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James Doyle Sell Mining Collection

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A-16

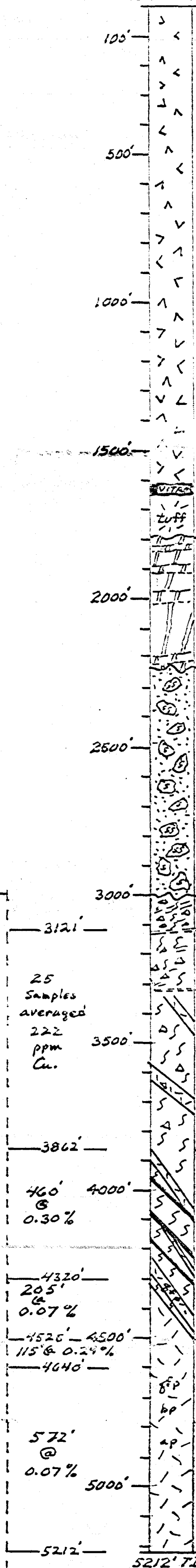
Collar Elev. 4781'

ASARCO DRILL HOLE-16

Rotary: Surface-1020', 6 1/4" RE
Harness Drilling Co.
Failing 1500 DAX Holmaster
June 23 - July 16, 1987

Core: 1020-5212'
CBC Drilling Co.
1020-1380' NC. 6/14-6/23/88
1380-2446' NC. 8/21-9/20/89
2446-3000' NC. } 11/1/90-
3000-4545' NX } 3/28/91.
4545-5212' BX }

DALCITE



Earlier Volcanics

Andesitic-basalt Flows
of 12' to 194' thick, w/ rubble or
oxidized tops.

Whitetail Conglomerate

2231'-2320'. Red brown to brown grit. 80% clast
60% schist, 40% pctzite, tr db.
2320'-2430'. Green-brown with red-brown grit
70% clast. 90% schist, 5% pctzite, 5% db.
2430'-2760'. Red-brown to green brown to green
grit. 80% clast. 50% schist, 15% pctzite
35% db.
2760'-3010'. Green grey to red brown & brown
grit. 80% clast. 65% schist, 15% pctzite
10% db, 5% Pinal Schist & pctzite,
5% black porphyry.

SLIDE BLOCK. unaltered Pinal Schist bx, brick red
Basal Fault, subhorizontal, gouge-bx, 3115'-3121'.
altered Pinal Schist, slide block, trace copper
sub-horizontal fault at base (3332'-3334')

PINAL SCHIST.

Oxidized leached capping, cut by minor gtz
veins, bx, & flts, with aplite & feldspar
porphyry dikes. Quartz-sericite altered,
some biotite, adularia, & specularite.
brecciated through-out.

PINAL SCHIST

Schist cut by sills & dikes of quartz
feldspar porphyry, black porphyry, &
aplitic porphyry @ 45°. all cut by gtz
veining & bx zones with gtz-sericite and
cc-bndiss. & seams.

QUARTZ FELDSPAR PORPHYRY

K-spar and silicification, gtz veins,
shear zones, bx zones @ 45°, with
variable cc-bn-cp, grading downward
into cp-pyrite.

T1S, R13E

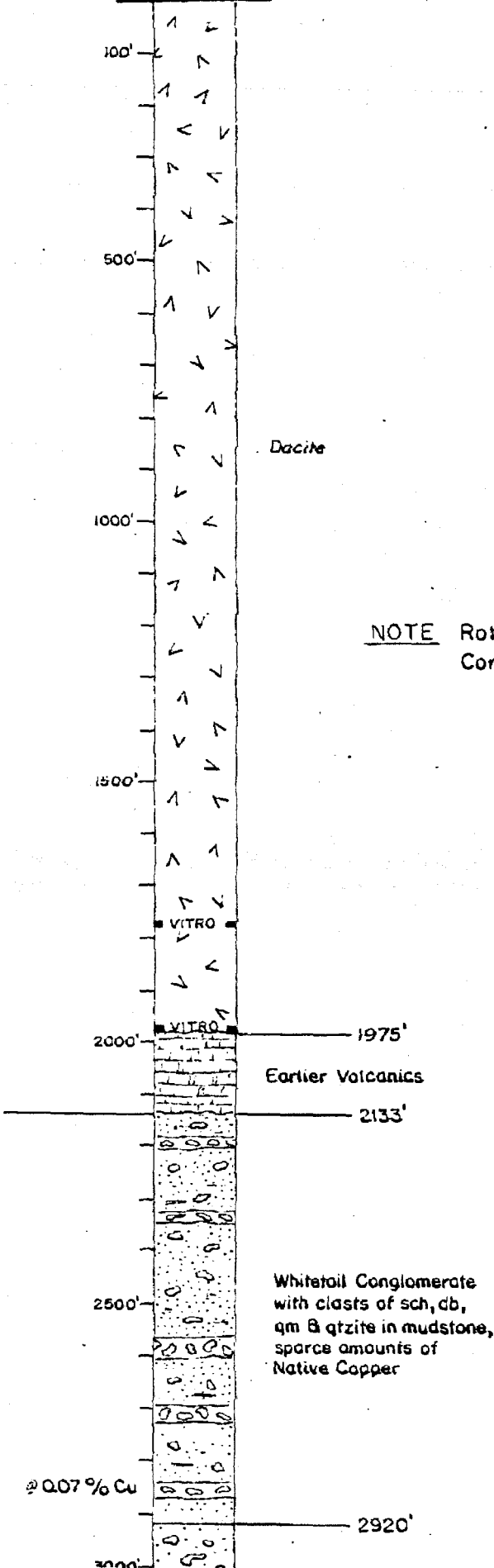
SW 1/4 SW 1/4 SW 1/4 of Sec 23

GRAPHIC LOG & ASSAY RESULTS

DRILL HOLE A-16
SUPERIOR EAST PROJECT
Pinal County, Arizona
SCALE: 1" = 300'

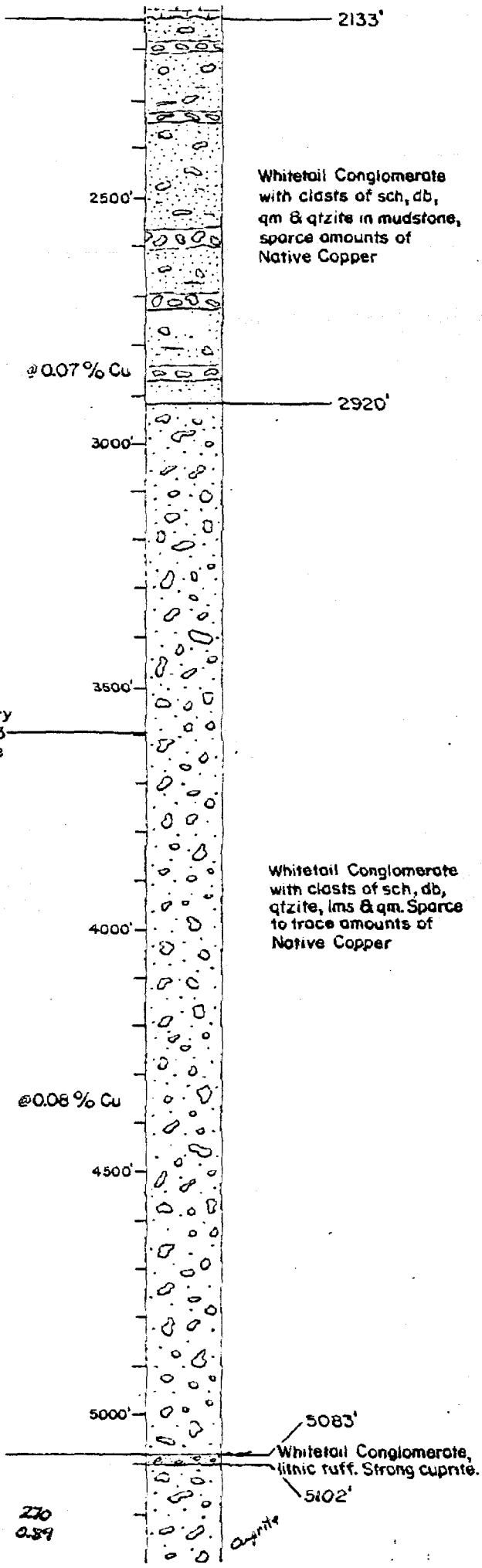
A-4

Collar Elev. 4090

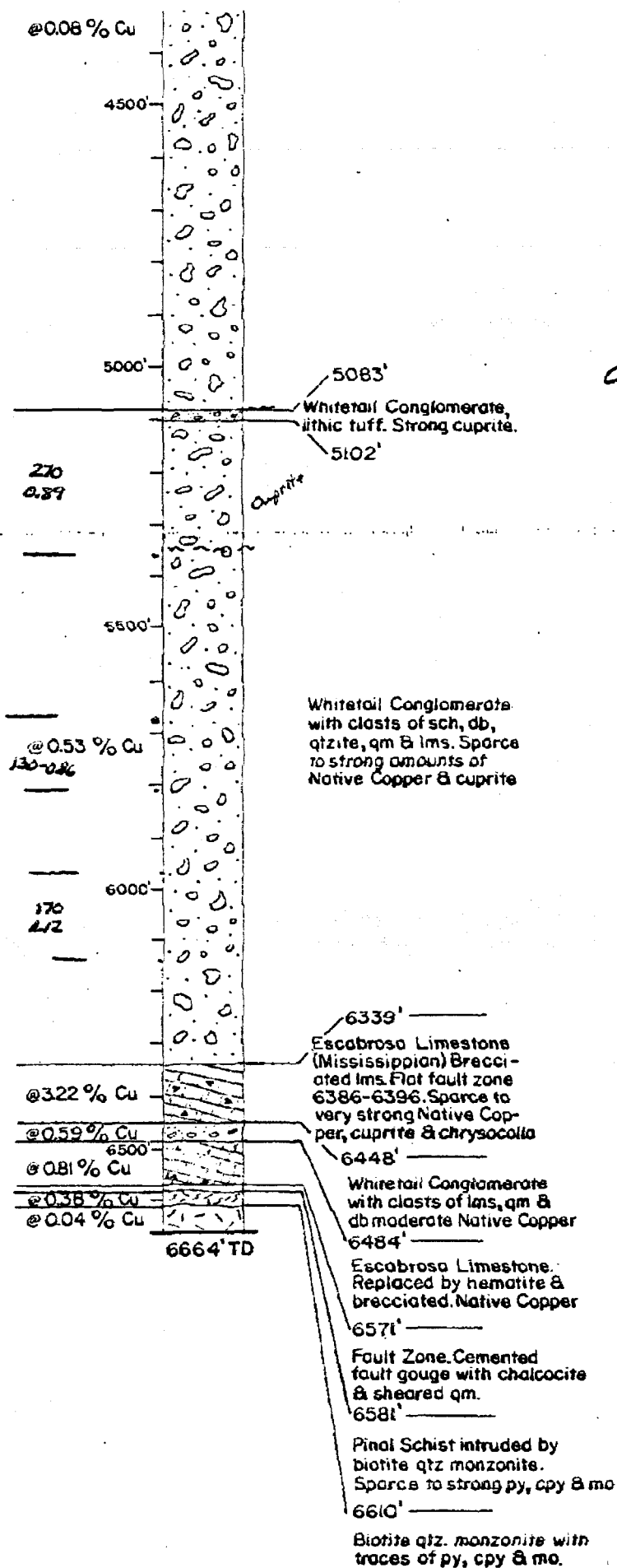


NOTE Rotary : Surface - 3593' (May 1 - July 21, 1971)
Core : 3593' - 6664' (August 17 - November 4, 1971)

A-4



Cuprite 5083-5150



Cuprite 5083-5150

NOTE:

5080-6540 = 1460 ft. @ 0.76 % Cu
 5680-6540 = 860 ft. @ 0.98 % Cu

T 1 S, R 13 E
 SW 1/4 SW 1/4 SW 1/4 Sec. 27

GRAPHIC LOG & ASSAY RESULTS
 of
DRILL HOLE A-4
SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE: 1" = 300'

A-3

Collar Elev. 4125'

ASARCO DRILL HOLE A-3

ROTARY:

- a) Harness Drilling Company
Failing 1500 DMX w/2 WEJ compressors
May 22-June 1, 1973 (8" hole)
surface-1445'
- b) Copper State Exploration Company
Failing DMX Holemaster, rotary mud
May 10-19, 1974 (5 1/8" hole)
1445'-1949'

CORE:

Tonto Drilling Company, CP-50
Sept. 26- Dec. 1, 1975
1949'-6006'

Dacite, light salmon pink to white to mottled orange and chocolate brown to yellow-orange near base.

1430'

1500'

1430'

2000'

Rotary
1949'
Core

2350'

2500'

0.014%
Cu

2700'

2800'

Whitetail Conglomerate, mudstone variety. Coarse sandy lenses from 2" to 8" thick of sandy granules, mainly less .25", in greenish to mottled fine, laminated mudstone, siltstone, and fine sandstone. Coarse sand debris mainly diabase, schist and Apache group granules with minor Paleozoic limestone.

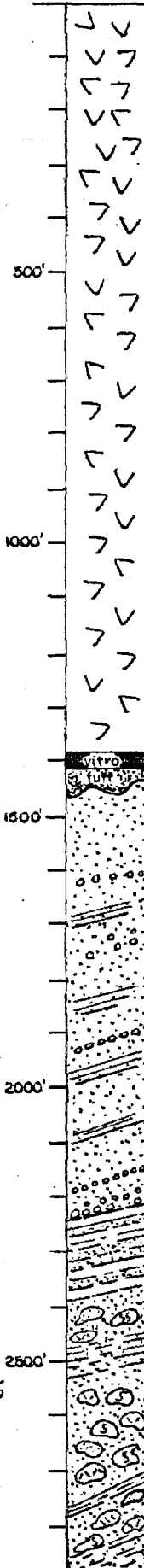
M* 40%-90% grey to grey green brown.

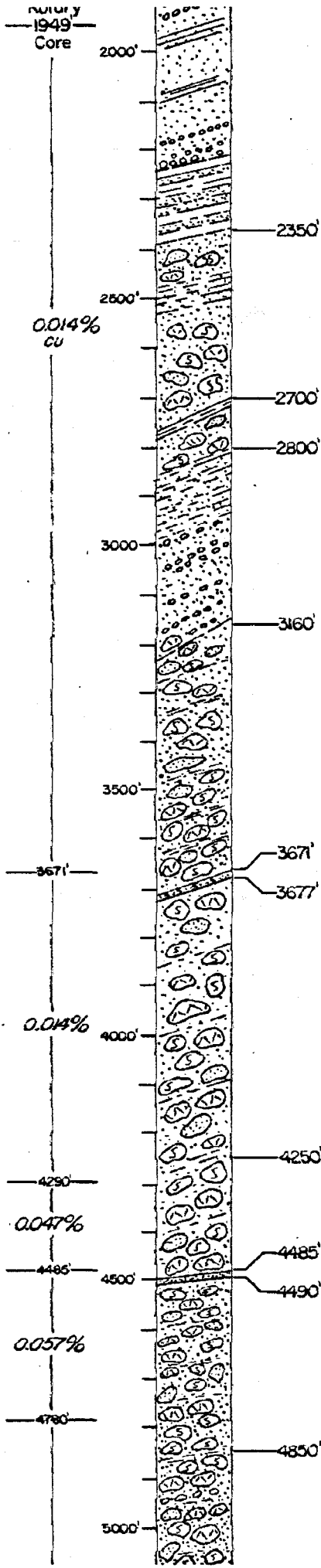
Whitetail Conglomerate, .25"-3" clasts, some in excess of 1", set in debris of similar material of sand to granular size. Bedding at 10°.

ACP* 77schist, 17db, 5.5 Apache group, .5 bolsa, Trace Laramide dike
M* 42% grey green to green brown

Mudstone slips suggest 30° inclination

ACP* 56db, 21 Madera gr., 16 Apache group, 4schist, 2 bolsa, 1 Paleozoic ls.
M* 23% dirty green





MINERALOGY.

M* 40% - 90% grey to grey green brown.

Whitetail Conglomerate, .25"-3" clasts, some in excess of 1', set in debris of similar material of sand to granular size. Bedding at 10°.

ACP* 77 schist, 17 db, 5.5 Apache group, .5 borsa, Trace Laramide dike
M* 42% grey green to green brown

Mudstone slips suggest 30° inclination

ACP* 56 db, 21 Madera gr., 16 Apache group, 4 schist, 2 borsa, 1 Paleozoic ls.
M* 23% dirty green

ACP* 35 schist, 31 db, 30 Apache group, 3 Madera gr., 1 Paleozoic ls
M* 76% brown to grey green

Mudstone slip at 30°

Note specularite replaced clasts in this interval

ACP* 44 schist, 36 db, 20 Apache group
M* 29% mainly green brown to brown, some chocolate brown with greenish cast becoming light tan to green brown at base

Litic tuff, sandstone, trace cuprite, banding at 25°

ACP* 46 schist, 32 db, 22 Apache group
M* 22% light grey brown to tan brown to medium brown becoming dirty brown near base.

Noticeable cu^o starting 4290' erratic distribution.

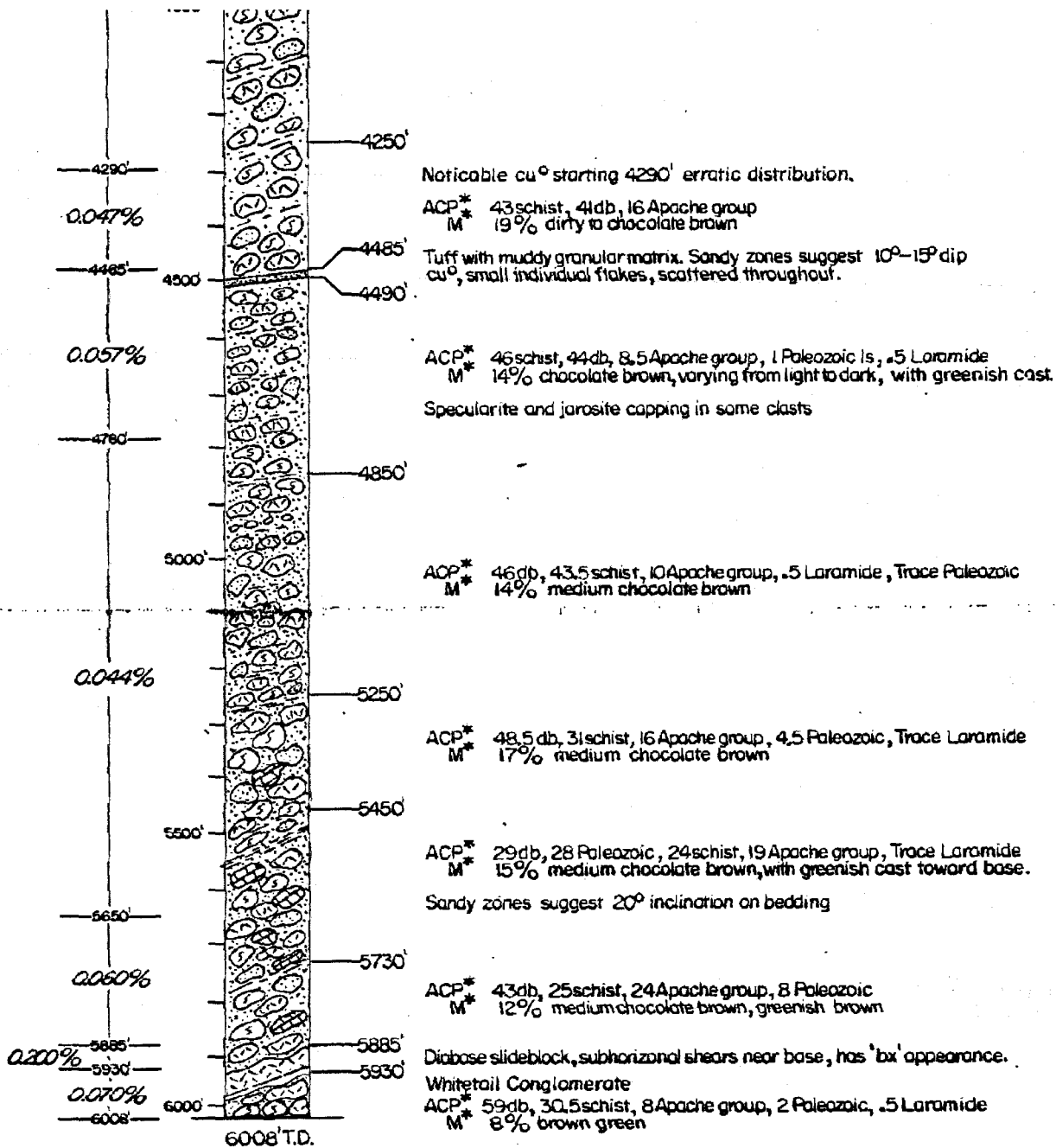
ACP* 43 schist, 41 db, 16 Apache group
M* 19% dirty to chocolate brown

Tuff with muddy granular matrix. Sandy zones suggest 10°-15° dip cu^o, small individual flakes, scattered throughout.

ACP* 46 schist, 44 db, 8.5 Apache group, 1 Paleozoic ls, .5 Laramide
M* 14% chocolate brown, varying from light to dark, with greenish cast

Specularite and jarosite capping in some clasts.

ACP* 46 db, 43.5 schist, 10 Apache group, .5 Laramide, Trace Paleozoic
M* 14% medium chocolate brown



ACP* = average clast percentage
 M* = matrix percentage

Note: Individual assays found on log sheets, and assay report dated Dec. 23, 1975

T.2 S., R.13 E.
 NW 1/4 SE 1/4 NE 1/4 of sec. 5

GRAPHIC LOG & ASSAY RESULTS

of

**DRILL HOLE A-3
 SUPERIOR EAST PROJECT
 PINAL COUNTY, ARIZONA
 SCALE 1"=300'**

TO ACCOMPANY <i>Report</i>
DATED <i>Dec. 29, 1975</i>
BY <i>J.D. Sell</i>

J.D.S.

Dec. 1975

A-3

Collar Elev. 4125'

ASARCO DRILL HOLE A-3

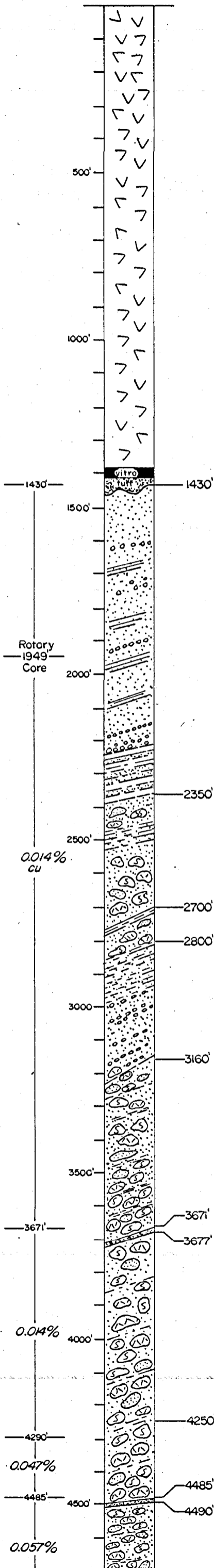
ROTARY:

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Failing 1500 DMX w/2 WEJ compressors
May 22 - June 1, 1973 (8" hole)
surface-1445'
- b) Copper State Exploration Company
Failing DMX Holemaster, rotary mud
May 10-19, 1974 (5 1/8" hole)
1445'-1949'

CORE:

Tonto Drilling Company, CP-50
Sept. 26 - Dec. 1, 1975
1949'-6008'

Dacite, light salmon pink to white to mottled orange and chocolate brown to yellow orange near base.



Whitetail Conglomerate, mudstone variety. Coarse sandy lenses from 2" to 8" thick of sandy granules, mainly less .25", in greenish to mottled fine, laminated mudstone, siltstone, and fine sandstone. Coarse sand debris mainly diabase, schist and Apache group granules with minor Paleozoic limestone.

M* 40% - 90% grey to grey green brown.

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ACP* 77schist, 17db, 5.5 Apache group, .5 bolsa, Trace Laramide dike
M* 42% grey green to green brown

Mudstone slips suggest 30° inclination

ACP* 56db, 21 Madera gr., 16 Apache group, 4schist, 2 bolsa, 1 Paleozoic ls.
M* 23% dirty green

ACP* 35schist, 31 db, 30 Apache group, 3 Madera gr., 1 Paleozoic ls
M* 76% brown to grey green

Mudstone slip at 30°

Note specularite replaced clasts in this interval

ACP* 44schist, 36 db, 20 Apache group
M* 29% mainly green brown to brown, some chocolate brown with greenish cast becoming light tan to green brown at base

Lithic tuff, sandstone, trace cuprite, banding at 25°

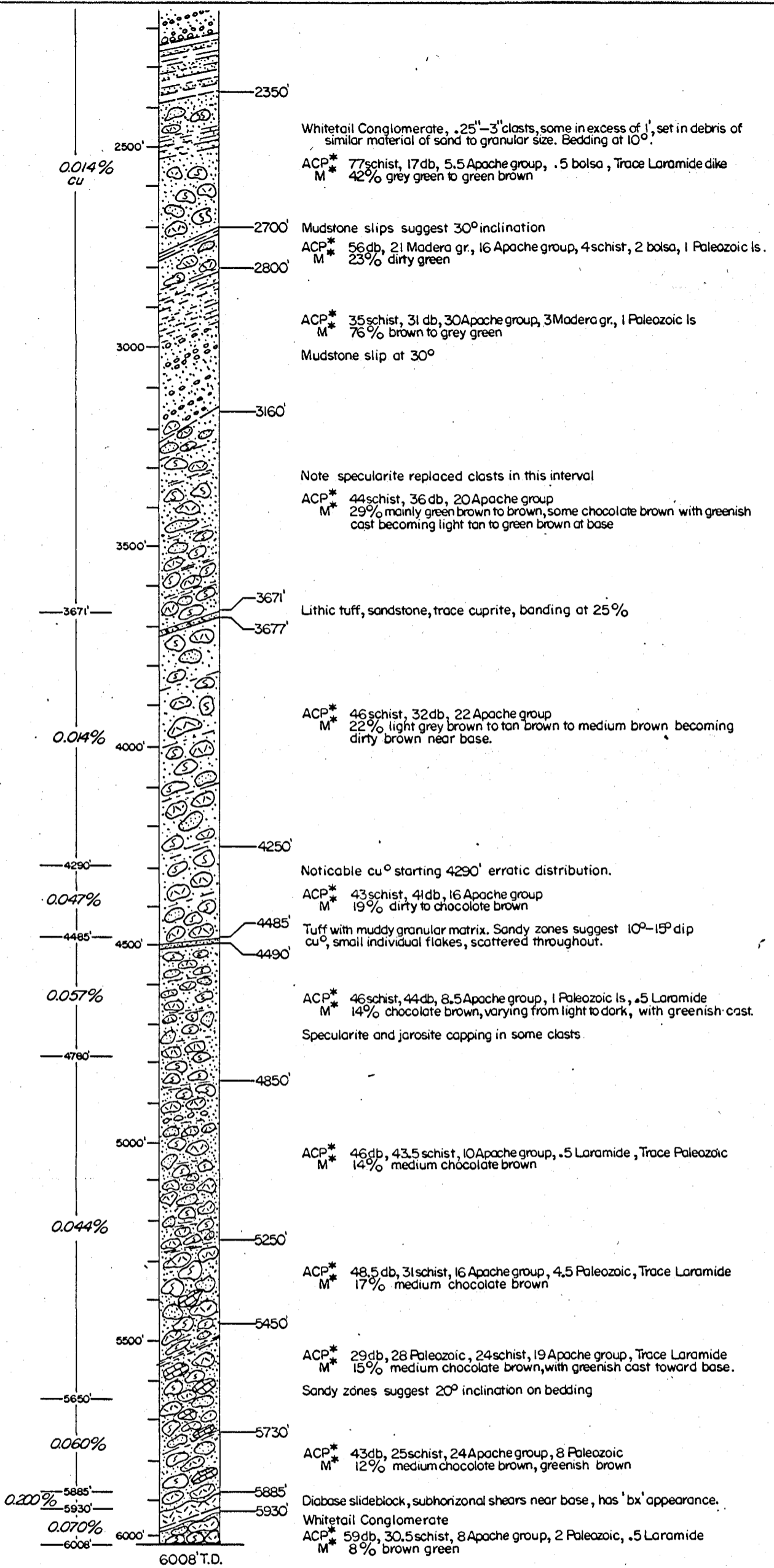
ACP* 46schist, 32db, 22 Apache group
M* 22% light grey brown to tan brown to medium brown becoming dirty brown near base.

Noticable cu° starting 4290' erratic distribution.

ACP* 43schist, 41db, 16 Apache group
M* 19% dirty to chocolate brown

Tuff with muddy granular matrix. Sandy zones suggest 10°-15° dip cu°, small individual flakes, scattered throughout.

ACP* 46schist, 44db, 8.5 Apache group, 1 Paleozoic ls, .5 Laramide
M* 14% chocolate brown, varying from light to dark, with greenish cast.



ACP* = average clast percentage
M* = matrix percentage

Note: Individual assays found on log sheets, and assay report dated Dec. 23, 1975

T. 2 S., R. 13 E.
NW 1/4 SE 1/4 NE 1/4 of sec. 5

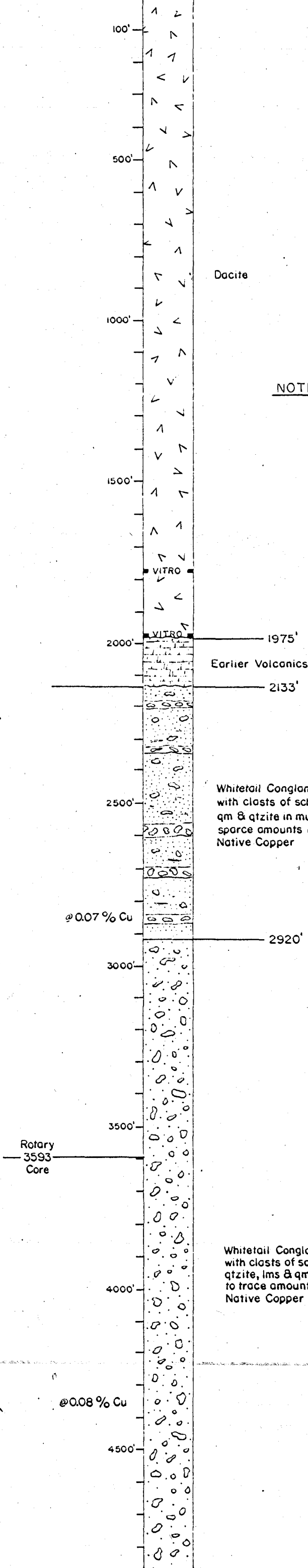
GRAPHIC LOG & ASSAY RESULTS
of

DRILL HOLE A-3
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1"=300'

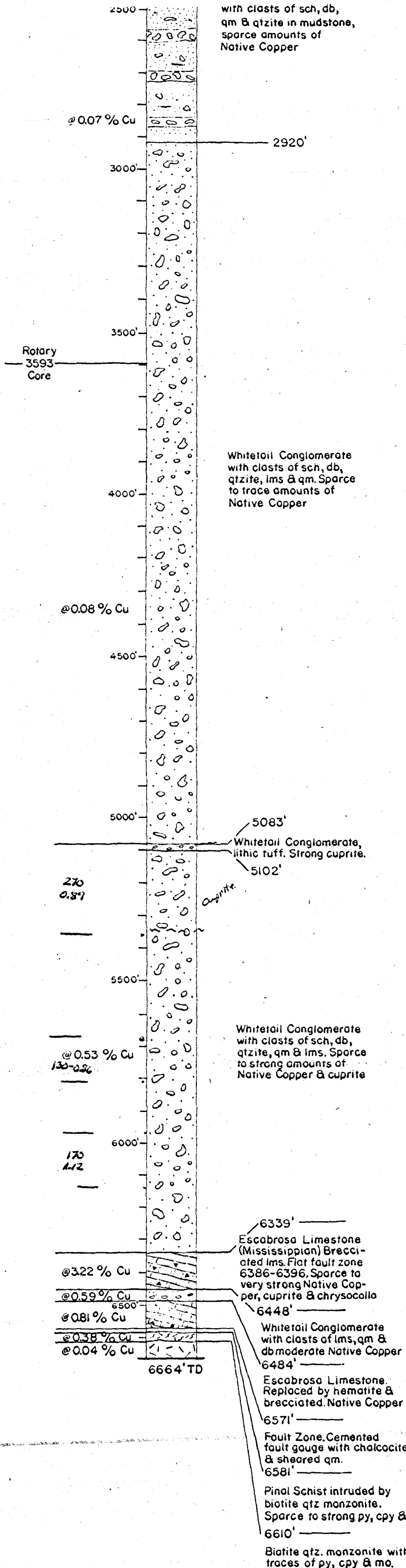
TO ACCOMPANY	<i>Report</i>
DATED	<i>Dec. 29, 1975</i>
BY	<i>J.D. Sell</i>

A-4

Collar Elev. 4090



NOTE Rotary : Surface - 3593' (May 1 - July 21, 1971)
 Core : 3593' - 6664' (August 17 - November 4, 1971)



Cuprite 5083-5150

NOTE:
 5080-6540 = 1460 ft. @ 0.76 % Cu
 5680-6540 = 860 ft. @ 0.98 % Cu

T 1 S, R 13 E.
 SW 1/4 SW 1/4 SW 1/4 Sec. 27
GRAPHIC LOG & ASSAY RESULTS
 of
DRILL HOLE A-4
SUPERIOR EAST PROJECT
 GILA & PINAL COUNTIES, ARIZONA
 SCALE: 1" = 300'

Serpentin East Drill Hole Data

1. List of bearings - distance between holes.
2. List of graphic logs and assay results.
3. Plan of drill holes in porphyry copper area (also A-13)
4. Plans of: (worksheets).

Total bedrock sulfide intersect
Capping A-2 Type 5B.

Bedrock alteration

Elevation of base oxidation, is top of sulfides.

Elevation of flat fault, is top of in-place block,
Thickness of TW.

5. Hole depth - true depth - equivalent sub-sea. & values.

Hole A-2, A-2W.

Hole A-8

Hole A-9

Hole A-10

Hole A-11

Hole A-12 & A-12A

Hole A-13

Hole A-14

Hole AI-1

Hole AI-2

Hole DCA-3A

6. Sealevel elevation top of sulfide hole data.

A-2W, A-8, → A-14, AI-1 & 2, DCA-3A,
with block calculations.

7. Graphic Log and Assay Results

A-2, A-2W, A-4, A-5, A-7, A-8, A-9, A-10, AI-1,
DCA-3A, LB-4, M-1A.

8. Plan map and sections, Bonanza Project.

9. Cross-Sections

A-5 → B-4, A-2 → A-8, A-9, DCA-3A → AI-1,
A-10, No. 6 shaft → A-4.

10. Elevation changes

11. Assay Results - depths

A-1, A-2, A-2W, A-3, A-4, A-6, A-7, rechecked of
A-3, A-4 & A-7.

12. Graphic Log & Assay results, assay results & depths.

A-8, resample result A-8, A-9, A-10, A-11,

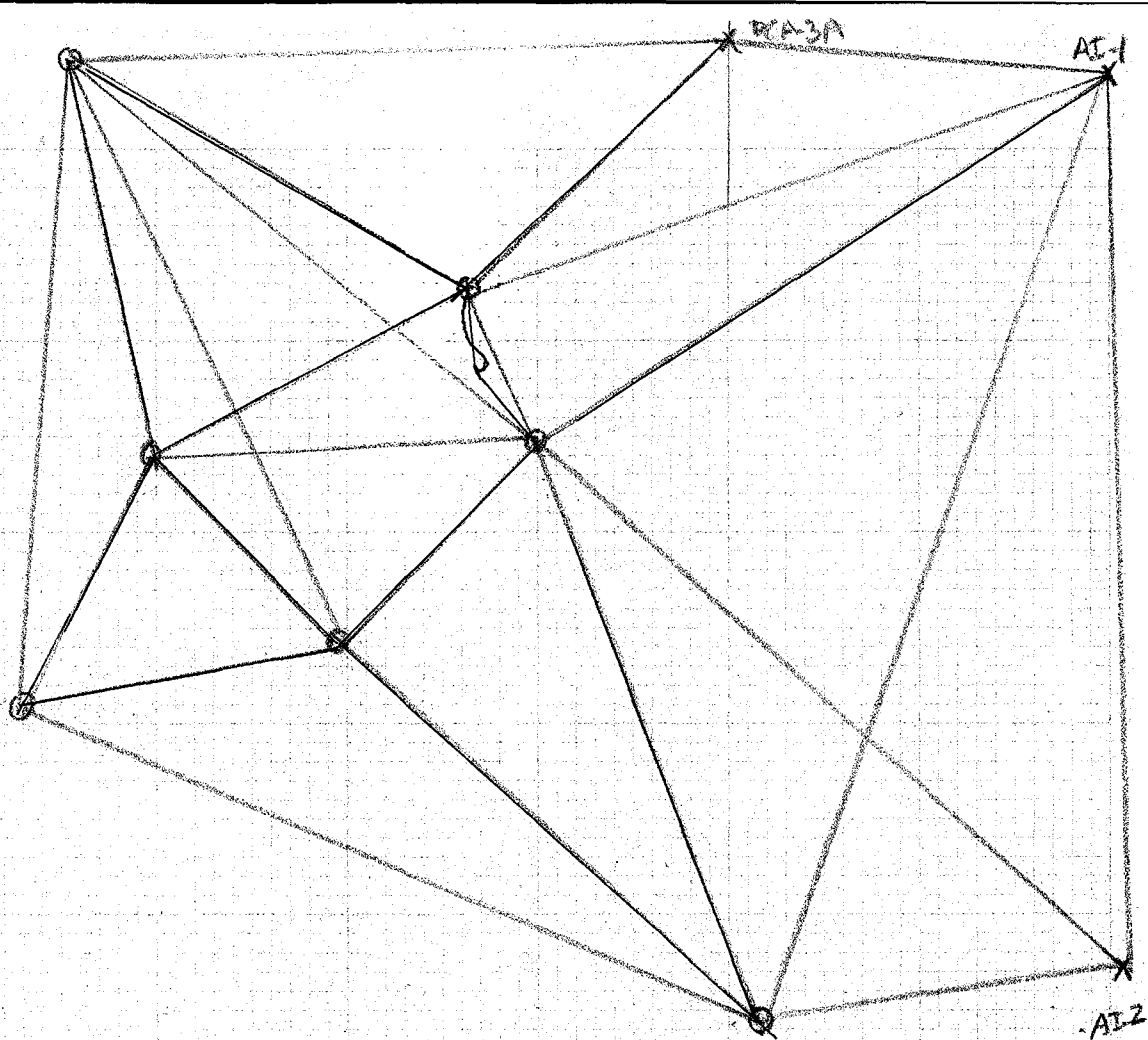
(Additional coring & assay splits of hole A-12 and A-12A,
A-12 & A-12A. ; A-13, A-14, A-15, M-1A, DCA-1A,

DCA-2A, DCA-3A, A-1, AI-2. QC-1 → 102

13. ICC Geologic Well Log - AOF Series. -1 → 5.

Superior East Drill Hole Data.

From	To	Direction	Distance	Surveyed	Saled
DCA-3A	AI-1	S 62° 32' E	2359'	X	
DCA-3A	A-2	S 51° 04' W	2935'	X	
DCA-3A	A-11	S 23° 30' W	2660'		X
A-2	A-8	S 30° 43' E	1759'	X	
A-2	A-9	S 58° 06' E	1756'	X	
A-2	A-10	S 3° 00' E	1752'	X	
A-2	A-11(A-12)	S 63° 40' E	1355'		X
A-2	A-14	S 16° 20' E	1155'		X
AI-1	A-9	S 59° 44' W	3341'	X	
AI-1	A-11	S 67° 00' W	3436'		X
AI-1	A-13	S 35° 00' W	3772'		X
AI-1	AI-2	S 2° 00' W	2497'		X
A-9	A-8	S 45° 21' W	832'	X	
A-9	A-11	N 39° 16' W	442'	X	
A-9	AI-2	S 73° 40' E	2905'		X
A-8	A-10	S 73° 37' W	841'	X	





EXPLANATION

POST-MINERAL ROCK UNIT

- Td-Dacite
- Tev-Early Volcanics
- Tw-Whitetail

PRE-MINERAL ROCK TYPE

- Tbx-Breccia
- Tqm-Quartz Monzonite
- Tgr-Granite
- Pe-Supai Formation
- Pn-Naco Limestone
- Me-Escabrosa Limestone
- Dm-Martin Limestone
- pCt-Troy Quartz
- pCdb-Diabase
- pCsc-Schist

A-8
●
4907' T.D. pCsc

ASARCO Hole & Designation
Total Depth-Rock Type

⊕

Proposed Drill Site

TO ACCOMPANY	QUARTERLY
REPORT	
DATED	SEPT. 28 '81
BY	J.D. SELL



DRILLING PROGRESS MAP
For The 3rd Quarter, 1981
CONTINENTAL COPPER CORP.

PINAL COUNTY, ARIZONA

SCALE: 1" = 500'

Graphic Log & Assay Results of DDH.
Superior East Area

Drafting File No.	Dull Hole No.
2486	M-1A
2486-A	A-1
2486-B	A-4
2486-C	DCA-1A
2486-D	A-5
2486-E	A-2
2486-F	A-2W
2486-G	A-7
2486-GG	A-7 WKK
2486-H	DCA-3A
2486-HH	DCA-3A WKK
2486-I	DCA-2A
2486-II	DCA-2A WKK
2486-J	A-3
2486-K	A-8
2486-L	LB-4
2486-M	A-9
2486-N	QDC-5
2486-O	A-10
2486-P	A-11
2486-Q	A-13

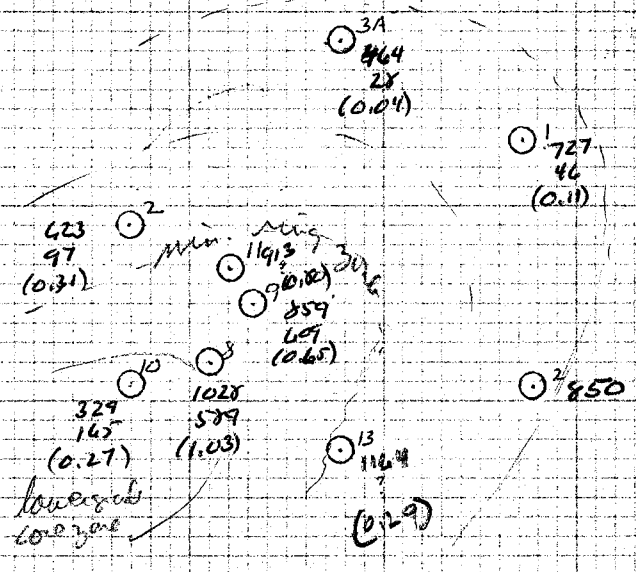
Done

~~LB-4 (Manning, Kasper)~~

MVK 2700
2700-A

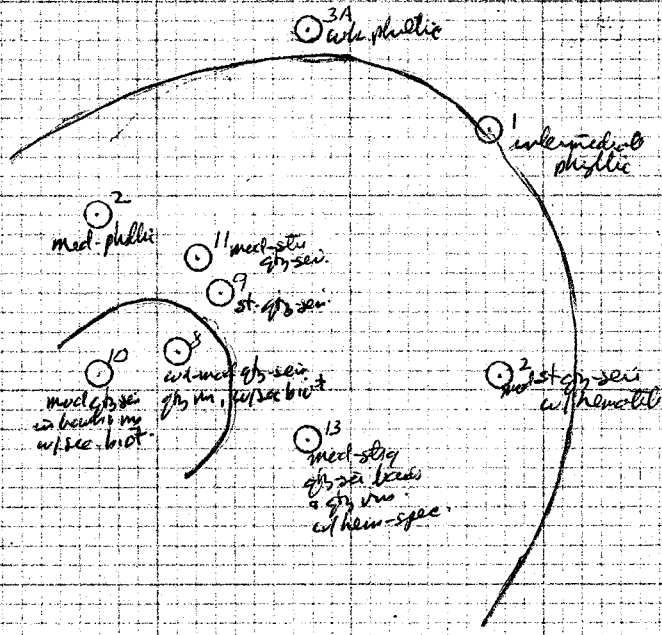
AI-1 (Rayhild)
AI-2



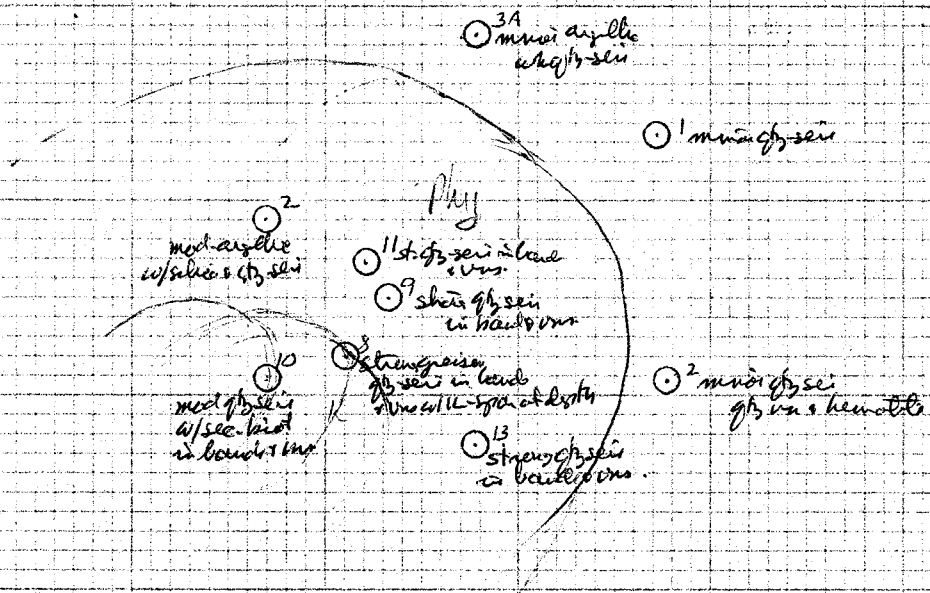


footage
 Cu/Mo ratio
 (~) Cu %

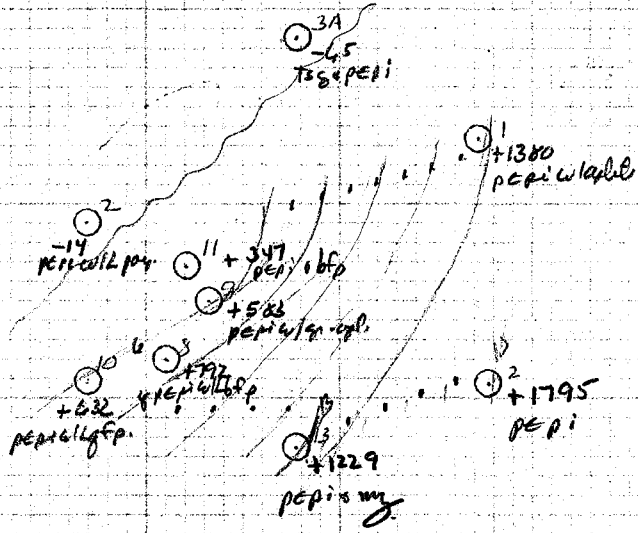
Total budget sufficient, etc.



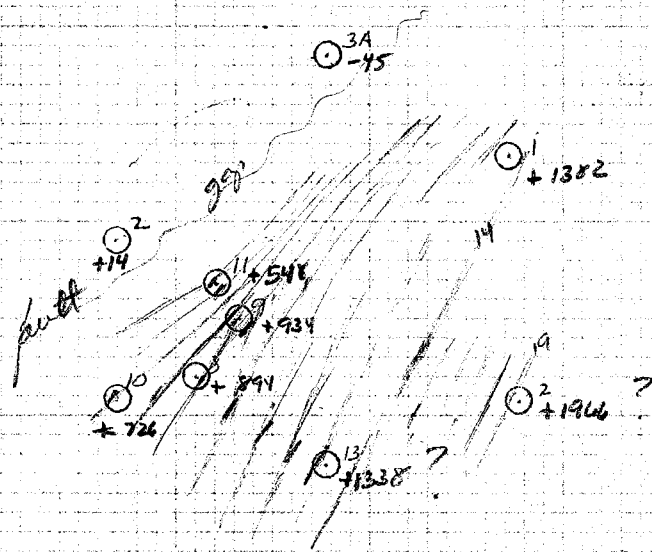
Capping 4-2 Type SB



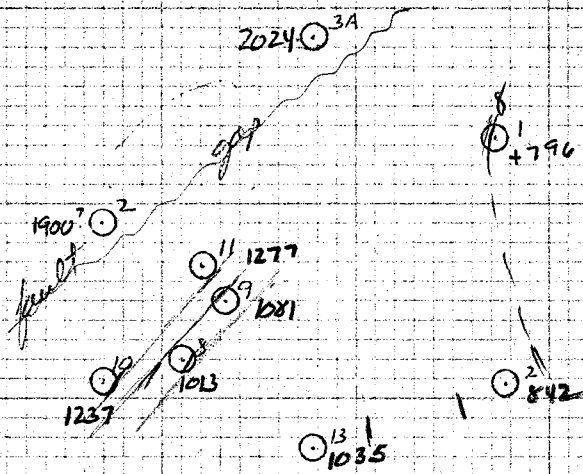
Balt. det.



Elev. of base oxidation
to top of sulfide



Several flat fault
is top of in-place bedrock



Thickness of Ted

Hole A-2, 2w

Suel
depth

Equiv
True Depth

Equiv.
Silhsea
of est. true depth.

Collar 4340'

Top of Permian 3920

est 3900

+490

Base of Flatfish 4289
100% Tgm
11-35°

4206

4183

+75

Top of Sulfides 4317

4386

est 4292

+48

296' @ 0.35

4613

est 4588 4584

-248

292'

217' @ 0.18

4830

est 4798

-458

214'

110' @ 0.42

4940

est 4907

-567

109'

Total Depth

4940

4907

* 623' @ 0.31%

≅ 615' @ 0.31%

28

51

collar 4340

Td

3080

700

2120

700

500 Tgm

Td

x-165 = 248
0.31%

Hole A-8

Subsea equine
of est true depth.

Collar 4671

	3200	3198.7	
Top of Permian 3226		2x 3225	+1446
4% Top of Permian A-2.36% leaded casing			
base of Flattish Flt 3777 @ 20'		2x 3776	+895
25% leaded casing	3800	3798.6	
Top of sulfides 3879		2x 3878	+793
27% leaded casing			
* {	4200	4198.4	645'
	4400	4398.1	+148
		2x 4523	135'
646' @ 1.57	4525		
25% leaded casing			
135' @ 0.26	4660	2x 4658	+13
16% leaded casing			
247' @ 0.07	4907	2x 4903	245'
Total Depth	4907		-232
* 781' @ 1.34%			≅ 780' @ 1.34%

last survey 4440' = 4438.06'

Collar 4671'

Td

+30 x 2'

781 x 1.34% +2706

Td

+2458

Hole A-10

Solsia equina
fast two depth

Collar 4585'

	3300	3289.4	
Top of Biemerial 3375		10.6	+ 1221
64% lign. material 3406		94 3364	+ 1191
25% Lf + 2% blk. p. g. A-2	3800	3786.2	
Base of Flattish flt 3859		13.8	+ 740
3% Lf + 1% blk.	3900	3885.6	
Top of Sulfides 3953		14.4	+ 646
22% Lf + 1% blk.		94 3939	+ 591
58' @ 0.41	4011	94 3940 3994	55
3% Lf + 1% blk.			605
16' @ 0.18	4179 4179	94 4146 4153	159
10% Lf + 1% blk.			+ 432
70' @ 0.44%	4249	94 4219	66
64% Lf + 1% blk.		4249	+ 366
33' @ 0.07	4282	94 4250	31'
Total Depth	4282		+ 335

≅ 280' @ 0.29%

* 296' @ 0.29
total 329' @ 0.27

last survey 3930' = 3915.41'

collar 4585
Td
+2986
Tev
+2471
+2447
Tw

Hole A-11

Subsea equi-
valent depths

Collar 4608

Top of Bremineral 3492	3500	est 3490 3498.2	+ 1118
+ 40% blk. sh. prop.		1.5	
Base of Flattish Set 4085	4100	est 4083 4097.7	+ 525
23% blk. sh. prop.		3.3	
Top of Sulphides 4262	4300	est 4259 4296.8	51 + 349
37% blk. sh. prop.		3.2	289'
* { 291' @ 0.40% } 4553	824 = 0.81% 29% blk. sh. prop. = 4737.517	est 4548	+ 60
		4594.4	- 120 528'
* { 533' @ 1.12% } 5086	3081 = 1.5047	5036.7	- 468
9% blk. sh. prop.		10.3	84'
* { 89' @ 0.26% } 5175	5147	5132.3	- 552
		14.7	
Total Depth 5175		est 5160	

* 913' @ 0.81%
(Note: last 23' = 0.05%) (or 890' = 0.82%)

≈ 901 @ 0.81%

last survey 5147' = 5122.82'

collar 4608 sea
Tel
3150
Tev
X-CH 2407
3393

Hole A-12 (Navi-Dull) & A-12-A

	Collar (A-11) 4608'	Hole Depth Records	True Depth Records	Subsea equm est True Depth.
520	Top of Premixed 3500 <i>all pipe about drilled A-2 Type</i>	3500	3497.4 2.6	+ 1111
101	Base of Flathead Flt 4070 <i>30% Lbf data</i>	4000	3790.4 9.6 Est 4058	+ 550
	Top of Sulphides 4170 <i>21% Lbf data</i>	4175	Est 4155 4158.9	+ 453
			306' ①	
	(317' @ 0.64% 4488 * 7% Lbf data ** 260' @ 0.92% 4748 9% Lbf data 509' @ 0.46% 5257 60% Lbf water data 247' @ 0.11% 5504 26% Lbf water data 270' @ 0.92% 5724	4450 4500 4750 5200 5300 5500 5690	4423.6 Est 4461 4472.4 Est 4716 4717.8 5164.8 Est 5224 5264.4 5443.5 Est 5467 5652.4 Est 5688	+ 147 255' ② - 108 506' ③ 614 246' ④ - 859 220 1080 - 1079
	Total Depth 5724			- 1079

de GR X-52

* 577' @ 0.77% ≈ 541 @ 0.77

** 1086' @ 0.62% ≈ 1017 @ 0.62

4950 = 4916.1

4959 = 4925 = -317 491

250085 = 4957 = -349

4991 5000 = 4965.8

last survey 5690' = 5652.40

KOP (A-12) = 2750 ≈ + 1048 section

Hole A-13

*Subsea equiv
est true depth*

Collar 4728'

Top of Premixed 3071
all pipe A-2 Type

3100

est 3059
3088.1

+1669

Base of Flatfish flt 3260
32% L pipe @ 10-20'

3300

est 3247
3287.2

+1481

Top of Sulfide 3499
64% L pipe, one mass

3500

est 3484
3485.3

+1244

136'

* { 138' @ 0.32% 3637

3600

est 3583.7
est 3620

+1108

387'

530 @ 0.58 100% L pipe, mass

4000

3978.0
est 4007

+721

32'

392 @ 0.67% 4029
100% L pipe, mass

4100

est 4089
4076.8

+689

592'

601 @ 0.05 4663
25% L pipe, mass

4400

4568.4
est 4631

+97

Total Depth 4663

* 563' @ 0.56%

≈ 555' @ 0.56%

last survey 4600' = 4568.42'

collar 4728

TD

3048

Top

2692

Hole A-14

Salsea equiu
est hie dorth.

Collar 4694

Top of Preliminary 3841	3800	3798.4	
25% ^{100%} _{100%} A2 Type ^{100%} _{100%}		est 3838	+856
Base of Flatbeds 4015 ^{10-15'}	4000	3998.2	+681
30% ^{100%} _{100%} ^{100%} _{100%}		est 4013	
Top of Sulfide 4096	4100	4098.2	+600
36% ^{100%} _{100%}		est 4096	53
* { 53' @ 0.53% 4149		est 4147	+547
10% ^{100%} _{100%}	4200	4198.2	99
99' @ 0.28% 4248		est 4246	+448
100% ^{100%} _{100%}			21
21' @ 1.20% 4269		est 4267	+427
all per cent	4300	4258.1	68
68' @ 0.07% 4337		est 4335	+359
20% ^{100%} _{100%}	4400	4398.1	1386
1401' @ < 0.05% 5738	5670	5662.6	est (-471)
		est 5721	-1027
Total Depth 5738		est. 5721	

* 173' @ 0.47%

≈ 173' @ 0.47%

last survey 5670' = 5662.56'

collar 4694

Td
+3042
Tco
+2405

X- Along
+2123

2700

Hole AI-2

Sericea equina
est true depth

Collar 4715			
Top of Premineral 2616 <small>at position</small>	2600	2589.3 est 2605 "	+ 2110
Base of Flattish flt 2794 <small>at position</small>	2800	est. 2780 " 2787.1	+ 1933
* Top of Sulfide 2850 <small>at position</small>	2900	est. 2838 " 2886.09	+ 1877
<u>310' @ 0.37%</u> 3160 <small>at position</small>	3200	est. 3140 " 3182.3	+ 1575
452' @ < 0.10% 3612	3525	3491.2 est 3573	+ 1142
Total depth 3612		est. 3573'	

302 @ 0.37%

* Note all of sulfide zone is partially oxidized to total depth of hole.

Last survey 3525' = 3491.18'

4715
Td
+ 3242
Tov
+ 2935
Tw
+ 2110
Total

Hole AI-1

Collar 4630'

No hole surveys

Subsea equiv.

Top of Premierial 2650'

+1980

✓ About 41% Top M-1A Type SB

Base of Flottish flt. ~~3238~~ 3046 @ 10-30°

+1584 ~~+1392~~

10% 30% Top ... banded ... brucic

Top of Sulfides 3238 gause @ 10° or self.

+1392

291' 10% Top ...

291'

* 229' @ 0.14%

3529' also +70° high angle flt contact. ~~4110~~ ~~+1101~~

10% Top ...

438'

438' @ 0.10%

3967' TD

+663 TD

Total depth

3967'

Collar 4630

Td

+ 3065

Top

+ 2380

Tw

+ 1980

Hole 19CA-3A

Subsea Equip
Test true depth.

Collar Elev. 4440'

Top of Premixed 4454'	4400	4361			
100% Top bx in bucket	4500	est 4414 4460			+ 226
Base of Flattish RCP 4670' ± 20'	4600	4559 est 4629 est 46			+ 11
100% Top leaded					
Top of Sulfide 4690' ext surf	4700	est 4648 4658			- 8'
100% Top					115'
* 116' @ 0.13%	4800	4757 est 4763' also X-plot @ 70'			- 123
3% for contamination	4900	4855'			342
348' @ ± 0.01%		est 5105 TD			- 465 TD
Total Depth 5154'					

Collar 4640'

TD
+3150
Tev
+2210
Tw
+559
SB bx
+481
Tw
+343
SB bx
+246
Tw
+226

Location of Hole at top of sulfide intercept.

+ A-2W (Hole Designation)
+ 48 Sealevel elevation of top of sulfides
623-0.31 Thickness of sulfide intercept ^(%) grade (% copper) in intercept

A-2W + 48
623-0.31
open below.

AI-1 + 1392
291-0.14
438-0.10

A-8 + 793
646-1.57
135-0.26

AI-2 + 1877
310-0.37
<0.1 below.

A-9 + 599
626-0.81
233-0.23

DCA-3A -8
114-0.13
<0.01 below.

A-10 + 646
296-0.29
33-0.07

A-11 + 349
824-0.87
89-0.26

~~A-12 + 453~~
~~1086-0.62~~

A-12 + 453
577-0.77
507-0.46
247-0.11

A-13 + 1244
530-0.58
33-0.23
<0.05 below.

A-14 + 600
173-0.47
<0.07 below.

patron map

$$1'' = 400' \quad \frac{400 \times 400}{100} = 160,000 \text{ ft}^2 / \text{grid} \\ 1,600 \text{ ft}^2 / \text{small sq.}$$

A-8 red. Using 450' column @ 1.50% copper. probable

$$25 + 25 + 12\frac{1}{2} + 12\frac{1}{2} + 50 + 10 =$$

$$135 \times 1,600 = \frac{216,000 \text{ ft}^2 \times 450'}{12.5} = 11,232,000 \text{ tons @ } 1.50\%$$

A-11 Orange Using 800' column @ 0.80% copper. probable.

$$12\frac{1}{2} + 112\frac{1}{2} + 50 + 25 + 28 + 12 + 50 + 18\frac{1}{2} =$$

$$308\frac{1}{2} \times 1,600 = \frac{493,600 \times 800}{12.5} = 31,590,400 \text{ tons @ } 0.80\%$$

A-11 Orange Possible outline

$$12\frac{1}{2} + 12\frac{1}{2} + 19 + 32\frac{1}{2} + 50 + 75 =$$

$$201\frac{1}{2} \times 1,600 = \frac{322,400 \times 800}{12.5} = 20,433,600 \text{ tons @ } 0.80\% \text{ Possible}$$

A-9, A-12 blue Using 600' column @ 0.8% copper Redoble

$$25 + 50 + 28 + 12 + 25 =$$

$$140 \times 1,600 = \frac{224,000 \times 600}{12.5} = 10,752,000 \text{ tons @ } 0.80\%$$

A-9, A-12 Blue Possible outline

$$25 + 50 + 25 + 25 + 100 + 25 + 75 + 12\frac{1}{2} + 75 + 12\frac{1}{2} + 12\frac{1}{2} +$$

$$32 + 32\frac{1}{2} + 9 + 19 + 50 + 25 + 50 =$$

$$655 \times 1,600 = \frac{1,048,000 \times 600}{12.5} = 50,304,000 \text{ tons @ } 0.80\% \text{ Possible}$$

A-13 Green Using 500' column @ 0.40% Probable

$$25 + 25 + 25 + 50 + 12\frac{1}{2} =$$

$$137\frac{1}{2} \times 1,600 = \frac{220,000 \times 500}{12.5} = 8,800,000 \text{ tons @ } 0.40\%$$

53,574,400

A-13 green possible outline

$$50 + 12\frac{1}{2} + 100 + 112\frac{1}{2} + 100 + 50 + 100 + 21 + 35 + 50 + \\ 25 + 25 + 12\frac{1}{2} + 100 + 112\frac{1}{2} + 30 + 16 + 26\frac{1}{2} + 65 + 48 + \\ 60 + 12\frac{1}{2} + 75 =$$

$$1239 \times 1600 = \frac{1,983,400 \times 500}{12.5} = 79,296,000 \text{ tons} @ 0.60\% \text{ possible}$$

A-2 yellow. Probable using 400' column @ 0.30% Cu.

$$470 \times 1600 = \frac{752,000 \times 400}{12.5} = 36,096,000 \text{ tons} @ 0.30\%$$

A-10 yellow probable using 300' column @ 0.30% Cu

$$300 + 100 + 77 + 75 + 120 + 35 =$$

$$707 \times 1600 = \frac{1,131,200 \times 300}{12.5} = 27,148,800 \text{ tons} @ 0.30\%$$

A-14 yellow Probable using 200' column @ 0.40%

$$75 + 45 + 30 + 25 + 40 =$$

$$215 \times 1600 = \frac{344,000 \times 200}{12.5} = 5,504,000 @ 0.40\%$$

A-1-2 yellow Probable, using 300' @ 0.35

$$400 \times 1600 = \frac{640,000 \times 300}{12.5} = 15,360,000 @ 0.35\%$$

(Sum) A-2, A-10, A-14, A-1-2 = 84,108,800 tons @ 0.32% Probable.

Rest of possible yellow:

$$800 + 950 + 375 + 12\frac{1}{2} + 300 + 375 + 400 + 325 + 250 + 1025 =$$

$$4800 \times 1600 = \frac{7,680,000 \times 300}{12.5} = 184,320,000 \text{ tons} @ 0.32 \text{ possible}$$

Probable

A-8 Red = 11,232,000 @ 1.50% Cu
A-11 Orange = 31,590,400 @ 0.80% Cu
A-9, A-12 Blue = 10,752,000 @ 0.80%
53,574,400 tons @ 0.95%
A-13 Green = 8,800,000 @ 0.60
62,374,000 tons @ 0.90%

Possible

A-11 Orange = 20,633,600 @ 0.80
A-9, A-12 Blue = 50,304,000
~~10,752,000~~ @ 0.80
~~A-13 Green~~
70,937,600 @ 0.80
A-13 Green = 79,296,000 @ 0.60%
150,233,600 @ 0.69%

Probable yellow:

A-2 ~~orange~~ ^{yellow} 34,096,000 @ 0.30
A-10 yellow 27,148,800 @ 0.30
A-14 yellow 5,504,000 @ 0.40
A-1-2 yellow 15,360,000 @ 0.35
Total/ave 84,108,800 @ 0.32%

Possible yellow Remainder

184,320,000 tons @ 0.32%

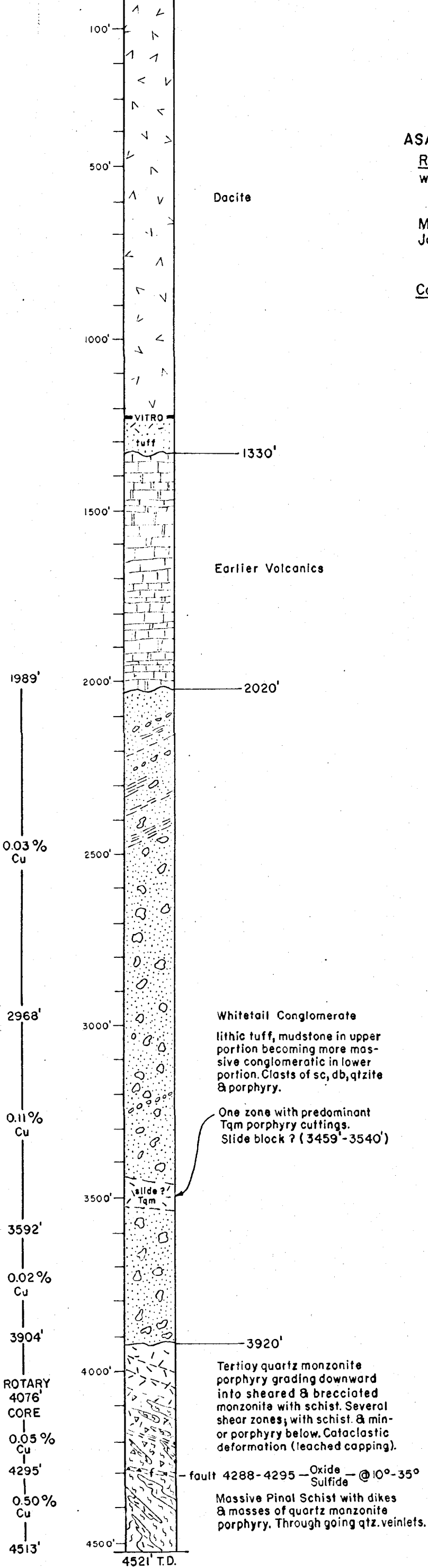
TAB

Superior East
REPORTS-ASSAY

A1 - A7

A-2

Collar Elev. 4340'



ASARCO DRILL HOLE A-2

Rotary: Surface - 4076 feet
with spot cores at 2559-2574
3540-3550
4075-4076
Mayhew 3000, air drilled
January 13 - February 7, 1972
8 3/4" - 6 1/4" hole.

Core: 4076 - 4521 feet
Longyear TRK-44
NX Coring
March 4-18, 1972

NOTE: Hole lost w/corebarrel & rods in bottom. See Hole A-2W (map # 2486-F) for wedged hole.

Individual assays for the hole are found in Assay Report, dated March 24, 1972.

T 1 S, R 13 E.
NW 1/4 NE 1/4 SE 1/4 of Sec. 22

GRAPHIC LOG & ASSAY RESULTS of

DRILL HOLE A-2

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

J.D.S.

July 8, 1972

A-2W

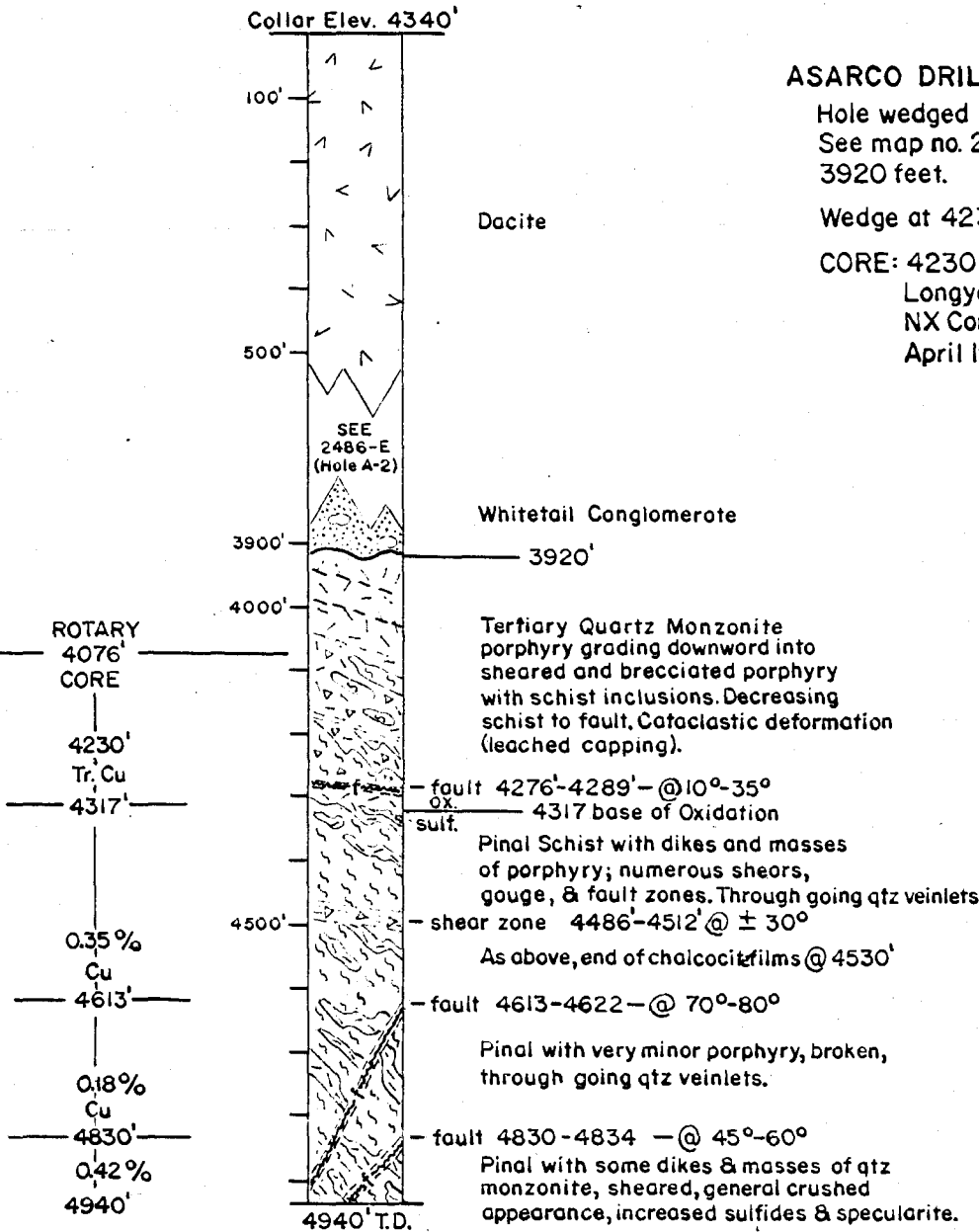
Collar Elev. 4340'

ASARCO DRILL HOLE A-2W (Wedge)

Hole wedged from previous Hole A-2.
See map no. 2486-E for units above
3920 feet.

Wedge at 4230 feet.

CORE: 4230 - 4940 feet
Longyear TRK-44
NX Coring
April 19 - May 17, 1972



NOTE: Individual assays for the hole is found in Assay Report, dated May 26, 1972.

T 1 S, R 13 E.
NW 1/4 NE 1/4 SE 1/4 of Sec. 22

GRAPHIC LOG & ASSAY RESULTS
of

DRILL HOLE A-2W

SUPERIOR EAST PROJECT

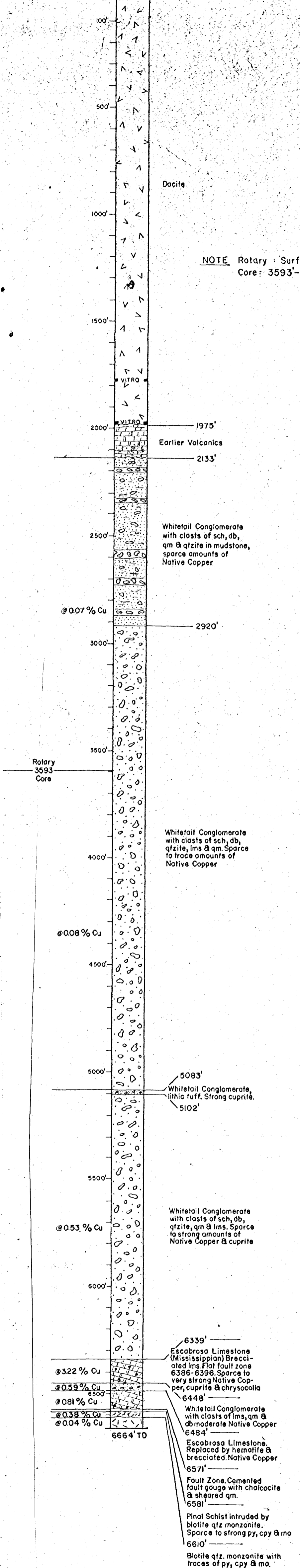
GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

J.D.S.

July 8, 1972

A-4
Collar Elev. 4090



NOTE Rotary : Surface - 3593' (May 1 - July 21, 1971)
Core : 3593' - 6664' (August 17 - November 4, 1971)

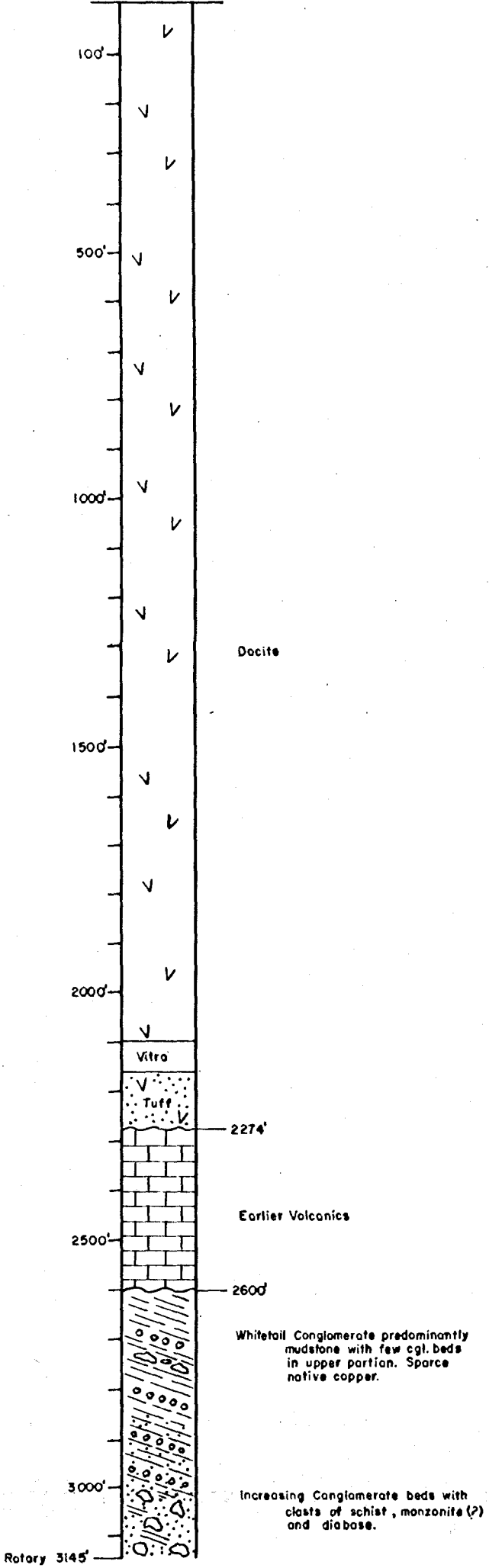
NOTE :
5080-6540 = 1460 ft. @ 0.76 % Cu
5680-6540 = 860 ft. @ 0.98 % Cu

T 1 S, R 13 E
SW 1/4 SW 1/4 SW 1/4 Sec. 27
GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-4
SUPERIOR EAST PROJECT
GILA & PINAL COUNTIES, ARIZONA
SCALE : 1" = 300'

R.B.C. Dec. 2, 1971

2486-B

A-5
Collar Elev. 4020'



ASARCO ROTARY HOLE
July 28 - August 28, 1971
Surface - 3145 feet

NOTE: No assays from Rotary cuttings

T. I. S. , R. 13 E.
sw 1/4 nw 1/4 nw 1/4 sec. 28
GRAPHIC LOG & ASSAY RESULTS
OF
DRILL HOLE A-5
SUPERIOR EAST PROJECT
GILA & PINAL COUNTIES, ARIZONA
scale 1" = 300'
JDS. MAY 25, 1972

A-7

Collqr Elev. 4215 ft.

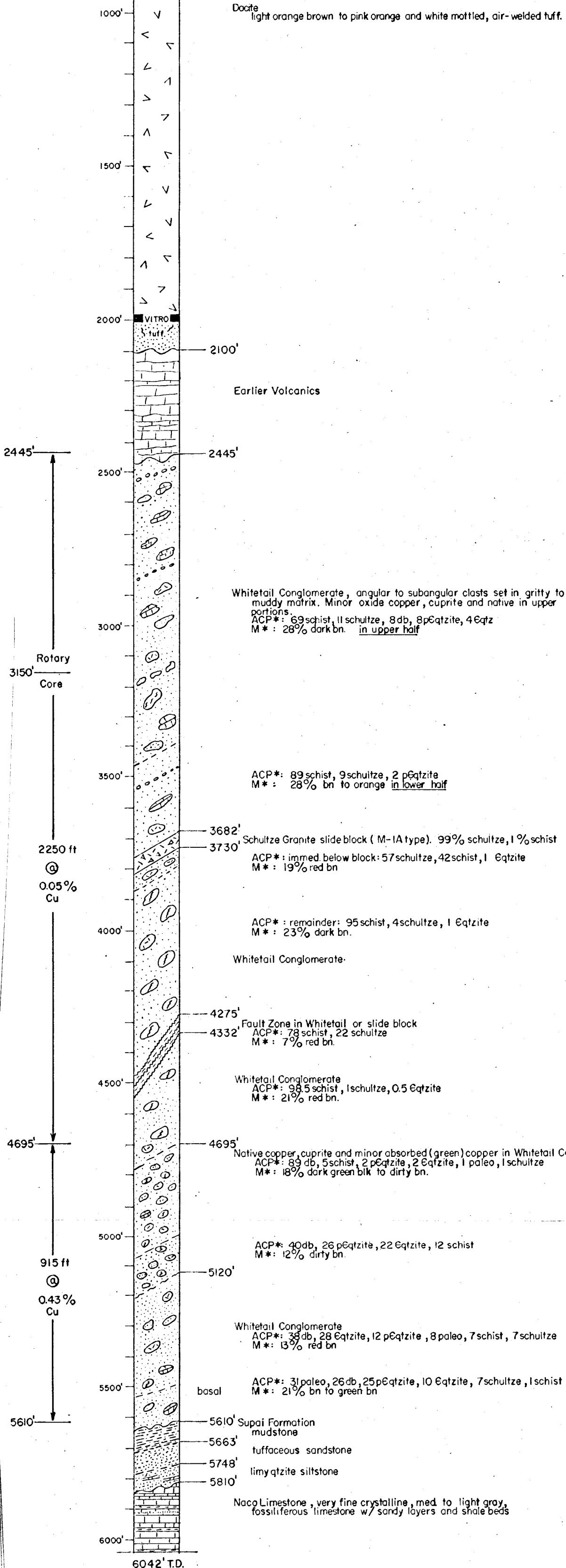
ASARCO DRILL HOLE A-7

ROTARY:

J.O. Barnes, Howard-Turner
w/air package
Aug. 17 - Sept. 16, 1973
Surface - 3150 ft.

