



CONTACT INFORMATION
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NOV 23 1964

THE ANACONDA COMPANY

151 S. Tucson Blvd. — Room 221

TUCSON, ARIZONA



*12/15/64
Barlow
will revise*

Geological Department
Southwest Office

November 20, 1964

Mr. Roland B. Mulchay, Asst. Chief Geologist
The Anaconda Company
809 Kearns Building
Salt Lake City, Utah

Dear Mr. Mulchay:

Attached are summary calculations of tonnage and grades of mineralized areas disclosed to date by our drilling program in the East Helvetia Area, Pima County, Arizona.

A cut-off grade of 0.40% total copper has been used in most cases. A conversion factor of 12 cubic feet per ton is assumed in deriving tonnages. This figure is used pending actual calculation of an average specific gravity for the copper-bearing rocks in the area.

As our drilling has progressed, two well-defined mineralized limestone formations have been disclosed. One is herein referred to as the lower mineralized limestone, and consists generally of garnetized-silicated limestone with abundant granular quartz seams and pods. Recrystallized limestone and wollastonite areas and bands are not uncommon in this unit. The second mineralized formation is a silicated, crystalline limestone intersected by numerous thin magnetite-serpentine stringers containing erratic sulfide minerals. These two limestones are separated by a section containing generally unmineralized siltstone and silicated silty limestones. Minor garnetized and silicated limestone beds are locally interbedded in this intervening silty section which ranges in true thickness between approximately 250 to 500 feet. Separate calculations have been made for these two mineralized formations.

Projections from the drill holes have been made along the general dip of the mineralized beds to a maximum distance of 200 feet from the respective drill hole in east-west directions. North-south projections are restricted to one-half the distance to the nearest hole, or 200 feet where there are no drill holes within a reasonable distance. Two hundred feet is a suitable projection to use for calculations involving this 400-foot center grid pattern. The upper limit for the projection of mineral zones is often the projected Cretaceous-Paleozoic contact, which generally dips from 10° to 40° to the east.

November 20, 1964

The Main Area is considered to extend from DDH A-803 on the north to DDH A-819 on the south, and includes all tonnages calculated except those intersected by DDH A-807, DDH A-811, and the lower portion of DDH A-801. Separate calculations are listed for these three blocks.

The resulting tonnages represent mineralized areas for the most part within 1600 feet of the surface, or above the 3700-foot elevation. Exceptions include the sulfide mineralization intersected below 2000 feet in DDH A-801, and the deep oxide mineralization encountered to 1900 feet in G-33.

Incomplete molybdenum assays have been received to date for some of the drill holes, and averages will be sent when compiled. The molybdenum content of 94% of the sulfide tonnage listed for the Main Area-Upper Mineralized Limestone averages 0.027% Mo.

Additional copper sulfide mineralization is being encountered in the lower mineralized limestone unit in DDH A-827, and approximately 300 feet of well mineralized upper mineralized limestone has been exposed to date in DDH A-828. Tonnages and grades for these mineralized sections are not included in these calculations.

Yours very truly,



G. A. Barber

GAB:je

Encl.

EAST HELVETIA AREA

SULFIDE

<u>Main Area</u>	<u>Tons</u>	<u>% Total Cu</u>	<u>% Oxide Cu</u>	<u>% Mo</u>
Lower Mineralized Limestone	42,918,000	0.79	- -	pending
Upper Mineralized Limestone	<u>53,228,400</u>	<u>0.91</u>	- -	pending
Total Sulfide - Main Area	96,146,400	0.86		
<u>Isolated Blocks</u>				
DDH A-807 - above Upper Min. Ls.	1,416,700	0.89	- -	0.036
DDH A-811 - Upper Min. Ls.	5,715,000	0.38	- -	pending
DDH A-801 - below Lower Min. Ls.	<u>2,262,000</u>	<u>1.09</u>	- -	0.033
Total Sulfide - Isolated Blocks	9,393,700	0.63		
Total Sulfide- Main Area and Blocks	105,540,100	0.84		

