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PRINTED: 04/29/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: NORTH STAR

ALTERNATE NAMES:
RANDALL COPPER PROPERTIES

PINAL COUNTY MILS NUMBER: 486D

LOCATION: TOWNSHIP 7 S RANGE 10 E SECTION 8 QUARTER SW
LATITUDE: N 32DEG 49MIN 30SEC LONGITUDE: W 111DEG 20MIN 32SEC
TOPO MAP NAME: PICACHO RESERVOIR SE - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER OXIDE
SILICON
COPPER

BIBLIOGRAPHY:
ADMMR NORTH STAR MINE FILE
ADMMR SCHWARTZ-GUXMAN LEASE FILE

NORTH STAR MINE

PINAL COUNTY
NORTH STAR DISTRICT
T7S R10E Sec. 08

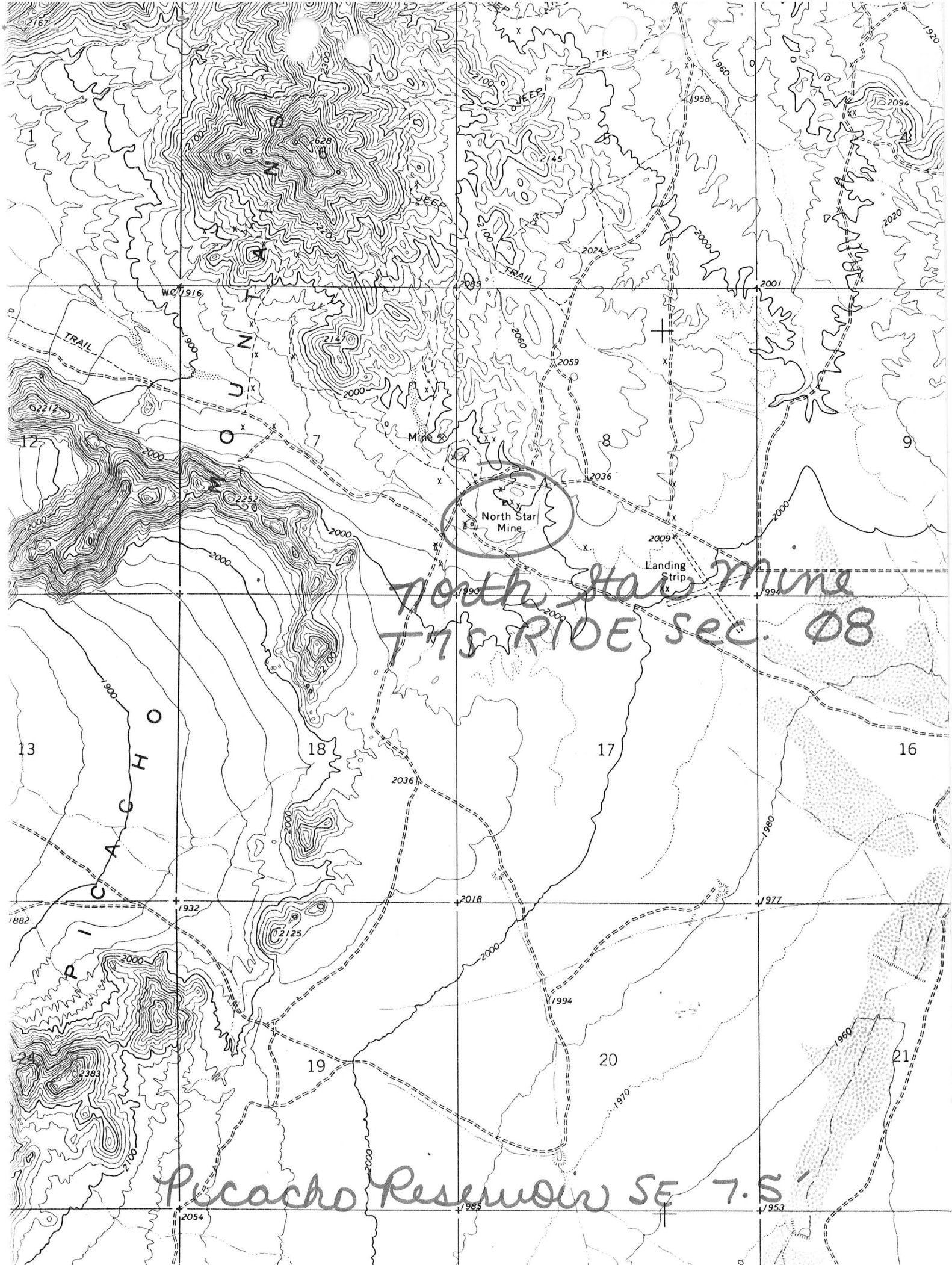
AKA: Randall Copper Properties, Lulu, Cora

MILS Pinal County Index #486D

USGS MF-778, 1978

See: Schwartz- Guzman Lease (file) Pinal Co.

Picacho Reservoir SE 7.5' Topo (included in file)



North Star Mine
T7S R1DE Sec. 08

Picacho Reservoir SE 7.5'

*GENERAL REFERENCES

REFERENCE 1 F1 < AGGMT-USBM & DATA

REFERENCE 2 F2 < ADMR NORTH STAR FILE

REFERENCE 3 F3 < USGS MF-778, 1978

REFERENCE 4 F4 < JOHNSON, GARY S., 1981 THE GEOLOGY AND GEOCHRONOLOGY OF THE NORTHERN PICACHO MOUNTAINS, PINAL COUNTY, ARIZONA. UNIV. OF ARIZONA M.S. THESIS.

L110 < RECENT DRILLING 200+ FT BY A MAJOR COMPANY, 1976 REPORT.

486D

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER B10 <>
*RECORD TYPE B20 <X,1,M,>
DEPOSIT NUMBER B40 <>
*REPORT DATE G1 <8,2,0,4,> YR. MO.
*INFORMATION SOURCE B30 <1,2,3,>
*FILE LINK IDENT. B50 <USBM-0040210909>
*REPORTER(SUPERVISOR) G2 < GEST, DON E. > (last, first, middle initial)
( ) (last, first, middle initial)
*REPORTER AFFILIATION G5 < AGGMT >
*SITE NAME A10 < NORTH STAR MINE >
SYNONYMS A11 < LULA, RANDALL COPPER, CORA >

LOCATION

*MINING DISTRICT/AREA A30 < NORTH STAR DISTRICT >
*COUNTY A60 < PINAL >
*STATE A50 <A,Z,>
*COUNTRY A40 <U,S,>
*PHYSIOGRAPHIC PROV A63 <1,2,>
*DRAINAGE AREA A62 <1,5,0,5,0,1,0,0,>
*LAND STATUS A64 <4,9,> (1,9,7,9,)
*QUADRANGLE NAME A90 < PICACHO RESERVOIR SE > (1,9,6,6,)
*QUADRANGLE SCALE A100 <2,4,0,0,0,>
SECOND QUAD NAME A92 < > ( )
SECOND QUAD SCALE A91 <>
*ELEVATION A107 <2,0,0,0,F,T,>

UTM
NORTHING A120 <3,6,3,1,7,7,0,>
EASTING A130 <4,6,7,9,5,0,>
ZONE NUMBER A110 <1,2,>

*ACCURACY
ACCURATE (ACC) (circle)
ESTIMATED EST <>

GEODETIC
*LATITUDE A70 < - - N >
*LONGITUDE A80 < - - W >

CADASTRAL
TOWNSHIP(S) A77 <0,0,7,S,>
*RANGE(S) A78 <0,1,9,E,>
SECTION(S) A79 < 8 >
SECTION FRACTION(S) A76 < NW OF SW >
MERIDIAN(S) A81 <>

*POSITION FROM NEAREST PROMINENT LOCALITY A82 < 1 1/2 MILES WEST OF TREADWAY MOUNTAIN (2305 FT), GRANITE HILLS >
LOCATION COMMENTS A83 < MAIN SHAFT USED, OUT WORKINGS AND CLAIMS EXTEND NORTH AND EAST INTO THE EAST EDGE OF SECTION 7 AND E SECTION 6 >