CORE:

Boyles, CP-50
Nov. 27, 1973 - Feb. 9, 1974
3150 - 6042 ft.



T. I. S., R. 13 E.

NE 1/4 NE 1/4 NE 1/4 of Sec. 28

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-7

SUPERIOR EAST PROJECT

PINAL COUNTY, ARIZONA

SCALE: 1" = 300'

J.D.S.

April, 1974

MVK 2486-G

NOTE: Individual assays found on log sheets,
and assay report dated April 8, 1974.

A-8

Collar Elev. 4671'

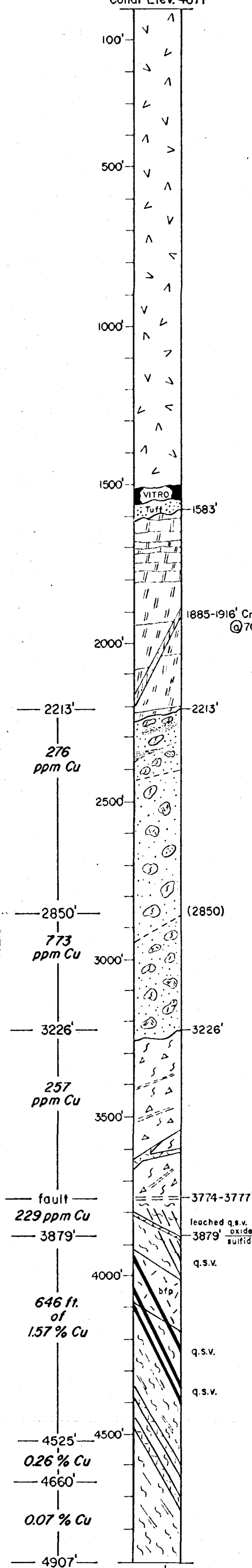
ASARCO DRILL HOLE A-8

CORE: Surface-1971' NC
1971'-3197' NX
3197'-4907' BX

Joy Manufacturing Co.
Joy-22
Surface-1971'
Aug. 8 - Sept. 15, 1976

Joy-22 Heavy Duty
1971'-4907' T.D.
Sept. 16 - Dec. 29, 1976

NOTE: Casing left in hole.
11 ft. of 4" surface (0-11'),
523 ft. of NX (1448-1971),
697 ft. of BX (2500-3197)



DACITE

EARLIER VOLCANICS

Andesite-basalt flows of 15-50' thickness with rubble and/or oxidized tops.

1885-1916' Cross fault zone @ 70'

WHITETAIL CONGLOMERATE

Sandy to gritty lenses and matrix with tuffaceous lenses, with clasts of pre-Whitetail units. Minor Cu²⁺.

2213-2400' Muddy light brown to light green matrix 42%. Clasts: 95% sc, 5% pQtzite.

2400-2850' Medium green to green-brown matrix 30%. Clasts: 77% sc, 21% db, 2% pQtzite.

2850-3226' Medium brown to red-brown at base, matrix 25%. Clasts: 66% sc, 20% db, 13% Schultze and porphyry, 1% pQtzite, tr Tbx. (numerous alt. clasts)

SLIDE BLOCK of Pinal Schist intruded by Laramide granitic aplite.

Altered and hematite replaced schist breccia, with minor gouge and "matrix" zones. Oxidized with tr. Cu²⁺ (Leached Capping).

3774-3777' Basal fault and gouge zone, oxidized, slickensides. @ 15°-20°

PINAL SCHIST, cut by Laramide biotite feldspar porphyry (Lbfp)

Top portion oxidized with FeOx and containing remnant chalcocite in quartz-sericite alteration.

Lbfp at 3879-3885' is a 30° dipping structure with gouge at top and bottom.

Sulfide zone is variably altered with quartz-sericite bands following schistosity at 10°-20° and cut across at 30°-60°. Bands also cut Lbfp.

Mineralization, disseminated and thin veins, follow schistosity and cut across at 60°. Most quartz-sulfide veins (q.s.v.) cut at 60°. Chalcocite is main copper sulfide to 3958 where bornite appears and becomes dominant below with continued chalcocite.

Schist contains numerous crushed-gouge zones with chalcocite-bornite.

Minor pyrite throughout with trace of chalcopyrite appearing at bottom of hole.

NOTE: Individual assays are found in Assay Report dated Feb. 10, 1977.

T. I. S., R. 13 E.
NW 1/4 SW 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-8

SUPERIOR EAST PROJECT

PINAL COUNTY, ARIZONA

SCALE 1" = 300'

J.D.S.

Feb. 1977
MVK 2486-K

A-9
Collar Elev. 4627'

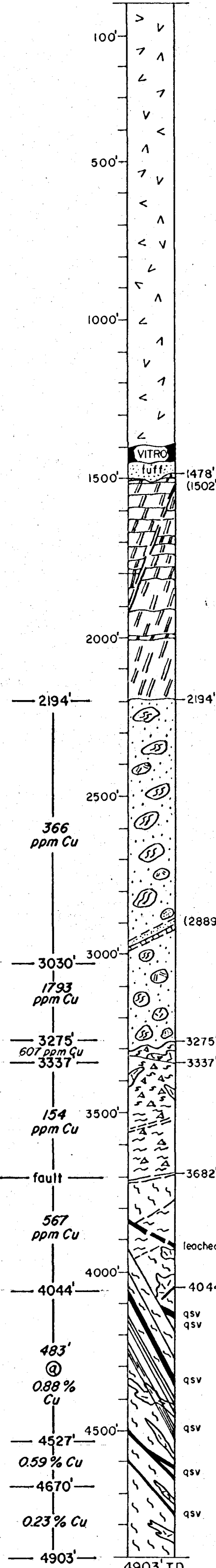
ASARCO DRILL HOLE A-9

CORE: Surface - 2357' NC
2357' - 3624' NX
3624' - 4903' BX
T.D.

Joy Manufacturing Co.
Joy-22, Heavy Duty Rig
Jan. 7 - May 4, 1977

DACITE

NOTE: Casing left in hole:
10' of 4"; Surface-10'
464' of NX; 1893'-2357'
586' of Bx; 3038'-3624'



EARLIER VOLCANICS

Andesitic - basalt flows, 5' - 45' thick, with few 100' - 200' thick units, separated by rubble and/or oxidized tops.

Cross-fault probably has around 100' feet of vertical offset, with dominant horizontal component (-20° slickensides).

WHITETAIL CONGLOMERATE

Clasts, few qmp & blk qm, set in sandy, gritty, granular, tuffaceous matrix. Minor Cu^o.

2194' - 2600' M: 19% brown to tan and green brown.
ACP: 97 1/2% sc, 2 1/2% db

2600' - 2889' M: 23%, brown to green brown to green.
ACP: 65% sc, 25% db, 10% pE qtz & Pioneer.

(2889-2917 sandy-grit of db & gr debris; w/ fresh water lms unit)

2917' - 3000' M: 17 1/2%, chocolate to dark brown.
ACP: 54% sc, 45 1/2% Schultze gr, 1/2% db.

3000' - 3275' M: 17% dark brown w/ reddish cast
ACP: 65% sc, 21% db, 11% Schultze,
3% Eqtzite minor leached clasts.

SLIDE BLOCK of M-1A Type. Lqm w/ chilled borders intruding pE schist. Both cut by qtz veins. Totally oxidized. Broken w/ 10-40% red-brown "adobe" matrix. Rests on 45% slip surface.

SLIDE BLOCK of A-2 Type. Broken, sheared, gougy, brecciated pE schist w/ few brecciated Lqmp dikes. "Leached Capping" w/ tr to 2% limonite, minor cuprite & black hematite above fault at 3521' - 3539'. 10% - 40% hematite below fault. Quartz-sericite & qtz veining throughout.

3682' - 3693' basal fault zone at 10°

PINAL SCHIST w/ minor granite aplite dikes. Minor hematite, 1% - 5%, mainly along schistosity. Cut by inclined breccia zones & quartz-sericite bands w/ remnant chalcocite (3900) also qtz veining at 60°. Schistosity changes across minor faults.

leached qsv

4044' Oxidized Sulfide

qsv

qsv

qsv

qsv

qsv

qsv

qsv

PINAL SCHIST w/ minor porphyry & biotite feldspar porphyry dikes.

qsv, quartz sulfide veins, w/ weakly developed quartz masses, often brecciated w/ crushed bornite - chalcocite & pyrite.

Intense quartz-sericite banding subparallel to the 45° - 60° qsv zones & subparallel to schistosity at 5° - 30°.

Breccia & gouge zones throughout in similar orientation.

NOTE: Individual assays are found in Assay Report dated May 24, 1977.

T.1 S. R.13 E.
SW 1/4 NW 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-9
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'

J.D.S.

May 1977

ALR 2486-M

A-10
Collar Elev. 4585'

ASARCO DRILL HOLE A-10

Joy Drilling Company
Joy Heavy Duty HD-22
May 5 - August 3, 1977
November 15 - December 28, 1977
5" rock bit surface - 11'
NC core 11' - 2437'
NX core 2437' - 3417'
BX core 3417' - 3968'
AX core 3968' - 4282' T.D.

NOTE: Casing left in hole
11' of 4.5" surface-11'
141' of NX 2296'-2437'
222' of BX 3195'-3417'
also BX rods from 3380'-3968'

DACITE. Medium chocolate brown to dense orange brown to olive brown.



Frogmental content increases

Vitrophyre unit 1468'-1492'
Crystal tuff, brown at top grading to grey at base

EARLIER VOLCANICS. Dense green black andesitic-basalt flows with oxidized tops, vesicular, with increasing red and red-black cinder ash towards base of total unit. Flows dip up to 25°. Individual units of cinders and flows vary from 70-150' in thickness.

2114'-2117', Steep angular shearing cross fault

WHITETAIL CONGLOMERATE

2138'-2230' M: 26.5% dark brown to grey green, sandy grit
ACP: 51.5% sch, 39.5% pE sed, 5% pE gr, 2.5% db,
1% Paleozoic, dipping 5-10°

2230'-2390' M: 82% green to green grey brown with tuff lenses 10°
ACP: 89% sch, 9% pE sed, 2% db, trace of pEgr and Paleozoic

2390'-2752' M: 20.5% brown to green brown, sandy grit
ACP: 71% sch, 24% db, 4% pE sed, and 1% bolsa with fresh-water lime

(2752'-2814') Mixture of limey siltstone-mudstone and fresh-water lime with 52.5% green brown matrix and grit of 61.5% sch, 26% Schultze border, 11.5% db, and 1% pE sed at 5°-10°

2814'-3375' M: 19% dark to reddish brown, sandy grit
ACP: 76.5% sch, 15% db, 6.5% Schultze and blk porphyry, 2% pE sed with minor Cu, dipping 20°-40°

3375'-3406' M-IA TYPE S.B. 83% border Schultze and 23% schist in 23% matrix of brick-red sandy grit. Rests on 15°-20° fault surface. Totally oxidized.

A-2 TYPE S.B. Broken and crushed units of Pinal schist cut by Laramide biotite feldspar and Laramide black porphyry. Qtz-sericite and biotizations of units with remnant cuprite and chalcocite. Totally oxidized. Cut by flat faults.

3859' (basal fault zone at 20°)

PINAL SCHIST. Cut by a number of Laramide quartz feldspar porphyry and black porphyry dikes and sills. Units cut by quartz-sericite bonds with disseminated and vein mineralization at 30°-60°

3953' oxidized sulfide

qsv

qsv

qsv

qsv

3963'
329' at 0.27% Cu
4282'

4282' T.D.

T.1 S. R.13 E.

NW 1/4 SE 1/4 SE 1/4 of Sec.22

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-10

SUPERIOR EAST PROJECT

PINAL COUNTY, ARIZONA

SCALE 1" = 300'

NOTE: Individual assays are found in ASSAY REPORT dated January 13, 1978

J.D.S.

Jan., 1978

mn 2486-o dom

AI-1
Collar Elev. 4630'

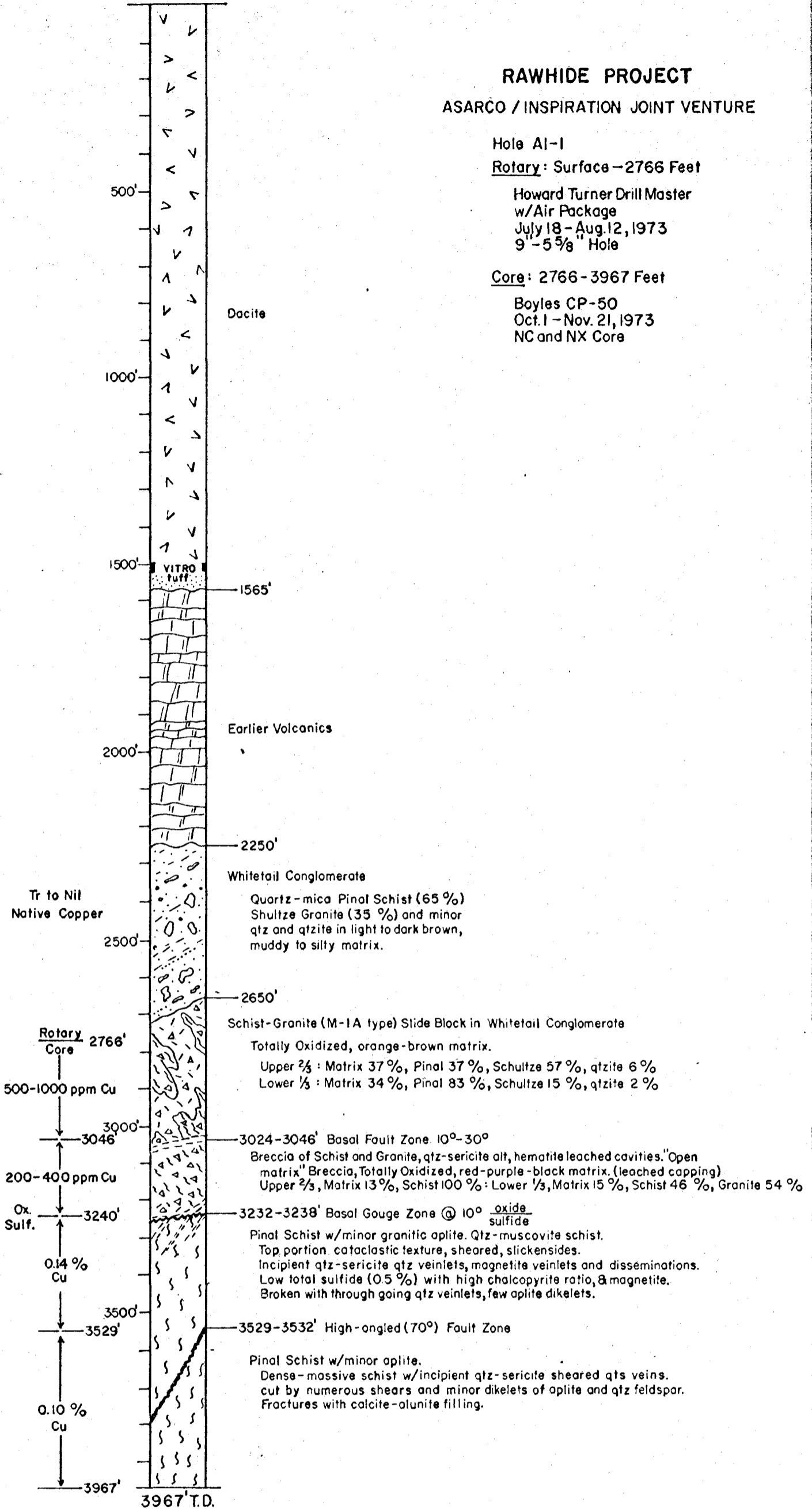
RAWHIDE PROJECT
ASARCO / INSPIRATION JOINT VENTURE

Hole AI-1
Rotary: Surface - 2766 Feet

Howard Turner Drill Master
w/Air Package
July 18 - Aug. 12, 1973
9 - 5 5/8" Hole

Core: 2766 - 3967 Feet

Boyles CP-50
Oct. 1 - Nov. 21, 1973
NC and NX Core



Summary of Weighted Averages in Sulfide Intercept:

3240-3529', 289 feet @ 1381 ppm Cu, 9 ppm Pb, 52 ppm Zn, and 31 ppm Mo.
3529-3967', 438 feet @ 990 ppm Cu, 18 ppm Pb, 57 ppm Zn, and 21 ppm Mo.
3240-3967', 727 feet @ 1145 ppm Cu, 14 ppm Pb, 55 ppm Zn, and 25 ppm Mo.

NOTE: Individual assays for the hole are found in Assay Report dated Jan. 7, 1974.

T I S, R I 3 E.

SE 1/4 SW 1/4 NE 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE AI-1

RAWHIDE PROJECT
(ASARCO / ICC Joint Venture)

Pinal County, Arizona

SCALE: 1" = 300'

JDS

Jan. 8, 1974

MVK 2700

DCA-3A

Collar Elev. 4640 ft.

DRILL HOLE DCA-3A

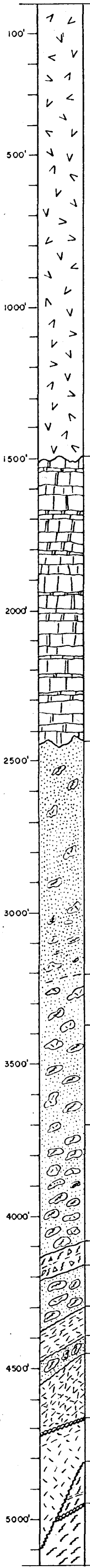
ROTARY Miami Copper-Superior Oil
Surface - 3000 ft.
Rotary - mud
May 7 - June 21, 1965

CORE ASARCO
2980-5154 ft.
Boyles, CP-50
NX Core
July 2 - October 16, 1974

NOTE: Core barrel & rods lost from 4150' to 4338'.
Hole cemented up to 4089'. A new hole was
deviated at 4089' and continued to terminal
depth at 5154'.

Rotary information
from files of Superior
Oil Company.

ROTARY	2980'	CORE
	300 ppm Cu	
	3204'	
	454 ppm Cu	
	4081'	660 ppm Cu
	4159'	2000 ppm Cu
	4297'	826 ppm Cu
	4394'	1225 ppm Cu
	4454'	3309 ppm Cu
	4666'	Oxide 4666'
	4690'	Sulfide 4690'
	4806'	1250 ppm Cu
	4948'	113 ppm Cu
	5154'	106 ppm Cu



(Notes in SOC files do not
mention vitrophyre or tuff
unit).

EARLIER VOLCANICS

WHITETAIL CONGLOMERATE

Slightly muddy to very gritty matrix of fine debris with
subangular to subrounded clasts, 1 1/2" - 2" medium size.

Matrix. red to muddy brown to chocolate brown at base, 18 %
Clast. Schultz 81 %, Pinal 16 %, Q.M. 3 %

3204'-3205' tuff marker.
Visible amounts of Cu^o in chocolate brown matrix, 17 %
Clast. Schultz 64 %, Pinal 36 %, Q.M. trace.

3370'
dark brown matrix, 15 %
Clast. Pinal 61 %, Schultz 27 %, db 7 1/2 %, Q.M. 4 1/2 %

3700'
dark brown to red brown matrix, 12 %.
Clast. Pinal 88 %, db 7 %, Q.M. 4 %, Qtzite 1 %

4081'
4159' SLIDE BLOCK of crushed & broken Pinal Schist & Schultz Q.M, altered.
dip ± 20°

4297'
Tw brown-red matrix, 20 %
Clast. Pinal 97 %, Q.M. 3 %

4394'
SLIDE BLOCK of cataclastic Q.M. @ ± 30°

4454'
Tw, red-brown matrix 16 %. Clast. Pinal 95 %, Q.M. 5 %

4500'
Cataclastic (moderate) fault slide of Schultz Q.M. (leached capping).
altered w/silica flooding, some clay & sericite, variable iron, oxidized.

4666'-4670' Fault Gouge @ ± 20° **OXIDE**
Schultz QM, broken, few shear zone, minor pyrite & moly. **SULFIDE**

4806'-4809' Fault Gouge @ 60°-70°
Pinal Schist w/minor gr. aplite squirts; cataclastic sheared.

4948'-4953' Fault Gouge @ ± 35°
Pinal Schist, broken but massive with fine pyrite, some magnetite.
Abundant spider-web calcite filled fractures. Through going qtz veinlets.

NOTE: Individual assays for the
hole are found in Assay
Report, dated Nov. 20, 1974

T 1 S, R 13 E
SW 1/4 NE 1/4 NW 1/4 of Sec. 23

**GRAPHIC LOG & ASSAY RESULTS
of**

DRILL HOLE DCA-3A

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

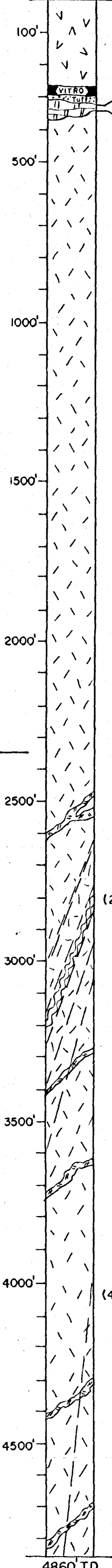
J.D.S.

July 8, 1974

MVK 2486-H

LB-4

Collar Elev. 4700'



DACITE

EARLIER VOLCANICS

SCHULTZE GRANITE

ARIZONA MINING COMPANY
 (P. Kayser)
HOLE LB-4

Rotary: Surface - 2344 feet
 GD-2000 w/Air Package
 Nov. 24 - Dec. 24, 1973

Core: 2344 - 4860 feet T.D.
 Longyear deep hole rig.
 Jan. 28 - July 30, 1974

Rotary
 — 2344' —
 Core

SCHULTZE GRANITE

Equigranular, medium grained, 15%-20% biotite w/small phenocrysts of feldspar. Few quartz eyes cut by 1"-2' granite aplite dikes. Minor clay zones. No mineral.

(2775'-2852') Shear zone @ 70°-85°, clay slips, slickensides (sub-horiz.).

3350'-3600' General increase in amount of biotite (20%-30%) and feldspar size (1/2" - 1" +)

3650' General loss of all feldspar phenocrysts. Granite aplites becoming pegmatites.

(4030'-4040') Steep, vertical, shearing w/ 1/8" clay slips.

4350' Pegmatite aplites with large plates of biotite.

Very massive, equigranular granite, few phenocrysts, few quartz eyes, minor granite aplite and pegmatitic aplite. Few steep fractures and slips.

4860 T.D.

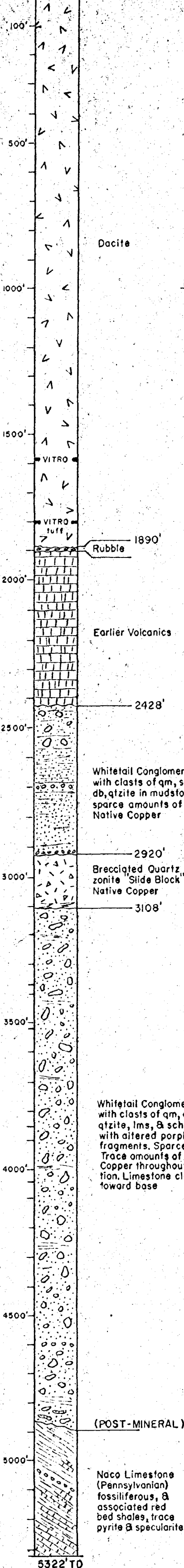
NOTE: Very low ppm Cu reported in hole.
 See memo dated Feb. 4, 1975.

T. I. S. R. 13 E.
 Center Of The
 NW 1/4 NE 1/4 NW 1/4 of Sec. 24

GRAPHIC LOG
 of

DRILL HOLE LB-4
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'

M-IA
Collar Elev. 4500'



Continental Rotary Hole M-1
Surface -2402' with core from 2252'-2261' (Sept.-Oct. 1970)

ASARCO Core Hole M-1A
2402'-5322' (April 11 - July 3, 1971)

NOTE: Assays recorded are Copper Values sampled on 10' intervals.

% Cu

0.305
0.348
0.152
0.130
0.100
0.082
0.092
0.110
0.090
0.075
0.150
0.222
0.220
0.140
0.122

from 3370' to 3520' 150'

0.18
0.14
0.09
0.08
0.13
0.11
0.13
0.10
0.07
0.09
0.09
0.10
0.08
0.08
0.11
0.09
0.08
0.08
0.08

from 3850' to 4040'

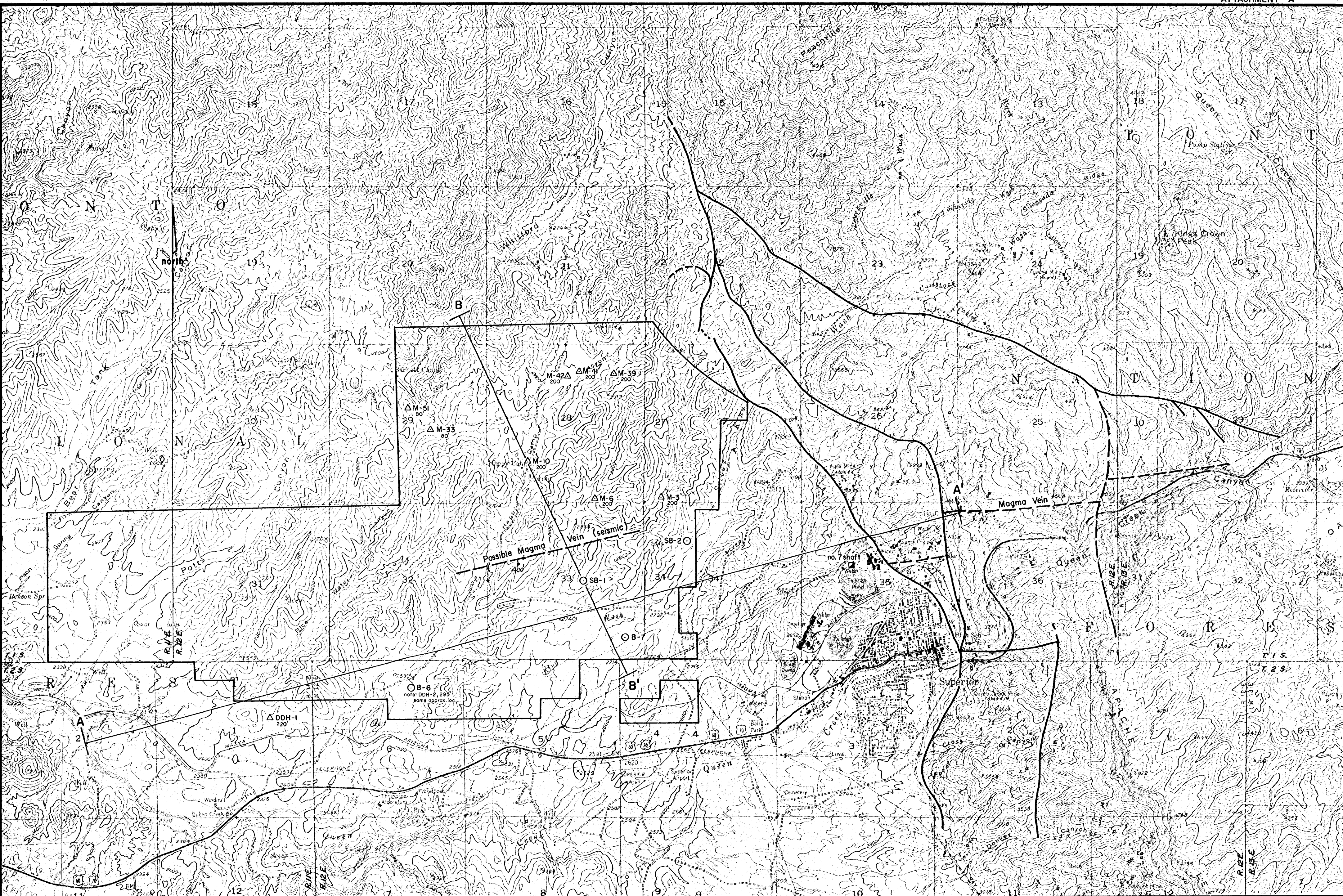
Available assays in this 492 foot section of Whitetail suggest the section will average 0.05 % copper.

Available assays in this 188 foot section of Quartz Monzonite 'slide block' will average 0.02 % copper.

Native copper in this 1790 foot section of Whitetail, from 3108 to 4898 feet, based on available assays, suggest the entire section will average 0.09 % copper.

T 1 S, R 13 E.
NW 1/4 SW 1/4 SW 1/4 of Sec. 15

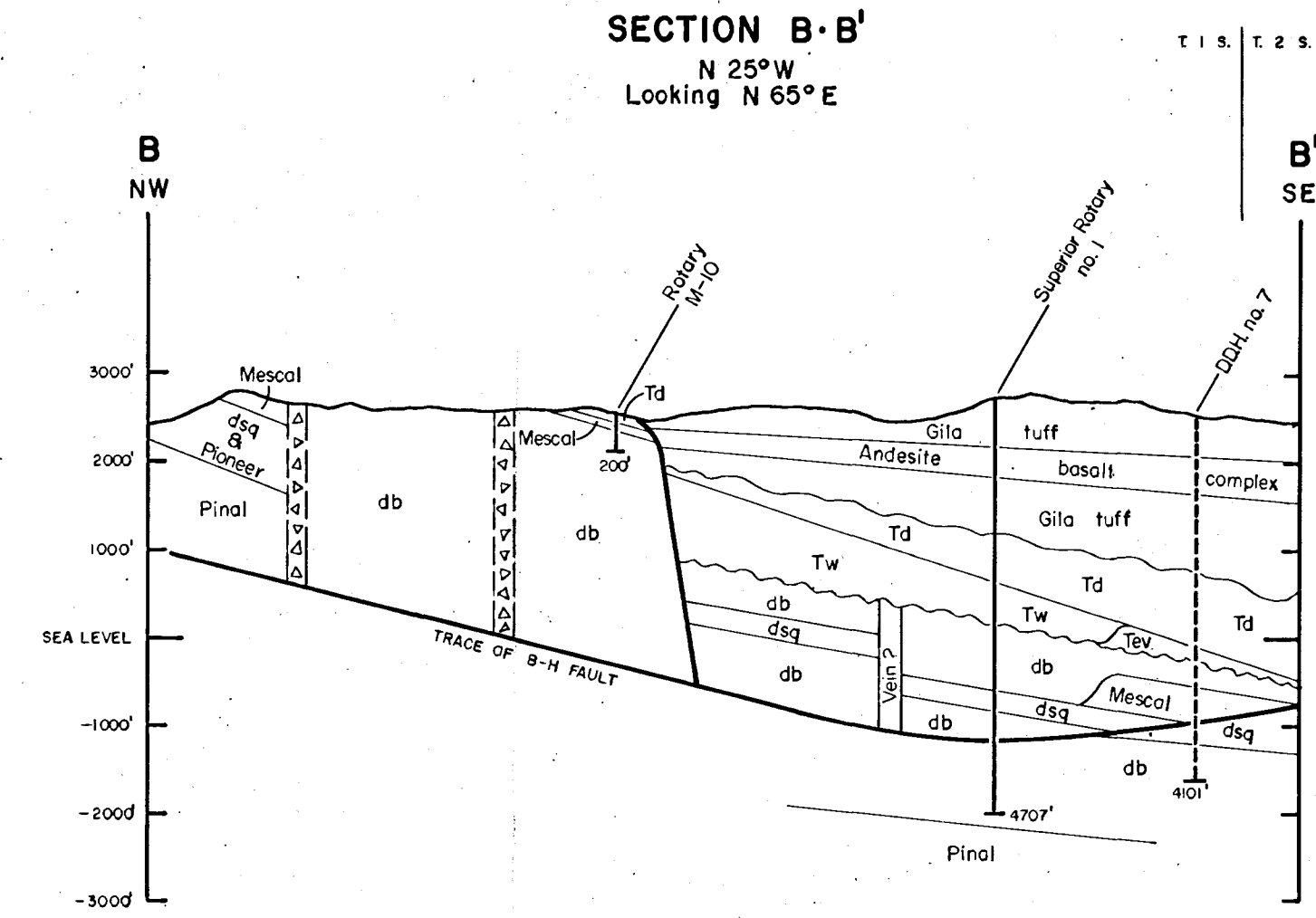
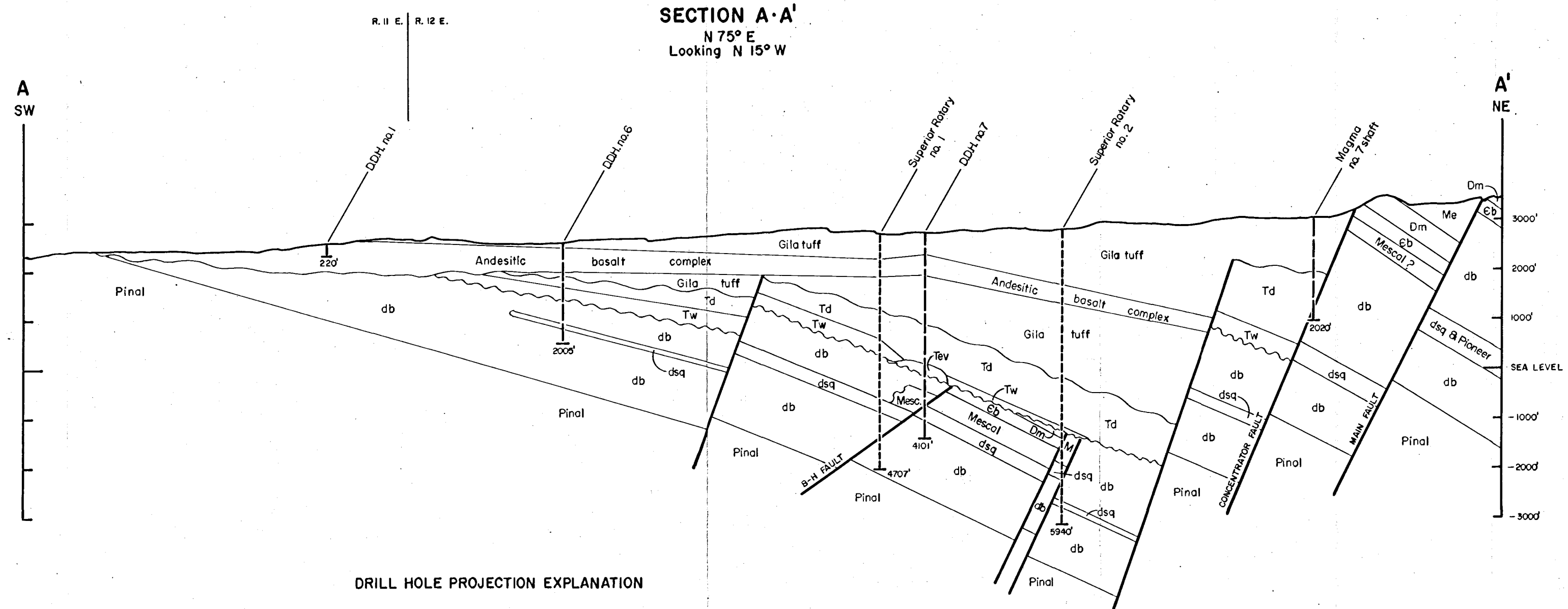
GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE M-1A
SUPERIOR EAST PROJECT
GILA & PINAL COUNTIES, ARIZONA
SCALE 1" = 300'
J.D.S. July 8, 1971



EXPLANATION

- CORE AND ROTARY DRILL HOLE
- △ AIR-TRACK DRILL HOLE (M-series)
- MJV - BONANZA CLAIM GROUP
- CROSS-SECTION
- - - FAULT

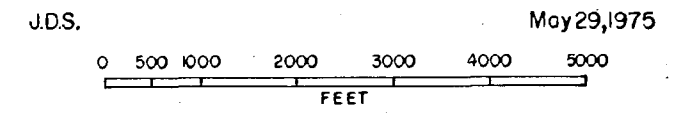
BONANZA PROJECT AREA
PINAL COUNTY, ARIZONA
SCALE 1"=2000'



DRILL HOLE PROJECTION EXPLANATION

 ON SECTION	 PROJECTED NORTH TO SECTION	 PROJECTED SOUTH TO SECTION A-A' SOUTHWEST TO SECTION B-B'
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SECTIONS A-A', B-B'
BONANZA PROJECT
PINAL COUNTY, ARIZONA
SCALE 1"=2000'



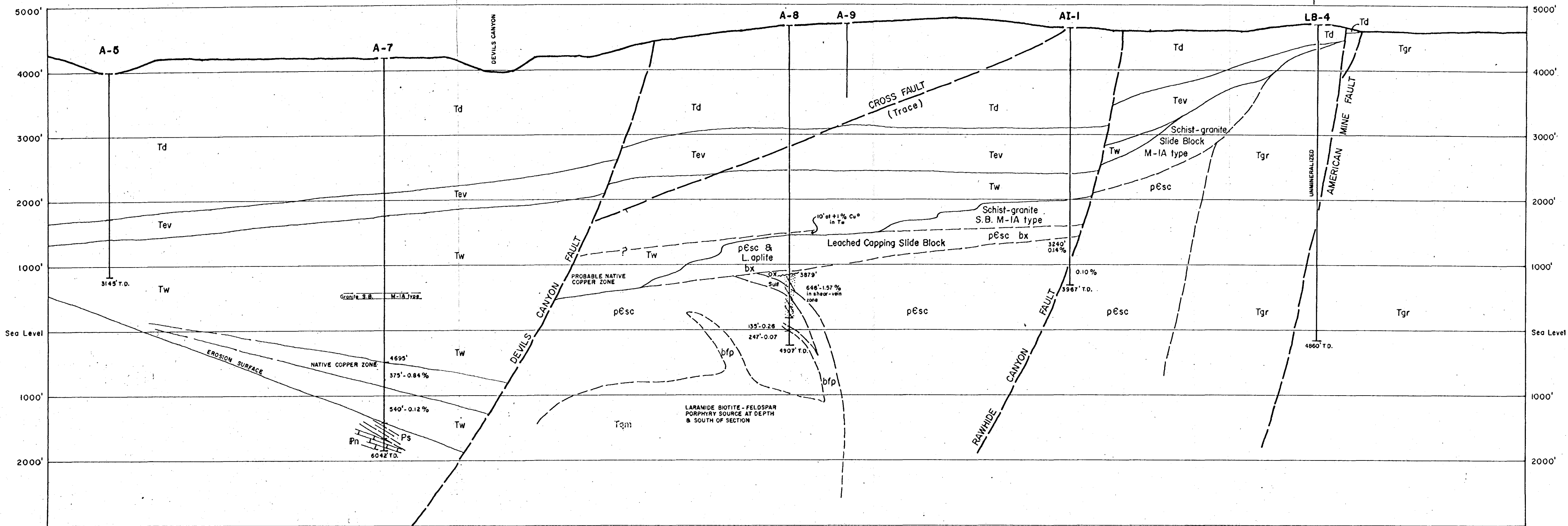
W

ASARCO

E

ASARCO

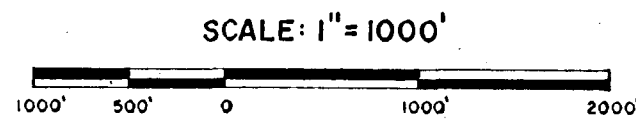
OTHER



EXPLANATION

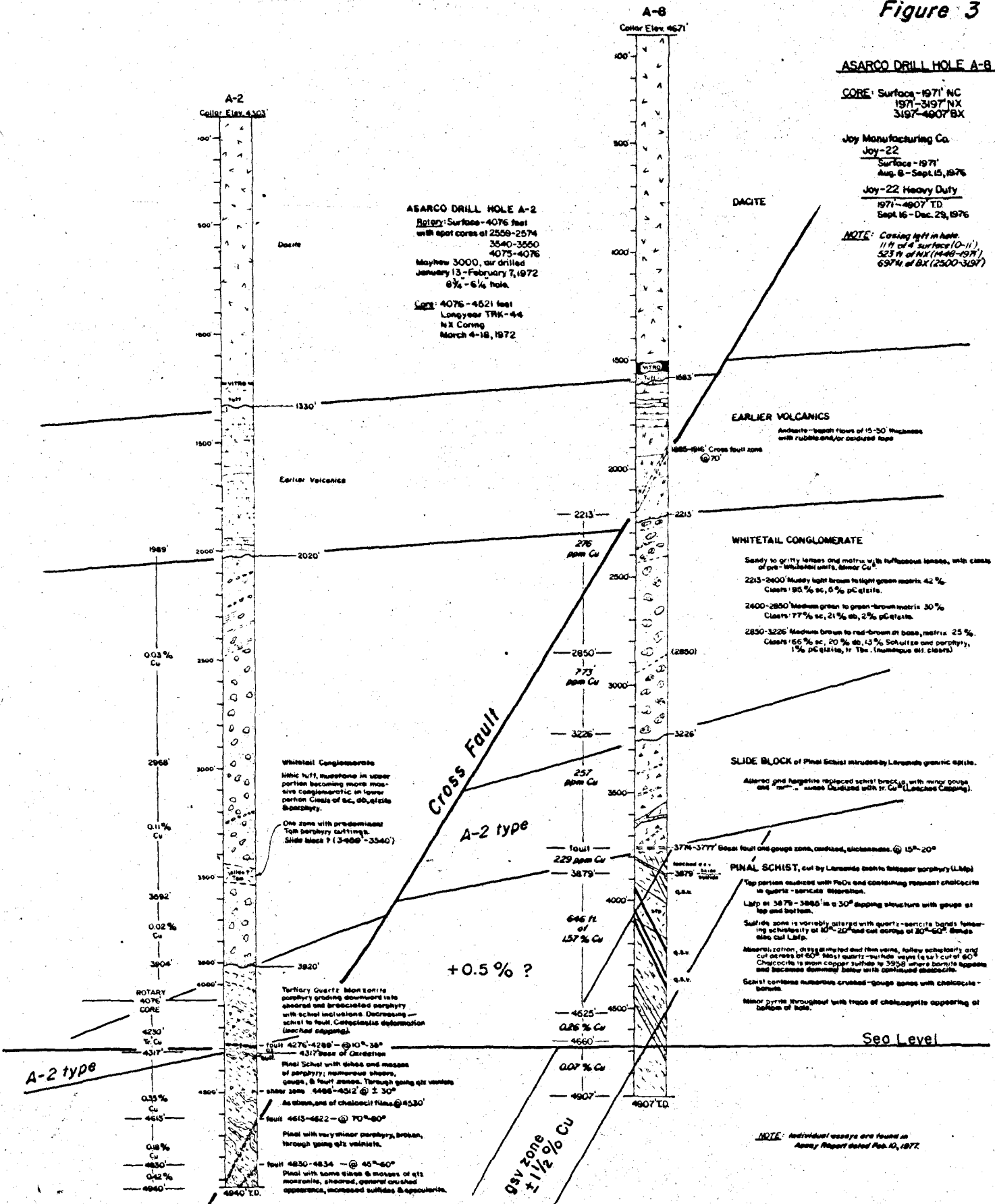
See Map Number 2990

SUPERIOR EAST PROJECT
CROSS SECTION
HOLE A-5 - HOLE LB-4



GILA & PINAL COUNTIES, ARIZONA
 JAN. 1977
 J.D.S.

Figure 3

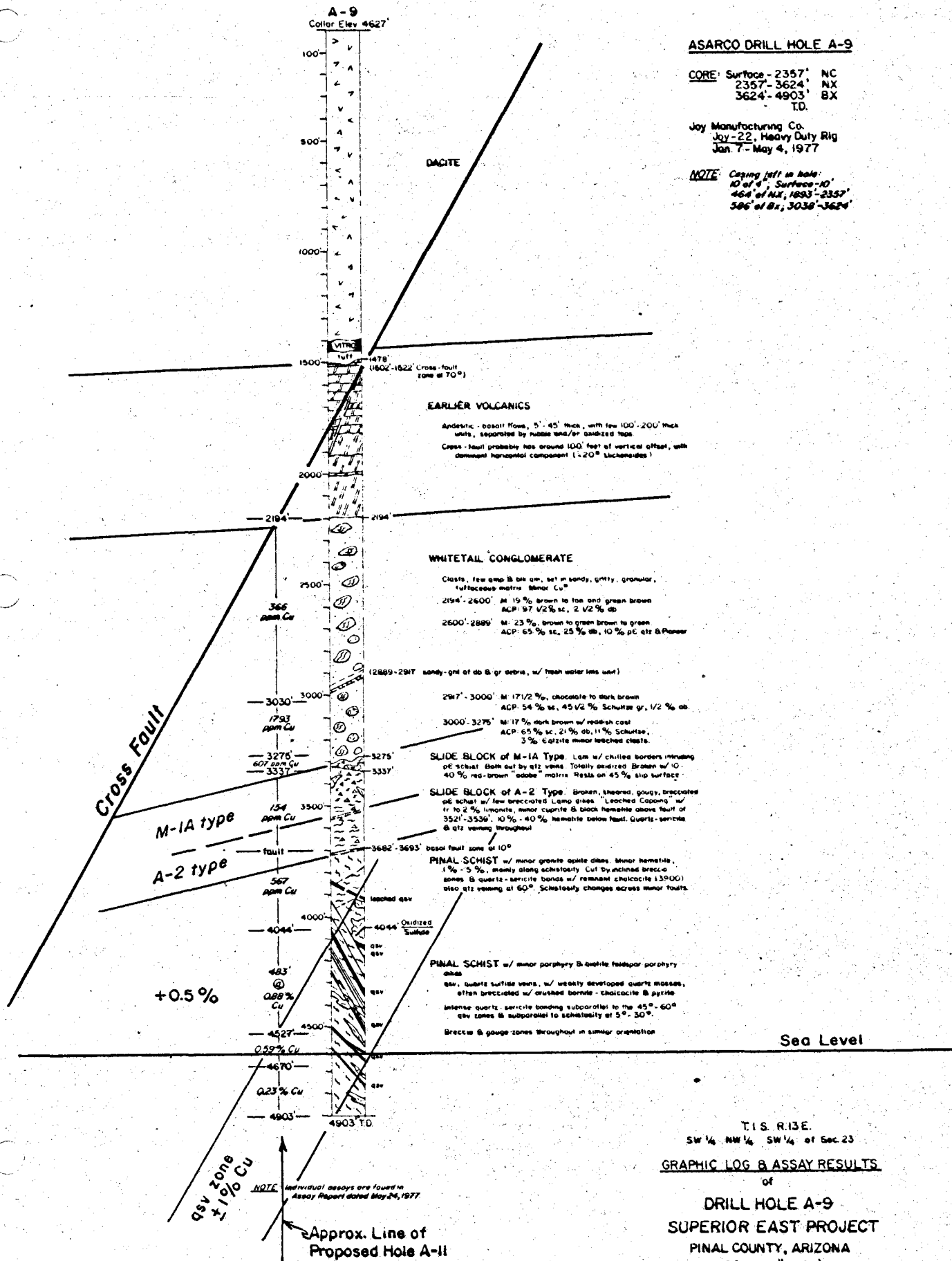


NOTE: Individual assays for the hole is found in Assay Report, dated May 26, 1972.

NOTE: Individual assays are found in Assay Report dated Feb. 12, 1977.

T. I. S. R. 13 E.
 NW 1/4 NE 1/4 SE 1/4 of Sec 22
 GRAPHIC LOG & ASSAY RESULTS
 of
 DRILL HOLE A-2W
 SUPERIOR EAST PROJECT
 GILA & PINAL COUNTIES, ARIZONA

T. I. S. R. 13 E.
 NW 1/4 SW 1/4 SW 1/4 of Sec 23
 GRAPHIC LOG & ASSAY RESULTS
 of
 DRILL HOLE A-8
 SUPERIOR EAST PROJECT
 PINAL COUNTY, ARIZONA
 SCALE 1" = 600'



ASARCO DRILL HOLE A-9

CORE: Surface - 2357' NC
 2357 - 3624' NX
 3624 - 4903' BX
 T.D.

Joy Manufacturing Co.
 Joy-22, Heavy Duty Rig
 Jan. 7 - May 4, 1977

NOTE: Casing left in hole:
 10' of 8", Surface-10'
 464' of NX, 1893-2357'
 506' of BX, 3038-3624'

EARLIER VOLCANICS

Andesitic - basalt flows, 5' - 45' thick, with few 100' - 200' thick
 vents, separated by rubble sand/gr oxidized tuff.
 Cross-fault probably has around 100' feet of vertical offset, with
 downward horizontal component (±20° N-S).

WHITETAIL CONGLOMERATE

Clasts, few gmp B to 6 in, set in sandy, gritty, granular,
 sulfaceous matrix. Minor Cu.
 2194' - 2600' M: 19% brown to tan and green brown
 ACP: 97 1/2% sc, 2 1/2% db
 2600' - 2889' M: 23% brown to green brown to green
 ACP: 65% sc, 25% db, 10% pC etc & Panner

(2889 - 2917 sandy-grit of db & gr debris, w/ fresh water lens unit)

2917' - 3000' M: 17 1/2% chocolate to dark brown
 ACP: 54% sc, 45 1/2% Schurtz gr, 1/2% db
 3000' - 3275' M: 17% dark brown w/ reddish cast
 ACP: 65% sc, 21% db, 11% Schurtz,
 3% Catzite minor leached clasts.

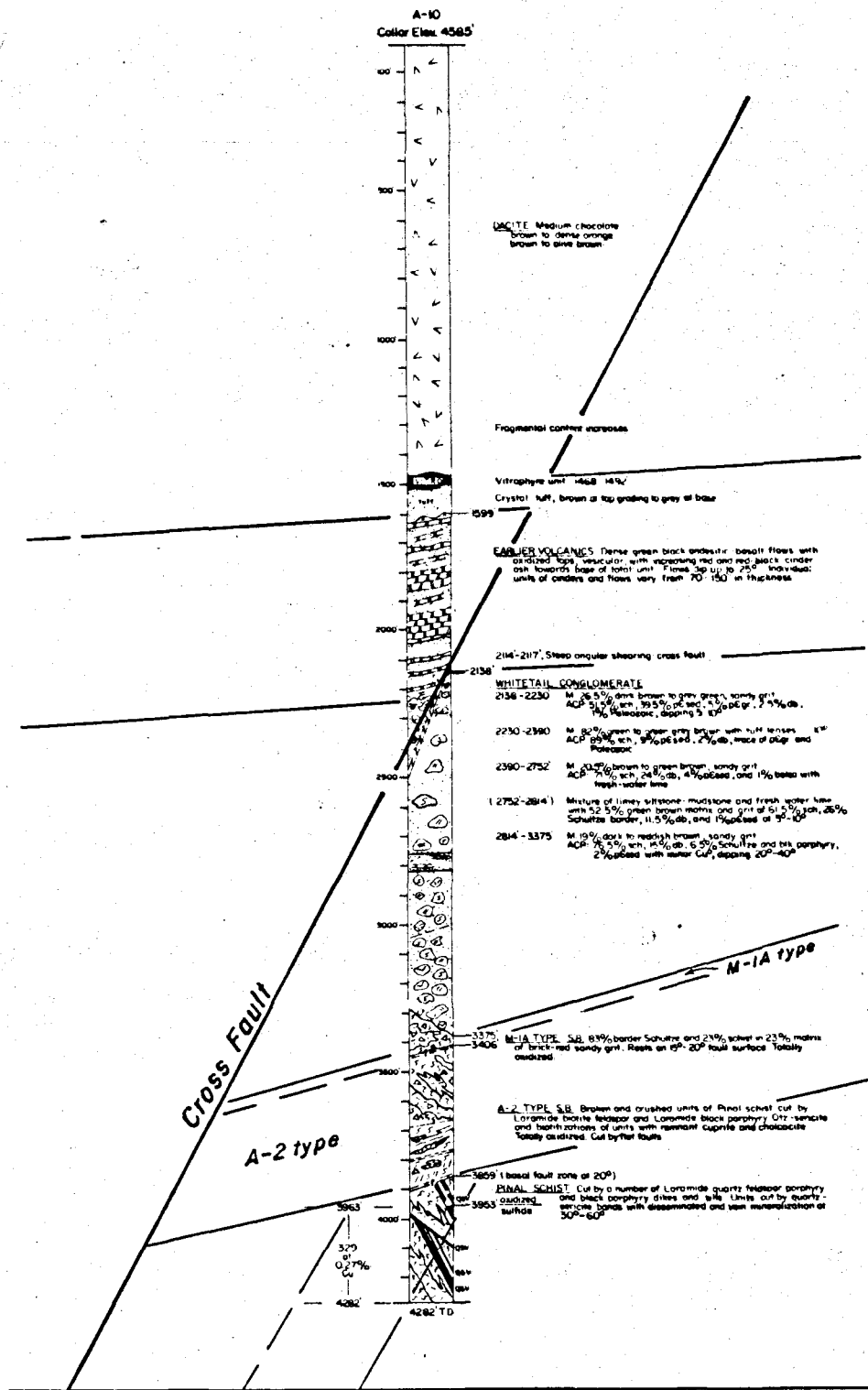
SLIDE BLOCK of M-1A Type: Lam w/ chilled borders intruding
 pE schist. Both cut by qtz veins. Totally oxidized. Brown w/ 10-
 40% red-brown "adobe" matrix. Rests on 45% slip surface.

SLIDE BLOCK of A-2 Type: Broken, sheared, gougy, brecciated
 pE schist w/ few brecciated Lamp dikes. Leached Caponga w/
 tr to 2% limonite, minor cuprite & black hematite above fault of
 3521' - 3536'. 10% - 40% hematite below fault. Quartz-sericite
 & qtz veining throughout.

PINAL SCHIST w/ minor granite apite dikes, minor hematite,
 1% - 5% mostly along schistosity. Cut by inclined breccia
 zones & quartz-sericite bands w/ remnant chalcocite (13900)
 also qtz veining of 60°. Schistosity changes across minor faults.

PINAL SCHIST w/ minor porphyry & enstatite feldspar porphyry
 etc, quartz sulfide veins, w/ weakly developed quartz masses,
 often brecciated w/ crushed hornite - chalcocite & pyrite.
 Intense quartz-sericite banding subparallel to the 45° - 60°
 etc zones & subparallel to schistosity at 5° - 30°.
 Breccia & gouge zones throughout in similar orientation.

T. I. S. R. I. S. E.
 SW 1/4, NW 1/4, SW 1/4 of Sec. 23
GRAPHIC LOG & ASSAY RESULTS
 of
DRILL HOLE A-9
SUPERIOR EAST PROJECT
 PINAL COUNTY, ARIZONA
 SCALE 1" = 600'



ASARCO DRILL HOLE A-10
Joy Drilling Company
Joy Heavy Duty MD-22
May 5 - August 3, 1977
November 15 - December 28, 1977
5' rock bit surface - 11'
MC core 11 - 2437'
NX core 2437 - 3417'
BX core 3417 - 3968'
AX core 3968 - 4282 TD.
NOTE: Core left in hole
11' of 4.5' surface - 11'
141' of NX 2296 - 2437'
222' of BX 3195 - 3417'
also BX rods from 3380 - 3968'

Probable
qsv zone
± 1% Cu

NOTE: Individual assays are found
in ASSARCO REPORT dated
January 13, 1978

T. I. S. R-13 E.
NW 1/4 SE 1/4 SE 1/4 of Sec. 22
GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-10
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 600'

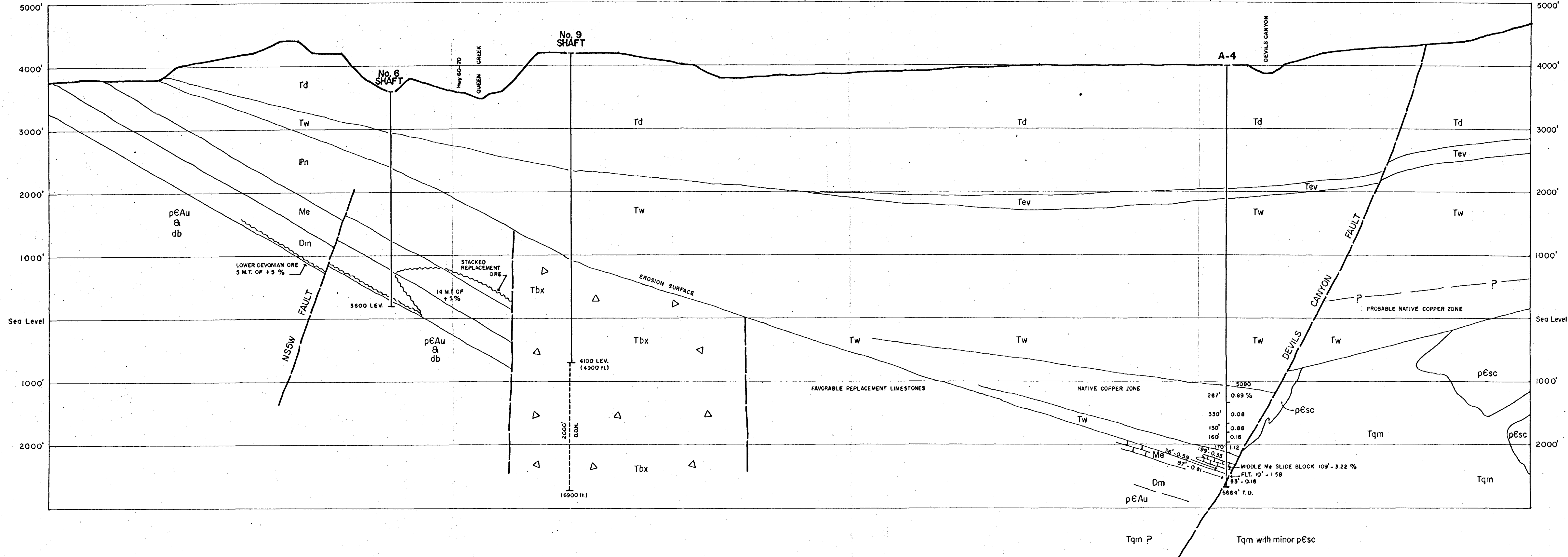
W

E

MAGMA COPPER COMPANY
(NEWMONT)

OAK FLAT F. S. WITHDRAWAL
6,500 FEET

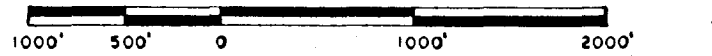
ASARCO



EXPLANATION

See Map Number 2990

SUPERIOR EAST PROJECT
CROSS SECTION
NO. 6 SHAFT-HOLE A-4
 SCALE: 1" = 1000'



GILA & PINAL COUNTIES, ARIZONA
 JAN. 1977 J. D. S.

Grainy Kellogg
Sean J. Sell

1/24/78

Please change the collar elevations on the following
SE graphic log & array reset log.

<u>log number</u>	<u>new collar elevation</u>
2486-E (A-2)	4303'
2486-F (A-2W)	4303'
2486-H (DCA-3A)	4625'
2486-HH (DCA-3A WLR)	4625'
2486-K (A-8)	4671'
2486-M (A-9)	4627'
2486-O (A-10)	4585'
MVK 2700 (AI-1, Ranchito)	4620'

Sean J. Sell

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

November 11, 1971

TO: J. D. Sell

FROM: R. B. Cummings

Assay Results
Drill Hole A-1
Superior East Project

Attached is a list of samples and corresponding assays for drill hole A-1. All are split core samples. Samples are listed in order of increasing depth. As can be seen from the list, the samples are not all continuous. An effort was made to obtain a good spatial distribution of samples in each of the pre-mineral rock types (Catus Breccia and Pinal Schist). Five continuous samples were taken (Samples A-1-1 thru A-1-5) in the best mineralization found in the schist.

R. B. Cummings
R. B. Cummings *lad*

RBC:lad
Attach.

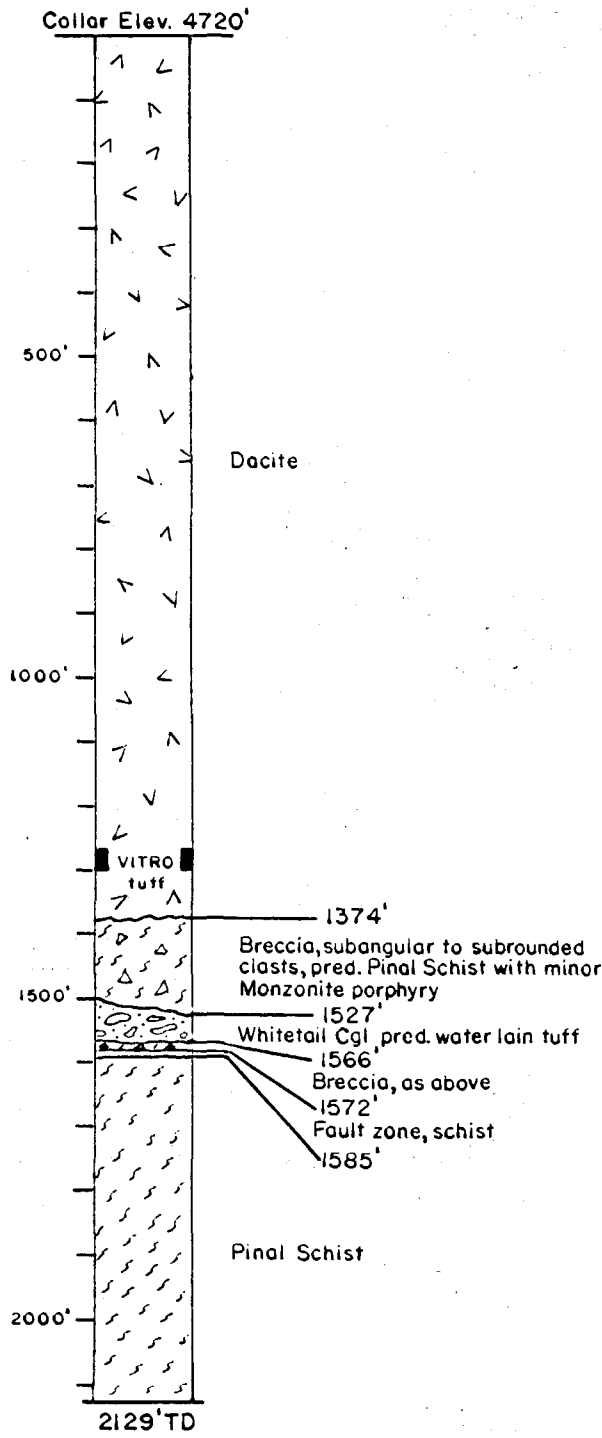
ASSAY RESULTS DRILL HOLE A-1
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Pb,%</u>	<u>Zn,%</u>	<u>Mo,%</u>	<u>Cu,%</u>
A-1-6	1380-1390	10'	Tr	0.01	.0053	0.18
A-1-7	1390-1400	10'	Tr	0.01	.0034	0.19
A-1-8	1420-1430	10'	0.01	Tr	.0039	0.12
A-1-9	1480-1490	10'	Tr	Tr	.0012	0.03
A-1-10	1510-1520	10'	0.01	0.01	.0011	0.15
A-1-11	1540-1550	10'	Tr	0.01	.0003	0.02
A-1-12	1620-1630	10'	Tr	0.01	.0032	0.02
A-1-13	1660-1670	10'	Tr	Tr	.0009	Tr
A-1-14	1750-1760	10'	Tr	0.01	.0008	0.01
A-1-15	1820-1830	10'	Tr	Tr	.0012	0.01
A-1-16	1880-1890	10'	Tr	Tr	.0009	0.01
A-1-1	1920-1930	10'	Tr	Tr	.0010	0.02
A-1-2	1930-1940	10'	Tr	Tr	.0010	0.02
A-1-3	1940-1950	10'	Tr	0.01	.0135	0.06
A-1-4	1950-1960	10'	Tr	0.01	.0009	0.04
A-1-5	1960-1970	10'	Tr	0.01	.0011	0.02
A-1-17	2030-2040	10'	Tr	Tr	.0014	0.02
A-1-18	2100-2110	10'	0.01	Tr	.0010	0.03
A-1-19	2120-2129	10'	Tr	Tr	.0010	0.03

NOTE: A composite of all nineteen samples assayed as follows:

Au - Trace
Ag - 0.19 02/ton

A-1



Footage — % Copper Assay

1380-1390	= 0.18 (0.053 % Mo)
1390-1400	= 0.19 (0.034 % Mo)
1420-1430	= 0.12
1480-1490	= 0.03
1510-1520	= 0.15
1540-1550	= 0.02
1620-1630	= 0.02 (oxide)
1660-1670	= Trace (oxide)
1750-1760	= 0.01 (sulfide)
1820-1830	= 0.01 (sulfide)
1880-1890	= 0.01
1920-1930	= 0.02
1930-1940	= 0.02
1940-1950	= 0.06
1950-1960	= 0.04
1960-1970	= 0.02
2030-2040	= 0.02
2100-2110	= 0.03
2120-2129	= 0.03

Composite of above samples

Assayed 0.19 oz Ag; tr. Au.

NOTE Rotary: Surface - 1309' (April 9-27, 1971)
Core: 1309'-2129' (July 15-August 12, 1971)

T 1 S, R 13 E.

NE 1/4 SW 1/4 SE 1/4 of Sec. 2

**GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-1
SUPERIOR EAST PROJECT**

GILA & PINAL COUNTIES, ARIZONA

SCALE: 1" = 300'

J.D.S.

Oct. 5, 1971

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 24, 1972

TO: J. D. Sell

FROM: R. B. Cummings

Assay Results
Drill Hole A-2
Superior East Project

Attached is a list of samples and corresponding assays for drill hole A-2. Samples numbered A-2-1, A-2-2, etc., are rotary cuttings samples. Samples numbered A-2C-1, A-2C-2, etc., are split core samples. Samples are listed in order of increasing depth. The first assays are by American Analytical and Research Laboratories. The sulfide zone was check assayed by Hawley and Hawley and the results submitted behind the AARL data.

R. B. Cummings
R. B. Cummings *Rak*

RBC:lad
Attach.

ASSAY RESULTS DRILL HOLE A-2

SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Total Cu, %	Weighted Average
ROTARY CUTTINGS				
A-2-1	Tev 1989-2021	32'	Trace	947 ft. @ 0.03% Cu.
A-2-2	2021-2052	31'	0.02	
A-2-3	2052-2081	29'	0.01	
A-2-4	2081-2112	31'	0.01	
A-2-5	2112-2143	31'	0.01	
A-2-6	2143-2174	31'	0.01	
A-2-7	2174-2205	31'	0.01	
A-2-8	2205-2236	31'	0.01	
A-2-9	2236-2267	31'	0.03	
A-2-10	2267-2297	30'	0.04	
A-2-11	2297-2327	30'	0.05	
A-2-12	2327-2358	31'	0.04	
A-2-13	2358-2390	32'	0.04	
A-2-14	2390-2422	32'	0.03	
A-2-15	2422-2452	30'	0.03	
A-2-16	2452-2484	32'	0.04	
A-2-17	2484-2515	31'	0.04	
A-2-18	2515-2546	31'	0.03	
A-2-19	2546-2559	13'	0.03	
A-2-20	2559-2572	13'	0.04	
A-2-21	2572-2602	30'	0.03	
A-2-22	2602-2633	31'	0.03	
A-2-23	TW 2633-2662	29'	0.04	
A-2-24	2662-2694	32'	0.02	
A-2-25	2694-2725	31'	0.02	
A-2-26	2725-2756	31'	0.03	
A-2-27	2756-2787	31'	0.04	
A-2-28	2787-2818	31'	0.05	
A-2-29	2818-2848	30'	0.02	
A-2-30	2848-2878	30'	0.05	
A-2-31	2878-2909	31'	0.07	
A-2-32	2909-2938	29'	0.05	
A-2-33	2938-2968	30'	0.03	
A-2-34	2968-3004	36'	0.10	
A-2-35	3004-3034	30'	0.03	
A-2-36	3034-3064	30'	0.10	
A-2-37	3064-3095	31'	0.07	
A-2-38	3095-3126	31'	0.09	
A-2-39	3126-3157	31'	0.03	
A-2-40	3157-3188	31'	0.09	
A-2-41	3188-3217	29'	0.03	

ASARCO Sample No.	Depth	Interval	Total Cu, %	Weighted Average	No ppm
A-2-42	3217-3248	31'	0.10	624 ft. @ 0.11% Cu	1883 ft. @ 0.06% Cu
A-2-43	3248-3278	30'	0.08		
A-2-44	3278-3308	30'	0.13		
A-2-45	3308-3339	31'	0.11		
A-2-46	3339-3370	31'	0.19		
A-2-47	3370-3400	30'	0.27		
A-2-48	3400-3429	29'	0.17		
A-2-49	3429-3459	30'	0.10		
A-2-50	3459-3490	31'	0.07		
A-2-51	3490-3522	32'	0.05		
A-2-52	3522-3550	28'	0.11		
A-2-53	3550-3561	11'	0.22		
A-2-54	3561-3592	31'	0.16		
A-2-55	3592-3622	30'	0.05		
A-2-56	3622-3653	31'	0.03		
A-2-57	3653-3685	32'	0.02		
A-2-58	3685-3716	31'	0.03		
A-2-59	3716-3747	31'	0.02		
A-2-60	3747-3779	32'	0.01		
A-2-61	3779-3810	31'	0.02		
A-2-62	3810-3841	31'	0.02		
A-2-63	3841-3873	32'	0.02		
A-2-64	3873-3904	31'	0.03		
A-2-65	3904-3935	31'	0.03		
A-2-66	3935-3964	29'	0.02		
A-2-67	3964-3995	31'	0.12		
A-2-68	3995-4027	32'	0.03		
A-2-69	4027-4055	28'	0.04		
A-2-70	4055-4076	21'	0.04		

CONTINUOUS CORE SAMPLES

A-2C-1	4076-4078	2'	0.16	312 ft. @ 0.02% Cu	26 ppm	oxidized and leached, no sulfides remaining.
A-2C-2	4078-4080	2'	0.18			
A-2C-3	4080-4090	10'	0.14			
A-2C-4	4090-4100	10'	0.01			
A-2C-5	4100-4110	10'	0.02			
A-2C-6	4110-4120	10'	0.05			
A-2C-7	4120-4130	10'	0.30			
A-2C-8	4130-4140	10'	0.01			
A-2C-9	4140-4150	10'	0.01			
A-2C-10	4150-4160	10'	0.01			
A-2C-11	4160-4170	10'	0.01			
A-2C-12	4170-4180	10'	0.07			
A-2C-13	4180-4190	10'	Trace			
A-2C-14	4190-4200	10'	0.06			
A-2C-15	4200-4210	10'	0.01			

Tqm & p&pi

ASARCO Sample No.	Depth	Interval	Total Cu, %	Weighted Average	Mo ppm
A-2C-16	4210-4220	10'	0.16	406 ft. @ 0.05% Cu	53
A-2C-17	4220-4230	10'	0.26		25
A-2C-18	4230-4240	10'	Trace		23
A-2C-19	4240-4250	10'	0.01		15
A-2C-20	4250-4260	10'	0.01		14
A-2C-21	4260-4270	10'	0.01		32
A-2C-22	4270-4280	10'	0.01		23
A-2C-23	4280-4290	10'	0.01		8
A-2C-24	4290-4300	10'	Trace		17
A-2C-25	4300-4310	10'	Trace		11
A-2C-26	4310-4320	10'	0.22		11
A-2C-27	4320-4330	10'	0.20		12
A-2C-28	4330-4340	10'	0.11		12
A-2C-29	4340-4350	10'	0.37		8
A-2C-30	4350-4360	10'	0.63		12
A-2C-31	4360-4370	10'	0.39		8
A-2C-32	4370-4380	10'	0.40		16
A-2C-33	4380-4390	10'	0.36		11
A-2C-34	4390-4400	10'	0.35		118
A-2C-35	4400-4410	10'	0.42		14
A-2C-36	4410-4420	10'	0.51		7
A-2C-37	4420-4430	10'	0.31		24
A-2C-38	4430-4440	10'	0.35		20
A-2C-39	4440-4450	10'	0.27		5
A-2C-40	4450-4460	10'	0.33		12
A-2C-41	4460-4470	10'	0.48	67	
A-2C-42	4470-4480	10'	0.49	16	
A-2C-43	4480-4490	10'	2.40	6	
A-2C-44	4490-4500	10'	0.42	7	
A-2C-45	4500-4510	10'	1.01	18	
A-2C-46	4510-4513	3'	0.25	32	

Tqm & pspi

33 ft. @ 1.18% Cu

170 ft. @ 0.36% Cu

203 ft. @ 0.50% Cu

Tr Au, 0.10 oz Ag

Tr Au, 0.07 oz Ag

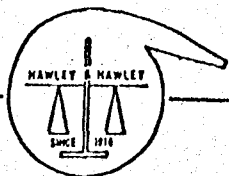
Tr Au, 0.04 oz Ag

oxidized and leached, no sulfides remaining.

fault 4295 ft.

first sulfide 4314 ft.

last of oxidation effects.



Registered Assayers
OVER 50 YEARS

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.
BOX 50106 1700 W. GRANT RD.,
TUCSON, ARIZONA 85703 (602) 622-4836

BRANCHES

Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

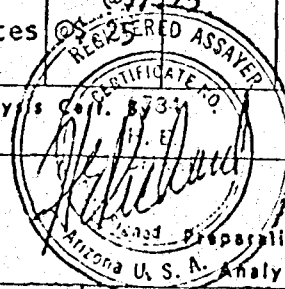
IDENTIFICATION	Gold opt	Silver opt	Lead %	Copper %					
A-2C-25				0.01	Weighted Average — 200 ft. @ 0.54% Cu —				
26				0.20					
27				0.20					
28				0.11					
A-2C-29				0.37					
A-2C-30				0.65					
31				0.40					
32				0.42					
33				0.39					
A-2C-34				0.38					
A-2C-35				0.43					
36				0.54					
37				0.30					
38				0.38					
A-2C-39				0.29					
A-2C-40				0.37					
41				0.50					
42				0.55					
43				2.71					
44				0.43					
A-2C-45				1.09					
<u>Composites:</u>									
A-2C-25, 26, 27, 28, 29	< 0.005	0.03							
A-2C-30, 31, 32, 33, 34	< 0.005	0.05							
A-2C-35, 36, 37, 38, 39	< 0.005	0.11							
A-2C-40, 41, 42, 43, 44	None	0.01							
					21 Cu, verified, @\$3.25	\$ 68.25			
					4 Au & Ag " @\$7.25	29.00			
					20 Composites	5.00			

cc. American Smelting & Refining Company
ADD: Southwestern Exploration Department
CITY: Attn: Mr. James D. Sell
AND: Box 5747
Tucson, Arizona 85703

REMARKS:

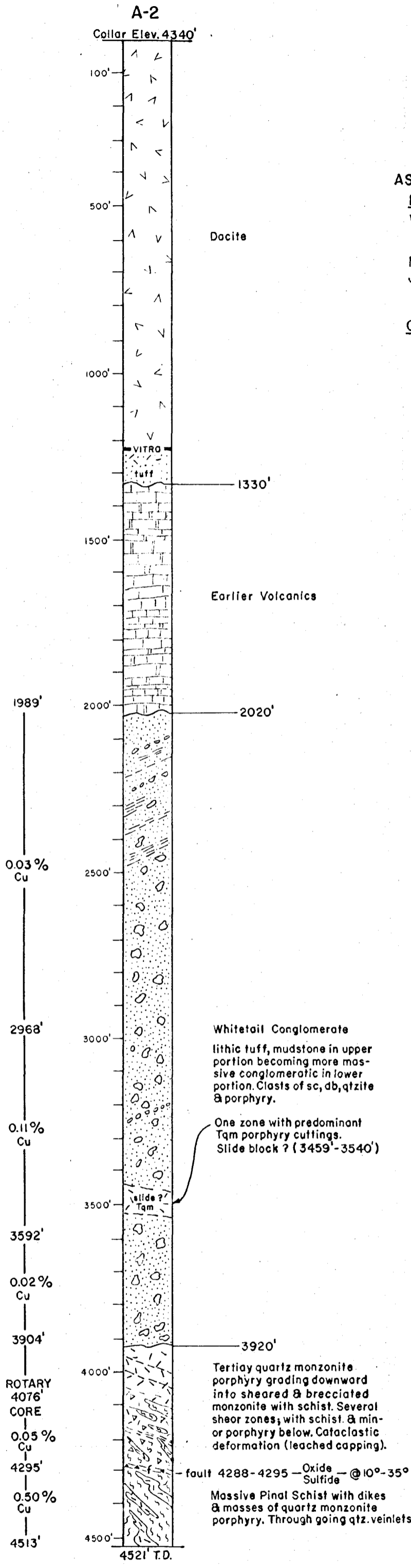
Verified analysis

Analysis Cert. 8734



Preparation \$ 5.00
Analysis \$ 97.25

ACC. AMERICAN SMELTING & REFINING CO.	Date Spl. Received 4/7/72	Date Compl. 4/10/72	TUC 346098	\$ 102.25
---------------------------------------	---------------------------	---------------------	------------	-----------



NOTE: Hole lost w/corebarrel & rods
in bottom. See Hole A-2 W
(map # 2486-F) for wedged
hole.

Individual assays for the hole
are found in Assay Report,
dated March 24, 1972.

T 1 S, R 13 E.
NW 1/4 NE 1/4 SE 1/4 of Sec. 22

GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-2
SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA
SCALE 1" = 300'
J.D.S. July 8, 1972

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

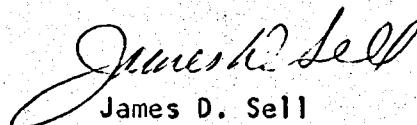
May 26, 1972

TO: W. L. Kurtz

FROM: J. D. Sell

Assay Results
Drill Hole A-2W
Superior East Project
Pinal County, Arizona

Attached is the list of samples and corresponding assays by American Analytical and Research Laboratories for Drill Hole A-2W. All samples are split core of NQ size (Longyear). Each sample length is ten feet.


James D. Sell

JDS:lad
Attach.

