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08/15/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: CORNELIA GROUP

ALTERNATE NAMES:

PIMA COUNTY MILS NUMBER: 538

LOCATION: TOWNSHIP 13 S RANGE 6 W SECTION 14 QUARTER N2
LATITUDE: N 32DEG 17MIN 59SEC LONGITUDE: W 112DEG 51MIN 31SEC
TOPO MAP NAME: AJO - 15 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:
COPPER

BIBLIOGRAPHY:

USBM FILE 463.2/14053
ADMMR CORNELIA GROUP FILE
ADMMR COPPER GIANT FILE
ADMMR BLUESTONE CLAIMS FILE
MILS AJO EXTENSION
MILS COPPER GIANT
ADDITIONAL CLAIMS SEC. 11 & 15

THURSDAY, AUGUST 15.

Citizen

9-15-
69

CORNELIA GROUP

Cu

Pima 10 - 3 T 12 S, R 6 W

H. G. Albert, *Tombstone*

'42

'47

CORNELIA GROUP

PIMA COUNTY

Copper Giant Group (file)

See: Greenway-Albert File (Confidential Files)

Property No. 6—GREENWAY-ALBERT PROPERTY

Property is located some 3 miles from the Phelps-Dodge, New Cornelia open pit operation at Ajo, Arizona. Its geological structure consists of Monzonitegranite and volcanics of various ages which have been faulted by two major faults referred to as the Concentrator Faults, which strikes north located northeast of the New Cornelia copper deposit and the Black Mountain fault which strikes north 10° east lying to the southeast of the New Cornelia copper deposit. The Black Mountain fault is exposed on part of the Greenway-Albert property. The amenability of this ore to hydrometallurgical systems of copper recovery make this property attractive for a leaching operation. The most abundant copper mineral is chrysocolla with some malachite. There are 68 claims in 1360 acres and negotiations are underway with a major mining company. *Knox-Ariz. Corp. Rpt. 1971*

References: Copper Giant (file)
Greenway-Albert file (Confidential files)

1

37
13
—
24
90

April 21, 1942

Mr. H. Greenway Albert
P. O. Box 246
Tombstone, Arizona

Dear Mr. Albert:

I am enclosing a copy of Mine Owner's Report filed with this department covering the CORNELIA GROUP in Pima County.

I shall be glad to submit this report to anyone making inquiry for a property such as yours.

Assuring you of my desire to be helpful, and with best wishes, I am

Yours very truly,

J. S. Coupal

JSC:LP
Enc.

THE CORNELIA-COPPER GIANT COPPER CLAIMS

AJO, PIMA COUNTY

ARIZONA

The property consists of 60 contiguous mining claims located in the AJO Mining District of Arizona approximately 6 miles by road South East of the town of Ajo. The road is paved within 2.7 miles of the property, and a County road passes through it. Private roads are of partially graded gravel construction. There are 40 additional claims which will be taken up to the south, which will complete the full pear shaped basin.

The Northern boundary of the property lies some 3 miles South East of the New Cornelia Open Pit. The ore in the Phelps Dodge pit dips and strikes to the South and East, in the direction of the Cornelia-Copper Giant Claims. (Since 1914, some 400,000,000 tons of ore have been mined from the pit, and the Phelps Dodge are mining daily approximately 35,000 tons and have ore blocked out for 50 more years.)

The claims are bounded on the East by a range of mountains and on the West by rolling hills, forming a pear-shaped basin. This basin area is covered by a layer of sedimentaries known locally as the Ajo Aluvium and Locomotive Conglomerate. Several geophysical surveys have all indicated the presence of a large sub-surface sulphide deposit or magma in this basin. A recent magnetometer survey showed anomalies both to the East and West of this basin, and a large pear-shaped homogeneous mass in the center, which was interpreted to indicate a large decimated deposit of copper ore.

Copper carbonate ore which has been exposed within two feet of the surface by numerous shallow pits, shafts and trenches on the rolling hills West of the pear-shaped basin extends for a distance of about one mile. One of these mineralized zones is approximately 600 feet wide and another over 200 feet wide at the East end of the exposure. In both cases the ore dips toward the basin area. The deepest shaft is 40 feet with carbonate ore all the way down. The bottom of the shaft could not be inspected due to some surface overburden which caved in to the shaft; however, there is a 25 foot shaft which shows ore all the way down and in the bottom.

A hole recently put down with a churn drill on a neighboring property South East of the Cornelia Claims struck the sulphide bearing monzonite. The pear-shaped basin where geophysical and magnetometer surveys showed indications of a sulphide deposit which lies directly in line between the churn drill hole and the New Cornelia open pit. Monzonite is the principal host rock in the Ajo Mining District, and the results from this hole definitely proves that the Monzonite is not confined to the pit area, but extends to the South East for a considerable distance.

Twenty-five samples taken from pits and dumps in the two mineralized areas described above show assay values from .9% to 5.2% Cu (Copper) with an overall average of better than 3%. Drill core assays below 400 feet ran from 3.76% to 4.25% Cu. Au and Ag values will help to defray mechanized mining costs.

I believe this property is worthy of a diamond drilling program of at least 25,000 feet of drill holes. This drilling operation can be carried on simultaneously with the mining and shipment of the carbonate ore. After equipment is on the property, it will require one or two weeks for stripping. Then with wagon drill and high lift or shovel I see no reason why ore could not be produced within two weeks from starting. There is a very good chance to make the property a very large producer.

Pro Forma Estimates: Carbonate copper ore

Five Thousand feet long, an average of 300 feet wide, averaging 200 feet deep. Estimated tonnage of carbonate copper ore 10,000,000 tons; to be most conservative estimate 5,000,000 tons of ore @ 2% or 100,000 tons or 200,000,000 pounds of copper at 36¢ or \$72,000,000. This amount, on a most conservative basis appears excessive. Considering there is a limited market for the carbonate ore at the various smelters, not to exceed 1,000 tons of ore per day, even though the earnings are most substantial on 350 tons per day, it would take many years to move this amount of ore; therefore, it is recommended to install our own leaching plant, having a capacity of 2,000 to 5,000 tons per day.

After the mine has been in operation for some time, at six months, coring has been done, which will definitely establish the tonnage of carbonate ore, and the tonnage is of sufficient volume to justify a plant, then install the leaching plant. The leaching process produces the finest quality of copper which commands top price. The cost of this process is most reasonable. The saving in freight, hauling and the smelter charges will amount to more than 10 dollars per ton, which saving will more than pay for the leaching cost and sufficient funds to be applied onto the cost of the plant. At the beginning most all mining and smelting companies had carbonate ore, and leaching plants, (which have been dismantled in most cases) now they are into sulphide ore, as this company will be eventually.

The various smelters in Arizona have advised me that they will take a limited amount of the carbonate ore, at the present 350 tons a day, and more after we have established a continuous and dependable delivery schedule. In addition to the mineral values they use this ore as a flux, the silica and lime are most essential in smelting sulphide ores.

There is a ready market for the sulphide ore, which from all geology and history is deposited in large tonnage in the basin and under the carbonate ore deposits. If, after coring the basin, the sulphide ore body is established, it is recommended a smelter be built on the property. This smelter will be a major investment and operation, after the ore body has been defined, assuring hundreds of millions of tons of copper ore of sufficient values, the investment will be justified, and of no financial problem. Copper at 36¢, and all prospects of going higher, the World market increasing, and a positive necessity for copper, lead and mercury, all essential minerals along with uranium for the building of the Atomic Age. Some scientists state that copper will be more important than gold, as a universal metal in the growing Atomic Era.

