning for the description of the Copper Mountain lode claim at corner No. 1; identical with corner No. 1, of said Copper Queen No. 3 lode claim.

Thence, first course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 2; a pine post four inches square marked 2-1-5252, with mound of earth and stone, from which discovery point bears south two degrees and thirty-eight minutes west three hundred and sixteen and two tenths feet distant.

Thence, second course, south fifteen degrees and forty eight minutes east, six hundred feet to corner No. 3; a pine post four inches square marked 3-4-1-2-5252, with mound of earth and stone.

Thence, third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4; identical with corner No. 2 of said Copper Queen No. 3 lode claim.

Thence, fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1; the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Copper Mountain vein or lode.

Beginning for the description of the Copper Mountain No. 2; lode claim at corner No. 1, identical with corner No. 2 of said Copper Mountain lode claim, from which said section corner bears north thirty-five degrees and twenty-three minutes west three thousand two hundred and seventy-two and four tenths feet distant, and discovery point bears south thirty-four degrees and fourteen minutes east three hundred and sixteen and two-tenths feet distant.

Thence, first course, north seventy four degrees and twelve minutes east one thousand five hundred feet to corner No. 2; a pine post four inches square, marked 2-5252, with mound of earth and stone.

Thence, second course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 3; a pine post four inches square, marked 3-2-5252, with mound of earth.

Thence third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4, identical with course No. 3 of said Copper Mountain lode claim.

Thence, fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1, the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Copper Mountain No. 2 vein or lode.

Beginning for the description of the Bear lode claim at corner No. 1, identical with corner No. 3 of said Copper Mountain lode claim from which said section corner bears north thirty-two degrees and twenty-three minutes west three thousand eight hundred and forty-two and nine tenths feet distant.

Thence, first course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 2, identical with corner No. 3, of said Copper Mountain No. 2 lode claim from which discovery point bears south five degrees and nineteen minutes east three hundred and five and one tenth feet distant.

Thence, second course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 3, a pine post four inches square, marked 3-2-5252, with mound of earth and stone.

Thence, third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4 a pine post four inches square marked 4-3-2-1-5252, with mound of earth and stone. Thence, fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1, the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Bear vein or lode.

Beginning for the description of the Copper King lode claim at corner No. 1, identical with corner No. 2 of said Copper Queen No. 3 lode claim from which said section corner bears north nine degrees and thirty-three minutes west three thousand seven hundred and five feet distant.

Thence, first course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 2, identical with corner No. 3 of said Copper Mountain lode claim.

Thence, second course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 3, identical with corner with corner No. 4 of said Bear lode claim.

Thence, third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4, a pine post four inches square, marked 4-2-1-1-5252, with mound of earth and stone, from which discovery point bears north forty-three degrees and seventeen minutes east five hundred and eighty-three and nine tenths feet distant.

Thence fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1, the place of beginning; the survey of the claim, as above described, extending one thousand five hundred feet in length along said Copper King vein or lode.

Beginning for the description of the Copper Queen lode claim at corner No. 1, identical with corner No. 1 of said Copper King lode claim, from which discovery point bears south four degrees and nineteen minutes west three hundred and nineteen and five tenths feet distant.

Thence, first course, south fifteen degrees and forty-eight minutes east, six hundred feet to corner No. 2, identical with corner No. 4 of said Copper King lode claim.

Thence, second course, south seventy-four degrees and twelve minutes west one thousand three hundred and ninety six feet to corner No. 3, a pine post four inches square marked 3-5252, with mound of earth and stone.

Thence, third course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 4, a pine post four inches square, marked 4-5252, with mound of earth and stone.

Thence fourth course, north seventy-four degrees and twelve minutes east one thousand three hundred and ninety six feet to corner No. 1, the place of beginning; the survey of the lode claim as above described, extending one thousand three hundred and ninety six feet in length along said Copper Queen vein or lode.