ASSAY RESULTS DRILL HOLE A-2W
SUPERIOR EAST PROJECT

ASARCO Sample Number	Footage Depth	Footage Interval	Percent Copper	PPM Moly	Weighted Average % Cu	
A-2W-1	4230-4240	10'	Tr	16		
A-2W-2	4240-4250	10'	Tr	23		pCpi & masses of Tqm
A-2W-3	4250-4260	10'	Tr	14		
A-2W-4	4260-4270	10'	Tr	17		
A-2W-5	4270-4280	10'	Tr	21		
A-2W-6	4280-4290	10'	0.01	14		4289 Fault Tqm
A-2W-7	4290-4300	10'	Tr	18		
A-2W-8	4300-4310	10'	Tr	7		
A-2W-9	4310-4320	10'	0.02	24		4317 base oxidation
A-2W-10	4320-4330	10'	0.19	8		pCpi & minor Tqm with veinlets and dissem.
A-2W-11	4330-4340	10'	0.72	12		
A-2W-12	4340-4350	10'	0.66	12		
A-2W-13	4350-4360	10'	0.32	10		
A-2W-14	4360-4370	10'	0.41	10		
A-2W-15	4370-4380	10'	0.25	11		
A-2W-16	4380-4390	10'	0.60	64		
A-2W-17	4390-4400	10'	0.53	15		
A-2W-18	4400-4410	10'	0.38	11		
A-2W-19	4410-4420	10'	0.28	24		
A-2W-20	4420-4430	10'	0.36	9		
A-2W-21	4430-4440	10'	0.30	12		
A-2W-22	4440-4450	10'	0.30	9		
A-2W-23	4450-4460	10'	0.25	11		
A-2W-24	4460-4470	10'	0.37	19		
A-2W-25	4470-4480	10'	0.45	10		
A-2W-26	4480-4490	10'	0.32	15		
A-2W-27	4490-4500	10'	0.67	12		
A-2W-28	4500-4510	10'	0.24	11		
A-2W-29	4510-4520	10'	0.07	10		
A-2W-30	4520-4530	10'	0.13	21		
A-2W-31	4530-4540	10'	0.12	68		
A-2W-32	4540-4550	10'	0.08	5		
A-2W-33	4550-4560	10'	0.46	0.0928%		
A-2W-34	4560-4570	10'	0.48	66		
A-2W-35	4570-4580	10'	0.18	122		
A-2W-36	4580-4590	10'	0.55	10		
A-2W-37	4590-4600	10'	0.43	10		
A-2W-38	4600-4610	10'	0.19	11		
A-2W-39	4610-4620	10'	0.10	3		4613-4622 fault zone drop in mineralization
A-2W-40	4620-4630	10'	0.06	18		Predominantly vein mineralization
A-2W-41	4630-4640	10'	0.14	25		
A-2W-42	4640-4650	10'	0.13	77		
A-2W-43	4650-4660	10'	0.13	8		

270' @ 0.35%

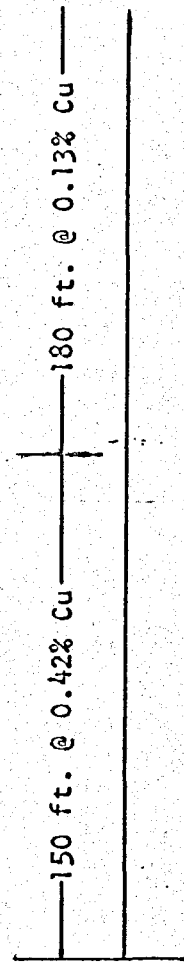
210 ft. @ 0.37% Cu
80 ft. @ 0.31% Cu
620 ft. @ 0.31% Cu for entire sulfide intercept
(to the base of 270')

end of cc films

A-2W-44	4660-4670	10'	0.25	18
A-2W-45	4670-4680	10'	0.07	18
A-2W-46	4680-4690	10'	0.12	0.0295%
A-2W-47	4690-4700	10'	0.17	0.0257%
A-2W-48	4700-4710	10'	0.10	12
A-2W-49	4710-4720	10'	0.05	10
A-2W-50	4720-4730	10'	0.13	12
A-2W-51	4730-4740	10'	0.30	6
A-2W-52	4740-4750	10'	0.28	14
A-2W-53	4750-4760	10'	0.07	18
A-2W-54	4760-4770	10'	0.09	13
A-2W-55	4770-4780	10'	0.08	15
A-2W-56	4780-4790	10'	0.09	11
A-2W-57	4790-4800	10'	0.20	37
A-2W-58	4800-4810	10'	0.82	26
A-2W-59	4810-4820	10'	0.41	21
A-2W-60	4820-4830	10'	0.26	19
A-2W-61	4830-4840	10'	0.50	8
A-2W-62	4840-4850	10'	0.11	11
A-2W-63	4850-4860	10'	0.19	15
A-2W-64	4860-4870	10'	0.34	32
A-2W-65	4870-4880	10'	0.37	7
A-2W-66	4880-4890	10'	0.63	79
A-2W-67	4890-4900	10'	1.18	24
A-2W-68	4900-4910	10'	0.56	17
A-2W-69	4910-4920	10'	0.07	10
A-2W-70	4920-4930	10'	0.10	13
A-2W-71	4930-4940	10'	0.54	73

220 ft @ 2.1%

110 ft @ 2.12%



4830-4834 fault
increased sulfides
& specularite

459

A-2W

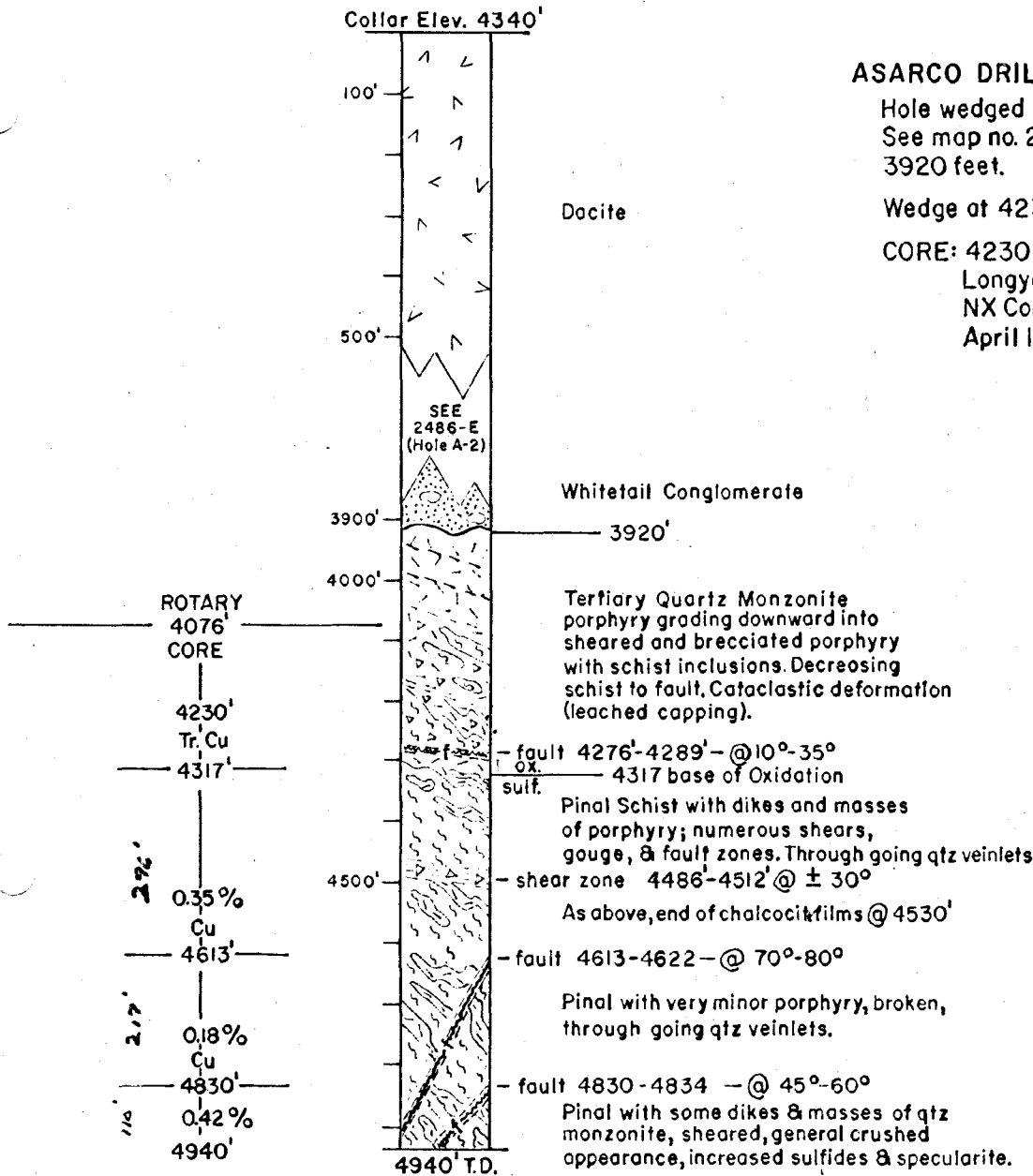
Collar Elev. 4340'

ASARCO DRILL HOLE A-2W (Wedge)

Hole wedged from previous Hole A-2.
See map no. 2486-E for units above
3920 feet.

Wedge at 4230 feet.

CORE: 4230 - 4940 feet
Longyear TRK-44
NX Coring
April 19 - May 17, 1972



NOTE: Individual assays for the hole is found in Assay Report, dated May 26, 1972.

T 1 S, R 13 E.
NW 1/4 NE 1/4 SE 1/4 of Sec. 22

**GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-2W
SUPERIOR EAST PROJECT**

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'
J.D.S. July 8, 1972

~~AS~~
ASARCO Incorporated
~~The~~ Drill Hole on State Lease Sections 5, T.2S, R.13E.
in NW 1/4 SE 1/4 NE 1/4

Rotary Contractors:

a) Harness Drilling Company

Unit: Fairbanks 1500 DMX with 2 WES ^{air} compressors ^{sys}
Dates: May 22 - June 1, 1973 (8" hole)

Surface casing: 10 feet of 10 inch.

Depth: surface - 1445 feet

b) Copper State Exploration Company

Unit: Fairbanks DMX Holemaster, ^{with} rotary mud system

Dates: May 10 - 19, 1974 (5 1/2" hole).

Depth: 1445 - 1749 feet.

Casing: ~~4 inch flush joint~~ stabilized 4" ID with 4" flush joint below.

Core Contractors

Tonto Drilling Company

Unit: CP-50

Dates: Sept. 26 - Dec. 1, 1975

Depth: 1749 - 6008 feet.

Casing: HQ rods as casing to 2978.

Geologic Units:

Surface - 1430 Tertiary Facies with vitrophyre

1430 - 6008 Tertiary Whitetail Conglomerate

Casing left in hole:

Ten feet of 10 inch

stabilized 4" ID from surface to 1445 in 8" hole with

4" flush joint to 1749 in 5 1/2" hole
HQ rods and shoe from 2950 - 2975 feet

Hole backfilled with heavy drilling mud
welded cap placed on surface pipe.

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

July 18, 1974

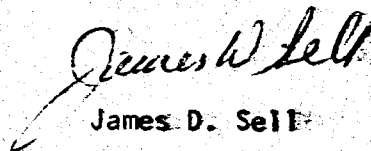
TO: W. L. Kurtz

FROM: J. D. Sell

Rotary

Assay Results
Drill Hole A-3
Superior East Project

Attached is an AARL report on the five rotary cuttings samples secured from the Whitetail section of hole A-3. The hole was deepened in Whitetail during the 1973-1974 assessment (State Lease) year.


James D. Sell

JDS:1b
Attach.

December 29, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Graphic Log and Assay Results
 Drill Hole A-3
 Superior East Project
Pinal County, Arizona

Drill hole A-3 on State Lease section 5, T2S, R13E, was completed to a depth of 6008 feet by Tonto Drilling Company

As shown on the graphic log (attached), dacite was found from the surface to 1430 feet and had the normal vitrophyre and tuff at the base. Whitetail Conglomerate extended from 1430 feet to the terminal depth of 6008 feet. A slide block of slightly broken and brecciated diabase, 45 feet thick, was cored near the bottom of the hole. Also attached are the detailed log, with assays, sheets 1 through 11. The AARL assay sheets and results were reported in a memo dated December 23, 1975.

Reverse or inverted stratigraphy in the clast composition was again noted in hole A-3 as has been recorded in several of the previous holes. Precambrian Pinal Schist and Hadera Granite were predominant near the top of the Whitetail Conglomerate sequence, with Precambrian schist, diabase, and Apache group sediments occupying the central portion, and lower in the hole, Paleozoic limestone clasts become abundant.

In all three holes, A-7, A-4, & A-3, a strong influx of Paleozoic clasts were noted with an average percentage of between 20 and 30 percent of the total clast population.

Table 1 compares the three holes and the thickness of the limestone clast sequence. Note the apparent thickening of the abundant limestone clast sequence going from north to south.

TABLE 1 — Comparison of Abundant Limestone Clast Thickness

Hole (Distance between holes)	A-7 (3900 ft.)	A-4 (7400 ft.)	A-3
Collar Elevation	4270	4100	4125
Depth to top of abundant Limestone clasts	5220	6130 (Minimum)	5450
Thickness of Limestone Clasts	390 ft.	354(?) ft.	558 plus ft.
Base of Whitetail Conglomerate	5610	6484	6008 (Incomplete)

Although the base of the Whitetail was not intercepted in hole A-3, it is probably in the same depth range as A-4, as noted in Table 1.

Coryell's hole KC-1 is presently being deepened by Newmont and is said to be scheduled for a depth of 5400 feet. Newmont is presently coring BX size at 3500 feet. Various projections would suggest that their hole will not penetrate into the basement units even though their collar elevation is at 3960 feet.

Based on past drill hole information, it is suggestive that the bedrock basement below A-3 should be one of the Paleozoic units, probably Naco Limestone. The hole KC-1 had originally cored Naco Limestone from a depth of 2917 feet to the then terminal depth of 3304 feet. Newmont's desire to deepen the hole was probably based on the fact that they would have a rather inexpensive test of the deeper middle Mississippian replacement horizon, which is the most productive at their nearby Magma Mine. However, the reentered hole apparently passed through the Naco block and back into Whitetail Conglomerate within the first several coring shifts. Thus, the Naco block is a slide block within the Whitetail Conglomerate, a common feature found in some of our holes.

Hole A-4 contained a number of very fine-grained lithic tuff beds and below the lowest and thickest bed the development of abundant and persistent distribution of native copper occurrence was found. At a comparable level in hole A-7 to the north, a five-foot tuff bed was found and a similar occurrence of native copper was found. In hole A-3, far to the south, two lithic tuff beds were intercepted and below the lowest and thickest bed the copper occurrence became persistent and with a three to four-fold increase in the amount of copper found above the tuff. A comparison of the holes is given in Table 2.

TABLE 2 — Comparison of Whitetail Thickness & Grade

Hole (Distance between holes)	A-7 (3900 ft.)	A-4 (7400 ft.)	A-3
Collar Elevation	4210	4100	4125
Top of Whitetail*	2445	2133	1430
Thickness of Whitetail**	2245 ft.	2950 ft.	3055 ft.
Average Grade***	0.05%	0.07%	0.01%
Top of Lowest Tuff*	4690	5083	4485
Thickness of Whitetail**	920 ft.	1401 ft.	1523 ft. (Incomplete)
Average Grade***	0.43%	0.53%	0.05%
Top of Basement	5610	6484	(6008' T.D. in Tw)
Basement Unit	Supai Frm.	Escabrosa Lms.	

*Depth below collar

**Includes any slide block

***Copper value in Whitetail portion only

A slight thickening is apparent in the conglomerate units both above and below the tuff marker bed in going southward from A-7 through A-4 to A-3. The change in average grade both above and below the tuff is also apparent, although in hole A-3 incomplete sampling suggests a higher valued zone (0.04%) extends above the tuff for 195 feet.

It might be suggested that the 0.05% intercept in A-3 is a stratigraphic equivalent to the 0.05-0.07% intercepts in A-7 and A-4 and, therefore, a plus 0.40% unit might lie deeper in A-3. However, based on presently known parameters such as total Whitetail thickness, various unit thicknesses within the Whitetail, the limestone clast abundance and the tuff marker bed, it all suggests a time-stratigraphic equivalency of Whitetail units above and below the assigned tuff marker, as listed in Table 2.

Basic differences in clast regime between holes A-7 and A-4 versus A-3 are within the type of Precambrian and Laramide granitoid clast. The northern two holes have Ruin Granite, Schultz Granite, quartz eye porphyry, and a dark porphyry, whereas hole A-3 contains Madera type clasts and a variable porphyritic dike rock type (rhyodacite?) similar to those of the Ray district. Specularite clasts of the Magma replacement type are found in all three holes and both above and below the tuff marker bed.

The color of the conglomerate matrix and its visual appearance change within the holes as well as between holes. Table 3 compares the matrix.

TABLE 3 — Conglomerate Matrix Color and Appearance

Hole	A-7	A-4	A-3
Collar Elevation	4210	4100	4125
Top of Whitetail	2445	2133	1430
Color of unit	dark brown to red brown	dark brown to grey brown with reddish brown	grey to tan to grey green brown to medium brown
Top of tuff	4690	5083	4485
Color-Appearance	dark grey black to dark red brown to dirty brown with abundant slips and slickensides	dark reddish brown to maroonish to blackish to muddy with abundant slips and slickensides	medium chocolate brown with greenish cast. Rare slips and slickensides
Base of Persistent Cu ^o	5120	6140	6008 (Incomplete)
Color of unit	red brown	reddish brown to grey and grey brown	.
Base of Whitetail	5610	6484	?

As shown in Table 3, the Whitetail in each hole is much darker in coloration below the tuff bed than above the tuff bed. This tuff marker is also the change from background copper values to higher grade values. The major zones of copper occurrence in holes A-7 and A-4 also have a matrix color of dark reddish to maroonish to blackish and with abundant slips and slickensides, whereas in the persistent copper area below the tuff bed in hole A-3, the matrix only attained a medium chocolate brown coloration and only rare slips and slickensides were noted.

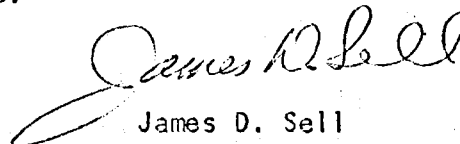
Based on the concept of a continuous subsiding basin with concurrent conglomerate debris infilling, it would appear likely that the northern two holes were being infilled from a northern and northeasterly source, whereas the area of hole A-3 was basically derived from the east and southeast. It is thought that the infilling resulted in a series of overlapping coarse alluvial mud-flow fans and that only minor clast contribution was received from the west.

Although solutions capable of carrying and releasing copper were present throughout the complete Whitetail basin deposition time, it is apparent that the higher grade areas of native copper are found in a different matrix coloration-appearance feature and are probably directly related.

The extent of the "copper" fans cannot be reconstructed at the present time, but it is suggestive that the probable source area, for the bulk of the copper, is from an eroded deposit, possibly as close as the A-2(W) system. If so, then the southerly productive margin probably is nearer to hole A-3 than previously suggested which results in a potentially greater inferred tonnage of +0.8% copper than previously suggested.

Based on the concept written in the report on the "Whitetail Copper Potential", November 8, 1974, the cross-section (Attachment C-2 of that report) through drill hole A-3 should be modified as shown on the Attachment A of this report. In hole A-3, the tuff marker bed and the attendant persistent native copper, although of low tenor, was found between 100 and 150 feet higher than originally projected, while the base of the conglomerate was not reached even though the drilling extended 1100 feet below the projected base. The thin, somewhat brecciated diabase slide block in A-3 sampled 0.20% copper, the highest value noted. The origin of the copper in the block is undoubtedly the same as the copper in the Whitetail units. It is also probable that the diabase block originated in the uplifted and deeper eroded block to the east.

Continued study of the Whitetail basin parameters and the integration of all available data from other drill holes will continue to be undertaken as a means of measuring this unique copper occurrence.


James D. Sell

JDS:lb
Atts.

A-3
Collar Elev. 4125'

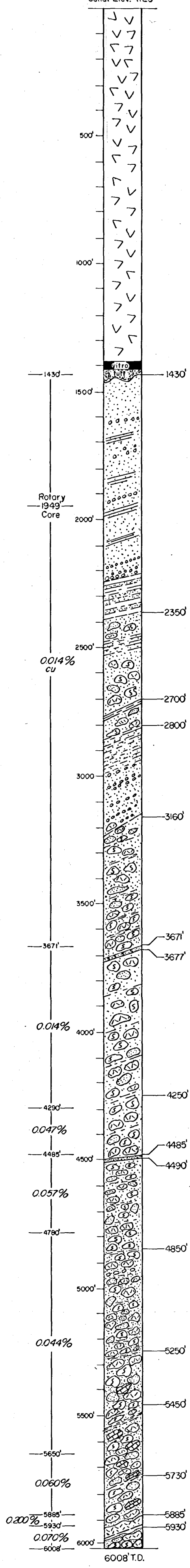
ASARCO DRILL HOLE A-3

ROTARY:

- a) Harness Drilling Company
Failing 1500 DMX w/2 WEJ compressors
May 22 - June 1, 1973 (8" hole)
surface-1445'
- b) Copper State Exploration Company
Failing DMX Holemaster, rotary mud
May 10-19, 1974 (5 1/8" hole)
1445'-1949'

CORE:

Tonto Drilling Company, CP-50
Sept. 26 - Dec. 1, 1975
1949' - 6008'



Dacite, light salmon pink to white to mottled orange and chocolate brown to yellow orange near base.

Whitetail Conglomerate, mudstone variety. Coarse sandy lenses from 2" to 8" thick of sandy granules, mainly less .25", in greenish to mottled fine laminated mudstone, siltstone, and fine sandstone. Coarse sand debris mainly diabase, schist and Apache group granules with minor Paleozoic limestone.
M* 40% - 90% grey to grey green brown.

Whitetail Conglomerate, .25"-3" clasts, some in excess of 1", set in debris of similar material of sand to granular size. Bedding at 10°.
ACP* 77schist, 17db, 5.5 Apache group, .5 bolsa, Trace Laramide dike
M* 42% grey green to green brown

Mudstone slips suggest 30° inclination
ACP* 56db, 21 Madera gr, 16 Apache group, 4schist, 2 bolsa, 1 Paleozoic ls.
M* 23% dirty green

ACP* 35schist, 31 db, 30 Apache group, 3 Madera gr, 1 Paleozoic ls
M* 76% brown to grey green
Mudstone slip at 30°

Note specularite replaced clasts in this interval
ACP* 44schist, 36 db, 20 Apache group
M* 29% mainly green brown to brown, some chocolate brown with greenish cast becoming light tan to green brown at base

Lithic tuff, sandstone, trace cuprite, banding at 25%

ACP* 46schist, 32db, 22 Apache group
M* 22% light grey brown to tan brown to medium brown becoming dirty brown near base.

Noticable cu° starting 4290' erratic distribution.

ACP* 43schist, 41db, 16 Apache group
M* 19% dirty to chocolate brown

Tuff with muddy granular matrix. Sandy zones suggest 10°-15° dip cu°, small individual flakes, scattered throughout.

ACP* 46schist, 44db, 8.5 Apache group, 1 Paleozoic ls, .5 Laramide
M* 14% chocolate brown, varying from light to dark, with greenish cast.
Specularite and jarosite capping in some clasts

ACP* 46db, 43.5schist, 10 Apache group, .5 Laramide, Trace Paleozoic
M* 14% medium chocolate brown

ACP* 48.5db, 31schist, 16 Apache group, 4.5 Paleozoic, Trace Laramide
M* 17% medium chocolate brown

ACP* 29db, 28 Paleozoic, 24schist, 19 Apache group, Trace Laramide
M* 15% medium chocolate brown, with greenish cast toward base.
Sandy zones suggest 20° inclination on bedding

ACP* 43db, 25schist, 24 Apache group, 8 Paleozoic
M* 12% medium chocolate brown, greenish brown

Diabase slideblock, subhorizontal shears near base, has 'bx' appearance.
Whitetail Conglomerate
ACP* 59db, 30.5schist, 8 Apache group, 2 Paleozoic, .5 Laramide
M* 8% brown green

ACP* = average clast percentage
M* = matrix percentage

Note: Individual assays found on log sheets, and assay report dated Dec. 23, 1975

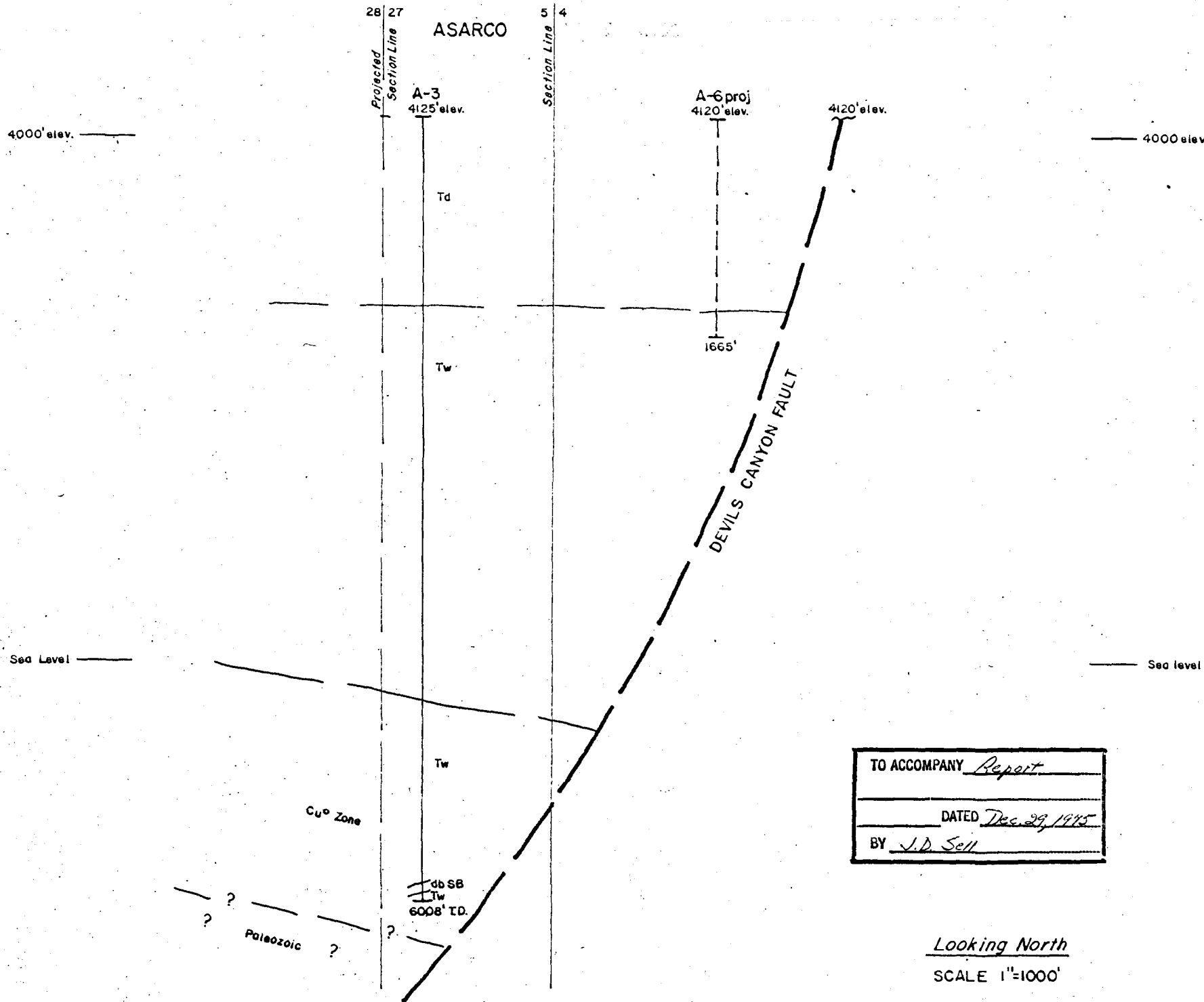
T.2 S., R.13 E.
NW 1/4 SE 1/4 NE 1/4 of sec. 5

GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-3
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'

TO ACCOMPANY	<i>Report</i>
DATED	<i>Dec. 29, 1975</i>
BY	<i>J.D. Sell</i>

J.D.S.

Dec. 1975



TO ACCOMPANY	<i>Report</i>
DATED	<i>Dec. 29, 1945</i>
BY	<i>J. D. Sell</i>

Looking North
SCALE 1"=1000'

See Previous Sheets for Rotary Drilling
 CORE: Tonto Drilling Co. (Vancouver, Canada)
 CP-50 w/ 50' pulls, 20' core barrel
 Started coring Sept. 26, 1975
 Terminated coring Dec. 1, 1975.
 Total depth 6008'

Moved on Sept. 20.
 Moved off Dec. 1.

GEOLOGIC LOG

PROJECT Superior East

SUPERIOR
 7 1/2' Topo. Quad
 (1948)

PROJECT Superior East
 Collar elev. 4125 ft
 Coord N. 883,450'
 Inclination Vertical
 Logged by J. H. [unclear]
 Date start Sept. 26, 1975
 Core

HOLE NO. A-3
 Final depth 6008 ft
 Coord E. 749,300'
 Page 2 of 11
 Date finish Dec. 1, 1975

DEPTH			% CORE RECOV. 100% unless specified	Assay No. A-3-	% ASSAY (AARL)					MATRIX COLOR	Matrix % gangue	GANGUE						STRUCTURE	ROCK TYPE and REMARKS
from	to	int'l			Cu	Pb	Zn	Mn	CLAST			pebbles	pebbles	pebbles	pebbles	pebbles	pebbles		
1941	1950	9																WHITE TAIL CONGLOMERATE. Mudstone matrix w/ coarse sand lenses, clayey pebbles containing dolomite fragments & pebbles of quartz & biotite grains visible. Sandy zones from 2" to 2 ft thick.	
1950	1960	10																	
1960	1970	10																	
1970	1980	10																	
1980	1990	10																	
1990	2000	10																	
2000	2010	10		-1	0.01	0.05	0.05	0.0004											
2010	2020	10																	
2020	2030	10																	
2030	2040	10																	
2040	2050	10																	
2050	2060	10																	
2060	2070	10																	
2070	2080	10																	
2080	2090	10																	
2090	2100	10																	
2100	2110	10		-2	0.01	0.04	0.04	0.0005											
2110	2120	10																	
2120	2130	10																	
2130	2140	10																	
2140	2150	10																	
2150	2160	10																	
2160	2170	10																	
2170	2180	10																	
2180	2190	10																	
2190	2200	10																	
2200	2210	10		-3	0.01	0.03	0.04	0.0001											
2210	2220	10																	
2220	2230	10																	
2230	2240	10																	
2240	2250	10																	
2250	2260	10																	
2260	2270	10																	
2270	2280	10																	
2280	2290	10																	
2290	2300	10																	
2300	2310	10		-4	0.03	0.04	0.05	Tr											
2310	2320	10																	
2320	2330	10																	
2330	2340	10																	
2340	2350	10																	
2350	2360	10																	
2360	2370	10																	

Tonto CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N _____

Coord E _____

Inclination Vertical

Page 4 of 11

Logged by J. Stoll

Date start _____

Date finish _____

DEPTH			% CORE RECOV 100% unless noted	ASSAY No. A-3-	% ASSAY				MATRIX Clas %	GANGUE						STRUCTURE	ROCK TYPE and REMARKS
from	to	int'l			Cu	Pb	Zn	Mn		CLASTS	Qtz	Plg	Amph	Py	Chl		
2800	2810	10		-9	0.01	0.02	0.04	0.000									WHITISH CONGLOMERATE. Various sized pre-Tert clasts set in fine sand to gritty coarse clastics. Fine matrix, hematite-muscovite. 1/4"-1/2" slices @ 15-20°
2810	2820	10							M: 84 quartz	95	10	25	30	25			
2820	2830	10							60	75		40	50	10			
2830	2840	10							95								
2840	2850	10							ARC: 40 Azurite	80	20	40	40				
2850	2860	10							34 db gangue	60	55	5	40				Bearing very sandy in grain size
2860	2870	10							19 sch	80							
2870	2880	10							4 pyrr	90							
2880	2890	10							3 Pyrr	98							thin reddish bands.
2890	2900	10								70	10	85	5				
2900	2910	10		-10	0.01	0.03	0.01	0.000		95							Ball in slices @ 20°
2910	2920	10							M: 74 gangue	90	50	25	25				
2920	2930	10								95	50	5	45				thin reddish brown bands & lenses
2930	2940	10							ARC: 55 sch	10	50	20	30				
2940	2950	10							25 db	98	90		10				
2950	2960	10							15 Amph	25	50	25	25				
2960	2970	10							5 pyrr	50	20	25	10	45			* matrix type
2970	2980	10								40	80	10	10				
2980	2990	10								40	40	5	5				
2990	3000	10								60	20	20	30	30			
3000	3010	10		-11	0.01	0.04	0.05	0.000		60	5	10	40	45			
3010	3020	10							M: 75 gangue	90	5	5					thin multicolored chips (1/4"-1/2")
3020	3030	10								80	10	7	3				
3030	3040	10							ARC: 87 db	60	50	15	35				
3040	3050	10							36 sch	70	50	20	30				
3050	3060	10							23 Amph	70	50		50				
3060	3070	10							2 pyrr	80	50		50				fine debris
3070	3080	10							2 Pyrr	80	5	5	40	50			
3080	3090	10								75	40	40	20				
3090	3100	10							gangue w/ ambr	80	30	20	20	15			
3100	3110	10		-12	0.01	0.04	0.06	0.000		60	5	5	50	40			
3110	3120	10							M: 55 gangue w/ sch	60	20	60	20				* Includes a 1" clast of chert (pyrr sch)
3120	3130	10								60	5	70	25				
3130	3140	10								50	40	40	20				
3140	3150	10							ARC: 38 Amph	70	15	50	30	5			* Spinelinite imp band db @ 2146.
3150	3160	10							31 sch	80	35	35	30				
3160	3170	10							30 db	40	50	15	35				Reaction rims around some db clasts, see 3168
3170	3180	10							1/2 pyrr	85	50	30	20				
3180	3190	10							1/2 sch	60	30	20	50				1" clast seen @ 2170.
3190	3200	10								40	60	10	20				
3200	3210	10		-13	0.01	0.03	0.07	0.000		85	80	10	10				
3210	3220	10								35	50	5	45				

HQ Core
TW

HQ Core
NQ Core

TW

Tenth CP-8

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N _____

Coord E _____

Inclination Vertical

Page 5 of 11

Logged by JRS/GO

Date start _____

Date finish _____

NK
TW

DEPTH			% CORE RECOV. 100% UNLESS NOTED	ASSAY No. A-3-	% ASSAY				ORE	MINERALS	GANGUE	MINERALS	STRUCTURE	ROCK TYPE and REMARKS		
from	to	int'l			Ca	Pb	Zn	Mg								
3220	3230	10							Mi: 37 <u>brn-grey quartz</u>	40	80	10	10		WHITETAIL CONGLOMERATE Various sized clasts from 4" up set in matrix of similar debris in gait to some size, often w/ mud slips. Matrix Clast 1-2. Strong br-cgl. 3224. Br. Dm. 3234. 2 ft br clast @ 3252 1/2. Clasts becoming "packed"	
3230	3240	10							ARC: 42 <u>db</u>	20	15	15	65	5		
3240	3250	10							34 <u>sch</u>	20	10	15	70	5		
3250	3260	10							21 <u>Ambrs</u>	40	25	40	35			
3260	3270	10							1/2 <u>Bolsa</u>	30	30	30	40			
3270	3280	10							1/2 <u>Poleo</u>	45	15	40	35	10		
3280	3290	10							" "	30	15	30	50	5		
3290	3300	10							" "	20	40	35	25			
3300	3310	10		-14	0.01	0.04	0.06	tr								
3310	3320	10							M: 25 <u>brn-grey quartz</u>	20	45	10	45			
3320	3330	10							" "	35	45	20	35			
3330	3340	10							ARC: 44 <u>sch</u>	30	45	20	35			
3340	3350	10							35 <u>db</u>	30	30	40	30		1/2 ft clast of disc.	
3350	3360	10							21 <u>Ambrs</u>	30	40	20	40			
3360	3370	10							T. <u>sch</u>	20	15	15	25			
3370	3380	10							" "	25	40	5	15	✓	Note Spinelite replaced db clast (1/2") @ 3373.	
3380	3390	10							" "	20	40	✓	10	30	✓	Note: Clast trending to fall out in core interval of 6" - 12" in length.
3390	3400	10							" "	15	20	✓	35	45	✓	
3400	3410	10		-15	0.02	0.05	0.06	0.000								
3410	3420	10							M: 22 <u>brn-grey quartz</u>	25	25	35	40	✓		
3420	3430	10							" "	20	45	5	50	✓		
3430	3440	10							ARC: 44 <u>sch</u>	20	55	5	40			
3440	3450	10							40 <u>db</u>	25	50	5	45		Note variation in type of diabase & alteration. Spinelite in matrix & db.	
3450	3460	10							1/2 <u>Ambrs</u>	20	45	10	45			
3460	3470	10							T. <u>sch</u>	25	55	5	40		? (Ambrs-like mat. 3468)	
3470	3480	10							" "	20	45	15	40	✓	* Note partial replacement of Balsa db by specularite 3476	
3480	3490	10							" "	30	50	10	40	✓		
3490	3500	10							" "	25	25	50	25		? (Ambrs-like mat. 3498)	
3500	3510	10		-16	0.01	0.05	0.06	0.000							* Note C-12 variable colored Trappite clasts. Note hematite stain coloration around some fragments and in matrix.	
3510	3520	10							M: 21 <u>brn-grey quartz</u>	20	15	5	45			
3520	3530	10							" "	20	40	20	40			
3530	3540	10							ARC: 53 <u>sch</u>	25	60	10	30			
3540	3550	10							29 <u>db</u>	30	70	✓	10	20		
3550	3560	10							18 <u>Ambrs</u>	30	70	10	20			
3560	3570	10							" "	20	70	15	15			
3570	3580	10							" "	30	55	5	40			
3580	3590	10							" "	20	40	40	20		* Note thin 1-foot piece, one specimen, all in matrix?	
3590	3600	10							" "	30	45	25	30			
3600	3610	10		-17	0.02	0.03	0.05	tr							* Note Mineral clast @ 3604	
3610	3620	10							M: 26 <u>brn-grey quartz</u>	20	15	20	20			
3620	3630	10							ARC: 39 <u>sch</u>	30	35	25	40			
3630	3640	10							23 <u>sch</u>	25	40	15	40			
3640	3650	10							21 <u>Ambrs</u>	20	45	15	40			

TW

Tomb CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N _____

Coord E _____

Inclination Vertical

Page 6 of 11

Logged by J. H. ...

Date start _____

Date finish _____

NX
Core
Tw
Lithic
tuff
Tw

DEPTH	CORE RECOVERY			Assay No. A-3-	% ASSAY				Cu	Native Cu	Matrix	GANGUE					STRUCTURE	ROCK TYPE and REMARKS
	from	to	int'l		%	Pb	Zn	Mn				CLASTS	Gr	Sp	Ch	Py		
3650	3660	10	100%								lt. green	15	45	10	45			WHITE-TAN CONGLOMERATE Various sized clasts of P. ...
3660	3670	10									lt. green	20	30	30	10			1/4" ... + 1-foot ...
3670	3671	1									lt. green	5	30	30	40			1st trace of Cu at 3658' ...
3671											lt. green							LITHIC SANDSTONE TOFF siliceous ...
3677	3677	6									lt. green	40	45	10	45			specimens? ...
3677	3680	3									lt. green	15	45	10	45			WHITE-TAN CONGLOMERATE As previously described
3680	3690	10									M: 21% ...	25	30	30	40			
3690	3700	10									M: 21% ...	20	40	20	40			
3700	3710	10									APC 44 ...	25	50	20	30			Note 9" clast of ...
3710	3720	10									36 ...	20	45	10	45			
3720	3730	10									18 ...	20	35	30	35			inclusion 2" ...
3730	3740	10									20 ...	20	40	15	25			
3740	3750	10									20 ...	15	45	25	30			
3750	3760	10									20 ...	20	50	10	40			
3760	3770	10									20 ...	15	20	20	60			* Note 3" clast of ...
3770	3780	10									20 ...	15	20	30	45			* Spinel ...
3780	3790	10									20 ...	20	30	5	15			* 1st calcite ...
3790	3800	10									20 ...	25	40	25	35			
3800	3810	10									M: 25% ...	20	30	30	40			
3810	3820	10									APC 37 ...	20	20	40	40			
3820	3830	10									24 ...	20	45	25	30			
3830	3840	10									20 ...	30	50	20	30			
3840	3850	10									20 ...	25	35	30	35			
3850	3860	10									20 ...	30	30	35	35			
3860	3870	10									20 ...	30	30	35	35			
3870	3880	10									20 ...	30	40	20	40			
3880	3890	10									20 ...	30	40	20	40			
3890	3900	10									20 ...	30	40	20	40			Note well ...
3900	3910	10									M: 29% ...	25	45	10	45			
3910	3920	10									APC 50 ...	35	50	20	30			
3920	3930	10									27 ...	40	45	35	20			
3930	3940	10									23 ...	25	45	35	20			
3940	3950	10									20 ...	25	30	10	10			
3950	3960	10									20 ...	25	40	20	40			
3960	3970	10									20 ...	30	70	25	5			
3970	3980	10									20 ...	25	50	10	40			
3980	3990	10									20 ...	25	60	10	30			
3990	4000	10									20 ...	20	55	30	15			
4000	4010	10									20 ...	15	50	10	35			
4010	4020	10									20 ...	15	50	10	35			
4020	4030	10									20 ...	15	50	10	35			
4030	4040	10									20 ...	15	50	10	35			

Tonto CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N. _____

Coord E. _____

Inclination Vertical

Page 7 of 11

Logged by J.P. Coe

Date start _____

Date finish _____

NX
Core

TW

TW

DEPTH			100 % CORE RECOV. <small>(Change if diff)</small>	Assay No. A-3-	% ASSAY				Ch <small>2nd stage value</small>	ORE			MINERALS			GANGUE			MINERALS			STRUCTURE	ROCK TYPE and REMARKS	
from	to	int'l			Cu	Pb	Zn	Mo		Native Copper	Si Matrix	Si Oxide	Fe Oxide	MATRIX Color %	Calc	Fe Sulf	Fe Oxide	Chalco	Pyrite	Pyrrhotite				
4040	4050	10									M	18%	Pyrite	Pyrrhotite	15	50	15	35					White-tail conglomerate. Thin, micaceous, clayey, granular & porphyritic red matrix, ranging in size from 1/4" to 1/2" in diam, set in matrix of similar color. Matrix 1-2"	
4050	4060	10																						
4060	4070	10									APC	57	Sch		20	60	15	25						
4070	4080	10										25	Sch		15	40	10	10					Note: G sandy base. Sample at 25° inclination.	
4080	4090	10										14	Pyrite		15	70	15	15						
4090	4100	10																						
4100	4110	10		-23	0.01	0.04	0.06	0.000															Note: Core tends to fragment upon splitting, abundant granular in texture.	
4110	4120	10																						
4120	4130	10									M	22%	Pyrite	Pyrrhotite	25	40	25	35						
4130	4140	10																						
4140	4150	10									APC	45	Sch		25	45	20	35						
4150	4160	10										31	Sch		25	50	25	25						
4160	4170	10										70	Pyrite	Pyrrhotite	25	35	30	35						
4170	4180	10																						
4180	4190	10																					Note: Very fractured at 14" depth, following fracture 1-2' above.	
4190	4200	10																						
4200	4210	10		-24	0.02	0.04	0.07	0.000																
4210	4220	10																						
4220	4230	10									M	13%	Pyrite	Pyrrhotite	15	40	25	35						
4230	4240	10																						
4240	4250	10									APC	47	Sch		15	50	5	45						
4250	4260	10										30	Sch	Alm. brn	10	50	15	35					4262-4272 Sample showed siliceous matrix at 60-70°	
4260	4270	10										15	Pyrite		10	50	5	45						
4270	4280	10																						
4280	4290	10																						
4290	4300	10		-25	0.04	0.03	0.05	0.000																Note: Increasing grayish granular matrix in matrix around about with more sp. of native copper, mostly along cracks.
4300	4310	10		-26	0.03	0.05	0.06	0.000																
4310	4320	10		-27	0.05	0.04	0.05	0.000																
4320	4330	10		-28	0.06	0.07	0.06	0.000																Note: Noticeable G ^o from 4320-4330.
4330	4340	10		-29	0.05	0.03	0.05	0.000																
4340	4350	10									APC	40	Sch		15	50	10	35						
4350	4360	10										30	Sch	Char. brn	20	45	10	45						
4360	4370	10										15	Pyrite		20	45	15	40						
4370	4380	10																						
4380	4390	10																						
4390	4400	10																						
4400	4410	10		-30	0.05	0.05	0.04	0.000																
4410	4420	10									M	15%	Pyrite	Pyrrhotite	20	35	10	55						
4420	4430	10									APC	44	Sch		20	50	20	30						
4430	4440	10										41	Sch		10	40	10	50						
4440	4450	10										15	Pyrite		10	40	10	50						
4450	4460	10																						
4460	4470	10																						Note: Sample taken at 4460 shows 20-25° inclination.

Torch CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N. _____

Coord E. _____

Inclination Vertical

Page 8 of 11

Logged by J.S. LaRoc

Date start _____

Date finish _____

NX
Core
Tw
tuff
Tw

DEPTH	100% CORE RECOV.		Assay No. A-3-	% ASSAY					Ch 200ppm Cu	Native		MATRIX	CLASTS					STRUCTURE	ROCK TYPE and REMARKS			
	from	to		Int'l	Cu	Pb	Zn	Mo		In MATRIX	Copper In CLAST		At Bound. dng	Chd %	Sch	G	F			C	P	M
4470	4480	10									ch. ben	10	35	30	35						WHITISH CONGLOMERATE Various sized, subrounded clasts of quartz in matrix of similar degree. Clast from 44 to plus 1-foot, max 1-2" TUFF, siliceous (?) similar type mixed in muddy granular matrix of type from above. Matrix contains clasts of 1/2"-2" w/ 1/4"-3/4" median size. General layer of tuff at 4482 (3") & 4489 (5"). Similar matrix basins against 110° inclination, as does top contact with regular bedding matrix.	
4480	4485	5									"	10	40	25	35							
4485											tuff	40	40	25	35							
4490	4500	10									ch. ben	25	40	10	50							
4500	4510	10	-31	0.07	0.04	0.4	0.0032	0.07			"	25	30	35	10	25					WHITISH CONGLOMERATE As above. Note 10" tuff at 4502 and 9" argillite-plant (Escobedo) at 4500.	
4510	4520	10									"	20	40	10	40	10					M: 17% ch. ben	
4520	4530	10									gn. ch. ben	20	40	5	55							
4530	4540	10									"	10	55	5	40						ARC: 44 Sch	
4540	4550	10									"	10	45	15	40							
4550	4560	10	-32	0.04	0.05	0.04	0.0016	0.04			"	20	55	5	40						* With Tuff sand, fine clasts from 4555-4556.	
4560	4570	10									"	20	40	5	55						* Mostly at 4-foot interval probably about at 4561/2.	
4570	4580	10									"	15	40	10	50							
4580	4590	10									"	20	45	5	50							
4590	4600	10									"	5	55	5	40							
4600	4610	10	-33	0.06	0.04	0.04	0.0019	0.08			"	10	45	15	40						* 6 clast / Barrow of at 4606.	
4610	4620	10									"	10	55	10	35							
4620	4630	10									"	10	45	5	50						M: 47% ch. ben	
4630	4640	10									"	15	40	10	50							
4640	4650	10									"	15	45	5	50						ARC: 47 Sch	
4650	4660	10	-34	0.06	0.06	0.06	0.0006	0.05			gn. ch. ben	15	60	5	35						80 slice cumulated at 4641/2. Note massive red-ironstone (Magnetite) spines in clast (2") at 4642 w/ Cu.	
4660	4670	10									"	15	60	5	35							
4670	4680	10									"	20	40	10	50						7% ch. ben	
4680	4690	10									"	20	35	5	60						1/2 Paleog	
4690	4700	10									gn. ch. ben	15	45	5	50							
4700	4710	10	-35	0.06	0.02	0.01	0.0009				"	10	50	10	40							
4710	4720	10									"	15	45	5	50						M: 12% ch. ben	
4720	4730	10									gn. ch. ben	15	40	15	45							
4730	4740	10									"	5	45	5	50						ARC: 40 Sch	
4740	4750	10									"	10	45	5	50							
4750	4760	10	-36	0.05	0.02	0.05	0.0012				"	15	45	5	50						9 Aspac	
4760	4770	10									"	10	45	5	50						1 Laminar	
4770	4780	10									"	15	30	30	30							
4780	4790	10									"	10	60	5	35						Note horizontal "intrusive" vein of impregnated with spariferous (4780).	
4790	4800	10									gn. ch. ben	10	55	3	45						* Red ironstone "massive" in matrix of schist in clast at 4785.	
4800	4810	10	-37	0.03	0.01	0.06	0.0005				"	10	60	15	25						* Sp. to - hematite - 2thorn.	
4810	4820	10									"	10	25	15	60						M: 12% ch. ben	
4820	4830	10									"	15	60	5	35						ARC: 41 Sch	
4830	4840	10									"	10	30	5	65						* Note exceptional clast of fine-grained ch. ben including at boundary vs. coarse ch. ben adjacent to it.	
4840	4850	10									"	20	60	10	30						10 Aspac	
4850	4860	10	-38	0.04	0.02	0.06	0.0009				"	15	30	30	40						Note Cu only at boundary (4837)	

Tail CP 50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East HOLE NO. A-3
 Collar elev. _____ Final depth _____
 Coord N. _____ Coord E. _____
 Inclination Vertical Page 9 of 11
 Logged by J.R. DeLoe
 Date start _____ Date finish _____

NX
Core

Tw

DEPTH			% CORE RECOV. (by % of method)	Assay No. A-3-	% ASSAY				ORE			MINERALS		GANGUE					MINERALS		STRUCTURE	ROCK TYPE and REMARKS		
from	to	int'l			Cu	Pb	Zn	Mo	In Matrix	In Clast	At Boundary	MATRIX		sch	sch	sch	sch	sch	sch	sch				
4860	4870	10																						WHITETAIL CONGLOMERATE. Various types & sizes of subrounded clasts set in matrix of similar debris. Clasts from 1/4" to plus 1 foot; Matrix 2-3.
4870	4880	10																						
4880	4890	10																						
4890	4900	10																						
4900	4910	10		-39	0.05	0.03	0.06	0.000																* No "volcanic" at 4900, probably a welded tuff from vent zone (Not split w/ sample)
4910	4920	10																						Note, more porous shaly clasts appearing in Apache group sediments
4920	4930	10																						more whereas previous it was dominant & of some mass.
4930	4940	10																						* Spinite replaced laminae intrusion (?) at 4937 1/2.
4940	4950	10																						
4950	4960	10		-40	0.04	0.02	0.04	0.0016																
4960	4970	10																						
4970	4980	10																						
4980	4990	10																						
4990	5000	10																						* Note: 6" clast of schist w/ gbs - specimens veins (1/8" - 1/4") at 4990.
5000	5010	10		-41	0.04	0.01	0.06	0.000																* Note: 1-ft clast of schist w/ gbs - specimens veins (1/8" - 1/4") at 4990.
5010	5020	10																						
5020	5030	10																						
5030	5040	10																						
5040	5050	10																						
5050	5060	10		-42	0.04	0.02	0.06	0.0011																
5060	5070	10																						
5070	5080	10																						
5080	5090	10																						
5090	5100	10																						
5100	5110	10		-43	0.07	0.03	0.05	0.000																
5110	5120	10																						
5120	5130	10																						
5130	5140	10																						
5140	5150	10																						
5150	5160	10		-44	0.04	0.02	0.07	0.000																
5160	5170	10																						
5170	5180	10																						
5180	5190	10																						
5190	5200	10																						
5200	5210	10		-45	0.04	0.03	0.09	0.0013																
5210	5220	10																						
5220	5230	10																						
5230	5240	10																						
5240	5250	10																						
5250	5260	10		-46	0.05	0.03	0.09	0.000																
5260	5270	10																						
5270	5280	10																						
5280	5290	10																						

Tw

Tomb CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N: _____

Coord E: _____

Inclination Vertical

Page 9 of 11

Logged by J. H. ...

Date start _____

Date finish _____

NX
core

TW

TW

DEPTH			% CORE RECOV. UNLESS NOTED	ASSAY No. A-3-	% ASSAY				ORE		MINERALS		GANGUE		MINERALS		STRUCTURE	ROCK TYPE and REMARKS
from	to	int'l			Cu	Pb	Zn	Mo	In matrix	In Chert	As	Other	Color	%	As sch	As chert		
4860	4870	10																WHITETAIL CONGLOMERATE Various types & sizes of subangular clasts set in matrix of similar debris. Clasts from 1/4" to plus 1 foot; maximum 2-3".
4870	4880	10																
4880	4890	10																
4890	4900	10																
4900	4910	10		-39	0.05	0.02	0.06	0.0009										* Note: "volcanic" at 4900, probably a welded tuff from vent zone (Not split as normal)
4910	4920	10																Note: more prominent shaly clasts appearing in Apache group sediments
4920	4930	10																transgressive previous it was dominant clast of near matrix.
4930	4940	10																* Spindle replaced lamellar intrusion (?) at 4935'.
4940	4950	10																
4950	4960	10		-40	0.04	0.02	0.04	0.0016										
4960	4970	10																
4970	4980	10																
4980	4990	10																
4990	5000	10																
5000	5010	10		-41	0.04	0.01	0.06	0.0009										
5010	5020	10																
5020	5030	10																
5030	5040	10																
5040	5050	10																
5050	5060	10		-42	0.04	0.02	0.06	0.0011										
5060	5070	10																
5070	5080	10																
5080	5090	10																
5090	5100	10																
5100	5110	10		-43	0.07	0.03	0.05	0.0009										
5110	5120	10																
5120	5130	10																
5130	5140	10																
5140	5150	10																
5150	5160	10		-44	0.04	0.02	0.07	0.0009										
5160	5170	10																
5170	5180	10																
5180	5190	10																
5190	5200	10																
5200	5210	10		-45	0.04	0.03	0.09	0.0013										
5210	5220	10																
5220	5230	10																
5230	5240	10																
5240	5250	10																
5250	5260	10		-46	0.05	0.03	0.09	0.0009										
5260	5270	10																
5270	5280	10																
5280	5290	10																

WHITETAIL CONGLOMERATE Various types & sizes of subangular clasts set in matrix of similar debris. Clasts from 1/4" to plus 1 foot; maximum 2-3".

* Note: "volcanic" at 4900, probably a welded tuff from vent zone (Not split as normal)
 Note: more prominent shaly clasts appearing in Apache group sediments
 transgressive previous it was dominant clast of near matrix.
 * Spindle replaced lamellar intrusion (?) at 4935'.

* Note: 6' clast of schist w/ gln specimens veins (1/8-1/4") at 4990.
 * Note: 1-ft clast of carbonaceous colored shale at 5000, & 1-in clast at 5010.

Cu on schist at 5140; unusual, since most Cu on chert.

Note: Greenish tuff (glassy) at 5125.

Note: 2-foot altered & mineralized (arsenical) schist clast at 5210-5212.

Tonto CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. _____

Final depth _____

Coord N. _____

Coord E. _____

Inclination Vertical

Page 10 of 11

Logged by J. S. S. S.

Date start _____

Date finish _____

X Core TW

DEPTH			100% CORE RECOV. unless noted	ASSAY No. A-3-	% ASSAY				ORE			MINERALS		GANGUE							MINERALS			STRUCTURE	ROCK TYPE and REMARKS			
from	to	int'l			Cu	Pb	Zn	Mn	Native Copper In matrix	Copper Class	at boundary	MATRIX Color	%	Fe-Si	Fe-Oxide	Fe-Apothite	Fe-dib	Ca-Al-sil	Fe-sil	Fe-sil	Fe-sil	Fe-sil	Fe-sil			Fe-sil	Fe-sil	
5290	5300	10																									WHITETIC CONGLOMERATE. Various sized types of proclastic chert, sub rounded set in matrix of similar, muddy, debris. Clast matrix 2"-3" but from 1/4" to plus 1-ft.	
5300	5310	10		-47	0.05	0.02	0.09	0.001				15	25	5	65	5												
5310	5320	10										15	20	5	75	5												
5320	5330	10										20	20	35	45	5												
5330	5340	10										25	50	20	20	5	5											
5340	5350	10										25	35	20	35	5												
5350	5360	10										15	40	10	50	5												
5360	5370	10										20	20	20	60	5												
5370	5380	10										20	50	10	40	5												
5380	5390	10										15	10	15	45	30												
5390	5400	10										15	25	30	45	5												
5400	5410	10		-48	0.04	0.03	0.12	0.000				15	25	30	45	5												
5410	5420	10										20	35	20	45	5												
5420	5430	10										25	40	15	45	5												
5430	5440	10										25	20	20	60	5												
5440	5450	10										15	20	20	50	10												
5450	5460	10										10	15	5	20	60												
5460	5470	10										15	10	30	30	30												
5470	5480	10										15	25	5	10	60												
5480	5490	10										20	20	15	20	45												
5490	5500	10										15	15	15	20	50												
5500	5510	10		-49	0.04	0.04	0.07	0.000				20	15	15	35	35												
5510	5520	10										20	25	25	25	25												
5520	5530	10										20	20	5	45	30												
5530	5540	10										15	5	30	30	30	5											
5540	5550	10										20	20	40	20	20												
5550	5560	10										15	30	20	30	20												
5560	5570	10										15	30	20	30	20												
5570	5580	10										10	20	20	20	40												
5580	5590	10										10	30	10	20	40												
5590	5600	10										15	25	25	25	25												
5600	5610	10		-50	0.05	0.02	0.05	0.000				5	25	10	40	25												
5610	5620	10										10	30	25	30	15												
5620	5630	10										15	20	30	30	20												
5630	5640	10										15	30	25	35	10												
5640	5650	10										15	10	5	40	45												
5650	5660	10										20	45	40	10	5												
5660	5670	10										5	25	20	20	15												
5670	5680	10										20	35	15	45	5												
5680	5690	10										10	30	10	30	30												
5690	5700	10										10	2	10	50	10												
5700	5710	10		-51	0.06	0.03	0.09	0.000				10	30	10	45	15												
5710	5720	10										15	25	25	25	25												

Tonto CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East

HOLE NO. A-3

Collar elev. 4125 Ft

Final depth 6008 Ft

Coord N 823 650

Coord E 769 300

Inclination Vertical

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Logged by J.P. CO

Core Date start Sept 26, 1975

Date finish Dec. 1, 1975

NA Core
Tw
pg
db
S.B.
Tw
Tw
T.D.

DEPTH	from	to	int'l	% CORE RECOV.	ASSAY No. A-3	% ASSAY					NATIVE COPPER			GANGUE		MINERALS						STRUCTURE	ROCK TYPE and REMARKS
						Cu	Pb	Zn	Mn														
5720	5720	5730	10																				
5730	5730	5740	10																				
5740	5740	5750	10																				
5750	5750	5760	10																				
5760	5760	5770	10																				
5770	5770	5780	10																				
5780	5780	5790	10																				
5790	5790	5800	10																				
5810	5810	5820	10		-52	0.06	0.04	0.10	0.0008		✓	✓											
5820	5820	5830	10																				
5830	5830	5840	10																				
5840	5840	5850	10																				
5850	5850	5860	10																				
5860	5860	5870	10																				
5870	5870	5880	10								✓	✓											
5880	5880	5885	10								✓	✓											
5885	5885	5890	15																				
5900	5900	5910	10		-53	0.20	0.03	0.01	0.0005		✓												
5930	5930	5940	20																				
5940	5940	5950	10																				
5950	5950	5960	10																				
5960	5960	5970	10																				
5970	5970	5980	10																				
5980	5980	5990	10																				
5990	5990	6000	10		-54	0.07	0.02	0.13	0.0009		✓	✓											
6008	6008	6008	8								✓												
T.D.																							

STRUCTURE

ROCK TYPE and REMARKS

WHITE-TAIL CONGLOMERATE. Various types & sizes of rock clasts, subangular to subangular, set in matrix of similar, muddy dolomite. Clasts range from 1/4" to plus 1-foot, with 2-3" as median size.

Concretion disjunct with matrix bearing, "shaly" parting. Green-yellow to brown brown 5776 to matrix & clasts.

DIAPYRE. Weathered top with pseudobreccia with non-stained weathering along fractures to 5776. Fine-crystalline (fg) in "gash" opening throughout. "disseminated" native copper, in visible amount throughout. 3" massive red xh specularly replacement band at 5911 ft. Becomes "crushed", "shaly", & "platy" below 5925 ft. Entire section has "oxidized" "weathered" appearance.

WHITE-TAIL CONGLOMERATE: As previous section with occasional of oxidized greenish yellow parting.

Note specularite clast at 5967 ft.

*Note 10" long clast

Note: HQ rods had been set for casing to a depth of 2978 ft (including shoe). On termination of hole, the HQ rods (casing) was pulled. A break at 110 feet was found, and all recovered. The remainder was cut at 2952 feet and all recovered.
Left in hole: HQ rods (casing) & shoe from 2950 - 2978 feet.
All of 4" & 5" flush joint in rotary hole portion from surface to 1949 feet.
(Standing) 4" from surface to 1445 in 8" hole, with 4" flush joint from 1445 to 1949 in 5 1/2" hole).
Ten feet of 8" ID surface casing set.
Hole was back-filled with heavy drilling mud & a welded cap placed on top.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE NOV. 14, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage
A-3-1	<i>Whitetail Cgl.</i>		0.01	0.05	0.05	.0004		2000-2010
A-3-2			0.01	0.04	0.04	.0005		2100-2110
A-3-3			0.01	0.03	0.04	.0001		2200-2210
A-3-4			0.03	0.06	0.05	Trace		2300-2310
A-3-5			0.02	0.05	0.04	.0005		2400-2410
A-3-6			0.02	0.04	0.01	Trace		2500-2510
A-3-7			0.02	0.03	0.05	Trace		2600-2610
A-3-8			0.01	0.03	0.06	.0003		2700-2710
A-3-9			0.01	0.02	0.04	.0004		2800-2810
A-3-10			0.01	0.03	0.01	.0005		2900-2910
A-3-11			0.01	0.04	0.05	.0004		3000-3010
A-3-12			0.01	0.04	0.06	Trace		3100-3110
A-3-13			0.01	0.03	0.07	.0005		3200-3210
A-3-14			0.01	0.04	0.06	Trace		3300-3310
A-3-15			0.02	0.05	0.06	.0001		3400-3410
A-3-16			0.01	0.05	0.06	.0001		3500-3510
A-3-17			0.02	0.03	0.05	Trace		3600-3610
A-3-18			0.01	0.07	0.06	.0002		3700-3710
A-3-19			0.01	0.04	0.08	Trace		3800-3810
A-3-20			0.01	0.04	0.07	.0002		3900-3910
A-3-21			0.01	0.06	0.06	.0003		4000-4010
A-3-22			0.03	0.04	0.06	Trace		4030-4040 4100-4110
A-3-23			0.01	0.04	0.06	.0001		4200-42
A-3-24			0.02	0.04	0.07	.0001		
A-3-25			0.04	0.03	0.05	.0002		

REGISTERED ASSAYER
 CERTIFICATE NO. 6852
 PETE S. FLORES
 Signed Nov 14 1975
 Arizona U. S. A.

Invoice # 13133

CHARGES \$ 293.75

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

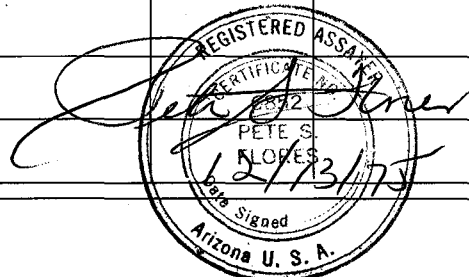
SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage.
A-3-35	Whitetail Gyl.		0.06	0.02	0.08	.0009		4700-4710
A-3-36			0.05	0.02	0.05	.0012		4750-4760
A-3-37			0.03	0.01	0.06	.0005		4800-4810
A-3-38			0.04	0.02	0.06	.0009		4850-4860
A-3-39			0.05	0.03	0.06	.0009		4900-4910
A-3-40			0.04	0.02	0.04	.0016		4950-4960
A-3-41			0.04	0.01	0.06	.0001		5000-5010
A-3-42			0.04	0.02	0.06	.0011		5050-5060
A-3-43			0.07	0.03	0.05	.0009		5100-5110
A-3-44			0.04	0.02	0.07	.0005		5150-5160
A-3-45		0.04	0.03	0.09	.0013		5200-5210	
A-3-46		0.05	0.03	0.09	.0005		5250-5260	
A-3-47		0.05	0.02	0.09	.0011		5300-5310	
A-3-48		0.04	0.03	0.12	.0005		5400-5410	
A-3-49		0.04	0.01	0.07	.0010		5500-5510	
A-3-50		0.05	0.02	0.05	.0004		5600-5610	
A-3-51		0.06	0.03	0.09	.0005		5700-5710	
A-3-52	Whitetail Gyl.		0.06	0.04	0.10	.0008		5800-5810
A-3-53	Diabase S.B.		0.20	0.03	0.07	.0001		5900-5910
A-3-54	Whitetail Gyl.		0.07	0.02	0.13	.0009		5990-6000

Invoice # 13230

CHARGES \$ 235.00



ASSAYER - CHEMIST

December 23, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Assay Results - Core
Drill Hole A-3
Superior East Project

The assay results, in parts per million, for the rotary portion of the hole, surface to 1949 feet, have been previously reported in the memo dated July 18, 1974. The sample series A-3-1 thru -5 were split from the Whitetail Conglomerate section of the rotary cuttings.

The core sample splits, sample series A-3-1 thru -5 (repeated numbers), and A-3-6 thru -54 are attached to this memo. All samples are from the cored Whitetail Conglomerate except A-3-53 which was split from the diabase slide block. The values reported are in percent copper.

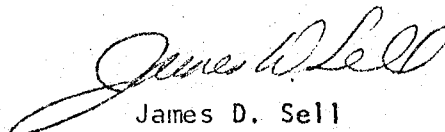
As noted, the bulk of the Whitetail averaged 0.014% copper (Samples A-3-1 thru -5 Rotary and Core A-3-1 thru A-3-24) from the top (at 1430 feet) to below the first lithic tuff marker bed where noticeable copper appeared at 4290 feet. From the noticeable, but erratic, values of the interval 4290-4485 (top of second tuff marker), the values averaged 0.047% (Core samples A-3-24 thru -30).

Immediately below the second tuff marker, the copper became persistent and widely scattered throughout the core. The immediate section from 4485 to 4780 averaged 0.057% (samples A-3-31 thru -36). Below, the values again became erratic and the interval 4780-5650 averaged 0.044% (samples A-3-37 thru -50). An increase to 0.060% was noted from the interval 5650-5885 (samples A-3-51 and A-3-52).

A diabase slide block was cored from 5885-5930 and is represented by the one sample A-3-53 which contained 0.200% copper.

The final block of Whitetail Conglomerate from 5930 to the terminated depth of 6008 feet is represented by assay sample A-3-54 which ran 0.070% copper.

Visual estimate of samples A-3-25 thru -34 contained some values different than what was returned by the laboratory and a "2nd Split" was taken from the reject bags and re-assayed for copper only. The results are attached and reported in the Nov. 21, 1975 AARL report. The AARL lab was rechecked thru the submittal of additional rejects from holes A-4 and A-7. The results were tabulated in a memo dated December 22, 1975. The laboratory results from the various samples check quite well.



James D. Sell

JDS:lb
Atts.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

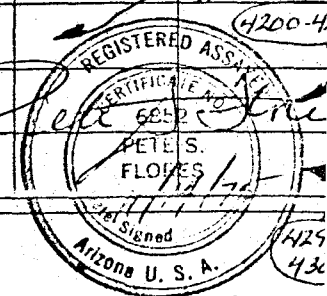
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Nov. 14, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage
A-3-1	<i>Whitetail Cgl.</i>		0.01	0.05	0.05	.0004		2000-2010
A-3-2			0.01	0.04	0.04	.0005		2100-2110
A-3-3			0.01	0.03	0.04	.0001		2200-2210
A-3-4			0.03	0.06	0.05	Trace		2300-2310
A-3-5			0.02	0.05	0.04	.0005		2400-2410
A-3-6			0.02	0.04	0.01	Trace		2500-2510
A-3-7			0.02	0.03	0.05	Trace		2600-2610
A-3-8			0.01	0.03	0.06	.0003		2700-2710
A-3-9			0.01	0.02	0.04	.0004		2800-2810
A-3-10			0.01	0.03	0.01	.0005		2900-2910
A-3-11			0.01	0.04	0.05	.0004		3000-3010
A-3-12			0.01	0.04	0.06	Trace		3100-3110
A-3-13			0.01	0.03	0.07	.0005		3200-3210
A-3-14			0.01	0.04	0.06	Trace		3300-3310
A-3-15			0.02	0.05	0.06	.0001		3400-3410
A-3-16			0.01	0.05	0.06	.0001		3500-3510
A-3-17			0.02	0.03	0.05	Trace		3600-3610
A-3-18			0.01	0.07	0.06	.0002		3700-3710
A-3-19			0.01	0.04	0.08	Trace		3800-3810
A-3-20			0.01	0.04	0.07	.0002		3900-3910
A-3-21			0.01	0.06	0.06	.0003		4000-4010
A-3-22			0.03	0.04	0.06	Trace		4030-4040 4100-4110
A-3-23			0.01	0.04	0.06	.0001		4200-4210
A-3-24			0.02	0.04	0.07	.0001		
A-3-25			0.04	0.03	0.05	.0002		



Invoice # 13133

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

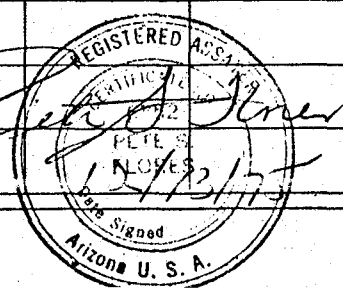
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage	
A-3-35	<i>Whitetail Cgl.</i>		0.06	0.02	0.08	.0009		4700-4710	
A-3-36			0.05	0.02	0.05	.0012		4750-4760	
A-3-37			0.03	0.01	0.06	.0005		4800-4810	
A-3-38			0.04	0.02	0.06	.0009		4850-4860	
A-3-39			0.05	0.03	0.06	.0009		4900-4910	
A-3-40			0.04	0.02	0.04	.0016		4950-4960	
A-3-41			0.04	0.01	0.06	.0001		5000-5010	
A-3-42			0.04	0.02	0.06	.0011		5050-5060	
A-3-43			0.07	0.03	0.05	.0009		5100-5110	
A-3-44			0.04	0.02	0.07	.0005		5150-5160	
A-3-45			0.04	0.03	0.09	.0013		5200-5210	
A-3-46			0.05	0.03	0.09	.0005		5250-5260	
A-3-47			0.05	0.02	0.09	.0011		5300-5310	
A-3-48			0.04	0.03	0.12	.0005		5400-5410	
A-3-49			0.04	0.01	0.07	.0010		5500-5510	
A-3-50			0.05	0.02	0.05	.0004		5600-5610	
A-3-51			0.06	0.03	0.09	.0005		5700-5710	
A-3-52		<i>Whitetail Cgl.</i>		0.06	0.04	0.10	.0008		5800-5810
A-3-53		<i>Diorase S.B.</i>		0.20	0.03	0.07	.0001		5900-5910
A-3-54		<i>Whitetail Cgl.</i>		0.07	0.02	0.13	.0009		5990-6000



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

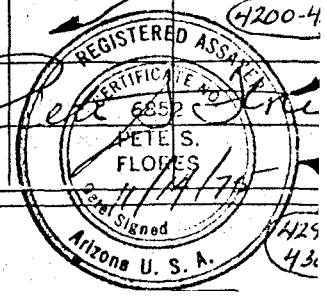
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Nov. 14, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage
A-3-1	<i>Whitetail Cof.</i>		0.01	0.05	0.05	.0004		2000-2010
A-3-2			0.01	0.04	0.04	.0005		2100-2110
A-3-3			0.01	0.03	0.04	.0001		2200-2210
A-3-4			0.03	0.06	0.05	Trace		2300-2310
A-3-5			0.02	0.05	0.04	.0005		2400-2410
A-3-6			0.02	0.04	0.01	Trace		2500-2510
A-3-7			0.02	0.03	0.05	Trace		2600-2610
A-3-8			0.01	0.03	0.06	.0003		2700-2710
A-3-9			0.01	0.02	0.04	.0004		2800-2810
A-3-10			0.01	0.03	0.01	.0005		2900-2910
A-3-11			0.01	0.04	0.05	.0004		3000-3010
A-3-12			0.01	0.04	0.06	Trace		3100-3110
A-3-13			0.01	0.03	0.07	.0005		3200-3210
A-3-14			0.01	0.04	0.06	Trace		3300-3310
A-3-15			0.02	0.05	0.06	.0001		3400-3410
A-3-16			0.01	0.05	0.06	.0001		3500-3510
A-3-17			0.02	0.03	0.05	Trace		3600-3610
A-3-18			0.01	0.07	0.06	.0002		3700-3710
A-3-19			0.01	0.04	0.08	Trace		3800-3810
A-3-20			0.01	0.04	0.07	.0002		3900-3910
A-3-21			0.01	0.06	0.06	.0003		4000-4010
A-3-22			0.03	0.04	0.06	Trace		4030-4040 4100-4110
A-3-23			0.01	0.04	0.06	.0001		4200-4210
A-3-24			0.02	0.04	0.07	.0001		
A-3-25			0.04	0.03	0.05	.0002		



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY: Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage.
A-3-35	Whitetail Gf. ↑		0.06	0.02	0.08	.0009		4700-4710
A-3-36			0.05	0.02	0.05	.0012		4750-4760
A-3-37			0.03	0.01	0.06	.0005		4800-4810
A-3-38			0.04	0.02	0.06	.0009		4850-4860
A-3-39			0.05	0.03	0.06	.0009		4900-4910
A-3-40			0.04	0.02	0.04	.0016		4950-4960
A-3-41			0.04	0.01	0.06	.0001		5000-5010
A-3-42			0.04	0.02	0.06	.0011		5050-5060
A-3-43			0.07	0.03	0.05	.0009		5100-5110
A-3-44			0.04	0.02	0.07	.0005		5150-5160
A-3-45			0.04	0.03	0.09	.0013		5200-5210
A-3-46			0.05	0.03	0.09	.0005		5250-5260
A-3-47			0.05	0.02	0.09	.0011		5300-5310
A-3-48			0.04	0.03	0.12	.0005		5400-5410
A-3-49			0.04	0.01	0.07	.0010		5500-5510
A-3-50			0.05	0.02	0.05	.0004		5600-5610
A-3-51			0.06	0.03	0.09	.0005		5700-5710
A-3-52	Whitetail Gf.		0.06	0.04	0.10	.0008		5800-5810
A-3-53	Diabase S.B.		0.20	0.03	0.07	.0001		5900-5910
A-3-54	Whitetail Gf.		0.07	0.02	0.13	.0009		5990-6000

REGISTERED ASSAULT
 ANALYTICAL
 PETER J. KOVES
 12/13/75
 Signed
 Arizona U. S. A.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

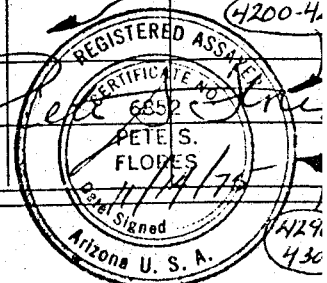
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Nov. 14, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage
A-3-1	<i>Whitetail Cgl.</i>		0.01	0.05	0.05	.0004		2000-2010
A-3-2			0.01	0.04	0.04	.0005		2100-2110
A-3-3			0.01	0.03	0.04	.0001		2200-2210
A-3-4			0.03	0.06	0.05	Trace		2300-2310
A-3-5			0.02	0.05	0.04	.0005		2400-2410
A-3-6			0.02	0.04	0.01	Trace		2500-2510
A-3-7			0.02	0.03	0.05	Trace		2600-2610
A-3-8			0.01	0.03	0.06	.0003		2700-2710
A-3-9			0.01	0.02	0.04	.0004		2800-2810
A-3-10			0.01	0.03	0.01	.0005		2900-2910
A-3-11			0.01	0.04	0.05	.0004		3000-3010
A-3-12			0.01	0.04	0.06	Trace		3100-3110
A-3-13			0.01	0.03	0.07	.0005		3200-3210
A-3-14			0.01	0.04	0.06	Trace		3300-3310
A-3-15			0.02	0.05	0.06	.0001		3400-3410
A-3-16			0.01	0.05	0.06	.0001		3500-3510
A-3-17			0.02	0.03	0.05	Trace		3600-3610
A-3-18			0.01	0.07	0.06	.0002		3700-3710
A-3-19			0.01	0.04	0.08	Trace		3800-3810
A-3-20			0.01	0.04	0.07	.0002		3900-3910
A-3-21			0.01	0.06	0.06	.0003		4000-4010
A-3-22			0.03	0.04	0.06	Trace		4030-404 4100-4110
A-3-23			0.01	0.04	0.06	.0001		4200-4210
A-3-24			0.02	0.04	0.07	.0001		
A-3-25			0.04	0.03	0.05	.0002		

Invoice # 13133



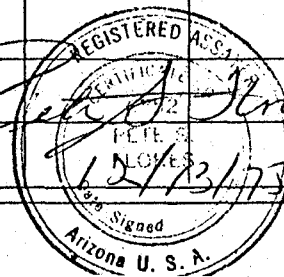
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Footage.
A-3-35	Whitetail Gyl.		0.06	0.02	0.08	.0009		4700-4710
A-3-36			0.05	0.02	0.05	.0012		4750-476
A-3-37			0.03	0.01	0.06	.0005		4800-4810
A-3-38			0.04	0.02	0.06	.0009		4850-4860
A-3-39			0.05	0.03	0.06	.0009		4900-4910
A-3-40			0.04	0.02	0.04	.0016		4950-4960
A-3-41			0.04	0.01	0.06	.0001		5000-5010
A-3-42			0.04	0.02	0.06	.0011		5050-506
A-3-43			0.07	0.03	0.05	.0009		5100-5110
A-3-44			0.04	0.02	0.07	.0005		5150-5160
A-3-45			0.04	0.03	0.09	.0013		5200-5210
A-3-46			0.05	0.03	0.09	.0005		5250-526
A-3-47			0.05	0.02	0.09	.0011		5300-531
A-3-48			0.04	0.03	0.12	.0005		5400-541
A-3-49			0.04	0.01	0.07	.0010		5500-551
A-3-50			0.05	0.02	0.05	.0004		5600-561
A-3-51			0.06	0.03	0.09	.0005		5700-571
A-3-52	Whitetail Gyl.		0.06	0.04	0.10	.0008		5800-581
A-3-53	Diabase S.B.		0.20	0.03	0.07	.0001		5900-591
A-3-54	Whitetail Gyl.		0.07	0.02	0.13	.0009		5990-600



AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

November 9, 1971

TO: J. D. Sell

FROM: R. B. Cummings

Assay Results
Drill Hole A-4
Superior East Project

Attached is a list of samples and corresponding assays for drill hole A-4. Samples numbered A-4-1, A-4-2, etc., are rotary cuttings samples. Samples numbered A-4-C1, A-4-C2, etc., are split core samples. Samples are listed in order of increasing depth. If no assay result is given the result has not yet been received. Acid soluble copper assays were run only on those samples containing substantial copper oxide minerals.