In reference to the sale of carbonate ore to the various smelters, freight rates, smelting costs, hauling and assays are quite accurate, I believe the cost of stripping and mining is excessive. I have talked with the following smelter executives, and they have stated that they will take delivery of the daily tonnage as set forth below:

Miles from Ajo.	Name of Smelter	No. Tons per day	Smelting rate per ton	Mining Cost	Hauling Cost	Freight Cost Per T.	Total Cost Ton	Sell per Ton	Profit per Ton	Total Profit
6	PHELPS DODGE Ajo, Ariz. Mr. Barr	100	\$5.00	\$5.00	\$.60	\$ 0	\$10.60	\$23.60	\$13.00	\$1800000
207	INSPIRATION COP INTERNATIONAL Miami, Globe, Ariz Mr. C. F. Smith Frt. Base \$20 Val \$4.28 plus 3%	50	5.00	5.00	.60	4.41	15.00	23.60	8.60	430.00
182	MAGMA COPPER Superior, Ariz. Mr. Goff & Caldwell \$4.30 plus 3%	50	5.00	5.00	.60	4.43	15.03	23.60	8.57	428.50
322	PHELPS DODGE Douglas, Ariz. Mr. M. G. Fowler \$15 Value \$3.20 plus 3%	50	5.00	5.00	.60	3.30	13.90	23.60	9.70	485.00

SALES PRICE PER TON OF ORE

350 TONS DAILY CARBONATE ORE - 1 TON 3% CU @ 36¢	\$ 21.60
SILICA - SILVER - GOLD AND OTHER MINERALS	<u>2.00</u>
GROSS RETURNS PER TON ORE	<u>\$ 23.60</u>

SUGGESTED MAJOR INVESTMENT AT END OF SIX MONTHS OPERATION


LEACHING PLANT \$2,000,000.00

MINIMUM 2,000 TONS PER DAY

BEGINNING SECOND YEAR, PROVIDED SULPHIDE ORE OF SUFFICIENT TONNAGE HAS BEEN BLOCKED OUT

ESTIMATE

PREPARING PIT AND TUNNELS	\$ 5,000,000.00
SMELTER 10,000 TONS DAILY	<u>25,000,000.00</u>
	<u>\$ 30,000,000.00</u>


ROE WELLS

E & O. E

JULY 1, 1955
2205 WEST HOLCOMBE BLVD.
HOUSTON, TEXAS

ESTIMATED DAILY MINE PRO		\$ 3,2
OVERHEAD - INS., SUPPLIES	\$350.00	
CONTINGENCIES 10%	<u>660.00</u>	
	\$1,010.00	<u>1,010.00</u>

DAILY PROFIT
(Per Ton Based on 350 T. \$6.97) \$ 2,439.50

ANNUAL PROFIT \$ 890,417.50

NO CONSIDERATION GIVEN AS TO TAXES AND DEPLETION, DEPRECIATION, EXPLORATION & DEVELOPMENT. ALL IN ALL THEY WILL ABOUT OFFSET EACH OTHER.

PURCHASE PRICE OF THE 60 CLAIMS		\$4,500,000.00
1ST PAYMENT 1%		45,000.00
CONTINUING 1% UNTIL PRODUCTION WARRANTS INCREASED PAYMENTS UNTIL THE \$4,500,000 IS PAID IN FULL. NO FURTHER PAYMENTS, OBLIGATIONS, ROYALTIES OR OVERRIDES		

OR

THE OWNER WILL AGREE TO, AT THE BEGINNING, GIVE US A PURCHASE OPTION BY PAYING \$5,000, AND 25% FROM THE DAILY MINE NET RUN		\$ 2,439.50
25% APPLY ONTO PURCHASE PRICE		<u>609.88</u>
(ANNUAL PAYMENT \$222,606.20 - 20 YEAR PAY OUT OF PURCHASE PRICE)	DAILY NET	<u>1,829.62</u>
	ANNUAL	<u>\$ 667,811.30</u>

INVESTMENT REQUIRED

PURCHASE OPTION PAYMENT	\$ 5,000.00
OPERATING FUNDS - RENTAL OF EQUIPMENT, ETC.	45,000.00
25,000 FEET DIAMOND DRILL @ \$6.00	150,000.00
TOTAL INVESTMENT	<u>\$ 200,000.00</u>

(1 MONTH TO GET INTO OPERATION)	
(5 MONTHS @ \$1800 DAY)	\$ 270,000.00
(6 MONTHS OPERATION)	

TAKEN FROM

SUPPLEMENT TO U. S. GEOLOGICAL SURVEY P. P. 209

THE AJO MINING DISTRICT, ARIZONA

By James Gilluly

In 1928 two diamond drill holes were put down on the Bluestone claims south of the New Cornelia pit at Ajo, Ariz. During the preparation of Professional Paper 209, "The Ajo Mining district, Arizona," Mr. Hoval A. Smith offered to make available to the U. S. Geological Survey the records of these drill holes. Unfortunately the information did not reach the author. Again in 1948, after the publication of the Ajo professional paper, Mr. Smith renewed his offer to make the drill records available to the Survey. These holes furnish data that necessitate some modification of the inferred position of the erosion surface on which the Locomotive fanglomerate was deposited. Accordingly, this supplementary note has been prepared. In addition, the following, revised sections are included: sections B-B' and C-C' on plate 20; sections through coordinates 9 to 14 on plate 22; and the section through coordinate B on plate 23. Also, a new map, plate 21A, has been prepared to show structure contours on the base of the Locomotive fanglomerate and the location of the two drill holes on the Bluestone claims.

The cores of these drill holes were examined in October 1948 by C. A. Anderson and N. P. Peterson of the Geological Survey, and they report mineralized bedrock below the Locomotive fanglomerate. Hole No. 1 is 2,253 feet deep, and the upper 1,492 feet is in fanglomerate. Hole No. 2 is 2,050 feet deep, and the upper 1,668 feet is in fanglomerate. The rock beneath the fanglomerate is highly silicified and sericitized, and locally brecciated. The upper part of the bedrock is oxidized and contains some native copper, limonite, and a few seams of chalcocite. At depths 200 feet below the bedrock surface, primary pyrite and chalcopyrite show no signs of enrichment or oxidation.

Most of the bedrock resembles the Concentrator volcanics, and examination of representative thin sections of the cores confirms this identification. In hole No. 1, at a depth of 2,000 feet, specimens of core resemble diorite porphyry, and this rock may be related to the monzonite intrusive bodies; however, this rock is so altered hydrothermally as to make specific determination impossible.

The bedrock at these depths, beneath the Locomotive fanglomerate, may be part of an upfaulted block or of a buried hill which, after the tilting of the fanglomerate, would now appear as a more gently sloping basal surface of that formation. Although faults have been mapped at intervals along the northern contact of the Locomotive fanglomerate, no evidence has been found for a continuous northern fault contact, and the continuity of geologic boundaries north of the fanglomerate shows that no large fault can there exist. Movement along a fault near the southwest corner of section 27 (pl.20) has brought the Concentrator volcanics against the Locomotive fanglomerate, but this fault seems to swing southeastward where it can be traced last near the boundary between sections 27 and 34. Hence it would have no effect on the altitude of the base of the fanglomerate as intersected in holes 1 and 2. Overlap of fanglomerate on bedrock is very evident where the contact is exposed. This is shown by the wedging out

of the lower beds of the fanglomerate westward along the contact. The combined evidence now available from the drill holes in fanglomerate in this area (see pl. 21A) suggests strongly that the erosion surface on which the fanglomerate was deposited not only has irregularities but also, locally, has a relatively gentle slope. The presence of the bedrock in holes 1 and 2 at a higher elevation than would be inferred from the projection of the erosion surface is evidence that the irregularities, so evident along the strike, also exist down the dip. Although a concealed fault may exist and account for the relations, no fault of adequate displacement has been found.

Possibly future exploration will reveal beneath the Locomotive fanglomerate other areas where the bedrock is relatively near the surface. Some of them may be underlain by bedrock sufficiently mineralized in copper and close enough to the surface to constitute minable ore.

see

Copper Grant file

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Cornelia Group

Date April 25th 1947

1. Mine: 65 Cantegaras Mining Claims.
2. Location: Sec. _____ Twp. _____ Range _____ Nearest Town Ajo, Ariz.
Distance 3 miles Direction south Road Condition good (but not paved)
3. Mining District & County: Ajo Mining District, Pima County
4. Former Name of Mine: 40 Claims in Cornelia group, 25 Claims in Copper Grant group -
5. Owner: A. Compro, Albert, 40 Claims; 25 Claims held under option agreement.
Address: P.O. Box, 246, Tombstone, Ariz. Phone 2466
6. Operator: _____
Address: _____
7. Principal Minerals: Cu, with small values in Au. & Ag.
8. Number of Claims: 65 Lode Placer _____
Patented _____ Unpatented
9. Type of Surrounding Terrain: rolling, sparse desert growth
10. Geology & Mineralization: Geological conditions favorable or occurs in manganese and agglomerate. Mineralization is that normally found at New Cornelia, P.D. operation. Carbonate ore.
11. Dimension & Value of Ore Body: Two known mineralized zones. One 150 feet wide. One 600 feet wide. About 100 open pits and shallow shafts on property; all in ore. Assay sheets from samples of these pits and dumps attached.