ESSENTIAL INFORMATION
ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT C10: C,U, ,A, ,A,U, ,S,I,L,
*ORE MINERALS C30: CHRYSOCOLLA, MALACHITE, CHALCOCITE, CHALCOPYRITE, TENORITE
COMMODITY SUBTYPES C41:
*GEN. ANALYTICAL DATA C43:
COM. INFO. COMMENTS C50: CHRYSOCOLLA BY FAR MOST COMMON MINERAL

* SIGNIFICANCE

PRODUCER		NON-PRODUCER	
MAJOR PRODUCTS	MAJOR: C,U, ,S,I,L,	MAIN COMMODITIES PRESENT	C11:
MINOR PRODUCTS	MINOR: A,G, ,A,U,	MINOR COMMODITIES PRESENT	C12:
POTENTIAL PRODUCTS	POTEN:		
OCCURRENCES	OCCUR:	OCCURRENCES	OCCUR:

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SML) MED LGE (circle one)	PRODUCTION UND NO (circle one)

EXPLORATION OR DEVELOPMENT

*STATUS

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20: 4	STATUS AND ACTIVITY A20:

*DISCOVERER L20:
*YEAR OF DISCOVERY L10: *NATURE OF DISCOVERY L30: B *YEAR OF FIRST PRODUCTION L40: 1949 *YEAR OF LAST PRODUCTION L45: 1970
*PRESENT/LAST OWNER A12: FRANK RANDALL, 1972
*PRESENT/LAST OPERATOR A13:
EXPL./DEV.COMMENTS L110: OPERATORS INCLUDED GUZMAN AND SCHWARTZ, 1962 DIETZ AND STONE, GW. MINCLAY, D. DANIELS, AND ERNEST RAND ON CORA CLAIMS, 1956. 82 UNPATENTED CLAIMS, NORTH STAR AND CORA GROUPS

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40: VEIN
DEPOSIT FORM/SHAPE M10:
*DEPTH TO TOP M20: *UNITS M21: *MAXIMUM LENGTH M40: 2 *UNITS M41: METERS
*DEPTH TO BOTTOM M30: *UNITS M31: *MAXIMUM WIDTH M50: 0.5 *UNITS M51: METERS
*DEPOSIT SIZE M15: (SMALL) M15: MEDIUM M15: LARGE (circle one) *MAXIMUM THICKNESS M60: *UNITS M61:
*STRIKE M70: N 40-60 W *DIP M80: 30-40 SW
*DIRECTION OF PLUNGE M100: *PLUNGE M90:
*DEP. DESC. COMMENTS M110: DIMENSIONS GIVEN ARE FOR INDIVIDUAL VEINS

DESCRIPTION OF WORKINGS

*Workings are: SURFACE M120 UNDERGROUND M130 BOTH M140 (circle one)
*DEPTH BELOW SURFACE M160: 340 *UNITS M161: FT *OVERALL LENGTH M190: *UNITS M191:
*LENGTH OF WORKINGS M170: *UNITS M171: *OVERALL WIDTH M200: *UNITS M201:
*OVERALL AREA M210: *UNITS M211:
DESC. OF WORK. COM. M220: UNDERGROUND WORKINGS FOR COPPER, OPEN PITS AND CUTS FOR SILICA (1952) DEEPEST SHAFT 340 FT, BUT IN 1962, 45 FT WAS DEEPEST BEING WORKED

GEOLOGY

*AGE OF HOST ROCK(S) K1: C,R,E,T,-,P,A,L,E,O,
*HOST ROCK TYPE(S) K1A: BIOTITE GRANODIORITE, OR MONZONITE (JOHNSON, '81)
*AGE OF IGNEOUS ROCK(S) K2: C,R,E,T,-,P,A,L,E,O, ALSO PREC GRANODIORITE
*IGNEOUS ROCK TYPE(S) K2A: HORNBLENDE-BIOTITE GRANODIORITE; DACITE PORPHYRY, ANDESITE PORPHYRY, MONZONITE DIKES
*AGE OF MINERALIZATION K3: C,R,E,T,-,P,A,L,E,O,
*PERT. MINERALS (NOT ORE) K4: QUARTZ, ABUNDANT HEMATITE AFTER PYRITE, CHLORITE
*ORE CONTROL/LOCUS K5: DIKES AND FAULTS CONTROL VEIN LOCATIONS, ORE FILLS JOINTS AND FRACTURES
*MAJ. REG. TRENDS/STRUCT. N5: NW TRENDING FAULT FORMS VALLEY S OF MINE. OTHER ADITS ALSO ALONG THIS FAULT ZONE
*TECTONIC SETTING N15:
*SIGNIFICANT LOCAL STRUCT. N70:
*SIGNIFICANT ALTERATION N75: SUPERGENE HEMATITE AFTER PYRITE, PROBABLE SUPERGENE CHRYSOCOLLA
*PROCESS OF CONC./ENRICH. N80:
*FORMATION AGE N30:
FORMATION NAME N30A:
SECOND FM AGE N35:
SECOND FM NAME N35A:
IGNEOUS UNIT AGE N50: P,R,E,C,
IGNEOUS UNIT NAME N50A: ORACLE GRANITE
SECOND IG. UNIT AGE N55: C,R,E,T,-,P,A,L,E,O,
SECOND IG. UNIT NAME N55A: NORTH STAR MONZONITE (JOHNSON, 1981)
GEOLOGY COMMENTS N85: CONTACT BETWEEN YOUNGER GRANODIORITE AND PREC GRANODIORITE IS UNCLEAR

GENERAL COMMENTS

GENERAL COMMENTS GEN:

Intra-Company Correspondence

SHATTUCK DENN MINING CORPORATION

and

SUBSIDIARIES

Engineering/Geology ..... Office

Date January 18, 1963

TO: D. M. Kentro

SUBJECT: Schwarz-Guzman lease
Copper prospect south of
Florence, Pinal County, Arizona

General

On January 9, 1963, we visited leased claims held by Messrs. W. M. Schwarz and M. Guzman, P. O. Box 1145, Miami, Arizona. The claims are located in the Picacho Mining District south of Florence in T. 7 S., R. 10 E., and comprise all of sections 7, 8, and 17; and part of sections 3, 4, 5, 6, 9, 18, and 20.

The claims, owned by Mr. Randall and three others, have been grouped together for a total of 194 unpatented lode type contiguous claims on federal land. Mr. Schwarz presently holds a 5 year lease with an option to buy.

Sample Data

Six samples were taken during the examination. The assay results are tabulated below:

Sample No.		Width	Au	Ag	Cu	SiO_2
# 5158	cut	33.0'	tr	nil	0.24	86.5
# 5159	cut	15.0'	tr	nil	0.06	71.1
# 5160	cut	50.0'	tr	nil	0.09	58.8
# 5161	grab around shaft collar		tr	nil	0.88	
# 5162	cut	10.0'	0.01	0.2	0.45	
# 5163	grab along 60.0' of length		tr	nil	0.36	

Although the assay results are low, outcrops showing copper are distributed over several square miles suggesting a porphyry type deposit may be found in this area. The best assay, # 5161, (see sketch) is about midway between the North Star (Randall Group--area recently mapped by a major mining company) and surface cut #'s 5158-59-60.

Geology

In the outcrops examined chrysocolla is the main copper mineral--locally scattered blebs of chalcocite are present. Oxidized copper minerals were noted in quartz monzonite-monzonite porphyry, andesite dikes, granites, quartzites, and argillaceous sediments. Volcanics in the area range in composition from rhyolite to felsite. These rocks, on the Pinal County Geologic Map, are lumped together as preCambrian granites. It is very likely some of the igneous rocks have intruded Paleozoic sediments and are therefore younger than preCambrian--perhaps Cretaceous in age. This possibility further enhances the chances of a porphyry type copper deposit--preCambrian age porphyry deposits are rare to unknown.

Mining

Copper has been mined on these claims from surface cuts and shipped to the Magma Smelter for flux--the shippers apparently had free smelting for the high silica content. Samples # 5158-59-60 were taken from one of these cuts (see sketch). Some mining is still active on the North Star Group about 1.5 miles southwest of samples # 5158-59-60.