R. B. Cummings
R. B. Cummings

RBC:sg
attach.
cc: HLCrittendon

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Total</u> <u>Cu, %</u>	<u>Oxide</u> <u>Cu, %</u>	<u>Weighted</u> <u>Average</u>
<u>Rotary Cuttings:</u>					
A-4-14	2212-2236	24'	0.01		
A-4-15	2236-2265	29'	0.01		
A-4-16	2265-2294	29'	0.02		
A-4-17	2294-2324	30'	0.02		
A-4-18	2324-2354	30'	0.04		
A-4-19	2354-2384	30'	0.13		
A-4-20	2384-2414	30'	0.08		
A-4-21	2414-2444	30'	0.06		
A-4-22	2444-2474	30'	0.04		
A-4-23	2474-2497	23'	0.04		
A-4- 1	2497-2535	38'	0.04		
A-4-24	2535-2565	30'	0.04		
A-4-25	2565-2595	30'	0.04		
A-4-26	2595-2624	29'	0.04		
A-4- 2	2624-2640	16'	0.04		
A-4- 3	2640-2659	19'	0.05		
No sample	2659-2670	11'	-----		
A-4- 4	2670-2700	30'	0.09		
A-4- 5	2700-2708	8'	0.08		
A-4- 6	2708-2737	29'	0.05		
A-4- 7	2737-2764	27'	0.07		
A-4- 8	2764-2785	21'	0.07		
A-4- 9	2785-2814	29'	0.11		
A-4-10	2814-2844	30'	0.12		
A-4-27	2844-2864	20'	0.11		
A-4-28	2864-2868	4'	0.15		
A-4-11	2868-2898	30'	0.14		
A-4-12	2898-2920	22'	0.18		
A-4-29	2920-2928	8'	0.12		
A-4-13	2928-2958	30'	0.13		
A-4-30	2958-2969	11'	0.10		
A-4-31	2969-2989	20'	0.10		
A-4-32	2989-3014	25'	0.07		
A-4-33	3014-3048	34'	0.07		
A-4-34a	3048-3078	30'	0.09		
A-4-34b	3078-3108	30'	0.17		
A-4-35	3108-3138	30'	0.11		

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No. Rotary Cuttings	Depth (cont'd.):	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
A-4-36	3138-3170	32'	0.05		----- 455 ft. @ 0.06% Cu -----	
A-4-37	3170-3200	30'	0.05			
A-4-38	3200-3229	29'	0.03			
A-4-39	3229-3259	30'	0.03			
A-4-40	3259-3289	30'	0.05			
A-4-41	3289-3321	32'	0.04			
A-4-42	3321-3343	22'	0.05			
A-4-43	3343-3363	20'	0.07			
A-4-44	3363-3384	21'	0.05			
A-4-45	3384-3405	21'	0.09			
A-4-46	3405-3424	19'	0.07			
A-4-47	3424-3444	20'	0.05			
A-4-48	3444-3467	23'	0.06			
A-4-49	3467-3488	21'	0.08			
A-4-50	3488-3509	21'	0.06			
A-4-51	3509-3529	20'	0.05			
A-4-52	3529-3549	20'	0.08			
A-4-53	3549-3569	20'	0.08			
A-4-54	3569-3593	24'	0.07			

Note: The following samples were cut from core taken during the above rotary drilling intervals

A-4-C1	2708-2716	8'	0.05
A-4-C2	2716-2737	21'	0.05
A-4-C3	3092-3119	27'	0.05

Continuous Core Samples:

A-4-C131	3593-3610	17'	0.09
A-4-C132	3690-3710	20'	0.05
A-4-C133	3790-3810	20'	0.05
A-4-C134	3890-3910	20'	0.06
A-4-C135	3990-4010	20'	0.18
A-4-C136	4090-4110	20'	0.09
A-4-C138	4290-4310	20'	0.05
A-4-C139	4390-4410	20'	0.05
A-4-C140	4490-4510	20'	0.04
A-4-C141	4590-4610	20'	0.16

|-----
1,487 ft. @ 0.08% Cu
|-----

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No. Core Samples	Depth (cont'd.):	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
A-4-C142	4690-4710	20'	0.06			
A-4-C143	4790-4810	20'	0.04			
A-4-C126	4890-4910	20'	0.20			
A-4-C127	4990-5010	20'	0.07			
A-4-C128	5010-5030	20'	0.07			
A-4-C129	5030-5050	20'	0.07			
A-4-C130	5050-5070	20'	0.06			
A-4-C 4	5070-5080	10'	0.03	0.01		
A-4-C 5	5080-5090	10'	1.36	1.01		
A-4-C 6	5090-5100	10'	1.24	0.93		
A-4-C 8	5100-5120	20'	1.17	0.66		
A-4-C 9	5120-5140	20'	0.31	0.07		
A-4-C 10	5140-5160	20'	0.93	0.34		
A-4-C 11	5160-5180	20'	0.57	0.27		
A-4-C 12	5180-5195	15'	0.19	0.04		
A-4-C 7	5195-5215	20'	1.38	0.90		
A-4-C 13	5215-5230	15'	0.93	0.49		
A-4-C 14	5230-5250	20'	0.83	0.59		
A-4-C 15	5250-5270	20'	0.97	0.35		
A-4-C 16	5270-5290	20'	0.81	0.46		
A-4-C 17	5290-5310	20'	0.91	0.44		
A-4-C 18	5310-5330	20'	1.22	0.65		
A-4-C 19	5330-5350	20'	0.79	0.40		
A-4-C 20	5350-5370	20'	0.15	0.10		
A-4-C 21	5440-5460	20'	0.06			
A-4-C 22	5520-5540	20'	0.05			
A-4-C 23	5630-5640	10'	0.03			
A-4-C 24	5640-5650	10'	0.27			
A-4-C 25	5650-5660	10'	0.65			
A-4-C 26	5660-5670	10'	0.04			
A-4-C 27	5670-5680	10'	0.04			
A-4-C 28	5680-5700	20'	1.42			
A-4-C 29	5700-5710	10'	0.77			
A-4-C 30	5710-5720	10'	0.57			
A-4-C 31	5720-5730	10'	1.18			
A-4-C 32	5730-5740	10'	0.13			
A-4-C 33	5740-5750	10'	0.75			
A-4-C 34	5750-5760	10'	0.25			
A-4-C 35	5760-5770	10'	1.40			
A-4-C 36	5770-5780	10'	1.40			
A-4-C 37	5780-5790	10'	0.62			
A-4-C 38	5790-5800	10'	0.06			
A-4-C 39	5800-5810	10'	1.23			

TW

130 ft. @ 0.86% Cu | 330 ft. @ 0.08% Cu | 270 ft. @ 0.89% Cu

Composite -
0.002 oz/ton
Au, 0.10 oz/
ton Ag

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No. Core Samples	Depth (cont'd.):	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
A-4-C40	5810-5820	10'	0.27		160 ft. @ 0.16% Cu	
A-4-C41	5820-5830	10'	0.09			
A-4-C42	5830-5840	10'	0.03			
A-4-C43	5840-5850	10'	0.03			
A-4-C44	5850-5860	10'	0.04			
A-4-C45	5860-5870	10'	0.07			
A-4-C46	5870-5880	10'	0.03			
A-4-C47	5880-5890	10'	0.03			
A-4-C48	5890-5900	10'	0.04			
A-4-C49	5900-5910	10'	0.16			
A-4-C50	5910-5920	10'	0.06			
A-4-C51	5920-5930	10'	0.08			
A-4-C52	5930-5940	10'	1.07			
A-4-C53	5940-5950	10'	0.14			
A-4-C54	5950-5960	10'	0.16			
A-4-C55	5960-5970	10'	0.25			170 ft. @ 1.12% Cu
A-4-C56	5970-5980	10'	0.47			
A-4-C57	5980-5990	10'	0.63			
A-4-C58	5990-6000	10'	0.13			
A-4-C59	6000-6010	10'	0.19			
A-4-C60	6010-6020	10'	0.39			
A-4-C61	6020-6030	10'	3.81			
A-4-C62	6030-6040	10'	1.91			
A-4-C63	6040-6050	10'	0.11			
A-4-C64	6050-6060	10'	0.04			
A-4-C65	6060-6070	10'	0.18			
A-4-C66	6070-6080	10'	0.94			
A-4-C67	6080-6090	10'	2.15			
A-4-C68	6090-6100	10'	1.91			
A-4-C69	6100-6110	10'	2.04			
A-4-C70	6110-6120	10'	2.38			
A-4-C71	6120-6130	10'	1.32			
A-4-C72	6130-6140	10'	0.36			
A-4-C73	6140-6150	10'	0.19		190 ft. @ 0.35% Cu	
A-4-C74	6150-6160	10'	0.29			
A-4-C75	6160-6170	10'	0.26			
A-4-C76	6170-6180	10'	0.44			
A-4-C77	6180-6190	10'	0.60			
A-4-C78	6190-6200	10'	0.14			
A-4-C79	6200-6210	10'	0.45			
A-4-C80	6210-6220	10'	0.76			
A-4-C81	6220-6230	10'	0.47			
A-4-C82	6230-6240	10'	0.65			
A-4-C83	6240-6250	10'	0.38			
A-4-C84	6250-6260	10'	0.19			
A-4-C85	6260-6270	10'	0.31			
A-4-C86	6270-6280	10'	0.36			
A-4-C87	6280-6290	10'	0.23A-			
A-4-C88	6290-6300	10'	0.30			
A-4-C89	6300-6310	10'	0.26			
A-4-C90	6310-6320	10'	0.19			
A-4-C91	6320-6330	10'	0.11			

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

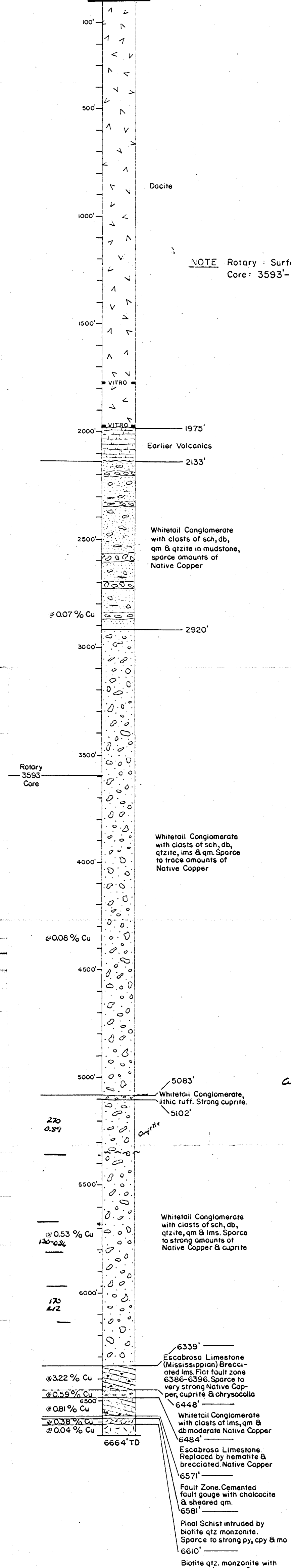
ASARCO Sample No. Core Samples (cont'd.):	Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
A-4-C92	6330-6340	10'	1.05			
A-4-C93	6340-6350	10'	0.68			
A-4-C94	6350-6360	10'	1.09			
A-4-C95	6360-6370	10'	0.59			
A-4-C96	6370-6380	10'	1.06			
A-4-C97	6380-6390	10'	8.15	1.17		
A-4-C98	6390-6400	10'	13.20	5.47		
A-4-C99	6400-6410	10'	8.65	7.72		
A-4-C100	6410-6420	10'	0.10			
A-4-C101	6420-6430	10'	0.24			
A-4-C102	6430-6440	10'	0.57			
A-4-C103	6440-6450	10'	1.09			
A-4-C104	6450-6460	10'	0.57			
A-4-C105	6460-6470	10'	0.84			
A-4-C106	6470-6480	10'	0.36			
A-4-C107	6480-6490	10'	1.26			
A-4-C108	6490-6500	10'	0.72			
A-4-C109	6500-6510	10'	1.16			
A-4-C110	6510-6520	10'	0.69			
A-4-C111	6520-6530	10'	0.28			
A-4-C112	6530-6540	10'	2.55			
A-4-C113	6540-6550	10'	0.09			
A-4-C114	6550-6560	10'	0.47			
A-4-C115	6560-6570	10'	0.07			
A-4-C116	6570-6580	10'	1.58	Mo, %		
A-4-C117	6580-6590	10'	0.14	.0044		
A-4-C118	6590-6600	10'	0.20	.0122		
A-4-C119	6600-6610	10'	0.81	.0045		
A-4-C120	6610-6620	10'	0.05	.0026		
A-4-C121	6620-6630	10'	0.04	.0018		
A-4-C122	6630-6640	10'	0.03	.0023		
A-4-C123	6640-6650	10'	0.04	.0012		
A-4-C124	6650-6660	10'	0.05	.0040		
A-4-C125	6660-6664	4'	0.05	.0023		

<p>Lms & Lms bx</p> <p>Tw</p> <p>Lms Slide Block</p> <p>Intrusive</p> <p>fault</p>	<p>30 ft @ 0.59% Cu</p> <p>30 ft @ 0.21% Cu</p> <p>90 ft @ 0.81% Cu</p> <p>84 ft @ 0.16% Cu</p>	<p>120 ft @ 3.04% Cu</p> <p>210 ft @ 2.14% Cu</p>	<p>Composite</p> <p>0.003 oz/ton Au, 0.13 oz/ton Ag</p> <p>Composite</p> <p>.002 oz/ton Au, 0.10 oz/ton Ag</p>
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Note: 5080-6540 = 1460 feet of 0.76% Cu
5680-6540 = 860 feet of 0.98% Cu

A-4

Collar Elev. 4090



NOTE Rotary : Surface - 3593' (May 1 - July 21, 1971)
Core: 3593' - 6664' (August 17 - November 4, 1971)

NOTE:
5080-6540 = 1460 ft. @ 0.76 % Cu
5680-6540 = 860 ft. @ 0.98 % Cu

T I S, R 13 E
SW 1/4 SW 1/4 SW 1/4 Sec. 27
GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-4
SUPERIOR EAST PROJECT
GILA & PINAL COUNTIES, ARIZONA
SCALE: 1" = 300'
R.B.C. Dec. 2, 1971

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd split from Rejects

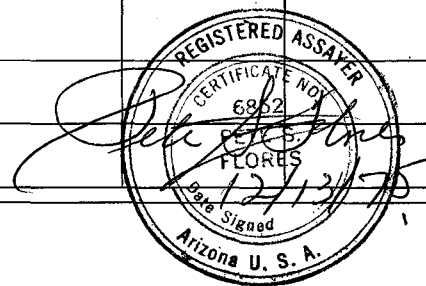
ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-4C-57			0.85				
A-4C-58			0.17				
A-4C-59			0.13				
A-4C-60			0.31				



Invoice # 13230

CHARGES \$ 10.00

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

July 18, 1974

TO: W. L. Kurtz

FROM: J. D. Sell

Assay Results
Drill Hole A-6
Superior East Project

Three rotary drill hole cuttings samples were secured during the recent 1973-1974 assessment (State Lease) year. The results of the Whitetail samples are listed on the attachment.


James D. Sell

JDS:lb
Attach.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

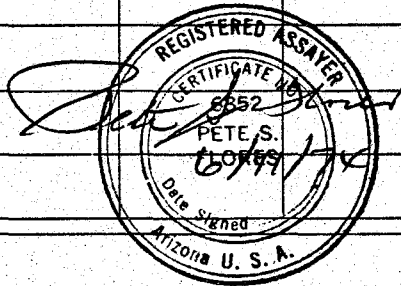
ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE June 11, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A - 6 - 1	From Factory To	1495-1515	52	28	134	5	W. G. K.
2		1575-1595	60	29	89	9	JUN 12 1974
3		1655-1665	59	26	116	1	



Invoice # 10988

CHARGES \$ 15.00

ASSAYER · CHEMIST

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

April 8, 1974

TO: W. L. Kurtz

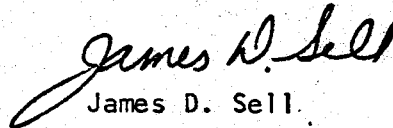
FROM: J. D. Sell

Assay Results
Drill Hole A-7
Superior East Project
Pinal County, Arizona

Attached is a list of samples, footages and corresponding assays, along with weighted assays, for copper values in drill hole A-7. The first sample is rotary cuttings while all other samples are of split core.

The AARL reports are attached showing the lead, zinc and moly values.

Some samples were rerun by Southwestern Assayers and these confirming assays are also listed.


James D. Sell

JDS:lb
Attachs.

Assay Results
Hole A-7
Superior East Project

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Southwestern Assayers	
			Total Copper	Weighted Average	Total Copper %	Weighted Average
A-7-1	Tw	2555-2577	60	2445 to 3150 705' @ 60 ppm		
-2		3200-3210	908			
-3		3300-3310	319			
-4		3400-3410	572	3150 to 3682		
-5		3500-3510	379	532' @ 806 ppm		
-6		3550-3560	224			
-7		3560-3570	2100			
-8		3600-3610	1138			
-9		Slide	3700-3710	1576	3682 to 3730 48' @ 1576 ppm	
-12	Tw	3790-3795	670			
-10		3795-3805	660			
-13		3805-3810	583	3730 to 4275		
-11		3900-3910	128	545' @ 454 ppm		
-14		4000-4010	230			
-15		4100-4110	492			
-16		4200-4210	588			
-17	Slide?	4300-4310	390	4275 to 4332 57' @ 390 ppm		
-18	Tw	4400-4410	2000			
-19		4500-4510	279	4332 to 4695		
-20		4600-4610	784	363' @ 823 ppm		
-21		4680-4690	329			
-22		4690-4695	626			
-23		Tw	4695-4700	0.50		0.52
-24	4700-4710		0.67	4695 to	0.62	4695 to
-25	4710-4720		0.59	4750	0.60	4750
-26	4720-4730		1.47	55' @	1.64	55' @
-27	4730-4740		2.83	1.17%	2.92	1.24%
-28	4740-4750		0.62		0.77	
-29	4750-4760		0.04		0.05	
-30	4760-4770		0.12	4750 to	0.18	4750 to
-31	4770-4780		0.08	4800	0.07	4800
-32	4780-4790		0.06	50' @	0.08	50' @
-33	4790-4800		0.20	0.10%	0.12	0.10%

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Southwestern Assayers	
			Total Copper	Weighted Average	Total Copper %	Weighted Average
A-7-34	Tw	4800-4810	1.09		0.38	
-35		4810-4820	0.62		0.63	
-36		4820-4830	0.31	4800 to	0.36	4800 to
-37		4830-4840	1.79	4910	2.13	4910
-38		4840-4850	1.97	110' @	1.72	110' @
-39		4850-4860	1.61	1.46%	1.82	1.51%
-40		4860-4870	1.83		1.99	
-41		4870-4880	1.46		1.54	
-42		4880-4890	1.48		1.72	
-43		4890-4900	2.03		2.17	
-44		4900-4910	<u>1.83</u>	4910 to	<u>2.17</u>	4910 to
-45		4910-4920	0.24	4960	0.25	4960
-46		4920-4930	0.20	50' @	0.10	50' @
-47		4930-4940	0.09	0.16%	0.08	0.13%
-48		4940-4950	0.04		0.04	
-49		4950-4960	<u>0.22</u>		<u>0.16</u>	
-50		4960-4970	1.34		0.92	
-51		4970-4980	0.52		0.60	
-52		4980-4990	0.37		0.33	
-53		4990-5000	0.18	4960 to	0.22	4960 to
-54		5000-5010	0.29	5070	0.27	5070
-55		5010-5020	0.29	110' @	0.26	110' @
-56		5020-5030	1.30	0.70%	1.04	0.58%
-57		5030-5040	0.68		0.67	
-58		5040-5050	1.46		0.67	
-59		5050-5060	1.04		0.85	
-60		5060-5070	<u>0.28</u>		<u>0.50</u>	
-61		5070-5080	0.18	5070 to	0.16	5070 to
-62	5080-5090	0.30	5120	0.23	5120	
-63	5090-5100	0.24	50' @	0.32	50' @	
-64	5100-5110	0.40	0.31%	0.36	0.32%	
-65	5110-5120	<u>0.41</u>		<u>0.52</u>		
			as ppm below			
-66	5120-5130	835				
-67	5130-5140	280				
-68	5140-5150	471				
-69	5150-5160	471				
-70	5160-5170	442				
-71	5170-5180	452				
-72	5180-5190	350	5120 to			
-73	5190-5200	554	5360			
-74	5200-5210	367	240' @			
-75	5210-5220	504	583 ppm			
-76	5220-5230	495				
-77	5230-5240	684				
-78	5240-5250	938				

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Amer. Anal. Reas. Lab.		
			Total Copper	Weighted Average	Total Zinc ppm	Weighted Average	
A-7-79	Tw	5250-5260	as ppm below				
-80		5260-5270	628				
-81		5270-5280	601				
-82		5280-5290	692				
-83		5290-5300	580				
-84		5300-5310	583				
-85		5310-5320	832				
-86		5320-5330	888				
-87		5330-5340	765				
-88		5340-5350	616				
-89		5350-5360	421				
			553				
-90			5360-5370	1059		311	
-91			5370-5380	1076		414	
-92			5380-5390	1498		489	5360 to
-93			5390-5400	1419		404	5440
-94			5400-5410	2300		399	80' @
-95			5410-5420	1710		428	445 ppm
-96			5420-5430	1990		535	
-97			5430-5440	965		578	
-98			5440-5450	1410		1690	
-99			5450-5460	1630	5360 to	2500	
-100			5460-5470	1100	5610	1820	
-101			5470-5480	720	250' @	1380	
-102			5480-5490	1290	1380 ppm	1350	
-103			5490-5500	543		1227	5440 to
-104			5500-5510	738		1700	5610
-105			5510-5520	835		1630	170' @
-106			5520-5530	616		1018	2066 ppm
-107			5530-5540	823		1685	
-108			5540-5550	903		2900	
-109			5550-5560	1198		3400	
-110			5560-5570	1947		3900	
-111			5570-5580	1705	1977	3400	
-112			5580-5590	3600		2800	
-113		5590-5600	515		1140		
-114		5600-5610	2900		1575		
-115	Ps	5610-5620	10,600		1425		
-117		5620-5630	1210		590		
-118		5630-5640	6700		1470		
-119		5640-5650	1590		597		
-120		5650-5660	709		384		
-121		5660-5663	629		740		
-122		5663-5670	508		354		
-123		5670-5680	495		330		
-116		5680-5690	736		2800		

Synopsis:

<u>Unit</u>	<u>Footage</u>	<u>Feet</u>	<u>Total Copper</u>	<u>Weighted Average</u>
Tw	2445-3150	705	60 ppm	2445 to 5610 3165 ft. @ 1550 ppm or 0.155%
	3150-3682	532	806 ppm	
	3682-3730	48	1576 ppm	
	3730-4275	545	454 ppm	
	4275-4332	57	390 ppm	
	4332-4695	363	823 ppm	
	4695-4750	55	1.17%	
	4750-4800	50	0.10%	
	4800-4910	110	1.46%	
	4910-4960	50	0.16%	
	4960-5070	110	0.70%	
	5070-5120	50	0.31%	
	5120-5360	240	583 ppm	
	5360-5610	250	1380 ppm	
Ps	5610-5690	80	2823 ppm	2823 ppm

Various Combinations:

Tw	2445-5610	3165	0.16%
	or		
Tw	2445-4695	2250	0.05%
Tw	4695-5610	915	0.43%
	or		
Tw	4695-5120	425	0.78%
	or		
Tw	4695-5070	375	0.84%
	5070-5610	540	0.12%
	or		
Tw	4695-4910	215	1.07%

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

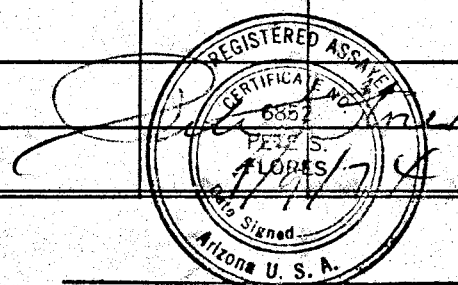
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 9, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
A - 7 - 14			230	20	32	15		4000-10
15			492	29	29	21		4100-10
16			588	28	22	29		4200-10
17			390	25	21	61		4300-10
18			0.20% 2000+	39	54	28		4400-10
19			279	40	22	28		4500-10
20			784	35	27	23		4600-10
21			329	29	28	36		4680-90
22			626	52	91	36		4690-95
23			0.50% 2000+	72	251	16		4695-4700
24			0.67% 2000+	80	302	9		4700-10
25			0.59% 2000+	82	431	8		4710-20
26			1.47% 2000+	129	773	11		4720-30
27			2.83% 2000+	125	915	6		4730-40
28			0.62% 2000+	123	1213	5		4740-50
29			430	160	705	4		4750-60
30			1240	105	1194	8		4760-70
31			844	151	530	12		4770-4780

A. D. C
JAN 10 1974



Invoice # 10271
CHARGES \$ 90.00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

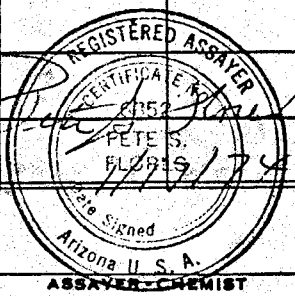
ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 17, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A - 7 - 21								0.02
22								0.02
23								0.23
24								0.09
25								0.06
26								0.62
27								1.86
28								0.35
29				A.D.C.				0.02
30				JAN 21 1974				0.02
31								0.02



Invoice # 10330

CHARGES \$ 24.75

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

2nd Cut

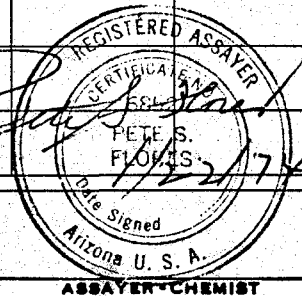
DATE January 22, 1974

SAMPLE SUBMITTED BY American Smelting & Refining Company

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A - 7 - 32			0.08					
33			0.12					
36			0.32					
40			1.72					
41			1.42					
<i>Second Cut</i>								

Invoice # 10359

CHARGES \$ 11.25



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 28, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A - 7 - 44			1.83	106	744			1.01
45			0.24	75	262			0.02
46			0.20	69	289			0.02
47			0.09	28	92			0.02
48			0.04	22	56			0.01
49			0.22	67	327			0.02
50			1.34	73	1070			0.13
51			0.52	71	1378			0.05
52			0.37	93	1153			0.03
53			0.18	65	698			0.02
54			0.29	145	1167			0.01
55			0.29	109	1580			0.01
56			1.30	52	781			0.11
57			0.68	63	656			0.08
58			1.46	160	1804			0.17
59			1.04	104	1685			0.14
60			0.28	67	1325			0.03
61			0.18	38	875			0.01
62			0.30	59	1050			0.02

Invoice # 10385

CHARGES \$ 123.50



[Handwritten Signature]

 1/28/74

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

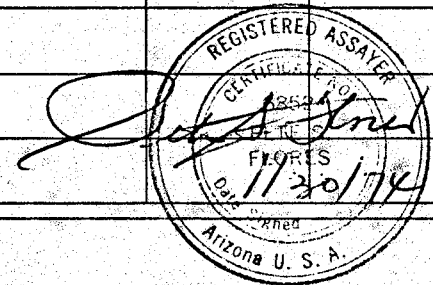
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 30, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A - 7 - 44						20	
45						17	
46						11	
47						50	
48						38	
49						15	
50						5	
51						5	
52						3	
53						3	
54						13	
55						5	
56						23	
57						15	
58						5	
59						11	
60						20	
61						12	
62						10	

A.D.C.
JAN 31 1974



Invoice # 10405

CHARGES \$ 38.00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining CompanyDATE February 6, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A - 7 - 63			0.24% 2000+	24	510	25	
64			0.40% 2000+	27	408	24	A.D.C.
65			0.41% 2000+	76	1405	10	FEB 8 1974
66			835	82	1764	24	
67			280	79	0.38% 2000+	31	
68			471	90	0.30% 2000+	7	
69			471	83	1230	8	
70			422	72	1098	11	
71			452	64	1449	11	
72			350	72	1344	11	
73			554	87	998	20	
74			367	109	480	8	
75			504	75	339	12	
76			495	106	470	10	
77			684	140	621	11	
78			938	101	446	12	
79			628	117	531	16	
80			601	100	537	12	
81			692	105	439	7	
82			580	121	442	9	



Invoice # 10436

CHARGES \$ 100.00

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

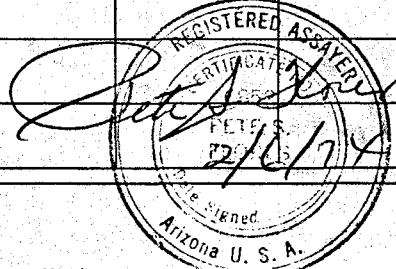
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE February 6, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-7-63			0.24				
64			0.40				
65			0.41				
67					0.38		
68					0.30		



Invoice # 10436

CHARGES \$ 10.75

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining CompanyDATE February 7, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A - 7 - 83			583	400	375	21	
84			832	108	382	22	
85			888	144	537	22	
86			765	291	0.16% 2000+	57	
87			616	96	501	36	
88			421	87	358	47	
89			553	67	363	15	
90			1059	65	311	12	
91			1076	64	414	15	
92			1498	73	489	17	
93			1419	53	408	41	
94			0.23% 2000+	59	399	21	
95			1710	56	428	20	
96			1990	54	535	23	
97			965	58	578	19	
98			1410	111	1690	18	
99			1630	290	0.25% 2000+	14	
100			1100	204	1820	7	
101			720	140	1380	7	
102			1209	161	1350	8	
104			738	197	1700	8	
105			835	374	1630	8	
113			515	242	1140	5	

Invoice # 10443

CHARGES \$ 115.00

 ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

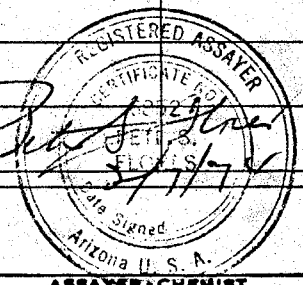
ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE February 7, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A - 7 - 86					0.16		
94			0.23				
99					0.25		


 REGISTERED ASSAYER
 CERTIFICATE NO. 296
 FEB. 8. 1974
 [Signature]
 State Signed
 Arizona U.S.A.
 ASSAYER-CHEMIST

Invoice # 10443
 CHARGES \$ 7.25

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE March 12, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	Percent Manganese
A-7-103			543	189	1227	14		
106			616	220	1018	7		W. G. R.
107			823	437	1685	6		MAR 14 1974
108			903	332	0.29% 2000+	5		
109			1198	383	0.34% 2000+	10		
110			1947	293	0.39% 2000+	21		
111			1705	347	0.34% 2000+	14		
112			0.36% 2000+	493	0.28% 2000+	12		
114			0.29% 2000+	303	1575	5		
115			1.06% 2000+	169	1425	4		
116			736	421	0.28% 2000+	9	4.95	0.71



Invoice # 10570
 CHARGES \$ 61.25

ASSAYER · CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE March 12, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A - 7 - 108					0.29		
109					0.34		W. G. K.
110					0.39		MAR 14 1974
111			<i>To be called</i>		0.34		
112			0.36		0.28		
114			0.29				
115			1.06				
116					0.28		

[Handwritten Signature]

REGISTERED ASSAYER
 TUCSON, ARIZONA
 U.S.A.
 3/12/74
 ASSAYER - CHEMIST

Invoice # 10570
 CHARGES \$ 20.00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE March 25, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-7-117			1210	91	590	3	
118			0.67% 2000+	245	1470	4	V.V. G. R. MAR 29 1974
119			1590	181	597	5	
120			709	222	384	4	
121			629	137	740	3	
122			508	169	354	5	
123			495	546	330	5	

REGISTERED ASSAYER
 CERTIFICATE NO. 657
 P. E. S.
 FLORES
 3/26/74
 Arizona U. S. A.
 Signed: *P. E. Flores*

Invoice # 10650
 CHARGES \$ 35.00

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8208
WIL WRIGHT
ARIZONA REG. NO. 8878

P.O. BOX 7517
TUCSON, ARIZONA 85725

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

American Smelting & Refining Company
Mr. James D. Sell
P.O. Box 5747
Tucson, Arizona 85703

JOB # 015220
RECEIVED 2-8-74
REPORTED 2-14-74

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC XXXX		MOLYBDENUM %
					A-Cold Oxide % Cu.	B-Hot Oxide % Cu	
A-7:							
21				.04	.02	.03	
22				.05	.01	.03	
23				.52	.29	.40	
24				.62	.22	.42	
25				.60	.14	.41	
26				1.64	.76	1.39	
27				2.91	2.06	2.66	
28				.77	.51	.62	
29				.05	.01	.03	
30				.18	.03	.08	
31				.07	.02	.05	
32				.08	.01	.04	
33				.12	.03	.06	
34				.38	.08	.18	
35				.63	.24	.34	
36				.36	.07	.09	
37				2.13	1.63	1.90	
38				1.72	1.05	1.60	
39				1.82	.97	1.57	
40				1.99	.78	1.66	
41				1.54	.42	1.21	
42				1.72	.92	1.47	
43				2.17	.94	1.74	
44				2.17	1.22	1.93	
45				.25	.05	.15	
46				.10	.02	.06	
47				.08	.04	.03	
48				.04	.01	.04	
49				.16	.04	.10	

CHARGE _____

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

INVOICE

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 5205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

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

American Smelting

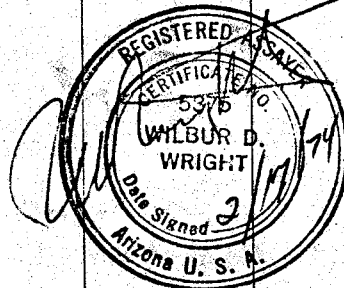
Page 2 of 2

JOB # 015220 Continued

RECEIVED _____

REPORTED _____

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	XXXX		MOLYBDENUM %
					A-Cold Oxide % Cu.	B-Hot Oxide % Cu.	
<i>A7:</i>							
50				.92	.63	.63	
51				.60	.12	.37	
52				.33	.06	.19	
53				.22	.05	.13	
54				.27	.06	.14	
55				.26	.05	.15	
56				1.04	.20	.60	
57				.67	.07	.43	
58				.67	.10	.35	
59				.85	.10	.26	
60				.50	.09	.18	
61				.16	.03	.08	
62				.23	.04	.09	
63				.32	.05	.08	
64				.36	.07	.11	
65				.52	.10	.18	
66				.12	.03	.06	
67				.04	.02	.03	
68				.05	.03	.04	
69				.05	.02	.05	
70				.06	.02	.04	



CHARGE \$ 200.00

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

INVOICE

A-7

Collar Elev. 4215 ft.

ASARCO DRILL HOLE A-7

ROTARY:

J.O. Barnes, Howard-Turner
w/air package
Aug. 17 - Sept. 16, 1973
Surface-3150 ft.

CORE:

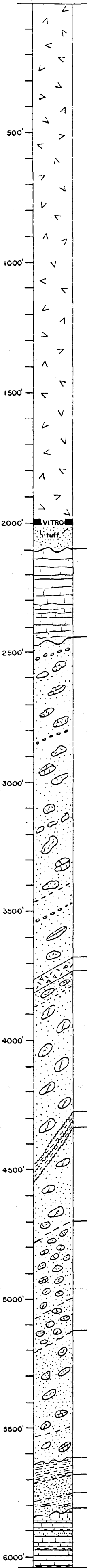
Boyles, CP-50
Nov. 27, 1973 - Feb. 9, 1974
3150-6042 ft.

2445'
Rotary
3150'
Core

2250 ft
@
0.05%
Cu

4695'
915 ft
@
0.43%
Cu

5610'



Dolomite
light orange brown to pink orange and white mottled, air-welded tuff.

Earlier Volcanics

Whitetail Conglomerate, angular to subangular clasts set in gritty to muddy matrix. Minor oxide copper, cuprite and native in upper portions.
ACP*: 69 schist, 11 schultze, 8 db, 8 pQtzite, 4 Qtz
M*: 28% dark bn. in upper half

ACP*: 89 schist, 9 schultze, 2 pQtzite
M*: 28% bn to orange in lower half

3682'
3730' Schultze Granite slide block (M-1A type). 99% schultze, 1% schist
ACP*: immed. below block: 57 schultze, 42 schist, 1 Qtzite
M*: 19% red bn

ACP*: remainder: 95 schist, 4 schultze, 1 Qtzite
M*: 23% dark bn.

Whitetail Conglomerate

4275'
4332' Fault Zone in Whitetail or slide block
ACP*: 78 schist, 22 schultze
M*: 7% red bn.

Whitetail Conglomerate
ACP*: 98.5 schist, 1 schultze, 0.5 Qtzite
M*: 21% red bn.

4695'
Native copper, cuprite and minor absorbed (green) copper in Whitetail Cgl.
ACP*: 89 db, 5 schist, 2 pQtzite, 2 Qtzite, 1 paleo, 1 schultze
M*: 18% dark green blk to dirty bn.

ACP*: 40 db, 26 pQtzite, 22 Qtzite, 12 schist
M*: 12% dirty bn.

Whitetail Conglomerate
ACP*: 38 db, 28 Qtzite, 12 pQtzite, 8 paleo, 7 schist, 7 schultze
M*: 13% red bn

basal
ACP*: 31 paleo, 26 db, 25 pQtzite, 10 Qtzite, 7 schultze, 1 schist
M*: 21% bn to green bn

5610' Supai Formation
mudstone
5663' tuffaceous sandstone
5748' limyqtzite siltstone
5810'

Naco Limestone, very fine crystalline, med. to light gray, fossiliferous limestone w/ sandy layers and shale beds

*ACP: average clast percentage

*M: matrix percentage

T. I. S., R. 13 E.
NE 1/4 NE 1/4 NE 1/4 of Sec. 28

GRAPHIC LOG & ASSAY RESULTS

of
DRILL HOLE A-7
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE: 1" = 300'

NOTE: Individual assays found on log sheets,
and assay report dated April 8, 1974.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd Split from Rejects

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-7-11			0.02					
A-7-12			0.07					
A-7-13			0.05					
A-7-14			0.02					

Invoice # 13230

CHARGES \$ 10.00

A circular seal for a registered assayer. The outer ring contains the text 'REGISTERED ASSAYER' at the top and 'Arizona U. S. A.' at the bottom. Inside the ring, it says 'CERTIFICATE NO. 6852'. The name 'PETE S. FLORES' is written in the center, with a signature over it. Below the name, it says 'Date Signed' followed by the date '12/13/75'. At the bottom of the seal, the word 'ASSAYERS - CHEMIST' is printed.

December 22, 1975

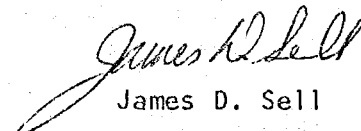
FILE MEMORANDUM

Recheck of Assays
 Drill Holes A-3, A-4, & A-7
 Superior East Project
Pinal County, Arizona

During the drilling of hole A-3, where low values were found, several samples of the hole and other holes were resubmitted to AARL for re-assay. In all cases, the reject pulps were used and a new split taken and processed. The original values in hole A-7 were reported in p.p.m. and have been converted to % for this memo.

Superior East Check Assays - Copper		
Hole & Sample	Original % Assay	Check % Assay
A-3-25	0.04	0.06
-26	0.03	0.04
-27	0.05	0.06
-28	0.06	0.07
-29	0.05	0.07
-30	0.05	0.08
-31	0.07	0.07
-32	0.04	0.04
-33	0.06	0.08
A-3-34	0.06	0.05
A-4-15(R)	0.01	0.01
-16(R)	0.02	0.01
-43(R)	0.07	0.11
A-4-44(R)	0.05	0.04
A-4C-57	0.63	0.85
-58	0.13	0.17
-59	0.19	0.13
A-4C-60	0.39	0.31
A-7-11	0.01 (128 ppm)	0.02
-12	0.07 (670 ppm)	0.07
-13	0.06 (583 ppm)	0.05
A-7-14	0.02 (230 ppm)	0.02

From the recheck samples it would appear that all the assaying by AARL is within the ballpark. The few samples in hole A-3 which were visually estimated to carry around 0.1-0.2% were indeed lower value samples as shown by the check work.


 James D. Sell

JDS:lb

cc: WLKurtz

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

DATE Nov. 21, 1975

from reject sack

SAMPLE SUBMITTED BY American Smelting & Refining Company
2nd Split from Rejects.

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-3-25			0.06				
A-3-26			0.04				
A-3-27			0.06				
A-3-28			0.07				
A-3-29			0.07				
A-3-30			0.08				
A-3-31			0.07				
A-3-32			0.04				
A-3-33			0.08				
A-3-34			0.05				

TUCSON, ARIZONA, ASSAYER
Date Signed 11/21/75
Arizona

Invoice # 13150
CHARGES \$ 25.00

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd Split from Rejects

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY: Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-4-15 (R)			0.01				
A-4-16 (R)			0.01				
A-4-43 (R)			0.11				
A-4-44 (R)			0.04				

REGISTERED ASSAYER
 CERTIFICATE OF ANALYSIS
 FLORES
 12/13/75
 Data Signed
 Arizona U. S. A.

Invoice # 13230

CHARGES \$ 10.00

REGISTERED ASSAYER

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd split from Rejeals

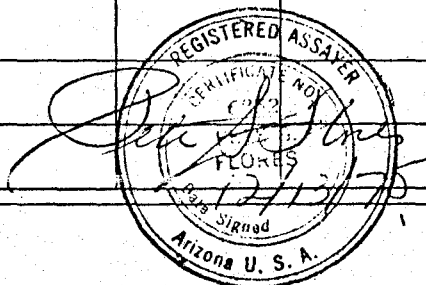
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-4C-57			0.85				
A-4C-58			0.17				
A-4C-59			0.13				
A-4C-60			0.31				



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

2nd split from Rejects

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-7-11			0.02				
A-7-12			0.07				
A-7-13			0.05				
A-7-14			0.02				

[Signature]

REGISTERED ASSAYER
FLORNS
212/13/75
Signed
Arizona U. S. A.

Invoice # 13230

CHARGES \$ 10.00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

DATE Nov. 21, 1975

from reject sack

SAMPLE SUBMITTED BY American Smelting & Refining Company
2nd Split *from Repeats.*

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-3-25			0.06				
A-3-26			0.04				
A-3-27			0.06				
A-3-28			0.07				
A-3-29			0.07				
A-3-30			0.08				
A-3-31			0.07				
A-3-32			0.04				
A-3-33			0.08				
A-3-34			0.05				

Invoice # 13150

CHARGES \$ 25.00

John A. [Signature]
 ASSAYER
 PERCENT
 FLORES
 Date Signed 11/21/75
 Arizona U.S.A.
 ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd split from Rejects

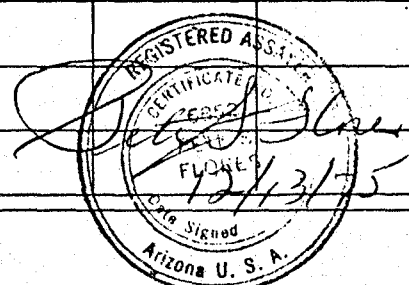
ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

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DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-15 (R)			0.01					
A-4-16 (R)			0.01					
A-4-43 (R)			0.11					
A-4-44 (R)			0.04					



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

2nd Split from Rejects

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY Asarco, Inc.

DATE Dec. 13, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-7-11			0.02				
A-7-12			0.07				
A-7-13			0.05				
A-7-14			0.02				

Invoice # 13230

CHARGES \$ 10.00

TAB

Superior East
Reports: Assay
II

AS - A-15

A-8

Collar Elev. 4671'

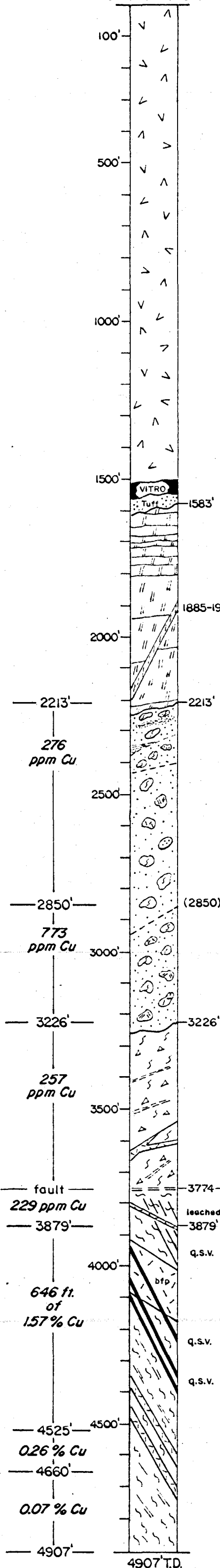
ASARCO DRILL HOLE A-8

CORE: Surface-1971' NC
1971-3197' NX
3197-4907' BX

Joy Manufacturing Co.
Joy-22
Surface-1971'
Aug. 8 - Sept. 15, 1976

Joy-22 Heavy Duty
1971-4907' T.D.
Sept. 16 - Dec. 29, 1976

NOTE: Casing left in hole.
11 ft. of 4" surface (0-11')
523 ft. of NX (1448-1971')
697 ft. of BX (2500-3197')



DACITE

EARLIER VOLCANICS

Andesite-basalt flows of 15-50' thickness with rubble and/or oxidized tops.

1885-1916' Cross fault zone @ 70'

WHITETAIL CONGLOMERATE

Sandy to gritty lenses and matrix with tuffaceous lenses, with clasts of pre-Whitetail units. Minor Cu^o.

2213-2400' Muddy light brown to light green matrix 42%.
Clasts: 95% sc, 5% pCqtzite.

2400-2850' Medium green to green-brown matrix 30%.
Clasts: 77% sc, 21% db, 2% pCqtzite.

2850-3226' Medium brown to red-brown at base, matrix 25%.
Clasts: 66% sc, 20% db, 13% Schultze and porphyry, 1% pCqtzite, tr Tbx. (numerous alt. clasts)

SLIDE BLOCK of Pinal Schist intruded by Laramide granitic aplite.

Altered and hematite replaced schist breccia, with minor gouge and "matrix" zones. Oxidized with tr. Cu^o (Leached Capping).

3774-3777' Basal fault and gouge zone, oxidized, slickensides. @ 15°-20°

PINAL SCHIST, cut by Laramide biotite feldspar porphyry (Lbfp)

Top portion oxidized with FeOx and containing remnant chalcocite in quartz-sericite alteration.

Lbfp at 3879-3885' is a 30° dipping structure with gouge at top and bottom.

Sulfide zone is variably altered with quartz-sericite bands following schistosity at 10°-20° and cut across at 30°-60°. Bands also cut Lbfp.

Mineralization, disseminated and thin veins, follow schistosity and cut across at 60°. Most quartz-sulfide veins (q.s.v.) cut at 60°. Chalcocite is main copper sulfide to 3958 where bornite appears and becomes dominant below with continued chalcocite.

Schist contains numerous crushed-gouge zones with chalcocite-bornite.

Minor pyrite throughout with trace of chalcopyrite appearing at bottom of hole.

NOTE: Individual assays are found in Assay Report dated Feb. 10, 1977.

T. 1 S., R. 13 E.
NW 1/4 SW 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-8

SUPERIOR EAST PROJECT

PINAL COUNTY, ARIZONA

SCALE 1" = 300'

ASARCO

Southwestern Exploration Division

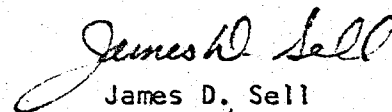
February 10, 1977

TO: F.T. Graybeal

FROM: J.D. Sell

Assay Results
Drill Hole A-8
Superior East Project
Pinal County, Arizona

Attached is a list of samples and corresponding assays, depth, and rock types for drill hole A-8. In addition to copper and molybdenum, assays were also obtained for lead and zinc with scattered iron and gold-silver assays. All values are given on the attached AARL reports.


James D. Sell

JDS:lb
Atts.

ASSAY RESULTS DRILL HOLE A-8
SUPERIOR EAST PROJECT

ASARCO Number	Unit	Depth	ppm		Note
			Copper	Moly	
A-8-81	Tw	2300-2310	230	4	
-82	Tw	2400-2410	311	4	
-83	Tw	2500-2510	320	11	
-84	Tw	2600-2610	395	2	
-85	Tw	2700-2710	176	4	
-86	Tw	2800-2810	225	5	
-87	Tw	2900-2910	945	25	
-88	Tw	3000-3010	563	54	
-89	Tw	3100-3110	810	27	
-90	Tw	3200-3210	3400	28	
-91	SB of scbx	3240-3250	518	22	2.82% Fe, oxidized
-117	SB of scbx	3300-3310	251	43	
-118	SB of scbx	3400-3410	102	16	
-119	SB of scbx	3500-3510	115	14	
-120	SB of Lga	3541-3545	93	4	
-121	SB of scbx	3600-3610	212	9	2.92% Fe, 0.02 oz. Ag, 0.001 oz. Au
-122	SB of Lga	3660-3670	279	264	
-123	SB of scbx	3700-3710	476	18	
-1	SB of scbx	3750-3758	178	9	0.18 oz. Ag, 0.002 oz. Au
-2	SB of Lga	3758-3762	80	5	
-3	SB of scbx	3762-3774	207	29	
In-Place Units					
A-8-4	p&pi	3777-3786	244	27	altered, partially oxidized
-5	"	3786-3791	232	22	
-6	"	3820-3830	225	27	
-7	"	3830-3840	345	25	
-8	"	3840-3843	4.80%	13	6" vn of qtz-ser-cc
-9	"	3843-3851	321	16	
-10	"	3851-3860	120	15	
-11	"	3872-3876	92	9	
-11A	"	3876-3879	328	28	

oxide-sulfide interface

ASARCO Number	Unit	Depth	% Copper	ppm Moly	Note
A-8-94	Lbfp	3879-3885	0.62	10	
-95	p&pi	3885-3886	0.32	6	
-12	"	3886-3894	0.63	17	0.16 oz. Ag, 0.001 oz. Au
-13	"	3894-3905	0.47	10	
-14	"	3905-3909	0.23	10	
-92	"	3909-3911	0.20	15	
-15	"	3911-3922	0.24	10	
-16	"	3922-3924	6.45	8	qtz vn.
-17	"	3924-3932	0.63	133	
-18	"	3932-3944	0.62	16	
-19	"	3944-3952	0.94	14	
-20	"	3952-3957	0.54	10	
-21	"	3957-3967	1.04	22	
-22	"	3967-3978	1.17	163	0.02 oz. Ag, 0.001 oz. Au
-23	"	3978-3979	15.64	204	qtz vn. 0.30 oz. Ag, 0.005 oz. Au
-24	"	3979-3990	0.24	16	0.21 oz. Ag, tr. Au
-25	"	3990-4005	0.46	14	
-26	"	4005-4008	4.90	18	qtz vn.
-27	Lbfp	4008-4019	0.18	4	
-28	"	4019-4027	0.69	53	
-29	"	4027-4038	0.44	80	
-50	"	4038-4046	0.38	9	
-51	"	4046-4060	0.44	11	
-52	"	4060-4075	0.45	4	
-30	"	4075-4090	0.46	9	
-53	"	4090-4110	0.45	4	
-54	"	4110-4135	0.29	5	
-55	"	4135-4150	1.16	4	
-31	"	4150-4165	1.20	4	
-32	"	4165-4176	1.66	6	
-33	p&pi	4176-4190	1.35	21	
-34	"	4190-4197	0.64	45	
-56	"	4197-4206	0.86	7	
-57	"	4206-4215	0.70	22	
-35	"	4215-4226	0.66	173	
-36	"	4226-4235	1.45	28	0.12 oz. Ag, 0.004 oz. Au
-37	"	4235-4241	2.57	77	0.15 oz. Ag, 0.005 oz. Au
-38	"	4241-4248	1.03	28	0.17 oz. Ag, 0.002 oz. Au
-39	"	4248-4252	16.54	10	0.32 oz. Ag, 0.002 oz. Au
-40	"	4252-4254	58.99	25	0.73 oz. Ag, 0.012 oz. Au
-41	"	4254-4258	28.13	5	0.36 oz. Ag, 0.004 oz. Au
-42	"	4258-4264	4.59	284	0.13 oz. Ag, 0.003 oz. Au
-43	"	4264-4268	14.18	22	0.18 oz. Ag, 0.005 oz. Au
-44	"	4268-4284	0.29	25	0.10 oz. Ag, 0.002 oz. Au
-45	"	4284-4301	0.16	19	
-58	"	4301-4325	0.16	9	
-59	"	4325-4329	0.39	11	
-46	"	4329-4338	0.55	19	
-47	"	4338-4345	1.09	10	
-48	"	4345-4348	3.92	181	qtz vn.
-49	"	4348-4354	8.32	14	
-60	"	4354-4360	4.33	42	

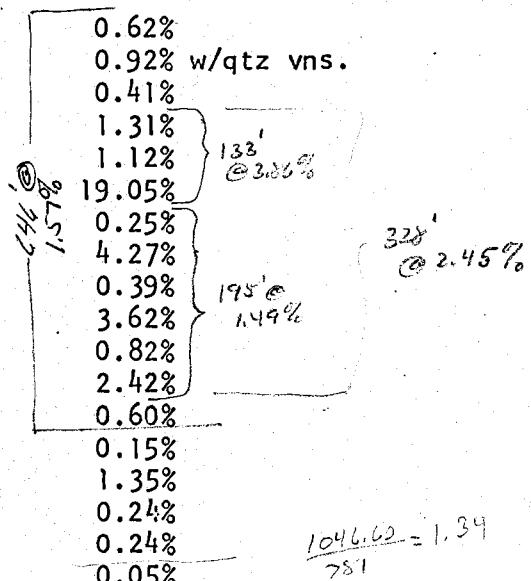
ASARCO Number	Unit	Depth	% Copper	ppm Moly	Note
A-8-93	p&pi	4360-4367	7 0.56	7	
-61	"	4367-4379	12 0.29	6	
-62	"	4379-4385	6 3.22	12	qtz vn. 1.31% Fe
-63	"	4385-4391	6 6.86	56	
-64	"	4391-4401	10 1.12	31	
-65	"	4401-4404	3 6.24	181	
-66	"	4404-4416	12 0.74	29	
-67	"	4416-4430	14 0.73	16	
-68	"	4430-4443	13 0.99	19	
-69	"	4443-4451	8 1.19	12	qtz vn. 1.36% Fe
-70	"	4451-4456	5 5.25	3	
-71	"	4456-4463	7 1.80	24	
-72	"	4463-4475	0.38	15	
-73	"	4475-4484	0.99	10	
-74	"	4484-4501	0.46	10	
-75	"	4501-4512	0.94	32	
-76	"	4512-4525	0.44	26	
-77	"	4525-4537	0.13	20	
-78	"	4537-4551	0.13	13	
-79	"	4551-4563	0.09	8	
-80	"	4563-4578	0.17	39	2.20% Fe
-96	"	4578-4591	0.18	15	
-97	"	4591-4603	0.18	11	
-98	"	4603-4607	1.17	15	
-99	"	4607-4612	1.50	79	
-100	Lbfp	4612-4615	0.67	12	
-101	"	4615-4627	0.13	3	
-102	"	4627-4633	0.11	5	
-103	"	4633-4642	0.24	7	
-104	"	4642-4644	0.78	6	
-105	"	4644-4646	0.11	4	
-106	p&pi	4646-4660	0.24	8	
			ppm Copper		
-107	Lbfp	4660-4664	497	3	
-108	p&pi	4664-4682	633	9	
-109	"	4682-4695	506	7	
-110	"	4695-4704	317	5	
-111	"	4704-4712	646	6	
-112	Lbfp	4712-4720	413	12	
-113	"	4720-4730	487	14	
-114	p&pi	4790-4800	1120	6	
-115	p&pi	4850-4860	598	3	
-116	p&pi	4890-4900	633	9	3.25% Fe, 0.07 oz. Ag, 0.002 oz. Au
		T.D. 4907			

Legend:

- Tw Tertiary Whitetail Conglomerate
- SB of scbx Slide Block of Precambrian Pinal Schist breccia
- SB of Lga Slide Block of Laramide granite aplite
- p&pi Precambrian Pinal Schist
- Lbfp Laramide biotite feldspar porphyry
- qtz vn. quartz vein

UNIT-DEPTH-FOOTAGE-COPPER VALUE COMPILATION, A-8

<u>Unit</u>	<u>Depth</u>	<u>Footage</u>	<u>Copper Value</u>
Tw	2213-2850	637	276 ppm
Tw	2850-3226	376	773 ppm
SB of scbx & Lga	3226-3774	548	257 ppm
Basal Fault Zone	3774-3777	3	---
pēpi, oxidized	3777-3879	102	229 ppm
	oxide-sulfide interface		
Lbfp	3879-3885	6	0.62%
pēpi	3885-4008	123	0.92% w/qtz vns.
Lbfp	4008-4135	127	0.41%
Lbfp	4135-4176	41	1.31%
pēpi	4176-4248	72	1.12%
pēpi qtz vn	4248-4268	20	19.05%
pēpi	4268-4338	70	0.25%
pēpi qtz vn	4338-4360	22	4.27%
pēpi	4360-4379	19	0.39%
pēpi qtz vn	4379-4404	25	3.62%
pēpi	4404-4443	39	0.82%
pēpi qtz vn	4443-4463	20	2.42%
pēpi	4463-4525	62	0.60%
pēpi	4525-4603	78	0.15%
pēpi	4603-4612	9	1.35%
Lbfp	4612-4646	34	0.24%
pēpi	4646-4660	14	0.24%
Lbfp	4660-4664	4	0.05%
pēpi	4664-4712	48	0.05%
Lbfp	4712-4747	35	0.05%
pēpi	4747-4907	160	0.08%
T.D.			



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TUCSON, ARIZONA 85714

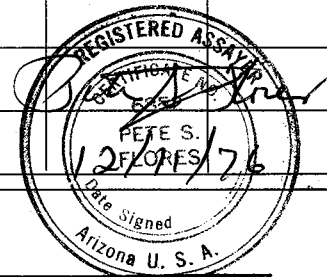
SAMPLE SUBMITTED BY ASARCO, Inc.DATE Dec. 11, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-8-1			178	32	43	9	
A-8-2			80	15	14	5	
A-8-3			207	29	21	29	
A-8-4			244	33	19	27	
A-8-5			232	40	42	22	
A-8-6			225	41	33	27	
A-8-7			345	25	35	25	
A-8-8			4.80% 2000+	27	32	13	
A-8-9			321	15	48	16	
A-8-10			120	35	27	15	
A-8-11			92	32	29	9	
A-8-12			0.63 2000+	20	18	17	
A-8-13			0.47 2000+	29	27	10	
A-8-14			0.23 2000+	37	22	10	
A-8-15			0.24 2000+	25	34	10	
A-8-16			6.45 2000+	17	14	8	
A-8-17			0.63 2000+	24	33	133	
A-8-18			0.62 2000+	19	15	16	
A-8-19			0.94 2000+	22	19	14	
A-8-20			0.54 2000+	23	24	10	
A-8-21			1.04 2000+	35	27	22	
A-8-22	0.001	0.02	1.17 2000+	33	18	163	
A-8-23	0.005	0.30	15.64	25	18	204	
A-8-24	Trace	0.21	0.24 2000+	32	36	16	
A-8-25			0.46 2000+			14	

Invoice # 14342 Anal. \$ 173.50

Prep. 18.75

CHARGES \$ 192.25



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

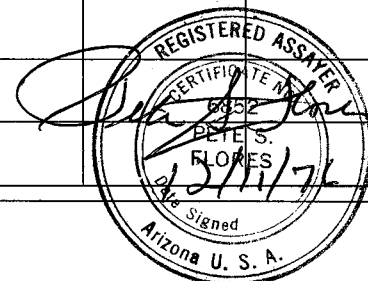
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 11, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-8-26			4.90 2000+			18	
A-8-27			0.18 1750			4	
A-8-28			0.69 2000+	38	22	53	
A-8-29			0.44 2000+			80	
A-8-35			0.66 2000+			173	
A-8-36	0.004	0.12	1.45 2000+	26	38	28	
A-8-37	0.005	0.15	2.57 2000+	34	26	77	
A-8-38	0.002	0.17	1.03	19	14	28	
A-8-39	0.002	0.32	16.54	26	17	10	
A-8-40	0.012	0.73	58.99	11	15	25	
A-8-41	0.004	0.36	28.13	21	19	5	
A-8-42	0.003	0.13	4.59	37	18	284	
A-8-43	0.005	0.18	14.18	46	15	22	
A-8-44	0.002	0.10	0.29	20	12	25	
A-8-45			0.16 1600			19	
A-8-46			0.55 2000+			19	
A-8-47			1.09 2000+			10	
A-8-48			3.92 2000+			181	
A-8-49			8.32 2000+			14	



Invoice # 14342 Anal. \$95.50

Prep. 14.25

CHARGES \$ 109.75

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
2000+ PPM

DATE Dec. 11, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-8			4.80				
A-8-12			0.63				
A-8-13			0.47				
A-8-14			0.23				
A-8-15			0.24				
A-8-16			6.45				
A-8-17			0.63				
A-8-18			0.62				
A-8-19			0.94				
A-8-20			0.54				
A-8-21			1.04				
A-8-22			1.17				
A-8-24			0.24				
A-8-25			0.46				
A-8-26			4.90				
A-8-28			0.69				
A-8-29			0.44				
A-8-35			0.66				
A-8-36			1.45				
A-8-37			2.57				
A-8-46			0.55				
A-8-47			1.09				
A-8-48			3.92				
A-8-49			8.32				

REGISTERED ASSAYER
 PETE S. FLORES
 12/11/76
 Arizona U. S. A.
 ASSAYER-CHEMIST

Invoice # 14342

CHARGES \$ 51.00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

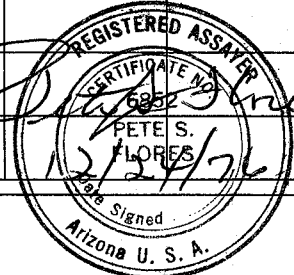
COMPOSITES

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 24, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-1 ---A-8-3	.002	0.18					
A-8-12 - A-8-14	.001	0.16					



Invoice # 14381 Anal. \$ 8.50
 Comp. 4.20
 CHARGES \$ 12.70

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 14, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-22	.001	0.02					
A-8-23	.005	0.30					
A-8-24	Trace	0.21					
A-8-36	.004	0.12					
A-8-37	.005	0.15					
A-8-38	.002	0.17					
A-8-39	.002	0.32					
A-8-40	.012	0.73					
A-8-41	.004	0.36					
A-8-42	.003	0.13					
A-8-43	.005	0.18					
A-8-44	.002	0.10					

Invoice # 14347

CHARGES \$ 54.00

REGISTERED ASSAYER
 CERTIFICATE
 PETE S. JELDES
 Date Signed 12/14/76
 Arizona U.S.A.
 ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 18, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-8-30			0.46 2000+			9	
31			1.20 2000+			4	
32			1.66 2000+			6	
33			1.35 2000+			21	
34			0.64 2000+			45	
50			0.38 2000+			9	
51			0.44 2000+			11	
52			0.45 2000+			4	
53			0.45 2000+			4	
54			0.29 2000+			5	
55			1.16 2000+			4	
56			0.86 2000+			7	
57			0.70 2000+			22	
58			1570			9	
59			0.39 2000+			11	
60			4.33 2000+			42	
61			0.29 2000+			6	
62			3.22 2000+			12	
63			6.86 2000+	10	23	56	
64			1.12 2000+			31	
65			6.24 2000+			181	
66			0.74 2000+			29	
67			0.73 2000+			16	
68			0.99 2000+			19	
A-8-69			1.19 2000+			12	

Invoice # 14361 Anal. \$103.00

Prep. 18.75

CHARGES \$ 121.75



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY: ASARCO, Inc.

DATE Dec. 18, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-8-70			5.25 2000+			3	
71			1.80 2000+	7	11	24	
72			0.38 2000+			15	
73			0.99 2000+			10	
74			0.46 2000+			10	
75			0.94 2000+			32	
76			0.44 2000+			26	
77			1280			20	
78			1270			13	
79			912			8	
-8-80			1690	17	25	39	

Invoice # 14361 Anal. \$50.00

Prep. 8.25

CHARGES \$ 58.25

A circular stamp with the text "REGISTERED ASSAYER" around the top and "Arizona U. S. A." around the bottom. In the center, it says "CERTIFICATE NO. 6852", "PETE S. FLORES", and "Date Signed 12-18-76". There is a handwritten signature over the stamp.

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
OVER 2000 PPM

DATE Dec. 18, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-30			0.46				
31			1.20				
32			1.66				
33			1.35				
34			0.64				
50			0.38				
51			0.44				
52			0.45				
53			0.45				
54			0.29				
55			1.16				
56			0.86				
57			0.70				
59			0.39				
60			4.33				
61			0.29				
62			3.22				
63			6.86				
64			1.12				
65			6.24				
66			0.74				
67			0.73				
68			0.99				
69			1.19				
A-8-70			5.25				

REGISTERED ASSAYER
 CERTIFICATE NO. 6852
 PETER FLORES
 Date Signed 12/18/76
 Arizona U. S. A.

Invoice # 14361
 CHARGES \$ 52.50

ASSAYER - CHEMIST

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
OVER 2000PPM

DATE Dec. 18, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-71			1.80				
72			0.38				
73			0.99				
74			0.46				
75			0.94				
A-8-76			0.44				

REGISTERED ASSAYER
 CERTIFICATE NO. 6862
 PETER FLORES
 Date Signed 12/18/76
 Arizona U. S. A.

Invoice # 14361

CHARGES \$ 12.00

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

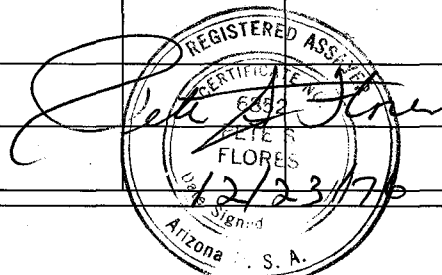
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 23, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
✓ A-8-63							1.31	
✓ A-8-71							1.36	
✓ A-8-80							2.20	



Invoice # 14373
CHARGES \$ 9.75

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

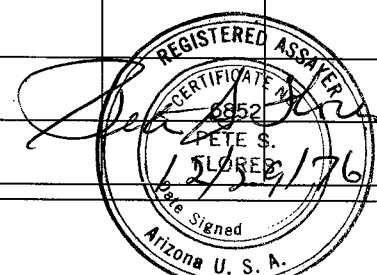
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Dec. 29, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-8-81			230	13	52	4	
82			311	11	75	4	
83			320	13	182	11	
84			395	32	320	2	
85			176	12	187	4	
86			225	11	203	5	
87			945	12	68	25	
88			563	4	91	54	
89			810	15	103	27	
90			0.34% 2000+	10	64	28	
91			518	8	40	22	2.82



Invoice # 14408 Anal. \$ 79.75
 Prep. 8.25
 CHARGES \$ 88.00

ASSAYER - CHEMIST

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
OVER 2000 PPM

DATE _____

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-8-90			0.34					

Invoice # 14408

CHARGES \$ 2.00

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

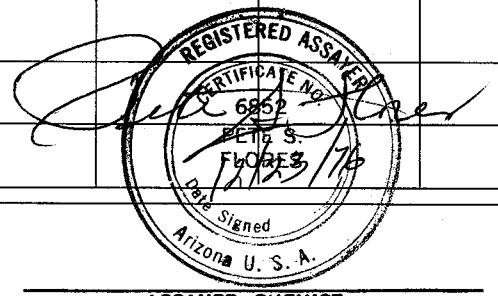
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
Over 2000 PPM

DATE Dec. 23, 1976

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-93			0.56				
94			0.62				
95			0.32				
98			1.17				
99			1.50				
100			0.67				
103			0.24				
104			0.78				
A-8-106			0.24				



Invoice # 14366

CHARGES \$ 9.00

ASSAYER - CHEMIST

TABLE ONE — Footage-Assay Tabulation of DDH A-8

Unit abbreviations: p̄sc Precambrian Pinal Schist
 Lbfp Laramide biotite feldspar porphyry
 qtz vn quartz vein with sulfide masses

Unit	Initial Depth	Intercept Footage	Percent Copper
p̄sc (leached capping)	3843	36	0.008
oxide-sulfide interface			
Lbfp	3879	6	0.62
p̄sc	3885	1	0.32
	3886	8	0.63
	3894	11	0.47
	3905	4	0.23
	3909	2	0.20
	3911	11	0.24
qtz vn	3922	2	6.45
	3924	8	0.63
	3932	12	0.62
	3944	8	0.94
	3952	5	0.54
	3957	10	1.04
	3967	11	1.17
qtz vn	3978	1	15.64
	3979	11	0.24
	3990	15	0.46
qtz vn	4005	3	4.90
Lbfp	4008	11	0.18
	4019	8	0.69
	4027	11	0.44
	4038	8	0.38
	4046	14	0.44
	4060	15	0.45
	4075	15	0.46
	4090	20	0.45
	4110	25	0.29
	4135	15	1.16
	4150	15	1.20
	4165	11	1.66
p̄sc	4176	14	1.35
	4190	7	0.64
	4197	9	0.86
	4206	9	0.77
	4215	11	0.66
	4226	9	1.45
	4235	6	2.57
	4241	7	1.03
qtz vn	4248	4	16.54
qtz vn	4252	2	58.99
qtz vn	4254	4	28.13
qtz vn	4258	6	4.59
qtz vn	4264	4	14.18

① Keep assay intervals to 10 ft. or less

② 4254-4258 assay looks too high

③ Interval 4258-4264 is mostly unsplit and assay looks too high.

④ Unsplit zones.
 4330-4345
 4380-4420

— # 187 re-split

Unit	Initial Depth	Intercept Footage	Percent Copper
	4268	16	0.29
	4284	17	0.16
	4301	24	0.16
	4325	4	0.39
	- 4329	9	0.55
qtz vn	- 4338	7-1/2	1.09
qtz vn	4345-1/2	2-1/2	3.92
qtz vn	4348	6	8.32
qtz vn	4354	6	4.33
	4360	7	0.56
	4367	12	0.29
qtz vn	4379	6	3.22
qtz vn	4385	6	6.86
qtz vn	4391	10	1.12
qtz vn	4401	3	6.24
	4404	12	0.74
	4416	14	0.73
	4430	13	0.99
qtz vn	4443	8	1.19
qtz vn	4451	5	5.25
qtz vn	4456	7	1.80
	4463	12	0.38
	4475	9	0.99
	4484	17	0.46
	4501	11	0.94
	4512	13	0.44
	4525	12	0.13
	4537	14	0.13
	4551	12	0.09
	4563	15	0.17
	4578	13	0.18
	4591	12	0.18
	4603	4	1.17
	4607	5	1.50
Lbfp	4612	3	0.67
	4615	12	0.13
	4627	6	0.11
	4633	9	0.24
	4642	2	0.78
	4644	2	0.11
pesc	4646	14	0.24
Lbfp	4660	4	0.05
pesc	4664	18	0.06
	4682	13	0.05
	4695	9	0.03
	4704	8	0.06
Lbfp	4712	8	0.04
	4720	10	0.05
	4730	Not available	

#188 replit
#189 "

- assay looks too high

should be
4402

ps make
4402
4403

- assay looks too high; look
less than 4443-4451
and 4456-4463

- 10% core recovery

Lbfp continues to 4744; p̄sc to 4767 foot depth at end of reporting period.

Scattered sampling for Pb, Zn, Mo, Au, and Ag indicates very low values. Sample distribution included the hi-grade bornite-chalcocite veins.

<u>Element</u>	<u>Number of Samples</u>	<u>Ave. Value</u>
Pb	25	25 ppm
Zn	25	22 ppm
Mo	61	31 ppm
Au	12	0.004 oz/ton
Ag	12	0.23 oz/ton

February 25, 1977

TO: F. T. Graybeal

FROM: J. D. Sell

Resample Results A-8
Superior East Project
Pinal County, Arizona

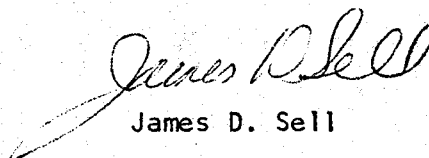
As you noted in looking at the core of A-8, there were three zones which appeared to be only partially split. As verbally communicated, these zones were highly brecciated material and whole pieces were alternatively picked for assay with the intervening pieces left for visual appreciation of the brecciation. As there was some question as to this method of sampling, it was requested that the intervals be resplit and the values compared. This has been done and the results of the copper values are as follows:

TABLE 1 — Original and Resample Assay Comparison, Hole A-8

<u>Depth Interval</u>	<u>Original</u>		<u>Resample</u>	
	<u>Number</u>	<u>% Copper</u>	<u>Number</u>	<u>% Copper</u>
4258-4264	-42	4.59	-187	2.55
4329-4338	-46	0.55	-188	1.00
4338-4345-1/2	-47	1.09	-189	1.03

Both sample sets were assayed by the Long Iodide method as noted on the attached assay sheet and should be directly comparable. The difference in values undoubtedly lies in the small grains of chalcocite-bornite being in predominance in one sample over the other.

The original sample was whole pieces of core whereas the resample was a split of the remaining core.


James D. Sell

JDS:lb
Att.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Feb. 23, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-8-187			2.55				
A-8-188			1.00				
A-8-189			1.03				

REGISTERED ASSAYER
 PETE S. FLORES
 Date 2/23/77
 Signed
 Arizona U. S. A.

3441 East Milber

INVOICE
No. 14347

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
Mr. James D. Sell

DATE Dec. 14, 1976

SAMPLE MARKED

ANALYSIS

CHARGES

A-8-22 -- A-8-44

Au, Ag

\$54.00

THANK YOU MUCH...

WE APPRECIATE YOUR BUSINESS...