12. Ore "Blocked Out" or "In Sight": *No ore located as yet
On tonnage in sight not estimated.*

Ore Probable: *Large potential ore deposits
indicated by surface showings and
geophysics survey. Extent can be determined
only by drilling program.*

13. Mine Workings—Amount and Condition: *Surface pits & shallow shafts.*

No.	Feet	Condition
Shafts.....		
Raises.....		
Tunnels.....		
Crosscuts.....		
Stopes.....		

14. Water Supply:

15. Brief History: *See notes*

16. Signature: *A. Conway Albert*

17. If Property for Sale, List Approximate Price and Terms: *See notes*

MC-67

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date: April 20, 1942

1. Mine: Cornelia Group
2. Location: 3 miles from New Cornelia workings.
3. Mining District & County: Ajo Dist.,
Pima County
4. Former name
5. Owner: H. Greenway Albert
6. Address (Owner) P.O. Box 246,
Tombstone, Arizona
7. Operator
8. Address (Operator)
9. President, Owning Co.
- 9A. President, Operating Co.
10. Gen. Mgr.
14. Principal Minerals: Copper
11. Mine Supt.
15. Production Rate
12. Mill Supt.
16. Mill - Type & Cap.
13. Men Employed
17. Power - Amt. & Type
18. Operations - Present
19. Operations - Planned: Diamond drilling necessary to supplement geophysics survey.
20. Number Claims, Title, etc.: 39
21. Description - Topography & Geography: Similar to that of New Cornelia now owned by Phelps Dodge.
22. Mine Workings: Amt. & Condition:
Geophysics Report
1300 ft. Diamond Drilling
3 converging dykes
#1 - approximately 175 ft. in width
#2 - approximately 500 ft. in width
#3 - not trenched.

(over)

23. Geology & Mineralization: Reports and maps in my files at Tombstone.
24. Ore - Positive & Probable, Ore Dumps, Tailings: Large potential body of probable ore.
- 24A. Dimensions and Value of Ore body: Mineralized zone appears to be larger than that covered by New Cornelia pit at Ajo.
25. Mine, Mill Equipment & Flow-Sheet: None
26. Road Conditions, Route: Can drive car practically over entire property. Good road to property.
27. Water Supply: No water developed on property. Water available for diamond drilling close by however.
28. Brief History: Property was taken over by the Ajo Extension Copper Co. in 1931 but abandoned because of a drastic drop in price in copper. Afterwards a geophysics survey was made which seemed to warrant diamond drilling - 1300 ft. of diamond drilling was done. This, however, was not sufficient to block out ore.
29. Special Problems, Reports Filed: Require small amount of capital to supplement present work. From then on sufficient diamond drilling to block out ore for a large operation.
30. Remarks.
31. If property for sale - Price, terms and address to negotiate: Will consider any reasonable proposition that will lead to property's further development and operation.

Signed: H. Greenway Albert
P. O. Box 246
Tombstone, Arizona

CLAUDE E. MCLEAN
P. O. BOX 1838

TELEPHONE 3-6272

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

823 EAST VAN BUREN STREET

ASSAY CERTIFICATE

PHOENIX, ARIZONA, October 29 1946

Mr. John L. Alexander
Box 1745
Miami, Arizona

WE HAVE ASSAYED THE SAMPLES RECEIVED FROM YOU AND FIND THE RESULTS AS FOLLOWS:

GOLD FIGURED AT \$ 35.00 PER OUNCE.

SILVER FIGURED AT \$ 0.90 PER OUNCE.

LAB. FORM 2

LAB. NO.	SAMPLE	GOLD		SILVER		PERCENTAGES		
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	LEAD	
62032	#1-6 $\frac{1}{2}$ ' E.side #1 Pit					2.65%		
33	#2-5' S.side #1 Pit					0.90%		
34	#3-3' Pit #2					2.25%		
35	#4-5' Pit #3					2.85%		
36	#5-5' Pit #4					5.20%		
37	#6-5' Pit #5					2.70%		
38	#7-5' Pit #6					3.40%		
39	#8-3' Pit #7					2.30%		
40	#9-6' Pit #8 Dump Grab					3.55%		
41	#10-Pit #9 Grab Dump					2.05%		
42	#12-Pit #25					5.00%		
43	#13-Pit #26					3.25%		

RESPECTFULLY SUBMITTED,

ARIZONA TESTING LABORATORIES

BY

Claude E. McLean

ASSAYER

CHARGES \$ 12.00

URANIUM CONCENTRATING CO.

P.O. Box 494 - Phone 1005

PRESCOTT, ARIZONA

Sept. 25, 1955

Dr. Hunter L. Harang
Houston, Texas

PRELIMINARY REPORT
CORNELIA-COPPER GIANT ORE

Purpose; To test adaptability of Cornelia-Copper Giant ore to the Records-Zinkl dry concentration methods.

Sample; Furnished by Mr. J. G. Albert, Tombstone, Arizona, owner of property.

Location of Mine; Consists of 60 claims adjacent to the New Cornelia operation of the Phelps-Dodge Co.

Tested For; Dr. Hunter L. Harang, and Roe. E. Wells, both of Houston, Texas.

Conclusions

Ore is somewhat amenable to the dry separation method. The fine, soft material is readily extracted with a minor concentration of the copper bearing minerals. Two distinct products are produced, the fines would provide an excellent leaching plant feed, and the coarse material would be a highly acceptable smelter feed. This is due to the increase in the siliceous content.

The process actually extracted the softer metallic and non-metallic materials as fines, thereby eliminating a high percentage of the alumina content from the coarse product. This resulted in a fluxing ore containing better than 80% silica, a good copper content and the gold and silver. The precious metals may, or may not, be present in sufficient quantities to command pay from the smelter. The samples have not been assayed for the precious metals as yet.

Additional work, on a much larger sample must be conducted before accurate metallurgical and economic figures can be evolved.

If the ore body is as large as has been stated and can be open pit mined and if further testing of representative ore produces answers similar to these indicated in this test, the success of this mining venture is assured.

(Initialed) A.J.Z.

Test Work

The attached metallurgical balance sheet gives an approximation of the results that can be expected from the dry separation process.

The head sample weighed only 165 pounds which amount is much too small for pilot plant work. Grinding and dusting characteristics were determined, however. A metallurgical balance had to be forced because of the small amount of ore which passed thru the circuit. The original head sample and the tail sample are accurate. The various concentrate samples are reasonably close to right in assay, altho the weights shown are probably less than true.

The ore appears to disintegrate easily in the hammermill, and the selectivity of grinding in the attrition mill is apparent. The Vacon air separator can easily part the coarse and fine particles at whatever optimum portions are necessary. This can be determined with more test work on a much larger sample.

A brief laboratory test on the fines was conducted to determine the solubility of the copper. A 5% solution of sulphuric acid was used, cold, with a slight agitation for 5 minutes. The solution was filtered resulting in a medium blue copper sulphate solution and a fine, slimy filtrate. The filtrate was dried and examined visually. The dried filtrate showed little or no indication of copper minerals. The ease of solubility, plus the ease of filtration indicated that the fines would be an excellent leaching plant feed.

Approximately 40% of the copper was contained in the fines, which represented 25% of the total weight. The remaining 60% of the copper was contained in 75% of the weight in the form of a coarse product (plus 30 mesh). The short truck haul (6 miles), a favorable smelter schedule, due to the siliceous content, plus the possibility of some gold and silver pay makes the coarse product ideal as a shipping flux, and should realize a good return.

The fines would not be acceptable at the smelter despite the higher copper content. The undesirable minerals, i.e., aluminas, lime, etc., have been concentrated here and would be too high for smelter feed. The copper can readily and economically be extracted by standard leaching methods, leaving a fine sludge containing the alumina, etc. The aluminum content of this sludge may be high enough to interest purchase or extraction by one of the aluminum companies, the possibilities here warrant further investigation.