Beginning for the description of the Copper Queen No. 2 lode claim at corner No. 1 identical with corner No. 2 of said Copper Queen lode claim, from which said section corner bears north ten degrees twenty-five minutes and twenty seconds west four thousand three hundred and two and one tenth feet distant.

Thence, first course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 2 a pine post four inches square marked 2-4-5252, with mound of earth and stone, from which discovery point bears north seventeen degrees and forty-two minutes west three hundred, and two tenths feet distant.

Thence, second course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 3, a pine post four inches square, marked 3-5252, with mound of earth and stone.

Thence, third course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 4, a pine post four inches square, marked 4-5252, with mound of earth and stone.

Thence fourth course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 1 the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Copper Queen No. 2, vein or lode.

Beginning for the description of the Copper King No. 2, lode claim at corner No. 1, identical with corner No. 1 of said Copper Queen No. 2 lode claim.

Thence, first course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 2, identical with corner No. 3 of said Copper King lode claim.

Thence, second course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 3, a pine post four inches square, marked 3-4-5252, with mound of earth and stone, from which discovery point bears north twenty-seven degrees and forty-two minutes west three hundred and six and six tenths feet distant.

Thence, third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4, identical with corner No. 2 of said Copper Queen No. 2 lode claim.

Thence, fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1, the place of beginning; the survey of the lode claim as above described extending one thousand five hundred feet in length along said Copper King No. 3, vein or lode.

Beginning for the description of the Bear No. 2, lode claim at corner No. 1, identical with corner No. 4 of said Bear lode claim, from which said section corner bears north thirty degrees and ten minutes west four thousand four hundred and twenty-one and four tenths feet distant.

Thence, first course, north seventy-four degrees and twelve minutes east one thousand five hundred feet to corner No. 2, identical with corner No. 3 of said Bear lode claim.

Thence, second course, south fifteen degrees and forty-eight minutes east six hundred feet to corner No. 3 a pine post four inches square, marked 3-5252, with mound of earth and stone.

Thence, third course, south seventy-four degrees and twelve minutes west one thousand five hundred feet to corner No. 4, identical with corner No. 3 of said Copper King No. 2 lode claim, from which

discovery point bears north ten degrees and five minutes west three hundred and one and five tenths feet distant.

Thence, fourth course, north fifteen degrees and forty-eight minutes west six hundred feet to corner No. 1, the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Bear No. 2 vein or lode.

Beginning for the description of the Copper Head No. 2 lode claim at corner No. 1, a pine post four inches square marked 1-2-5252, with mound of earth and stone, situate on line 3-4 of said Bear No. 2, lode claim, from which said section corner bears north thirty-six degrees and forty-one minutes west five thousand two hundred and twenty-six and five tenths feet distant, and discovery point bears south eighty-nine degrees and thirty-six minutes east three hundred and forty-eight and eight tenths feet distant.

Thence, first course, north seventy-four degrees and twelve minutes east six hundred and nineteen and six tenths feet to corner No. 2, a pine post four inches square, marked 2-5252, with mound of earth and stone.

Thence, second course, south thirty degrees and eighteen minutes east one thousand five hundred feet to corner No. 3, a pine post four inches square marked 3-5252 with mound of earth and stone.

Thence, third course, south four degrees and twelve minutes west six hundred and nineteen and six tenths feet to corner No. 4, a pine post four inches square marked 4-3-5252, with mound of earth and stone.

Thence, fourth course, north thirty degrees and eighteen minutes west one thousand five hundred feet to corner No. 1, the place of beginning; the survey of the lode claim as above described, extending one thousand five hundred feet in length along said Copper Head No. 2 vein or lode.

Beginning for the description of the Copper Head No. 1 lode claim at corner No. 1, a pine post four inches square, marked 1-2-5252 with mound of earth and stone from which said section corner bears north thirty degrees and five minutes west five thousand and thirty-eight and nine tenths feet distant and discovery point bears north eighty-six degrees and five minutes east three hundred and thirty-four and eight tenths feet distant.