3441 East Milber

INVOICE
No. 14342

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
Mr. James D. Sell

DATE Dec. 11, 1976

SAMPLE MARKED	ANALYSIS	CHARGES
A-8-1 -- A-8-25 25 Samples	23-Geo-Chem Cu, Pb, Zn, Mo 1-Geo-Chem Pb, Zn, Mo 1-Geo-Chem Cu, Mo Preparation	\$ 168.00 18.75
A-8-26 -- A-8-29 A-8-35 -- A-8-49 19 Samples	12-Geo-Chem Cu, 10-Geo-Chem Pb, Zn 19-Geo-Chem Mo Preparation	95.50 14.25
(Over 2000PPM) A-8-8 A-8-12 -- A-8-22 A-8-24 -- A-8-26 A-8-28 -- A-8-29 A-8-35 -- A-8-37 A-8-46 -- A-8-49	Cu (18-AA Cu, 6-Long Iodide Cu)	51.00
A-8-23 A-8-38 A-8-39 A-8-40 -- A-8-44	Cu (2-AA Cu, 6-Long Iodide Cu)	19.00
OK for Payment Superior East James D. Sell	TOTAL HAPPINESS IS... HAVING YOU AS OUR CUSTOMER...	\$366.50

3441 East Milber

INVOICE
No. 14342

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.
Mr. James D. SellDATE Dec. 11, 1976

SAMPLE MARKED	ANALYSIS	CHARGES
A-8-1 -- A-8-25 25 Samples	23-Geo-Chem Cu, Pb, Zn, Mo 1-Geo-Chem Pb, Zn, Mo 1-Geo-Chem Cu, Mo Preparation	\$ 168.00 18.75
A-8-26 -- A-8-29 A-8-35 -- A-8-49 19 Samples	12-Geo-Chem Cu, 10-Geo-Chem Pb, Zn 19-Geo-Chem Mo Preparation	95.50 14.25
(Over 2000PPM) A-8-8 A-8-12 -- A-8-22 A-8-24 -- A-8-26 A-8-28 -- A-8-29 A-8-35 -- A-8-37 A-8-46 -- A-8-49 A-8-23 A-8-38 A-8-39 A-8-40 -- A-8-44	Cu (18-AA Cu, 6-Long Iodide Cu) Cu (2-AA Cu, 6-Long Iodide Cu)	51.00 19.00
<p><i>OK for Payment Superior East James R. Sell</i></p>	TOTAL HAPPINESS IS... HAVING YOU AS OUR CUSTOMER...	\$366.50

ASARCO Number	Unit	Depth	% Copper	ppm Moly	ppm Lead	
A-8-94	Lbfp	3879-3885	6 0.62	10	24	11' @ 95.36 ft %Cu = 0.86% Cu = 8591 ppm Cu Cu/Mo = 220
-95	pEpi	3885-3886	1 0.32	6	26	
-12	"	3886-3894	8 0.63	17	20	11' @ 4319 ft ppm Mo = — = 39 ppm Mo
-13	"	3894-3905	11 0.47	10	29	
-14	"	3905-3909	4 0.23	10	37	11' @ 2943 ft ppm Pb = — = 26 1/2 ppm Pb Pb/Mo = 0.68
-92	"	3909-3911	2 0.20	15	18	
-15	"	3911-3922	11 0.24	10	25	
-16	"	3922-3924	2 6.45	8	17	
-17	"	3924-3932	8 0.63	133	24	
-18	"	3932-3944	12 0.62	16	19	
-19	"	3944-3952	8 0.94	14	22	
-20	"	3952-3957	5 0.54	10	23	
-21	"	3957-3967	10 1.04	22	35	
-22	"	3967-3978	11 1.17	163	33	
-23	"	3978-3979	1 15.64	204	25	
-24	"	3979-3990	11 0.24	16	32	
-25	"	3990-4005	15 0.46	14		
-26	"	4005-4008	3 4.90	18		
-27	Lbfp	4008-4019	11 0.18	4		
-28	"	4019-4027	8 0.69	53	38	Cu/Mo = 130 Pb/Mo = 0.72
-29	"	4027-4038	11 0.44	80		
-50	"	4038-4046	8 0.38	9		
-51	"	4046-4060	14 0.44	11		
-52	"	4060-4075	15 0.45	4		
-30	"	4075-4090	15 0.46	9		
-53	"	4090-4110	20 0.45	4		
-54	"	4110-4135	25 0.29	5		
-55	"	4135-4150	15 1.16	4		
-31	"	4150-4165	15 1.20	4		
-32	"	4165-4176	11 1.66	6		
-33	pEpi	4176-4190	14 1.35	21		
-34	"	4190-4197	7 0.64	45		
-56	"	4197-4206	9 0.86	7		
-57	"	4206-4215	9 0.70	22		
-35	"	4215-4226	11 0.66	173		
-36	"	4226-4235	9 1.45	28	26	
-37	"	4235-4241	6 2.57	77	34	
-38	"	4241-4248	7 1.03	28	19	58' @ 421.24 ft %Cu = 7.26% Cu = 72428 ppm Cu Cu/Mo = 1320
-39	"	4248-4252	4 16.54	107	26	
-40	"	4252-4254	2 58.99	25	11	58' @ 3212 ft ppm Mo = — = 55 ppm Mo
-41	"	4254-4258	4 28.13	5	21	
-42	"	4258-4264	6 4.59	284	37	58' @ 1507 ft ppm Pb = — = 26 ppm Pb Pb/Mo = 0.47
-43	"	4264-4268	4 14.18	22	46	
-44	"	4268-4284	16 0.29	25	20	
-45	"	4284-4301	17 0.16	19		
-58	"	4301-4325	24 0.16	9		
-59	"	4325-4329	4 0.39	11		
-46	"	4329-4338	9 0.55	19		
-47	"	4338-4345 1/2	7 1.09	10		
-48	"	4345 1/2-4348	2 1/2 3.92	181		
-49	"	4348-4354	6 8.32	14		
-60	"	4354-4360	6 4.33	42		

ASARCO Number	Unit	Depth	% Copper	ppm Moly	ppm Pb
A-8-93	Sulfide p&pi	4360-4367	7 0.56	7	20
-61	"	4367-4379	12 0.29	6	
-62	"	4379-4385	6 3.22	12	
-63	"	4385-4391	6 6.86	56	10
-64	"	4391-4401	10 1.12	31	
-65	"	4401-4404	3 6.24	181	
-66	"	4404-4416	12 0.74	29	
-67	"	4416-4430	14 0.73	16	
-68	"	4430-4443	13 0.99	19	
-69	"	4443-4451	8 1.19	12	
-70	"	4451-4456	5 5.25	3	7
-71	"	4456-4463	7 1.80	24	
-72	"	4463-4475	12 0.38	15	
-73	"	4475-4484	9 0.99	10	
-74	"	4484-4501	17 0.46	10	
-75	"	4501-4512	11 0.94	32	
-76	"	4512-4525	13 0.44	26	
-77	"	4525-4537	12 0.13	20	
-78	"	4537-4551	14 0.13	13	
-79	"	4551-4563	12 0.09	8	
-80	"	4563-4578	15 0.17	39	17
-96	"	4578-4591	13 0.13	15	6
-97	"	4591-4603	12 0.18	11	9
-98	"	4603-4607	4 1.17	15	17
-99	"	4607-4612	5 1.50	79	18
-100	Lbfp	4612-4615	3 0.67	12	27
-101	"	4615-4627	12 0.13	3	15
-102	"	4627-4633	6 0.11	5	13
-103	"	4633-4642	9 0.24	7	22
-104	"	4642-4644	2 0.78	6	23
-105	"	4644-4646	2 0.11	4	11
-106	p&pi	4646-4660	14 0.24	8	25
-107	Lbfp	4660-4664	4 497	3	11
-108	p&pi	4664-4682	18 633	9	12
-109	"	4682-4695	13 506	7	14
-110	"	4695-4704	9 317	5	13
-111	"	4704-4712	8 646	6	12
-112	Lbfp	4712-4720	8 413	12	10
-113	"	4720-4730	10 487	14	8
-114	p&pi	4790-4800	10 1120	6	515
-115	p&pi	4850-4860	10 598	3	23
-116	p&pi	4890-4900	10 633	9	13
		T.D. 4907	7 635		

$7 \times 0.56 = 3.92 \text{ ft} \% \text{ Cu} = 0.56 \% \text{ Cu} = 5600 \text{ ppm Cu}$
 $7 \times 7 = 49 \text{ ft ppm Mo}$
 $7 \times 20 = 140 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 800$
 $\text{Pb/Mo} = 2.86$

$6 \times 6.86 = 41.16 \text{ ft} \% \text{ Cu} = 6.86 \% \text{ Cu} = 6860 \text{ ppm Cu}$
 $4 \times 50 = 200 \text{ ft ppm Mo}$
 $4 \times 10 = 40 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 1225$
 $\text{Pb/Mo} = 0.18$

$7 \times 1.19 = 8.33 \text{ ft} \% \text{ Cu} = 1.19 \% \text{ Cu} = 11900 \text{ ppm Cu}$
 $7 \times 24 = 168 \text{ ft ppm Mo}$
 $7 \times 7 = 49 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 750$
 $\text{Pb/Mo} = 0.29$

$129' @ 57.28 \text{ ft} \% \text{ Cu} = 3.04 \% \text{ Cu} = 30385 \text{ ppm Cu}$
 $189' @ 8084 \text{ ft ppm Mo} = 43 \text{ ppm Mo}$
 $189' @ 4699 \text{ ft ppm Pb} = 25 \text{ ppm Pb}$
 $\text{Cu/Mo} = 707$
 $\text{Pb/Mo} = 0.58$

$205' @ 34.38 \text{ ft} \% \text{ Cu} = 0.17 \% \text{ Cu} = 1677 \text{ ppm Cu}$
 $\text{Cu/Mo} = 152$

$205' @ 2258 \text{ ft ppm Mo} = 11 \text{ ppm Mo}$

$205' @ 2369 \text{ ft ppm Pb} = 11 \frac{1}{2} \text{ ppm Pb}$
 $\text{Pb/Mo} = 1.05$

$10' @ 1120 \text{ ppm Cu} = 1.12 \text{ ft} \% \text{ Cu}$
 $10' @ 6 \text{ ppm Mo} = 60 \text{ ft ppm Mo}$
 $10' @ 57 \text{ ppm Pb} = 570 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 187$
 $\text{Pb/Mo} = 85.83$

$10' @ 0.0598 = 0.598 \text{ ft} \% \text{ Cu}$
 $10' @ 3 = 30 \text{ ft ppm Mo}$
 $10' @ 23 = 230 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 199$
 $\text{Pb/Mo} = 7.67$

$10' @ 0.0433 = 0.433 \text{ ft} \% \text{ Cu}$
 $10' @ 9 = 90 \text{ ft ppm Mo}$
 $10' @ 13 = 130 \text{ ft ppm Pb}$
 $\text{Cu/Mo} = 70$
 $\text{Pb/Mo} = 1.44$

$14525 = 4907 \times 382 @ 51.1870 \text{ ft} \% \text{ Cu} = 0.13 \% \text{ Cu} = 1348 \text{ ppm Cu}$

$235' @ 35.41 \text{ ft} \% \text{ Cu} = 0.15 \% \text{ Cu} = 1545 \text{ ppm Cu}$
 $225' @ 2938 \text{ ft ppm Mo} = 10 \frac{1}{2} \text{ ppm Mo}$
 $225' @ 2727 \text{ ft ppm Pb} = 32 \frac{1}{2} \text{ ppm Pb}$
 $\text{Cu/Mo} = 144$
 $\text{Pb/Mo} = 3.35$

Total Sulfide - Laramide
 414' @ 60.87 ft % Cu = 1.47% Cu = 14722 ppm Cu
 414' @ 10.462 ft ppm Mo = 25 ppm Mo
 414' @ 7128 ft ppm Pb = 15.5 ppm Pb

Legend: Tw Tertiary Whitetail Conglom
 SB of scbx Slide Block of Precambrian
 SB of Lga Slide Block of Laramide gr
 p&pi Precambrian Pinal Schist
 Lbfp Laramide biotite feldspar
 qtz vn. quartz vein

A-9

Collar Elev. 4640'

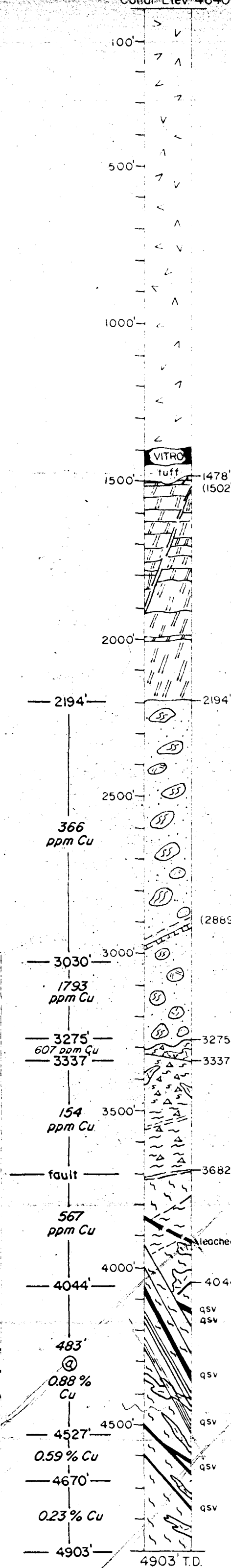
ASARCO DRILL HOLE A-9

CORE: Surface - 2357' NC
 2357' - 3624' NX
 3624' - 4903' BX
 T.D.

Joy Manufacturing Co.
 Joy-22, Heavy Duty Rig
 Jan 7 - May 4, 1977

DACITE

NOTE: Casing left in hole:
 10' of 4"; Surface-10'
 464' of NX; 1893'-2357'
 586' of BX; 3038'-3624'



EARLIER VOLCANICS

Andesitic - basalt flows, 5' - 45' thick, with few 100' - 200' thick units, separated by rubble and/or oxidized tops.
 Cross - fault probably has around 100' feet of vertical offset, with dominant horizontal component (- 20° slickensides).

WHITETAIL CONGLOMERATE

Clasts, few qm & bik qm, set in sandy, gritty, granular, tuffaceous matrix. Minor Cu.
 2194' - 2600' M: 19% brown to tan and green brown. ACP: 97 1/2% sc, 2 1/2% db.
 2600' - 2889' M: 23% brown to green brown to green. ACP: 65% sc, 25% db, 10% pE qtz & Pioneer
 (2889-2917 sandy-grit of db & gr debris, w/ fresh water lms. unit)
 2917' - 3000' M: 17 1/2%, chocolate to dark brown. ACP: 54% sc, 45 1/2% Schultze gr, 1/2% db.
 3000' - 3275' M: 17% dark brown w/ reddish-cast. ACP: 65% sc, 21% db, 14% Schultze, 3% Qtzite minor leached clasts.

SLIDE BLOCK of M-1A Type. Lqm w/ chilled borders intruding pE schist. Both cut by qtz veins. Totally oxidized. Broken w/ 10-40% red-brown "adobe" matrix. Rests on 45° slip surface.

SLIDE BLOCK of A-2 Type. Broken, sheared, gougy, brecciated pE schist w/ few brecciated Lqm dikes. "Leached Capping" w/ tr to 2% limonite, minor cuprite & black hematite above fault at 3521'-3539'. 10% - 40% hematite below fault. Quartz-sericite & qtz veining throughout.

3682' - 3693' basal fault zone at 10°
PINAL SCHIST w/ minor granite aplite dikes. Minor hematite, 1% - 5%, mainly along schistosity. Cut by inclined breccia zones & quartz-sericite bands w/ remnant chalcocite (3900) also qtz veining at 60°. Schistosity changes across minor faults

PINAL SCHIST w/ minor porphyry & biotite feldspar porphyry dikes.
 qsv, quartz sulfide veins, w/ weakly developed quartz masses, often brecciated w/ crushed bornite - chalcocite & pyrite.
 Intense quartz-sericite banding subparallel to the 45° - 60° qsv zones & subparallel to schistosity at 5° - 30°.
 Breccia & gouge zones throughout in similar orientation.

NOTE: Individual assays are found in Assay Report dated May 24, 1977.

T. I. S. R. 13 E.
 SW 1/4 NW 1/4 SW 1/4 of Sec. 23
GRAPHIC LOG & ASSAY RESULTS
 of
DRILL HOLE A-9
SUPERIOR EAST PROJECT
 PINAL COUNTY, ARIZONA
 SCALE 1" = 300'

J.D.S.

May 1977

ALR 2486-M

May 24, 1977

TO: F. T. Graybeal

FROM: J. D. Sell

Assay Results
Drill Hole A-9
Superior East Project
Pinal County, Arizona

Attached is a list of samples and corresponding units, depth, footage, and copper assays for drill hole A-9. In addition to the copper values, scattered sections were assayed for lead, zinc, moly, gold, and silver. All values are given on the attached AARL report sheets.

The oxidized leached capping-sulfide interface was penetrated at a depth of 4044 feet. The sulfide values were contained in quartz-bearing sulfide zones as well as the fracture-control and disseminated mineralization in the wall rock between the quartz sulfide veins. Discounting the first twenty feet of 0.46% copper, the following 454 feet averaged 0.90% copper. Within this interval ten veins, varying from 5 to 44 feet in cored length, were encountered. The veins have an average width of 12.4 feet and an average grade of 1.94% copper. The intervening wall rock varied from 10 to 86 feet in length with an average of 32.8 feet containing an average of 0.52% copper.

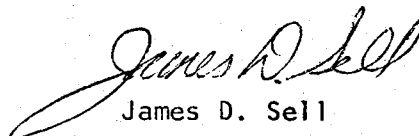
Continuing below the above interval were three additional veins with lower grade wall rock intervals. Including this zone, the total sulfide intercept of 626 feet averaged 0.81% copper. An additional 233 feet of material containing a 1-foot vein averages 0.23% copper to the bottom of the hole.

Scattered samples (29) in the upper 454 feet average 0.0021 oz. Au per ton and 0.096 oz. Ag per ton. Low geochemical values for lead, zinc, and molybdenum were also recorded.

Based on the adjacent hole A-8 to the southwest, the present hole A-9 is very similar in all characteristics except having less porphyry and less distinct veins containing lower values. The Table One below compares several of the features of the two holes.

TABLE ONE — Comparison Features of A-8 and A-9

<u>Feature</u>	<u>A-8</u>	<u>A-9</u>
Drill hole depth, top of sulfides	3879'	4044'
Best zone of qtz-sulf-vns	4135-4463	4367-4518
Footage of best zone	328'	151'
Assay of best zone, Cu	2.45%	1.14%
Total +0.5% Cu intercept:		
depth	3879-4525	4044-4670
footage	646'	626'
assay, Cu	1.57%	0.81%


James D. Sell

JDS:lb
Atts.

ASSAY RESULTS DRILL HOLE A-9
SUPERIOR EAST PROJECT

Asarco Number	Unit	Depth	Footage	Cu Value (PPM)	Note
A-9-247	Td	687	0.3	515	20.7% Mn, 2.15% Ba
-130	Tw	2200-2210	10	223	
-131	Tw	2300-2310	10	301	
-132	Tw	2400-2410	10	239	
-133	Tw	2500-2510	10	264	
-134	Tw	2600-2610	10	481	
-135	Tw	2700-2710	10	278	
-136	Tw	2800-2810	10	177	
-137	Tw	2900-2910	10	603	
-138	Tw	3000-3010	10	728	
-139	Tw	3100-3110	10	1385	
-140	Tw	3200-3210	10	2200	
-141	SB of Lqmbx	3300-3310	10	607	
-142	SB of scbx	3400-3410	10	166	
-143	SB of scbx	3500-3510	10	190	
-144	SB of scbx	3590-3600	10	105	

In-Place Units

A-9-145	p€pi	3700-3710	10	132	
-146	p€pi	3800-3810	10	175	
-1	p€pi	3880-3890	10	0.01	(Percent)
-2	p€pi	3930-3940	10	0.06	
-3	p€pi	3980-3990	10	0.11	
-4	p€pi	4020-4025	5	0.15	
-5	Lga	4025-4032	7	0.09	
-6	Lga	4032-4037	5	0.03	
-7	Lga & p€pi	4037-4044	7	0.08	

OXIDIZED (Leached Capping) — SULFIDE INTERFACE

-8	pēpi	4044-4050	6	0.37	
-9	"	4050-4060	10	0.44	
-10	"	4060-4064	4	0.64	
-11	Lqm	4064-4069	5	0.97	
-12	pēpi	4069-4077	8	2.24	qsv
-13	"	4077-4081	4	0.20	
-14	"	4081-4087	6	0.63	
-15	"	4087-4097	10	2.72	qsv
-16	"	4097-4107	10	0.46	
-17	"	4107-4114	7	0.82	
-18	"	4114-4121	7	0.31	
-19	"	4121-4126	5	0.90	
-20	"	4126-4129	3	0.16	
-21	"	4129-4134	5	1.24	qsv
-22	"	4134-4139	5	2.84	qsv
-23	"	4139-4145	6	0.26	
-24	"	4145-4152	7	0.52	
-25	"	4152-4159	7	0.36	
-26	Lqmp	4159-4162	3	0.30	
-27	pēpi	4162-4169	7	0.21	
-28	"	4169-4176	7	0.36	
-29	"	4176-4182	6	1.88	qsv
-30	"	4182-4191	9	0.43	
-31	"	4191-4199	8	0.46	
-32	"	4199-4205	6	0.56	
-33	"	4205-4210	5	0.41	
-34	"	4210-4220	10	0.70	
-35	"	4220-4230	10	0.56	
-36	"	4230-4240	10	0.62	
-37	"	4240-4245	5	0.57	
-38	"	4245-4252	7	0.51	
-39	"	4252-4259	7	0.51	
-40	"	4259-4268	9	0.58	
-41	"	4268-4273	5	3.04	qsv
-42	"	4273-4283	10	0.86	
-43	"	4283-4286	3	0.84	
-44	"	4286-4294	8	0.60	
-45	"	4294-4300	6	0.37	
-46	"	4300-4306	6	1.60	qsv
-47	"	4306-4312	6	0.39	
-48	"	4312-4321	9	0.42	
-49	"	4321-4330	9	0.62	
-50	"	4330-4340	10	1.10	qsv
-51	"	4340-4348	8	0.29	
-52	"	4348-4355	7	0.35	
-53	"	4355-4363	8	0.42	
-54	"	4363-4367	4	0.30	
-55	"	4367-4375	8	1.36	qsv
-56	"	4375-4377	2	0.50	qsv
-57	"	4377-4381	4	0.92	qsv
-58	"	4381-4387	6	0.47	
-59	"	4387-4390	3	0.62	
-60	"	4390-4400	10	0.46	

-61	pēpi	4400-4410	10	0.56	
-62	"	4410-4420	10	0.59	
-63	"	4420-4426	6	0.64	
-64	Lbfp	4426-4435	9	0.54	
-65	"	4435-4445	10	0.40	
-66	"	4445-4449	4	1.08	qsv
-67	pēpi	4449-4454	5	2.00	qsv
-68	"	4454-4458	4	1.40	qsv
-69	"	4458-4467	9	0.58	
-70	"	4467-4474	7	0.64	
-71	"	4474-4481	7	1.60	qsv
-72	Lbfp	4481-4483	2	0.51	
-73	pēpi	4483-4490	7	1.48	qsv
-74	"	4490-4495	5	4.24	qsv
-75	"	4495-4502	7	0.90	qsv
-76	"	4502-4506	4	1.20	qsv
-77	"	4506-4512	6	0.82	qsv
-78	"	4512-4518	6	5.60	qsv
-79	"	4518-4527	9	0.64	
-80	"	4527-4535	8	0.46	
-81	"	4535-4545	10	0.28	
-82	"	4545-4555	10	0.26	
-83	"	4555-4565	10	0.30	
-84	Lbfp	4565-4570	5	0.33	
-85	pēpi	4570-4580	10	0.31	
-86	"	4580-4590	10	0.29	
-87	"	4590-4600	10	0.33	
-88	"	4600-4608	8	0.39	
-89	"	4608-4613	5	1.36	qsv
-90	"	4613-4615	2	15.60	qsv
-91	"	4615-4618	3	0.28	
-92	"	4618-4628	10	0.22	
-93	"	4628-4637	9	0.39	
-94	"	4637-4647	10	0.20	
-95	"	4647-4649	2	1.10	qsv
-96	"	4649-4655	6	0.38	
-97	"	4655-4665	10	0.17	
-98	"	4665-4670	5	1.12	qsv
-99	"	4670-4680	10	0.11	
-100	"	4680-4690	10	0.19	
-101	"	4690-4695	5	0.09	
-102	"	4695-4701	6	0.38	
-103	"	4701-4708	7	0.20	
-104	"	4708-4717	9	0.18	
-105	Lqm	4717-4720	3	0.18	
-106	pēpi	4720-4724	4	0.20	
-107	Lqm	4724-4732	8	0.24	
-108	Lqm & pēpi	4732-4735	3	0.25	
-109	pēpi	4735-4742	7	0.20	
-110	Lqm	4742-4746	4	0.32	
-111	pēpi	4746-4753	7	0.21	
-112	"	4753-4754	1	2.24	qsv
-113	"	4754-4762	8	0.30	
-114	"	4762-4772	10	0.25	

-115	p&pi	4772-4782	10	0.20
-116	"	4782-4792	10	0.21
-117	"	4792-4802	10	0.15
-118	"	4802-4812	10	0.19
-119	"	4812-4822	10	0.19
-120	"	4822-4829	7	0.17
-121	Lbfp	4829-4836	7	0.31
-122	"	4836-4843	7	0.53
-123	p&pi	4843-4854	11	0.34
-124	Lbfp	4854-4857	3	0.16
-125	p&pi	4857-4867	10	0.20
-126	"	4867-4877	10	0.18
-127	"	4877-4887	10	0.18
-128	"	4887-4897	10	0.19
-129	"	4897-4903	6	0.09

T.D.

UNIT-DEPTH-FOOTAGE-COPPER VALUE COMPILATION, A-9
SUPERIOR EAST PROJECT

Unit	Depth	Footage	Copper Value (PPM)
Tw	2194-3030		366
Tw	3030-3275		1793
SB of scbx & Lqmbx (M-1A type)	3275-3337	62	607
SB of scbx & Lqmbx (A-2 type)	3337-3682	345	154
Basal fault zone	3682-3693	11	N.A.
pēpi & Lga oxidized	3693-4044	351	567
Leached Capping-Sulfide Interface			(percent copper)
pēpi	4044-4064	20	0.46
Lqm	4064-4069	5	0.97
pēpi	4069-4077	8	2.24 qsv
"	4077-4087	10	0.46
"	4087-4097	10	2.72 qsv
"	4097-4129	32	0.55
"	4129-4139	10	2.02 qsv
pēpi & minor Lqmp	4139-4176	37	0.34
pēpi	4176-4182	6	1.88 qsv
"	4182-4268	86	0.55
"	4268-4273	5	3.04 qsv
"	4273-4300	27	0.67
"	4300-4306	6	1.60 qsv
"	4306-4330	24	0.49
"	4330-4340	10	1.10 qsv
"	4340-4367	27	0.35
"	4367-4381	14	1.11 qsv
"	4381-4426	45	0.55
Lbfp	4426-4445	19	0.47
"	4445-4449	4	1.08 qsv
pēpi	4449-4458	9	1.73 qsv
"	4458-4474	16	0.61
"	4474-4481	7	1.60 qsv
Lbfp	4481-4483	2	0.51
pēpi	4483-4518	35	2.32 qsv
pēpi & minor Lbfp	4518-4608	90	0.35
pēpi	4608-4615	7	5.43 qsv
"	4615-4647	32	0.27
"	4647-4649	2	1.10 qsv
"	4649-4665	16	0.25
"	4665-4670	5	1.12 qsv
"	4670-4717	47	0.19
pēpi & Lqm	4717-4753	36	0.23
pēpi	4753-4754	1	2.24
"	4754-4829	75	0.21
Lbfp & pēpi	4829-4857	28	0.36
pēpi	4857-4903	46	0.17
T.D.			

Various Sulfide Combinations:

4044-4064	20'	@ 0.46%				
4064-4139	75'	@ 1.23%				
4139-4268	129'	@ 0.55%	-276'	@ 0.83%		
4268-4340	72'	@ 0.91%				
4340-4426	86'	@ 0.58%	-86'	@ 0.58%	-454'	@ 0.90%
4426-4483	57'	@ 0.89%				
4483-4518	35'	@ 2.32%	-92'	@ 1.43%		
4518-4670	152'	@ 0.59%				
4670-4903	233'	@ 0.23%				-626'

T.D.

$\frac{540.65}{859} = 0.63$

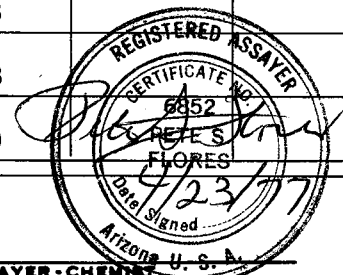
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.DATE April 23, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-9-1			0.01	14	18	14	
2			0.06	423	14	21	
3			0.11	19	22	14	
4			0.15	10	15	38	
5			0.09	9	14	9	
6			0.03	11	23	14	
7			0.08	8	16	21	
8			0.37	12	20	12	
9			0.44	10	19	9	
10			0.64	11	16	14	
11			0.97	10	12	17	
12			2.24	7	7	16	
13			0.20	13	31	14	
14			0.63	8	11	6	
15			2.72	10	12	22	
16			0.46	12	16	11	
17			0.82	10	14	12	
18			0.31	13	20	8	
19			0.90	10	15	16	
20			0.16	13	29	11	
21			1.24	7	12	24	
22			2.84	10	8	17	
23			0.26	17	18	63	
24			0.52	15	15	13	
A-9-25			0.36	17	17	10	



INVOICE NO. 14839

CHARGES \$ 207.75

ASSAYER - CHEMIST

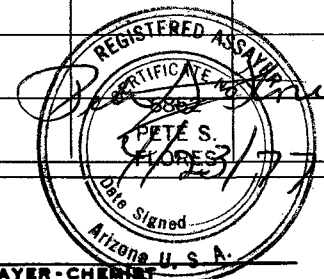
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.DATE April 23, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-9-26			0.30	12	13	4	
27			0.21	14	20	13	
28			0.36	11	13	13	
29			1.88	13	14	9	
30			0.43	13	11	7	
31			0.46	15	19	13	
32			0.56	16	43	14	
33			0.41	12	22	18	
34			0.70	10	13	13	
35			0.56	13	9	10	
65			0.40	14	21	6	
66			1.08	15	13	7	
67			2.00	10	9	16	
68			1.40	9	11	9	
69			0.58	11	18	14	
70			0.64	13	17	5	
71			1.60	12	12	8	
72			0.51	13	14	6	
73			1.48	12	11	11	
74			4.24	16	9	7	
75			0.90	9	14	23	
76			1.20	11	13	11	
77			0.82	12	15	9	
78			5.60	8	10	6	
A-9-79			0.64	16	24	9	



INVOICE NO. 14839

CHARGES \$ 207.75

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 23, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-9-80			0.46	13	25	17	

REGISTERED ASSAYER
 CERTIFICATE NO. 6852
 PETER S. FLORES
 Signed 4/23/77
 Arizona U. S. A.

INVOICE NO. _____ CHARGES \$ 8.25 _____ ASSAYER - CHEMIST

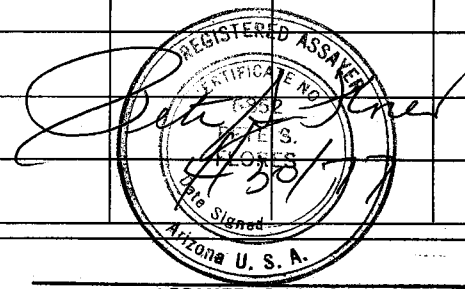
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.DATE April 30, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-9-8	.001	0.11						
9	.002	0.09						
10	.003	0.11						
11	.002	0.11						
12	.001	0.06						
13	.002	0.09						
14	.004	0.19						
15	.003	0.13						
16	Trace	0.04						
65	.003	0.13						
66	.004	0.13						
67	.002	0.12						
68	.001	0.13						
69	.001	0.14						
70	.003	0.11						
71	.002	0.07						
72	.004	0.11						
73	.003	0.08						
74	.002	0.02						
75	.001	0.04						
76	.001	0.05						
77	.002	0.05						
78	.003	0.11						
79	.001	0.05						
80	.003	0.04						

CHARGES \$ 112.50

Invoice # 14893

ASSAYER - CHEMIST

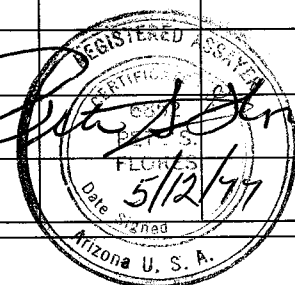
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.DATE May 12, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-9-36			0.62				
37			0.57				
38			0.51				
39			0.51				
40			0.58				
41			3.04				
42			0.86				
43			0.84				
44			0.60				
45	.001	0.08	0.37	12	24	32	
46	.003	0.11	1.60	8	12	12	
47	Trace	0.05	0.39	11	24	14	
48	.001	0.07	0.42	7	21	46	
49			0.62				
50			1.10				
51			0.29				
52			0.35				
53			0.42				
54			0.30				
55			1.36				
56			0.50				
57			0.92				
58			0.47				
59			0.62				
60	.002	0.06	0.46	7	20	30	

INVOICE NO. 14932CHARGES \$ 120.00

ASSAYER - CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

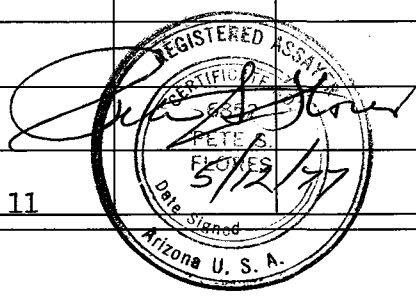
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 12, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON
A-9-61	.001	0.09	0.56	8	16	9	
62	.001	0.08	0.59	6	14	16	
63	.003	0.14	0.64	6	13	16	
64	.004	0.20	0.54	7	11	7	
81			0.28				
82			0.26				
83			0.30				
84			0.33				
85			0.31				
86			0.29				
87	.002	0.10	0.33	8	14	9	
88	Trace	0.05	0.39	7	17	9	
89	.001	0.12	1.36	9	11	55	
90	.002	0.20	15.6	8	15	2	
91	.001	0.03	0.28	7	22	11	
92	.003	0.19	0.22	5	26	12	
93			0.39				
94			0.20				
95			1.10				
96			0.38				
97			0.17				
98			1.12				
99			0.11				
100			0.19				
101	.002	0.14	0.09	6	19	11	



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

DATE May 16, 1977

SAMPLE SUBMITTED BY ASARCO, INC.
OVER 2000 PPM

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-9-123			0.34				

REGISTERED ASSAYER
 CERTIFICATE NO. 14943
 DATE 5/16/77
 PLACES
 Signed
 Arizona U. S. A.
 ASSAYER-CHEMIST

INVOICE NO. 14943

CHARGES \$ 2.00

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

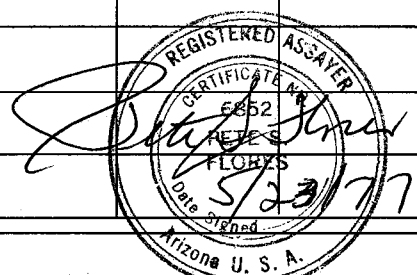
ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 23, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PPM Mn	PPM Ba
A-9-247			515	77	457	224	20.7% 2000+	2.15% 2000+



CHARGES \$ 16.25
Invoice # 11075

ASSAYER-CHEMIST

A-9

Collar Elev. 4640'

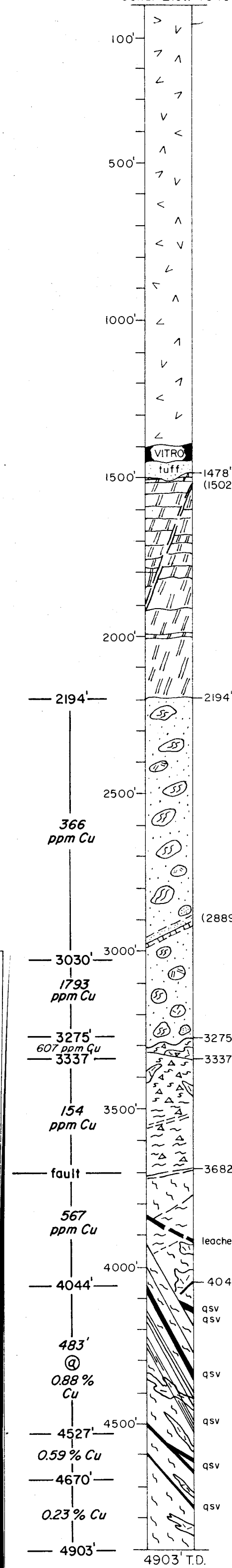
ASARCO DRILL HOLE A-9

CORE: Surface - 2357' NC
 2357' - 3624' NX
 3624' - 4903' BX
 T.D.

Joy Manufacturing Co.
 Joy-22, Heavy Duty Rig
 Jan. 7 - May 4, 1977

DACITE

NOTE: Casing left in hole:
 all casing left in hole
 for geophysical probe
 and test; to be recovered
 after test.



EARLIER VOLCANICS

Andesitic - basalt flows, 5' - 45' thick, with few 100' - 200' thick units, separated by rubble and/or oxidized tops.
 Cross-fault probably has around 100' feet of vertical offset, with dominant horizontal component (-20° slickensides).

WHITETAIL CONGLOMERATE

Clasts, few qmp & blk qm, set in sandy, gritty, granular, tuffaceous matrix. Minor Cu.
 2194' - 2600' M: 19% brown to tan and green brown. ACP: 97 1/2% sc, 2 1/2% db
 2600' - 2889' M: 23%, brown to green brown to green. ACP: 65% sc, 25% db, 10% pE qtz & Pioneer.

SLIDE BLOCK of M-1A Type.

Lam w/ chilled borders intruding pE schist. Both cut by qtz veins. Totally oxidized. Broken w/ 10-40% red-brown "adobe" matrix. Rests on 45% slip surface.

SLIDE BLOCK of A-2 Type.

Broken, sheared, gougy, brecciated pE schist w/ few brecciated Lqmp dikes. "Leached Capping" w/ tr to 2% limonite, minor cuprite & black hematite above fault at 3521' - 3539'. 10% - 40% hematite below fault. Quartz-sericite & qtz veining throughout.

PINAL SCHIST

w/ minor granite aplite dikes. Minor hematite, 1% - 5%, mainly along schistosity. Cut by inclined breccia zones & quartz-sericite bands w/ remnant chalcocite (3900) also qtz veining at 60°. Schistosity changes across minor faults.

PINAL SCHIST

w/ minor porphyry & biotite feldspar porphyry dikes. qsv, quartz sulfide veins, w/ weakly developed quartz masses, often brecciated w/ crushed bornite - chalcocite & pyrite. Intense quartz-sericite banding subparallel to the 45° - 60° qsv zones & subparallel to schistosity at 5° - 30°. Breccia & gauge zones throughout in similar orientation.

NOTE: Individual assays are found in Assay Report dated May 24, 1977.

TO ACCOMPANY *Assay Report*
 DATED *May 24, 1977*
 BY *J.D. Sell*

T. I. S. R. 13 E.
 SW 1/4 NW 1/4 SW 1/4 of Sec. 23
GRAPHIC LOG & ASSAY RESULTS
 of
DRILL HOLE A-9
SUPERIOR EAST PROJECT
 PINAL COUNTY, ARIZONA
 SCALE 1" = 300'

OXIDIZED (Leached Capping) -- SULFIDE I

		ft	% Cu	ppm Mo	ppm Pb
-8	p&pi	4044-4050	6	0.37	12
-9	"	4050-4060	10	0.44	10
-10	"	4060-4064	4	0.64	14
-11	Lqm	4064-4069	5	0.97	17
-12	p&pi	4069-4077	8	2.24	16
-13	"	4077-4081	4	0.20	14
-14	"	4081-4087	6	0.63	6
-15	"	4087-4097	10	2.72	22
-16	"	4097-4107	10	0.46	11
-17	"	4107-4114	7	0.82	12
-18	"	4114-4121	7	0.31	8
-19	"	4121-4126	5	0.90	16
-20	"	4126-4129	3	0.16	11
-21	"	4129-4134	5	1.24	24
-22	"	4134-4139	5	2.84	17
-23	"	4139-4145	6	0.26	63
-24	"	4145-4152	7	0.52	13
-25	"	4152-4159	7	0.36	10
-26	Lqmp	4159-4162	3	0.30	4
-27	p&pi	4162-4169	7	0.21	13
-28	"	4169-4176	7	0.36	13
-29	"	4176-4182	6	1.88	9
-30	"	4182-4191	9	0.43	7
-31	"	4191-4199	8	0.46	13
-32	"	4199-4205	6	0.56	14
-33	"	4205-4210	5	0.41	18
-34	"	4210-4220	10	0.70	13
-35	"	4220-4230	10	0.56	10
-36	"	4230-4240	10	0.62	13
-37	"	4240-4245	5	0.57	
-38	"	4245-4252	7	0.51	
-39	"	4252-4259	7	0.51	
-40	"	4259-4268	9	0.58	
-41	"	4268-4273	5	3.04	
-42	"	4273-4283	10	0.86	
-43	"	4283-4286	3	0.84	
-44	"	4286-4294	8	0.60	
-45	"	4294-4300	6	0.37	32
-46	"	4300-4306	6	1.60	12
-47	"	4306-4312	6	0.39	14
-48	"	4312-4321	9	0.42	44
-49	"	4321-4330	9	0.62	
-50	"	4330-4340	10	1.10	
-51	"	4340-4348	8	0.29	
-52	"	4348-4355	7	0.35	
-53	"	4355-4363	8	0.42	
-54	"	4363-4367	4	0.30	
-55	"	4367-4375	8	1.36	
-56	"	4375-4377	2	0.50	
-57	"	4377-4381	4	0.92	
-58	"	4381-4387	6	0.47	
-59	"	4387-4390	3	0.62	
-60	"	4390-4400	10	0.46	30

104.12 ft @ 2.84% Cu

186' @ 151.07 ft % Cu = 0.8122% = 8122 ppm Cu Cu/Mo = 580
 186' @ 2669 ft ppm Mo = — = 14 ppm Mo
 186' @ 2215 ft ppm Pb = — = 12 ppm Pb Pb/Mo = 0.86

27' @ 17.94 ft % Cu = 0.4444% = 4444 ppm Cu Cu/Mo = 237
 27' @ 742 ft ppm Mo = — = 28 ppm Mo
 27' @ 249 ft ppm Pb = — = 9 ppm Pb Pb/Mo = 0.32



		ft	%Cu	ppm Mo	ppm Pb
-61	pēpi	4400-4410	0.56	39	8
-62	"	4410-4420	0.59	16	6
-63	"	4420-4426	0.64	16	4
-64	Lbfp	4426-4435	0.54	7	7
-65	"	4435-4445	0.40	6	14
-66	"	4445-4449	1.08	7	15
-67	pēpi	4449-4454	2.00	16	10
-68	"	4454-4458	1.40	9	9
-69	"	4458-4467	0.58	14	11
-70	"	4467-4474	0.64	5	13
-71	"	4474-4481	1.60	8	12
-72	Lbfp	4481-4483	0.51	6	13
-73	pēpi	4483-4490	1.48	11	12
-74	"	4490-4495	4.24	7	14
-75	"	4495-4502	0.90	23	9
-76	"	4502-4506	1.20	11	11
-77	"	4506-4512	0.82	9	12
-78	"	4512-4518	5.60	6	8
-79	"	4518-4527	0.64	9	14
-80	"	4527-4535	0.46	17	13
-81	"	4535-4545	0.28		
-82	"	4545-4555	0.26		
-83	"	4555-4565	0.30		
-84	Lbfp	4565-4570	0.33		
-85	pēpi	4570-4580	0.31		
-86	"	4580-4590	0.29		
-87	"	4590-4600	0.33	9	8
-88	"	4600-4608	0.39	9	7
-89	"	4608-4613	1.36	55	9
-90	"	4613-4615	15.60	2	8
-91	"	4615-4618	0.28	11	7
-92	"	4618-4628	0.22	12	5
-93	"	4628-4637	0.39		
-94	"	4637-4647	0.20		
-95	"	4647-4649	1.10		
-96	"	4649-4655	0.38		
-97	"	4655-4665	0.17		
-98	"	4665-4670	1.12		
-99	"	4670-4680	0.11		
-100	"	4680-4690	0.19		
-101	"	4690-4695	0.09	11	6
-102	"	4695-4701	0.38	8	7
-103	"	4701-4708	0.20	94	18
-104	"	4708-4717	0.18	9	7
-105	Lqm	4717-4720	0.18	14	36
-106	pēpi	4720-4724	0.20	5	17
-107	Lqm	4724-4732	0.24	5	109
-108	Lqm & pēpi	4732-4735	0.25	12	7
-109	pēpi	4735-4742	0.20		
-110	Lqm	4742-4746	0.32		
-111	pēpi	4746-4753	0.21		
-112	"	4753-4754	2.24		
-113	"	4754-4762	0.30		
-114	"	4762-4772	0.25		

145' @ 141.24 ft %Cu = 1.1121 %Cu = 11,121 ppm Cu Cu/Mo = 927
 145' @ 1766 ft ppm Mo = — = 12 ppm Mo
 145' @ 1534 ft ppm Pb = — = 10 1/2 ppm Pb Pb/Mo = 0.88

396' @ 377.72 ft %Cu = 0.9538 %Cu = 9538 ppm Cu Cu/Mo = 658
 396' @ 5791 ft ppm Mo = — = 14 1/2 ppm Mo
 396' @ 4266 ft ppm Pb = — = 11 ppm Pb Pb/Mo = 0.76

38' @ 47.45 ft %Cu = 1.2489 %Cu = 12,489 ppm Cu Cu/Mo = 781
 38' @ 594 ft ppm Mo = — = 16 ppm Mo
 38' @ 268 ft ppm Pb = — = 7 ppm Pb Pb/Mo = 0.44

45' @ 9.74 ft %Cu = 0.2169 %Cu = 2169 ppm Cu
 30' @ 6.44 ft %Cu = 0.2147 %Cu = 2147 ppm Cu Cu/Mo = 226
 30' @ 282 ft ppm Mo = — = 9 1/2 ppm Mo
 30' @ 332 ft ppm Pb = — = 11 ppm Pb Pb/Mo = 1.06

		ft	% Cu	ppm Mo	ppm Pb
-115	pεpi	4772-4782	0.20		
-116	"	4782-4792	0.21	8	10
-117	"	4792-4802	0.15	7	34
-118	"	4802-4812	0.19	12	84
-119	"	4812-4822	0.19	7	52
-120	"	4822-4829	0.17	5	48
-121	Lbfp	4829-4836	0.31	5	64
-122	"	4836-4843	0.53	79	160
-123	pεpi	4843-4854	0.34		
-124	Lbfp	4854-4857	0.16		
-125	pεpi	4857-4867	0.20		
-126	"	4867-4877	0.18		
-127	"	4877-4887	0.18		
-128	"	4887-4897	0.19		
-129	"	4897-4903	0.09		
		T.D.			

61' @ 14.47 ft % Cu = 0.2372 % Cu = 2372 ppm Cu
 54' @ 10.76 ft % Cu = 0.1993 % Cu = 1993 ppm Cu Cu/Mo = 266
 54' @ 410 ft ppm Mo = — = 7 1/2 ppm Mo
 54' @ 2604 ft ppm Pb = — = 48 ppm Pb Pb/Mo = 6.4

Subtotal: 84' @ 17.20 ft % Cu = 0.2048 % Cu = 2048 ppm Cu Cu/Mo = 256
 84' @ 642 ft ppm Mo = — = 8 ppm Mo
 84' @ 2936 ft ppm Pb = — = 35 ppm Pb Pb/Mo = 4.38

Total Sulphide Intercept:

480' @ 394.92 ft % Cu = 0.8228 % Cu = 8228 ppm Cu Cu/Mo = 609
 480' @ 6483 ft ppm Mo = — = 13 1/2 ppm Mo
 480' @ 7202 ft ppm Pb = — = 15 ppm Pb Pb/Mo = 1.11

75 1134

January 13, 1978

TO: F. T. Graybeal

FROM: J. D. Sell

Assay Results
Drill Hole A-10
Superior East Project
Pinal County, Arizona

Attached is a list of samples and corresponding units, depth, footage, and copper values for drill hole A-10. In addition to the copper values, the sections were assayed for lead, zinc, and molybdenum. All values are from the sulfide zone and recorded on the attached AARL report sheets. The AARL sheets contain some values reported as ppm and these have been converted to percent copper for the tabulation. No samples were cut in the oxidized units based on the overall low values found in previously sampled drill holes.

The hole penetrated the Whitetail Conglomerate at 3375 feet and continued in M-1A type slide block units to the depth of 3406 feet. The M-1A type was totally oxidized and comprised of broken and gougy units of Precambrian Pinal Schist and border phase Laramide Schultze Granite set in a sandy matrix. From 3406 to 3859 feet, A-2 type mineralized slide block units were encountered. The A-2 type was oxidized with remnant cuprite and chalcocite in units of Pinal Schist, Laramide biotite feldspar porphyry (Lbfp), and Laramide black porphyry (Lbp). The units were highly broken and crushed with numerous flat gouge zones throughout and bottomed by a basal fault with an overall 20° dip.

The in-place units below 3859 feet contain an oxidized leached capping section of Pinal Schist cut by a number of Laramide biotite feldspar and black porphyry dikes and sills. The oxidized capping-sulfide interface was at a depth of 3953 feet. A vein zone of 61 feet was cut by the oxidized-sulfide contact and the oxidized portion was 37 feet in extent.

The sulfide zone contained the same units as above as well as the quartz sericite and quartz vein zones which cut the units at angles of 30° to 60°, subparallel to the schistosity and to the porphyry dike trends. The sulfide portion of the vein at the interface contained 24 feet of 0.49% copper. In addition to the partially oxidized vein zone noted above, several vein zones were traversed below. Minor pyrite, specularite, and chalcocite are disseminated and fracture controlled throughout the sulfide zone with concentrations within the quartz sulfide vein (qsv) portions.

The sulfide intercept was 329 feet averaging 0.27% copper, ending at 4282 feet T.D. The best section within a quartz sulfide vein was 15 feet of 0.82% copper. As noted by the assay values, the other vein zones averaged around 0.5% copper.

January 13, 1978

Overall, the copper content was lower than the adjacent holes and with the alteration and mineral distribution suggests that A-10 is within the equivalent part of the lower portion of the adjacent holes and within the potassic zone.

James D. Sell
James D. Sell

JDS:1b
Att.

Note: 10/2/81. These lower values are very similar to those of Nevada hole A-12 from 4743 → down past 5083

4743-4959 = 211' @ 0.41

418' @ 0.94

5' @ 2.42

9' @ 0.89

followed by 4959-4991 = 32' @ 0.85

then 4991-5085 = 92' @ 0.58

etc.

**Assay Results Drill Hole A-10
Superior East Project**

ASARCO Number	Unit	Depth	Footage	% Copper	Note
--	pēpi	3913-3916	3	--	oxidized
--	pēpi	3916-3953	37	--	oxidized qsv
OXIDIZED (Leach Capping) — SULFIDE INTERFACE					
A-10-1	pēpi	3953-3959-1/2	6-1/2	0.50	qsv
-2	Lbfp	3959-1/2-3965	5-1/2	0.56	qsv
-3	pēpi	3965-3968	3	0.44	qsv
-4	"	3968-3971	3	0.61	qsv
-5	"	3971-3977	6	0.38	qsv
-6	"	3977-3984	7	0.21	
-7	Lbfp	3984-3991	7	0.29	
-8	pēpi	3991-4001	10	0.40	qsv
-9	"	4001-4011	10	0.45	qsv
-10	"	4011-4021	10	0.20	w/1' porphyry dike
-11	"	4021-4031	10	0.30	w/1' porphyry dike
-12	"	4031-4041	10	0.24	
-13	"	4041-4050-1/2	9-1/2	0.29	
-14	pēpi w/Lbfp	4050-1/2-4056-1/2	6	0.17	
-15	pēpi w/Lbfp	4056-1/2-4066	9-1/2	0.25	
-16	" "	4066-4076	10	0.10	
-17	" "	4076-4086	10	0.37	
-18	pēpi w/Lbfp	4086-4096	10	0.12	
-19	" "	4096-4106	10	0.06	
-20	pēpi	4106-4116	10	0.05	
-21	"	4116-4124	8	0.03	
-22	"	4124-4131	7	0.34	qsv
-23	"	4131-4141	10	0.09	
-24	"	4141-4151	10	0.24	
-25	Lbfp	4151-4156	5	0.32	
-26	pēpi	4156-4163	7	0.21	
-27	Lbfp	4163-4166	3	0.04	w/native Cu
-28	pēpi	4166-4176	10	0.09	
-29	pēpi	4176-4179	3	0.05	
-30	Lbfp	4179-4182	3	0.89	qsv
-31	pēpi	4182-4189	7	0.08	
-32	"	4189-4192-1/2	3-1/2	0.51	qsv
-33	"	4192-1/2-4201	8-1/2	0.13	
-34	pēpi w/Lbfp	4201-4206	5	0.24	
-35	pēpi	4206-4216	10	0.50	qsv
-36	"	4216-4222	6	0.24	
-37	"	4222-4230	8	0.38	
-38	"	4230-4234	4	0.36	qsv (only 25% core recovery)
-39	"	4234-4237	3	0.92	qsv)
-40	"	4237-4239	2	0.59	qsv)
-41	"	4239-4246	7	0.72	qsv) best section
-42	Lbfp	4246-4249	3	1.11	qsv)
-43	pēpi	4249-4254	5	0.11	
-44	pēpi	4254-4261	7	0.11	
-45	Lbfp	4261-4270	9	0.05	
-46	"	4270-4275	5	0.04	
-47	"	4275-4282	7	0.06	

$\frac{23.76}{58} = 0.41$

$\frac{30.71}{168} = 0.18$

$\frac{41.02}{296} = 0.14$

$\frac{30.550}{70} = 0.44$

$\frac{2.39}{33} = 0.07$

T.D.

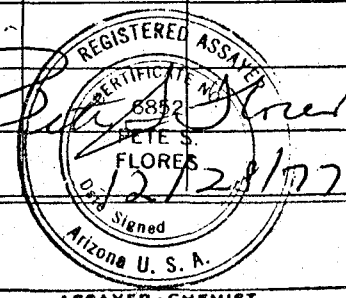
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.DATE Dec. 28, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-10-1			0.50 2000+	34	98	6		
A-10-2			0.56 2000+	24	20	26		
A-10-3			0.44 2000+	39	32	28		
A-10-4			0.61 2000+	26	14	19		
A-10-5			0.38 2000+	25	263	10		
A-10-6			0.21 2000+	23	114	20		
A-10-7			0.29 2000+	22	17	13		
A-10-8			0.40 2000+	24	30	11		
A-10-9			0.45 2000+	46	29	35		
A-10-10			1960	21	32	15		
A-10-11			0.30 2000+	28	32	9		
A-10-12			0.24 2000+	15	29	9		
A-10-13			0.24 2000+	26	34	23		
A-10-14			1744	19	26	126		
A-10-15			0.25 2000+	16	45	24		
A-10-16			973	38	34	6		
A-10-17			0.37 2000+	44	33	152		
A-10-18			1249	41	38	7		
A-10-19			584	25	41	13		
A-10-20			465	28	43	26		
A-10-21			341	42	25	19		
A-10-22			0.34 2000+	18	99	36		

CHARGES \$ 170.50INVOICE NO. 15536

ASSAYER • CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE Dec. 28, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM
A-10-23			889	27	417	53
A-10-24			0.24 2000+	34	81	13
A-10-25			0.32 2000+	35	53	11
A-10-26			0.21 2000+	36	40	36
A-10-27			434	31	226	14
A-10-28			880	35	51	17
A-10-29			486	26	39	22
A-10-30			0.89 2000+	22	38	15
A-10-31			756	34	26	7
A-10-32			0.51 2000+	38	18	14
A-10-33			1301	24	53	20
A-10-34			0.24 2000+	18	105	7
A-10-35			0.50 2000+	27	70	6

P. Flores
REGISTERED ASSAYER
CERTIFICATE NO. 6852
P. FLORES
DATE SIGNED 12/28/77
Arizona U. S. A.

CHARGES \$ 100.75

INVOICE NO. 15536

ASSAYER • CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

OVER 2000 PPM

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE Dec. 28, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-10-1			0.50				
A-10-2			0.56				
A-10-3			0.44				
A-10-4			0.61				
A-10-5			0.38				
A-10-6			0.21				
A-10-7			0.29				
A-10-8			0.40				
A-10-9			0.45				
A-10-11			0.30				
A-10-12			0.24				
A-10-13			0.29				
A-10-15			0.25				
A-10-17			0.37				
A-10-22			0.34				
A-10-24			0.24				
A-10-25			0.32				
A-10-26			0.21				
A-10-30			0.89				
A-10-32			0.51				
A-10-34			0.24				
A-10-35			0.50				

CHARGES \$ 44.00

INVOICE NO. 15536

REGISTERED ASSAYER
 CERTIFICATE
 6800
 PETE S.
 FLORIS
 12/28/77
 He Signed
 Arizona U. S. A.
 ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

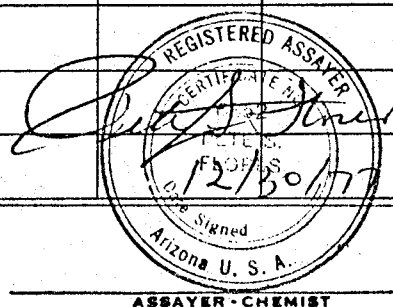
ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE Dec. 30, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-10-36			<i>0.24</i> 2000+	21	45	8		
A-10-37			<i>0.38</i> 2000+	24	26	6		
A-10-38			<i>0.36</i> 2000+	31	39	10		
A-10-39			<i>0.92</i> 2000+	43	16	5		
A-10-40			<i>0.59</i> 2000+	15	29	6		
A-10-41			<i>0.72</i> 2000+	29	55	5		
A-10-42			<i>1.11</i> 2000+	41	25	7		
A-10-43			1097	45	36	10		
A-10-44			1025	19	32	12		
A-10-45			533	16	41	10		
A-10-46			380	21	43	6		
A-10-47			557	27	38	26		


 REGISTERED ASSAYER
 CERTIFICATE NO. _____
 STATE OF ARIZONA
 12/30/77
 Signed _____
 Arizona U. S. A.
 ASSAYER • CHEMIST

CHARGES \$ 93.00
 INVOICE NO. 15540

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

OVER 2000 PPM

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

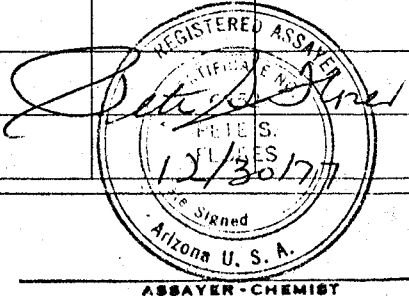
SAMPLE SUBMITTED BY ASARCO, INC.

DATE Dec. 30, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-10-36			0.24				
A-10-37			0.38				
A-10-38			0.36				
A-10-39			0.92				
A-10-40			0.59				
A-10-41			0.72				
A-10-42			1.11				

CHARGES \$ 14.00

INVOICE NO. 15540



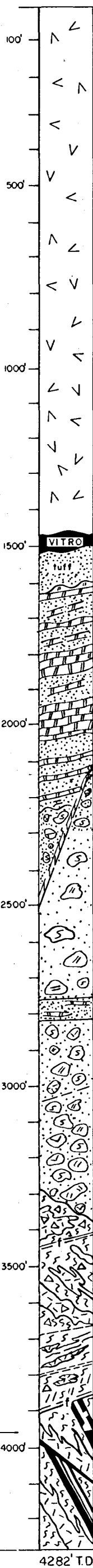
ASSAYER - CHEMIST

A-10
Collar Elev. 4585'

ASARCO DRILL HOLE A-10

Joy Drilling Company
Joy Heavy Duty HD-22
May 5 - August 3, 1977
November 15 - December 28, 1977
5" rock bit surface - 11'
NC core 11' - 2437'
NX core 2437' - 3417'
BX core 3417' - 3968'
AX core 3968' - 4282' T.D.

NOTE: Casing left in hole,
11' of 4.5" surface - 11'
141' of NX 2296'-2437'
222' of BX 3195'-3417'
also BX rods from 3380'-3968'



DACITE. Medium chocolate brown to dense orange brown to olive brown.

Fragmental content increases

1500' **VITRO**
tuff
1599'
Vitrophyre unit 1468'-1492'
Crystal tuff, brown at top grading to grey at base

EARLIER VOLCANICS. Dense green black andesitic-basalt flows with oxidized tops, vesicular, with increasing red and red-black cinder ash towards base of total unit. Flows dip up to 25°. Individual units of cinders and flows vary from 70'-150' in thickness.

2114'-2117', Steep angular shearing cross fault

- 2138'
WHITETAIL CONGLOMERATE
2138'-2230' M: 26.5% dark brown to grey green, sandy grit
ACP: 51.5% sch, 39.5% p_{es}ed, 5% p_{egr}, 2.5% db,
1% Paleozoic, dipping 5-10°
- 2230'-2390' M: 82% green to green grey brown with tuff lenses 10°
ACP: 89% sch, 9% p_{es}ed, 2% db, trace of p_{egr} and Paleozoic
- 2390'-2752' M: 20.5% brown to green brown, sandy grit
ACP: 71% sch, 24% db, 4% p_{es}ed, and 1% bolsa with fresh-water lime
- (2752'-2814') Mixture of limey siltstone-mudstone and fresh-water lime with 52.5% green brown matrix and grit of 61.5% sch, 26% Schultze border, 11.5% db, and 1% p_{es}ed at 5°-10°
- 2814'-3375' M: 19% dark to reddish brown, sandy grit
ACP: 76.5% sch, 15% db, 6.5% Schultze and blk porphyry, 2% p_{es}ed with minor Cu°, dipping 20°-40°

3375'-3406' **M-1A TYPE S.B.** 83% border Schultze and 23% schist in 23% matrix of brick-red sandy grit. Rests on 15°-20° fault surface. Totally oxidized.

A-2 TYPE S.B. Broken and crushed units of Pinal schist cut by Laramide biotite feldspar and Laramide black porphyry. Qtz-sericite and biotizations of units with remnant cuprite and chalcocite. Totally oxidized. Cut by flat faults.

3859' (basal fault zone at 20°)
PINAL SCHIST. Cut by a number of Laramide quartz feldspar porphyry and black porphyry dikes and sills. Units cut by quartz-sericite bands with disseminated and vein mineralization at 30°-60°

5'
3963'
329' at 0.27% Cu
4282'

4282' T.D.

T.1 S. R.13 E.
NW 1/4 SE 1/4 SE 1/4 of Sec. 22

GRAPHIC LOG & ASSAY RESULTS

of

**DRILL HOLE A-10
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'**

NOTE: Individual assays are found in ASSAY REPORT dated January 13, 1978

J.D.S.

Jan., 1978

mn 2486-o dam

568
380
588

A-10

all sulfide samples

Comment	ft	%	Ft-%		Comment	ft	%	Ft-%	
gsu pi	6 1/2	0.50	3.25		gsu	3	0.92	2.76	4234'-424
gsu Lbfp	5 1/2	0.56	3.08		gsu	2	0.59	1.18	15' @ 2.31 ft
BX gsu pi	3	0.44	1.32	24' @ 0.49%		7	0.72	5.04	0.82%
gsu	3	0.61	1.83		Lbfp	3	1.11	3.33	
	6	0.38	2.28		pi	5	0.11	0.55	
	7	0.21	1.47			7	0.10	0.70	4249'-4282
L bfp	7	0.29	2.03		Lbfp	9	0.05	0.45	33' @ 2.32 ft
pi	10	0.40	4.00	3953'-4096'		5	0.04	0.20	= 0.07%
	10	0.45	4.50	143' @ 43.22%		7	0.06	0.42	
	10	0.20	2.00	= 0.30%	TD 4282				
	10	0.30	3.00						
	10	0.24	2.40						
	9 1/2	0.29	2.76						
blk por pi	6	0.17	1.02						
pi w/Lbfp	9 1/2	0.25	2.38						Sulfide zone cut
"	10	0.10	1.00						3953'-4282'
"	10	0.37	3.70						329' @ 87.36 ft
pi w blk por	10	0.12	1.20						= 0.27%
pi	10	0.06	0.60						
	10	0.05	0.50						
	8	0.03	0.24						
2" va	7	0.34	2.38						
	10	0.09	0.90	4096'-4179'					
	10	0.24	2.40	83' @ 11.26 ft%					
Lbfp w/c	5	0.32	1.60	= 0.14%					
pi	7	0.21	1.47						
Lbfp w/c	3	0.04	0.12						
pi	10	0.09	0.90						
	3	0.05	0.15						
Lbfp cp	3	0.89	2.67						
pi	7	0.08	0.56						
	3 1/2	0.57	1.79						
	8 1/2	0.13	1.11						
w Lbfp	5	0.24	1.20	4179'-4234'					
gsu pi	10	0.50	5.00	55' @ 18.25 ft%					
	6	0.24	1.44	= 0.33%					
	8	0.38	3.04						
	4	0.26	1.44						

February 1, 1978

TO: W. L. Kurtz
FROM: F. T. Graybeal

Hole A-10
Superior East Project
Pinal County, Arizona

The attached report by J. D. Sell gives the assays from the lower portion of hole A-10. The disappointing results are interpreted by Mr. Sell to result from a penetration substantially toward the footwall of the vein zone cut in A-8 and A-9 so that the thicker veins nearer the hanging wall were missed. Mr. Sell's next proposed hole will be 500-700 ft. south of A-8.

Expenditures since Sept. 1, 1977 which apply toward 1977-1978 assessment work total \$44,000. Therefore a minimum additional expenditure of \$43,000 starting before Sept. 1, 1978 will complete the assessment work requirement of \$87,000 for both the Superior East and Rawhide Projects.

F. T. Graybeal

F. T. Graybeal

FTG:lb
Att.

cc: TCOsborne - w/att.
RBCrist - w/o att.
JDSell - w/o att. ✓

Assay Results Drill Hole A-10
Superior East Project

ASARCO Number	Unit	Depth	Footage	% Copper	ppm Mo	ppm Pb
--	pEpi	3913-3916	3	--		
--	pEpi	3916-3953	37	--		
OXIDIZED (Leach Capping) — SULFIDE INTL						
A-10-1	pEpi	3953-3959-1/2	6-1/2	0.50	6	34
-2	Lbfp	3959-1/2-3965	5-1/2	0.58	24	24
-3	pEpi	3965-3968	3	0.44	28	39
-4	"	3968-3971	3	0.6	19	26
-5	"	3971-3977	6	0.38	10	25
-6	"	3977-3984	7	0.21	20	23
-7	Lbfp	3984-3991	7	0.29	13	22
-8	pEpi	3991-4001	10	0.40	11	24
-9	"	4001-4011	10	0.45	35	46
-10	"	4011-4021	10	0.20	15	21
-11	"	4021-4031	10	0.30	9	28
-12	"	4031-4041	10	0.24	9	15
-13	"	4041-4050-1/2	9-1/2	0.29	23	26
-14	pEpi w/Lbp	4050-1/2-4056-1/2	6	0.17	124	19
-15	pEpi w/Lbfp	4056-1/2-4066	9-1/2	0.25	24	16
-16	"	4066-4076	10	0.10	6	38
-17	"	4076-4086	10	0.37	152	44
-18	pEpi w/Lbp	4086-4096	10	0.12	7	41
-19	"	4096-4106	10	0.06	13	25
-20	pEpi	4106-4116	10	0.05	26	28
-21	"	4116-4124	8	0.03	19	42
-22	"	4124-4131	7	0.34	36	18
-23	"	4131-4141	10	0.09	53	27
-24	"	4141-4151	10	0.24	13	34
-25	Lbfp	4151-4156	5	0.32	11	35
-26	pEpi	4156-4163	7	0.21	36	36
-27	Lbfp	4163-4166	3	0.04	14	31
-28	pEpi	4166-4176	10	0.09	17	35
-29	pEpi	4176-4179	3	0.05	22	24
-30	Lbfp	4179-4182	3	0.89	15	22
-31	pEpi	4182-4189	7	0.08	7	34
-32	"	4189-4192-1/2	3-1/2	0.51	14	38
-33	"	4192-1/2-4201	8-1/2	0.13	20	24
-34	pEpi w/Lbfp	4201-4206	5	0.24	7	18
-35	pEpi	4206-4216	10	0.50	6	27
-36	"	4216-4222	6	0.24	8	21
-37	"	4222-4230	8	0.38	6	24
-38	"	4230-4234	4	0.36	10	31
-39	"	4234-4237	3	0.92	5	43
-40	"	4237-4239	2	0.59	6	15
-41	"	4239-4246	7	0.72	5	29
-42	Lbfp	4246-4249	3	1.11	7	41
-43	pEpi	4249-4254	5	0.11	10	45
-44	pEpi	4254-4261	7	0.11	12	19
-45	Lbfp	4261-4270	9	0.05	10	16
-46	"	4270-4275	5	0.04	6	21
-47	"	4275-4282	7	0.06	26	27

313 @ 82.69 ft % Cu = 0.2642 % Cu = 2642 ppm Cu Cu/Mo = 165

313 @ 5083 ft ppm Mo = — = 16 ppm Mo

313 @ 8816 ft ppm Pb = — = 28 ppm Pb Pb/Mo = 1.75

ASARCO

Southwestern Exploration Division

July 13, 1979

TO: F. T. Graybeal

FROM: J. D. Sell

Assay Report, A-11
Superior East Project
Pinal County, Arizona

Attached is a listing of the continuous footage assay results from hole A-11, starting one foot below the first sulfides which were inside a flattish fault gouge. A massive bornite vein was within the gouge indicating post-mineral movement on the fault plane. The assays start at the base of the gouge zone at 4262 feet and continue to the final depth of 5175 feet. Attachment A contains the sequential copper assays.

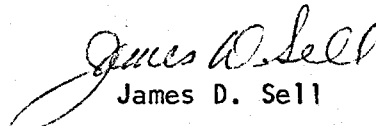
Toward the bottom of the hole, several core runs failed to recover any core to be sampled and are recorded as Sample Number "NS" ("No Sample") with the Copper Value as "LC" ("Lost Core").

The AX wedge placed in the hole at 4930 feet resulted in recoring a partial interval in the wedge hole. Both the original hole and the wedge hole contain lost core zones. Attachment B is a comparison of the original and wedge portion overlap and indicates a similar value for the intercept interval in question.

The assay values may be combined in various ways, and one scheme is shown on Attachment C. The lost core zones are not included in the initial value calculation, but are assumed to be the average of the total intercept within which it is found and is then included within the footage-assay range.

Four sets of composite groups were selected to be run for gold-silver, copper, and moly and are recorded in Attachment D.

All AARL assay report sheets are included as Attachment E.


James D. Sell

JDS:lb
Atts.

Hole A-11

<u>Sample Number</u>	<u>Rock Unit</u>	<u>Depth Interval</u>	<u>Footage</u>	<u>Cu Value</u>	<u>Note</u>
Leached capping-sulfide Interface basal fault.					
--	fault gouge	4261-4262	1	N.A.	fault gouge
A-11-38	p&pi	4262-4264	2	0.49	tr cc w/bn
-39	"	4264-4271	7	0.28	
-1	"	4271-4273	2	0.30	
-2	p&pi	4273-4279	6	0.43	
-3	Lbfp	4279-4283	4	0.44	
-4	p&pi	4283-4288	5	0.39	
-5	"	4288-4291	3	0.50	
-6	"	4291-4299	8	0.45	end of tr cc
-7	"	4299-4304	5	0.36	bn diss.
-8	"	4304-4314	10	0.35	
-9	"	4314-4324	10	0.40	
-10	p&pi	4324-4332	8	0.76	
-11	Lbfp	4332-4337	5	0.45	
-12	"	4337-4343	6	0.26	
-13	"	4343-4345	2	0.62	
-14	"	4345-4352	7	0.18	
-15	"	4352-4359	7	0.47	
-16	"	4359-4361	2	0.17	
-17	"	4361-4370	9	0.44	
-18	"	4370-4377	7	0.19	
-19	"	4377-4384	7	0.32	
-20	"	4384-4387	3	0.43	
-21	Lbfp	4387-4390	3	1.24	
-22	p&pi	4390-4400	10	0.40	
-23	"	4400-4410	10	0.37	
-24	"	4410-4417	7	0.42	
-25	p&pi	4417-4422	5	0.33	
-26	Lbfp	4422-4432	10	0.51	
-27	p&pi	4432-4441	9	0.29	
-28	Lbfp	4441-4450	9	0.49	
-29	p&pi	4450-4460	10	0.41	
-30	p&pi	4460-4468	8	0.36	
-31	Lbfp	4468-4476	8	0.79	
-32	p&pi	4476-4488	12	0.34	
-33	Lbfp	4488-4498	10	0.64	
-34	Lbfp	4498-4507	9	0.28	
-35	p&pi	4507-4514	7	0.21	
-36	"	4514-4521	7	0.31	
-37	"	4521-4530	9	0.29	
-40	"	4530-4535	5	0.29	
-41	"	4535-4546	11	0.29	
-42	"	4546-4553	7	0.40	bn diss.
-43	"	4553-4562	9	2.08	qsv bx
-44	"	4562-4567	5	1.44	qsv bx
-45	"	4567-4577	10	0.80	
-46	"	4577-4586	9	0.65	
-47	"	4586-4593	7	0.42	
-48	"	4593-4599	6	0.44	
-49	"	4599-4608	9	0.22	
-50	"	4608-4614	6	1.72	qsv bx

Sample Number	Rock Unit	Depth Interval	Footage	Cu Value	Note
-51	pεpi	4614-4621	7	0.86	qsv bx
-52	"	4621-4629	8	0.59	
-53	"	4629-4637	8	0.40	
-54	"	4637-4642	5	2.55	qsv bx
-55	"	4642-4647	5	7.75	qsv bx
-56	"	4647-4655	8	1.33	qsv bx
-57	"	4655-4662	7	0.51	
-58	"	4662-4672	10	0.63	
-59	"	4672-4680	8	1.03	qsv bx
-60	"	4680-4687	7	0.29	
-61	"	4687-4696	9	1.35	qsv
-62	"	4696-4706	10	1.12	qsv
-63	"	4706-4712	6	3.04	qsv
-64	pεpi	4712-4717	5	0.65	
-65	Lbfp	4717-4720	3	0.06	
-66	pεpi	4720-4728	8	0.42	
-67	"	4728-4731	3	2.96	qsv bx
-68	"	4731-4737	6	0.72	
-69	"	4737-4746	9	0.56	
-70	"	4746-4756	10	0.14	
-71	"	4756-4759	3	0.25	
-72	"	4759-4767	8	0.94	qsv bx
-73	pεpi	4767-4774	7	1.13	qsv bx
-74	Lbfp	4774-4778	4	0.31	
-75	"	4778-4781	3	0.11	
-76	Lbfp	4781-4786	5	0.68	
-77	pεpi	4786-4796	10	0.52	
-78	"	4796-4803	7	0.62	
-79	pεpi	4803-4807	4	10.24	qsv bx
-80	Lbfp	4807-4818	11	4.18	qsv bx
-81	pεpi	4818-4826	8	0.39	
-82	"	4826-4836	10	0.64	
-83	"	4836-4846	10	0.48	
-84	"	4846-4857	11	0.33	
-85	pεpi	4857-4861	4	0.24	
-86	Lbfp	4861-4865	4	0.23	
-87	Lbfp	4865-4869	4	0.80	qsv bx
-88	pεpi	4869-4873	4	0.64	
-NS*	"	4873-4877	4	LC**	**Lost core
-89	pεpi	4877-4879	2	0.34	
-90	Lbfp	4879-4883	4	0.66	
-91	"	4883-4890	7	0.27	
-92	"	4890-4894	4	2.08	qsv bx
-NS	Lbfp?	4894-4901½	7½	LC	qsv bx?
-93	Lbfp & pεpi	4901½-4906½	5	2.64	qsv bx
-94	Lbfp & pεpi	4906½-4911	4½	0.40	qv bx
-95	Lbfp	4911-4915½	4½	1.09	qsv bx
-96	"	4915½-4920	4½	2.03	qsv bx
-97	"	4920-4922½	2½	0.54	qsv bx
-NS	"	4922½-4926½	4	LC	qsv bx?
-98	"	4926½-4930	3½	2.21	qsv bx
-99	Lbfp	4930-4935½	5½	0.88	qsv bx

<u>Sample Number</u>	<u>Rock Unit</u>	<u>Depth Interval</u>	<u>Footage</u>	<u>Cu Value</u>	<u>Note</u>
-100	p&pi	4935½-4939½	4	1.11	qsv bx
AX Wedge placed in hole, recored interval as noted.					
-101	Lbfp	4924-4928	4	0.47	qsv bx
-NS	"	4928-4931	3	LC	qsv bx
-102	Lbfp	4931-4936	5	1.04	qsv bx
-103	p&pi	4936-4938	2	0.29	qsv bx
-104	Lbfp	4938-4940	2	1.50	qsv bx
-NS	Lbfp?	4940-4943	3	LC	qsv bx?
-105	p&pi	4943-4949	6	0.41	
-106	"	4949-4952½	3½	0.28	
-107	"	4952½-4954½	2	0.51	
-108	"	4954½-4959	4½	0.45	
-109	"	4959-4964	5	0.33	
-110	"	4964-4969	5	0.16	
-111	p&pi	4969-4975½	6½	0.24	
-112	Lbfp	4975½-4980½	5	0.25	
-113	p&pi	4980½-4988½	8	0.36	
-114	"	4988½-4998	9½	0.37	
-115	"	4998-5003½	5½	1.12	qsv
-116	"	5003½-5004½	1	54.60	qsv
-117	"	5004½-5009½	5	4.35	qsv bx
-118	"	5009½-5017½	8	0.97	qsv bx
-119	"	5017½-5023	5½	0.25	
-120	"	5023-5030	7	0.29	
-121	"	5030-5036	6	0.73	
-122	p&pi	5036-5040	4	0.32	
-123	Lbfp & p&pi	5040-5047	7	0.73	
-124	" " "	5047-5052	5	0.56	
-125	Lbfp & p&pi	5052-5062	10	0.28	
-126	p&pi	5062-5071	9	0.23	
-127	"	5071-5084	13	0.52	
-128	"	5084-5086	2	5.17	qsv bx
-129	"	5086-5097	11	0.42	
-130	"	5097-5106	9	0.50	
-131	"	5106-5114	8	0.27	
-132	"	5114-5122	8	0.42	
-133	"	5122-5132	10	0.34	
-134	"	5132-5142	10	0.18	
-135	p&pi	5142-5152	10	0.24	
-136	Lbfp	5152-5159	7	0.05	
-137	p&pi	5159-5168	9	0.04	
-138	p&pi	5168-5175	7	0.05	
T.D.					

*NS = No sample

Comparison of original and wedge portion overlap

Original	Wedge
4922-1/2 - 4926-1/2 = 4' @ lost core	4924-4928 = 4' @ 0.47%
4926-1/2 - 4930 = 3-1/2' @ 2.21%	4928-4931 = 3' @ lost core
4930-4935-1/2 = 5-1/2' @ 0.88%	4931-4936 = 5' @ 1.04%
4935-1/2 - 4939-1/2 = 4' @ 1.11%	4936-4938 = 2' @ 0.29% } 0.90%
	4938-4940 = 2' @ 1.50% }

If the equivalent zone assay is transferred across to other side then:

Original is 17' of 1.11% Cu; Wedge is 16' of 1.08% Cu.

Hole A-11

<u>Interval</u>	<u>Footage and Weighted Assay Value</u>		
oxide-sulfide interface			
4262-4553	291' @ 0.40% Cu))
4553-4687, qsv	134' @ 1.15% Cu)	824')
4687-4890, qsv	203' @ 1.09% Cu) 533')	@ 890')
4890-5086, qsv	196' @ 1.14% Cu) 1.12%)) 0.86%)
5086-5152	66' @ 0.34% Cu)) 0.82%)
5152-5175 T.D.	23' @ 0.05% Cu) 29' @ 0.24)

Of interest is a projection between holes A-9 and A-11 would suggest that the A-11 sulfide interval of 4262-4687' would be oxidized in hole A-9.

NOTE: AARL submitted a Reassay sheet dated July 11, 1979, whereby the copper values for samples A-11-92 through A-11-100 have been corrected. These values in Attachments A, B, and D have been updated, but those intervals in Attachment C have not been updated.

VALUES OF COMPOSITE INTERVALS IN HOLE A-11

<u>Sample Number</u>	<u>Interval</u>	<u>Footage</u>	<u>Original Weighted % Cu</u>	<u>Composite Value</u>			
				<u>% Cu</u>	<u>% Mo</u>	<u>oz. Au</u>	<u>oz. Ag</u>
1 thru 5	4271'-4291'	20'	0.42	0.40	0.0019	0.015	0.78
54 thru 63	4637'-4712'	75'	1.65	1.63	0.0022	0.009	0.66
81 thru 84	4818'-4857'	39'	0.46	0.42	0.0014	0.011	0.55
92 thru 100 (reassay)	4890'-4939-1/2'	49-1/2'	1.47	1.45	0.0033	0.009	0.41

Average (arithmetic) of scattered samples in other holes:

<u>Hole</u>	<u>Number of Samples</u>	<u>% Mo</u>	<u>oz. Au</u>	<u>oz. Ag</u>
A-2	4	0.0020	<0.005	0.05
A-8	14	0.0031	0.004	0.23
A-9	29	0.0015	0.002	0.096

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

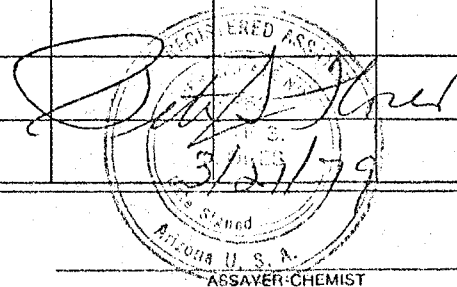
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 21, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-1			0.30				
A-11-2			0.43				
A-11-3			0.44				
A-11-4			0.39				
A-11-5			0.50				
A-11-6			0.45				
A-11-7			0.36				
A-11-8			0.35				
A-11-9			0.40				
A-11-10			0.76				
A-11-11			0.45				
A-11-12			0.26				
A-11-13			0.62				
A-11-14			0.18				
A-11-15			0.47				
A-11-16			0.17				
A-11-17			0.44				
A-11-18			0.19				
A-11-19			0.32				
A-11-20			0.43				
A-11-21			1.24				
A-11-22			0.40				
A-11-23			0.37				
A-11-24			0.42				
A-11-25			0.33				



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 ARIZONA U. S. A.
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CHARGES \$ 68.75

INVOICE NO. 16222

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 21, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-26			0.51				
A-11-27			0.29				
A-11-28			0.49				
A-11-29			0.41				
A-11-30			0.36				
A-11-31			0.79				
A-11-32			0.34				
A-11-33			0.64				
A-11-34			0.28				
A-11-35			0.21				
A-11-36			0.31				
A-11-37			0.29				

CHARGES \$ 33.00
INVOICE NO. 16222

REGISTERED ASSAYER
M. A. V. ...
U. S. A.
3/21/79
Date Signed
Arizona, U. S. A.
ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

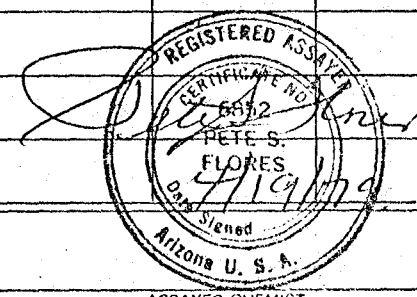
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 19, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-48			0.44				
A-11-49			0.22				
A-11-50			1.72				
A-11-51			0.86				
A-11-52			0.59				
A-11-53			0.40				
A-11-54			2.55				
A-11-55			7.75				
A-11-56			1.33				
A-11-57			0.51				
A-11-58			0.63				
A-11-59			1.03				
A-11-60			0.29				
A-11-61			1.35				
A-11-62			1.12				
A-11-63			3.04				
A-11-64			0.65				
A-11-65			0.06				
A-11-66			0.42				
A-11-67			2.96				
A-11-68			0.72				
A-11-69			0.56				
A-11-70			0.14				



CHARGES \$ 65.25

INVOICE NO. 16290

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

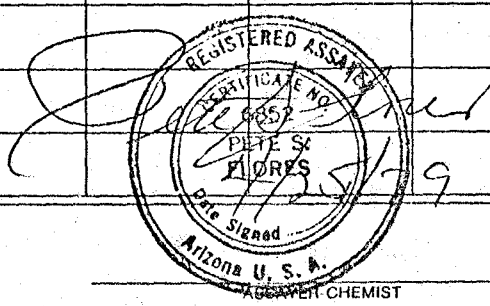
SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 25, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-71			0.25				
A-11-72			0.94				
A-11-73			1.13				
A-11-74			0.31				
A-11-75			0.11				
A-11-76			0.68				
A-11-77			0.52				

CHARGES \$ 19.25

INVOICE NO. 16315



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

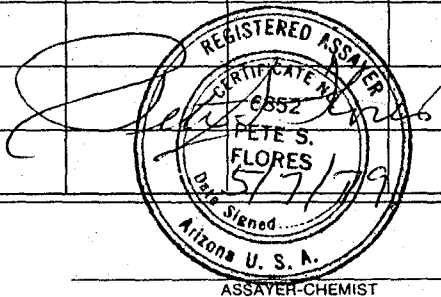
SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 7, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-11-85			0.24					
A-11-86			0.23					
A-11-87			0.80					
A-11-88			0.64					
A-11-89			0.34					
A-11-90			0.66					
A-11-91			0.27					
A-11-92			2.65					
A-11-93			2.98					
A-11-94			0.39					
A-11-95			1.23					
A-11-96			2.20					

CHARGES \$ 33.00

INVOICE NO. 16341



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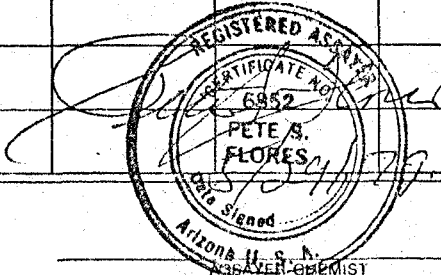
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 29, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-97			0.48				
A-11-98			2.15				
A-11-99			1.05				
A-11-100			0.96				



CHARGES \$ 11.00
INVOICE NO. 16380

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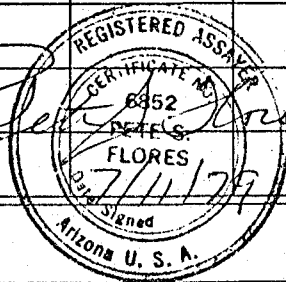
TUCSON, ARIZONA 85714

RE-ASSAY

SAMPLE SUBMITTED BY ASARCO, INC.