(Initialed) A.J.Z.

URANIUM CONCENTRATING CO
PRESCOTT, ARIZONA

Dr. Harang- Page 3

This report is very elementary and to be used merely as an indication of the possibilities. To accurately ascertain exact figures I would recommend the following steps be taken. In fact, the Uranium Concentration Co. would insist on the first three steps, prior to committing a plant to the project.

1. - A truck load, 3 to 5 tons, of representative ore be sent to our pilot plant. This sample should be collected from at least eight (8) different exposures of the ore body.
2. - A complete pilot plant test be conducted, not only to determine the proper settings on the machines, but also to gain accurate and representative samples of all the products.
3. - Assay of all products for gold, silver, alumina, lime, copper.
4. - A sample of the coarse product be sent to the smelter to determine a smelter schedule.
5. - Fine product samples be used to conduct leaching tests by a reputable firm or individual, i.e., Western Machinery Lab., Colorado School of Mine Research Foundation, or some other firm.
6. - Facts and data gained in the above five steps be consolidated into a report which would set forth the overall economics of the operation.

The Uranium Concentrating Co. would not build their plant on this, or any other property until the foregoing information was made available and indicated the success of the venture. We can undertake any or all of the phases suggested above, necessarily we would have to be included in the first three and the sixth phase.

Depending upon the size of the installation, as indicated by the economics, we would be in a position to deliver all our equipment to the plant site in 6 to 8 weeks. One-third of the cost money would have to be in our hands immediately, and the balance as equipment was delivered.

(Signed) A. J. Zinkl

TEST REPORT

Test No. One

LABORATORY -

PILOT PLANT - X

NAME OF COMPANY Roe. E. Wells and Dr. Hunter L. HarangADDRESS Houston, TexasTYPE OF ORE Copper minerals in the locomotive fanglomerateNAME OF MINE Cornelia-Copper Giant LOCATION Ajo, ArizonaWEIGHT OF HEAD SAMPLE 165 Lbs.

MOISTURE CONTENT _____

Description	Sample No.	per ton Weight	R.M. Assay	WET ASSAY Cu	% Weight	% Assay	lbs. Cu
Coarse Heads		2000		4.14			82.8
#1 Cyclone		85		7.30			6.2
Attrition Heads		1915		4.00			76.6
#2 Cyclone		136		6.45			8.8
Vacon Heads		1779		3.75			66.7
Vacon Cons		240		5.67			13.6
Vacon Tails		1539		3.12			48.0
Unaccountable Loss in concentrates in system							5.31

CALCULATED RATIO OF CONCENTRATION 4.34 to 1CALCULATED RECOVERY 42% in the concentrates

Remarks; For each 100 tons of ore mined the process would produce approximately 75 tons of coarse product containing 3.12% copper and over 80% silica shipable to the nearby smelter. The fines would be feed to a leaching plant. These fines, 25 tons, would contain 6.2% copper, most of the alumina and lime.

On heads containing less copper the above ratios would probably hold true.

(Initialed) A.J.Z.

E. N. Pennelaker

SUPPLEMENT TO U. S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 209

THE AJO MINING DISTRICT, ARIZONA

by James Gilluly

1948

In 1928 two diamond drill holes were put down on the Bluestone claims south of the New Cornelia pit at Ajo, Ariz. During the preparation of Professional Paper 209, "The Ajo mining district, Arizona," Mr. Hoval A. Smith offered to make available to the U. S. Geological Survey the records of these drill holes. Unfortunately the information did not reach the author. Again in 1948, after the publication of the Ajo professional paper, Mr. Smith renewed his offer to make the drill records available to the Survey. These holes furnish data that necessitate some modification of the inferred position of the erosion surface on which the Locomotive fanglomerate was deposited. Accordingly, this supplementary note has been prepared. In addition, the following revised sections are included: sections B-B' and C-C' on plate 20; sections through coordinates 9 to 14 on plate 22; and the section through coordinate B on plate 23. Also a new map, plate 21A, has been prepared to show structure contours on the base of the Locomotive fanglomerate and the location of the two drill holes on the Bluestone claims.

The cores of these drill holes were examined in October 1948 by C. A. Anderson and N. P. Peterson of the Geological Survey, and they report mineralized bedrock below the Locomotive fanglomerate. Hole No. 1 is 2,253 feet deep, and the upper 1,492 feet is in fanglomerate. Hole No. 2 is 2,050 feet deep, and the upper 1,668 feet is in fanglomerate. The rock beneath the fanglomerate is highly silicified and sericitized, and locally brecciated. The upper part of the bedrock is oxidized and contains some native copper, limonite, and a few seams of chalcocite. At depths 200 feet below the bedrock surface, primary pyrite and chalcopyrite show no signs of enrichment or oxidation.

Most of the bedrock resembles the Concentrator volcanics, and examination of representative thin sections of the cores confirms this identification. In hole No. 1, at a depth of 2,000 feet, specimens of core resemble diorite porphyry, and this rock may be related to the

monzonite intrusive bodies; however, this rock is so altered hydrothermally as to make specific determination impossible.

The bedrock at these depths, beneath the Locomotive fanglomerate, may be part of an upfaulted block or of a buried hill which, after the tilting of the fanglomerate, would now appear as a more gently sloping basal surface of that formation. Although faults have been mapped at intervals along the northern contact of the Locomotive fanglomerate, no evidence has been found for a continuous northern fault contact, and the continuity of geologic boundaries north of the fanglomerate shows that no large fault can there exist. Movement along a fault near the southwest corner of section 27 (pl. 20) has brought the Concentrator volcanics against the Locomotive fanglomerate, but this fault seems to swing southeastward where it can be traced last near the boundary between sections 27 and 34. Hence it would have no effect on the altitude of the base of the fanglomerate as intersected in holes 1 and 2. Overlap of fanglomerate on bedrock is very evident where the contact is exposed. This is shown by the wedging out of the lower beds of the fanglomerate westward along the contact. The combined evidence now available from the drill holes in fanglomerate in this area (see pl. 21A) suggests strongly that the erosion surface on which the fanglomerate was deposited not only has irregularities but also, locally, has a relatively gentle slope. The presence of the bedrock in holes 1 and 2 at a higher elevation than would be inferred from the projection of the erosion surface is evidence that the irregularities, so evident along the strike, also exist down the dip. Although a concealed fault may exist and account for the relations, no fault of adequate displacement has been found.

Possibly future exploration will reveal beneath the Locomotive fanglomerate other areas where the bedrock is relatively near the surface. Some of them may be underlain by bedrock sufficiently mineralized in copper and close enough to the surface to constitute minable ore.

LOCATION AND GENERAL DESCRIPTION.

*changed 4-1918
from
Carnelia
Co
Copper*

The Carnelia Consolidated Copper property comprises forty one claims, or about 800 acres, located approximately two miles southwest of Ajo, Arizona, and adjoining the New Carnelia Copper Mine on the south and west

The northern portion of the property is rugged and mountainous, dropping down to a ~~flat~~ ^{typical} typical desert country on the southern portion.

GEOLOGICAL DESCRIPTION.

The rough, mountainous country in the northern part of the property consists of a bedding system of rhyolite tuff and lavas, which has been elevated into mountainous form by some intrusive, probably monzonite, ~~that~~ ^{which} did not come to the surface in that place. These hills are in line with and adjoining the outer capping of monzonite porphyry forming the orebody of the New Carnelia Mine, and the intrusion which caused the elevation of these hills is no doubt part of that monzonite body.

The flat country on the southern portion of the claims consists of a heavy capping of a local conglomerate, with valleys filled with gravel and the product of erosion in recent times.

GEOLOGICAL HISTORY AND EVOLUTION.

The sketches on page 4 will give an idea of the ^{geological} changes that have taken place. The oldest formation visible is the bedded series of rhyolite tuffs and lavas. Into this was intruded the monzonite laccolith which is exposed at the New

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Every claim of the Cornelia Consolidated Copper Company that is not capped with the Local Conglomerate shows copper ore.