OXIDE

Main Area

Lower Mineralized Limestone	33,880,000	0.62	pending	- -
Upper Mineralized Limestone	<u>1,260,000</u>	<u>0.92</u>	<u>0.42</u>	- -
Total Oxide - Main Area	35,140,000	0.63	±0.38	

COPY

NOV 23 1964

THE ANACONDA COMPANY

151 South Tucson Blvd. — Room 221

Tucson, Arizona

Geological Department
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Mr. Roland B. Mulchay

- 2 -

November 20, 1964

The Main Area is considered to extend from DDH A-803 on the north to DDH A-819 on the south, and includes all tonnages calculated except those intersected by DDH A-807, DDH A-811, and the lower portion of DDH A-801. Separate calculations are listed for these three blocks.

The resulting tonnages represent mineralized areas for the most part within 1600 feet of the surface, or above the 3700-foot elevation. Exceptions include the sulfide mineralization intersected below 2000 feet in DDH A-801, and the deep oxide mineralization encountered to 1900 feet in G-33.

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Additional copper sulfide mineralization is being encountered in the lower mineralized limestone unit in DDH A-827, and approximately 300 feet of well mineralized upper mineralized limestone has been exposed to date in DDH A-828. Tonnages and grades for these mineralized sections are not included in these calculations.

Yours very truly,

C. A. Barber
C. A. Barber

GAB:je

Encl.

EAST HELVETIA AREA

SULFIDE

<u>Main Area</u>	<u>Tons</u>	<u>% Total Cu</u>	<u>% Oxide Cu</u>	<u>% Mo</u>
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Geological Department
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November 20, 1964

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Salt Lake City, Utah

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As our drilling has progressed, two well-defined mineralized limestone formations have been disclosed. One is herein referred to as the lower mineralized limestone, and consists generally of garnetized-silicated limestone with abundant granular quartz seams and pods. Recrystallized limestone and wollastonite areas and bands are not uncommon in this unit. The second mineralized formation is a silicated, crystalline limestone intersected by numerous thin magnetite-serpentine stringers containing erratic sulfide minerals. These two limestones are separated by a section containing generally unmineralized siltstone and silicated silty limestones. Minor garnetized and silicated limestone beds are locally interbedded in this intervening silty section which ranges in true thickness between approximately 250 to 500 feet. Separate calculations have been made for these two mineralized formations.

Projections from the drill holes have been made along the general dip of the mineralized beds to a maximum distance of 200 feet from the respective drill hole in east-west directions. North-south projections are restricted to one-half the distance to the nearest hole, or 200 feet where there are no drill holes within a reasonable distance. Two hundred feet is a suitable projection to use for calculations involving this 400-foot center grid pattern. The upper limit for the projection of mineral zones is often the projected Cretaceous-Paleozoic contact, which generally dips from 10° to 40° to the east.

Mr. Roland B. Mulchay

- 2 -

November 20, 1964

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The resulting tonnages represent mineralized areas for the most part within 1600 feet of the surface, or above the 3700-foot elevation. Exceptions include the sulfide mineralization intersected below 2000 feet in DDH A-801, and the deep oxide mineralization encountered to 1900 feet in G-33.

Incomplete molybdenum assays have been received to date for some of the drill holes, and averages will be sent when compiled. The molybdenum content of 94% of the sulfide tonnage listed for the Main Area-Upper Mineralized Limestone averages 0.027% Mo.

Additional copper sulfide mineralization is being encountered in the lower mineralized limestone unit in DDH A-827, and approximately 360 feet of well mineralized upper mineralized limestone has been exposed to date in DDH A-828. Tonnages and grades for these mineralized sections are not included in these calculations.

Yours very truly,

G.A. Barber

G. A. Barber

GAB:je

Encl.