DATE July 11, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-92			2.08				
A-11-93			2.64				
A-11-94			0.40				
A-11-95			1.09				
A-11-96			2.03				
A-11-97			0.54				
A-11-98			2.21				
A-11-99			0.88				
A-11-100			1.11				



CHARGES \$ N/C

INVOICE NO. _____

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE June 12, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-101			0.47				
A-11-102			1.04				
A-11-103			0.29				
A-11-104			1.50				
A-11-105			0.41				
A-11-106			0.28				
A-11-107			0.51				
A-11-108			0.45				
A-11-109			0.33				
A-11-110			0.16				
A-11-111			0.24				
A-11-112			0.25				
A-11-113			0.36				
A-11-114			0.37				
A-11-115			1.12				
A-11-116			54.6				
A-11-117			4.35				
A-11-118			0.97				
A-11-119			0.25				
A-11-120			0.29				

REGISTERED ASSAYER
No. 6852
PETE S.
FLORES
Signed
6/12/79
ARIZONA REGISTER

CHARGES \$ 56.00

INVOICE NO. 16412

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

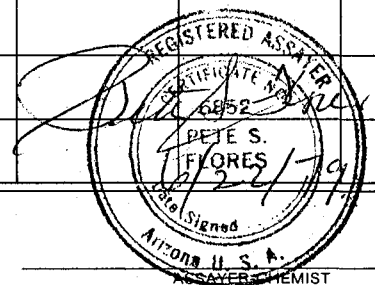
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
> 2000 PPM

DATE June 22, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-121			0.73				
A-11-122			0.32				
A-11-123			0.73				
A-11-124			0.56				
A-11-125			0.28				
A-11-126			0.23				
A-11-127			0.52				
A-11-128			5.17				
A-11-129			0.42				
A-11-130			0.50				
A-11-131			0.27				
A-11-132			0.42				
A-11-133			0.34				
A-11-135			0.24				



CHARGES \$ 24.50
 INVOICE NO. 16437

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

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SAMPLE SUBMITTED BY ASARCO, INC.

DATE June 22, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-11-121			> 2000					
122			> 2000					
123			> 2000					
124			> 2000					
125			> 2000					
126			> 2000					
127			> 2000					
128			> 2000					
129			> 2000					
130			> 2000					
131			> 2000					
132			> 2000					
133			> 2000					
134			1820					
135			> 2000					
136			479					
137			439					
138			454					

CHARGES \$ 45.00

Invoice # 16437

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

COMPOSITE

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE July 11, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-11								
1-5	.015	0.78	0.40			.0019		
54-63	.009	0.66	1.63			.0022		
81-84	.011	0.55	0.42			.0014		
92-100	.009	0.41	1.45			.0033		

REGISTERED ASSAYER
 PETE S. FLORES
 7/11/79
 Signed
 ASSAYER-CHEMIST

CHARGES \$ 53.40
 INVOICE NO. 16472

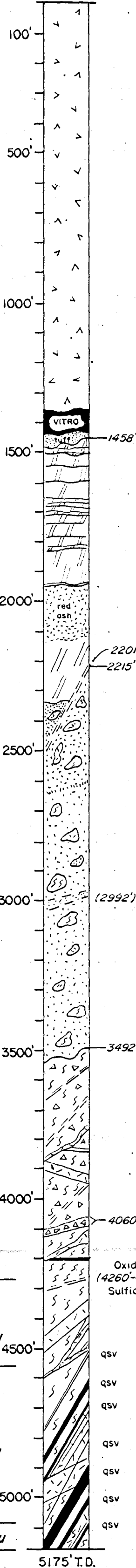
A-II
Collar Elevation 4608'

ASARCO DRILL HOLE A-II

CORE: Surface - 2580' NC
2580' - 3772' NX
3772' - 4857' BX
4857' - 5175' AX

Joy Manufacturing Co.
Joy-22, HD
Surface - 5175'
8/2/78 - 6/20/79

NOTE: Casing left in hole
137' of 4" Surface (0-137')
2550' of NX Casing (30'-2580')
840' of BX Casing (2932'-3772')
1102' of AX Casing, ie BX Rods,
(3755'-4857')
(including barrel & bit)



DACITE

EARLIER VOLCANICS

Andesitic basalt flows of 6-283' in thickness with rubble or oxidized tops. Lower flow has 187' of red ash underlain by 96' of blue black basalt of 'Olberg ash & Blue Basalt' type.

WHITETAIL CONGLOMERATE

Sandy to gritty matrix lenses, with lenses of tuffaceous material, containing clasts of pre-Whitetail units. Minor Cu^o.

- 2215-2601' red, muddy brown w/greenish matrix 35 %
Clasts: 98 1/2 sc, 1 db, 1/2 Schultze
- 2601-2607' tuff bed
- 2607-2960' dark brown to dirty green matrix 24 %
Clasts: 77 sc, 18 db, 5 Apache
- 2960-2992' sandy grit w/schist & diabase debris
- 2992-3060' mud red brown matrix 32 %
Clasts: 49 Schultze, 41 sc, 7db, 3 Apache
- 3060-3492' dark red to orange red matrix 19 %
Clasts: 73 sc, 20 db, 7 Schultze, tr Apache

SLIDE BLOCK of Pinal Schist intruded by Laramide

biotite feldspar porphyry & diorite porphyry dikes
Altered & hematite replaced gouge-bx zones with minor Cu^o. Oxidized, leached capping.

PINAL SCHIST cut by Laramide biotite feldspar

porphyry dikes.
Top portion oxidized, leached capping, w/oxidized qsv zones, tr native copper remaining, probably a moved block in part. 15° fault zone @ 4260-4262' is oxide-sulfide contact.

Sulfide zone contains disseminated py-cc-bn & quartz-sulfide veins (py-bn) in quartz-sericite altered wallrock, bands, & breccia zones, generally at + 60° inclination.

NOTE: Individual assays are found in Assay Report dated July 13, 1979

T. I. S. R. 13 E.
NW 1/4 NW 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-II
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'

Hole A-11

Sample Number	Rock Unit	Depth Interval	Footage	Cu Value	Note
Leached capping-sulfide Interface basal fault.					
--	fault gouge	4261-4262	1	N.A.	fault gouge
A-11-38	pēpi	4262-4264	2	0.49	tr cc w/bn
-39	"	4264-4271	7	0.28	
-1	"	4271-4273	2	0.30	
-2	pēpi	4273-4279	6	0.43	
-3	Lbfp	4279-4283	4	0.44	
-4	pēpi	4283-4288	5	0.39	
-5	"	4288-4291	3	0.50	
-6	"	4291-4299	8	0.45	
-7	"	4299-4304	5	0.36	end of tr cc
-8	"	4304-4314	10	0.35	bn diss.
-9	"	4314-4324	10	0.40	
-10	pēpi	4324-4332	8	0.76	
-11	Lbfp	4332-4337	5	0.45	
-12	"	4337-4343	6	0.26	
-13	"	4343-4345	2	0.62	
-14	"	4345-4352	7	0.18	
-15	"	4352-4359	7	0.47	
-16	"	4359-4361	2	0.17	
-17	"	4361-4370	9	0.44	
-18	"	4370-4377	7	0.19	
-19	"	4377-4384	7	0.32	
-20	"	4384-4387	3	0.43	
-21	Lbfp	4387-4390	3	1.24	
-22	pēpi	4390-4400	10	0.40	
-23	"	4400-4410	10	0.37	
-24	"	4410-4417	7	0.42	
-25	pēpi	4417-4422	5	0.33	
-26	Lbfp	4422-4432	10	0.51	
-27	pēpi	4432-4441	9	0.29	
-28	Lbfp	4441-4450	9	0.49	
-29	pēpi	4450-4460	10	0.41	
-30	pēpi	4460-4468	8	0.36	
-31	Lbfp	4468-4476	8	0.79	
-32	pēpi	4476-4488	12	0.34	
-33	Lbfp	4488-4498	10	0.64	
-34	Lbfp	4498-4507	9	0.28	
-35	pēpi	4507-4514	7	0.21	
-36	"	4514-4521	7	0.31	
-37	"	4521-4530	9	0.29	
-40	"	4530-4535	5	0.29	
-41	"	4535-4546	11	0.29	
-42	"	4546-4553	7	0.40	bn diss.
-43	"	4553-4562	9	2.08	qsv bx
-44	"	4562-4567	5	1.44	qsv bx
-45	"	4567-4577	10	0.80	
-46	"	4577-4586	9	0.65	
-47	"	4586-4593	7	0.42	
-48	"	4593-4599	6	0.44	
-49	"	4599-4608	9	0.22	
-50	"	4608-4614	6	1.72	qsv bx

Sample Number	Rock Unit	Depth Interval	Footage	Cu Value	Note
-51	pεpi	4614-4621	7	0.86	qsv bx
-52	"	4621-4629	8	0.59	
-53	"	4629-4637	8	0.40	
-54	"	4637-4642	5	2.55	qsv bx
-55	"	4642-4647	5	7.75	qsv bx
-56	"	4647-4655	8	1.33	qsv bx
-57	"	4655-4662	7	0.51	
-58	"	4662-4672	10	0.63	
-59	"	4672-4680	8	1.03	qsv bx
-60	"	4680-4687	7	0.29	
-61	"	4687-4696	9	1.35	qsv
-62	"	4696-4706	10	1.12	qsv
-63	"	4706-4712	6	3.04	qsv
-64	pεpi	4712-4717	5	0.65	
-65	Lbfp	4717-4720	3	0.06	
-66	pεpi	4720-4728	8	0.42	
-67	"	4728-4731	3	2.96	qsv bx
-68	"	4731-4737	6	0.72	
-69	"	4737-4746	9	0.56	
-70	"	4746-4756	10	0.14	
-71	"	4756-4759	3	0.25	
-72	"	4759-4767	8	0.94	qsv bx
-73	pεpi	4767-4774	7	1.13	qsv bx
-74	Lbfp	4774-4778	4	0.31	
-75	"	4778-4781	3	0.11	
-76	Lbfp	4781-4786	5	0.68	
-77	pεpi	4786-4796	10	0.52	
-78	"	4796-4803	7	0.62	
-79	pεpi	4803-4807	4	10.24	qsv bx
-80	Lbfp	4807-4818	11	4.18	qsv bx
-81	pεpi	4818-4826	8	0.39	
-82	"	4826-4836	10	0.64	
-83	"	4836-4846	10	0.48	
-84	"	4846-4857	11	0.33	
-85	pεpi	4857-4861	4	0.24	
-86	Lbfp	4861-4865	4	0.23	
-87	Lbfp	4865-4869	4	0.80	qsv bx
-88	pεpi	4869-4873	4	0.64	
-NS*	"	4873-4877	4	LC**	**Lost core
-89	pεpi	4877-4879	2	0.34	
-90	Lbfp	4879-4883	4	0.66	
-91	"	4883-4890	7	0.27	
-92	"	4890-4894	4	2.08	qsv bx
-NS	Lbfp?	4894-4901½	7½	LC	qsv bx?
-93	Lbfp & pεpi	4901½-4906½	5	2.64	qsv bx
-94	Lbfp & pεpi	4906½-4911	4½	0.40	qv bx
-95	Lbfp	4911-4915½	4½	1.09	qsv bx
-96	"	4915½-4920	4½	2.03	qsv bx
-97	"	4920-4922½	2½	0.54	qsv bx
-NS	"	4922½-4926½	4	LC	qsv bx?
-98	"	4926½-4930	3½	2.21	qsv bx
-99	Lbfp	4930-4935½	5½	0.88	qsv bx

<u>Sample Number</u>	<u>Rock Unit</u>	<u>Depth Interval</u>	<u>Footage</u>	<u>Cu Value</u>	<u>Note</u>
-100	pεpi	4935½-4939½	4	1.11	qsv bx
AX Wedge placed in hole, recored interval as noted.					
-101	Lbfp	4924-4928	4	0.47	qsv bx
-NS	"	4928-4931	3	LC	qsv bx
-102	Lbfp	4931-4936	5	1.04	qsv bx
-103	pεpi	4936-4938	2	0.29	qsv bx
-104	Lbfp	4938-4940	2	1.50	qsv bx
-NS	Lbfp?	4940-4943	3	LC	qsv bx?
-105	pεpi	4943-4949	6	0.41	
-106	"	4949-4952½	3½	0.28	
-107	"	4952½-4954½	2	0.51	
-108	"	4954½-4959	4½	0.45	
-109	"	4959-4964	5	0.33	
-110	"	4964-4969	5	0.16	
-111	pεpi	4969-4975½	6½	0.24	
-112	Lbfp	4975½-4980½	5	0.25	
-113	pεpi	4980½-4988½	8	0.36	
-114	"	4988½-4998	9½	0.37	
-115	"	4998-5003½	5½	1.12	qsv
-116	"	5003½-5004½	1	54.60	qsv
-117	"	5004½-5009½	5	4.35	qsv bx
-118	"	5009½-5017½	8	0.97	qsv bx
-119	"	5017½-5023	5½	0.25	
-120	"	5023-5030	7	0.29	
-121	"	5030-5036	6	0.73	
-122	pεpi	5036-5040	4	0.32	
-123	Lbfp & pεpi	5040-5047	7	0.73	
-124	" " "	5047-5052	5	0.56	
-125	Lbfp & pεpi	5052-5062	10	0.28	
-126	pεpi	5062-5071	9	0.23	
-127	"	5071-5084	13	0.52	
-128	"	5084-5086	2	5.17	qsv bx
-129	"	5086-5097	11	0.42	
-130	"	5097-5106	9	0.50	
-131	"	5106-5114	8	0.27	
-132	"	5114-5122	8	0.42	
-133	"	5122-5132	10	0.34	
-134	"	5132-5142	10	0.18	
-135	pεpi	5142-5152	10	0.24	
-136	Lbfp	5152-5159	7	0.05	
-137	pεpi	5159-5168	9	0.04	
-138	pεpi	5168-5175	7	0.05	
		T.D.			

*NS = No sample

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 21, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-1			0.30				
A-11-2			0.43				
A-11-3			0.44				
A-11-4			0.39				
A-11-5			0.50				
A-11-6			0.45				
A-11-7			0.36				
A-11-8			0.35				
A-11-9			0.40				
A-11-10			0.76				
A-11-11			0.45				
A-11-12			0.26				
A-11-13			0.62				
A-11-14			0.18				
A-11-15			0.47				
A-11-16			0.17				
A-11-17			0.44				
A-11-18			0.19				
A-11-19			0.32				
A-11-20			0.43				
A-11-21			1.24				
A-11-22			0.40				
A-11-23			0.37				
A-11-24			0.42				
A-11-25			0.33				

REGISTERED ASSAYER
 CERTIFICATE NO. 1285
 PETE S. FLORES
 Date Signed 3/21/79
 Arizona U.S.A.
 ASSAYER-CHEMIST

CHARGES \$ 68.75

INVOICE NO. 16222

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 21, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-26			0.51				
A-11-27			0.29				
A-11-28			0.49				
A-11-29			0.41				
A-11-30			0.36				
A-11-31			0.79				
A-11-32			0.34				
A-11-33			0.64				
A-11-34			0.28				
A-11-35			0.21				
A-11-36			0.31				
A-11-37			0.29				

CHARGES \$ 33.00

INVOICE NO. 16222

REGISTERED ASSAYER
 CERTIFICATE NO. 6852
 ETE S. FLORES
 3/21/79
 Date Signed
 Arizona U.S.A.
 ASSAYER-CHEMIST

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

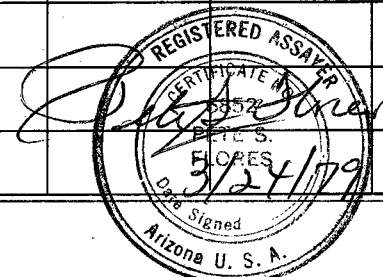
SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 24, 1979

Table with columns: SAMPLE MARKED, GOLD OZ./TON, SILVER OZ./TON, PPM COPPER, PPM LEAD, PPM ZINC, PPM MOLYBDENUM. Rows include samples A-11-38 through A-11-47.

CHARGES \$ 27.50

INVOICE NO. 16232



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

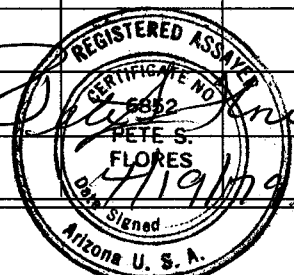
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 19, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-48			0.44				
A-11-49			0.22				
A-11-50			1.72				
A-11-51			0.86				
A-11-52			0.59				
A-11-53			0.40				
A-11-54			2.55				
A-11-55			7.75				
A-11-56			1.33				
A-11-57			0.51				
A-11-58			0.63				
A-11-59			1.03				
A-11-60			0.29				
A-11-61			1.35				
A-11-62			1.12				
A-11-63			3.04				
A-11-64			0.65				
A-11-65			0.06				
A-11-66			0.42				
A-11-67			2.96				
A-11-68			0.72				
A-11-69			0.56				
A-11-70			0.14				



CHARGES \$ 65.25

INVOICE NO. 16290

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

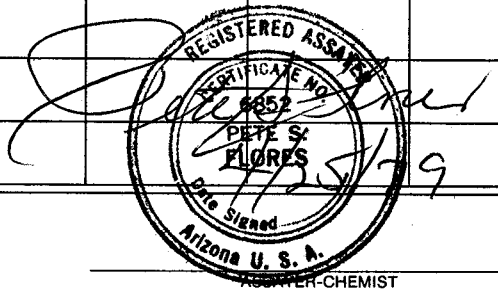
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 25, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-71			0.25				
A-11-72			0.94				
A-11-73			1.13				
A-11-74			0.31				
A-11-75			0.11				
A-11-76			0.68				
A-11-77			0.52				



CHARGES \$ 19.25
 INVOICE NO. 16315

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 30, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-78			0.62				
A-11-79			10.24				
A-11-80			4.18				
A-11-81			0.39				
A-11-82			0.64				
A-11-83			0.48				
A-11-84			0.33				

REGISTERED ASSAYER

CERTIFICATE NO. 1552

PEPE S.

FLORES

4/30/79

signed

Arizona U. S. A.

CHARGES \$ 20.25

INVOICE NO. 16329

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

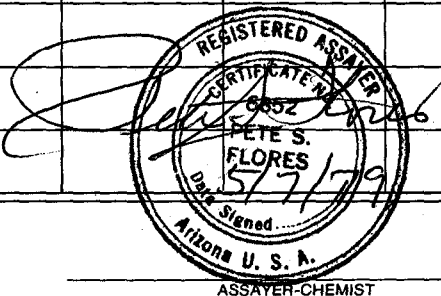
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 7, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-85			0.24				
A-11-86			0.23				
A-11-87			0.80				
A-11-88			0.64				
A-11-89			0.34				
A-11-90			0.66				
A-11-91			0.27				
A-11-92			2.65				
A-11-93			2.98				
A-11-94			0.39				
A-11-95			1.23				
A-11-96			2.20				

See no-assay of 7/11/79



CHARGES \$ 33.00
INVOICE NO. 16341

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 29, 1979

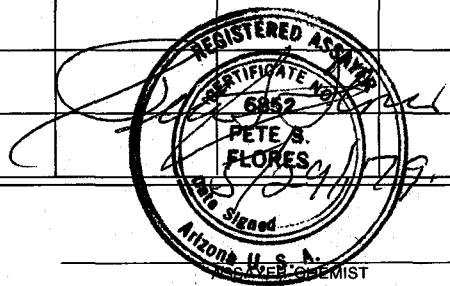
SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-97			0.48				
A-11-98			2.15				
A-11-99			1.05				
A-11-100			0.96				

See no entry of J. 11, 1979

↑

CHARGES \$ 11.00

INVOICE NO. 16380



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

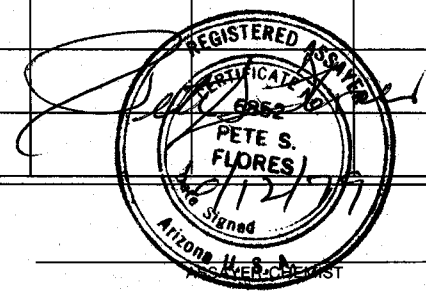
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE June 12, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-101			0.47				
A-11-102			1.04				
A-11-103			0.29				
A-11-104			1.50				
A-11-105			0.41				
A-11-106			0.28				
A-11-107			0.51				
A-11-108			0.45				
A-11-109			0.33				
A-11-110			0.16				
A-11-111			0.24				
A-11-112			0.25				
A-11-113			0.36				
A-11-114			0.37				
A-11-115			1.12				
A-11-116			54.6				
A-11-117			4.35				
A-11-118			0.97				
A-11-119			0.25				
A-11-120			0.29				



CHARGES \$ 56.00

INVOICE NO. 16412

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

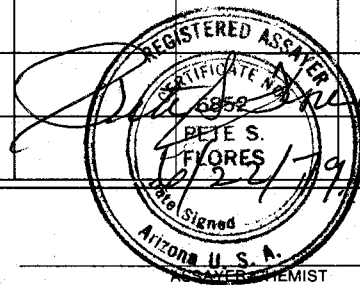
DATE June 22, 1979

> 2000 PPM

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-121			0.73				
A-11-122			0.32				
A-11-123			0.73				
A-11-124			0.56				
A-11-125			0.28				
A-11-126			0.23				
A-11-127			0.52				
A-11-128			5.17				
A-11-129			0.42				
A-11-130			0.50				
A-11-131			0.27				
A-11-132			0.42				
A-11-133			0.34				
A-11-135			0.24				

CHARGES \$ 24.50

INVOICE NO. 16437



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE June 22, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-11-121			> 2000					
122			> 2000					
123			> 2000					
124			> 2000					
125			> 2000					
126			> 2000					
127			> 2000					
128			> 2000					
129			> 2000					
130			> 2000					
131			> 2000					
132			> 2000					
133			> 2000					
134			1820					
135			> 2000					
136			479					
137			439					
138			454					

REGISTERED ASSAYER
 CERTIFICATE
 5888
 PETE S.
 FLORES
 Date Signed 6/22/79
 Arizona U. S. A.
 ASSAYER-CHEMIST

CHARGES \$ 45.00
 Invoice # 16437

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

COMPOSITE

SAMPLE SUBMITTED BY ASARCO, INC.

DATE July 11, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-11								
1-5	.015	0.78	0.40			.0019		
54-63	.009	0.66	1.63			.0022		
81-84	.011	0.55	0.42			.0014		
92-100	.009	0.41	1.45			.0033		

Pete S. Flores
REGISTERED ASSAYER
CERTIFICATE NO. 10452
PETE S. FLORES
7/11/79
Date Signed
Arizona U.S.A.
ASSAYER-CHEMIST

CHARGES \$ 53.40

INVOICE NO. 16472

1

		<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Mo</u>
	1-5	.015	.78	.40	.0019
A-11	54-63	.009	.66	1.63	.0022
	81-84	.011	.55	.42	.0014
	92-100	.009	.41	*	.0033

* They are still working on this one.

Per Angel Flores

AARL

6/20/79 - 4:05 PM

889-5787

should be ready 6/21

Composites:

0 runs for Mo, Au, Ag.

4291-4291 ±0.40 A-11 - 1 thru 5

4637-4712 ±1.4 A-11 - 54 thru 63

4818-4857 ±0.80 A-11 - 81 thru 84

4890-4939 1/2 ±1.0 A-11 - 92 thru 100.

				ft		ft.
1	2	54	5	81	8	92 4
2	6	55	5	82	10	93 5
3	4	56	8	83	10	94 4 1/2
4	5	57	7	84	11	95 4 1/2
5	3	58	10			96 4 1/2
		59	8	4		97 2 1/2
5		60	7			98 3 1/2
		61	9			99 5 1/2
		62	10			100 4
		63	6			
		<u> </u>				
		10				9

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY

James D. ASARCO Tucson

DATE

6/7/79

SINGLE ANALYSIS

VERIFIED ANALYSIS

UMPIRE QUALITY

COMPOSITE

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	INSOL	AL ₂ O ₃	SiO ₂	Mo	S.	Footage
4637 A-11-54	}	}	}	}	2.55	=		12.75					5
-55					7.75		38.75				5		
-56					1.33		6.44				8		
-57					0.51		3.57				7		
-58					0.63		4.30				10		
-59					X	X	X	1.03			8.24	X	8
-60								0.29			2.03		7
-61								1.35			12.15		9
-62								1.12			11.20		10
-63								3.04			18.24		6
4712 4712													
75' @	1.65%							123.87 ft%					
Composite return = 1.63% Cu													

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Juan D. Soc ASARCO Tucson

DATE 6/7/79

SINGLE ANALYSIS

VERIFIED ANALYSIS

UMPIRE QUALITY

COMPOSITE

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	INSOL	Al ₂ O ₃	SiO ₂	Mo	S.	Footage		
4818															
A-11-81	}	}	}	0.39		3.124%							8		
-82				X	X	X	0.64		6.40				X	10	
-83							0.48		4.80						10
-84							0.33		3.63						11
4857						17.95									
39' @	0.46% Cu														
Composite result = 0.42% Cu.															

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY

James D. Sell ASARCO - Tucson

DATE

6/7/79

SINGLE ANALYSIS

COMPOSITE

VERIFIED ANALYSIS

UMPIRE QUALITY

SAMPLE	AU	AG	CU	PB	ZN	Ox Cu	FE	INSOL	AL ₂ O ₃	SI O ₂	Mo	S.	Footage			
4090																
A-11-92	}	}	}	2.65		10.60	57%	remain	2.08				4			
<i>No core</i>															5	
-93							2.98		14.90			2.64				4 1/2
-94							0.39		1.76			0.40				4 1/2
-95							1.23		5.53			1.09				4 1/2
-96				X	X	X	2.20		9.90			2.03		X		4 1/2
-97							0.18		1.20			0.54				2 1/2
<i>No core</i>																
-98							2.15		7.53			2.21				3 1/2
-99							1.05		5.77			0.28				5 1/2
-100				0.96		3.84			1.11				4			
4939 1/2																
						38 √ 41.03 =										
	or	49 1/2'	@	1.41% Cu												
				Composite			1.45									

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

start 1' below oxide surface, full contact.

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 24, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-11-38	<i>start 4262</i>		0.49	X 2	= 0.98			
A-11-39			0.28	X 7	= 1.96			
A-11-1			0.30	X 2	= 0.60			
A-11-2			0.43	X 6	= 2.58			
A-11-3			0.44	X 4	= 1.76			
A-11-4			0.39	X 5	= 1.95			
A-11-5			0.50	X 3	= 1.50			
A-11-6			0.45	X 8	= 3.60			
A-11-7			0.36	X 5	= 1.80			
A-11-8			0.35	X 10	= 3.50			
A-11-9			0.40	X 10	= 4.00			
A-11-10			0.76	X 8	= 6.08			
A-11-11			0.45	X 5	= 2.25			
A-11-12			0.26	X 6	= 1.56			
A-11-13			0.62	X 2	= 1.24			
A-11-14			0.18	X 7	= 1.26			
A-11-15			0.47	X 7	= 3.29			
A-11-16			0.17	X 2	= 0.34			
A-11-17			0.44	X 9	= 3.96			
A-11-18			0.19	X 7	= 1.33			
A-11-19			0.32	X 7	= 2.24			
A-11-20			0.43	X 3	= 1.29			
A-11-21			1.24	X 3	= 3.72			
A-11-22			0.40	X 10	= 4.00			
A-11-23			0.37	X 10	= 3.70			
A-11-24			0.42	X 7	= 2.94			
A-11-25			0.33	X 5	= 1.65			

REGISTERED ASSAYER
[Signature]
 3/27/79

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE March 21, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT <i>FL</i> LEAD	PERCENT <i>FL</i> ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-26			0.51	X10	= 5.10		
A-11-27			0.29	X9	= 2.61		
A-11-28			0.49	X9	= 4.41		
A-11-29			0.41	X10	= 4.10		
A-11-30			0.36	X8	= 2.88		
A-11-31			0.79	X8	= 6.32		
A-11-32			0.34	X12	= 4.08		
A-11-33			0.64	X10	= 6.40		
A-11-34			0.28	X9	= 2.52		
A-11-35			0.21	X7	= 1.47		
A-11-36			0.31	X7	= 2.17		
A-11-37			0.29	X9	= 2.61		
A-11-40			0.29	X5	= 1.45 1.45		
A-11-41			0.29	X11	= 3.19 3.19		
A-11-42	<i>end 4553</i>		0.40	X7	= 2.80		→ 117.19 Ft% or 29' @ 0.40%
A-11-43	<i>start 4553</i>	<i>of Vn its self structure.</i>	2.08	X9	= 18.72	} 39.77 Ft% or	} 33' @ 1.21%
A-11-44			1.44	X5	= 7.20		
A-11-45			0.80	X10	= 8.00		
A-11-46	<i>end 4586</i>		0.65	X9	= 5.85		
A-11-47	<i>start 4586</i>		0.42	X7	= 2.94		

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 19, 1979

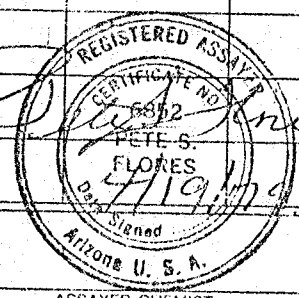
SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-48			0.44	X6	= 2.44	7.56 Ft%	
A-11-49			0.22	X9	= 1.98	22' 0.34%	
A-11-50			1.72	X6	= 10.32	16.34 Ft%	
A-11-51			0.86	X7	= 6.02	13' 1.26%	
A-11-52			0.59	X8	= 4.72	7.92 Ft%	
A-11-53			0.40	X8	= 3.20	16' 0.50%	
A-11-54			2.55	X5	= 12.75	62.14 Ft%	
A-11-55			7.75	X5	= 38.75	18' 3.45%	
A-11-56			1.33	X8	= 10.64		
A-11-57			0.51	X7	= 3.57	9.87 Ft%	
A-11-58			0.63	X10	= 6.30	17' 0.58%	
A-11-59			1.03	X8	= 8.24	8.24 Ft% 8' 1.03%	
A-11-60			0.29	X7	= 2.03	2.03 Ft% 7' 0.29%	
A-11-61			1.35	X9	= 12.15		
A-11-62			1.12	X10	= 11.20	41.59 Ft% 25' 1.66%	
A-11-63			3.04	X6	= 18.24		
A-11-64			0.65	X5	= 3.25	6.79 Ft%	
A-11-65			0.06	X3	= 0.18	16' 0.12%	
A-11-66			0.42	X8	= 3.36		
A-11-67			2.96	X 3 3	= 8.88 = 11.84	13.20 Ft% 9' 1.47%	
A-11-68			0.72	X6	= 4.32		
A-11-69			0.56	X9	= 5.04		
A-11-70			0.14	X10	= 1.40		

70% A-9
 4687
 153.57%
 134' 1.15%
 2137 11%
 109' 0.87%

104' 2.175%
 117'

and 4737
also 4737

CHARGES \$ 65.25
 INVOICE NO. 16290



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE April 25, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT $\frac{FT}{\%}$ LEAD	PERCENT $\frac{FT}{\%}$ ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-71			0.25	X 3	= 0.75	7.19 ft% or 22' @ 0.33%	
A-11-72			0.94	X 8	= 7.52	15.43 ft%	OR from 4553-4796 = 248.24 ft%
A-11-73			1.13	X 7	= 7.91	or 15' @ 1.03%	or 243 ft @ 1.02%
A-11-74			0.31	X 4	= 1.24		
A-11-75			0.11	X 3	= 0.33	14.51 ft%	
A-11-76			0.68	X 5	= 3.40	or 29' @ 0.50%	
A-11-77	4796		0.52	X 10	= 5.20		
A-11-78			0.62	X 7	= 4.34		
A-11-79			10.24	X 4	= 40.96	86.94 ft% or	OR from 4553-4857 = 357.47 ft%
A-11-80			4.18	X 11	= 45.98	15' @ 5.80%	or
A-11-81			0.39	X 8	= 3.12		304' @ 1.18%
A-11-82			0.64	X 10	= 6.40	19.83 ft% or	
A-11-83			0.48	X 10	= 4.80	47' @ 0.42%	
A-11-84	and BX @ 4857		0.33	X 11	= 3.63		
A-11-85	4857		0.24	X 4	= 0.96		
A-11-86			0.23	X 4	= 0.92		
A-11-87			0.80	X 4	= 3.20		
A-11-88			0.64	X 4	= 2.56	16.97 ft%	
A-11-89			0.34 0.34	X 4 X 2	= 1.36 = 0.68	OR	
A-11-90			0.66	X 4	= 2.64	21 ft @ 0.52%	
A-11-91	4890		0.27	X 7	= 1.89		
A-11-92			2.65	X 4	= 10.60		OR from 4553-4920 = 413.01 ft%
A-11-93			2.98 2.98	X 7 1/2 X 5	= 7.50 = 14.90	42.69 ft%	
A-11-94			0.39	X 4 1/2	= 1.76 ⁵⁵	or 22 1/2' @ 1.90%	367' - 1 1/2' =
A-11-95			1.23	X 4 1/2	= 5.535		355 1/2' @ 1.16%
A-11-96	end 4920		2.20	X 4 1/2	= 9.90		

INVOICE NO. 16315

AMERICAN ANALYTICAL AND RESEARCH LABORATORIES

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

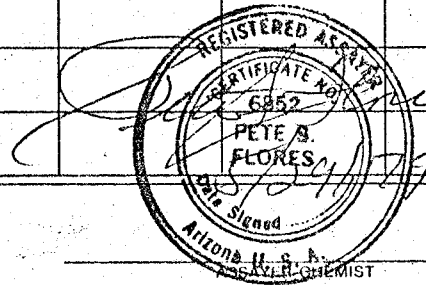
SAMPLE SUBMITTED BY ASARCO, INC.

DATE May 29, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-97	4920		0.48	X 2 1/2 = 1.20			
A-11-98	<i>No core recovered</i>		2.15	X 4 = 8.6			
A-11-99			1.05	X 3 1/2 = 7.53			
A-11-100			0.96	X 5 1/2 = 5.77			
	<i>end 4939 1/2</i>			X 4 = 3.84			
<i>Total 4262-4939 1/2 = 677 1/2 @ 565.53 ft % = 0.83%</i>							
						<i>Calculated remainder loss of core interest.</i>	
						<i>15 1/2 @ 15.34 ft % = 1.18%</i>	
						<i>from 4553 - 4939 1/2 = 386 1/2'</i>	
						<i>lost concave = 11 1/2 + 4 = -15 1/2'</i>	
						<i>= feet % = 371</i>	
						<i>@ total 431.35 ft % = 1.16%</i>	

Wedge hole ✓

use 4920-4940 @ 20.70 ft % 1.04% Cu



CHARGES \$ 11.00

INVOICE NO. 16380

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

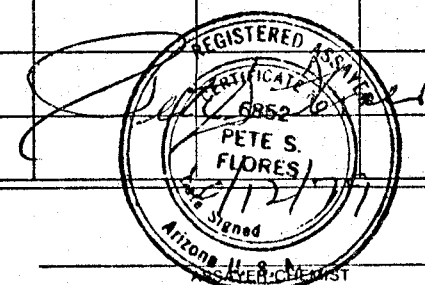
WEDGE HOLE

DATE June 12, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT- FT LEAD	PERCENT- FT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-101	Start 4924		0.47	X 4	= 1.88		
A-11-102	No Core Recovered		1.04	X 5	= 5.20		
A-11-103		previous post see notes	0.29	X 2	= 0.58		
A-11-104	4940 No Core Recovered		1.50	X 2	= 3.00	4924 - 4954 1/2 = 30 1/2 ft 30 1/2 - 6 = 24 1/2 = 15.12 ft% = 0.62%	
A-11-105	about 4943		0.41	X 6	= 2.46		
A-11-106			0.28	X 3 1/2	= 0.98		
A-11-107	4954 1/2		0.51	X 2	= 1.02		
A-11-108			0.45	X 4 1/2	= 2.03		
A-11-109			0.33	X 5	= 1.65		
A-11-110			0.16	X 5	= 0.80		
A-11-111			0.24	X 6 1/2	= 1.56	43 1/2' @	13.69 ft% = 0.31%
A-11-112			0.25	X 5	= 1.25		
A-11-113			0.36	X 8	= 2.88		
A-11-114	4998		0.37	X 9 1/2	= 3.52		
A-11-115			1.12	X 5 1/2	= 6.16		
A-11-116			54.6	X 1	= 54.60		
A-11-117			4.35	X 5	= 21.75	19 1/2' @	90.27 ft% = 4.63%
A-11-118	5017 1/2		0.97	X 8	= 7.76		
A-11-119			0.25	X 5 1/2	= 1.38		
A-11-120	ends 5030		0.29	X 7	= 2.03		

CHARGES \$ 56.00

INVOICE NO. 16412



AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
 > 2000 PPM

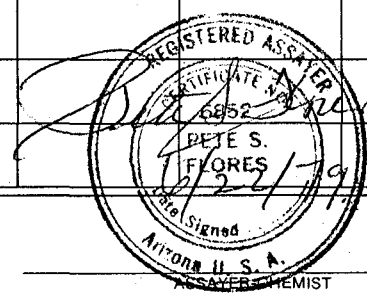
DATE June 22, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-11-121	5030		0.73	X 6	= 4.38		
A-11-122			0.32	X 4	= 1.28		
A-11-123			0.73	X 7	= 5.11		
A-11-124			0.56	X 5	= 2.80		
A-11-125			0.28	X 10	= 2.80	8 1/2 ft	
A-11-126			0.23	X 9	= 2.07	@ 48.07% = 0.54%	
A-11-127			0.52	X 13	= 6.76		
A-11-128	5084		5.17	X 2	= 10.34		
A-11-129			0.42	X 11	= 4.62		
A-11-130	5106		0.50	X 9	= 4.50		
A-11-131			0.27	X 8	= 2.16		
A-11-132			0.42	X 8	= 3.36		
A-11-133			0.34	X 10	= 3.40		
-134			0.18	X 10	= 1.80		
A-11-135	5151		0.24	X 10	= 2.40	69 ft	
-136			0.05	X 7	= 0.35	@ 14.18% = 0.21%	
-137			0.04	X 9	= 0.36		
-138	5175		0.05	X 7	= 0.35		

176 ft @ 14.75% = 0.95%

4

0.26
 23.30 ft @



CHARGES \$ 24.50

INVOICE NO. 16437

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.

DATE June 22, 1979

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM		
A-11-121			> 2000					
122			> 2000					
123			> 2000					
124			> 2000					
125			> 2000					
126			> 2000					
127			> 2000					
128			> 2000					
129			> 2000					
130			> 2000					
131			> 2000					
132			> 2000					
133			> 2000					
134			1820					
135			> 2000					
136			479					
137			439					
138			454					

REGISTERED ASSAYER
 CERTIFICATE NO. 8882
 PETE S. FLORES
 Date signed 6/22/79
 Arizona U. S. A.
 ASSAYER - CHEMIST

CHARGES \$ 45.00
 Invoice # 16437

Comparison of original & wedge 2

Reconstructed	4920 - 4922 1/2 = 2 1/2 @ 0.46 = 1.20	
@ 0.47	4922 1/2 - 4926 1/2 = 4 @ lost core	4924 - 4928 = 4' @ 0.47
@ 2.15	4926 1/2 - 4930 = 3 1/2 @ 2.15%	4928 - 4931 = 3' @ lost core
@ 1.05	4930 - 4935 1/2 = 5 1/2 @ 1.05	4931 - 4934 = 5' @ 1.04
@ 0.96	4935 1/2 - 4939 1/2 = 4 @ 0.96	4936 - 4938 = 2' @ 0.29
		4938 - 4940 = 2' @ 1.50
	17' } 19.02 = 1.12	14' } 17.11 = 1.07
	or 4920 - 4940 = 20' @ 20.70 ft%	or 1.04 % Cu

Total Hole ± 4553 - 4939 1/2 = 386 1/2' @ 1.16%

(using 371' of 431.35 ft %)

± 4939 1/2 - 5017 1/2 = 78' @ 1.46%

(using 74 1/2' of 108.42 ft %)

or total 4553 - 5017 1/2' = 464 1/2' @ 1.21%

(using 445 1/2' of 539.77 ft %)

or total sulfide intercept 4242' - 5017 1/2' = 775 1/2' @ 0.89%

(using { 291' of 117.19 ft %
 445 1/2' of 539.77 ft %
 736 1/2' of 454.96 ft % })

Final Total Alder

$$\pm 4553 - 4939\frac{1}{2} = 386\frac{1}{2}' @ 1.14\%$$

(using 371' @ 431.35 ft%)

$$\pm 4939\frac{1}{2} - 5106 = 166\frac{1}{2}' @ 0.96\%$$

(using $\left. \begin{array}{l} 74\frac{1}{2}' @ 108.24\text{ft}\% \\ 2+88\frac{1}{2}' @ 48.07\text{ft}\% \end{array} \right\} = 163' @ 156.31\text{ft}\%$)

best

$$\text{or total } 4553 - 5106 = 553' @ 1.10\%$$

(using 534' @ 587.66 ft%)

or total sulfide interest

$$\text{using } \left\{ \begin{array}{l} 291' @ 117.19 \\ 534' @ 587.66 \\ 69' @ 14.18 \end{array} \right\} \left\{ \begin{array}{l} 4242' - 5106' = 844' @ 0.85\% \\ (825' @ 704.85\text{ft}\%) \\ 4262' - 5175' = 913' @ 0.80\% \\ (894' @ 719.03\text{ft}\%) \end{array} \right.$$

January 15, 1982

To: W. D. Payne

From: J. D. Sell

Assay Report
Holes A-12 and A-12-A
Superior East Project
Pinal County, Arizona

The drill hole A-12 was initiated by use of a cement plug set and trimmed to the depths of 2750 feet in hole A-11. A NX-size Dyna-Drill was then placed in operation by Thompson and Associates but the machine failed to make a deflection off the plug. The hole was cleaned by coring some eight feet of the cement plug and an oriented wedge was placed and cemented.

Coring off the wedge produced core from 2754½ feet to a depth of 2790 feet and established a south-bearing traverse of NX-sized hole designated as hole A-12.

Thompson and Associates again commenced Dyna-Drilling and advanced the hole from 2790 feet to 2879 feet. Due to a number of problems, the contractor was terminated. This work was conducted between January 14, 1980 and March 5, 1980. The hole was filled with drilling mud, capped, and temporarily abandoned.

On March 12, 1981, a year after terminating the Dyna-Drill, a second directional-drill machine was brought in. This new machine, the Navi-Drill of Christensen Diamin Company (Boyles Brothers) along with Joy crews, directionally drilled and cored from 2879 feet to 4217 feet. The Navi-Drill/spot cores portion of the hole was terminated on June 1, 1981.

Joy Manufacturing Company then continued conventional coring from 4217 feet to 5724 feet when the hole A-12 was completed.

As the Navi-Drill had penetrated the oxide-sulfide contact (at ±4170 feet), a non-oriented wedge was placed in hole A-12 at a depth of 4095 feet (base), to core this missed portion of sulfide mineralization.

The new wedge hole was designated hole A-12-A and BX core was recovered from 4093 feet to 4240 feet when the wedge hole was terminated on December 19, 1981.

As the wedge hole A-12-A provided core for assay from the oxide zone on into the sulfide zone and overlapped the cored portion of hole A-12, a continuous run of footage-assays results are available. The treatment of the overlap values was reported in my January 13, 1982 memo on "Additional Coring and Assay Splits, Hole A-12 and A-12-A."

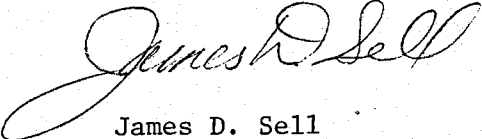
Attachment A of this report is a sequential list of copper assay values from 4134 feet to 5724 feet, the terminal depth of hole A-12, and includes the A-12-A values and assignments, along with the sample numbers, rock units, and depth-footage intervals.

Attachment B is a synopsis of one method of combining the individual assays into various grade zones. This combination shows 577 feet of 0.77% copper followed by 509 feet of 0.46% copper as being the sulfide zone of interest.

Molybdenum, gold, and silver were analyzed on separate runs and groupings and these have been averaged and recorded as Attachment C. Of the 734 feet of sulfide averaged, the results were 0.63% copper, 0.003% molybdenum, 0.001 oz/ton gold, and 0.03 oz/ton silver. A second average set of samples which only had copper-moly values, show 241 feet averaging 0.53% copper and 0.004% molybdenum.

All assays were by Mountain States R&D Laboratories under "Project No. B-31." The individual certificates for holes A-12 and A-12-A are attached as Attachment D.

The graphic log and assay results plot of holes A-12 and A-12-A is map 2486-S.



James D. Sell

Attachments

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A.

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Lbfp*	A-12-A-199	4134-4141	7	0.08	oxidized, tr. copper
Pinal*	-100	4141-4148	7	0.09	" " "
Lbfp*	-201	4148-4158	10	0.48	oxidized cc + cu°, qsv*
"	-202	4158-4171	13	1.22	" " " " "
----- oxide-sulfide interface -----					
Lbfp	A-12-A-203	4171-4182	11	0.86	qsv, mainly chalcocite
"	-204	4182-4194	12	0.57	"
"	-205	4194-4205	11	0.29	"
"	-206	4205-4212	7	0.57	"
Pinal	assigned*	4212-4214	2	0.57	"
"	assigned*	4214-4217	3	1.21	"
"	A-12-1	4217-4224	7	1.80	"
"	-2	4224-4232	8	1.70	"
"	-3	4232-4239	7	0.25	
"	-4	4239-4251	12	0.15	
"	-5	4251-4256	5	0.46	
Lbfp	-6	4256-4264	8	0.44	
Pinal	-7	4264-4273	9	0.40	
"	-8	4273-4276	3	0.40	
Lbfp	-9	4276-4287	11	0.48	
"	-10	4287-4297	10	0.50	
Pinal	-11	4297-4309	12	0.39	appearance of bornite
"	-12	4309-4315	6	0.23	
"	-13	4315-4325	10	0.46	
"	-14	4325-4335	10	0.43	
"	-15	4335-4342	7	0.39	
"	-16	4342-4343	1	0.30	fault gouge
"	-351	4343-4345	2	0.25	" "
"	-352	4345-4349	4	0.98	" " , qsv
"	-353	4349-4352½	3½	1.39	" " "
"	-354	4352½-4360	7½	0.45	
"	-355	4360-4365	5	0.42	

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A.
(Continued)

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Pinal	A-12-356	4365-4375	10	0.50	
"	-17	4375-4384	9	0.35	appearance of chalcopyrite
"	-18	4384-4394½	10½	0.53	
"	-20	4394½-4395½	1	16.90	qsv
"	-19	4395½-4401	5½	0.54	
"	-21	4401-4408	7	0.30	
"	-22	4408-4414	6	0.33	
"	-23	4414-4420	6	0.18	
Lbfp	-24	4420-4422	2	0.30	
Pinal	-25	4422-4429	7	0.38	
"	-26	4429-4434	5	0.23	
"	-27	4434-4442	8	0.65	qsv, py, cp, cc, bn
"	-28	4442-4452	10	2.80	" " " " "
"	-29	4452-4462	10	0.76	" " " " "
"	-30	4462-4467	5	0.35	
"	-31	4467-4472	5	0.36	
"	-32	4472-4481	9	0.22	
"	-33	4481-4488	7	0.36	
"	-34	4488-4496	8	2.30	qsv
"	-35	4496-4501	5	1.70	qsv
"	-36	4501-4505	4	0.18	
"	-37	4505-4512	7	0.33	
"	-38	4512-4517	5	0.33	
"	-39	4517-4523	6	0.59	qsv, cc-bn
"	-40	4523-4527	4	4.00	qsv
"	-41	4527-4533	6	2.00	"
"	-42	4533-4537	4	1.90	"
"	-43	4537-4543	6	2.60	"
"	-44	4543-4550	7	1.80	"
"	-45	4550-4554	4	1.90	"
"	-46	4554-4559	5	0.33	
"	-47	4559-4567	8	0.35	
"	-48	4567-4573	6	0.21	
"	-49	4573-4582	9	0.43	

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A
(Continued)

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Pinal	A-12-50	4582-4588	6	0.35	
Lbfp	-51	4588-4598	10	0.16	
Pinal	-52	4598-4602	4	0.34	
"	-53	4602-4610	8	0.19	
"	-54	4610-4620	10	1.01	
Lbfp	-55	4620-4622	2	0.29	
"	-56	4622-4628	6	0.38	
Pinal	-57	4628-4636	8	0.31	
"	-58	4636-4641	5	0.17	
"	-59	4641-4650	9	0.89	qsv
"	-60	4650-4657	7	0.19	
"	-61	4657-4662½	5½	0.44	qsv
"	-62	4662½-4670	7½	2.20	"
"	-63	4670-4675	5	0.48	
"	-64	4675-4684	9	2.10	qsv
"	-65	4684-4693	9	0.42	
"	-66	4693-4700	7	0.95	disseminated, bx
"	-67	4700-4705	5	1.00	" "
"	-68	4705-4710	5	0.25	bx
"	-69	4710-4718	8	0.99	qsv, bx
"	-70	4718-4726	8	0.51	bx
"	-71	4726-4735	9	0.37	
"	-72	4735-4743	8	0.34	
"	-73	4743-4748	5	3.05	qsv
"	-74	4748-4755	7	0.44	
"	-75	4755-4766	11	0.18	
"	-76	4766-4775	9	0.31	
"	-77	4775-4785	10	0.24	
"	-78	4785-4794	9	0.34	
"	-79	4794-4804	10	0.36	
"	-80	4804-4811	7	0.35	
"	-81	4811-4818	7	0.80	qsv
Lbfp	-82	4818-4826	8	0.94	qsv

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A
(Continued)

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Pinal	A-12-83	4826-4836	10	0.17	
"	-84	4836-4846	10	0.46	
"	-85	4846-4851	5	2.42	qsv
"	-86	4851-4859	8	0.43	qsv
"	-87	4859-4864	5	0.21	
"	-88	4864-4874	10	0.31	
"	-89	4874-4884	10	0.24	
"	-90	4884-4891	7	0.26	
"	-91	4891-4900	9	0.89	qsv
"	-92	4900-4909	9	0.53	"
"	-93	4909-4919	10	0.30	
"	-94	4919-4930	11	0.30	
"	-95	4930-4940	10	0.13	
"	-96	4940-4950	10	0.09	
"	-97	4950-4959	9	0.35	
"	-98	4959-4965	6	1.02	qsv, disseminated
Lbfp	-99	4965-4969	4	1.20	" "
"	-100	4969-4976	7	0.91	" "
"	-101	4976-4983	7	0.37	" "
Pinal	-102	4983-4991	8	0.92	" "
"	-103	4991-5001	10	0.54	" "
"	-104	5001-5010	9	0.30	
"	-105	5010-5020	10	0.10	
"	-106	5020-5025	5	0.16	
"	-107	5025-5033	8	3.76	qsv
"	-108	5033-5043	10	0.39	
"	-109	5043-5052	9	0.24	
"	-110	5052-5059	7	0.08	
"	-111	5059-5067	8	0.29	
"	-112	5067-5077	10	0.17	
"	-113	5077-5083	6	0.39	
"	-114	5083-5085	2	0.26	
"	-115	5085-5102	17	0.16	mainly py-cp below

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A
(Continued)

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Pinal	A-12-116	5102-5113	11	0.17	
Lbfp	-117	5113-5127	14	0.75	qsv
Pinal	-118	5127-5134	7	0.88	"
"	-119	5134-5144	10	0.31	
"	-120	5144-5149	5	0.54	qsv (chalcopyrite)
"	-121	5149-5160	11	0.35	
"	-122	5160-5170	10	0.36	
Lbfp	-123	5170-5175	5	0.76	qsv
Pinal	-124	5175-5187	12	0.08	
"	-125	5187-5199	12	0.22	
"	-126	5199-5206	7	0.08	
"	-127	5206-5214	8	0.38	
"	-128	5214-5223	9	0.57	qsv
"	-129	5223-5233	10	0.28	"
"	-130	5233-5242	9	0.34	"
"	-131	5242-5257	15	0.53	
"	-132	5257-5259	2	0.08	
"	-133	5259-5274	15	0.15	
"	-134	5274-5287	13	0.06	
Lbfp	-135	5287-5289	2	1.76	bx
Pinal	-136	5289-5301	12	0.02	
"	-137	5301-5311	10	0.06	
"	-138	5311-5320	9	0.11	
"	-139	5320-5321	1	0.03	
"	-140	5321-5328	7	0.29	
"	-141	5328-5344	16	0.08	
"	-142	5344-5357	13	0.03	
Lbfp	-143	5357-5363	6	0.05	
"	-144	5363-5370	7	0.02	
"	-145	5370-5374	4	0.76	bx
"	-146	5374-5385	11	0.09	
"	-147	5385-5400	15	0.14	
"	-148	5400-5408	8	0.19	bx, tr. py-cp-hem
"	-149	5408-5424	16	0.03	

ATTACHMENT A. - List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A
(Continued)

<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
Lbfp	A-12-150	5424-5435	11	0.24	
"	-151	5435-5449	14	0.08	
"	-152	5449-5459	10	0.07	
"	-153	5459-5469	10	0.03	
"	-154	5469-5481	12	0.01	
"	-155	5481-5484	3	0.13	bx
"	-156	5484-5504	20	0.04	
"	Not assayed	5504-5570	66	est. 0.02	
"	A-12-157	5570-5585	15	0.01	
"	-158	5585-5590	5	0.04	
"	-159	5590-5605	15	0.02	
"	Not assayed	5605-5712	107	est. 0.02	
"	-160	5712-5724	12	0.014	
		Total Depth			

* Notes:

Lbfp = Laramide biotite feldspar porphyry

Pinal = Precambrian Pinal Schist

qsv = quartz-sulfide vein

assigned = values assigned as treated in January 13, 1982
memo "Additional Coring and Assay Splits, Hole
A-12 and A-12-A," to W.D. Payne, from J.D. Sell.

ATTACHMENT C. - Average of Intervals in Hole A-12 Assayed
for copper, moly, gold and silver.

	<u>Interval</u>	<u>Feet</u>	<u>% Cu</u>	<u>% Mo</u>	<u>oz. Au</u>	<u>oz. Ag</u>
1)	4217-4232	15	1.75	0.007	0.001	ND(0.005)
1)	4232-4343	111	0.38	0.002	0.001	0.02

1)	4375-4523	148	0.83	0.003	0.001	0.03
1)	4523-4543	20	2.56	0.002	0.003	0.10
2)	4543-4554	11	1.84	0.002	--	--
2)	4554-4610	56	0.29	0.004	--	--
1)	4610-4662½	52½	0.53	0.004	0.001	0.05
1)	4662½-4684	21½	1.76	0.001	0.002	0.05
1)	4684-4710	26	0.64	0.003	0.001	0.03
2)	4710-4804	94	0.53	0.006	--	--
1)	4804-4930	126	0.51	0.005	0.001	0.04
2)	4930-4959	29	0.18	0.001	--	--
2)	4959-4976	17	1.02	0.004	--	--
2)	4976-5010	34	0.53	0.001	--	--
1)	5010-5025	15	0.12	0.002	0.001	0.03
1)	5025-5033	8	3.76	0.004	0.001	0.05
1)	5033-5003	50	0.26	0.002	0.001	0.03

1)	5206-5257	51	0.43	0.001	0.001	ND(0.005)

1)	5449-5504	55	0.04	0.001	0.001	0.02

1)	5570-5605	35	0.02	0.004	0.001	0.02
<hr/>						
1)	Average	734	0.63	0.003	0.001	0.03
2	Average	241	0.53	0.004	--	--
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CERTIFICATE OF ASSAY

Certificate No. 657

Project No. B-31

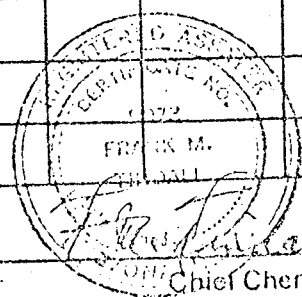
Date 6/30/81

Date	Sample No.	Au	Ag	Cu	Mo
		Oz/T	Oz/T	%	%
17812	A-12-15	0.001	0.06	0.39	0.001
17813	16	0.001	0.05	0.30	0.001
17814	17	0.001	0.03	0.35	0.001
17815	18	0.001	0.03	0.53	0.001
17816	19	0.001	0.04	0.54	0.001
17817	20	0.005	0.10	16.9	0.001
17818	21	0.001	0.06	0.30	0.001
17819	22	0.001	0.06	0.33	0.001
17820	23	0.001	0.03	0.18	0.001
17821	24	0.001	0.04	0.30	0.001
17822	25	0.001	0.02	0.38	0.001
17823	26	0.001	0.03	0.23	0.001
17824	27	0.004	0.03	0.65	0.001
17825	28	0.003	0.01	2.80	0.001
17826	29	0.001	0.03	0.76	0.001
17827	30	0.001	N.D.	0.35	0.001
17828	31	0.003	0.07	0.36	0.001
17829	32	0.001	0.02	0.22	0.001
	<i>Cont. on Cert. # 745</i>				

57.00 SAMPLE PREP

288.00 ASSAYS

Total Charge \$ 345.00



mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 745

Project No. B-31

Date 7/07/81

Date	Sample No.	Au Oz/T	Ag Oz/T	Cu %	Mo %
18513	A-12-33	0.001	0.02	0.36	0.003
18514	34	0.002	0.05	2.30	0.004
18515	35	0.002	0.02	1.70	0.009
18516	36	0.001	0.03	0.18	0.003
18517	37	0.001	0.02	0.33	0.002
18518	38	0.001	0.03	0.33	0.004
18519	39	0.001	0.02	0.59	0.002
18520	40	0.003	0.15	4.00	0.002
18521	41	0.005	0.05	2.00	0.001
18522	42	0.001	0.24	1.90	0.001
18523	43	0.001	0.02	2.60	0.003
18524	44	---	---	1.80	0.002
18525	45	---	---	1.90	0.002
18526	46	---	---	0.33	0.002
18527	47	---	---	0.35	0.004
18528	48	---	---	0.21	0.003
18529	49	---	---	0.43	0.004
18530	50	---	---	0.35	0.010
18531	51	---	---	0.16	0.002
18532	52	---	---	0.34	0.002
18533	53	---	---	0.19	0.003
18534	54	0.002	0.02	1.01	0.005
18535	55	0.001	N.D.	0.29	0.002
18536	56	0.001	0.03	0.38	0.002

Cont. on Cert. # 746 of 69.60 SAMPLE PREP.

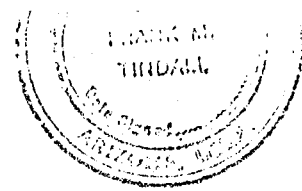
Total Charge \$ 304.00 ASSAYS

373.60

Chief Chemist

F. B. ...

mountain states research & development
 CERTIFICATE OF ASSAY



Certificate No. 562

Project No. B-31

Date 7/31/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
21739	A-12-70	---		---		0.51		0.001	
21740	71	---		---		0.37		0.003	
21741	72	---		---		0.34		0.013	
21742	73	---		---		3.05		0.002	
21743	74	---		---		0.44		0.030	
21744	75	---		---		0.18		0.002	
21745	76	---		---		0.31		0.003	
21746	77	---		---		0.24		0.001	
21747	78	---		---		0.34		0.002	
21748	79	---		---		0.36		0.006	
21749	80	0.001		0.04		0.35		0.001	
21750	81	0.001		N.D.		0.80		0.003	
21751	82	0.001		0.03		0.94		0.003	
21752	83	0.001		0.04		0.17		0.001	
21753	84	0.001		0.07		0.46		0.005	
21754	85	0.002		0.06		2.42		0.003	
21755	86	0.002		0.03		0.43		0.016	
21756	87	0.002		N.D.		0.21		0.001	
21757	88	0.001		0.01		0.31		0.002	
21758	89	0.001		N.D.		0.24		0.002	
21759	90	0.001		0.05		0.26		0.017	
21760	91	0.001		0.02		0.89		0.003	
21761	92	0.001		0.10		0.53		0.005	
21762	93	0.001		0.11		0.30		0.015	

Cont. on Oct. # 94: SAMPLE PREP.
 # 563
 Total Charge \$ 304.00 ASSAYS
398.00

[Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 563

Project No. B-31

Date 7/31/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
21763	A-12-94	0.001		N.D.		0.30		0.001	
21764	95	---		---		0.13		0.001	
21765	96	---		---		0.09		0.001	
21766	97	---		---		0.35		0.001	
21767	98	---		---		1.02		0.002	
21768	99	---		---		1.20		0.002	
21769	100	---		---		0.91		0.008	
21770	101	---		---		0.37		0.001	
21771	102	---		---		0.92		0.001	
21772	103	---		---		0.54		0.001	
21773	104	---		---		0.30		0.001	
22208	A-13-8	---		---		0.13		0.003	
22209	A-12-69	---		---		0.99		0.007	
21774	105	0.001		0.03		0.10		0.002	
21775	106	0.001		0.04		0.16		0.001	
21776	107	0.001		0.05		3.76		0.004	
21777	108	0.001		0.03		0.39		0.001	
21778	109	0.001		0.04		0.24		0.001	
21779	110	0.001		0.05		0.08		0.001	
21780	111	0.001		0.02		0.29		0.005	
21781	112	0.001		0.01		0.17		0.002	
21782	113	0.001		0.06		0.39		0.002	
	Cont. on Cont. #569								

Total Charge \$ 86.05 SAMPLE PREP. ASSAYS
256.00
342.00

[Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 569

Project No. B-31

Date 10/14/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
33654	A-12-114	---		---		0.26		---	
33655	115	---		---		0.16		---	
33656	116	---		---		0.17		---	
33657	117	---		---		0.75		---	
33658	118	---		---		0.88		---	
33659	119	---		---		0.31		---	
33660	120	---		---		0.54		---	
33661	121	---		---		0.35		---	
33662	122	---		---		0.36		---	
33663	123	---		---		0.76		---	
33664	124	---		---		0.08		---	
33665	149	---		---		0.03		---	
33666	150	---		---		0.24		---	
33667	151	---		---		0.08		---	
33668	152	0.002		0.01		0.07		0.0010	
33669	153	0.001		0.01		0.03		0.0014	
33670	154	0.001		0.01		0.01		0.0008	
33671	155	0.001		0.04		0.13		0.0082	
33672	156	0.001		0.04		0.04		0.0004	
33673	157	0.001		0.04		0.01		0.0004	
33674	158	ND		ND		0.04		0.0094	
33675	159	0.001		ND		0.02		0.0058	
	Cont. on Cert. # 690								
	* Interpol on Cert. # 691 & 690.								

Total Charge \$ 170⁰⁰

F. E. Tindall
 Chief Chemist

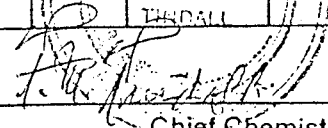
CERTIFICATE OF ASSAY

Certificate No. 691

Project No. B-31

Date 10/27/81

Date	Sample No.	Au		Ag		Mo		Cu	
		Oz/T		Oz/T		%		%	
34190	A-12-125	---		---		---			0.218
34191	126	---		---		---			0.076
34192	127	0.001		ND		0.002			0.38
34193	128	0.001		ND		0.001			0.57
34194	129	0.001		ND		0.002			0.28
34195	130	0.001		ND		0.001			0.34
34196	131	0.002		ND		0.001			0.53
34197	132	---		---		---			0.084
34198	133	---		---		---			0.154
34199	134	---		---		---			0.064
34200	135	---		---		---			1.76
34201	136	---		---		---			0.022
34202	137	---		---		---			0.064
34203	138	---		---		---			0.114
34204	139	---		---		---			0.028
34205	140	---		---		---			0.290
34206	141	---		---		---			0.084
34207	142	---		---		---			0.026
34208	143	---		---		---			0.052
34209	144	---		---		---			0.024
34210	145	---		---		---			0.760
	Cont. on Cert #690								

REGISTERED ASSAYER
 CERTIFICATE NO. 9073
 FRANK M. LINDALL

 Chief-Chemist

Total Charge \$ 128⁰⁰

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 690

Project No. B-31

Date 10/27/81

Sample No.	Cu	
	%	
34211 A-12-146	0.092	
34212 147	0.140	
34213 148	0.190	
34214 160	0.014	
<i>Note: No numbers from A-12-160 until sequence A-12-351 thru A-12-356. See Cert. # 82-079-A</i>		

Total Charge \$ 12⁰⁰

ND (None Detected)

F. G. Randall
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Asarco

Certificate No. 82-079-A

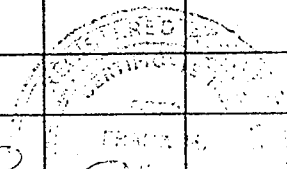
Project No. B-31

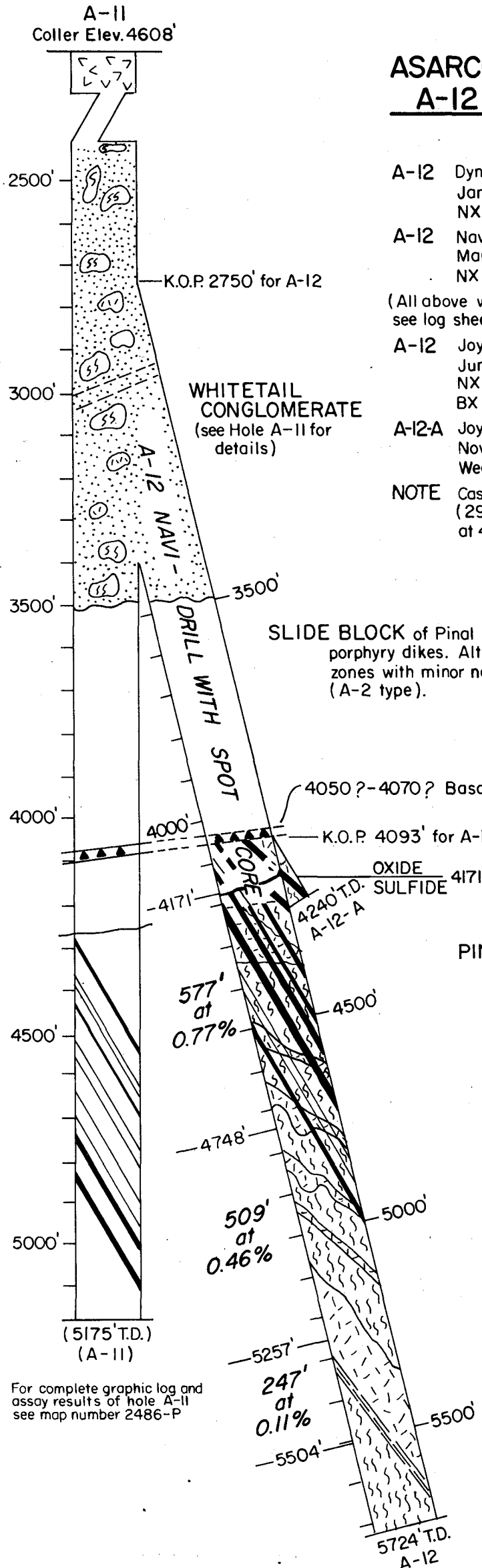
Date 1/04/82

Date	Sample No.	Cu						
		%						
42539	A-12-199 A-12-A-	0.08						
42540	200	0.09						
42541	201	0.48						
42542	202	1.22						
42543	203	0.86						
42544	204	0.57						
42545	205	0.29						
42546	206	0.57						
42547	207	1.21						
42548	208	1.33						
42549	209	0.28						
42550	210	0.10						
42551	A-12-351	0.25						
42552	352	0.98						
42553	353	1.39						
42554	354	0.45						
42555	355	0.42						
42556	356	0.50						

Total Charge \$ 72⁰⁰

ND (None Detected)


F. J. Lindall
 Chief Chemist



ASARCO DRILL HOLES A-12 and A-12-A

A-12 Dyna-drill, Thompson & Associates
Jan. 14, 1980 - March 5, 1980
NX 2750 - 2879 (terminated)

A-12 Navi-drill, Christensen (Boyles)
March 12, 1981 - June 1, 1981
NX 2879 - 4217

(All above with Joy Manufacturing Company drillers;
see log sheet for spot cores)

A-12 Joy Manufacturing Company
June 2, 1981 - November 10, 1981
NX 4217 - 5085
BX 5085 - 5724 T.D.

A-12-A Joy Manufacturing Company
November 11, 1981 - December 19, 1981
Wedge hole, BX 4093 - 4240 T.D.

NOTE Casing left in Hole A-12, 2185' of BX casing
(2900-5085'), and wedge of A-12-A set
at 4095' (base)

SLIDE BLOCK of Pinal Schist intruded by Laramide biotite feldspar porphyry dikes. Altered and hematite replaced gouge-breccia zones with minor native copper. Oxidized, leached capping (A-2 type).

4050? - 4070? Basal fault, breccia, gouge

K.O.P. 4093' for A-12-A

OXIDE
SULFIDE 4171'

4240' T.D.
A-12-A

PINAL SCHIST cut by Laramide feldspar porphyry dikes at 45°-60°

Top portion, 4070' - 4171', oxidized with some brecciation and faults, some oxidized remnant chalcocite and native copper.

Sulfide zone contains disseminated py-cc-bn and qtz-cc-bn veins, changing below 4750' to qtz-py-cp-bn veins and below 5050' to qtz-py-cp veins decreasing with depth. All in variable quartz-sericite alteration veins and halos with some K-spar type below 5300'. Numerous breccia and shear zones throughout.

For complete graphic log and assay results of hole A-12 see map number 2486-P

NOTE: Individual assay for hole A-12 and A-12-A may be found in assay report dated January 15, 1982.

T. 1 S., R. 13 E.
NW ¼ NW ¼ SW ¼ of Sec. 23
GRAPHIC LOG & ASSAY RESULTS
OF
DRILL HOLES
A-12 and A-12-A
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA

SCALE 1" = 300'

J.D. Sell

Jan. 1982

map 2486-P dm 1/82

original

mountain states research & development

CERTIFICATE OF ASSAY

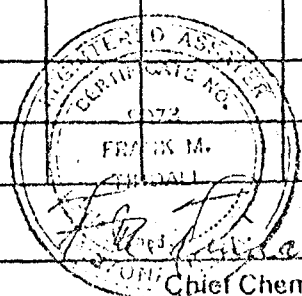
Certificate No. 657

Project No. B-31

Date 6/30/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
17812	A-12-15	4335	4342	0.001	0.06	0.39	0.001
17813	16	4342	4343	0.001	0.05	0.30	0.005
17814	17	4375	4384	0.001	0.03	0.35	0.002
17815	18	4384	4394 ¹ / ₂	0.001	0.03	0.53	0.004
17816	19	4395¹/₂ 4394 ¹ / ₂	4401 4395 ¹ / ₂	0.001	0.04	0.54	0.001
17817	20	4394¹/₂ 4395 ¹ / ₂	4395¹/₂ 4401	0.005	0.10	16.9	0.002
17818	21	4401	4408	0.001	0.06	0.30	0.002
17819	22	4408	4414	0.001	0.06	0.33	0.005
17820	23	4414	4420	0.001	0.03	0.18	0.002
17821	24	4420	4422	0.001	0.04	0.30	0.001
17822	25	4422	4429	0.001	0.02	0.38	0.002
17823	26	4429	4434	0.001	0.03	0.23	0.004
17824	27	4434	4442	0.004	0.03	0.65	0.009
17825	28	4442	4452	0.003	0.01	2.80	0.001
17826	29	4452	4462	0.001	0.03	0.76	0.002
17827	30	4462	4467	0.001	N.D.	0.35	0.002
17828	31	4467	4472	0.003	0.07	0.36	0.002
17829	32	4472	4481	0.001	0.02	0.22	0.002

57.00 SAMPLE PREP.
 288.00 ASSAYS
 Total Charge \$ 345.00



Frank M. [Signature]
 Chief Chemist

original

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 745

Project No. B-31

Date 7/07/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
18513	A-12-33	4481	4488	0.001	0.02	0.36	0.003
18514	34	4488	4496	0.002	0.05	2.30	0.004
18515	35	4496	4501	0.002	0.02	1.70	0.009
18516	36	4501	4505	0.001	0.03	0.18	0.003
18517	37	4505	4512	0.001	0.02	0.33	0.002
18518	38	4512	4517	0.001	0.03	0.33	0.004
18519	39	4517	4523	0.001	0.02	0.59	0.002
18520	40	4523	4527	0.003	0.15	4.00	0.002
18521	41	4527	4533	0.005	0.05	2.00	0.001
18522	42	4533	4537	0.001	0.24	1.90	0.001
18523	43	4537	4543	0.001	0.02	2.60	0.003
18524	44	4543	4550	---	---	1.80	0.002
18525	45	4550	4554	---	---	1.90	0.002
18526	46	4554	4559	---	---	0.33	0.002
18527	47	4559	4567	---	---	0.35	0.004
18528	48	4567	4573	---	---	0.21	0.003
18529	49	4573	4582	---	---	0.43	0.004
18530	50	4582	4588	---	---	0.35	0.010
18531	51	4588	4598	---	---	0.16	0.002
18532	52	4598	4602	---	---	0.34	0.002
18533	53	4602	4610	---	---	0.19	0.003
18534	54	4610	4620	0.002	0.02	1.01	0.005
18535	55	4620	4622	0.001	N.D.	0.29	0.002
18536	56	4622	4628	0.001	0.03	0.38	0.002

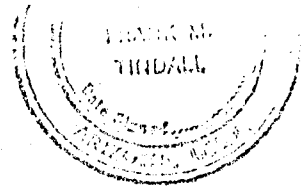
Total Charge \$ 373.60
 # 69.60 SAMPLE PREP.
 304.00 ASSAYS

Chief Chemist *F. W. ...*

Original

montain states research & development

CERTIFICATE OF ASSAY



Certificate No. 562

Project No. B-31

Date 7/31/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
21739	A-12-70	4718	4726	---	---	0.51	0.001
21740	71	4726	4735	---	---	0.37	0.003
21741	72	4735	4743	---	---	0.34	0.013
21742	73	4743	4748	---	---	3.05	0.002
21743	74	4748	4755	---	---	0.44	0.030
21744	75	4755	4766	---	---	0.18	0.002
21745	76	4766	4775	---	---	0.31	0.003
21746	77	4775	4785	---	---	0.24	0.001
21747	78	4785	4794	---	---	0.34	0.002
21748	79	4794	4804	---	---	0.36	0.006
21749	80	4804	4811	0.001	0.04	0.35	0.001
21750	81	4811	4818	0.001	N.D.	0.80	0.003
21751	82	4818	4826	0.001	0.03	0.94	0.003
21752	83	4826	4836	0.001	0.04	0.17	0.001
21753	84	4836	4846	0.001	0.07	0.46	0.005
21754	85	4846	4851	0.002	0.06	2.42	0.003
21755	86	4851	4859	0.002	0.03	0.43	0.016
21756	87	4859	4864	0.002	N.D.	0.21	0.001
21757	88	4864	4874	0.001	0.01	0.31	0.002
21758	89	4874	4884	0.001	N.D.	0.24	0.002
21759	90	4884	4891	0.001	0.05	0.26	0.017
21760	91	4891	4900	0.001	0.02	0.89	0.003
21761	92	4900	4909	0.001	0.10	0.53	0.005
21762	93	4909	4919	0.001	0.11	0.30	0.015

Contact #563. 94% SAMPLE PREP.

Total Charge \$ 304.52 ASSAYS

398.00

ms:6 OH

[Signature]
Chief Chemist

Original

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 563

Project No. B-31

Date 7/31/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
21763	A-12-94	4919	4930	0.001	N.D.	0.30	0.001
21764	95	4930	4940	---	---	0.13	0.001
21765	96	4940	4950	---	---	0.09	0.001
21766	97	4950	4959	---	---	0.35	0.001
21767	98	4959	4965	---	---	1.02	0.002
21768	99	4965	4969	---	---	1.20	0.002
21769	100	4969	4976	---	---	0.91	0.008
21770	101	4976	4983	---	---	0.37	0.001
21771	102	4983	4991	---	---	0.92	0.001
21772	103	4991	5001	---	---	0.54	0.001
21773	104	5001	5010	---	---	0.30	0.001
22208	A-13-8	(Combined double pulps 8a + 8b) 3735 3749		---	---	0.13	0.003
22209	A-12-69	4710	4718	---	---	0.99	0.007
21774	105	5010	5020	0.001	0.03	0.10	0.002
21775	106	5020	5025	0.001	0.04	0.16	0.001
21776	107	5025	5033	0.001	0.05	3.76	0.004
21777	108	5033	5043	0.001	0.03	0.39	0.001
21778	109	5043	5052	0.001	0.04	0.24	0.001
21779	110	5052	5059	0.001	0.05	0.08	0.001
21780	111	5059	5067	0.001	0.02	0.29	0.005
21781	112	5067	5077	0.001	0.01	0.17	0.002
21782	113	5077	5083	0.001	0.06	0.39	0.002
	Cont. on Cert. # 569						

Total Charge \$ 256.00 86.05 SAMPLER PREP. ASSAYS

msrd-01 342.00

[Signature]
Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 569

Project No. B-31

Date 10/14/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
33654	A-12-114	5083	5085	---	---	0.26	---
33655	115	5085	5102	---	---	0.16	---
33656	116	5102	5113	---	---	0.17	---
33657	117	5113	5127	---	---	0.75	---
33658	118	5127	5134	---	---	0.88	---
33659	119	5134	5144	---	---	0.31	---
33660	120	5144	5149	---	---	0.54	---
33661	121	5149	5160	---	---	0.35	---
33662	122	5160	5170	---	---	0.36	---
33663	123	5170	5175	---	---	0.76	---
33664	124	5175	5187	---	---	0.08	---
<hr/>							
33665	149	5408	5424	---	---	0.03	---
33666	150	5424	5435	---	---	0.24	---
33667	151	5435	5449	---	---	0.08	---
33668	152	5449	5459	0.002	0.01	0.07	0.0010
33669	153	5459	5469	0.001	0.01	0.03	0.0014
33670	154	5469	5481	0.001	0.01	0.01	0.0008
33671	155	5481	5484	0.001	0.04	0.13	0.0082
33672	156	5484	5504	0.001	0.04	0.04	0.0004
<hr/>							
33673	157	5570	5585	0.001	0.04	0.01	0.0004
33674	158	5585	5590	ND	ND	0.04	0.0094
33675	159	5590	5605	0.001	ND	0.02	0.0058
	Cont. on Cert. # 690						
	* Interval on Cert. # 691 & 690.						