The rhyolite shows unmistakable signs of having been subjected to strong mineralizing influences. Some areas are, of course, more favorable than others. In the more favorable areas, the rhyolite is highly altered and silicified, and thoroughly impregnated with iron, and the harder, boulder-like pieces that have resisted leaching, contain oxidized copper minerals.

The most favorable looking areas are the shear zone on the Mountain Gulch, Bulldog, and Commonwealth Claims; the mountainous area on the Coyote, Ansopogus and Boston Claims; an area near the camp on the Kekemo Claim; and some favorable fractures containing high grade ore on the Malden #5.

It is also highly probable that the conglomerate on the Fox #1 and 2 may ~~not~~ be ~~saxkisk~~ too ^{thin enough to permit} thick to prohibit drilling through it and reaching the extension of the New Cornelia "High Grade Mine" to the south.

A fractured area in the rhyolite, where well mineralized, is an excellent formation for ore and ^{although mineralization may be encountered at any depth} it is not necessary to consider that the monzonite must be reached before ore will be found. In the rhyolite however, the ore will probably be found to occur in more irregular ^{lenticles} of higher grade ore than in the monzonite, where the copper occurs disseminated through a very large mass. Between these higher grade bodies would be lean streaks, mineralized with iron and very little copper, as it is a well known fact that in mineralizations of this sort, the iron travels ^a further from the source of mineralization ~~in~~ (some important fracture or fault) than the copper.

DEVELOPMENT.

Diamond drilling was started on the shear zone of the Bulldog Claim, to give an insight into the geological conditions existing below the surface. Hole #1 started down in sheared rhyolite breccia. The rhyolite was heavily mineralized with iron, oxidized and leached, but contained no copper in the oxidized zone. At 500 feet the drill passed through the oxidized zone and into sheared rhyolite carrying iron and copper sulphides. This formation continued without change and the hole was stopped at 800 feet the drill still being in the same sulphide ore, and the last thirty feet carrying slightly more copper than any previous thirty feet. The copper was not ^{of} sufficiently high grade to make this ore workable, but the results of the hole prove ^{of} our geological assumption that the rhyolite has been subjected to intense mineralizing influences and that the mineralizing solutions carried copper. The fact that the copper in this spot was not ^{of} sufficiently high grade to be workable at a profit, merely fits in with our assumption that the copper will be found in irregular beds around which will be a margin of rock carrying considerable iron but little copper.

It may take some little feeling around with drill holes ~~xxxxxxxxxxxx~~ and careful study of the results of several holes before an important orebody can be located, but in the end the efforts should be well rewarded.

Drill hole #2 was started from the same point but run at an angle in an easterly direction. Two important strata of good carbonate ore were out in this hole, at 165 and 255 feet respectively. At the present writing the drill had not reached the sulphide zone.

Other development consists of over a hundred small shafts, tunnels and cuts, every one of which, when in rhyelite, shows copper ore.

PETROGRAPHICAL DATA.

RHYOLITE TUFF AND LAVA. - The bedded series of rhyelitic tuffs and lavas varies in ~~phx~~ chemical phase from a rhyelite, through a latite, to a trachy-andesite, and in physical phase, from a volcanic extrusive or lava, to tuffs and breccias. The bedding is complicated and no attempt has been made to work it out in detail.

A microscopic examination of the average phase, a rhyelite tuff, shows it to be clearly fragmental, the fragments lying in a glassy matrix which has been somewhat devitrified. The fragments consist of oligoclase-andesite, trachy-andesite, apherulitic felsite, quartzite, felsite, felsophyre, glass, apherulitic glass, broken feldspar crystals, rhyelitic glass, broken quartz crystals, and broken rhyelite fragments, so that it is ~~quite~~ a heterogeneous mixture of pieces of igneous rock with ~~quite~~ ^{wide} a range of structural and textural habits, but tending as a whole to a rather acid character corresponding to a rhyelitic or quartz-latitic ~~rxn~~ composition.

Much iron sulphide had evidently been introduced and has been oxidized with the production of much specularite and hematite, which has spread through the fractures in the rock and has been otherwise distributed, in grains, staining the rock and giving it the pronounced red or purple color.

In the sulphide zone of the same material we find much more alteration, intense silicification, erratic sericitizati

and extensive pyritization. The pyrite appears fresh and unaltered and is probably related to the period of seritization and silicification. The pyrite has replaced these portions of the rock in which it occurs in irregular disseminated grains, and is also connected with the veinlets and fractures. ^{appearance of the} The pyrite appears ^{as though} there had been an erratic distribution of some fragmental material more susceptible to the action of mineralizing agents than the main mass of feldspar crystals.

It is ~~no~~ ^{no} doubt certain that some igneous intrusive in the vicinity is responsible for the intensive mineralization.

TRACHY-ANDESITE- An area of trachy-andesite occurs on the Commonwealth claims and over the territory to the north of them. Some of this material is distinctly tuffaceous and the rock is no doubt a phase of the rhyolite tuffs, rather than a phase of the Andesite-Basalt flows which took place at a later period.

LOCAL CONGLOMERATE- The lower-lying country on the southern portion of the claims is almost completely covered with a capping of conglomerate. It is the result of a period of very rapid erosion following the ~~laying down of the~~ Andesite-Basalt flows. The rock fragments were not carried far enough to be rounded by the ~~water~~ action, and many of them exist in angular shapes, and in all sizes. In some sections the conglomerate is made up almost entirely of fragments of andesite and basalt. In other sections it is ~~mostly~~ rhyolite and in still others it is ~~mostly~~ a coarse-grained granite.

The thickness of the capping varies according to the ~~size~~ topography at the time it was laid down. In some parts it probably at least 1000 feet thick.

*This is copy
of original
Original
& sealed!*

REPORT ON MINES OF CORNELIA-AJO COPPER COMPANY
PIMA COUNTY, ARIZONA

JAMES P. HARVEY, President,
Cornelia-Ajo Copper Company,
Tucson, Arizona.

Dear Sir:

In accordance with your request, I have examined your holdings in the Ajo Mining District, Pima County, Arizona, the following report on which with assay sheet attached, is respectfully submitted.

PROPERTY

The Company, incorporated under the laws of Delaware, owns 27 mining claims, titles to which I find in perfect order, and has under option to purchase two claims known as the Bull Dog and Triangle.

The properties which are contiguous twenty-nine mining claims, the combined area of which forms an estate of approximately 400 acres, are located on the southern slope of the Ajo Mountains and adjoin the holdings of the New Cornelia Copper Company, and of the Ajo Consolidated Copper Company, and are reached either by auto or over ~~the~~ Tucson, Cornelia and Gila-Bend R. R., running from Gila Bend station on the main line of the Southern Pacific R. R., a distance of forty-five miles to the new town of Cornelia, the terminus.

It is but a short walk to the properties from Cornelia, this latest substantial mining town of the West, with a population rapidly nearing the 5,000 mark, having Banks, Mercantile establishments, Churches, Schools, Hotels, Water and Lighting systems, and all necessary improvements which obtain for the establishment of a mining camp of the highest order for an indefinite period.

Climatic conditions are such that work can be carried on without interruption the year round.

HISTORY

As the idea of this report is to avoid undue prolixity, short mention of this point will be made, in so far as it applies to discoverers, succeeding owners, etc., it being generally known that Ajo

was one of the first of the now famous Arizona Copper camps, supplying, as they do to-day, more copper than any other country of the world of a like area.

While the hills in and around Cornelia and Ajo almost lead one to think that a landscape artist with a penchant for green coloring has been at work, which, of course, is the green copper stain shot up from the mineral store house below through the fissures and fractures in the rock, the idea quite prevalent being that this is a low grade disseminated porphyry copper deposit similar to Miami, Utah Copper, and like properties, is rather misleading, for, while the New Cornelia Company has developed or demonstrated around sixty million (60,000,000) tons of low-grade pay ore, the values from a part of which will be obtained by an elaborate leaching plant now under construction, diamond drill holes put down by this and the Ajo Consolidated Company, together with the usual tunnelling, shaft sinking, etc., to a depth of 700 and 800 feet have demonstrated the presence at and below the water level of values astoundingly great in the sulphide zone, a fact which caused the New Cornelia Company, a corporation dominated by the Calumet & Arizona Copper Company, and the powerful Phelps, Dodge interests of Bisbee to build into the camp an up-to-date standard railway, which together with the initial plant, buildings for housing their mercantile business, bank, modern tile and cement houses for their employees, represent an outlay to date of around FIVE MILLION DOLLARS.