Thence, first course, north seventy four degrees and twelve minutes east six hundred and nineteen and six tenths feet to corner No. 2 identical with corner No. 1 of said Copper Head No. 2 lode claim.

Thence, second course, south thirty degrees and eighteen minutes east one thousand five hundred feet to corner No. 3, identical with corner No. 4 of said Copper Head No. 2 lode claim.

Thence, third course, south seventy-four degrees and twelve minutes west six hundred and nineteen and six tenths feet to corner No. 4 a pine post four inches square marked 4-3-5252 with mound of earth and stone.

Thence, fourth course, north thirty-degrees and eighteen minutes west one thousand five hundred feet to corner No. 1 the place of beginning; the survey of the lode claim, as above described, extending one thousand five hundred feet in length along said Copper Head No. 1 vein or lode.

Beginning for the description of the Moccasin lode claim at corner No. 1, a pine post four inches square, marked 1-5252, with mound of earth and stone, situate on line 3-4 of said Copper King No. 2 lode claim, from which said section corner bears north twenty-three degrees and five minutes west four thousand nine hundred and twenty-two and eight tenths feet distant and discovery point bears north seventy-five degrees and fifty-eight minutes east three hundred and twelve and four tenths feet distant.

Thence, first course, north seventy-four degrees and twelve minutes east six hundred and nineteen and six tenths feet to corner No. 2, identical with corner No. 1 of said Copper Head No. 1 lode claim.

Thence, second course, south thirty degrees and eighteen minutes east one thousand five hundred feet to corner No. 3, identical with corner No. 4 of said Copper Head No. 1 lode claim.

Thence, third course, south seventy-four degrees and twelve minutes west six hundred and eighteen and six tenths feet to corner No. 4, a pine post four inches square marked 4-5252, with mound of earth and stone.

Thence, fourth course, north thirty degrees and twenty minutes west one thousand five hundred and one tenth feet to corner No. 1, the place of beginning; the survey of the lode claim as above described, extending one thousand five hundred feet in length along said Moccasin vein or lode. Said lot No. 5252 containing two hundred and forty six acres and four hundred and sixty-seven thousandths of an acre of land more or less.

NOW KNOW YE, That there is therefore hereby Granted by the United States unto the said E. W. Genter and to his heirs and assigns the said mining premises hereinbefore described, and not expressly excepted from these presents, and all that portion of the said Copper Queen No. 3, Copper Mountain, Copper Mountain No. 2, Bear, Copper King, Copper Queen, Copper Queen No. 2, Copper King No. 2, Bear No. 2, Copper Head No. 2, Copper Head No. 1, and Moccasin veins, lodes or ledges, and of all other veins, lodes, and ledges, throughout their entire depth, the tops or apex of which lie inside of the surface boundary lines of said granted premises in said Lot No. 5252 extended downward vertically, although such veins, lodes or ledges in their downward course may so far depart from a perpendicular as to extend outside the vertical side lines of said premises;

PROVIDED That, the right of possession to such outside parts of said veins, lodes, or ledges, shall be confined to such portions thereof as lie between vertical planes drawn downward through the end lines of said Lot No. 5252, so continued in their own direction that such planes will intersect such exterior parts of said veins, lodes, or ledges; AND PROVIDED FURTHER, That nothing herein contained shall authorize the grantee herein to enter upon the surface of a claim owned or possessed by another.

TO HAVE AND TO HOLD SAID MINING premises, together with all the rights, privileges, immunities, and appurtenances of whatsoever nature thereunto belonging unto the said grantee above named and to his heirs and assigns forever; subject nevertheless to the above mentioned and to the following conditions and stipulations:

First. That the premises hereby granted with the exception of the surface, may be entered by the proprietor of any other vein, lode or ledge, the top or apex of which lies outside of the boundary of said granted premises, should the same dip be found to penetrate, intersect, or extend into said premises for the purpose of extracting and removing the ore from such other vein, lode, or ledge.