EAST HELVETIA AREA

SULFIDE

<u>Main Area</u>	<u>Tons</u>	<u>% Total Cu</u>	<u>% Oxide Cu</u>	<u>% Mo</u>
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Total Sulfide - Isolated Blocks	9,393,700	0.63		
Total Sulfide- Main Area and Blocks	105,540,100	0.84		

OXIDE

<u>Main Area</u>				
Lower Mineralized Limestone	33,880,000	0.62	pending	- -
Upper Mineralized Limestone	<u>1,260,000</u>	<u>0.92</u>	<u>0.42</u>	- -
Total Oxide - Main Area	35,140,000	0.63	±0.38	

Extra
JAN 7 1965 545-40
COPY

THE ANACONDA COMPANY

1/11/65 Copy to V.D. Perry

151 South Tucson Blvd. — Room 221

Tucson, Arizona

Geological Department
Southwestern Office

January 5, 1965

Mr. Roland B. Mulchay, Asst. Chief Geologist
The Anaconda Company
809 Kearns Building
Salt Lake City, Utah

Dear Mr. Mulchay:

Attached are summary calculations of tonnages and grades of mineralized areas disclosed to date by our drilling program in the East Helvetia Area, Pima County, Arizona.

A cut-off grade of 0.40% total copper has been used in most cases. Exceptions to this procedure have been made when the molybdenum content of particular drill hole intercepts is sufficient to include such sections in adjacent mineralized areas.

A conversion factor of 12 cubic feet per ton is assumed in deriving at tonnages. This figure is used pending actual calculation of an average specific gravity for the copper-bearing rocks in the area.

Projections of mineralized zones from the drill holes have been made in the manner which you requested. East-west projections are horizontal for a maximum distance of 200 feet beyond the drill hole. North-south projections are restricted to one-half the distance to the nearest hole, or 200 feet in areas where drilling is incomplete on the 400-foot grid pattern.

The only geologic controls used in these figures are the Cretaceous-Paleozoic contact for the upper limit of mineralized sections in a few drill holes, and the general north-south trending fault zone which terminates the oxidized material on the west in the north portion of the drilled area.

The Main Mineralized Area is considered to extend from DDH A-821 on the southeast to DDH A-803 on the north. The oxide portion of this area includes the area between DDH A-803 and DDH A-808.

Mr. Roland B. Mulchay

- 2 -

January 5, 1965

As noted on the attached tabulation, most of the tonnage calculated is above the 3600-foot elevation, which varies between approximately 1540 and 1670 feet below surface in the area.

In deriving at tonnage and grade for possible mineralized masses in the undrilled areas within the Main Mineralized Area, arbitrary direct projections between existing drill holes have been made. Grades for the resulting tonnages represent averages of copper-bearing intercepts in holes around individual untested blocks. Subsequent drilling within this area, such as DDH A-831, will serve as a basis for revising these figures.

Yours very truly,

G. A. Barber

G. A. Barber

GAB:je

Encl.

EAST HELVETIA AREA

	<u>Tons</u>	<u>% Total Cu</u>	<u>% Oxide Cu</u>	<u>% Mo</u>
<u>Main Mineralized Area - Above 3600-foot elevation</u>				
<u>Sulfide</u>				
Indicated by drilling to date	80,112,600	0.81	- -	0.021
Isolated blocks adjacent to Main Area	10,005,800	0.88	- -	±0.016
Undrilled area within Main Area	<u>78,173,800</u>	<u>0.76</u>	<u>- -</u>	<u>0.019</u>
Totals	168,292,200	0.79	- -	0.020
<u>Oxide</u>				
Indicated by drilling to date	27,459,600	0.68	0.39	- -
Isolated blocks adjacent to Main Area	<u>4,828,700</u>	<u>0.77</u>	<u>0.58</u>	<u>- -</u>
Totals	32,288,300	0.70	0.42	- -
<u>Isolated Blocks</u>				
<u>Sulfide</u>				
Beyond Main Mineralized Area	7,573,400	0.51	- -	0.024
Below 3600-foot elevation	<u>7,619,200</u>	<u>0.93</u>	<u>- -</u>	<u>0.032</u>
Totals	15,192,600	0.72	- -	0.028

COPY

extra

THE ANACONDA COMPANY

809 KEARNS BUILDING

SALT LAKE CITY 1, UTAH 84101

ASST. CHIEF GEOLOGIST

January 11, 1965

Mr. V. D. Perry
Vice President and Chief Geologist
The Anaconda Company
25 Broadway - Suite 1850
New York, N.Y. 10004

Dear Mr. Perry:

Enclosed is a copy of an estimate by Mr. G. A. Barber of ore indicated by drilling to date in the East Helvetia area. These substantial tonnages are impressive, and after further drilling it is probable that another large mining operation can ultimately be established on this division of the Banner holdings.