The general surface area is very similar to a deposit of copper situated some 20 miles to the southeast which consists of 17 claims and was worked by Messrs. Schwarz and Guzman several years ago and which appear to have the same general northwest trend.

Diamond Drilling

On the southern part of this property at least 6 diamond drill holes have been put down (see sketch). The logs from this drilling are not complete but indicate a grade of 0.35 to 0.50 % copper over the entire length of the holes. The holes ranged in depth from 125 to 800 feet. Much of the area is covered with alluvium--some of the drill holes show 300 feet of gravel overburden.

Conclusions

The area around the North Star (about 1 sq. mi.), in the Randall Group, has been recently mapped by the exploration division of a major mining company. Apparently this company is still interested in the property.

The numerous copper stained outcrops scattered over the Schwarz-Guzman lease define a very large area of mineralization. It is recommended this area be mapped on aerial photographs with a view to further investigation in the future, if warranted, by geophysics or diamond drilling.

William F. Sloan
Chief Engineer

Robert G. Raabe
Geologist

cc: Jack Pierce

RANDALL COPPER PROPERTIES

PICACHO DISTRICT--PINAL COUNTY--Arizona.

RANDALL COPPER PROPERTIES

The mining properties in this report are situated, in so far as could be ascertained, in the Picacho Mining District, in sections 6 and 7, T. 7 S. R. 10 E., Gila Salt River Meridian in Pinal County, State of Arizona. Florence is the county seat of Pinal County.

The properties are about 25 miles southwest of Florence on Highway 80. Of that distance, 20 miles are paved and five miles are dirt road from the turn off west from Highway 80.

Coolidge, the nearest town, is distant 20 miles by a partly paved and dirt road. An old dirt road, formerly used, until washed out by floods, is distant 10 miles from Coolidge. A few days with a dozer outfit could make it passable again.

The holdings comprise 82 lode claims, held by possessory rights. Five claims are located under the name of North Star Nos. 1 to 5, inclusive; the rest, under the name Cora Nos. 1 to 77, inclusive. Some of the latter claims cover the relative flat plateau area adjacent and are overlaid by a bedding of caliche lime, the thickness as yet undetermined.

The area lies within an ancient inland sea bed, which by successive seismographic disturbances over eons of time, resulted in the depositions of one of the largest known zones of copper bearing ores in existence.

The geology can be interpreted from the surface outcrops and open cuts as a series of quartz-monzonite cross-fissures interposed in a porphyry-rhyolite intrusive; lenticular stratas of the older granitic rocks were noted as evidence of deep seated origin. The older formations were thrust through the upper stratas by successive seismic and subsident actions.

COPY.

At some period of movement, a narrow body of diabase was thrust through the formation. This intrusion bears a north-south strike, whereas the quartz-monzonite fissurings occur at variable angles of strike. The copper ore bearing rocks, in general, occur with few exceptions at the point of contact of the cross-fissures along the fracture planes of the quartz-monzonite and altered adjacent country rock in the line of fracture. As silica is the predominate constituent of the quartz-monzonite and monzonite-porphyry, the greater part of the ores occurs as various forms of copper silicates, of which chrysocolla is the most abundant. Some minute segments of chalcocite were noted, interposed in the lenticular stratas of silicious ores, which undoubtedly are of secondary origin. Minute particles of cuprous oxides and carbonates were noted. The presence of activated limestone being absent accounts for the low contents of the oxides and carbonates of copper.

This zone comprises an area extending westerly to the Picacho uplift, and easterly to the more extensively developed and better known areas as Superior, Miami, Globe, Ray and others within the rim of the basin.

Due to the pronounced surface exposures of the mineralized zones on the easterly horizons of these areas, the earlier prospectors and mining men gave their time and endeavors to these locales, at the neglect of some of the westerly horizons where little or no evidence of outcrops or exposures were evident.

With the present world price of copper, more attention is now being directed to the westerly horizon of the basin; and the properties under consideration comprise a part of this zone.

In my observations of the surface one point stood out clearly: the similarity of the area to the Coronado ore body at Metcalf, Arizona, which I quote:

COPY.

"The Coronado ore body or vein strikes east to northeast and has thrown quartzite against a Pre-Cambrian granite; it is a cementation of breccia on the Coronado fault. The ore body occurs as a quartzite against a Pre-Cambrian granite. A diabase dyke intruded into this fault before movement had ceased.

"The primary mineralization was similar to that of the fissures in the monzonite porphyry, but alterations resulted in the formation of a zone of oxidized ores, and one of secondary sulphides.

"This is in contrast with the deposits in limestone, which were mostly oxidized ores, and those in the monzonite porphyry were mostly sulphide ores. A further contrast was noted in that the reactivated limestone yielded oxidized ores, and the relatively inert monzonite porphyry yielded secondary chalcocite, whereas the intermediate rocks of the Coronado yielded both."

Excerpts from the Arizona Bureau of Mines, University of Arizona. The author was liaison officer and assistant to the George Millar, Superintendent and Mining Engineer of the Coronado Mine, Metcalf Division of Arizona Copper Co., Clifton Arizona, during World War I, 1917-18. Remarks which I quote from information given to me while stationed at Metcalf, Arizona.

During the early years of copper mining in the southwest territories, little attention was given to ground which failed to indicate copper bearing ores on the surface.

The Coronado vein was one of the many other similar cases in the course of events of that period.

Not until the old Arizona Copper Co. of Morenci, Arizona, a British corporation, erected their smelter at Clifton, Arizona, and surface operations were intensified for a larger source of silicious ore required for their smelter operations, was the Coronado vein discovered as it is known today.

The discovery was the result of driving the 7th level northerly to the north portal of said level. In the course of this work, the tunnel cut one side of the vein. Further development resulted in the opening up of one of the largest bodies of silicious ore discovered at that period.

This proved to be a windfall, as the silicious ores needed contained copper and some values in gold and silver within a few miles of their smelter.

The Coronado vein information has been used as a comparative description due to the similarity of the surface croppings.

The present workings have been confined to a limited area, in comparison to the properties as a whole; most of the developments are centered on the North Star group of five claims and are still in the prospective stage. The greatest depth attained is a nearly vertical shaft approximately 45 ft. in depth, following a fracture filled zone of brecciated quartz-monzonite 4 ft. in width, with low copper contents. (This shaft, for clarification in this report, is referred to as the Randall shaft.)

A similar condition was noted in an old, abandoned shaft about 200 ft. southerly from the Randall Shaft. This shaft, which is reported to be 340 ft. deep, and has a water level at 40 ft., was abandoned in the long past and no definite information is available, except the usual bizarre stories connected with old workings. Nevertheless, if the depth corresponds to the statements made, it should be unwatered at a later date, for what information it might lend to the geological data of the area.

Several open cuts of various dimensions have been opened, exposing the formations for study, particularly the faultings and subsidiences and cross faultings and subsequent mineralization as the result of the cross faultings. Apart from the aforesaid surface exploratory work, no work has been performed of any consequence to evaluate the properties below the surface faulted zone.

SUMMARY:

The mineralization zone covers a considerable area and warrants a systematic evaluation of the holdings by one of the various geophysic methods applicable to this type of deposition. If the geophysic findings are favorable, the area should be core-drilled in a grid pattern, as a result of the geophysic map readings, to determine the value of the deeper mineralized zones beyond the zone of the surface faulting.

The surface mineralization so far uncovered is indicative of having originated from a depth below the surface fault zone.

Under the present and future market for copper, a high price is assured for a considerable period of years. The properties have sufficient merit to recommend their development. Another factor in favor of the properties is that they are located in an area adjacent to several commercial copper smelting plants, or if the ores result favorably for leaching, the chemicals essential for a leaching plant are produced and available in the State of Arizona.

Apropos to a leaching plant, a sufficient water supply would be required for this type of operation -- an economic problem that has not been determined at this writing.

COPY.

Submitted by,

COPY.