Total Charge \$ 170⁰⁰

H. L. Tindall
Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 691

Project No. B-31

Date 10/27/81

Date	Sample No.	Footage		Au	Ag	Mo	Cu
		From	To	Oz/T	Oz/T	%	%
34190	A-12-125	5187	5199	---	---	---	0.218
34191	126	5199	5206	---	---	---	0.076
34192	127	5206	5214	0.001	ND	0.002	0.38
34193	128	5214	5223	0.001	ND	0.001	0.57
34194	129	5223	5233	0.001	ND	0.002	0.28
34195	130	5233	5242	0.001	ND	0.001	0.34
34196	131	5242	5257	0.002	ND	0.001	0.53
34197	132	5257	5259	---	---	---	0.084
34198	133	5259	5274	---	---	---	0.154
34199	134	5274	5287	---	---	---	0.064
34200	135	5287	5289	---	---	---	1.76
34201	136	5289	5301	---	---	---	0.022
34202	137	5301	5311	---	---	---	0.064
34203	138	5311	5320	---	---	---	0.114
34204	139	5320	5321	---	---	---	0.028
34205	140	5321	5328	---	---	---	0.290
34206	141	5328	5344	---	---	---	0.084
34207	142	5344	5357	---	---	---	0.026
34208	143	5357	5363	---	---	---	0.052
34209	144	5363	5370	---	---	---	0.024
34210	145	5370	5374	---	---	---	0.760
	Cont. on Cert #690						

REGISTERED ASSAYER
 CERTIFICATE NO. 9078
 FRANK M. HEDALL
 Chief Chemist

Total Charge \$ 128⁰⁰

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 690

ject No. B-31

Date 10/27/81

Sample No.	Footage		Cu					
	From	To	%					
34211 A-12-146	5374	5385	0.092					
34212 147	5385	5400	0.140					
34213 148	5400	5408	0.190					
34214 160	5712	5724	0.014					
Note: No numbers from A-12-160 until sequence A-12-351 thru A-12-356. See Cert. # 82-679-A								

Total Charge \$ 12⁰⁰

ND (None Detected)

F. G. ...
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Asarco

Certificate No. 82-079-A

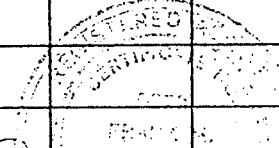
Project No. B-31

Date 1/04/82

Date	Sample No.	Feet		Cu	ft				Notes
		From	To	%					
42539	A-12-A- A-12-199	4134	4141	0.08	7				More detail needed Leached capping
42540	200	4141	4148	0.09	7				"
42541	201	4148	4158	0.48	10				Trace oxidized Cu & not clear Copper.
42542	202	4158	4171	1.22	13				oxidized Cu & not clear.
42543	203	4171	4182	0.86	11				Sulfide
42544	204	4182	4194	0.57	12				
42545	205	4194	4205	0.29	11				
42546	206	4205	4212	0.57	7				
42547	207	4212	4222	1.21	10				
42548	208	4222	4229	1.33	7				
42549	209	4229	4236	0.28	7				
42550	210	4236	4240	0.10	4				
42551	A-12-351	4343	4345	0.25	2				oxidized Cu & not clear Sulfide
42552	352	4345	4349	0.98	4				
42553	353	4349	4352 1/2	1.39	3 1/2				
42554	354	4352 1/2	4360	0.45	7 1/2				
42555	355	4360	4365	0.42	5				
42556	356	4365	4375	0.50	10				

Total Charge \$ 72⁰⁰

ND (None Detected)


F. J. Lindall
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 657

Project No. B-31

Date 6/30/81

Date	Sample No.	Au		Ag	Cu		Mo
		Oz/T		Oz/T	%		%
17812	A-12-15	0.001		0.06	0.39		0.001
17813	16	0.001		0.05	0.30		0.005
17814	17	0.001		0.03	0.35		0.002
17815	18	0.001		0.03	0.53		0.004
17816	19	0.001		0.04	0.54		0.001
17817	20	0.005		0.10	16.9		0.002
17818	21	0.001		0.06	0.30		0.002
17819	22	0.001		0.06	0.33		0.005
17820	23	0.001		0.03	0.18		0.002
17821	24	0.001		0.04	0.30		0.001
17822	25	0.001		0.02	0.38		0.002
17823	26	0.001		0.03	0.23		0.004
17824	27	0.004		0.03	0.65		0.009
17825	28	0.003		0.01	2.80		0.001
17826	29	0.001		0.03	0.76		0.002
17827	30	0.001		N.D.	0.35		0.002
17828	31	0.003		0.07	0.36		0.002
17829	32	0.001		0.02	0.22		0.002
	Cont. on Cert. # 745						

57⁰⁰ SAMPLE PREP.
 288⁰⁰ ASSAYS
 Total Charge \$ 345.⁰⁰

REGISTERED ASSAYER
 CERTIFICATE NO. 0273
 FRANK M. TINDALL
 CHIEF CHEMIST

Frank M. Tindall
Chief Chemist

mountain states research & development CERTIFICATE OF ASSAY

Certificate No. 745

Project No. B-31


Date 7/07/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
18513	A-12-33	0.001		0.02		0.36		0.003	
18514	34	0.002		0.05		2.30		0.004	
18515	35	0.002		0.02		1.70		0.009	
18516	36	0.001		0.03		0.18		0.003	
18517	37	0.001		0.02		0.33		0.002	
18518	38	0.001		0.03		0.33		0.004	
18519	39	0.001		0.02		0.59		0.002	
18520	40	0.003		0.15		4.00		0.002	
18521	41	0.005		0.05		2.00		0.001	
18522	42	0.001		0.24		1.90		0.001	
18523	43	0.001		0.02		2.60		0.003	
18524	44	---		---		1.80		0.002	
18525	45	---		---		1.90		0.002	
18526	46	---		---		0.33		0.002	
18527	47	---		---		0.35		0.004	
18528	48	---		---		0.21		0.003	
18529	49	---		---		0.43		0.004	
18530	50	---		---		0.35		0.010	
18531	51	---		---		0.16		0.002	
18532	52	---		---		0.34		0.002	
18533	53	---		---		0.19		0.003	
18534	54	0.002		0.02		1.01		0.005	
18535	55	0.001		N.D.		0.29		0.002	
18536	56	0.001		0.03		0.38		0.002	

Cont. on Cert. # 746 of 69.60 SAMPLE PREP.

Total Charge \$ 304.00 ASSAYS
373.60

Chief Chemist


 F. H. Tindall
 Chief Chemist

mountain states research & development
 CERTIFICATE OF ASSAY



Certificate No. 562

Project No. B-31

Date 7/31/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
21739	A-12-70	----		----		0.51		0.001	
21740	71	----		----		0.37		0.003	
21741	72	----		----		0.34		0.013	
21742	73	----		----		3.05		0.002	
21743	74	----		----		0.44		0.030	
21744	75	----		----		0.18		0.002	
21745	76	----		----		0.31		0.003	
21746	77	----		----		0.24		0.001	
21747	78	----		----		0.34		0.002	
21748	79	----		----		0.36		0.006	
21749	80	0.001		0.04		0.35		0.001	
21750	81	0.001		N.D.		0.80		0.003	
21751	82	0.001		0.03		0.94		0.003	
21752	83	0.001		0.04		0.17		0.001	
21753	84	0.001		0.07		0.46		0.005	
21754	85	0.002		0.06		2.42		0.003	
21755	86	0.002		0.03		0.43		0.016	
21756	87	0.002		N.D.		0.21		0.001	
21757	88	0.001		0.01		0.31		0.002	
21758	89	0.001		N.D.		0.24		0.002	
21759	90	0.001		0.05		0.26		0.017	
21760	91	0.001		0.02		0.89		0.003	
21761	92	0.001		0.10		0.53		0.005	
21762	93	0.001		0.11		0.30		0.015	

Cont. on Oct. # 94⁰⁵ SAMPLE PREP.
 # 563
 Total Charge \$ 304⁰⁰ ASSAYS
398⁰⁰
 msrd-OR

Frank M. Tindall
 Chief Chemist
 9073

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 563

Project No. B-31

Date 7/31/81

Date	Sample No.		Au Oz/T	Ag Oz/T	Cu %	Mo %
21763	A-12-94		0.001	N.D.	0.30	0.001
21764	95		---	---	0.13	0.001
21765	96		---	---	0.09	0.001
21766	97		---	---	0.35	0.001
21767	98		---	---	1.02	0.002
21768	99		---	---	1.20	0.002
21769	100		---	---	0.91	0.008
21770	101		---	---	0.37	0.001
21771	102		---	---	0.92	0.001
21772	103		---	---	0.54	0.001
21773	104		---	---	0.30	0.001
22208	A-13-8		---	---	0.13	0.003
22209	A-12-69		---	---	0.99	0.007
21774	105		0.001	0.03	0.10	0.002
21775	106		0.001	0.04	0.16	0.001
21776	107		0.001	0.05	3.76	0.004
21777	108		0.001	0.03	0.39	0.001
21778	109		0.001	0.04	0.24	0.001
21779	110		0.001	0.05	0.08	0.001
21780	111		0.001	0.02	0.29	0.005
21781	112		0.001	0.01	0.17	0.002
21782	113		0.001	0.06	0.39	0.002
	Cont. on Cert. #569					

Total Charge \$ 86.00 SAMPLE PREP.
256.00 ASSAYS
342.00

Stamp: MOUNTAIN STATES RESEARCH & DEVELOPMENT, 1981, CHEMIST
 Signature: *[Handwritten Signature]*
 Title: Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

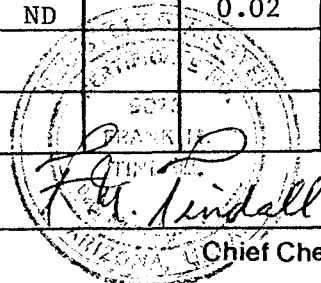
Certificate No. 569

Project No. B-31

Date 10/14/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
33654	A-12-114	---		---		0.26		---	
33655	115	---		---		0.16		---	
33656	116	---		---		0.17		---	
33657	117	---		---		0.75		---	
33658	118	---		---		0.88		---	
33659	119	---		---		0.31		---	
33660	120	---		---		0.54		---	
33661	121	---		---		0.35		---	
33662	122	---		---		0.36		---	
33663	123	---		---		0.76		---	
33664	124	---		---		0.08		---	
33665	149	---		---		0.03		---	
33666	150	---		---		0.24		---	
33667	151	---		---		0.08		---	
33668	152	0.002		0.01		0.07		0.0010	
33669	153	0.001		0.01		0.03		0.0014	
33670	154	0.001		0.01		0.01		0.0008	
33671	155	0.001		0.04		0.13		0.0082	
33672	156	0.001		0.04		0.04		0.0004	
33673	157	0.001		0.04		0.01		0.0004	
33674	158	ND		ND		0.04		0.0094	
33675	159	0.001		ND		0.02		0.0058	
	Cont. on Cert. # 690								
	* Interval on Cert. # 691 + 690.								

Total Charge \$ 170⁰⁰



K. G. Lindell
Chief Chemist

mountain states research & development

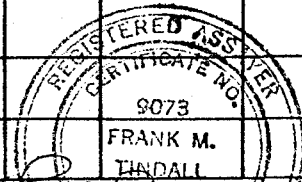
CERTIFICATE OF ASSAY

Certificate No. 691

Project No. B-31

Date 10/27/81

Date	Sample No.	Au		Ag		Mo		Cu	
		Oz/T		Oz/T		%		%	
34190	A-12-125	---		---		---		0.218	
34191	126	---		---		---		0.076	
34192	127	0.001		ND		0.002		0.38	
34193	128	0.001		ND		0.001		0.57	
34194	129	0.001		ND		0.002		0.28	
34195	130	0.001		ND		0.001		0.34	
34196	131	0.002		ND		0.001		0.53	
34197	132	---		---		---		0.084	
34198	133	---		---		---		0.154	
34199	134	---		---		---		0.064	
34200	135	---		---		---		1.76	
34201	136	---		---		---		0.022	
34202	137	---		---		---		0.064	
34203	138	---		---		---		0.114	
34204	139	---		---		---		0.028	
34205	140	---		---		---		0.290	
34206	141	---		---		---		0.084	
34207	142	---		---		---		0.026	
34208	143	---		---		---		0.052	
34209	144	---		---		---		0.024	
34210	145	---		---		---		0.760	
	Cont. on Cert #690								



Total Charge \$ 128⁰⁰

F. M. Tindall
Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 690

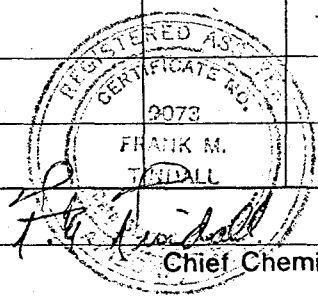
Project No. B-31

Date 10/27/81

Sample No.		Cu					
		%					
34211	A-12-146	0.092					
34212	147	0.140					
34213	148	0.190					
34214	160	0.014					
<i>Note: No numbers from A-12-160 until sequence A-12-351 thru A-12-356. See Cert. #82-079-A</i>							

Total Charge \$ 12⁰⁰

ND (None Detected)



mountain states research & development

CERTIFICATE OF ASSAY

Asarco

Certificate No. 82-079-A

Project No. B-31

Date 1/04/82

Date	Sample No.	Cu							
		%							
42539	A-12-A- A-12-199					0.08			
42540	200					0.09			
42541	201					0.48			
42542	202					1.22			
42543	203					0.86			
42544	204					0.57			
42545	205					0.29			
42546	206					0.57			
42547	207					1.21			
42548	208					1.33			
42549	209					0.28			
42550	210					0.10			
42551	A-12- 351					0.25			
42552	352					0.98			
42553	353					1.39			
42554	354					0.45			
42555	355					0.42			
42556	356					0.50			

Total Charge \$ 72⁰⁰

ND (None Detected)



F. G. Findall
Chief Chemist

CERTIFICATE OF ASSAY

Certificate No. 657

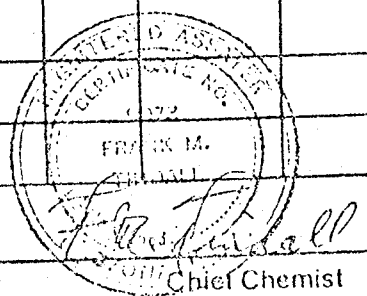
Project No. B-31

Date 6/30/81

Date	Sample No.	Au Oz/T	Ag Oz/T	Cu %	Mo %
17812	A-12-15	0.001	0.06	0.39	0.001
17813	16	0.001	0.05	0.30	0.005
17814	17	0.001	0.03	0.35	0.002
17815	18	0.001	0.03	0.53	0.002
17816	19	0.001	0.04	0.54	0.001
17817	20	0.005	0.10	16.9	0.001
17818	21	0.001	0.06	0.30	0.001
17819	22	0.001	0.06	0.33	0.001
17820	23	0.001	0.03	0.18	0.001
17821	24	0.001	0.04	0.30	0.001
17822	25	0.001	0.02	0.38	0.001
17823	26	0.001	0.03	0.23	0.001
17824	27	0.004	0.03	0.65	0.001
17825	28	0.003	0.01	2.80	0.001
17826	29	0.001	0.03	0.76	0.001
17827	30	0.001	N.D.	0.35	0.001
17828	31	0.003	0.07	0.36	0.001
17829	32	0.001	0.02	0.22	0.001
	Cont. on Cert. # 745				

57.00 SAMPLE PREP.
288.00 ASSAYS

Total Charge \$ 345.00



mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 745

Project No. B-31

Date 7/07/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
18513	A-12-33	0.001		0.02		0.36		0.003	
18514	34	0.002		0.05		2.30		0.004	
18515	35	0.002		0.02		1.70		0.009	
18516	36	0.001		0.03		0.18		0.003	
18517	37	0.001		0.02		0.33		0.002	
18518	38	0.001		0.03		0.33		0.004	
18519	39	0.001		0.02		0.59		0.002	
18520	40	0.003		0.15		4.00		0.002	
18521	41	0.005		0.05		2.00		0.001	
18522	42	0.001		0.24		1.90		0.001	
18523	43	0.001		0.02		2.60		0.003	
18524	44	---		---		1.80		0.002	
18525	45	---		---		1.90		0.002	
18526	46	---		---		0.33		0.002	
18527	47	---		---		0.35		0.004	
18528	48	---		---		0.21		0.003	
18529	49	---		---		0.43		0.004	
18530	50	---		---		0.35		0.010	
18531	51	---		---		0.16		0.002	
18532	52	---		---		0.34		0.002	
18533	53	---		---		0.19		0.003	
18534	54	0.002		0.02		1.01		0.005	
18535	55	0.001		N.D.		0.29		0.002	
18536	56	0.001		0.03		0.38		0.002	

Cont. on Cert. # 746 of 69.60 SAMPLE PREP.
 Total Charge \$ 304.00 ASSAYS
373.60

Chief Chemist *[Signature]*

mountain states research & development
CERTIFICATE OF ASSAY

Certificate No. 746

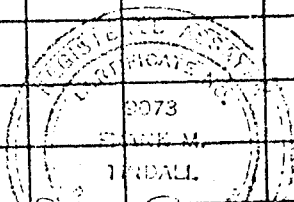
Project No. B-31

Date 7/07/81

Date	Sample No.			Au Oz/T		Ag Oz/T		Cu %	Mo %
18537	A-12-57			0.001		0.10		0.31	0.009
18538	58			0.001		0.02		0.17	0.001
18539	59			0.001		0.12		0.89	0.002
18540	60			0.001		0.02		0.19	0.002
18541	61			0.001		0.04		0.44	0.002
18542	62			0.003		0.03		2.20	0.001
18543	63			0.001		0.04		0.48	0.001
18544	64			0.001		0.08		2.10	0.002
18545	65			0.001		0.05		0.42	0.001
18546	66			0.001		0.03		0.95	0.001
15847	67			0.001		0.02		1.00	0.008
18548	68			0.002		0.01		0.25	0.002
	<i>A-12-69 See Certificate # 563</i>								
	<i>A-12-70 See Certificate # 562</i>								

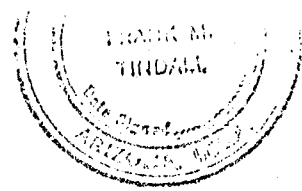
Ⓢ 34.80 SAMPLE PREP
192.00 ASSAYS

Total Charge S 226.80



Chief Chemist

CERTIFICATE OF ASSAY



Certificate No. 562

Project No. B-31

Date 7/31/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
21739	A-12-70	---		---		0.51		0.001	
21740	71	---		---		0.37		0.003	
21741	72	---		---		0.34		0.013	
21742	73	---		---		3.05		0.002	
21743	74	---		---		0.44		0.030	
21744	75	---		---		0.18		0.002	
21745	76	---		---		0.31		0.003	
21746	77	---		---		0.24		0.001	
21747	78	---		---		0.34		0.002	
21748	79	---		---		0.36		0.006	
21749	80	0.001		0.04		0.35		0.001	
21750	81	0.001		N.D.		0.80		0.003	
21751	82	0.001		0.03		0.94		0.003	
21752	83	0.001		0.04		0.17		0.001	
21753	84	0.001		0.07		0.46		0.005	
21754	85	0.002		0.06		2.42		0.003	
21755	86	0.002		0.03		0.43		0.016	
21756	87	0.002		N.D.		0.21		0.001	
21757	88	0.001		0.01		0.31		0.002	
21758	89	0.001		N.D.		0.24		0.002	
21759	90	0.001		0.05		0.26		0.017	
21760	91	0.001		0.02		0.89		0.003	
21761	92	0.001		0.10		0.53		0.005	
21762	93	0.001		0.11		0.30		0.015	

Cont. on Oct. # 94 of SAMPLE PREP.
563
Total Charge \$ 304.00 ASSAYS
398.00

[Signature]
Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 563

Project No. B-31

Date 7/31/81

Date	Sample No.	Au Oz/T	Ag Oz/T	Cu %	Mo %
21763	A-12-94	0.001	N.D.	0.30	0.001
21764	95	---	---	0.13	0.001
21765	96	---	---	0.09	0.001
21766	97	---	---	0.35	0.001
21767	98	---	---	1.02	0.002
21768	99	---	---	1.20	0.002
21769	100	---	---	0.91	0.008
21770	101	---	---	0.37	0.001
21771	102	---	---	0.92	0.001
21772	103	---	---	0.54	0.001
21773	104	---	---	0.30	0.001
22208	A-13-8	---	---	0.13	0.003
22209	A-12-69	---	---	0.99	0.007
21774	105	0.001	0.03	0.10	0.002
21775	106	0.001	0.04	0.16	0.001
21776	107	0.001	0.05	3.76	0.004
21777	108	0.001	0.03	0.39	0.001
21778	109	0.001	0.04	0.24	0.001
21779	110	0.001	0.05	0.08	0.001
21780	111	0.001	0.02	0.29	0.005
21781	112	0.001	0.01	0.17	0.002
21782	113	0.001	0.06	0.39	0.002
	Cont. on Cert. #569				

Total Charge \$ 86.05 SAMPLE PREP.
256.00 ASSAYS
342.00

Chief Chemist
[Signature]

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 569

Project No. B-31

Date 10/14/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
33654	A-12-114	---		---		0.26		---	
33655	115	---		---		0.16		---	
33656	116	---		---		0.17		---	
33657	117	---		---		0.75		---	
33658	118	---		---		0.88		---	
33659	119	---		---		0.31		---	
33660	120	---		---		0.54		---	
33661	121	---		---		0.35		---	
33662	122	---		---		0.36		---	
33663	123	---		---		0.76		---	
33664	124	---		---		0.08		---	
33665	149	---		---		0.03		---	
33666	150	---		---		0.24		---	
33667	151	---		---		0.08		---	
33668	152	0.002		0.01		0.07		0.0010	
33669	153	0.001		0.01		0.03		0.0014	
33670	154	0.001		0.01		0.01		0.0008	
33671	155	0.001		0.04		0.13		0.0082	
33672	156	0.001		0.04		0.04		0.0004	
33673	157	0.001		0.04		0.01		0.0004	
33674	158	ND		ND		0.04		0.0094	
33675	159	0.001		ND		0.02		0.0058	
	Cont on Cert. # 690								
	* Interpol on Cert. # 691 + 690.								

Total Charge \$ 170⁰⁰

H. G. Tindall
 Chief Chemist

mountain states research & development

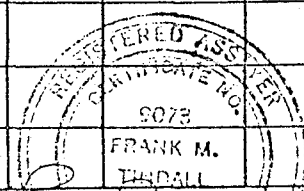
CERTIFICATE OF ASSAY

Certificate No. 691

Project No. B-31

Date 10/27/81

Date	Sample No.	Au		Ag		Mo		Cu	
		Oz/T		Oz/T		%		%	
34190	A-12-125	---		---		---			0.218
34191	126	---		---		---			0.076
34192	127	0.001		ND		0.002			0.38
34193	128	0.001		ND		0.001			0.57
34194	129	0.001		ND		0.002			0.28
34195	130	0.001		ND		0.001			0.34
34196	131	0.002		ND		0.001			0.53
34197	132	---		---		---			0.084
34198	133	---		---		---			0.154
34199	134	---		---		---			0.064
34200	135	---		---		---			1.76
34201	136	---		---		---			0.022
34202	137	---		---		---			0.064
34203	138	---		---		---			0.114
34204	139	---		---		---			0.028
34205	140	---		---		---			0.290
34206	141	---		---		---			0.084
34207	142	---		---		---			0.026
34208	143	---		---		---			0.052
34209	144	---		---		---			0.024
34210	145	---		---		---			0.760
	Cont. on Cert #690								



Total Charge \$ 128⁰⁰

[Signature]
Chief Chemist

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CERTIFICATE OF ASSAY

Certificate No. 690

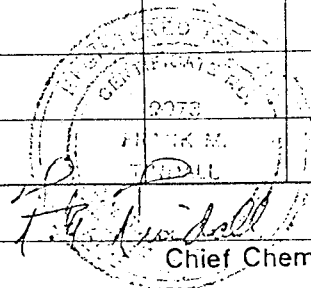
Project No. B-31

Date 10/27/81

Sample No.		Cu					
		%					
34211	A-12-146	0.092					
34212	147	0.140					
34213	148	0.190					
34214	160	0.014					
<i>Note: No numbers from A-12-160 until sequence A-12-351 thru A-12-356. See Cert. # 82-079-A</i>							

Total Charge \$ 12⁰⁰

ND (None Detected)



Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Asarco

Certificate No. 82-079-A

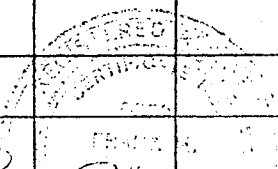
Project No. B-31

Date 1/04/82

Date	Sample No.	Cu	
			%
42539	A-12-199 A-12-A-		0.08
42540	200		0.09
42541	201		0.48
42542	202		1.22
42543	203		0.86
42544	204		0.57
42545	205		0.29
42546	206		0.57
42547	207		1.21
42548	208		1.33
42549	209		0.28
42550	210		0.10
42551	A-12-351		0.25
42552	352		0.98
42553	353		1.39
42554	354		0.45
42555	355		0.42
42556	356		0.50

Total Charge \$ 72⁰⁰

ND (None Detected)


F. H. Lindall
 Chief Chemist

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CERTIFICATE OF ASSAY

Certificate No. 657

Project No. B-31

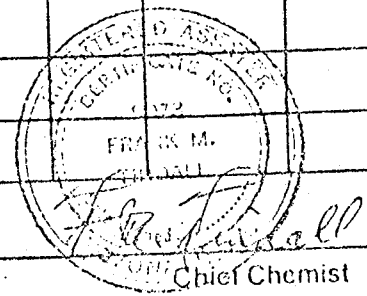
Date 6/30/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
17812	A-12-15	0.001		0.06		0.39		0.001	
17813	16	0.001		0.05		0.30		0.005	
17814	17	0.001		0.03		0.35		0.002	
17815	18	0.001		0.03		0.53		0.004	
17816	19	0.001		0.04		0.54		0.003	
17817	20	0.005		0.10		16.9		0.003	
17818	21	0.001		0.06		0.30		0.003	
17819	22	0.001		0.06		0.33		0.003	
17820	23	0.001		0.03		0.18		0.003	
17821	24	0.001		0.04		0.30		0.003	
17822	25	0.001		0.02		0.38		0.003	
17823	26	0.001		0.03		0.23		0.003	
17824	27	0.004		0.03		0.65		0.003	
17825	28	0.003		0.01		2.80		0.003	
17826	29	0.001		0.03		0.76		0.003	
17827	30	0.001		N.D.		0.35		0.003	
17828	31	0.003		0.07		0.36		0.003	
17829	32	0.001		0.02		0.22		0.003	

Cont. on Cert. # 745

57.00 SAMPLE PREP
288.00 ASSAYS

Total Charge \$ 345.00



mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 745

Project No. B-31

Date 7/07/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
18513	A-12-33	0.001		0.02		0.36		0.003	
18514	34	0.002		0.05		2.30		0.004	
18515	35	0.002		0.02		1.70		0.009	
18516	36	0.001		0.03		0.18		0.003	
18517	37	0.001		0.02		0.33		0.002	
18518	38	0.001		0.03		0.33		0.004	
18519	39	0.001		0.02		0.59		0.002	
18520	40	0.003		0.15		4.00		0.002	
18521	41	0.005		0.05		2.00		0.001	
18522	42	0.001		0.24		1.90		0.001	
18523	43	0.001		0.02		2.60		0.003	
18524	44	---		---		1.80		0.002	
18525	45	---		---		1.90		0.002	
18526	46	---		---		0.33		0.002	
18527	47	---		---		0.35		0.004	
18528	48	---		---		0.21		0.003	
18529	49	---		---		0.43		0.004	
18530	50	---		---		0.35		0.010	
18531	51	---		---		0.16		0.002	
18532	52	---		---		0.34		0.002	
18533	53	---		---		0.19		0.003	
18534	54	0.002		0.02		1.01		0.005	
18535	55	0.001		N.D.		0.29		0.002	
18536	56	0.001		0.03		0.38		0.002	

Cont. on Cert. # 746 of 69.60 SAMPLE PREP.

Total Charge \$ 304.00 ASSAYS

373.60

Chief Chemist

F. A. Rudall

newark state research & development
 CERTIFICATE OF ASSAY



Certificate No. 562

Project No. B-31

Date 7/31/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
21739	A-12-70	---		---		0.51		0.001	
21740	71	---		---		0.37		0.003	
21741	72	---		---		0.34		0.013	
21742	73	---		---		3.05		0.002	
21743	74	---		---		0.44		0.030	
21744	75	---		---		0.18		0.002	
21745	76	---		---		0.31		0.003	
21746	77	---		---		0.24		0.001	
21747	78	---		---		0.34		0.002	
21748	79	---		---		0.36		0.006	
21749	80	0.001		0.04		0.35		0.001	
21750	81	0.001		N.D.		0.80		0.003	
21751	82	0.001		0.03		0.94		0.003	
21752	83	0.001		0.04		0.17		0.001	
21753	84	0.001		0.07		0.46		0.005	
21754	85	0.002		0.06		2.42		0.003	
21755	86	0.002		0.03		0.43		0.016	
21756	87	0.002		N.D.		0.21		0.001	
21757	88	0.001		0.01		0.31		0.002	
21758	89	0.001		N.D.		0.24		0.002	
21759	90	0.001		0.05		0.26		0.017	
21760	91	0.001		0.02		0.89		0.003	
21761	92	0.001		0.10		0.53		0.005	
21762	93	0.001		0.11		0.30		0.015	

Cont. on Oct. # 94 SS SAMPLE PREP.
 # 563
 Total Charge \$ 304.00 ASSAYS
398.00

[Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 563

Project No. B-31

Date 7/31/81

Date	Sample No.	Au Oz/T	Ag Oz/T	Cu %	Mo %
21763	A-12-94	0.001	N.D.	0.30	0.001
21764	95	---	---	0.13	0.001
21765	96	---	---	0.09	0.001
21766	97	---	---	0.35	0.001
21767	98	---	---	1.02	0.002
21768	99	---	---	1.20	0.002
21769	100	---	---	0.91	0.008
21770	101	---	---	0.37	0.001
21771	102	---	---	0.92	0.001
21772	103	---	---	0.54	0.001
21773	104	---	---	0.30	0.001
22208	A-13-8	---	---	0.13	0.003
22209	A-12-69	---	---	0.99	0.007
21774	105	0.001	0.03	0.10	0.002
21775	106	0.001	0.04	0.16	0.001
21776	107	0.001	0.05	3.76	0.004
21777	108	0.001	0.03	0.39	0.001
21778	109	0.001	0.04	0.24	0.001
21779	110	0.001	0.05	0.08	0.001
21780	111	0.001	0.02	0.29	0.005
21781	112	0.001	0.01	0.17	0.002
21782	113	0.001	0.06	0.39	0.002
Cont. on Cert. #569					

Total Charge \$ 86.00 SAMPLE PREP.
256.00 ASSAYS
342.00

[Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 569

Project No. B-31

Date 10/14/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
33654	A-12-114	---		---		0.26		---	
33655	115	---		---		0.16		---	
33656	116	---		---		0.17		---	
33657	117	---		---		0.75		---	
33658	118	---		---		0.88		---	
33659	119	---		---		0.31		---	
33660	120	---		---		0.54		---	
33661	121	---		---		0.35		---	
33662	122	---		---		0.36		---	
33663	123	---		---		0.76		---	
33664	124	---		---		0.08		---	
33665	149	---		---		0.03		---	
33666	150	---		---		0.24		---	
33667	151	---		---		0.08		---	
33668	152	0.002		0.01		0.07		0.0010	
33669	153	0.001		0.01		0.03		0.0014	
33670	154	0.001		0.01		0.01		0.0008	
33671	155	0.001		0.04		0.13		0.0082	
33672	156	0.001		0.04		0.04		0.0004	
33673	157	0.001		0.04		0.01		0.0004	
33674	158	ND		ND		0.04		0.0094	
33675	159	0.001		ND		0.02		0.0058	
	Cont on Cert. # 690								
	* Interval on Cert. # 691 & 690.								

Total Charge \$ 170⁰⁰

H. L. Tindall
 Chief Chemist

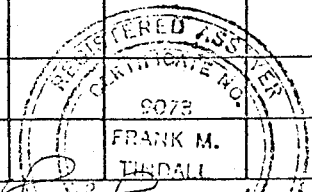
mountain states research & development
CERTIFICATE OF ASSAY

Certificate No. 691

Project No. B-31

Date 10/27/81

Date	Sample No.	Au		Ag		Mo		Cu	
		Oz/T		Oz/T		%		%	
34190	A-12-125	---		---		---			0.218
34191	126	---		---		---			0.076
34192	127	0.001		ND		0.002			0.38
34193	128	0.001		ND		0.001			0.57
34194	129	0.001		ND		0.002			0.28
34195	130	0.001		ND		0.001			0.34
34196	131	0.002		ND		0.001			0.53
34197	132	---		---		---			0.084
34198	133	---		---		---			0.154
34199	134	---		---		---			0.064
34200	135	---		---		---			1.76
34201	136	---		---		---			0.022
34202	137	---		---		---			0.064
34203	138	---		---		---			0.114
34204	139	---		---		---			0.028
34205	140	---		---		---			0.290
34206	141	---		---		---			0.084
34207	142	---		---		---			0.026
34208	143	---		---		---			0.052
34209	144	---		---		---			0.024
34210	145	---		---		---			0.760
	Cont. on Cert #690								



Total Charge \$ 128⁰⁰

[Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 690

Project No. B-31

Date 10/27/81

Sample No.		Cu					
		%					
34211	A-12-146	0.092					
34212	147	0.140					
34213	148	0.190					
34214	160	0.014					
<i>Note: No numbers from A-12-160 until sequence A-12-351 thru A-12-356. See Cert. # 82-079-A</i>							

Total Charge \$ 12⁰⁰

ND (None Detected)

F. G. Kendall
 Chief Chemist

mountain states research & development

Asarco

CERTIFICATE OF ASSAY

Certificate No. 82-079-A

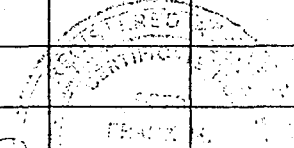
Project No. B-31

Date 1/04/82

Date	Sample No.	Cu							
			%						
42539	A-12-A- A-12-199		0.08						
42540	200		0.09						
42541	201		0.48						
42542	202		1.22						
42543	203		0.86						
42544	204		0.57						
42545	205		0.29						
42546	206		0.57						
42547	207		1.21						
42548	208		1.33						
42549	209		0.28						
42550	210		0.10						
42551	A-12- 351		0.25						
42552	352		0.98						
42553	353		1.39						
42554	354		0.45						
42555	355		0.42						
42556	356		0.50						

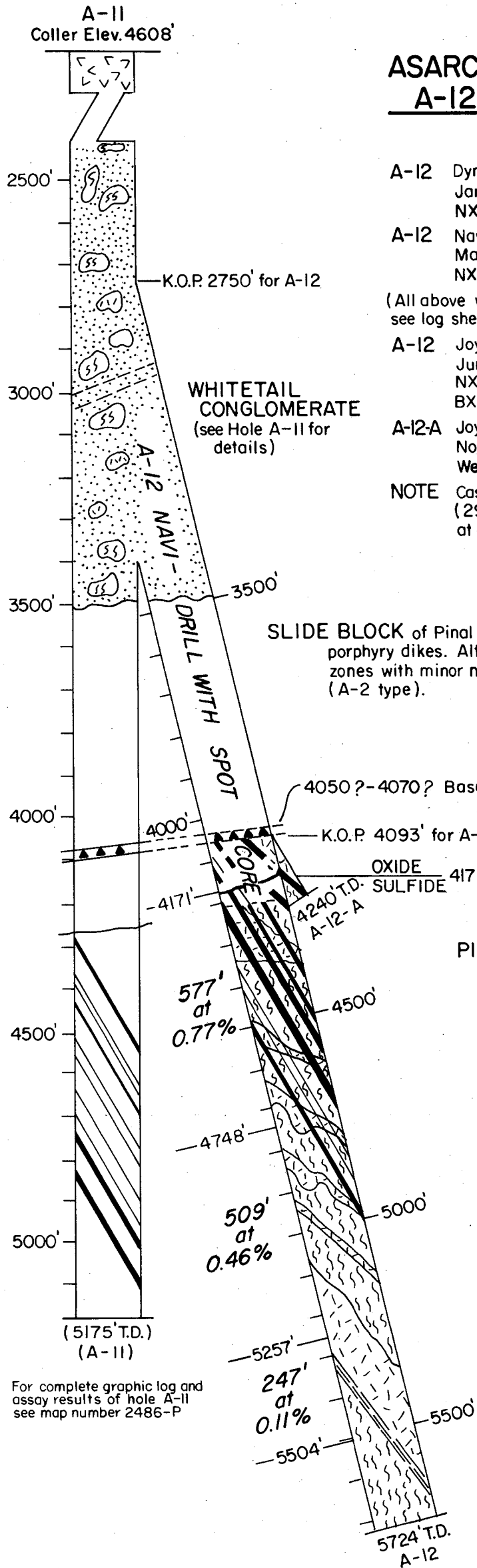
Total Charge S 72⁰⁰

ND (None Detected)


F. F. Lindall
 Chief Chemist

A-11
Coller Elev. 4608'

ASARCO DRILL HOLES A-12 and A-12-A



A-12 Dyna-drill, Thompson & Associates
Jan. 14, 1980 - March 5, 1980
NX 2750' - 2879' (terminated)

A-12 Navi-drill, Christensen (Boyles)
March 12, 1981 - June 1, 1981
NX 2879' - 4217'

(All above with Joy Manufacturing Company drillers;
see log sheet for spot cores)

A-12 Joy Manufacturing Company
June 2, 1981 - November 10, 1981
NX 4217' - 5085'
BX 5085' - 5724' T.D.

A-12-A Joy Manufacturing Company
November 11, 1981 - December 19, 1981
Wedge hole, BX 4093' - 4240' T.D.

NOTE Casing left in Hole A-12, 2185' of BX casing
(2900'-5085'), and wedge of A-12-A set
at 4095' (base).

SLIDE BLOCK of Pinal Schist intruded by Laramide biotite feldspar porphyry dikes. Altered and hematite replaced gouge-breccia zones with minor native copper. Oxidized, leached capping (A-2 type).

4050? - 4070? Basal fault, breccia, gouge

K.O.P. 4093' for A-12-A

OXIDE
SULFIDE 4171'

4240' T.D.
A-12-A

PINAL SCHIST cut by Laramide feldspar porphyry dikes at 45°-60°

Top portion, 4070' - 4171', oxidized with some brecciation and faults, some oxidized remnant chalcocite and native copper.

Sulfide zone contains disseminated py-cc-bn and qtz-cq-bn veins, changing below 4750' to qtz-py-cp-bn veins and below 5050' to qtz-py-cp veins decreasing with depth. All in variable quartz-sericite alteration veins and halos with some K-spar type below 5300'. Numerous breccia and shear zones throughout.

For complete graphic log and assay results of hole A-11 see map number 2486-P

NOTE: Individual assay for hole A-12 and A-12-A may be found in assay report dated January 15, 1982.

T. 1 S., R. 13 E.
NW 1/4 NW 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

OF
DRILL HOLES
A-12 and A-12-A
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA

SCALE 1" = 300'

J.D.Sell

Jan. 1982

Unit	Assay Number	Footage	Feet	% Cu		
	A-12-A-199	4134-4141	7	0.08	0.56	OXIDIZED
	200	4141-4148	7	0.09	0.63	OXIDIZED
	201	4148-4158	10	0.48	4.80	OXIDIZED Tn Cu + Tn Cu
	202	4158-4171	13	1.22	15.86	OXIDIZED OXID Cu + Np Cu
	203	4171-4182	11	0.86	9.46	SULFIDE
	204	4182-4194	12	0.57	6.84	
	205	4194-4205	11	0.29	3.19	
	206	4205-4212	7	0.57	3.99	$\frac{54.45}{61} = 0.89$
	assigned	4212-4214	2	0.57	1.14	
	assigned	4214-4217	3	1.21	3.63	
	A-12-1	4217-4224	7	1.80	12.60	
	2	4224-4232	8	1.70	13.60	
	3	4232-4239	7	0.25	1.75	
	4	4239-4251	12	0.15	1.80	
	5	4251-4256	5	0.46	2.30	
	6	4256-4264	8	0.44	3.52	
	7	4264-4273	9	0.40	3.60	
	8	4273-4276	3	0.40	1.20	$\frac{42.94}{113} = 0.38$
	9	4276-4287	11	0.48	5.28	
	10	4287-4297	10	0.50	5.00	
	11	4297-4309	12	0.39	4.68	
	12	4309-4315	6	0.23	1.38	
	13	4315-4325	10	0.46	4.60	
	14	4325-4335	10	0.43	4.30	
	15	4335-4342	7	0.39	2.73	
	16	4342-4343	1	0.30	0.30	

Unit	Assay Number	Footage	Feet		
21	4401-4408	7	0.30	2.10	
22	4408-4414	6	0.33	1.98	
23	4414-4420	6	0.18	1.08	
24	4420-4422	2	0.30	0.60	
25	4422-4429	7	0.38	2.66	
26	4429-4434	5	0.23	1.15	
27	4434-4442	8	0.65	5.20	0.67
28	4442-4452	10	2.80	28.00	-0.67
29	4452-4462	10	0.74	7.40	58.42 / 87
30	4462-4467	5	0.35	1.75	
31	4467-4472	5	0.34	1.80	
32	4472-4481	9	0.22	1.98	
33	4481-4488	7	0.36	2.52	
34	4488-4496	8	2.30	18.40	26.80 / 13
35	4496-4501	5	1.70	8.50	
36	4501-4505	4	0.18	0.72	
37	4505-4512	7	0.33	2.31	-0.37
38	4512-4517	5	0.33	1.65	8.22 / 22
39	4517-4523	6	0.59	3.54	106.52 / 66
40	4523-4527	4	4.00	16.00	
41	4527-4533	6	2.00	12.00	
42	4533-4537	4	1.90	7.60	5-2.30
43	4537-4543	6	2.60	15.60	71.40 / 31
44	4543-4550	7	1.80	12.60	
45	4550-4554	4	1.90	7.60	
46	4554-4559	5	0.33	1.65	

Unit	Assay Number	Footage	Feet				
	47	4559-4567	8	0.35	2.80		
	48	4567-4573	6	0.21	1.26		
	49	4573-4582	9	0.43	3.87		
	50	4582-4588	6	0.35	2.10		
	51	4588-4598	10	0.16	1.60		
	52	4598-4602	4	0.34	1.36		
	53	4602-4610	8	0.19	1.52		
	54	4610-4620	10	1.01	10.10		
	55	4620-4622	2	0.29	0.58		
	56	4622-4628	6	0.38	2.28		
	57	4628-4636	8	0.31	2.48		
	58	4636-4641	5	0.17	0.85		
	59	4641-4650	9	0.89	8.01		
	60	4650-4657	7	0.19	1.33		
	61	4657-4662 1/2	5 1/2	0.44	2.42		
	62	4662 1/2-4670	7 1/2	2.20	16.50		
	63	4670-4675	5	0.48	2.40		
	64	4675-4684	9	2.10	18.90		
	65	4684-4693	9	0.42	3.78		
	66	4693-4700	7	0.95	6.65		
	67	4700-4705	5	1.00	5.00		
	68	4705-4710	5	0.25	1.25		
	69	4710-4718	8	0.99	7.92		
	70	4718-4726	8	0.51	4.08		
	71	4726-4735	9	0.37	3.33		
	72	4735-4743	8	0.34	2.72		

↑

= 0.41

24.21
108 1/2

53.23
42 1/2 = 1.25

8.78
8.5 1/2 = 1.03

34.55
43 = 0.80

small to here

433.23
456 = 0.95

Unit	Assay Number	Footage	Feet	% Cu	ft ³		
	73	4743-4748	5	3.05	15.25	small to here	$\frac{394.115}{499} = 0.79$
	74	4748-4755	7	0.44	3.08		
	75	4755-4766	11	0.18	1.98		
	76	4766-4775	9	0.31	2.79		
	77	4775-4785	10	0.24	2.40		
	78	4785-4794	9	0.34	3.06		
	79	4794-4804	10	0.36	3.60		
	80	4804-4811	7	0.35	2.45		
	81	4811-4818	7	0.80	5.60		
	82	4818-4826	8	0.94	7.52		
	83	4826-4836	10	0.17	1.70	$\frac{8712}{211} = 41$	
	84	4836-4846	10	0.46	4.60		
	85	4846-4851	5	2.42	12.10		
	86	4851-4859	8	0.43	3.44		
	87	4859-4864	5	0.21	1.05		
	88	4864-4874	10	0.31	3.10		
	89	4874-4884	10	0.24	2.40		
	90	4884-4891	7	0.26	1.82		
	91	4891-4900	9	0.89	8.01		
	92	4900-4909	9	0.53	4.77		
	93	4909-4919	10	0.30	3.00		
	94	4919-4930	11	0.30	3.30		
	95	4930-4940	10	0.13	1.30		
	96	4940-4950	10	0.09	0.90		
	97	4950-4959	9	0.35	3.15		
	98	4959-4965	6	1.02	6.12		

Unit	Assay Number	Footage	Feet			
	99	4965-4969	4	1.20	480	
	100	4969-4976	7	0.91	637	$\frac{2721}{3} = 0.85$
	101	4976-4983	7	0.37	259	
	102	4983-4991	8	0.92	736	
	103	4991-5001	10	0.54	540	
	104	5001-5010	9	0.30	270	
	105	5010-5020	10	0.10	100	
	106	5020-5025	5	0.16	0.80	
	107	5025-5033	8	3.74	30.08	
	108	5033-5043	10	0.39	3.90	$\frac{5291}{92} = 0.58$
	109 109	5043-5052	9	0.24	2.16	
	110	5052-5059	7	0.08	0.56	
	111	5059-5067	8	0.29	2.32	
	112	5067-5077	10	0.17	1.70	
	113	5077-5083	6	0.39	2.34	
	114	5083-5085	2	0.26	0.52	
	115	5085-5102	17	0.16	2.72	
	116	5102-5113	11	0.17	1.87	
	117	5113-5127	14	0.75	10.50	
	118	5127-5134	7	0.88	6.16	
	119	5134-5144	10	0.31	3.10	
	120	5144-5149	5	0.54	2.70	
	121	5149-5160	11	0.35	3.85	
	122	5160-5170	10	0.36	3.60	
	123	5170-5175	5	0.76	3.80	
	124	5175-5187	12	0.08	0.96	

4748 - 5257 = 32128
 509
 = 0.456

Unit	Assay Number	Footage	Feet				
	125	5187-5199	12	0.22	2.64		
	126	5199-5206	7	0.08	0.56		
	127	5206-5214	8	0.38	3.04		
	128	5214-5223	9	0.57	5.13		
	129	5223-5233	10	0.28	2.80		
	130	5233-5242	9	0.34	3.06		
	131	5242-5257	15	0.53	7.95		
	132	5257-5259	2	0.08			
	133	5259-5274	15	0.15			
	134	5274-5287	13	0.06			
	135	5287-5289	2	1.76			
	136	5289-5301	12	0.02			
	137	5301-5311	10	0.06			
	138	5311-5326	9	0.11			
	139	5326-5321	1	0.03			
	140	5321-5328	7	0.29			
	141	5328-5344	14	0.08			
	142	5344-5357	13	0.03			
	143	5357-5363	6	0.05			
	144	5363-5370	7	0.02			
	145	5370-5374	4	0.76			
	146	5374-5385	11	0.09			
	147	5385-5400	15	0.14			
	148	5400-5408	8	0.19			
	149	5408-5424	16	0.03			
	150	5424-5435	11	0.24			

117.92
117.92
117.92

117.92
117.92
117.92

117.92
117.92
117.92

Unit	Assay Number	Footage	Feet				
	151	5435-5449	14	0.08			
	152	5449-5459	10	0.07			
	153	5459-5469	10	0.03			
	154	5469-5481	12	0.01			
	155	5481-5484	3	0.13	$\frac{2491}{247} = 0.11$		
	156	5484-5504	20	0.04	↓		
	-	5504)					
	-	(5570	66	Not assayed			
	157	5570-5585	15	0.01			
	158	5585-5590	5	0.04			
	159	5590-5605	15	0.02			
	-	5605)					
	-	(5712	107	Not assayed			
	160	5712-5724	12	0.01			
		T.D.					

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

<u>Date</u>	<u>Rock Type</u>	<u>Sample Number</u>	<u>Footage</u>	<u>Feet</u>	<u>Percent Copper</u>	<u>Notes</u>
<u>Interval</u>	<u>Footage</u>	<u>% Cu</u>	<u>% Mo</u>	<u>#</u>	<u>AU</u>	<u>Ag</u>
4217-	7	1.80	0.003		0.001	ND (0.005)
- 4232	8	1.70	0.008		0.001	ND 0.045
		<u>26.20</u>	<u>0.005</u>			
	15	1.75	0.007		0.001	ND (0.005)
4232-	7	0.25	0.002		0.001	0.04
	12	0.15	0.005		0.001	ND (0.005)
	5	0.46	0.003		0.001	0.02
	8	0.44	0.001		0.001	0.04
	9	0.40	0.003		0.001	ND (0.005)
	3	0.40	0.001		0.001	0.04
	11	0.48	0.002		0.001	0.02
	10	0.50	0.001		0.001	0.05
	12	0.39	0.004		0.001	ND (0.005)
	6	0.23	0.002		0.001	ND (0.005)
	10	0.46	0.001		0.001	ND (0.005)
	10	0.43	0.001		0.001	0.03
	7	0.39	0.001		0.001	0.06
- 4343	1	0.30	0.005		0.001	0.05
		<u>42.94</u>	<u>0.001</u>			<u>2.555</u>
	111	0.38	0.002		0.001	0.02

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Interval
4375-

Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
Footage	% Cu	% Mo		Au	Ag
9	0.35	0.002		0.001	0.03
10 1/2	0.53	0.004		0.001	0.03
1	16.90	0.002		0.005	0.10
5 1/2	0.54	0.001		0.001	0.04
7	0.30	0.002		0.001	0.06
6	0.33	0.005		0.001	0.06
6	0.18	0.002		0.001	0.03
2	0.30	0.001		0.001	0.04
7	0.38	0.002		0.001	0.02
5	0.23	0.004		0.001	0.03
8	0.65	0.009		0.004	0.03
10	2.80	0.001		0.003	0.01
10	0.76	0.002		0.001	0.03
5	0.35	0.002		0.001	ND (0.005)
5	0.36	0.002		0.003	0.07
9	0.22	0.002		0.001	0.02
7	0.36	0.003		0.001	0.02
8	2.30	0.004		0.002	0.05
5	1.70	0.009		0.002	0.02
4	0.18	0.003		0.001	0.03
7	0.33	0.002		0.001	0.02
5	0.33	0.004		0.001	0.03
6	0.59	0.002		0.001	0.02
	122.125	0.4805		0.219	4.600
148	0.83	0.003		0.001	0.03

-4523

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Lulemal
4523-

4543

4543-

4554

4554-

4610

Rock Type	Sample Number	Footage	Feet	Percent Copper		Notes
				Au	Ag	
	4.00	0.002		0.003	0.15	
	2.00	0.001		0.005	0.05	
	1.90	0.001		0.001	0.24	
	2.60	0.003		0.001	0.02	
	51.20	0.0360		0.052	1.48	
	2.56	0.002		0.003	0.10	
	1.80	0.002				
	1.90	0.002				
	20.20 1.84	0.002				
	0.33	0.002				
	0.35	0.004				
	0.21	0.003				
	0.43	0.004				
	0.35	0.010				
	0.16	0.002				
	0.34	0.002				
	0.19	0.003				
	16.16	0.203				
	0.29	0.004				

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Internal

4610-

Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
Ft	Cu	Md		Av	Ag
	10	1.01	0.005	0.002	0.02
	2	0.29	0.002	0.001	ND (0.005)
	6	0.38	0.002	0.001	0.03
	8	0.31	0.009	0.001	0.10
	5	0.17	0.001	0.001	0.02
	9	0.89	0.002	0.001	0.12
	7	0.19	0.002	0.001	0.02
	5 1/2	0.44	0.002	0.001	0.04
		<u>28.05</u>	<u>0.186</u>	<u>0.0025</u>	<u>2.73</u>
	5 1/2	0.53	0.004	0.001	0.05
	7 1/2	2.20	0.001	0.003	0.03
	5	0.48	0.001	0.001	0.04
	9	2.10	0.002	0.001	0.08
		<u>51.00</u>	<u>0.0305</u>	<u>0.0365</u>	<u>1.145</u>
	2 1/2	1.76	0.001	0.002	0.05
	9	0.42	0.001	0.001	0.05
	7	0.95	0.001	0.001	0.03
	5	1.00	0.008	0.001	0.02
	5	0.25	0.002	0.002	0.01
		<u>16.08</u>	<u>0.006</u>	<u>0.031</u>	<u>0.81</u>
	26	0.64	0.003	0.001	0.03

-4662 1/2

4662 1/2-

-4684

4684-

-4710

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Interval

4710-

-4204

Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
Fl	Cu	Mo		Au	Ag
8	0.99	0.007			
8	0.51	0.001			
9	0.37	0.003			
8	0.34	0.013			
5	3.05	0.002			
7	0.44	0.030			
11	0.18	0.002			
9	0.31	0.003			
10	0.24	0.001			
9	0.34	0.002			
10	0.36	0.006			
94	<u>50.61</u> 0.53	<u>0.55</u> 0.006			

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Interval	Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
	Ft	Cu	Me		Au	Ag
4930-	10	0.13	0.001			
	10	0.09	0.001			
-4959	9	0.35	0.001			
	6	1.02	0.002			
	29	^{5.35} 0.18	^{0.029} 0.001			
4959	6	1.02	0.002			
	4	1.20	0.002			
-4976	7	0.91	0.008			
	17	^{11.209} 1.02	^{6.076} 0.004			
4976-	7	0.37	0.001			
	8	0.92	0.001			
	10	0.54	0.001			
-5010	9	0.30	0.001			
	34	^{18.03} 0.53	^{6.054} 0.001			

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

Interval	Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
	ft	Cu	Mo		Au	Ag
5010-	10	0-10	0.002		0.001	0.03
-5025	5	0-16	0.001		0.001	0.04
5025-5033	15	0-12	0.002		0.001	0.03
	8	3-16	0.004		0.001	0.05
5033-	10	0-39	0.001		0.001	0.03
	9	0-24	0.001		0.001	0.04
	7	0-08	0.001		0.001	0.05
	8	0-29	0.005		0.001	0.02
	10	0-17	0.002		0.001	0.01
	-5083	6	0-39	0.002		0.001
	50	11.98 0-26	0.002		0.001	0.03
5206-	8	0-38	0.002		0.001	ND (0.005)
	9	0-57	0.001		0.001	ND (0.005)
	10	0-28	0.002		0.001	ND (0.005)
	9	0-34	0.001		0.001	ND (0.005)
	-5257	15	0-53	0.001		0.002
	51	21.98 0-43	0.001		0.001	ND (0.005)

Attachment A. List of Assays, Rock Type, & Footage, Holes A-12 and A-12-A.

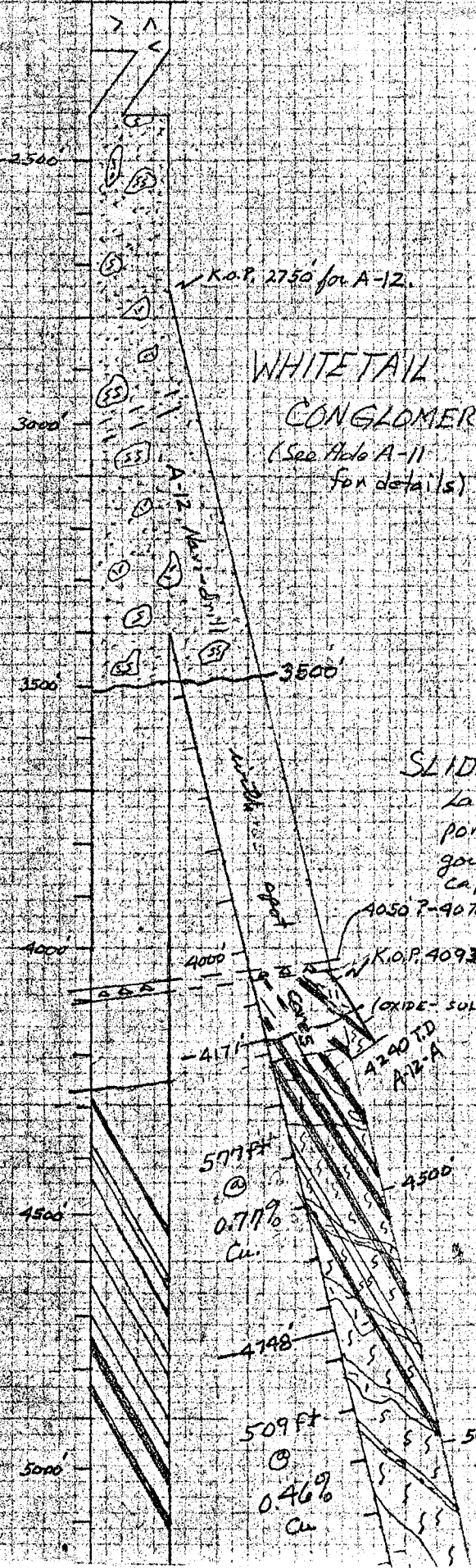
Interval	Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
	Est	Cu	Mt		Au	Ag
5449	B	0.07	0.0010		0.002	0.01
	10	0.03	0.0014		0.001	0.01
	12	0.01	0.0008		0.001	0.01
	3	0.13	0.0082		0.001	0.04
-5504	20	0.04	0.0004		0.001	0.04
	55	^{2.31} 0.04	^{0.0668} 0.001		^{0.065} 0.001	^{1.24} 0.02
570-	15	0.01	0.0004		0.001	0.04
	5	0.04	0.0094		ND (0.005)	ND (0.005)
-5605	15	0.02	0.0058		0.001	ND (0.005)
	35	^{0.65} 0.02	^{0.140} 0.004		^{0.0190} 0.001	^{0.675} 0.02

Attachment A. List of Assays, Rock Type, & Footage,
Holes A-12 and A-12-A.

	Rock Type	Sample Number	Footage	Feet	Percent Copper	Notes
	FA/FT	CU/FT	MO/FT		AG/FT	AS/FT
1)	15	24.20	0.105		0.015	0.075
1)	111	42.44	0.251		0.111	2.555
1)	148	122.125	0.4805		0.219	4.600
1)	20	51.20	0.0360		0.052	1.980
2)	11	20.20	0.022		—	—
2)	56	14.16	0.208		—	—
1)	52 1/2	28.05	0.186		0.0625	2.73
1)	21 1/2	37.80	0.0305		0.0365	1.145
1)	26	14.68	0.066		0.031	0.81
2)	94	50.21	0.552		—	—
1)	126	64.86	0.652		0.144	4.955
2)	29	5.35	0.029		—	—
2)	17	17.29	0.076		—	—
2)	34	18.05	0.034		—	—
1)	15	1.80	0.025		0.015	0.50
1)	8	30.08	0.032		0.008	0.40
1)	50	12.98	0.098		0.050	1.63
1)	51	21.98	0.069		0.066	0.255
1)	55	2.31	0.0662		0.065	1.24
1)	35	0.65	0.140		0.0325	0.6775
			2.2372		0.9075	23.525
1)	734'	459.695 0.63	507.3927 0.003		0.001	0.03
2)	241'	127.26 0.53	0.921 0.004		0.9075	

(A-11)
(Collar Elev. 4608')

ASARCO DRILL HOLES A-12 & A-12-A



A-12 Dyna-drill, Thompson & Assoc.
Jan. 14, 1980 - March 5, 1980
NX 2750' - 2879' (terminated)

A-12 Navi-drill, Christensen (Boyles)
March 12, 1981 - June 1, 1981
NX 2879' - 4217'

(All above w/ Joy Manufacturing Co
drillers; See log sheet for Spot Coras).
A-12 Joy Manufacturing Co.
NX 4217' - 5085'
BX 5085' - 5724', T.D.

A-12-A Joy Manufacturing Co.
Wedge Hole, BX 4093' - 4240' T.D.

NOTE: Casing left in Hole A-12
2185' of BX Casing (2900' - 5085')
and wedge of A-12-A set at 4095' (base)

WHITETAIL
CONGLOMERATE A-12
(See Hole A-11
for details)

SLIDE BLOCK of Pinel Schist intruded by
Laramide biotite feldspar porphyry & diorite
porphyry dikes. Altered & hematite replaced
gouge-bx zones with minor Cu. Oxidized, leached
capping. (A-2 Type).
4050? - 4070' Basal fault, bx. gouge.

PINAL SCHIST cut by Laramide
feldspar porphyry dikes at 45°-60°.
Top portion, 4070' - 4171', oxidized
with some brecciation & faults, some
oxidized remnant chalcocite, and
native copper.

Sulfide zone contains disseminated
py-cc-bn and gtz-cc-bn veins,
changing below 4750' to gtz-py-
cp-bn veins, & below 5050' to
gtz-py-cp veins decreasing with
depth. All in variable quartz-series
alteration veins and halos with
same K-spar type below 5300'.

January 13, 1982

TO: W. D. Payne

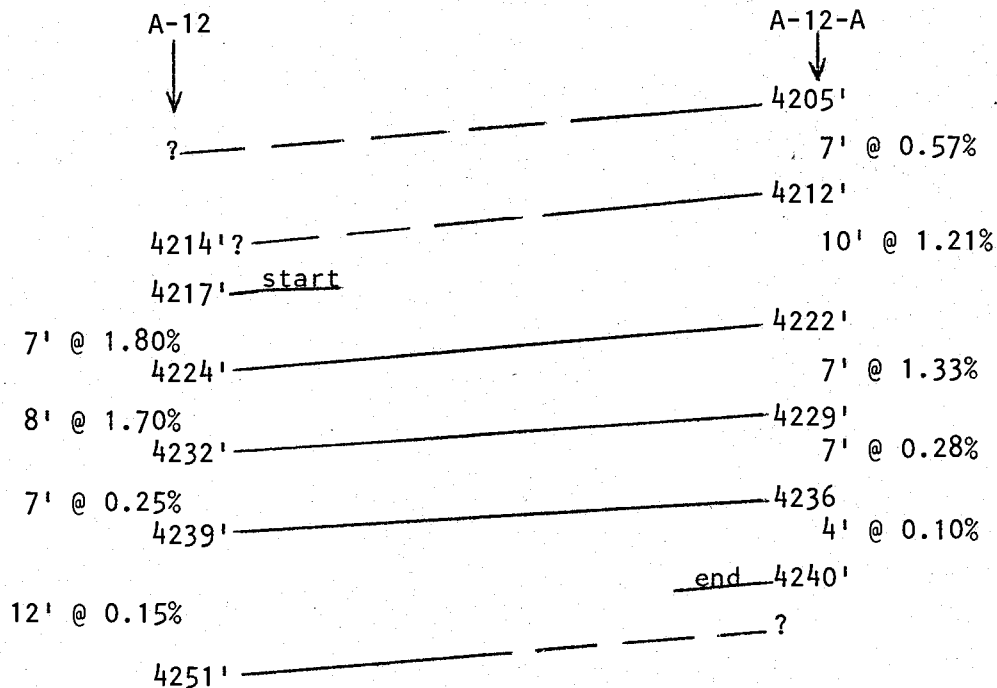
FROM: J. D. Sell

Additional Coring & Assay Splits
 Hole A-12 and A-12-A
 Superior East Project
 Pinal County, Arizona

The Navi-drill hole A-12 drilled through the oxide-sulfide interface which was estimated from cuttings to be around 4170 foot depth. The drill continued to 4217 feet before core drilling commenced.

A wedge hole A-12-A was turned off of hole A-12 at an unknown orientation and cored from 4093 feet to 4240 feet where the wedge hole was terminated. The oxide-sulfide interface in A-12-A was found at 4171 feet, comparable to the original estimate.

Core was recovered from both A-12 and A-12-A in overlap footages and provide a comparison and continuation of assays. The following suggestion of the overlap portion is sketched below for the copper values.



January 13, 1982

Based on the above sketch, I continue the assay values as follows:

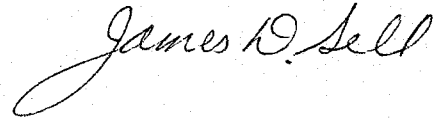
A-12-A-205	4194-4205, 11' @ 0.29% Copper
A-12-A-206	4205-4212, 7' @ 0.57%
Assign	4212-4214, 2' @ 0.57%
Assign	4214-4217, 3' @ 1.21%
A-12-1	4217-4224, 7' @ 1.80%
A-12-2	4224-4232, 8' @ 1.70%

The above intervals complete the switch over from values found in A-12-A to those in A-12 which continued to termination of hole A-12.

The oriented core in hole A-12 was also split and assayed. This interval was from 4343 feet to 4375 feet and completes the assay intervals.

Mountain States Research and Development assay certificates are attached covering the overlap in A-12 and A-12-A as well as the A-12 oriented core splits.

James D. Sell



JDS:mek

Att.: Certificate 514
Certificate 82-079-A

CERTIFICATE OF ASSAY

Certificate No. 514

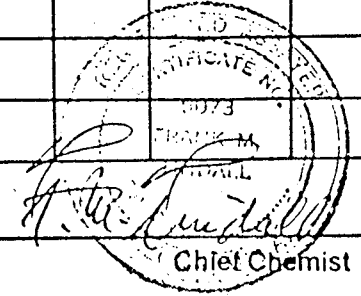
Project No. B-31

Date 6/19/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
16370	A-12-1	4217	4224	0.001	N.D.	1.80	0.003
16371	A-12-2	4224	4232	0.001	N.D.	1.70	0.008
16372	A-12-3	4232	4239	0.001	0.04	0.251	0.002
16373	A-12-4	4239	4251	0.001	N.D.	0.149	0.005
16374	A-12-5	4251	4256	0.001	0.02	0.46	0.003
16375	A-12-6	4256	4264	0.001	0.04	0.44	0.001
16376	A-12-7	4264	4273	0.001	N.D.	0.40	0.003
16377	A-12-8	4273	4276	0.001	0.04	0.40	0.001
16378	A-12-9	4276	4287	0.001	0.02	0.48	0.002
16379	A-12-10	4287	4297	0.001	0.05	0.50	0.001
16380	A-12-11	4297	4309	0.001	N.D.	0.39	0.004
16381	A-12-12	4309	4315	0.001	N.D.	0.234	0.002
16382	A-12-13	4315	4325	0.001	N.D.	0.46	0.001
16383	A-12-14	4325	4335	0.001	0.03	0.43	0.001

95⁰⁰ SAMPLE PREP.
224⁰⁰ ASSAYS

Total Charge \$ 319⁰⁰



CERTIFICATE OF ASSAY

Asarco

Certificate No. 82-079-A

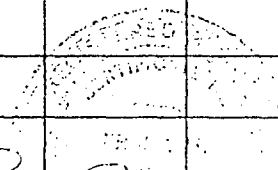
Project No. B-31

Date 1/04/82

Date	Sample No.	Feet		Cu %	ft				Notes
		From	To						
42539	A-12-A- A-12-199	4134	4141	0.08	7				More drill from Loc had capping
42540	200	4141	4148	0.09	7				"
42541	201	4148	4158	0.48	10				Trace oxidized Cu & no other copper.
42542	202	#158	#171	1.22	13				oxidized Cu & no other.
42543	203	#171	4182	0.86	11				Sulfide
42544	204	4182	4194	0.57	12				
42545	205	4194	4205	0.29	11				
42546	206	4205	4212	0.57	7				
42547	207	4212	4222	1.21	10				
42548	208	4222	4229	1.33	7				
42549	209	4229	4236	0.28	7				
42550	210	4236	4240	0.10	4				
42551	A-12-351	4343	4345	0.25	2				oxidized copper, magnetite sulfide
42552	352	4345	4349	0.98	4				
42553	353	4349	4352 1/2	1.39	3 1/2				
42554	354	4352 1/2	4360	0.45	7 1/2				
42555	355	4360	4365	0.42	5				
42556	356	4365	4375	0.50	10				

Total Charge \$ 72.00

ND (None Detected)


P. F. ...
 Chief Chemist

August 5, 1981

TO: W. D. Payne

FROM: J. D. Sell

Assay Results
 Drill Hole A-13
 Superior East Project
Pinal County, Arizona

I hereby attach and report on the assay values from the drill core of hole A-13.

A-13 was drilled as a step-out hole and is located slightly ^{less than 1500} ~~over 1600~~ feet southeast of drill hole A-8 (the discovery hole in this area). Values determined were copper-moly throughout the hole with scattered gold-silver values.

slightly over 1600' from A-8.

The oxidized leached capping-sulfide interface was penetrated at a depth of 3499 feet. The bedrock unit is initially Precambrian Pinal Schist and at a depth of 3549 feet Laramide monzonite was encountered. The best values, as chalcocite, some bornite, and chalcopyrite, are found in quartz sulfide veins having a variable selvage of quartz-sericite with disseminated mineralizations.

One grouping of values follows:

Geological Unit	Depth (ft)	Copper (%)	Molybdenum (ppm)
Oxidized Sulfide	3499'		
Pinal Schist	3549'	50' @ 0.39% Cu	48 ppm Mo
Monzonite	3637'	88' @ 0.28% Cu	21 ppm Mo
Monzonite	3680'	43' @ 1.19% Cu	25 ppm Mo
Monzonite	3951'	271' @ 0.29% Cu	5 ppm Mo
Monzonite	4029'	78' @ 1.71% Cu	7 ppm Mo
Monzonite	4062'	33' @ 0.23% Cu	4 ppm Mo
Monzonite	4082-1/2'	20-1/2' @ 0.03% Cu	2 ppm Mo
Pinal Schist	4124'	41-1/2' @ 0.03% Cu	8 ppm Mo
Mixed Mz & Pinal Schist	4663'	539' @ 0.06% Cu	20 ppm Mo
Summary Groupings:			
		138' @ 0.32% Cu	33 ppm Mo
		392' @ 0.67% Cu	8 ppm Mo
		563' @ 0.56%	14 ppm Mo
		601' @ 0.05% Cu	19 ppm Mo

Total Depth

As noted above, the best values are in monzonite.

August 5, 1981

The general pattern of values is similar to that of the A-8 sequence, that is, copper values in steeply dipping quartz-sericite bands cutting the host rock with a better contained zone followed by a sharp drop off of values with depth. This rapid drop off was within the monzonite and remained in the low range as schist and mixed monzonite-schist were encountered.

Initial interpretation of the A-13 intercept is that the mineralized zone cut is composed of several high grade zones within a general moderately mineralized zone of quartz-sericite banding with or without a central and/or border zone of vein or stringer ore minerals and often containing disseminated values of ore minerals.

The zone is interpreted to have a southerly dip and a probable northeasterly strike similar to that interpreted for the A-8 area. The copper to moly ratio, having a value of 400 in the main zone, is comparable to that found in A-8, A-9 and A-11.

The main zone (3637'-4029'; 392') also has a weighted average of 0.12 oz/T. of silver and 0.0008 oz/T. of gold.

Attachments of the rock type-assay number-values and assay sheets are attached.