I am planning to leave for Tucson on January 15th, and to be back in Salt Lake City on January 28th. During my visit to Tucson I will review the East Helvetia calculation with Mr. Barber and Mr. Kelly.

With best regards,

Yours very truly,

Roland B. Mulchay

Roland B. Mulchay

REM:S
Encl.

E. HELVETIA

3/16/64

SULPHIDE

DDH 806

$$802 - 1349' = 547' - 0.88\% \text{ Cu} - 0.029 \text{ Mo.}$$

$$\frac{45.5}{547} \times 400 \times 400 = 7,280,000 \text{ T}$$

$$\text{C} \\ 0.88 \text{ Cu} - 0.029 \text{ Mo.}$$

$$\begin{array}{r} 18200.0 \\ 400 \\ \hline 7,280,000 \end{array}$$

E. HELVETIA

MIXED OXIDE - SULPHIDE

SECT. 306,000

DDH G36

$$\begin{array}{rcl} 585-1110 & = & 525' - 0.82\% - 0.75\% \text{ ox} \\ 1110-1257 & = & 147' - 1.00\% - 0.13\% \\ \hline 801 & & 672' - 0.86\% - 0.62\% \\ 802-1212 & = & 410' - 0.70\% - 0.36\% \\ \hline 1082 & & 541' - 0.80\% - 0.52\% \end{array}$$

$$\frac{45}{541} \times 450 \times 250$$

$$= 5,062,500$$

SECT. 306,200

(G-33) 592-1299

$$\begin{array}{rcl} 707 & 0.65 & 0.43 \pm \\ \hline 707 \times 200 \times 300 & & \end{array}$$

$$= 3,535,000 \text{ T.}$$

SECT. 305,700

DDH 802

$$671-1284 \quad 613 \quad 0.92 \quad 0.57$$

$$\frac{51}{613} \times 350 \times 350$$

$$= 6,247,500 \text{ T.}$$

$$14,845,000$$

@

$$0.81\% \text{ T} - 0.52\% \text{ ox.}$$

NORTHEAST AREA

DDH	648	811 - 1481 ft. =	670 ft	1.53% Cu -	0.035% Mo
		1787 - 2316	529	0.63	0.135

DDH	665	824 - 1585	761 ft	No assays
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Assays now available

828 - 1157	329	0.73	0.072
1266 - 1383	117	1.45	0.030

Lower

Southeast Area

SECTION	DPH	623	1470-1747	277f	$\frac{TH\ COUNTRIES}{1.21}$	$\frac{7.0X}{C.I.}$	$\frac{7.0H_0}{0.068}$
	1200SE	DDH	623	1470-1747	277f	1.21	0.068
			1848-2366	513	0.52		0.100
	635		1251-1661	410	1.17		0.169
			2011-2288	277	0.50		0.021
	657		1346-1718	372	0.70		0.229
1600SE	616		1478-1995	517	0.98		0.058
	624		1200-1368	168	0.98		0.015
	637		1878-2135	257	1.15		0.099
2000SE	608		2077-3095	1018	0.78		0.076
			3095-3420 (not used)	325	0.66		0.108
	618		2065-2790	725	0.85		0.004
	629		1813-2954	1141	0.81		0.037
2400SE	619		1469-2178	709	1.49		0.044
	630		1869-2281	412	1.06		0.061
	633		1507-1621 (not used)	114	1.78		0.022
			1767-2280	513	0.62		0.012
2600SE	647		1546-1836	290	1.25		0.160