S. E. Chiapella, M.E.
Member of the American Institute of
Mining & Metallurgical Engineers, 1926

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles 13, California

ASSAY CERTIFICATE

PHONE VANDIKE 9328

Los Angeles, Calif. Sept. 12/56 19

I hereby Certify that the samples described below, received from

Mr. S. Chiapella assay as follows:

Owner's Mark and Sample	GOLD OZS. PER TON	GOLD VALUE PER TON	SILVER OZS. PER TON	SILVER VALUE PER TON	TOTAL VALUE PER TON	PERCENTAGE OF COPPER	PERCENTAGE OF LEAD	PERCENTAGE OF ZINC
From bottom of 45' shaft Vertical ore shoot -along 15' face- N. star #4-3' wide						.60		
Old tunnel to open pit- original markings-Footwall 3.5' from hanging wall-	.08	$ 2.80				5.10		
old tunnel from open pit						1.10		
Stock pile- general average						3.9		
Old tunnel on N. Star -#2 & #4 across 4'						.20		

GOLD @ $35 PER OZ.

SILVER @ $_____ PER OZ.

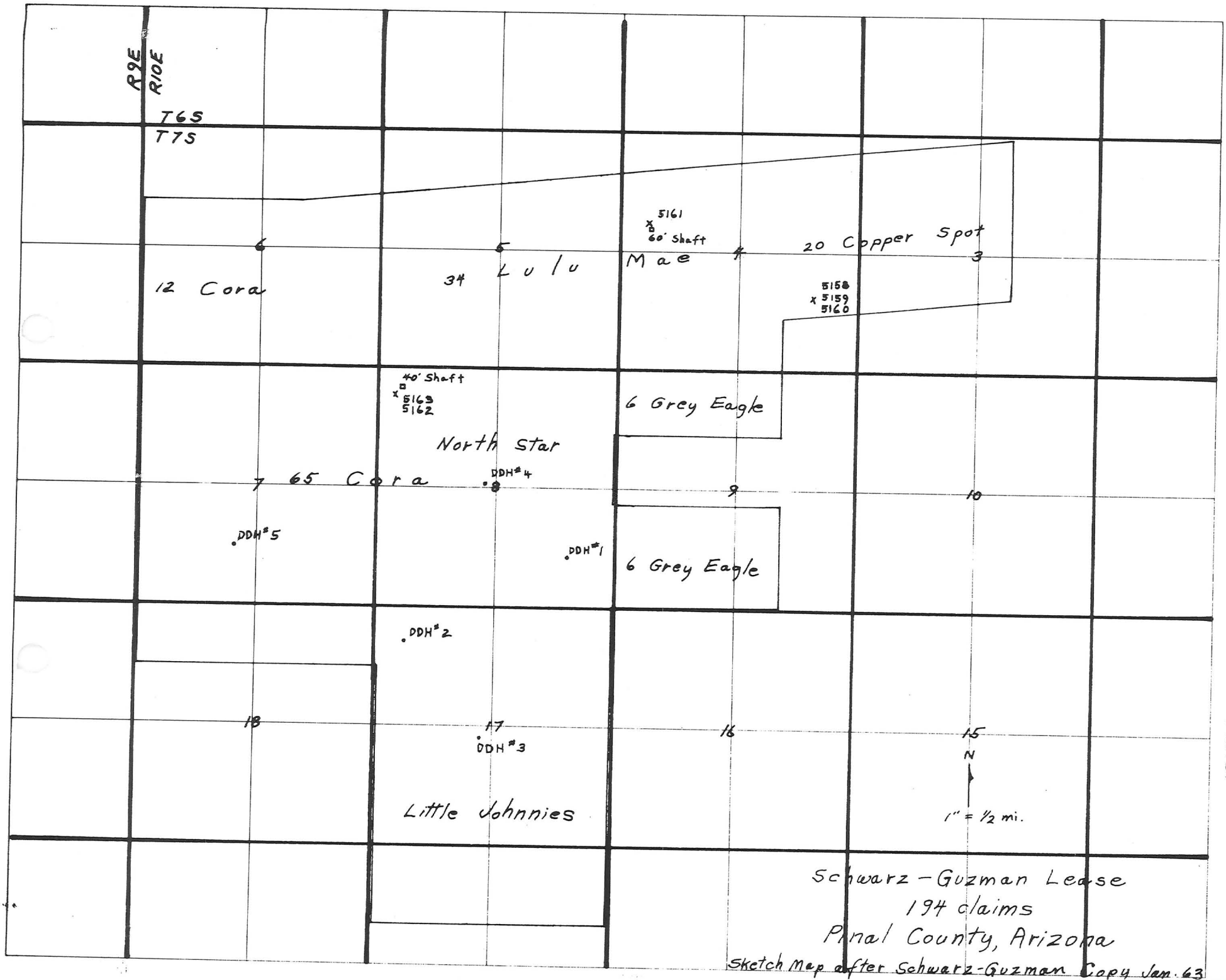
LEAD @ _____ C.

COPPER @ _____ C.

CHARGES $ 9.00

Ed. Eisenhauer
ASSAYER

Established 1916


R9E
R10E
T6S
T7S
6
5
4
3
12 Cora
34 Lulu
5161
60' Shaft
Mae
20 Copper Spot
5158
5159
5160
40' Shaft
5163
5162
6 Grey Eagle
North Star
7
65 Cora
DDH#4
8
9
10
DDH#5
DDH#1
6 Grey Eagle
DDH#2
18
17
DDH#3
16
15
Little Johnnies
N
1" = ½ mi.
Schwarz-Guzman Lease
194 claims
Pinal County, Arizona
Sketch Map after Schwarz-Guzman Copy Jan. 63
GEOLOGY BY
MINE SURVEY
LOCATION
SCALE
LEVEL
DATE

NORTH STAR MINE PINAL COUNTY

RRB WR 8/29/80: Bonnie Mochizuki, P.O. Box 416, Cottonwood, Arizona 86326, was in to discuss the North Star Mine, south of Florence in Pinal County. She reports that there is no record of it in Florence or at the BLM. Says it is not patented and there is no record of assessment work or refiling.

RRB WR 10/17/80: Norman Adams, 883-8857, was in to look at the North Star and Little Hill Mines in Pinal County. He is considering a copper leaching operation at one or both of them.

RRB WR 2/15/85: Visited the North Star Mine, Sec 8, T7S R10E, Picacho Mtns. Pinal County. Russell Stewart, who is living on the property, reports that Pearce Trucking of Casa Grande is removing the overburden, running it through a crushing and screening plant and providing sand and gravel to the CAP can site. He didn't say what financial arrangements were made but seemed very pleased to get stripping done while the price of copper is so low.

NORTH STAR MINE PINAL COUNTY

To North Star Mine (turnoff at mile post 117½ West) - watchman at mine - Randall on his placer claims near Black Canyon - no activity at mine camp. Watchman said some outfit from Tucson was going to examine the mine. FTJ WR 4-18-69

Calumet Silver Mining Corp. of Albuquerque has the North Star near Florence, another property at Tombstone. Also a property in the Chiricahua's. GWI Note 9-12-69

Went to the North Star Mine and met Frank Randall - the owner. He and three other men were getting out a carload of high grade oxidized copper ore to be sold at Hayden. This property was optioned about a month ago to Essex-International Wire Co. of Michigan, who has Heinricks of Tucson doing the evaluation. Mr. Randall also has a property in Bloody Basin know as the Brooklyn where he has previously mined about 250 tons of Cu, Ag, Au ore and will go there soon to rebuild the road so the ore can be hauled out. He also has another oxide copper prospect on State land about 12 miles south of the North Star which he is trying to sell to Essex. GW WR 7-17-70

Frank Randall has quit working the North Star mine. So has Heinricks. The watchman didn't know if Essex Wire & Cable Co. had dropped their option or not. Mr. Randall is now working his mine in Bloody Basin but is living at Bumble Bee. Randall shipped 30 tons of 10.5% Cu to the Magma smelter. Heinricks drilled seven 150'-200' holes with a dry rotary rig. GW WR 10-26-70

Went on down to Frank Randall's North Star Mine. The watchman said Mr. Randall has contacted several companies with regard to mining his deposit of copper, but none have made a deal as yet. He also stated that Mr. Randall was doing considerable prospecting at the old Brooklyn Mine in Bloody Basin where 3 men are employed. GW WR 5-10-71

Went to the North Star mine of Frank Randall where the watchman said they were contemplating a small leaching operation but would first try to get some capital from a placer operation near Bumble Bee, where Mr. Randall now lives. GW WR 4/3/72

RRB WR 4/22/80: Discussed leaching of copper ores with Norman Adams, 708 South Jones, Mesa, Arizona 85204. He is considering buying or leasing the North Star Mine south of Florence, Pinal County, and setting up some type of leaching operation. He has been in the sand and gravel business but knows nothing of the metallurgy involved. He is also interested in finding a small sufide copper property to operate.