The efforts of the Ajo Consolidated Company, a close corporation controlled by James Phillips, Esq., and associates of New York, have been so crowned with success though drilling in the lower horizon, that they place a value of \$12,000,000 on their holdings, at which figure the same are under option at this time to the New Cornelia Company.

The latter company is now extending its railroad into the hills a short distance from its depot, a step similar to its mode of operation in Bisbee, which permits of the ore being automatically loaded on to the trains directly from the shafts or steam shovels.

It is common talk in the camp that the company is preparing to ship from 150,000 to 200,000 tons to its smelters in Douglas,

Arizona, for treatment, which would rather disprove the fact that the initial plans were built on the basis of a 1½% to 3% ore.

As far back as seventy years the old timers shipped ore running as high as 40% copper with good silver values to Swansea, Wales, for treatment.

It is a fact naturally these phenomenal values did not continue their downward way without interruption through slight faults, slips, etc., but it is also a fact that a visit to these properties to-day will disclose the knowledge that this same high-grade ore is freely shot up through the upper strata, and is discernible to the naked eye.

This fact obtains as well on the estate of the Cornelia-Ajo Copper Company, notably on the Commonwealth No. 1, Coyote, Kokomo and Malden No. 5, mention of which will be made later.

It is a fact generally accepted that the New Cornelia and Ajo Consolidated Companies have to-day proven ore up to 130,000,000 tons.

GEOLOGY OF THE DISTRICT

The accepted geological theory of the district is that advanced by Mr. Joralemon, of the Calumet & Arizona Copper Company, whose observations were published in the Transactions of the American Institute of Mining Engineers in August, 1914, from which this is taken, with all due credit to Mr. Joralemon.

The oldest rocks in the district are ancient volcanics consisting of rhyolites, breccias and tuffs, the lavas having been intruded as a localith of monzonite porphyry, which cuts through and uplifts the lavas.

This localith is exposed along its longer axis in a N. 20 W. direction for 8 or 10 miles, and has a width of from 1 to 4 miles.

The porphyry shows considerable variations. In the ore zone it is a quartz monzonite, while to the north it grades into a granitic type and at many places the porphyry is more basic, approaching a diorite.

A few basic dykes cut both the monzonite and lavas, but seem to have no influence on the mineralization.

The youngest rock in the immediate vicinity of the ore zone is a

conglomerate made up of fragments of both rhyolite and monzonite, occasional boulders being rich ore.

Later volcanics covered the country for considerable depths, but these lavas are practically absent in the Ajo, though they probably at one time covered the entire district.

STRUCTURES

As stated, the chief feature of the district is a localith of monzonite porphyry.

The ore bodies occur in the southern part of the intrusion, where the monzonite is plunging under the ancient lavas and conglomerate.

While contacts are very irregular it appears that the porphyry dips at gentle angles on the E. and S. E. and at steep angles 60% or more on the S. and S. W.

This dip on the S. and S. W. is very important, as the ground under consideration dips to the S. and S. E.

MINERALIZATION

The principal mineral is copper in the form of oxidized ores at and near the surface and chalcopyrite and bornite below water level.

The oxidized ores are chiefly malachite, azurite with cuprite, native copper and copper silicates.

Chalcocite is somewhat abundant in several of the veins where it naturally was an important constituent of the ore.

The change from oxidized ores to sulphides takes place within a few feet vertically, and is one of the unique features of these deposits.

The downward limit of oxidation corresponds closely with the present water level.

Pyrite is present in appreciable amounts with occasional high values in gold and silver.

The bulk of the ore in its surface occurrence is low grade; ore of a very high grade, however, is shot up in pipes and chimneys through the surface mass in many places, and particularly rich ore has been mined from the veins in contact with the monzonite for appreciable distances on the dips and strikes.

Some of them have been good producers of oxide ores, which, in depth, gave way to solid bornite and chalcopyrite.

While the rich ore is generally but several feet wide, the walls and surrounding ground show the mineralization for many feet in places on either side.

GENESIS OF THE ORE

On cooling, the monzonite contracted, causing innumerable fractures and fissures, some of these having evidently gone to great depth, the overlying rhyolites also being affected in a similar manner.

Shortly after the outer portions of the monzonite cooled, hot ascending solutions carrying silica, sulphur, iron and copper, circulated through the many fractures in the porphyry, the overlying lavas acting as a dam forcing the solutions to permeate the rock as well as filling the fissures.

Eventually, the minerals in solution were precipitated, first the iron and sulphur as pyrite in the outer edges of the ore zone.

Later the solutions, being rich in silica and copper, deposited their load, silicifying the monzonite and depositing the copper as chalcopyrite and bornite, not only as innumerable veinlets, but as replacements in the rock itself.

GEOLOGY ON PROPERTY UNDER CONSIDERATION

The question of geology on this property is not a matter of moment, as it is identical with that of its neighbors, the New Cornelia and Ajo Consolidated, being the extensions thereof.

Arkansas Hill, a small hill on the edge of the town, is partly covered on its eastern slope and towards its apex by the Butte Claim of the New Cornelia Company.

Extensive diamond drilling at or very near its eastern base has demonstrated the sulphide values at shallow depth.

This same obtains on the Quien Sabe Claim, its neighbor to the north, which was the main objective point in the workings of the long ago and from which ore was taken of such phenomenal richness as to stand the excessive cost of the long wagon haul, railroad and water transportation for treatment.

To be absolutely frank, I must state, that to me it is as yet simply an exceptionally attractive prospect, nevertheless I believe it a big mine in the making.

I will, however, call your attention to these facts, first your holdings join two properties which have demonstrated positive tonnage of 130,000,000 tons of ore oxide and sulphide, next the vein which has produced the highest grade ore on the holdings of the New Cornelia and Ajo Consolidated ground can be traced through your acreage, next that the Quien Sabe, Southern and Cora claims of these companies have produced or are in position to produce the larger proportionate amount of the above great tonnage; next that drill holes attended by most satisfactory results have been put down within a few hundred feet of your ground; next, that in considering parallel veins in these mines, your Commonwealth No. 1 and 2 claims take you across the ore measures of the New Cornelia Company for a distance of 1,200 feet from the side lines of the Bull Dog and Commonwealth No. 1, and it is hardly possible that these companies figure their ore to quit simply because the adjoining claims are in hands other than theirs. Further, while the amount of work done has not been large, it has nevertheless produced ore of surpassing richness in several of the many openings, and I believe that were it good mining a small tonnage of high-grade ore could be gouged out and shipped at a reasonable cost and profit.

You, however, have no time for that, and what you need is not engineers' reports, but sane, systematic, hard-headed development work, situated as you are in a modern camp connected with the outside world by a standard gauge railroad, the tracks of which run across your acreage, facilitating the handling of your ores, and supplies a country presenting no natural drawbacks, labor plentiful, water easily developed and within easy reach of California timber tracts and oil fields.

I would recommend you to sink a shaft at the most favorable point, which I consider near the end line of the Bull Dog and Commonwealth No. 1.

You could then run a crosscut tunnel to explore Commonwealth 2 and 3, and in the opposite direction to prospect in the same

Malden No. 1 claims, but in the prosecution of the work silver dropped and copper was not very attractive at 13 cents forty-five miles from the railroad.

Kokomo has several open cuts, the largest being 40 feet long, 6 feet wide and 15 feet deep, and a shaft 30 feet deep.

Samples were taken from the cuts and shafts and from rock on the dump.

From the Malden No. 1, samples are from a shaft 40 feet deep, cuts and dumps.

Malden No. 5 has a fine showing as a prospect, the ore having shoved its way to the surface through the overburden.

Some of this ore is particularly rich, and it is well to note that the ore seen on the Kokomo, Malden No. 1 and 5 is all pitching or dipping towards the Commonwealth, Coyote and Bull Dog claims.

Some high-grade copper silver ore has been picked up on the Flatiron ground lying against the Wolverine claims of the Ajo Consolidated holdings.