Second. That the premises hereby granted shall be held subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights as may be recognized and acknowledged by the local laws, customs, and decisions of the courts. And there is reserved from the lands hereby granted, a right of way thereon for ditches or canals constructed by the authority of the United States.

Third. That in the absence of necessary legislation by Congress, the Legislature of Utah may provided rules for working the mining claim or premises hereby granted, involving easements, drainage and other necessary means to its complete development.

IN TESTIMONY WHEREOF, I Theodore Roosevelt, President of the United States of America, have caused these letters to be made PATENT and the Seal of the General Land Office to be hereunto affixed. GIVEN under my hand, at the City of Washington, the twelfth day of June, in the year of our Lord one thousand nine hundred and five, and of the Independence of the United States the one hundred and twenty-ninth.

SEAL

By the President: T Roosevelt

By F. M. McKean Secretary.

C. H. Smith

Recorder of the General Land Office

C E R T I F I C A T E

STATE OF UTAH)
) SS.
COUNTY OF BEAVER)

I, C. VICTOR SMITH, Registered and Authorized Abstracter in and for Beaver County, State of Utah, do hereby certify that the foregoing and hereunto attached instrument is a full, true and correct copy of that certain United States Mineral Patent No. 42561, recorded in the Office of the County Recorder of Beaver County, State of Utah, in Book S of Deeds, at Page 83 thereof.

WITNESS my hand and seal this 30th day of December, 1959.



C Victor Smith
Registered and Authorized
Abstracter

entered

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
WIL WRIGHT
ARIZONA REG. NO. 5875

P. O. BOX 7517
TUCSON, ARIZONA 85713

710 E. EVANS BLVD.
PHONE 602-294-5811

Metcon Laboratory
P.O. Box 5912
Tucson, Arizona 85703

JOB# 007606
RECEIVED 9-21-70
REPORTED 9-30-70

U004-G303

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC %	Tungsten %	MOLYBDENUM %
114.5:							
5414	Nil	Trace		.175		.013	.008
5415	Nil	Trace		.095		.050	.010
5416		1.54	1.52	.836			



CHARGE \$ 34.00

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

INVOICE

August 21, 1970

Dr. Eugene N. Davis
P. O. Box 188
Milford, Utah

Dear Gene:

It was a pleasure meeting with you again and exchanging ideas and plans. I only regret that we didn't have more time to explore a subject that I know we are both interested in - ecology & mining.

This is intended to summarize the conclusions of our discussion and to outline the framework of a plan that could serve as a basis of an agreement. We are both interested in the major development potential of the Milford area and we see your property as a starting point to gain broader control of the mineral potential. Consequently, I think of a 2-phase program as follows: (1) Development of your leachable ore potential and (2) A longer term acquisition and development program. Details of these programs are outlined below.

Leachable Ore Program

The Copper King has evidence of sufficient oxide ore on the surface indicating possible reserves for a significant leaching operation processing 2-3 thousand tons of ore per day. If 5-10 million tons of ore could be blocked-out, economic justification would exist for a \$3-5,000,000 investment in a processing plant. This would give production and revenue within a 2-year period and would provide the nucleus for expansion in the Milford area. The plan for our mutual participation in this development follows.

1. Preliminary Exploration

Using the data you currently have available initiate a shallow drilling program to identify the ore reserve potential. We would make available the technical assistance to plan and conduct the drilling. Your drill rig and earth moving equipment would be

October 26, 1970

Dr. Eugene N. Davie
Box 188
Milford, Utah

REF: Copper King Group
in Milford Area

Dear Doctor:

We received your memorandum dated October 21, 1970, referring to the suggested change on the proposed drilling program on the Copper King claim group in the Milford area. Hopefully, we will be drilling next week.

Any further information you may have on the Beaver Carbonate would be most helpful in determining a course of action on that property. As you know, I was quite surprised at the assay results which indicated, if I remember correctly, 7/10 copper from a grab sample from the ore bin of the B.C.