RRB WR 4/25/80: Visited North Star property south of Florence (Pinal County). No one was there but a visitor who knows the caretakers--William Teigen 885-5917. He showed me around the property. There were several open cuts and some old shafts that showed copper mineralization. Principally chrysocolla and malachite in granite.

A heap leaching and "tin" can cementation operation had been tried on a small scale at sometime in the past. The ore appears amenable to this type of operation if it is in sufficient quantity. Also stopped at an adit approximately a mile away that was run on a narrow vein containing considerable chrysocolla. It may be a part of this property.

OBERTA MINING AND PRODUCT CO.
PINAL COUNTY
FLORENCE, ARIZONA

INVENTORY AND EQUIPMENT
AS OF DECEMBER 3, 1967

	Value
1 - Rotary drilling rig - Super Wilson	$53,000.00
1 - D8 Cat	16,500.00
1 - Gardner Denver track drill	rental
1 - trailer house	1,500.00
1 - " "	1,200.00
1 - 4" Stainless steel acid pump and motor skid mounted	3,600.00
1 - 2" Stainless steel acid pump and motor skid mounted	2,400.00
100' Drill steel - collars, etc.,	1,879.00
1954 R-200 Int. truck, Tulsa winch-rolling tailboard	3,500.00
F8 - Ford truck, Tulsa winch, rolling tailboard	2,400.00
1 - All steel tool house	650.00
Lufkin float trailer tandem	3,100.00
3,600 ' of 2" P.V.C. pipe; 400' of 3" P.V.C pipe; 400' of 4" P.V.C. pipe and connections	3,500.00
Leaching plant, pad, precip. house, acid pit, set-up complete	85,000.00
Ore pad and lake - cement and asphalt	9,000.00
1 - 7 K. W. Light plant	900.00
1 - Submergible pump 420' setting, gear, head	4,200.00
1 - Pump jack col. and sucker rod 600' setting	3,100.00
1 - 200 Amp. Lincoln welder complete with cutting torch - leads - trailer mounted	1,600.00
Tools assorted	2,000.00
1 - Jacuzzi pump - 160' col. and pressure tank	900.00
1 - Ford pickup truck - 1964 with rack	1,900.00
1 - G.M.C. pickup - 1954	800.00
1 - Int. pickup 4 wheel drive with tool chests	1,000.00
Diesel, pumps, parts and equipment supplies	1,500.00
	$203,033.00

STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX 7, ARIZONA

Tucson, Arizona,
June 18, 1964

MEMORANDUM

To: Frank P. Knight, Director

From: Axel L. Johnson, Field Engineer

Subject: Exploration at the North Star Mine

Field engineer received the following information on June 12, 1964:

The North Star Mine area, 12 miles south of Florence (Sec. 6 - T 7 S - R 10 E) is now being diamond drilled by Magma Copper Co., with Joy Drilling Co. doing the drilling. (1 drill rig).

They are now reported to be drilling the 4 th hole, and the holes are reported to be about 1,000 ft. deep.

Oct. 1962 Active Mine List shows the North Star Mine was operated by Mike Guzman of Superior at that time. (See L. A. Smith for particulars).

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine: Northstar Mine — Date: 9-20-62

District: Owlhead Dist., Pinal Co. — Engineer: Lewis A. Smith

Subject: Conference with Mike Guzman, at Superior, 9-20-62.

Mr. Guzman stated that Guzman and Schwartz were mining copper-silica ore at the Northstar and delivering it to Magma Copper Company's smelter. Mike said they were not making much on a carload a day. The ore runs about 85-87 percent silica with about 1.25 percent or less ~~silica~~ *in Copper*. The ore is, with the exception of local chalcocite veinlets or blebs, oxidized to chrysocolla and some malachite.

active 10-62 - 3 men working

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Northstar Mine **Date** June25, 1962

District Owl Head District, Pinal Co. **Engineer** Lewis A. Smith

Subject: Interview with Mike Guzman, at Superior June 21, 1962.

Claims: About 100

Location: Approximately 16 miles South of Florence and thence 11 miles W.

Owner: Frank Randall, Coolidge

Operators: Guzmans and Schwartz, of Superior (partnership agreement with Randall).

Work & Geology: Only shallow pits and cuts. The present silica pit is in schist and monzonite (?) intrusions containing veins and small masses of quartz. The quartz is dense, fine-grained, and impregnated by chrysocolla, malachite and some chalcocite altering to cuprite and copper oxidized minerals (mainly chrysocolla). The near surface silicified material runs 1-1½ percent copper and approximately 80-85 percent silica. Several 10-ton truck lots have been delivered to Magma Copper Company, at Superior. The haul is approximately 60 miles. Guzman said that the material, where being worked, had become better with depth and appeared to be widening a little. He stated, also, that unless the copper content can be increased, the operation is a little over marginal.

1/28/60

North Star Mine
Info. H.Clyde Davis

Location In Pinal Co., about 15 miles S. of Florence in the Picacho Range. Turn S. of Highway 80 at the 117 mile post.

Minerals Copper oxides & carbonates.

Past Operations Exploration work was conducted in 1958 & first part of 1959 by S. W. Mining Industries, 1000 N. Mountain Ave., Tucson -- H. Clyde Davis, Mgr. 2,000 ft. of drilling was done by Vought & Cloeter, Ltd., Tucson.

Present Operations
Frank Randall, Black Canyon Road, Phoenix is now sinking a 100 ft. shaft on the vein, acc. to Mr. Davis.

This property active Feb. 1959

RANDALL COPPER PROPERTIES

PICACHO DISTRICT--PINAL COUNTY--Arizona.

RANDALL COPPER PROPERTIES

The mining properties in this report are situated, in so far as could be ascertained, in the Picacho Mining District, in sections 6 and 7, T. 7 S. R. 10 E., Gila Salt River Meridian in Pinal County, State of Arizona. Florence is the county seat of Pinal County.

The properties are about 25 miles southwest of Florence on Highway 80. Of that distance, 20 miles are paved and five miles are dirt road from the turn off west from Highway 80.

Coolidge, the nearest town, is distant 20 miles by a partly paved and dirt road. An old dirt road, formerly used, until washed out by floods, is distant 10 miles from Coolidge. A few days with a dozer outfit could make it passable again.

The holdings comprise 82 lode claims, held by possessory rights. Five claims are located under the name of North Star Nos. 1 to 5, inclusive; the rest, under the name Cora Nos. 1 to 77, inclusive. Some of the latter claims cover the relative flat plateau area adjacent and are overlaid by a bedding of caliche lime, the thickness as yet undetermined.

The area lies within an ancient inland sea bed, which by successive seismographic disturbances over eons of time, resulted in the depositions of one of the largest known zones of copper bearing ores in existence.

The geology can be interpreted from the surface outcrops and open cuts as a series of quartz-monzonite cross-fissures interposed in a porphyry-rhyolite intrusive; lenticular stratas of the older granitic rocks were noted as evidence of deep seated origin. The older formations were thrust through the upper stratas by successive seismic and subsident actions.

COPY.

At some period of movement, a narrow body of diabase was thrust through the formation. This intrusion bears a north-south strike, whereas the quartz-monzonite fissurings occur at variable angles of strike. The copper ore bearing rocks, in general, occur with few exceptions at the point of contact of the cross-fissures along the fracture planes of the quartz-monzonite and altered adjacent country rock in the line of fracture. As silica is the predominate constituent of the quartz-monzonite and monzonite-porphyry, the greater part of the ores occurs as various forms of copper silicates, of which chrysocolla is the most abundant. Some minute segments of chalcocite were noted, interposed in the lenticular stratas of silicious ores, which undoubtedly are of secondary origin. Minute particles of cuprous oxides and carbonates were noted. The presence of activated limestone being absent accounts for the low contents of the oxides and carbonates of copper.