CONCLUSION

I beg to state, that while I have never done any work in this camp, my acquaintance with it goes back over a number of years, and I was the first one, I think, to bring it to the attention of the late Col. L. W. Powell, then general manager of the Calumet & Arizona interests in the Southwest.

This being before the metallurgists had made such strides in the treatment of the low-grade porphyry coppers, the absence of proper transportation facilities making the known streaks of rich ore unattractive to a large corporation.

It is in keeping with the vagaries of mining, that in the past three years the New Cornelia Company has been bringing this camp into its own.

It is not the intention of the writer to impress your company with the fact that its property is in shape to begin the production of shipping ore in any quantities as this ground has been held for years by men who have had to work elsewhere to obtain money with which to do the annual work necessary for the preservation of their titles under the U. S. mining laws.

The main blowouts occur about on the line between the Quien Sabe and the Butte.

What is considered the main vein can be easily traced from the principal workings of the Ajo Consolidated, on the southern claim through the Butte and Quien Sabe of the New Cornelia Company, into the Mountain Gulch and Bull Dog claims of the Cornelia-Ajo Copper Company.

The vein outcrops strongly on the eastern end of the Bull Dog claim, dips under in a shallow wash and appears again on your Commonwealth No. 1, on which a tunnel recently run has intersected the vein, but at the time of my visit had not extended far enough to determine its width.

The vein is again cut some distance from the tunnel by the so-called Mitchell shaft to a depth of 40 feet, showing same to be persistent and strong with both low and high grade ores.

On the Coyote claim a shaft 35 feet deep has been sunk, the vein showing varying thickness and values.

An open cut or trench on this claim looks particularly attractive to me and while the shallow depth gained was of no real use and the values obtained low and general appearance of the vein matter was such as to cause me to visit it a second time, due to the fact probably that the vein matter and surrounding rock was decomposed and softer, suggesting a most likely spot for an ore body.

This same condition was also noticed on the Automobile claim adjacent to the Commonwealth No. 1, Coyote, Kokomo and Bull Dog but here also the amount of work done to date was insufficient to show any amount of ore at this point, but near this point is a shallow shaft from which I took a sample.

The Kokomo to the south has been given considerable attention in the way of work, due to the fact that some rare silver copper values were obtained here.

Thomas Childes, Esq., cattle man and speculator, who has made a fortune from the sale of claims in the camp and who still has valuable holdings adjoining your claims to the southwest, is authority for the statement that some of the richest ore ever produced in the camp was mined at shallow depth on the Kokomo and

manner the Automobile, Coyote, Kokomo, and Malden Claims, sinking and upraising at the same time for another shaft on this acreage to connect with No. 1 shaft, and I make the assertion that it is my firm belief that in not more than 100 feet in either shaft, the results will be most gratifying.

Yours respectfully,

Signed,

William M. Macdonald

February 17, 1917.

MC-67

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date: April 20, 1942

1. Mine: Cornelia Group
2. Location: 3 miles from New Cornelia workings.
3. Mining District & County: Ajo Dist.,
Pima County
4. Former name
5. Owner: H. Greenway Albert
6. Address (Owner) P.O. Box 246,
Tombstone, Arizona
7. Operator
8. Address (Operator)
9. President, Owning Co.
- 9A. President, Operating Co.
10. Gen. Mgr.
14. Principal Minerals: Copper
11. Mine Supt.
15. Production Rate
12. Mill Supt.
16. Mill - Type & Cap.
13. Men Employed
17. Power - Amt. & Type
18. Operations - Present

19. Operations - Planned: Diamond drilling necessary to supplement geophysical survey.

20. Number Claims, Title, etc.: 39

21. Description - Topography & Geography: Similar to that of New Cornelia now owned by Phelps Dodge.

22. Mine Workings: Amt. & Condition:

Geophysic Report
1300 ft. Diamond Drilling
3 converging dykes
#1 - approximately 175 ft. in width
#2 - approximately 600 ft. in width
#3 - not trenched.

(over)

23. Geology & Mineralization: Reports and maps in my files at Tombstone.
24. Ore - Positive & Probable, Ore Dumps, Tailings: Large potential body of probable ore.
- 24A. Dimensions and Value of Ore body: Mineralized zone appears to be larger than that covered by New Cornelia pit at Ajo.
25. Mine, Mill Equipment & Flow-Sheet: None
26. Road Conditions, Route: Can drive car practically over entire property. Good road to property.
27. Water Supply: No water developed on property. Water available for diamond drilling close by however.
28. Brief History: Property was taken over by the Ajo Extension Copper Co. in 1931 but abandoned because of a drastic drop in price in copper. Afterwards a geophysics survey was made which seemed to warrant diamond drilling - 1300 ft. of diamond drilling was done. This, however, was not sufficient to block out ore.
29. Special Problems, Reports Filed: Require small amount of capital to supplement present work. From then on sufficient diamond drilling to block out ore for a large operation.
30. Remarks.
31. If property for sale - Price, terms and address to negotiate: Will consider any reasonable proposition that will lead to property's further development and operation.

Signed: H. Greenway Albert
P. O. Box 246
Tombstone, Arizona

mc-67

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date 4/20/42

- 1. Mine *Cornelia Group*
- 3. Mining District & County *Ajo Dist, Pima Co.*
- 4. Former name
- 5. Owner *H. Greenway Albert.* ✓
- 7. Operator
- 9. President, Owning Co.
- 10. Gen. Mgr.
- 11. Mine Supt.
- 12. Mill Supt.
- 13. Men Employed
- 18. Operations: Present

2. Location *3 MILES FROM
NEW CORNELIA WORKINGS.*

6. Address (Owner) *P.O. Box 246.
Tombstone, Ariz.*

8. Address (Operator)

9A. President, Operating Co.

14. Principal Minerals *Copper* ✓

15. Production Rate

16. Mill: Type & Cap.

17. Power: Amt. & Type

19. Operations: Planned
*Diamond Drilling necessary to supplement
Geophysic Survey -*

20. Number Claims, Title, etc. *39*

21. Description: Topography & Geography
*Similar to that of New Cornelia
now owned by Phelps Dodge*

22. Mine Workings: Amt. & Condition
*Geophysic Report
1306 ft Diamond Drilling
3 Converging Dykes
#1. Approximately 175 ft in width
#2. " " 600 ft " "
#3. Not trenched*

(over)

23. Geology & Mineralization

Reports and maps in my files at Tombstone.

24. Ore: Positive & Probable, Ore Dumps, Tailings

Large Potential body of Probable ore

24A. Dimensions and Value of Ore body

Mineralized zone appears to be larger than that covered by New Cornelia Pit at Esjo.

25. Mine, Mill Equipment & Flow-Sheet

None

26. Road Conditions, Route

Can drive car practically over entire property Good Road to Property.

27. Water Supply

No water developed on property Water available for Diamond Drilling close by however.

28. Brief History

Property was taken over by the Rio Extension Copper Co. in 1931 but abandoned because of a drastic drop in price in Copper. Afterwards a Geophysical survey was made which seemed to warrant Diamond Drilling - 1300 ft of Diamond Drilling was done. This however was not sufficient to block out ore.

29. Special Problems, Reports Filed

Require small amount of Capital to supplement present work From then on sufficient Diamond Drilling to Block out ore for a large operation.

30. Remarks

31. If property for sale: Price, terms and address to negotiate.

Will consider any reasonable proposition that will lead to property's further development and operation.

32. Signature

N. Gurney Albert

33. Use additional sheets if necessary.

see

Copper Giant file

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Cornelia Group

Date April 25th 1947

1. Mine: 65 Castagnas Mining Claims.
2. Location: Sec. _____ Twp. _____ Range. _____ Nearest Town. Ajo, Ariz.
Distance 3 miles Direction south Road Condition good (but not paved)
3. Mining District & County: Ajo Mining District, Pima County
4. Former Name of Mine: 40 Claims in Cornelia group, 25 claims in Copper Giant group -
5. Owner: N. Cimarron, Ajo, Ariz. 40 Claims; 25 claims held under option agreement.
Address: P.O. Box 246, Tombstone, Ariz. Phone 2466
6. Operator: _____
Address: _____
7. Principal Minerals: Cu, with small values in Au. & Ag.
8. Number of Claims: 65 Lode Placer _____
Patented _____ Unpatented
9. Type of Surrounding Terrain: rolling, sparse desert growth -

10. Geology & Mineralization: Geological conditions favorable or occurs in manganese and agglomerate mineralization to that formerly found at New Cornelia, P.D. operation. Carbonate ore.