Very truly yours,

HEINRICHS GEOEXPLORATION CO.

E. Grover Heinrichs, Vice President

EGH:td

Glavin

EUGENE N. DAVIE, M. D.

EA

BOX 188

MILFORD : UTAH

OCT 23 1970

RECEIVED

21 October, 1970

DRILLING COST FOR PRELIMINARY EXPLORATION ON THE COPPER KING
PROPERTY, Milford, Utah

Drill Rig: Mayhew 1000

Cost per foot: \$3.00

Bit cost is extra.

Labor - 2 men - 8 hour shift - \$60.00 per day - or \$30.00 per man, per day.

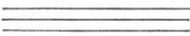
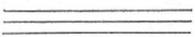
D-6 Caterpillar tractor - \$10.00 per hour - fueled and maintained. The
labor cost is included in the above. Charge will be made for time used.

The present cost for bits for Rotary drilling is about \$60.00 per bit.
The diamond bits for this core barrel are about \$600.00 per bit.

It is understood that you will pay the actual expenses.

Eugene N. Davie
Eugene N. Davie, M.D.

Send letter of acknowledgment

METCON 
 **LABORATORY**

Tel: 623-5045
Box 50225
Tucson, AZ 85703

November 5, 1970

Mr. Randy Burke
Essex International
2030 East Speedway
Tucson, AZ 85719

Dear Randy:

Here are two copies of the data accumulated in the magnetic separation of several samples. The delay in getting these to you was occasioned by my absence from the office for over two weeks.

Since you had already received the information verbally, the time value in getting these reports to you was assumed not to be too significant.

Thank you for this opportunity to serve you.

Very cordially,



Phil Allen, President
METCON Research, Inc.

vas

Enclosures



Neenah Board
25% COTTON FIBER

Dr. Eugene N. Davis
Milford, Utah

August 21, 1970

-2-

used, however, we would pay the actual expenses. We would handle all of the assaying and perform the preliminary metallurgical studies to evaluate the leachability of the ore. We would also conduct preliminary economic evaluations. Time to accomplish would be 3-4 weeks at an estimated cost to us of \$10,000.

2. Mine Development

If the preliminary drilling results were affirmative, the drilling program would be extended to block-out reserves. This would probably require an additional three months at an estimated cost to Essex of \$40,000-\$50,000. Simultaneously, the metallurgical flow-sheet and engineering design would commence aimed at expediting plant construction.

Long Range Development

There are at least four major property holders in the Milford area other than yourself, namely (1) Shields Development Co. (Noranada participation), (2) American Gilsonite (Red Dixon), (3) Del Wray (BYU contract) and (4) Tintic Lead. There are numerous small property holders and additional open area that may be of interest. The longer range plan entails achieving adequate property to secure a position for a major exploration program. Your familiarity in the area should enable you to acquire these smaller properties that are held by small owners or maybe open. We could provide funds in an obscure holding company from which you would be authorized to draw for property payments. Details of this arrangement would need to be defined.

The royalty payment discussed would be a minimum of 5% of the net smelter return. In leaching, the basis of net smelter return may not be applicable, thus we may want to base the payment on the equivalent in cents per pound of contained copper produced. This would be 2½ cents per pound. You would also have the option to participate in the plant cost investment and earnings up to 49%.

Dr. Eugene N. Davie
Milford, Utah

August 21, 1970

-3-

Please bear in mind that this letter is an attempt to outline on paper the discussions we've had to date. Some of these points need to be covered in more detail and the usual lease terminology would need to be included in an agreement. Writing an agreement should not delay our starting preliminary drilling within a couple of weeks.

Very truly yours,

ESSEX INTERNATIONAL, INC.

Howard Lanier, General Manager
Copper Operations

HL:td

cc: J. O'Connor
Ft. Wayne, Ind.

Clyde Davis
Provo, Utah

E.G. Heinrichs
Tucson, Ariz.