This zone comprises an area extending westerly to the Picacho uplift, and easterly to the more extensively developed and better known areas as Superior, Miami, Globe, Ray and others within the rim of the basin.

Due to the pronounced surface exposures of the mineralized zones on the easterly horizons of these areas, the earlier prospectors and mining men gave their time and endeavors to these locales, at the neglect of some of the westerly horizons where little or no evidence of outcrops or exposures were evident.

With the present world price of copper, more attention is now being directed to the westerly horizon of the basin; and the properties under consideration comprise a part of this zone.

In my observations of the surface one point stood out clearly: the similarity of the area to the Coronado ore body at Metcalf, Arizona, which I quote:

COPY.

"The Coronado ore body or vein strikes east to northeast and has thrown quartzite against a Pre-Cambrian granite; it is a cementation of breccia on the Coronado fault. The ore body occurs as a quartzite against a Pre-Cambrian granite. A diabase dyke intruded into this fault before movement had ceased.

"The primary mineralization was similar to that of the fissures in the monzonite porphyry, but alterations resulted in the formation of a zone of oxidized ores, and one of secondary sulphides.

"This is in contrast with the deposits in limestone, which were mostly oxidized ores, and those in the monzonite porphyry were mostly sulphide ores. A further contrast was noted in that the reactivated limestone yielded oxidized ores, and the relatively inert monzonite porphyry yielded secondary chalcocite, whereas the intermediate rocks of the Coronado yielded both."

Excerpts from the Arizona Bureau of Mines, University of Arizona. The author was liaison officer and assistant to the George Millar, Superintendent and Mining Engineer of the Coronado Mine, Metcalf Division of Arizona Copper Co., Clifton Arizona, during World War I, 1917-18. Remarks which I quote from information given to me while stationed at Metcalf, Arizona.

During the early years of copper mining in the southwest territories, little attention was given to ground which failed to indicate copper bearing ores on the surface.

The Coronado vein was one of the many other similar cases in the course of events of that period.

Not until the old Arizona Copper Co. of Morenci, Arizona, a British corporation, erected their smelter at Clifton, Arizona, and surface operations were intensified for a larger source of silicious ore required for their smelter operations, was the Coronado vein discovered as it is known today.

The discovery was the result of driving the 7th level northerly to the north portal of said level. In the course of this work, the tunnel cut one side of the vein. Further development resulted in the opening up of one of the largest bodies of silicious ore discovered at that period.

This proved to be a windfall, as the silicious ores needed contained copper and some values in gold and silver within a few miles of their smelter.

The Coronado vein information has been used as a comparative description due to the similarity of the surface croppings.

The present workings have been confined to a limited area, in comparison to the properties as a whole; most of the developments are centered on the North Star group of five claims and are still in the prospective stage. The greatest depth attained is a nearly vertical shaft approximately 45 ft. in depth, following a fracture filled zone of brecciated quartz-monzonite 4 ft. in width, with low copper contents. (This shaft, for clarification in this report, is referred to as the Randall shaft.)

A similar condition was noted in an old, abandoned shaft about 200 ft. southerly from the Randall Shaft. This shaft, which is reported to be 340 ft. deep, and has a water level at 40 ft., was abandoned in the long past and no definite information is available, except the usual bizarre stories connected with old workings. Nevertheless, if the depth corresponds to the statements made, it should be unwatered at a later date, for what information it might lend to the geological data of the area.

Several open cuts of various dimensions have been opened, exposing the formations for study, particularly the faultings and subsidiences and cross faultings and subsequent mineralization as the result of the cross faultings. Apart from the aforesaid surface exploratory work, no work has been performed of any consequence to evaluate the properties below the surface faulted zone.

SUMMARY:

The mineralization zone covers a considerable area and warrants a systematic evaluation of the holdings by one of the various geophysic methods applicable to this type of deposition. If the geophysic findings are favorable, the area should be core-drilled in a grid pattern, as a result of the geophysic map readings, to determine the value of the deeper mineralized zones beyond the zone of the surface faulting.

The surface mineralization so far uncovered is indicative of having originated from a depth below the surface fault zone.

Under the present and future market for copper, a high price is assured for a considerable period of years. The properties have sufficient merit to recommend their development. Another factor in favor of the properties is that they are located in an area adjacent to several commercial copper smelting plants, or if the ores result favorably for leaching, the chemicals essential for a leaching plant are produced and available in the State of Arizona.

Apropos to a leaching plant, a sufficient water supply would be required for this type of operation -- an economic problem that has not been determined at this writing.

COPY.

Submitted by,

COPY.

S. E. Chiapella, M.E.
Member of the American Institute of
Mining & Metallurgical Engineers, 1926

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles 13, California

ASSAY CERTIFICATE

PHONE VANDIKE 9328

Los Angeles, Calif. Sept. 12/56 19

I hereby Certify that the samples described below, received from

Mr. S. Chiapella assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
From bottom of 45' shaft Vertical ore shoot -along 15' face- N. star #4-3' wide						.60		
Old tunnel to open pit- original markings-Footwall 3.5' from hanging wall-	.08	$ 2.80				5.10		
old tunnel from open pit						1.10		
Stock pile- general average						3.9		
Old tunnel on N. Star -#2 & #4 across 4'						.20		

GOLD @ $ 35 PER OZ.

SILVER @ $ _____ PER OZ.

LEAD @ _____ C.

COPPER @ _____ C.

CHARGES $ 9.00

E. Eisenhauer
ASSAYER

Established 1916

GEOLOGIC REPORT

NORTH STAR MINE

Location

The North Star Mining property is located approximately 16 miles south of Florence, Arizona, and 56 miles north of Tucson, Arizona. The mine is located in Sections 7, 8, 9, Township 7 south, Range 10 East. The property is accessible by traveling on U. S. Highway 89 from Tucson to Florence, turning off between mile markers 117 and 118, thence turning west on a good country road for seven miles to the mine.

Physical Features

The North Star mine deposit is in the Sonora Desert section of the Basin and Range province and is in the Salt River Valley, which drains into the Mesa-Phoenix area, located 50 miles to the north. The mine is in a valley through. All streams in this area are intermittent. The mean annual Surface temperature of the area is about 71degrees Fahrenheit. The rainfall is small, running about eight to eleven inches a year. The periods of greatest rainfall are in January and February and again in July and August, when sudden and violent local thunderstorms are common. The water table is at approximately 80 feet in depth, according to the incline shaft on the property.

Claim Description

There are 170 claims located in the North Star Mine Group, known As North Star #1 through 5 and others. These are on record in Florence, the county seat for Pinal County.

General Geology

The exact age of the rocks in the area has not been determined, but Presumably would date from Pre-Cambrian to recent. Except for the alluvial Deposits of Quaternary age, the rocks are all igneous, and the age of most of them can be identified only in a general way by correlation with rocks in the surrounding area. The mountain to the west of the immediate mining area is a Pre-Cambrian granite and schist. The fine grained granite located in the area of the 300' incline would be of Pre-Cambrian age or of the Mesozoic or early Tertiary age, correlating with the Ray and San Manuel District. The diabase material located in the northeast part of the map intrudes the monzonite and granite. The volcanic rocks and hyolite outcropping on the Three red hills where the main structure is open – cut, are of Tertiary age. Many younger dikes were noted on the property, striking in various directions but forming a general pattern from the northwest to the southwest directions.

The general structure indicates the strike to be from a northwest-southwest direction dipping from 30degrees to 60degrees to the southwest. This is noted on Hill No.1 of the main open-pit area and, can be traced to Hill No.2 and on the Hill No. 3, where the dip is considerably steeper. In the mid-workings of the property, the dip is a little flatter, about 30degrees west, the nearby 300degrees shaft is on a 45degree dip to the west.