11. Dimension & Value of Ore Body: Two known mineralized zones. One 150 feet wide. One 600 feet wide. About 100 open pits and shallow shafts on property; all in ore. Assay sheets from samples of these pits and dumps attached.

12. Ore "Blocked Out" or "In Sight":

*no ore reached out
on tonnage in sight not estimated.*

MINE OWNER'S REPORT

Ore Probable:

*Large potential ore deposits
indicated by surface showings and
geophysics survey. extent can be determined
only by drilling program.*

13. Mine Workings—Amount and Condition:

Surface pits & shallow shafts.

No.	Feet	Condition
Shafts.....		
Raises.....		
Tunnels.....		
Crosscuts.....		
Stopes.....		

14. Water Supply:

15. Brief History:

See owner

16. Signature:

A. Murray Albert

17. If Property for Sale, List Approximate Price and Terms:

See owner.

MC-67

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

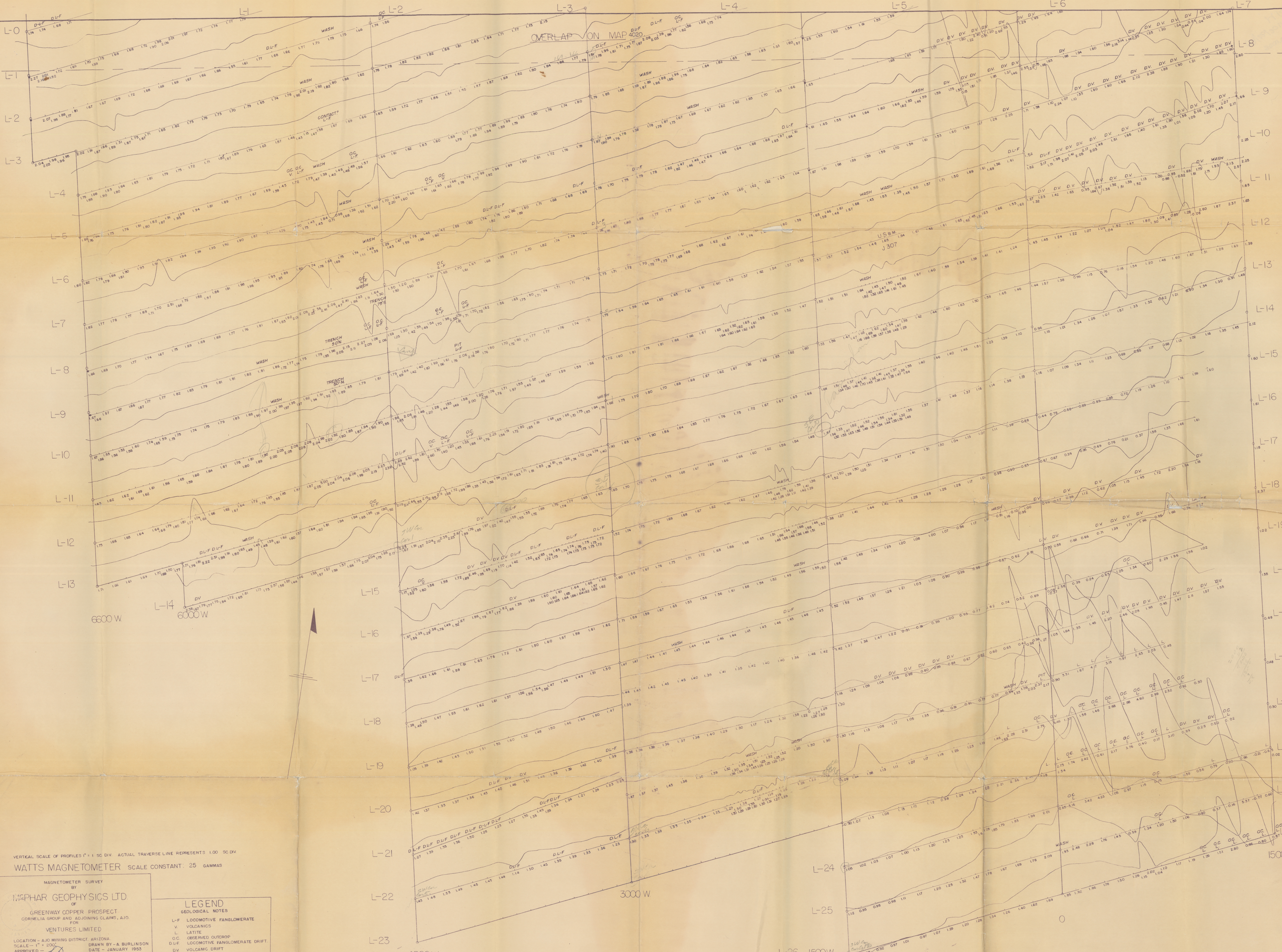
Date: April 20, 1942

1. Mine: Cornelia Group
2. Location: 3 miles from New Cornelia workings.
3. Mining District & County: Ajo Dist.,
Pima County
4. Former name
5. Owner: H. Greenway Albert
6. Address (Owner) P.O. Box 246,
Tombstone, Arizona
7. Operator
8. Address (Operator)
9. President, Owing Co.
- 9A. President, Operating Co.
10. Gen. Mgr.
14. Principal Minerals: Copper
11. Mine Supt.
15. Production Rate
12. Mill Supt.
16. Mill - Type & Cap.
13. Men Employed
17. Power - Amt. & Type
18. Operations - Present
19. Operations - Planned: Diamond drilling necessary to supplement geophysical survey.
20. Number Claims, Title, etc.: 39
21. Description - Topography & Geography: Similar to that of New Cornelia now owned by Phelps Dodge.
22. Mine Workings: Amt. & Condition:
Geophysic Report
1300 ft. Diamond Drilling
3 converging dykes
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- 24A. Dimensions and Value of Ore body: Mineralized zone appears to be larger than that covered by New Cornelia pit at Ajo.
25. Mine, Mill Equipment & Flow-Sheet: None
26. Road Conditions, Route: Can drive car practically over entire property. Good road to property.
27. Water Supply: No water developed on property. Water available for diamond drilling close by however.
28. Brief History: Property was taken over by the Ajo Extension Copper Co. in 1931 but abandoned because of a drastic drop in price in copper. Afterwards a geophysics survey was made which seemed to warrant diamond drilling - 1300 ft. of diamond drilling was done. This, however, was not sufficient to block out ore.
29. Special Problems, Reports Filed: Require small amount of capital to supplement present work. From then on sufficient diamond drilling to block out ore for a large operation.
30. Remarks.
31. If property for sale - Price, terms and address to negotiate: Will consider any reasonable proposition that will lead to property's further development and operation.

Signed: H. Greenway Albert
 P. O. Box 246
 Tombstone, Arizona



VERTICAL SCALE OF PROFILES 1" = 100 DIV. ACTUAL TRAVERSE LINE REPRESENTS 1.00 SC DIV
 WATTS MAGNETOMETER SCALE CONSTANT: 25 GAMMAS

MAGNETOMETER SURVEY BY
MARPHAR GEOPHYSICS LTD.
 OF
 GREENWAY COPPER PROSPECT
 CORNELIA GROUP AND ADJOINING CLAIMS, AJO
 FOR
 VENTURES LIMITED
 LOCATION - AJO MINING DISTRICT, ARIZONA.
 SCALE - 1" = 200'
 APPROVED - *[Signature]* DRAWN BY - A. BURLINSON
 DATE - JANUARY 1953
 DATE - *[Signature]* MAP NO. - 4019

LEGEND
 GEOLOGICAL NOTES

- L-F LOCOMOTIVE PANLOMERATE
- V VOLCANICS
- L LATITE
- OC OBSERVED OUTCROP
- DVF LOCOMOTIVE PANLOMERATE DRIFT
- DV VOLCANIC DRIFT