U004

Copper King (Melford)

(Temporarily
until named)

August 18, 1970

Dr. Davie of Milford called August 18, 1970 to advise that the drill cores that are at the Cactus Mine site belong to Tintic Lead of Salt Lake City. The drilling was done by New York & Honduras Rosario Mining Company.

Dr. Davie called Page Blakemore at Salt Lake City, who represents Tintic Lead, and received permission for a complete investigation of the available cores.

Blakemore contends that this drilling blocked 2 million tons of 1.5% copper.

Blakemore is forwarding a letter to Dr. Davie authorizing him to proceed with work on the drill core.

HL/18 Aug. 70

August 11, 1970

Copper King - Milford

U004

Met with Clyde Davis at BYU on August 8th to review status of the Morenci property and to obtain information on new prospects.

While at Mr. Davis' office, we called Dr. Eugene Davie, who is an M. D. in Milford, Utah, regarding a property he has in that area.

The Copper King includes 12 patented claims and 44 unpatented claims. It is claimed to be a sizeable oxide deposit and is in a favorable area, Milford. Attached is a report by William A. Booth, a geologist who studied the property for Dr. Davie.

Dr. Davie came to the Tucson office on August 8th to review further the property. He appears to be a reasonable man and gave conservative estimation of his property. He is keenly concerned with the ecological problem and is investing his own money to investigate means of bypassing smelting. I explored with him the possibility of an option arrangement, similar to the Dixie Basin, where we would pay the maximum of 2½¢ per pound of copper royalties with an opportunity for them to participate on capital investment up to 49%.

Clyde Davis recommended this property highly and as a result I have authorized a geologist to investigate it on August 14th.

0004
Copper King



HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA, 85703. P.O. BOX 5671. PHONE: (AREA CODE 602) 623-0578

To: August 17, 1970

Mr. Howard Lanier
Essex International Inc.
Room 222 - Suite 216 Sun Building
2030 E. Speedway
Tucson, Arizona

From: Don Cooley

Re: Milford Trip - 14 and 15 August, 1970 with Dr. Davie

14 and 15 August was spent examining various areas with Dr. Eugene Davie both on the ground and from the air.

Dr. Davie in one way or another controls some three square miles south of and including the Copper King mine area. At this time I was not able to procure any claim maps or boundaries from Dr. Davie. Patented and unpatented ground is involved in all of the areas examined.

Most of Dr. Davie's ground is in the Star Mining District and is related to the contact mineralization. Geologically, there are at least three local situations but they are all related:

Cont'd.....

Cont'd.....

1. A quartz monzonite of Tertiary age has intruded into the area. In some places this intrusive has been proven to be mineralized. The mineralization is shown at the Cactus Mine and O.K. mine and in several places where the drilling has penetrated through the skarn and into the underlying intrusive.
2. In at least two areas the volcanics in this area have been mineralized; at the Horn Silver and Beaver Carbonate mines both of which are primarily lead, zinc and silver. Most mineralization is oxidized ^{but} ~~by~~ some sulfide was found at the Beaver Carbonate.
3. Where the intrusive has intruded the lower to middle Paleozoic sedimentary rocks, some very strong skarn zones have been developed as described in the Joraleman report. In places these skarns have been mined for copper, lead, silver, zinc and tungsten. Again two situations exist; These are in the Star Range, Beaver Lake Range, Rocky Range:
 - A. In some places the skarn zone is exposed and can be mapped. In these areas the copper occurs in the oxidized forms. In

Cont'd.....

Cont'd.....

some places the remaining zone may be so severely eroded that not enough mineralization may remain. This will require a drilling program to evaluate and some careful reconnaissance geologic mapping.

- B. In many places the skarn is not directly visible because of the overlying Talisman Quartzite. A number of fissure type deposits in the quartzite have yielded high grade mineralization. A number of these areas may have the skarn below the quartzite and should be investigated with this in mind. Possibly the sulfide minerals may still exist if the overlying quartzite has prevented the complete oxidization visible in the exposed skarn zones.