Mineralogy and Ore Deposits

Chrysocolla and malachite are the predominant copper minerals in the oxidized zone of the copper-bearing rhyolite and the fine-grained granite. They are also present in the midworking area where residual sulphides are present. The three red hills have the prominent red color because of the leaching in the rhyolite and presence of oxidized iron. A supergene sulphide zone is below the oxidized ore, due to deposits of chalcocite and other secondary copper sulphides as replacement of primary pyrites and chalcopyrite, as can be seen in the deposit. For this reason, it will be necessary for a drilling program to determine the extent of a sulphide zone at depth. Chalcocite can either be hypogene or supergene, but in the majority of the cases in Arizona, it has been a supergene deposit as replacements of primary pyrite, chalcopyrite, and bornite. At the present time on Hill No. 1, a large open cut has been made, approximately 100,00 tons of leaching ore on the dump which will run from .50 to 1% copper. A sample of the dump ran .64% CU. This tonnage with the indicated reserve of the open cut, would justify a small leaching operation. However, the ore reserves could be enlarged by shallow drilling of the enriched zone.

Conclusions and Recommendations

Inferred Reserves. There is an inferred reserve of approximately 2-1/2 million Ton of oxide copper from the surface exposure. Mineralization is noted of 200 feet wide, 1500 feet long, and 100 feet in depth, at .80-1.00% copper. The gross value would be approximately $9,000,000 per 100' depth of leaching material.

Due to the abundance of secondary copper minerals at the surface, secondary sulphides and primary copper minerals, this group has promise as a drilling propert5y in containing a large ore body in depth. In the old incline, depth to 300', silver and copper of high-grade rank was found. This old incline is filled with water, but the dump indicates primary ore. Primary chalcopyrite and bornite were found in the open cut on Hill No. 1.

First – Geo-physical methods should be used in helping to outline potential favorable mineral areas.

Second – This primary ore could not have come from any great distance. The claims have a great amount of surface copper mineralization over most the claims. This itself would justify and warrant, first, a limited reconnaissance drilling program going to the depths of 100' for leaching to 1000' primary.

Third – Detailed drilling program.

Yours very truly,
Signed
H. Clyde Davis
Geologist

Retype
tm

NORTH STAR MINING AND PRODUCING COMPANY
PINAL COUNTY
FLORENCE, ARIZONA

SUMMARY OF 30 DAY OPERATING STATEMENT

Monthly Gross Profit - 302,400 lbs. @ 35¢ per pound copper, plant site, Florence, Arizona	$105,840.00
Total Monthly Operating Cost (30 days)	52,899.04
One Month Operation Net Gross Income	52,950.96
Annual Net Gross Income	635,411.52

Before taxes and depreciation and financial Costs

North Star

CURRENT PRODUCTION PROCEDURE

The report is based on 9 lb. Cu. per 1,000 gallons solution with 2 lbs. holdover in solution; dropping 7 lbs. Cu. per 1,000 gallons per minute flow through special (U.S. Patent Pending) copper precipitating, stainless steel, vats.

The copper ore assay shows better than one-half of one per cent (1/2 of 1%) Cu. It is mined and treated with sulphuric acid known as the Leaching Process, a standard procedure except for a new system that simplifies the operation for quicker recovery of the copper precipitates developed by O. L. Hill, and operating under the name of Roberts Mining and Producing Company.

Production Acid Flow Schedule:

1,000 gallons per minute produces 7 lbs. Cu. per minute.

1 hour produces 420 lbs. of Cu.

24 hours produces 10,080 lbs. Cu. (per day)

30 days operation produces a total of 302,400 lbs. of Cu.

At 35¢ per pound x 302,400 lbs. Cu.
Net Gross Income per month $105,840.00

OPERATION COSTS BASED ON 302,400 LBS. CU.
PRODUCTION PER 30 DAY MONTH

A. Labor Cost

Condition: based on 5 days per week, 8 hours per day, or 22 days per month working hours.

Mining - Loading and Dozier: 8 employees @ $4.00 per hour, per worker - 8 x 8 x 30 x $4.00	$7,680.00
Hauling: 4 employees @ $3.50 per hour, per worker - 4 x 8 x 30 x $3.50	3,360.00
Leaching: (24 hour runs) 4 employees @ $3.50 per hour, per worker - 4 x 8 x 30 x $3.50	3,360.00
Maintenance and Repair: 1 employee @ $3.30 per hour 1 x 8 x 22 x $3.50	616.00
Total Monthly Labor Cost	$15,016.00

B. Direct Operating Costs

Gas, Fuel and Oil:

1.	Diesel - 200 gallons per day @ 19¢ per gallon (30 x 200 x 19¢)	1,140.00
2.	Gas - 100 gallons per day @ 32.9¢ per gallon (30 x 100 x 32.9¢)	987.00
3.	Butane - 500 gallons per day @ 16¢ per gallon (30 x 500 x 16¢)	2,400.00
4.	Oil - 55 gallons per 30 days	69.30
5.	Maintenance, parts, tires and repairs, etc.	100.00
6.	Powder, fuse, caps, etc.	1,373.00
7.	Acid (H_2SO_4), 60 tons per month @ $56.00 per ton	3,360.00
8.	Scrap cans @ $56.00 per ton, 225 tons per month	12,600.00
		22,029.30

C. General Expenses

Legal and auditing services, insurance, payroll taxes, traveling expenses, office supplies, telephone and telegraph, auto expense, miscellaneous, etc. $ 2,298.24

D. Management

Executives, supervisor and administration 2,400.00

E. Indirect Operating Costs

Freight and hauling $800.00 per 40,000 lbs. $5,300.00

Royalty payments @ 7% of gross 3,743.60

$11,243.60

30 days, total operating cost to produce 302,400 lbs. of Cu. $52,989.14

ESTIMATED PRODUCTION COST PER EACH POUND OF Cu. PRODUCED ON BASIS OF 202,400 LBS. OF Cu. ON 30 DAY OPERATION

A.	Labor	.0497
B.	Direct Operating Cost	.0722
C.	General Expenses	.0075
D.	Management	.0372
E.	Indirect Operating Cost	.0080
		.1746

The production cost is approximately 17½¢ to 18¢ per lb. Cu.

BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

August 21, 1967

8-21-1967

Mr. O. L. Hill
Wilcox
Arizona

Dear Mr. Hill:

Enclosed is my report on the North Star property, Pinal County, Arizona.

Sincerely,

H. Clyde Davis, Director
Mineral Development.

HCD:cc

Enclosure.

Attached is a copy of the Magma Copper Company Settlement Sheet, giving the average grade of copper shipped from this group.

no settlement sheet with report copied.
L.P.

ROBERTA MINING AND PRODUCING CO.
PINAL COUNTY
FLORENCE, ARIZONA

FINANCIAL STATEMENT

DECEMBER, 1967

Assets

Cash	$ 8,420.00	
Account Receivable	1,500.00	
Receivable for Mining Claim	250,000.00	
Funds committed	275,000.00	
Other Assets:		
Machinery and Equipment	203,025.00	
Capital Investments:		
Mining Claims (144)	144,000.00	
15,000 tons Copper Ore warehoused on pad at $1.00 per ton	15,000.00	
Equity Capital:		
$9,000,000 worth of Copper Ore reserve. Said total ore reserve estimation ten times said amount	1,000,000.00	
Total Assets		$1,896,945.00

525
1,371,945.00

Liabilities

Note Payable, but not due	$ 15,000.00	
Total Equipment lien	16,000.00	
Net worth	1,865,145.00	
		$1,896,945.00

ROBERTA MINING AND PRODUCING CO.
PINAL COUNTY
FLORENCE, ARIZONA

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NORTH STAR MINE

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The general structure indicates the strike to be from a northwest-southeast direction, dipping from 30° to 60° to the southwest. This is noted on Hill No. 1 of the main open-pit area, can be traced to Hill No. 2 and on the Hill No. 3, where the dip is considerably steeper. In the mid-workings of the property, the dip is a little flatter, about 30° west, the nearby 300' shaft is on a 45° dip to the west.

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below the oxidized ore, due to deposits of chalcocite and other secondary copper sulphides as replacement of primary pyrites and chalcopyrites, as can be seen in the deposit. For this reason, it will be necessary for a drilling program to determine the extent of a sulphide zone at depth. Chalcocite can either be hypogene or supergene, but in the majority of the cases in Arizona, it has been a supergene deposit as replacements of primary pyrite, chalcopyrite, and boronite. At the present time on Hill No. 1, a large open cut has been made, approximately 100,000 tons of leaching ore on the dump which will run from .50 to 1% copper. A sample of the dump ran .64% CU This tonnage, with the indicated reserve of the open cut, would justify a small leaching operation. However, the ore reserves could be enlarged by shallow drilling of this enriched zone.

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Third -- Detailed drilling program.

Yours very truly,

W. Clyde Davis
Geologist

ROBERTA MINING AND PRODUCING COMPANY
PINAL COUNTY
FLORENCE, ARIZONA

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North Star

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PRODUCTION PER 30 DAY MONTH

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Mining - Loading and Dozier: 8 employees @ $4.00 per hour, per worker - 8 x 8 x 30 x $4.00	$7,680.00	
Hauling: 4 employees @ $3.50 per hour, per worker - 4 x 8 x 30 x $3.50	3,360.00	
Leaching: (24 hour runs) 4 employees @ $3.50 per hour, per worker - 4 x 8 x 30 x $3.50	3,360.00	
Maintenance and Repair: 1 employee @ $3.50 per hour 1 x 8 x 22 x $3.50	616.00	
Total Monthly Labor Cost		$15,016.00

B. Direct Operating Costs

Gas, Fuel and Oil:

1. Diesel - 200 gallons per day @ 19¢ per gallon (30 x 200 x 19¢)	1,140.00	
2. Gas - 100 gallons per day @ 32.9¢ per gallon (30 x 100 x 32.9¢)	987.00	
3. Butane - 500 gallons per day @ 16¢ per gallon (30 x 500 x 16¢)	2,400.00	
4. Oil - 55 gallons per 30 days	69.30	
5. Maintenance, parts, tires and repairs, etc.	100.00	
6. Powder, fuse, caps, etc.	1,373.00	
7. Acid (H_2SO_4), 60 tons per month @ $56.00 per ton	3,360.00	
8. Scrap cans @ $56.00 per ton, 225 tons per month	12,600.00	
		22,029.30

CURRENT PRODUCTION PROCEDURE

The report is based on 9 lb. Cu. per 1,000 gallons solution with 2 lbs. holdover in solution; dropping 7 lbs. Cu. per 1,000 gallons per minute flow through special (U.S. Patent Pending) copper precipitating, stainless steel, vats.

The copper ore assay shows better than one-half of one per cent (1/2 of 1%) Cu. It is mined and treated with sulphuric acid known as the Leaching Process, a standard procedure except for a new system that simplifies the operation for quicker recovery of the copper precipitates developed by O. L. Hill, and operating under the name of Roberts Mining and Producing Company.

Production Acid Flow Schedule:

1,000 gallons per minute produces 7 lbs. Cu. per minute.

1 hour produces 420 lbs. of Cu.

24 hours produces 10,080 lbs. Cu. (per day)

30 days operation produces a total of 302,400 lbs. of Cu.

At 35¢ per pound x 302,400 lbs. Cu.
Net Gross Income per month $105,840.00

ESTIMATED PRODUCTION COST PER EACH POUND OF CU. PRODUCED ON BASIS OF 302,400 LBS. OF CU. ON 30 DAY OPERATION

A.	Labor	.0497
B.	Direct Operating Cost	.0722
C.	General Expenses	.0075
D.	Management	.0372
E.	Indirect Operating Cost	.0080
		.1746

The production cost is approximately 17½c to 18c per lb. Cu.

C. General Expenses:

Legal and auditing services, insurance, payroll taxes, traveling expenses, office supplies, telephones and telegraph, auto expenses, miscellaneous, etc. $ 2,298.24

D. Management:

Executives, supervisor and administration 2,400.00

E. Indirect Operating Cost:

Freight and hauling $800.00 per 40,000 lbs. $5,300.00

Royalty payments @ 5% of gross 5,745.60

$11,265.60

30 days, total operating cost to produce 302,400 lbs. of Cu. $52,989.14

BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

August 21, 1967

Mr. O. L. Hill
Wilcox
Arizona

Dear Mr. Hill:

Enclosed is my report on the North Star property, Pinal County, Arizona.

Sincerely,

H. Clyde Davis, Director
Mineral Development.

HCD:cc

Enclosure.

Attached is a copy of the Magma Copper Company Settlement Sheet, giving the average grade of copper stripped from this group.

no settlement sheet with report copied.
L. P.

ROBERTA MINING AND PRODUCING CO.
PINAL COUNTY
FLORENCE, ARIZONA

FINANCIAL STATEMENT

DECEMBER, 1967

Assets

Cash	$ 8,420.00	
Account Receivable	1,500.00	
Receivable for Mining Claim	250,000.00	
Funds committed	275,000.00	
Other Assets:		
Machinery and Equipment	203,025.00	
Capital Investments:		
Mining Claims (144)	144,000.00	
15,000 tons Copper Ore warehoused on pad at $1.00 per ton	15,000.00	
Equity Capital:		
$9,000,000 worth of Copper Ore reserve. Said total ore reserve estimation ten times said amount	1,000,000.00	
Total Assets		$1,896,945.00

525
1,371,945.00

Liabilities

Note Payable, but not due	$ 15,000.00	
Total Equipment lien	16,000.00	
Net worth	1,865,145.00	
		$1,896,945.00

ROBERTA MINING AND PRODUCING CO.
PINAL COUNTY
FLORENCE, ARIZONA

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OBERTA MINING AND PRODUCING CO.
PINAL COUNTY
FLORENCE, ARIZONA

INVENTORY AND EQUIPMENT
AS OF DECEMBER 5, 1967

	Value
1 - Rotary drilling rig - Super Wilson -	$53,000.00
1 - D8 Cat -	16,500.00
1 - Gardner Denver track drill -	rental
1 - trailer house - -	1,500.00
1 - " " - -	1,200.00
1 - 4" Stainless steel acid pump and motor skid mounted -	3,600.00
1 - 2" Stainless steel acid pump and motor skid mounted -	2,400.00
100' Drill steel - collars, etc., -	1,875.00
1954 R-210 Int. truck, Tulsa winch-rolling tailboard	3,300.00
F8 - Ford truck, Tulsa winch, rolling tailboard	2,400.00
1 - All steel tool house -	850.00
Lufkin float trailer tandom -	3,100.00
3,600 ' of 2" P.V.C. pipe; 400' of 3" P.V.C pipe; 400' of 4" P.V.C. pipe and connections	3,300.00
Leaching plant, pad, precip. house, acid pit, set-up complete -	83,000.00
Ore pad and lake - cement and asphalt -	5,000.00
1 - 7 K. W. Light plant -	900.00
1 - Submergible pump 420' setting, gear, head	4,200.00
1 - Pump jack col. and sucker rod 600' setting	3,100.00
1 - 200 Amp. Lincoln welder complete with cutting torch - leads - trailer mounted	1,600.00
Tools assorted	2,000.00
1 - Jacuzzi pump - 160' col. and pressure tank	900.00
1 - Ford pickup truck - 1964 with rack	1,500.00
1 - G.M.C. pickup - 1954	800.00
1 - Int. pickup 4 wheel drive with tool chests	1,600.00
Miscel. pumps, parts and equipment supplies	1,000.00
	$203,025.00

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine: Northstar Mine Date: 9-20-62

District: Owlhead Dist., Pinal Co. Engineer: Lewis A. Smith

Subject: Conference with Mike Guzman, at Superior, 9-20-62.

Mr. Guzman stated that Guzman and Schwartz were mining copper-silica ore at the Northstar and delivering it to Magma Copper Company's smelter. Mike said they were not making much on a carload a day. The ore runs about 85-87 percent silica with about 1.25 percent or less ~~silica~~ *in copper*. The ore is, with the exception of local chalcocite veinlets or blebs, oxidized to chrysocolla and some malachite.