In addition to the above Dr. Davie has drilled into a steam field of unknown proportions northeast of Milford. The rock is apparently granitic and some is mapped as Precambrian gneiss and schist. Chalcopyrite is reported to be in the cuttings but I did not see any samples.

Any program of exploration in this area will require some careful mapping, considerable ground magnetics and a lot of drilling for proper evaluation of the various properties.

Cont'd.....

Cont'd.....

Special Note:

Rosario Exploration Co. has been examining the Cactus Mine and reportedly left the area. Several thousand feet of core has been left on site. Shortly the boxes will be ruined; if possible this should be logged.

The O.K. Mine is being mined now by Shield Development, they also have a mill operating.

Donald B. Cooley
Senior Geologist

DBC/re:



Rocky Mountain Geochemical Corporation

P. O. BOX 2217
SALT LAKE CITY, UTAH 84110

Phone 322-2396
Area Code 801

CERTIFICATE OF ANALYSIS

Date August 21, 1970

Page 1 of 1

Client Mineral Development
Brigham Young University
A-367 Smoot Building
Provo, Utah

Report on: 1 sample

Submitted by: C. Davis

Date Received: August 4, 1970

Analysis: Gold, Silver & Copper

Remarks: Analyses determined by atomic absorption.
Job No. 70-26-24SL

cc: Enc.
File (2)

LRR:pba

<u>Sample No.</u>	<u>% Copper</u>	<u>oz/ton Gold</u>	<u>oz/ton Silver</u>
#5	.210	.085	2.65

By Lawrence R. Reid
Lawrence R. Reid

All values are reported in parts per million unless specified otherwise. A minus sign (-) is to be read "less than" and a plus sign (+) "greater than." Values in parenthesis are estimates. This analytical report is the confidential property of the above mentioned client and for the protection of this client and ourselves we reserve the right to forbid publication or reproduction of this report or any part thereof without written permission.
ND == None Detected 1 ppm == 0.0001% 1 Troy oz./ton == 34.28 ppm % Mo x 1.6683 == %MoS.

Rocky Mountain Geochemical Corporation

P. O. BOX 2217
SALT LAKE CITY, UTAH 84110

Phone 322-2396
Area Code: 801

CERTIFICATE OF ANALYSIS

SXM

Page 1 of 1

AUG 31 1970

RECEIVED

*Howard:
Copy of rpt. on Sample
from Mr. Davy -
Skarn zone.*

*F
Milford
Copper King*

Date August 21, 1970

Client Mineral Development
Brigham Young University
A-367 Smoot Building
Provo, Utah

Report on: 1 sample

Submitted by: C. Davis

Date Received: August 4, 1970

Analysis: Gold, Silver & Copper

Remarks: Analyses determined by atomic absorption.
Job No. 70-26-24SL

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LRR:pba

<u>Sample No.</u>	<u>% Copper</u>	<u>oz/ton Gold</u>	<u>oz/ton Silver</u>
#5	2.10	.085	2.65

By Lawrence R. Reid
Lawrence R. Reid

All values are reported in parts per million unless specified otherwise. A minus sign (-) is to be read "less than" and a plus sign (+) "greater than." Values in parenthesis are estimates. This analytical report is the confidential property of the above mentioned client and for the protection of this client and ourselves we reserve the right to forbid publication or reproduction of this report or any part thereof without written permission.
ND = None Detected 1 ppm = 0.0001% 1 Troy oz./ton = 34.28 ppm % Mo x 1.6683 = %MoS₂

EUGENE N. DAVIE, M. D.

BOX 188

MILFORD : UTAH

1 August, 1970

Dr. H. Clyde Davis
Mineral Research Division
Department of Geology
Brigham Young University
Provo, Utah

Dear Dr. Davis:

Enclosed is a copy of a current report and maps on the Copper King properties at Milford, Utah

It is my understanding that we will meet with the Essex Company on Tuesday, 4 August, 1970.

Sincerely,


Eugene N. Davie, M.D.