James D. Sell

James D. Sell

JDS:rr

Atts: Assays

Attachment, Graphic Log & Assay Results, File #2486-Q

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	Mo PPM	
Pinal Schist	102	3456-3465	9	0.02	20	
"	103	3465-3471	6	0.09	20	
"	104	3471-3487	16	0.03	10	
"	105	3487-3490	3	0.15	10	
"	106	3490-3499	9	0.20	10	
		Oxidized				
		Sulfide				
"		3499-3510	11	0.44	79	
"		3510-3519	9	0.32	49	
"		3519-3529	10	0.38	14	
"		3529-3535	6	0.57	14	
"		3535-3540	5	0.84	66	qsv bx
Pinal Schist		3540-3549	9	0.06	60	
Monzonite		3549-3554	5	0.87	87	qsv
"		3554-3562	8	0.05	10	
"		3562-3564	2	1.00	44	qsv
"		3564-3579	15	0.21	12	
"		3579-3585	6	0.18	50	
"		3585-3589	4	0.64	19	qsv
"		3589-3602	13	0.10	12	
"		3602-3606	4	0.28	24	
"		3606-3618	12	0.42	10	
"		3618-3625	7	0.27	15	
"		3625-3637	12	0.13	19	
"		3637-3650	13	1.62	27	qsv
Monzonite		3650-3660	10	1.24	49	qsv
Monzonite	---	3660-3670	10	0.16	9	bx
"	---	3670-3676	6	1.04	43	qsv bx
"	1	3676-3680	4	2.45	64	qsv
"	2	3680-3690	10	0.32	19	qsv
"	3	3690-3700	10	0.83	9	qsv
"	4	3700-3705	5	0.57	2	
"	5	3705-3715	10	0.03	1	
"	6	3715-3725	10	0.48	2	
"	7	3725-3735	10	0.09	5	
"	8	3735-3749	14	0.08	6	
"	9	3749-3751	2	2.60	9	qsv
"	10	3751-3761	10	0.31	2	
"	11	3761-3771	10	0.05	2	
"	12	3771-3781	10	0.06	1	
"	13	3781-3791	10	0.47	13	
"	14	3791-3800	9	0.08	3	
"	15	3800-3810	10	0.07	4	
"	16	3810-3820	10	0.04	3	
"	17	3820-3830	10	1.37	8	qsv bx
"	18	3830-3840	10	0.16	2	
"	19	3840-3850	10	0.63	3	qsv
"	20	3850-3860	10	0.25	7	
"	21	3860-3870	10	0.07	3	
"	22	3870-3880	10	0.14	1	
Monzonite	23	3880-3890	10	0.12	4	

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	Mo PPM		
Monzonite	24	3890-3900	10	0.04	3	qv	
"	25	3900-3910	10	0.22	10		
"	26	3910-3914	4	0.32	2	qsv	
"	27	3914-3919	5	0.53	15	qsv	
"	28	3919-3930	11	0.06	10		
"	29	3930-3940	10	0.10	8		
"	30	3940-3951	11	0.40	2		
"	31	3951-3957	6	0.92	2	qsv	
"	32	3957-3962-1/2	5-1/2	8.65	23	qsv bx	
"	---	3962-1/2-3965	2-1/2	4.00	15	qsv bx	
		No core recovered, probably				assigned	
"	33	3965-3975	10	0.57	4	qsv bx	
"	34	3975-3983	8	0.65	3	qsv bx	
"	35	3983-3987	4	5.20	7	qsv	
"	36	3987-3992	5	3.05	6	qsv	
"	37	3992-4001	9	0.37	8		
"	38	4001-4006	5	0.96	11	qsv	
"	39	4006-4012-1/2	6-1/2	0.77	10	qsv bx	
"	40	4012-1/2-4019	6-1/2	0.82	3	qsv	
"	41	4019-4029	10	0.45	2		
"	42	4029-4035	6	0.07	2		
"	43	4035-4040	5	0.38	1		
"	---	4040-4048	8	0.39	1		
"	44	4048-4062	14	0.16	8		
"	45	4062-4072	10	0.04	3		
Monzonite	46	4072-4082-1/2	10-1/2	0.03	2		
Pinal Schist	47	4082-1/2-4093	10-1/2	0.03	10		
"	48	4093-4102	9	0.02	12		
"	49	4102-4111	9	0.03	10		
"	50	4111-4124	13	0.05	3		
Monzonite	51	4124-4128	4	0.01	15		
Pinal Schist	52	4128-4137	9	0.03	8		
"	53	4137-4146	9	0.08	5		
"	54	4146-4156	10	0.06	3	qv	
"	55	4156-4166	10	0.05	2	qv	
"	56	4166-4174	8	0.07	4		
"	57	4174-4177	3	0.23	12		
"	58	4177-4187	10	0.09	10		
"	59	4187-4197	10	0.08	18		
"	60	4197-4202	5	0.02	11		
"	61	4202-4211	9	0.04	5		
"	62	4211-4217	6	0.02	5		
"	63	4217-4224	7	0.10	15		
Pinal Schist	64	4224-4234	10	0.08	35		
Monzonite	65	4234-4241-1/2	7-1/2	0.02	8		
"	66	4241-1/2-4251	9-1/2	0.06	3		
"	67	4251-4260	9	0.42	3		
"	68	4260-4269	9	0.13	6		
Monzonite	69	4269-4275-1/2	6-1/2	0.09	6		

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	Mo PPM	
Pinal Schist	70	4275-1/2-	9	0.15	4	
"	71	4284-1/2- 4284-1/2- 4293-1/2	9	0.06	9	
"	72	4293-1/2-4303	9-1/2	0.19	12	
"	73	4303-4308-1/2	5-1/2	0.03	2	
"	74	4308-1/2- 4316-1/2	8	0.05	1	qv
"	75	4316-1/2-4326	9-1/2	0.04	44	
"	76	4326-4336	10	0.07	42	qv
"	77	4336-4346	10	0.03	74	
"	78	4346-4354	8	0.05	42	
"	79	4354-4360	6	0.05	22	
"	80	4360-4370	10	0.03	15	
"	81	4370-4375	5	0.03	28	
"	82	4375-4385	10	0.02	29	
Pinal Schist	83	4385-4392	7	0.06	9	qv
Monzonite	84	4392-4394-1/2	2-1/2	0.01	21	
Pinal Schist	85	4394-1/2- 4398	3-1/2	0.03	17	
"	86	4398-4403	5	0.03	29	
"	87	4403-4411	8	0.01	12	
Pinal Schist	88	4411-4419	8	0.01	26	qv
Monzonite	---	4419-4422-1/2	3-1/2	0.04	38	qv
"		4422-1/2- 4431	8-1/2	0.03	16	qv
"		4431-4439	8	0.02	36	
Monzonite		4439-4445-1/2	6-1/2	0.01	9	
Pinal Schist		4445-1/2- 4452-1/2	7	0.07	24	
Monzonite		4452-1/2- 4462-1/2	10	0.02	102	
Monzonite		4462-1/2- 4469-1/2	7	0.03	19	
Pinal Schist		4469-1/2- 4476	6-1/2	0.27	25	qv
"		4476-4483	7	0.01	72	qv
"		4483-4487	4	0.06	16	
"		4487-4492	5	0.05	43	
"		4492-4502	10	0.06	11	
"		4502-4504	2	0.05	10	
		Poor core recovery, value assigned				
Pinal Schist		4504-4510	6	0.05	20	
Monzonite		4510-4518	8	0.06	27	
Monzonite		4518-4523	5	0.02	24	
Monzonite		4523-4532	9	0.01	31	

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	Mo PPM	
Pinal Schist		4532-4538	6	0.02	12	
Pinal Schist		4538-4545	7	0.03	11	
Monzonite	---	4545-4547	2	0.02	14	
Pinal Schist	89	4547-4555	8	0.03	18	qv
"	90	4555-4563	8	0.02	34	
"	91	4563-4573	10	0.02	29	
"	92	4573-4580	7	0.02	15	
"	93	4580-4590	10	0.04	12	qv
"	94	4590-4599	9	0.03	17	
"	95	4599-4609	10	0.02	15	
"	96	4609-4619	10	0.03	12	
"	97	4619-4627	8	0.02	35	qv
"	98	4627-4637	10	0.05	15	
"	99	4637-4647	10	0.03	7	
Pinal Schist	100	4647-4650	3	0.04	51	
Monzonite	101	4650-4654	4	0.04	9	
Monzonite	Not	4654-4656	2	0.04	9	
	<u>Split</u>	<u>Assay assigned</u>				
Monzonite		4656-4663	7	0.04	9	
		<u>No core recovered-assigned</u>				
		<u>T. D.</u>				

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 512

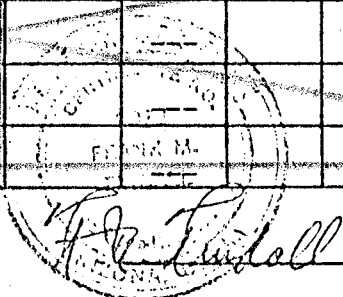
Project No. B-31

Date 6/19/81

OXIDIZED
 PARTIALLY OXIDIZED
 SULFIDE
 S FIDE

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
15817	AI-2-25	2840	2850	0.001	0.05	0.038	0.004
15818	AI-2-26	2850	2860	0.001	0.03	0.115	0.005
15819	AI-2-27	2860	2871	0.001	0.09	0.78	0.003
15820	AI-2-28	2871	2881	N.D.	N.D.	0.155	0.003
15821	AI-2-29	2881	2891	N.D.	N.D.	0.144	0.003
15822	AI-2-30	2891	2901	N.D.	N.D.	0.112	0.003
15823	AI-2-31	2901	2910	N.D.	N.D.	0.078	0.002
15824	AI-2-32	2910	2920	0.001	0.02	0.154	0.003
15825	AI-2-33	2920	2930	0.001	0.03	0.34	0.006
15826	AI-2-34	2930	2940	0.001	0.04	0.37	0.006
15827	AI-2-35	2940	2950	0.001	N.D.	0.28	0.002
15828	AI-2-36	2950	2960	0.001	N.D.	0.47	0.003
15829	AI-2-37	2960	2970	0.002	N.D.	0.32	0.009
15830	AI-2-38	2970	2980	0.001	N.D.	0.20	0.004
15831	AI-13-102	3456	3465	0.001	N.D.	0.018	0.002
15832	AI-13-103	3465	3471	0.001	N.D.	0.087	0.002
15833	AI-13-104	3471	3487	0.001	0.02	0.028	0.001
15834	AI-13-105	3487	3490	0.001	N.D.	0.150	0.001
15835	AI-13-106	3490	3499	0.001	N.D.	0.202	0.001
15836	AI-2-39	2990	2990	---	---	0.41	0.008
15837	AI-2-40	2990	3000	---	---	0.29	0.001
15838	AI-2-41	3000	3010	---	---	0.27	0.006
15839	AI-2-42	3010	3020	---	---	0.128	0.024
15840	AI-2-43	3020	3030	---	---	0.243	0.004

Total Charge \$ 111.50 SAMPLE PREP
377.00 ASSAYS
495.50


 Chief Chemist

TO: G. W. Pickard
J. D. Sell

DATE: December 29, 1980

FROM: John Wood

SUBJECT: Code Sheet for A-13
Drill Hole

<u>SAMPLE NO.</u>	<u>INTERVAL</u>	<u>SAMPLE NO.</u>	<u>INTERVAL</u>	<u>SAMPLE NO.</u>	<u>INTERVAL</u>
A-13-1	3676-3680	A-13-39	4006-4012	A-13-77	4336-4346
2	3680-3690	40	4012-4019	78	4346-4354
3	3690-3700	41	4019-4029	79	4354-4360
4	3700-3705	42	4029-4035	80	4360-4370
5	3705-3715	43	4035-4040	81	4370-4375
6	3715-3725	44	4048-4062	82	4375-4385
7	3725-3735	45	4062-4072	83	4385-4392
8	3735-3749	46	4072-4082 1/2	84	4392-4394.5
9	3749-3751	47	4082 1/2-4093	85	4394.5-4398
10	3751-3761	48	4093-4102	86	4398-4403
11	3761-3771	49	4102-4111	87	4403-4411
12	3771-3781	50	4111-4124	88	4411-4419
13	3781-3791	51	4124-4128	89	4547-4555
14	3791-3800	52	4128-4137	90	4555-4563
15	3800-3810	53	4137-4146	91	4563-4573
16	3810-3820	54	4146-4156	92	4573-4580
17	3820-3830	55	4156-4166	93	4580-4590
18	3830-3840	56	4166-4174	94	4590-4599
19	3840-3850	57	4174-4177	95	4599-4609
20	3850-3860	58	4177-4187	96	4609-4619
21	3860-3870	59	4187-4197	97	4619-4627
22	3870-3880	60	4197-4202	98	4627-4637
23	3880-3890	61	4202-4211	99	4637-4647
24	3890-3900	62	4211-4217	100	4647-4650
25	3900-3910	63	4217-4224	101	4650-4654
26	3910-3914	64	4224-4234		
27	3914-3919	65	4234-4241.5		
28	3919-3930	66	4241.5-4244.5 4251		
29	3930-3940	67	4244.5-4303 4251-4260		
30	3940-3951	68	4303-4308.5 4260-4269		
31	3951-3957	69	4308.5-4316.5 4269-4275 1/2		
32	3957-3962 1/2	70	4316.5-4326 4275 1/2-4284 1/2		
33	3965-3975	71	4326-4336 4284 1/2-4293 1/2		
34	3975-3983	72	4336.5-4303		
35	3983-3987	73	4303-4308.5		
36	3987-3992	74	4308.5-4316.5		
37	3992-4001	75	4316.5-4326		
38	4001-4006	76	4326-4336		

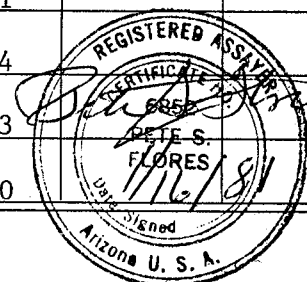
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, Inc.DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
1	Trace	Trace	2.45			.0064	
2	Trace	Trace	0.32			.0019	
3	Trace	Trace	0.83			.0009	
4	Trace	Trace	0.57			.0002	
5	Trace	Trace	0.03			<.0001	
6	Trace	Trace	0.48			.0002	
7	Trace	Trace	0.09			.0005	
8A	Trace	Trace	0.08			.0006	
9	.001	0.14	2.60			.0009	
10	.001	0.13	0.31			.0002	
11	Trace	0.13	0.05			.0002	
12	.001	0.16	0.06			.0001	
13	.001	0.14	0.47			.0013	
14	Trace	0.10	0.08			.0003	
15	Trace	0.16	0.07			.0004	
16	Trace	0.01	0.04			.0003	
17	Trace	0.13	1.37			.0008	
18	Trace	0.09	0.16			.0002	
19	.001	0.17	0.63			.0003	
20	Trace	0.17	0.25			.0007	
21	Trace	0.15	0.07			.0003	
22	Trace	0.29	0.14			.0001	
23	Trace	0.12	0.22			.0004	
24	Trace	0.12	0.04			.0003	
25	Trace	0.13	0.22			.0010	

CHARGES \$ 337.50INVOICE NO. 18022

ASSAYER-CHEMIST

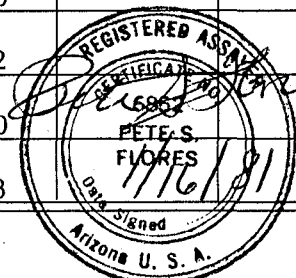
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCODATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
26	.001	0.16	0.32			.0002	
27	.001	0.18	0.53			.0015	
28	Trace	0.11	0.06			.0010	
29	Trace	0.16	0.10			.0008	
30	.001	0.42	0.40			.0002	
31	.001	0.21	0.92			.0002	
32	.001	0.18	8.65			.0023	
33	.001	0.15	0.57			.0004	
34	.001	0.17	0.65			.0003	
35	.001	0.19	5.20			.0007	
36	.001	0.22	3.05			.0006	
37	Trace	0.20	0.37			.0008	
38	Trace	0.19	0.96			.0011	
39	.001	0.15	0.77			.0010	
40	Trace	0.18	0.82			.0003	
41	Trace	0.17	0.45			.0002	
42	.001	0.18	0.07			.0002	
43	Trace	0.14	0.38			.0001	
44	Trace	0.08	0.16			.0008	
45	.001	0.12	0.04			.0003	
46	.001	0.18	0.03			.0002	
47	.001	0.16	0.03			.0010	
48	Trace	0.12	0.02			.0012	
49	.001	0.19	0.03			.0010	
50	.001	0.15	0.05			.0003	

CHARGES \$ 337.50INVOICE NO. 18022

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

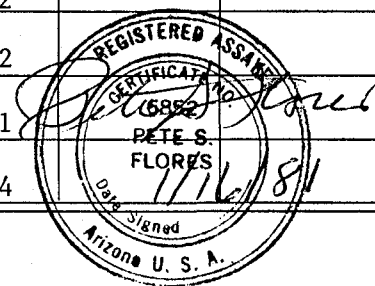
SAMPLE SUBMITTED BY ASARCO

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
51	.001	0.20	0.01			.0015	
52	Trace	0.17	0.03			.0008	
53	.001	0.18	0.08			.0005	
54	.001	0.14	0.06			.0003	
55	.001	0.17	0.05			.0002	
56	.001	0.19	0.07			.0004	
57	.002	0.22	0.23			.0012	
58	.001	0.18	0.09			.0010	
59	Trace	0.04	0.08			.0008	
60	.001	0.18	0.02			.0011	
61	Trace	0.11	0.04			.0005	
62	Trace	0.11	0.02			.0005	
63	.001	0.17	0.10			.0015	
64	.001	0.17	0.08			.0035	
65	Trace	0.13	0.02			.0008	
66	.001	Trace	0.06			.0005	
67	.001	0.13	0.42			.0003	
68	.014	0.20	0.13			.0006	
69	.001	0.22	0.09			.0006	
70	.001	0.16	0.15			.0004	
71	.001	0.17	0.06			.0009	
72	.001	0.16	0.19			.0012	
73	Trace	0.15	0.03			.0002	
74	.001	0.17	0.05			.0001	
75	Trace	0.16	0.04			.0044	

CHARGES \$ 337.50

INVOICE NO. 18022



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

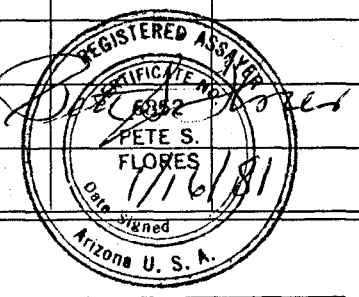
SAMPLE SUBMITTED BY ASARCO

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
76	.001	0.17	0.07			.0042	
77	.001	0.17	0.03			.0074	
78	.001	0.14	0.05			.0042	
79	Trace	0.13	0.05			.0022	
80	.001	0.15	0.03			.0015	
81	.001	0.14	0.03			.0028	
82	.001	0.15	0.02			.0029	
83	.001	0.20	0.06			.0009	
84	.001	0.15	0.01			.0021	
85	.001	0.16	0.03			.0017	
86	.001	0.17	0.03			.0029	
87	.001	0.19	0.01			.0012	
88	.001	0.17	0.01			.0026	
89	.001	0.16	0.03			.0018	
90	.001	0.17	0.02			.0034	
91	.001	0.21	0.02			.0029	
92	.001	0.17	0.02			.0015	
93	.001	0.14	0.04			.0012	
94	.001	0.21	0.03			.0017	
95	.001	0.20	0.02			.0015	
96	.001	0.14	0.03			.0012	
97	.001	0.16	0.02			.0035	
98	Trace	0.14	0.05			.0015	
99	.001	0.17	0.03			.0007	
100	.001	0.13	0.04			.0051	

CHARGES \$ 337.50

INVOICE NO. 18022



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13 101	.001	0.13	0.04			.0009	
8-b	.001	0.11	0.20			.0004	

REGISTERED ASSAYER
 CERTIFICATE NO.
 6852
 PETE S FLORES
 Date signed 1/16/81
 Arizona U. S. A.

CHARGES \$ 27.00
 INVOICE NO. 18022

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

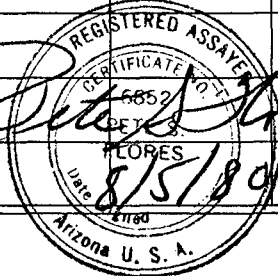
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
Attn: Mr. J. Sells

DATE Aug. 5, 1980

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-13 4040-4048	.003	0.06	0.39			13		

CHARGES \$ 13.50
INVOICE NO. 17561

Peter Sells

REGISTERED ASSAYER
CERTIFICATE NO. 5852
TUCSON, ARIZONA
DATE 8/5/80
Arizona U.S.A.
ASSAYER-CHEMIST

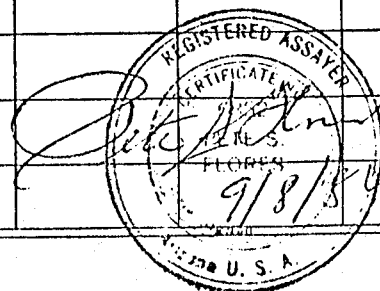
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
Attn: Mr. G. W. PickardDATE Sept. 8, 1980

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-13 4419-4422.5	.002	0.10	0.04			38	
4422.5-4431	.013	0.07	0.03			16	
4431-4439	.001	0.01	0.02			36	
4439-4445.5	.003	0.04	0.01			9	
4445.5-4452.2	.002	0.01	0.07			24	
4452.5-4462.5	.001	0.01	0.02			102	
4462.5-4469.5	.002	0.03	0.03			19	
4469.5-4476	.003	0.07	0.27			25	
4476-4483	.005	0.07	0.01			72	
4483-4487	.001	0.02	0.06			16	
4487-4492	.002	0.05	0.05			43	
4492-4502	.003	0.08	0.06			11	
4502-4504			0.05	(Poor Core Recovery - Value Assigned)		20	
4504-4510	.004	0.10	0.05			27	
4510-4518	.001	0.01	0.06			24	
4518-4523	.003	0.09	0.02			31	
4523-4532	.002	0.02	0.01			12	
4532-4538	.003	0.08	0.02			11	
4538-4545	.002	0.06	0.03			14	
4545-4547	.001	0.01	0.02				

CHARGES \$ 223.25LABORATORY NO. 17673

ASSAYER-CHEMIST

A-13
Collar Elev. 4728'

ASARCO DRILL HOLE A-13

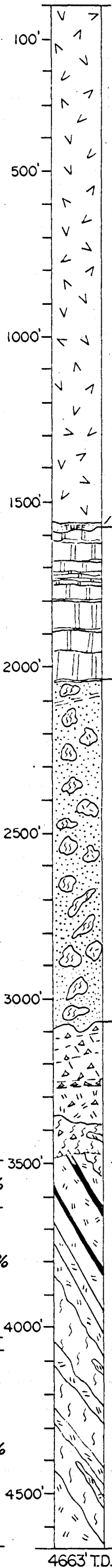
Surface - 10' - (6 1/4 RB)
CORE: 10' - 2363' NC
2363' - 4663' NX

Joy Manufacturing Co.
Joy-36, TM.

Surface - 4663'
March 8, 1980 - Sept. 8, 1980

NOTE: Casing left in hole

4" : Surface - 10' (w/cap)
NX : 1723' - 2363' (640')



DACITE

EARLIER VOLCANICS

Andesitic basalt flows with oxidized tops, autobrecciation.
All portions generally fractured.

WHITE TAIL CONGLOMERATE

1"-4" subangular clasts set in gritty-sandy matrix.
Minor Cu° below 2250'; tuff lense @ 10°-15° (2090')

2036'-2070' M: 35%, med. dark brown, reddish cast.
ACP: 65%; 100 sc

2070'-2285' M: 21%, green grey to green brown.
ACP: 79%; 88 sc, 12 db

2285'-2600' M: 15%, med. brown to green brown.
ACP: 85%; 70 sc, 28 db, 2 pC sed.

2600'-3071' M: 20%, red brown.
ACP: 80%; 95 sc, 5 db

3071' **A-2 TYPE SLIDE BLOCK** of Pinal Schist cut by high angled qtz-seri bands w/1-2% hematite limonite w/numerous flattish breccia & gouge zones throughout.
(3242'-3260') Flattish breccia-gouge; possibly basal fault zone.

PINAL SCHIST & MONZONITE, broken brecciated & gougy to 3471; but all cut by variable quartz-sericite-sulfide (or oxidized) bands in overall strong quartz-sericite alteration. Bands & breccia zones generally at steep, +60° angle to core axis.
Quartz-sulfide veins & breccias.

% Cu

3499' — 3500'
138' @ 0.32%
3637' —

392' @ 0.67%

4029' — 4000'
33' @ 0.23%
4062' —

60' @ 0.05%

4663'

4663' T.D.

NOTE: Individual assays are found in Assay Report dated Aug. 5, 1981.

T. 1 S. R. 13 E.

SW 1/4 SW 1/4 SE 1/4 SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-13
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA

SCALE 1" = 300'

J.D.Sell

Aug. 1981

MVK-2486.Q

TO: G. W. Pickard
J. D. Sell

DATE: December 29, 1980

FROM: John Wood

SUBJECT: Code Sheet for A-13
Drill Hole

<u>SAMPLE NO.</u>	<u>INTERVAL</u>	<u>SAMPLE NO.</u>	<u>INTERVAL</u>	<u>SAMPLE NO.</u>	<u>INTERVAL</u>
A-13-1	3676-3680	A-13-39	4006-4012	A-13-77	4336-4346
2	3680-3690	40	4012-4019	78	4346-4354
3	3690-3700	41	4019-4029	79	4354-4360
4	3700-3705	42	4029-4035	80	4360-4370
5	3705-3715	43	4035-4040	81	4370-4375
6	3715-3725	44	4048-4062	82	4375-4385
7	3725-3735	45	4062-4072	83	4385-4392
8	3735-3749	46	4072-4082 1/2	84	4392-4394.5
9	3749-3751	47	4082 1/2-4093	85	4394.5-4398
10	3751-3761	48	4093-4102	86	4398-4403
11	3761-3771	49	4102-4111	87	4403-4411
12	3771-3781	50	4111-4124	88	4411-4419
13	3781-3791	51	4124-4128	89	4547-4555
14	3791-3800	52	4128-4137	90	4555-4563
15	3800-3810	53	4137-4146	91	4563-4573
16	3810-3820	54	4146-4156	92	4573-4580
17	3820-3830	55	4156-4166	93	4580-4590
18	3830-3840	56	4166-4174	94	4590-4599
19	3840-3850	57	4174-4177	95	4599-4609
20	3850-3860	58	4177-4187	96	4609-4619
21	3860-3870	59	4187-4197	97	4619-4627
22	3870-3880	60	4197-4202	98	4627-4637
23	3880-3890	61	4202-4211	99	4637-4647
24	3890-3900	62	4211-4217	100	4647-4650
25	3900-3910	63	4217-4224	101	4650-4654
26	3910-3914	64	4224-4234		
27	3914-3919	65	4234-4241.5		
28	3919-3930	66	4241.5-4284.5 4251		
29	3930-3940	67	4284.5-4303 4251-4260		
30	3940-3951	68	4303-4308.5 4260-4269		
31	3951-3957	69	4308.5-4316.5 4269-4275 1/2		
32	3957-3962 1/2	70	4316.5-4326 4275 1/2-4284 1/2		
33	3965-3975	71	4326-4336 4284 1/2-4293 1/2		
34	3975-3983	72	4336-4303		
35	3983-3987	73	4303-4308.5		
36	3987-3992	74	4308.5-4316.5		
37	3992-4001	75	4316.5-4326		
38	4001-4006	76	4326-4336		

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

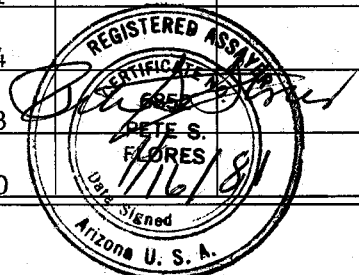
SAMPLE SUBMITTED BY ASARCO, Inc.

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-13								
1	Trace	Trace	2.45			.0064		
2	Trace	Trace	0.32			.0019		
3	Trace	Trace	0.83			.0009		
4	Trace	Trace	0.57			.0002		
5	Trace	Trace	0.03			<.0001		
6	Trace	Trace	0.48			.0002		
7	Trace	Trace	0.09			.0005		
8A	Trace	Trace	0.08			.0006		Note: Samples 8A & 8B were two sacks from large sample - should have been combined See Cont. 563 of M.S.R.A.
9	.001	0.14	2.60			.0009		
10	.001	0.13	0.31			.0002		
11	Trace	0.13	0.05			.0002		
12	.001	0.16	0.06			.0001		
13	.001	0.14	0.47			.0013		
14	Trace	0.10	0.08			.0003		
15	Trace	0.16	0.07			.0004		
16	Trace	0.01	0.04			.0003		
17	Trace	0.13	1.37			.0008		
18	Trace	0.09	0.16			.0002		
19	.001	0.17	0.63			.0003		
20	Trace	0.17	0.25			.0007		
21	Trace	0.15	0.07			.0003		
22	Trace	0.29	0.14			.0001		
23	Trace	0.12	0.22			.0004		
24	Trace	0.12	0.04			.0003		
25	Trace	0.13	0.22			.0010		

CHARGES \$ 337.50

INVOICE NO. 18022



ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

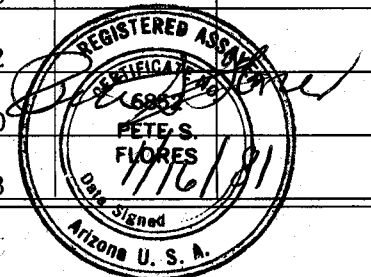
SAMPLE SUBMITTED BY ASARCO

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
26	.001	0.16	0.32			.0002	
27	.001	0.18	0.53			.0015	
28	Trace	0.11	0.06			.0010	
29	Trace	0.16	0.10			.0008	
30	.001	0.42	0.40			.0002	
31	.001	0.21	0.92			.0002	
32	.001	0.18	8.65			.0023	
33	.001	0.15	0.57			.0004	
34	.001	0.17	0.65			.0003	
35	.001	0.19	5.20			.0007	
36	.001	0.22	3.05			.0006	
37	Trace	0.20	0.37			.0008	
38	Trace	0.19	0.96			.0011	
39	.001	0.15	0.77			.0010	
40	Trace	0.18	0.82			.0003	
41	Trace	0.17	0.45			.0002	
42	.001	0.18	0.07			.0002	
43	Trace	0.14	0.38			.0001	
44	Trace	0.08	0.16			.0008	
45	.001	0.12	0.04			.0003	
46	.001	0.18	0.03			.0002	
47	.001	0.16	0.03			.0010	
48	Trace	0.12	0.02			.0012	
49	.001	0.19	0.03			.0010	
50	.001	0.15	0.05			.0003	

CHARGES \$ 337.50

INVOICE NO. 18022



ASSAYER-CHEMIST

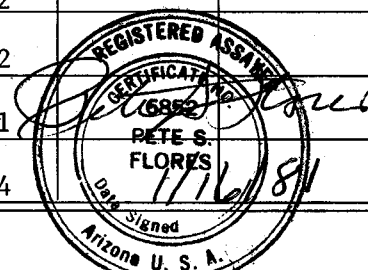
AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCODATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
51	.001	0.20	0.01			.0015	
52	Trace	0.17	0.03			.0008	
53	.001	0.18	0.08			.0005	
54	.001	0.14	0.06			.0003	
55	.001	0.17	0.05			.0002	
56	.001	0.19	0.07			.0004	
57	.002	0.22	0.23			.0012	
58	.001	0.18	0.09			.0010	
59	Trace	0.04	0.08			.0008	
60	.001	0.18	0.02			.0011	
61	Trace	0.11	0.04			.0005	
62	Trace	0.11	0.02			.0005	
63	.001	0.17	0.10			.0015	
64	.001	0.17	0.08			.0035	
65	Trace	0.13	0.02			.0008	
66	.001	Trace	0.06			.0005	
67	.001	0.13	0.42			.0003	
68	.014	0.20	0.13			.0006	
69	.001	0.22	0.09			.0006	
70	.001	0.16	0.15			.0004	
71	.001	0.17	0.06			.0009	
72	.001	0.16	0.19			.0012	
73	Trace	0.15	0.03			.0002	
74	.001	0.17	0.05			.0001	
75	Trace	0.16	0.04			.0044	

CHARGES \$ 337.50INVOICE NO. 18022

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

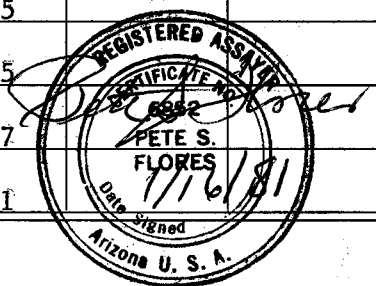
SAMPLE SUBMITTED BY ASARCO

DATE Jan. 16, 1981

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-13							
76	.001	0.17	0.07			.0042	
77	.001	0.17	0.03			.0074	
78	.001	0.14	0.05			.0042	
79	Trace	0.13	0.05			.0022	
80	.001	0.15	0.03			.0015	
81	.001	0.14	0.03			.0028	
82	.001	0.15	0.02			.0029	
83	.001	0.20	0.06			.0009	
84	.001	0.15	0.01			.0021	
85	.001	0.16	0.03			.0017	
86	.001	0.17	0.03			.0029	
87	.001	0.19	0.01			.0012	
88	.001	0.17	0.01			.0026	
89	.001	0.16	0.03			.0018	
90	.001	0.17	0.02			.0034	
91	.001	0.21	0.02			.0029	
92	.001	0.17	0.02			.0015	
93	.001	0.14	0.04			.0012	
94	.001	0.21	0.03			.0017	
95	.001	0.20	0.02			.0015	
96	.001	0.14	0.03			.0012	
97	.001	0.16	0.02			.0035	
98	Trace	0.14	0.05			.0015	
99	.001	0.17	0.03			.0007	
100	.001	0.13	0.04			.0051	

CHARGES \$ 337.50

INVOICE NO. 18022



ASSAYER-CHEMIST

CERTIFICATE OF ASSAY

Certificate No. 563

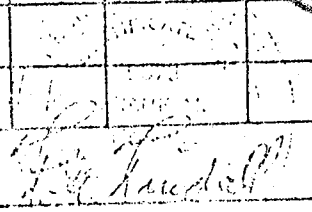
Project No. B-31

Date 7/31/81

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
21763	A-12-94	4919	4930	0.001	N.D.	0.30	0.001
21764	95	4930	4940	---	---	0.13	0.001
21765	96	4940	4950	---	---	0.09	0.001
21766	97	4950	4959	---	---	0.35	0.001
21767	98	4959	4965	---	---	1.02	0.002
21768	99	4965	4969	---	---	1.20	0.002
21769	100	4969	4974	---	---	0.91	0.008
21770	101	4974	4983	---	---	0.37	0.001
21771	102	4983	4991	---	---	0.92	0.001
21772	103	4991	5001	---	---	0.54	0.001
21773	104	5001	5010	---	---	0.30	0.001
22208	A-13-8	(Combined double pulps 8a + 8b) 3735 3749		---	---	0.13	0.003
22209	A-12-69	4710	4718	---	---	0.99	0.007
21774	105	5010	5020	0.001	0.03	0.10	0.002
21775	106	5020	5025	0.001	0.04	0.16	0.001
21776	107	5025	5033	0.001	0.05	3.76	0.004
21777	108	5033	5043	0.001	0.03	0.39	0.001
21778	109	5043	5052	0.001	0.04	0.24	0.001
21779	110	5052	5059	0.001	0.05	0.08	0.001
21780	111	5059	5067	0.001	0.02	0.29	0.005
21781	112	5067	5077	0.001	0.01	0.17	0.002
21782	113	5077	5083	0.001	0.06	0.39	0.002

Total Charge \$ 256.00
 msrd-011 342.00

SAMPLE PREP.
ASSAYS


 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 512

Project No. B-31

Date 6/19/81

OXIDIZED
 PARTIALLY OXIDIZED
 SULFIDE
 SULFIDE

Date	Sample No.	T ₇₀₀ g/g		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
15817	AI-2-25	2840	2850	0.001	0.05	0.038	0.004
15818	AI-2-26	2850	2860	0.001	0.03	0.115	0.005
15819	AI-2-27	2860	2871	0.001	0.09	0.78	0.003
15820	AI-2-28	2871	2881	N.D.	N.D.	0.155	0.003
15821	AI-2-29	2881	2891	N.D.	N.D.	0.144	0.003
15822	AI-2-30	2891	2901	N.D.	N.D.	0.112	0.003
15823	AI-2-31	2901	2910	N.D.	N.D.	0.078	0.002
15824	AI-2-32	2910	2920	0.001	0.02	0.154	0.003
15825	AI-2-33	2920	2930	0.001	0.03	0.34	0.006
15826	AI-2-34	2930	2940	0.001	0.04	0.37	0.006
15827	AI-2-35	2940	2950	0.001	N.D.	0.28	0.002
15828	AI-2-36	2950	2960	0.001	N.D.	0.47	0.003
15829	AI-2-37	2960	2970	0.002	N.D.	0.32	0.009
15830	AI-2-38	2970	2980	0.001	N.D.	0.20	0.004
15831	AI-13-102	3456	3465	0.001	N.D.	0.018	0.002
15832	AI-13-103	3465	3471	0.001	N.D.	0.087	0.002
15833	AI-13-104	3471	3487	0.001	0.02	0.028	0.001
15834	AI-13-105	3487	3490	0.001	N.D.	0.150	0.001
15835	AI-13-106	3490	3499	0.001	N.D.	0.202	0.001
15836	AI-2-39	2990	2990	---	---	0.41	0.008
15837	AI-2-40	2990	3000	---	---	0.29	0.001
15838	AI-2-41	3000	3010	---	---	0.27	0.006
15839	AI-2-42	3010	3020	---	---	0.128	0.024
15840	AI-2-43	3020	3030	---	---	0.243	0.004

Total Charge \$ 455.50
 # 111.50 SAMPLE PREP
 344.00 ASSAYS

FRED M.
Fred M. [Signature]

Chief Chemist

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
Attn: Mr. G. W. Pickard

DATE Sept. 25, 1980

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-13							
3499-3510	.004	0.05	0.44			79	
3510-3519	.002	0.03	0.32			49	
3519-3529	.001	0.02	0.38			14	
3529-3535	.001	0.03	0.57			14	
3535-3540	.005	0.04	0.84			66	
3540-3549	.002	0.03	0.06			60	
3549-3554	.003	0.02	0.87			87	
3554-3562	.001	0.03	0.05			10	
3562-3564	.002	0.05	1.00			44	

REGISTERED ASSAYER
 CERTIFICATE NO. 452
 E. FLORES
 Date Signed 9/25/80
 Arizona U.S.A.

CHARGES \$ 105.75

INVOICE NO. 17706

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

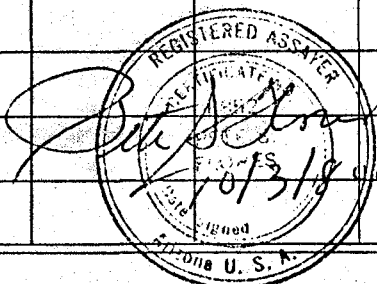
ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
Attn: Mr. G. W. Pickard

DATE Oct. 3, 1980

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	MOLYBDENUM	PERCENT IRON
A-13:							
3564-3579	.002	0.07	0.21			12	
3579-3585	.001	0.06	0.18			50	
3585-3589	.001	0.03	0.64			19	
3589-3602	.003	0.05	0.10			12	
3602-3606	.002	0.04	0.28			24	
3606-3618	.003	0.06	0.42			10	
3618-3625	.004	0.07	0.27			15	
3625-3637	.001	0.03	0.13			19	
3637-3650	.002	0.04	1.62			27	
3650-3660	.001	0.02	1.24			49	
3660-3670	.003	0.05	0.16			9	
3670-3676	.004	0.07	1.04			43	



*3441 East Milber

INVOICE NO. 17561

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY AMCO, INC.

DATE AUGUST 5, 1980

Attn: Mr. J. ...

SAMPLE MARKED	ANALYSIS	CHARGES
A-13 4040-4048	1 Au, Ag, Cu, Mo (Geo-chem) <i>OK for Payment EA-0010 Segeuer East</i>	\$ 13.50

THANK YOU

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

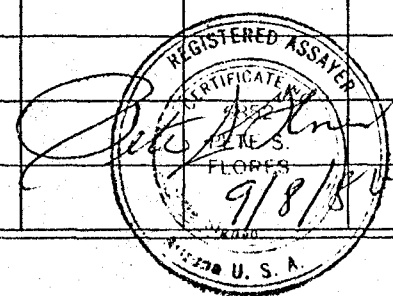
TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC.
Attn: Mr. G. W. Pickard

DATE Sept. 8, 1980

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-13							
4419-4422.5	.002	0.10	0.04			38	
4422.5-4431	.013	0.07	0.03			16	
4431-4439	.001	0.01	0.02			36	
4439-4445.5	.003	0.04	0.01			9	
4445.5-4452.2	.002	0.01	0.07			24	
4452.5-4462.5	.001	0.01	0.02			102	
4462.5-4469.5	.002	0.03	0.03			19	
4469.5-4476	.003	0.07	0.27			25	
4476-4483	.005	0.07	0.01			72	
4483-4487	.001	0.02	0.06			16	
4487-4492	.002	0.05	0.05			43	
4492-4502	.003	0.08	0.06			11	
4502-4504			0.05	<i>(Poor Core Recovery - Value Assigned)</i>			
4504-4510	.004	0.10	0.05			20	
4510-4518	.001	0.01	0.06			27	
4518-4523	.003	0.09	0.02			24	
4523-4532	.002	0.02	0.01			31	
4532-4538	.003	0.08	0.02			12	
4538-4545	.002	0.06	0.03			11	
4545-4547	.001	0.01	0.02			14	

CHARGES \$ 223.25



A-13 Assay

Sheet 1 of

Master

A-13-

Assay
Number

Footage

Feet

↑
Pencil
Sketch

102

3456-3465

9

↑
pi

103

3465-3471

6

↑
pi

104

3471-3487

16

↑
pi

105

3487-3490

3

↑
pi

106

3490-3499

9

oxidized

sulfide

↑
pi

3499-3510

11

↑
pi

3510-3519

9

↑
pi

3519-3529

10

↑
pi

3529-3535

6

↑
pi

3535-3540

5

↑
pi

3540-3549

9

↑
Monzonite
~~Monz~~

3549-3554

5

↓

3554-3562

8

3562-3564

2

3564-3579

15

3579-3585

6

3585-3589

4

3589-3602

13

3602-3606

4

3606-3618

12

3618-3625

7

3625-3637

12

↑

3637-3650

13

↑
Monz

3650-3660

10

A-13-

Assay
Numbers

Footage

Feet

Unit

~~Monzonite~~
↓

- 3660-3670 10

- 3670-3676 6

1 3676-3680 4

2 3680-3690 10

3 3690-3700 10

4 3700-3705 5

5 3705-3715 10

6 3715-3725 10

7 3725-3735 10

8 3735-3749 14

9 3749-3751 2

10 3751-3761 10

11 3761-3771 10

12 3771-3781 10

13 3781-3791 10

14 3791-3800 9

15 3800-3810 10

16 3810-3820 10

17 3820-3830 10

18 3830-3840 10

19 3840-3850 10

20 3850-3860 10

21 3860-3870 10

22 3870-3880 10

23 3880-3890 10

↑
Mong.

24 3890-3900 10

A-13 Assay

sheet 3

A-13-

Assay
Number

Footage

Feet

Unit

Monym
Henry



25 3900-3910 10

26 3910-3914 4

27 3914-3919 5

28 3919-3930 11

29 3930-3940 10

30 3940-3951 11

31 3951-3957 6

32 3957-3962 1/2 5 1/2

No core recovered, probably assigned

- 3962 1/2-3965 2 1/2

33 3965-3975 10

34 3975-3983 8

35 3983-3987 4

36 3987-3992 5

37 3992-4001 9

38 4001-4006 5

39 4006-4012 1/2 6 1/2

40 4012 1/2-4019 6 1/2

41 4019-4029 10

42 4029-4035 6

43 4035-4040 5

- 4040-4048 8

44 4048-4062 14

45 4062-4072 10

46 4072-4082 1/2 10 1/2

47 4082 1/2-4093 10 1/2

48 4093-4102 9

Monym
Punch
Sheet



A-13
Assay
Number

Footage

Feet

Unit	Assay Number	Footage	Feet
pi	49	4102-4111	9
pi	50	4111-4124	13
Mongit	51	4124-4128	4
Reval Sheet pi	52	4128-4137	9
	53	4137-4146	9
	54	4146-4156	10
	55	4156-4166	10
	56	4166-4174	8
	57	4174-4177	3
	58	4177-4187	10
	59	4187-4197	10
	60	4197-4202	5
	61	4202-4211	9
	62	4211-4217	6
pi.	63	4217-4224	7
pi.	64	4224-4234	10
Mongit	65	4234-4241 $\frac{1}{2}$	7 $\frac{1}{2}$
	66	4241 $\frac{1}{2}$ -4251	9 $\frac{1}{2}$
	67	4251-4260	9
	68	4260-4269	9
Mong	69	4269-4275 $\frac{1}{2}$	6 $\frac{1}{2}$
Reval Sheet pi	70	4275 $\frac{1}{2}$ -4284 $\frac{1}{2}$	9
	71	4284 $\frac{1}{2}$ -4293 $\frac{1}{2}$	9
	72	4293 $\frac{1}{2}$ -4303	9 $\frac{1}{2}$
	73	4303-4308 $\frac{1}{2}$	5 $\frac{1}{2}$
pi.	74	4308 $\frac{1}{2}$ -4316 $\frac{1}{2}$	8

A-13

Assay
Number

Footage

Feet

Unit	Assay Number	Footage	Feet
pi	75	4316 1/2 - 4326	9 1/2
	76	4326 - 4336	10
	77	4336 - 4346	10
	78	4346 - 4354	8
	79	4354 - 4360	6
	80	4360 - 4370	10
	81	4370 - 4375	5
	82	4375 - 4385	10
pi	83	4385 - 4392	7
Mong	84	4392 - 4394 1/2	2 1/2
pi	85	4394 1/2 - 4398	3 1/2
pi	86	4398 - 4403	5
pi	87	4403 - 4411	8
pi	88	4411 - 4419	8
Mong	-	4419 - 4422 1/2	3 1/2
Mong		4422 1/2 - 4431	8 1/2
Mong		4431 - 4439	8
Mong		4439 - 4445 1/2	6 1/2
pi		4445 1/2 - 4452 1/2	7
Mong		4452 1/2 - 4462 1/2	10
Mong		4462 1/2 - 4469 1/2	7
pi		4469 1/2 - 4476	6 1/2
		4476 - 4483	7
		4483 - 4487	4
		4487 - 4492	5
pi		4492 - 4502	10

A-13

Unit	Assay Number	Footage	Feet				
pi	-	poor core recovery, value assigned 4502-4504	2				
pi		4504-4510	6				
Mony		4510-4518	8				
Mony		4518-4523	5				
Mony		4523-4532	9				
pi		4532-4538	6				
pi		4538-4545	7				
Mony	-	4545-4547	2				
pi	89	4547-4555	8				
pi	90	4555-4563	8				
	91	4563-4573	10				
	92	4573-4580	8 7				
	93	4580-4590	10				
	94	4590-4599	9				
	95	4599-4609	10				
	96	4609-4619	10				
	97	4619-4627	8				
	98	4627-4637	10				
	99	4637-4647	10				
pi	100	4647-4650	3				
Mony	101	4650-4654	4				
Mony	not split	assay assigned 4654-4656	2				
Mony	No core recovery - assigned	4656-4663	7				
		T.D					

A-13 Assay

A-13-
Assay
Number

Unit	Assay Number	Footage	Feet	% Cu	Ft % Cum Cu	ppm Mo	Cum Mo
pi	102	3456-3465	9	0.02	0.18	20	180
pi ^{pp}	103	3465-3471	6	0.09	0.54	20	120
pi	104	3471-3487	16	0.03	0.48 $\frac{3.45}{43} = 0.08\%$	10	160
pi	105	3487-3490	3	0.15	0.45	10	30
pi	106	3490-3499	9	0.20	1.80	10	90
<i>oxidized sulfide</i>							
pi		3499-3510	11	0.44	4.84	79	869
pi		3510-3519	9	0.32	2.88	49	441
pi		3519-3529	10	0.38	3.80	14	141
pi		3529-3535	6	0.57	3.42	14	84
pi		3535-3540	5	0.84	4.20	66	330
pi		3540-3549	9	0.06	0.54	60	540
pi		3549-3554	5	0.87	4.35	87	435
pi		3554-3562	8	0.05	0.40	10	80
		3562-3564	2	1.00	2.00	44	88
		3564-3579	15	0.21	3.15	12	180
		3579-3585	6	0.18	1.08	50	300
		3585-3589	4	0.64	2.56	19	76
		3589-3602	13	0.10	1.30	12	156
		3602-3606	4	0.28	1.12	24	96
		3606-3618	12	0.42	5.04	10	120
		3618-3625	7	0.27	1.89	15	105
		3625-3637	12	0.13	1.56	19	228
		3637-3650	13	1.62	21.06	27	351
<i>Mony</i>		3650-3660	10	1.24	12.40	49	490

$\frac{19.68}{138} = 0.39\%$
 $\frac{44.13}{138} = 0.32\%$
 $\frac{44.13}{138} = 0.29\%$
 $\frac{24.45}{88} = 0.28\%$

$\frac{46.20}{138} = 3.39\%$

Mony
↓

↑
Mony

↓ ↓

A-13-
Assay
Number

Unit

Footage

Feet

oz/ton
Au

oz/ton
Ag

pi	102	3456-3465	9		
pi pep	103	3465-3471	6		
pi	104	3471-3487	16		
pi	105	3487-3490	3		
pi	106	3490-3499	9		
		oxidized			
		sulfide			
pi		3499-3510	11	.004	.05
pi		3510-3519	9	.002	.03
pi		3519-3529	10	.001	.02
pi		3529-3535	6	.001	.03
pi		3535-3540	5	.005	.04
pi		3540-3549	9	.002	.03
pi		3549-3554	5	.003	.02
↓		3554-3562	8	.001	.03
		3562-3564	2	.002	.05
		3564-3579	15	.002	.07
		3579-3585	6	.001	.06
		3585-3589	4	.001	.03
		3589-3602	13	.003	.05
		3602-3606	4	.002	.04
		3606-3618	12	.003	.06
		3618-3625	7	.004	.07
		3625-3637	12	.001	.03
↑		3637-3650	13	.002	.04
Moxy		3650-3660	10	.001	.02

A-13 Assay

Unit	A-13- Assay Number	Footage	Feet	% Cu	Gram Cu	PPM Mo	Gram-Mo.
Moxy ↓	-	3660-3670	10	0.16	1.60	9	90
	-	3670-3676	6	1.04	6.24	43	258
	1	3676-3680	4	2.45	9.80	44	256
	2	3680-3690	10	0.32	3.20	19	190
	3	3690-3700	10	0.83	8.30	9	90
	4	3700-3705	5	0.57	2.85	2	10
	5	3705-3715	10	0.03	0.30	1	10
	6	3715-3725	10	0.48	4.80	2	20
	7	3725-3735	10	0.09	0.90	5	50
	8	3735-3749	14	0.08	1.12	6	84
	9	3749-3751	2	2.60	5.20	9	18
	10	3751-3761	10	0.31	3.10	2	20
	11	3761-3771	10	0.05	0.50	2	20
	12	3771-3781	10	0.06	0.60	1	10
	13	3781-3791	10	0.47	4.70	13	130
	14	3791-3800	9	0.08	0.72	3	27
	15	3800-3810	10	0.07	0.70	4	40
	16	3810-3820	10	0.04	0.40	3	30
	17	3820-3830	10	1.37	13.70	8	80
	18	3830-3840	10	0.16	1.60	2	20
	19	3840-3850	10	0.63	6.30	3	30
	20	3850-3860	10	0.25	2.50	7	70
	21	3860-3870	10	0.07	0.70	3	30
	22	3870-3880	10	0.14	1.40	1	10
	23	3880-3890	10	0.12	1.20	4	40
Moxy ↑	24	3890-3900	10	0.04	0.40	3	30

$$\frac{51.10}{43} = 1.19\%$$

$$\frac{241.50}{392} = 0.617\%$$

10 9 1/2 43 = 258 ppm

1454/271 = 5366

A-13 Assay

Unit	A-13- Assay Number	Footage	Feet	oz/ton Au	oz/ton Ag
Mong	-	3660-3670	10	.003	.05
	-	3670-3676	6	.004	.07
	1	3676-3680	4	^{assay} to 0.0005	^{assay} to 0.01
	2	3680-3690	10	to	to
	3	3690-3700	10	to	to
	4	3700-3705	5	to	to
	5	3705-3715	10	to	to
	6	3715-3725	10 ⁿ	to	to
	7	3725-3735	10	to	to
	8	3735-3749	14	to	to
	9	3749-3751	2	.001	.04
	10	3751-3761	10	.001	.13
	11	3761-3771	10	to	.13
	12	3771-3781	10	.001	.14
	13	3781-3791	10	.001	.14
	14	3791-3800	9	to	.10
	15	3800-3810	10	to	.16
	16	3810-3820	10	to	.01
	17	3820-3830	10	to	.13
	18	3830-3840	10	to	.09
	19	3840-3850	10	.001	.17
	20	3850-3860	10	to	.17
	21	3860-3870	10	to	.15
	22	3870-3880	10	to	.29
	23	3880-3890	10	to	.12
Mong	24	3890-3900	10	to	.12

A-13 Assay

Unit	A-13- Assay Number	Footage	Feet	% Cu	Com Cu	PPM Mo	Com Mo
Mony	25	3900-3910	10	0.22	2.20	10	100
	26	3910-3914	4	0.32	1.28	2	8
	27	3914-3919	5	0.40 0.53	2.15	15	75
	28	3919-3930	11	0.06	0.66	10	110
	29	3930-3940	10	0.10	1.00	8	80
	30	3940-3951	11	0.40	4.40	2	22
	31	3951-3957	6	0.92	5.52	2	12
	32	3957-3962 1/2	5 1/2	8.65	47.58	23	127
	-	No core recovered, probably assigned 3962 1/2-3965	2 1/2	1.50	10.00	15	38
	33	3965-3975	10	0.57	5.70	4	40
	34	3975-3983	8	0.65	5.20	3	24
	35	3983-3987	4	5.20	20.80	7	28
	36	3987-3992	5	3.05	15.25	6	30
	37	3992-4001	9	0.37	3.33	8	72
	38	4001-4006	5	0.96	4.80	11	55
	39	4006-4012 1/2	6 1/2	0.77	5.01	10	65
	40	4012 1/2-4019	6 1/2	0.82	5.33	3	20
	41	4019-4029	10	0.45	4.50	2	20
	42	4029-4035	6	0.07	0.42	2	12
	43	4035-4040	5	0.38	1.90	1	5
	-	4040-4048	8	0.39	3.12	assigned	8
	44	4048-4062	14	0.14	2.24	8	112
	45	4062-4072	10	0.04	0.40	3	30
Mony	46	4072-4082 1/2	10 1/2	0.03	0.32	2	21
pi	47	4082 1/2-4093	10 1/2	0.03	0.31	10	105
	48	4093-4102	9	0.02	0.18	12	108

3.12/5.20 = 0.56%

133.02/78 = 1.71

1.68/33 = 0.23%

32.00/601 = 0.05

5.31/78 = 7ppm

137/33 = 4ppm

11.24/601 = 1ppm

Mony ↓

Mony ↑
pi ↓

↓

A-13 Assay

Unit	A-13- Assay Number	Footage	Feet	oz/Ton Au		oz/Ton Ag	
Mony. ↓	25	3900-3910	10	tu		0.13	
	26	3910-3914	4	.001		0.16	
	27	3914-3919	5	.001		.18	
	28	3919-3930	11	tu		.11	
	29	3930-3940	10	tu		.16	
	30	3940-3951	11	.001		.42	
	31	3951-3957	6	.001		.21	
	32	3957-3962 1/2	5 1/2	.001		.18	
	-	No core recovered, probably core assigned 3962 1/2-3965	2 1/2	.001		.15	
	Mony ↑ ↓	33	3965-3975	10	.001	0.32125 3921 = 0.00082 oz/T Au	.15
34		3975-3983	8	.001	.17		
35		3983-3987	4	.001	.19		
36		3987-3992	5	.001	.22		
37		3992-4001	9	tu	.20		
38		4001-4006	5	tu	.19		
39		4006-4012 1/2	6 1/2	.001	.15		
40		4012 1/2-4019	6 1/2	tu	.18		
41		4019-4029	10	tu	.17		
42		4029-4035	6	.001	.18		
43		4035-4040	5	tu	.14		
-		4040-4048	8	.003	.06		
44		4048-4062	14	tu	.08		
45		4062-4072	10	.001	.12		
46		4072-4082 1/2	10 1/2	.001	.18		
47		4082 1/2-4093	10 1/2	.001	.16		
48		4093-4102	9	tu	.12		

A-13 Assay

Unit	A-13 Assay Number	Footage	Feet	% Cu		PPM Mo	
pi	49	4102-4111	9	0.03	0.27 1.41	1.41 41.5 = 0.03%	10 90
pi	50	4111-4124	13	0.05	0.65		3 39
Mony	51	4124-4128	4	0.01	0.04	4 @ 0.01%	15 60
pi	52	4128-4137	9	0.03	0.27		8 72
	53	4137-4146	9	0.08	0.72		5 45
	54	4146-4156	10	0.04	0.60		3 30
	55	4156-4166	10	0.05	0.50		2 20
	56	4166-4174	8	0.07	0.56		4 32
	57	4174-4177	3	0.23	0.69		12 36
	58	4177-4187	10	0.09	0.90		10 100
	59	4187-4197	10	0.08	0.80		18 180
	60	4197-4202	5	0.02	0.10		11 55
	61	4202-4211	9	0.04	0.36		5 45
	62	4211-4217	6	0.02	0.12		5 30
pi	63	4217-4224	7	0.10	0.70		15 105
pi	64	4224-4234	10	0.08	0.80		35 350
Mony	65	4234-4241 1/2	7 1/2	0.02	0.15		8 60
	66	4241 1/2-4251	9 1/2	0.06	0.57		3 29
	67	4251-4260	9	0.42	3.78		3 27
	68	4260-4269	9	0.13	1.17		6 54
Mony	69	4269-4275 1/2	6 1/2	0.09	0.59		6 39
pi	70	4275 1/2-4284 1/2	9	0.15	1.35		4 36
	71	4284 1/2-4293 1/2	9	0.06	0.54		9 81
	72	4293 1/2-4303	9 1/2	0.19	1.81		12 114
	73	4303-4308 1/2	5 1/2	0.03	0.17		2 11
pi	74	4308 1/2-4316 1/2	8	0.05	0.40		1 8

Unit	A-13 Assay Number	Footage	Feet	oz/lb Au	Cum Au	oz/lb Ag	Cum Ag
pi	49	4102-4111	9	.001		.19	
pi	50	4111-4124	13	.001		.15	
<u>Mony</u>	51	4124-4128	4	.001		.20	
pi	52	4128-4137	9	tu		.17	
	53	4137-4146	9	.001		.18	
	54	4146-4156	10	.001		.14	
	55	4156-4166	10	.001		.17	
	56	4166-4174	8	.001		.19	
	57	4174-4177	3	.002		.22	
	58	4177-4187	10	.001		.18	
	59	4187-4197	10	tu		.04	
	60	4197-4202	5	.001		.18	
	61	4202-4211	9	tu		.11	
	62	4211-4217	6	tu		.11	
pi.	63	4217-4224	7	.001		.17	
pi.	64	4224-4234	10	.001		.17	
<u>Mony</u>	65	4234-4241 1/2	7 1/2	tu		.13	
	66	4241 1/2-4251	9 1/2	.001		tu	
	67	4251-4260	9	.001		.13	
	68	4260-4269	9	.014		.20	
<u>Mony</u>	69	4269-4275 1/2	6 1/2	.001		.22	
pi	70	4275 1/2-4284 1/2	9	.001		.16	
	71	4284 1/2-4293 1/2	9	.001		.17	
	72	4293 1/2-4303	9 1/2	.001		.16	
	73	4303-4308 1/2	5 1/2	tu		.15	
pi.	74	4308 1/2-4316 1/2	8	.001		.17	

Unit	A-13 Assay Number	Footage	Feet	% Cu		PPM Mo	
pi	75	4316 1/2 - 4326	9 1/2	0.04	0.38 0.38	44	418
	76	4326 - 4336	10	0.07	0.70	42	420
	77	4336 - 4346	10	0.03	0.30	74	740
	78	4346 - 4354	8	0.05 0.05	0.40	42	336
	79	4354 - 4360	6	0.05 0.05	0.30	22	132
	80	4360 - 4370	10	0.03	0.30	15	150
	81	4370 - 4375	5	0.03	0.15	28	140
	82	4375 - 4385	10	0.02	0.20	29	290
pi	83	4385 - 4392	7	0.06	0.42	9	63
Mong	84	4392 - 4394 1/2	2 1/2	0.01	0.03	21	53
pi	85	4394 1/2 - 4398	3 1/2	0.03	0.11	17	60
pi	86	4398 - 4403	5	0.03	0.15	29	145
pi	87	4403 - 4411	8	0.01	0.08 0.08	12	96
pi	88	4411 - 4419	8	0.01	0.08 0.08	26	208
Mong	-	4419 - 4422 1/2	3 1/2	0.04	0.14	38	133
Mong		4422 1/2 - 4431	8 1/2	0.03	0.26	16	136
Mong		4431 - 4439	8	0.02	0.16	36	288
Mong		4439 - 4445 1/2	6 1/2	0.01	0.07	9	59
pi		4445 1/2 - 4452 1/2	7	0.07	0.49	24	168
Mong		4452 1/2 - 4462 1/2	10	0.02	0.20	102	1020
Mong		4462 1/2 - 4469 1/2	7	0.03	0.21	19	133
pi		4469 1/2 - 4476	6 1/2	0.27	1.76	25	163
		4476 - 4483	7	0.01	0.07 0.07	72	504
		4483 - 4487	4	0.06	0.24	16	64
		4487 - 4492	5	0.05	0.25	43	215
pi		4492 - 4502	10	0.06	0.60	11	110

0.38
0.70
0.30
0.40
0.30
0.15
0.20
0.42
0.03
0.15
0.11
0.15
0.08
0.08
0.49
0.20
0.21
1.76
0.07
0.24
0.25
0.60

2 1/2 @ 0.01%
0.42 / 24.5 = 0.02%
0.16 / 26.5 = 0.02%0.49 / 20.07%
0.41 / 20.2%0.07 / 20.5 = 0.08%0.24 / 3.3 = 0.08%0.25 / 3.3 = 0.08%0.60 / 5.45 = 0.11%

A-13 Assay

sheet 5

Unit	A-13 Assay Number	Footage	Feet	Ag	Ag
pi	75	4316 1/2 - 4326	9 1/2	kt	0.16
	76	4326 - 4336	10	.001	.17
	77	4336 - 4346	10	.001	.17
	78	4346 - 4354	8	.001	.14
	79	4354 - 4360	6	kt	.13
	80	4360 - 4370	10	.001	.15
	81	4370 - 4375	5	.001	.14
	82	4375 - 4385	10	.001	.15
pi	83	4385 - 4392	7	.001	.20
Mong	84	4392 - 4394 1/2	2 1/2	.001	.15
pi	85	4394 1/2 - 4398	3 1/2	.001	.16
pi	86	4398 - 4403	5	.001	.17
pi	87	4403 - 4411	8	.001	.19
pi	88	4411 - 4419	8	.001	.17
Mong	-	4419 - 4422 1/2	3 1/2	.002	.10
Mong		4422 1/2 - 4431	8 1/2	.013	.07
Mong		4431 - 4439	8	.001	.01
Mong		4439 - 4445 1/2	6 1/2	.003	.04
pi		4445 1/2 - 4452 1/2	7	.002	.01
Mong		4452 1/2 - 4462 1/2	10	.001	.01
Mong		4462 1/2 - 4469 1/2	7	.002	.03
pi		4469 1/2 - 4476	6 1/2	.003	.07
		4476 - 4483	7	.005	.07
		4483 - 4487	4	.001	.02
		4487 - 4492	5	.002	.05
pi		4492 - 4502	10	.003	.08

A-13 Assay

A-13

Assay
Number

Footage

Feet

%
Cu

↑

PPM
Mo

Unit	Assay Number	Footage	Feet	% Cu		PPM Mo	
pi	-	4502-4504	2	.05	0.10	10	20
pi	-	4504-4510	6	.05	0.30	20	120
Mony	-	4510-4518	8	.04	0.48	27	216
Mony	-	4518-4523	5	.02	0.10	24	120
Mony	-	4523-4532	9	.01	0.10 0.09	31	279
pi	-	4532-4538	6	.02	0.12	12	72
pi	-	4538-4545	7	.03	0.21	11	77
Mony	-	4545-4547	2	.02	0.10 0.04	14	28
pi	89	4547-4555	8	.03	0.24	18	144
↑	90	4555-4563	8	.02	0.16	34	272
	91	4563-4573	10	.02	0.20	29	290
	92	4573-4580	7	.02	0.14	15	105
	93	4580-4590	10	.04	0.40	12	120
	94	4590-4599	9	.03	0.27	17	153
	95	4599-4609	10	.02	0.20	15	150
	96	4609-4619	10	.03	0.30	12	120
	97	4619-4627	8	.02	0.16	35	280
	98	4627-4637	10	.05	0.50	15	150
	99	4637-4647	10	.03	0.30	7	70
pi	100	4647-4650	3	.04	0.12	51	153
Mony	101	4650-4654	4	.04	0.16	9	36
Mony	not split	4654-4656 away assigned	2	.04	0.08	9	18
Mony	No core recovery - contaminated	4656-4663	7	.04	0.28 0.28	9	18
		T.D					

$\frac{0.47}{22} = 0.03\%$

$\frac{0.33}{13} = 0.03\%$

$\frac{0.04}{1} = 0.04\%$

$\frac{2.99}{103} = 0.03\%$

10, 874 ft mo = 20144 mo
 539 ft

A-13

Assay
Number

Footage

Feet

AU

Ag

Unit	Assay Number	Footage	Feet	AU	Ag
pi	-	poor core recovery, value assigned 4502-4504	2	.003	.08
pi		4504 -4510	6	.004	.10
Mony		4510-4518	8	.001	.01
Mony		4518-4523	5	.003	.09
Mony		4523-4532	9	.002	.02
pi		4532-4538	6	.003	.08
pi		4538-4545	7	.002	.06
Mony	-	4545-4547	2	.001	.01
pi	89	4547-4555	8	.001	.16
A	90	4555-4563	8	.001	.17
	91	4563-4573	10	.001	.21
	92	4573-4580	8 7	.001	.17
	93	4580-4590	10	.001	.14
	94	4590-4599	9	.001	.21
	95	4599-4609	10	.001	.20
	96	4609-4619	10	.001	.14
	97	4619-4627	8	.001	.16
	98	4627-4637	10	tu	.14
	99	4637-4647	10	.001	.17
pi	100	4647-4650	3	.001	.13
Mony	101	4650-4654	4	.001	.13
Mony	not split	assay assigned 4654-4656	2	.001	.13
Mony	No core recovery - assumed	4656-4663	7	.001	.13
		T.D			

August 10, 1981

TO: W. D. Payne

FROM: J. D. Sell

Assay Results
Drill Hole A-14
Superior East Project
Pinal County, Arizona

Drill hole A-14 was scheduled to be an offset of hole A-8 and located some 700 feet to the northwest. At the time of scheduling, the quartz-sulfide vein system found in A-8 was interpreted to dip to the northwest and, thus, A-14 would test the deep extension of the system.

As the graphic log and assay reports indicate, the typical qsv type alteration and mineralization were found in the oxidized capping. The sulfide zone, 53 feet of 0.53% copper in quartz-sulfide veins and breccia, was cut before the alteration and values diminished to 0.28% copper for ~~79~~^{79.25} feet, then a 21 foot qsv zone of 1.20% copper, followed below by values less than 0.10% copper.

Scattered sampling was undertaken and the quartz-sericite-mineral bands cut below generally did not average above 0.50% copper in a background of less than 0.10% copper to the hole at 5738 feet. Moly values are around 0.002% Mo, gold around 0.001 oz/T., and silver slightly above 0.02 oz/T.

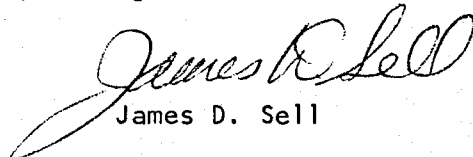
Subsequent to the drilling of A-14, we have drilled A-12 and taken oriented core in a portion of the hole. The results indicate that the qsv system elements have a north-northeasterly strike and dip to the south. Using an assumption as to the orientation of the schistosity, further studies of core from other holes, including A-14, also suggest a southerly dip to the mineralized structures.

Based on the above, we may interpret that below the basal fault at 4006-4015 feet, the quartz-sulfide vein system was oxidized and leached to the depth of 4096 feet. In the non-oxidized portion, the qsv type was cut to the depth of 4149 feet, before passing into low grade values.

This same sequence of passing from +0.8% copper values into a short zone of \pm 0.25%, then into values below 0.10%, has been noted in each of the holes of the area which penetrated a quartz-sulfide system.

To test the qsv system nicked in A-14 it will be necessary to deviate a hole to the south, then attain a near vertical to the north dipping component, and drill through the section of interest.

Attached are the assay-footage sheets with rock type, qsv, and interval notations; the assay sheets; and a graphic log of the hole.



James D. Sell

JDS:rr

Atts: Assay Sheets
Graphic Log #2486 - R

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	
Pi	9	4076-4086	10	0.01	qsv
Pi	10	4086-4096	10	0.08	qs
	<u>Oxidized Sulfide</u>				
Pi	11	4096-4106	10	0.34	qs
Pi	12	4106-4113	7	0.77	qsv bx
Pi	13	4113-4123	10	0.95	qsv
Pi	14	4123-4130	7	0.34	qs
					53' @ 0.53% Cu
Tp	15	4130-4140	10	0.30	qs
Tp	16	4140-4149	9	0.50	qsv
Tp	17	4149-4159	10	0.22	
Tp	18	4159-4166	7	0.09	
Tp	19	4166-4172	6	0.29	
Pi	20	4172-4180	8	0.30	
Pi	21	4180-4190	10	0.22	
Pi	22	4190-4201	11	0.22	qv
					99' @ 0.28% Cu
Tp	23	4201-4207	6	0.25	
Tp	24	4207-4213	6	0.27	
Pi	25	4213-4220	7	0.31	
Pi	26	4220-4228	8	0.32	
Tp	27	4228-4232	4	0.22	
Pi	28	4232-4240	8	0.26	
Pi	29	4240-4248	8	0.28	
Tp	30	4248-4252	7	0.82	qs bx
Tp	31	4252-4262	10	0.16	qs
Tp	32	4262-4269	7	2.90	qsv
					21' @ 1.20% Cu
Pi	33	4269-4278	9	0.14	
Pi	34	4278-4287	9	0.07	
Pi	35	4287-4296	9	0.07	
Pi	36	4296-4305	9	0.07	
Pi	1	4305-4307	2	0.21	qs
					68' @ 0.07% Cu
Pi	2	4307-4310	3	0.07	
Pi	37	4310-4321	11	0.04	
Pi	38	4321-4329	8	0.05	
Pi	39	4329-4337	8	0.05	
Note: 4337-4373 36' interval was not sampled. Assigned average grade of 0.07 equivalent to interval section.					
Pi	40	4373-4381	8	0.05	
Pi	41	4381-4390	9	0.06	
Pi	42	4390-4400	10	0.07	
					35' @ 0.07% Cu
Pi	43	4400-4408	8	0.12	qsv
Pi	44	4408-4409	1	2.10	qsv
Pi	45	4409-4414	5	0.34	qs
					6' @ 0.63% Cu
Pi	46	4414-4420	6	0.03	
Pi	47	4420-4428	8	0.05	
					14' @ 0.04% Cu
Note: 4428-4656 228' interval not sampled. Assigned average grade of 0.05 based on visual inspection.					
Pi	3	4656-4662	6	0.08	
Note: 4662-4698 36' interval not sampled. Assigned average grade of 0.08 based on visual inspection.					

43-45
173 @ 0.47

UNIT	ASSAY NUMBER	FOOTAGE	FEET	% Cu	
Pi	4	4698-	4-1/2	0.26	qsv
		4702-1/2			
Pi	5	4702-1/2-	3-1/2	0.21	qsv
		4706			
Note: 4706-4791 85' Interval not sampled. Assigned average grade of 0.08 based on visual inspection.					
Pi	6	4791-4797	6	0.12	
Note: 4797-4833 36' Interval not sampled. Assigned average grade of 0.05 based on visual inspection.					
Pi	7	4833-4840	7	0.04	
Note: 4840-4881 41' Interval not sampled. Assigned average grade of 0.05 based on visual inspection.					
Pi	8	4881-4886	5	0.08	
Note: 4886-5163 277' Interval not sampled. Assigned average grade of 0.04 based on visual inspection.					
Pi	48	5163-5169	6	0.06	
Tp	49	5169-5177	8	0.03	
Tp	50	5177-5187	10	0.04	
Note: 5187-5373 186' Interval not sampled. Assigned average grade of 0.04 based on visual inspection.					
Tp	51	5373-5383	10	0.04	
Tp	52	5383-5393	10	0.32	qsv bx
Tp	53	5393-5403	10	0.03	
Note: 5403-5688 285' Interval not sampled. Assigned average grade of 0.03 based on visual inspection.					
Tp	54	5688-5698	10	0.02	
Tp	55	5698-5708	10	0.03	
Tp	56	5708-5718	10	0.03	
Tp	57	5718-5728	10	0.02	
Tp	58	5728-5738	10	0.04	

TOTAL DEPTH

Note: Tp = Tertiary porphyry
Pi = Precambrian Pinal Schist

mountain states research & development
 CERTIFICATE OF ASSAY



Certificate No. 344

Project No. B-31

Date 6/04/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
14362	A-14 - 9	0.001		0.02		0.013		0.003	
14363	10	0.001		0.06		0.082		0.003	
14364	11	0.004		0.08		0.34		0.007	
14365	12	0.006		0.22		0.77		0.004	
14366	13	0.001		0.02		0.95		0.003	
14367	14	0.001		0.03		0.34		0.002	
14368	15	0.001		0.02		0.30		0.005	
14369	16	N.D.		0.02		0.50		0.002	
14370	17	0.001		0.02		0.218		0.003	
14371	18	0.001		N.D.		0.088		0.001	
14372	19	0.001		0.02		0.29		0.002	
14373	20	0.001		0.04		0.30		0.002	
14374	21	0.001		0.02		0.218		0.002	
14375	22	0.004		0.04		0.215		0.002	
14376	23	0.001		0.02		0.245		0.002	
14377	24	0.001		N.D.		0.27		0.002	
14378	25	0.001		0.02		0.31		0.002	
14379	26	0.001		N.D.		0.32		0.002	
14380	27	0.001		0.02		0.217		0.002	
14381	28	N.D.		0.02		0.261		0.002	
14382	29	0.001		0.02		0.28		0.002	
14383	30	0.001		0.02		0.82		0.001	
14384	31	0.001		0.02		0.155		0.001	
14385	32	0.245		0.10		2.90		0.010	

144 Sample Prep.
 384 Assays

Total Charge \$ 528.00

[Signature]
 Chief Chemist

mountain states research & development
 CERTIFICATE OF ASSAY

100000001
 6/12/81

ASARCO

Certificate No. 345

Project No. B-31

Date 6/04/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
14386	A-14 - 33	0.001		0.02		0.143		0.002	
14387	34	0.001		0.02		0.074		0.002	
14388	35	0.002		N.D.		0.068		0.002	
14389	36	0.001		N.D.		0.067		0.002	
14390	37					0.036		0.002	
14391	38					0.048		0.001	
14392	39					0.051		0.002	
14393	40					0.046		0.001	
14394	41					0.062		0.002	
14395	42					0.069		0.002	
14396	43					0.124		0.002	
14397	44					2.10		0.002	
14398	45					0.34		0.001	

6 136.00 Assays
 @ 84.00 Sample Prep.

Total Charge \$ 220.00

Mountain States Research & Development
 CERTIFICATE NO. 345
 FRANK M. [Signature]
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 514

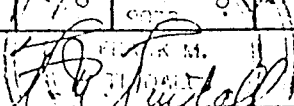
Project No. B-31

Date 6/19/81

Date	Sample No.			Au Oz/T		Ag Oz/T		Cu %		Mo %

16064	A-14-46			---		---		0.030		0.001
16065	A-14-47			---		---		0.050		0.001
16066	A-14-48			---		---		0.060		0.013
16067	A-14-49			---		---		0.025		0.003
16068	A-14-50			---		---		0.042		0.001
16069	A-14-51			0.001		N.D.		0.037		0.001
16070	A-14-52			0.001		0.04		0.32		0.002
16071	A-14-53			0.001		N.D.		0.029		0.001
16072	A-14-54			0.001		N.D.		0.016		0.001
16073	A-14-55			0.001		0.05		0.027		0.001
16074	A-14-56			0.001		0.03		0.027		0.001
16075	A-14-57			0.001		N.D.		0.024		0.001
16076	A-14-58			0.001		N.D.		0.039		0.002
16077	A-14-59			---		---		0.168		0.003

Total Charge \$ 102.30 SAMPLE PREP.
256.00 ASSAYS
358.30


THE MOUNTAIN STATES RESEARCH & DEVELOPMENT COMPANY
 CHEMIST

 Chief Chemist

ASARCO

Southwestern Exploration Division

October 5, 1981

TO: W.D. Payne

FROM: J.D. Sell 

Correction
Assay Results
Drill Hole A-14
Superior East Project
Pinal County, Arizona

Two errors were found in the report dated August 10, 1981.

- 1) Second paragraph, line 4: 125 feet
should be: 99 feet
- 2) On attached Graphic log and assay result sheet Number 2486-R, in the % Cu column (left side): 99' @ 0.25%
should be: 99' @ 0.28%

JDS/pd

c: M.V. Kellogg, Drafting

A-14

Collar Elev. 4694'

ASARCO DRILL HOLE A-14

ROTARY:

Surface - 1534'

8" : Surface - 20'

6" : 20' - 1534'

CMX DRILLING CO.

June 20, 1980 - July 2, 1980

CORE:

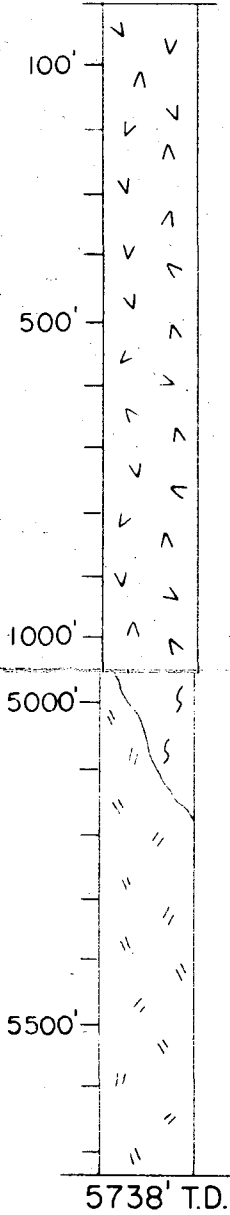
1534' - 2891' NC

2891' - 5493' NX

5493' - 5738' T.D. BX

JOY MANUFACTURING Co.

Sept. 19, 1980 - March 9, 1981



DACITE

Below 5150', secondary K-feldspar & green sericite became noticeable component in schist & bfp, porphyry; quartz-sericite banding with minor mineral became scattered.

Scattered assays range from w/0.2 - 0.4 % in q

NOTE : Individual assays are found in Assay Report dated Aug. 10, 1981.

T. 1 S. R. 13 E.

N LINE of NW¹/₄ NE¹/₄ SE¹/₄ SE¹/₄ of Sec. 22

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE A-14

SUPERIOR EAST PROJECT

PINAL COUNTY, ARIZONA

SCALE 1" = 300'

J.D. Sell

Aug. 1981

mountain states research & development
CERTIFICATE OF ASSAY

TINDALL
RECEIVED
6/12/81
ARIZONA, U.S.A.

ASARCO

Certificate No. 344

Project No. B-31

Date 6/04/81

Date	Sample No.	Au		Ag		Cu		Mo	
		Oz/T		Oz/T		%		%	
14362	A-14 - 9	0.001		0.02		0.013		0.003	
14363	10	0.001		0.06		0.082		0.003	
14364	11	0.004		0.08		0.34		0.007	
14365	12	0.006		0.22		0.77		0.004	
14366	13	0.001		0.02		0.95		0.003	
14367	14	0.001		0.03		0.34		0.002	
14368	15	0.001		0.02		0.30		0.005	
14369	16	N.D.		0.02		0.50		0.002	
14370	17	0.001		0.02		0.218		0.003	
14371	18	0.001		N.D.		0.088		0.001	
14372	19	0.001		0.02		0.29		0.002	
14373	20	0.001		0.04		0.30		0.002	
14374	21	0.001		0.02		0.218		0.002	
14375	22	0.004		0.04		0.215		0.002	
14376	23	0.001		0.02		0.245		0.002	
14377	24	0.001		N.D.		0.27		0.002	
14378	25	0.001		0.02		0.31		0.002	
14379	26	0.001		N.D.		0.32		0.002	
14380	27	0.001		0.02		0.217		0.002	
14381	28	N.D.		0.02		0.261		0.002	
14382	29	0.001		0.02		0.28		0.002	
14383	30	0.001		0.02		0.82		0.001	
14384	31	0.001		0.02		0.155		0.001	
14385	32	0.245		0.10		2.90		0.010	

Total Charge \$ 528.00
*144 Sample Prep.
384 Assays*

[Signature]
Chief Chemist

Mountain States Research & Development

CERTIFICATE OF ASSAY

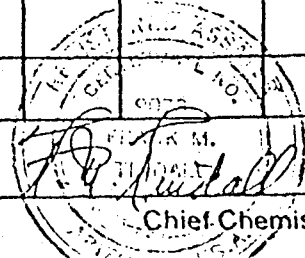
Certificate No. 514

Project No. B-31

Date 6/19/81

Date	Sample No.			Au Oz/T	Ag Oz/T	Cu %	Mo %
15866	AI-2-68			---	---	0.055	0.001
15867	AI-2-69			---	---	0.061	0.001
15868	AI-2-70			0.001	N.D.	0.146	0.003
15869	AI-2-71			0.001	0.03	0.126	0.001
15870	AI-2-72			0.001	N.D.	0.253	0.001
15871	AI-2-73			0.001	N.D.	0.39	0.001
16064	A-14-46			---	---	0.030	0.001
16065	A-14-47			---	---	0.050	0.001
16066	A-14-48			---	---	0.060	0.013
16067	A-14-49			---	---	0.025	0.003
16068	A-14-50			---	---	0.042	0.001
16069	A-14-51			0.001	N.D.	0.037	0.001
16070	A-14-52			0.001	0.04	0.32	0.002
16071	A-14-53			0.001	N.D.	0.029	0.001
16072	A-14-54			0.001	N.D.	0.016	0.001
16073	A-14-55			0.001	0.05	0.027	0.001
16074	A-14-56			0.001	0.03	0.027	0.001
16075	A-14-57			0.001	N.D.	0.024	0.001
16076	A-14-58			0.001	N.D.	0.039	0.002
16077	A-14-59 ?			---	---	0.168	0.003

Total Charge \$ 102.30 SAMPLE PREP.
256.00 ASSAYS
358.30


 Chief Chemist

Unit	Assay Number	Footage	Feet	% Cu	Gram Cu ft-%		
pi	9	4076-4086	10	0.01	0.10		gsv
pi	10	4086-4096	10	0.08	0.80		gsv
OXIDIZED							
SULFIDE							
pi	11	4096-4106	10	0.34	3.40	} 0.34 0.88 0.68	gsv
	12	4106-4113	7	0.77	5.39		gsv bx
	13	4113-4123	10	0.95	9.50		gsv
pi	14	4123-4130	7	0.34	2.38	} 0.38	gsv
TP	15	4130-4140	10	0.30	3.00		gsv
	16	4140-4149	9	0.50	4.50		gsv
	17	4149-4159	10	0.22	2.20		
TP	18	4159-4166	7	0.09	0.63		
TP	19	4166-4172	6	0.29	1.74	} 0.28	
pi	20	4172-4180	8	0.30	2.40		
pi	21	4180-4190	10	0.22	2.20	} 0.25 34.52 12.5	
pi	22	4190-4201	11	0.22	2.42		gsv
TP	23	4201-4207	6	0.25	1.50	} 0.25 24.64 99 99	
TP	24	4207-4213	6	0.27	1.62		
pi	25	4213-4220	7	0.31	2.17	} 0.25 77.99 173	
pi	26	4220-4228	8	0.32	2.56		
TP	27	4228-4232	4	0.22	0.88		
pi	28	4232-4240	8	0.26	2.08		
pi	29	4240-4248	8	0.28	2.24		
	30	4248-4252	4	0.82	3.28	} 1.20 25.18 21	gsv bx
TP	31	4252-4262	10	0.16	1.60		gsv
TP	32	4262-4269	7	2.90	20.30		gsv

Unit	Assay Number	Footage	Feet	% Cu		
pi	33	4269-4278	9	0.14	1.26	
	34	4278-4287	9	0.07	0.63	
	35	4287-4296	9	0.07	0.63	
	36	4296-4305	9	0.07	0.63	
	1	4305-4307	2	0.21	0.42	
	2	4307-4310	3	0.07	0.21	
	37	4310-4321	11	0.04	0.44	
	38	4321-4329	8	0.05	0.40	
pi	39	4329-4337	8	0.05	0.40	
	Note:	4337-4373	³⁶ interval was not sampled. assigned average grade of 0.07			
					2.52	equivalent to interval section.
pi	40	4373-4381	8	0.05	0.40	
	41	4381-4390	9	0.06	0.54	
	42	4390-4400	10	0.07	0.70	
	43	4400-4408	8	0.12	0.96	
	44	4408-4409	1	2.10	2.10	
	45	4409-4414	5	0.34	1.70	
	46	4414-4420	6	0.03	0.18	
pi	47	4420-4428	8	0.05	0.40	
	Note:	4428-4656	228 interval not sampled. assigned average grade of			
					11.40	based on visual inspection.

5.02 / 68 = 0.07

10.0 / 35 = 0.07

3.80 / 6 = 0.63

0.58 / 14 = 0.04

8V
8SV

Unit	Assay Number	Footage	Feet	% Cu			
pi	3	4654-4662	6	0.08	0.48	=	6' @ 0.08
	Note:	4662-4698	36	Interval not sampled. Assigned average grade of	0.08	based on visual inspection.	
					2.88		
pi	4	4698-4702 1/2	4 1/2	0.26	1.17) 1.91 / 8 = 0.24	gsv
pi	5	4702 1/2-4706	3 1/2	0.21	0.74		gsv
	Note:	4706-4791	85	Interval not sampled. Assigned average grade of	0.08	based on visual inspection.	
					6.80		
	6	4791-4797	6	0.12	0.72	=	6' @ 0.12
	Note:	4797-4837	36	Interval not sampled. Assigned average grade of	0.05	based on visual inspection.	
					1.80		
pi	7	4833-4840	7	0.04	0.28	=	7' @ 0.04
	Note:	4840-4881	41	Interval not sampled. Assigned average grade of	0.05	based on visual inspection.	
					2.05		
pi	8	4881-4886	5	0.08	0.40	=	5' @ 0.08
	Note:	4886-5163	277	Interval not sampled. Assigned average grade of	0.04	based on visual inspection.	
					11.08		

Unit	Assay Number	Footage	Feet	% Cu		
pi	48	5163-5169	6	0.06	0.36	40.2 / 3 = 13.4
TP	49	5169-5177	8	0.03	0.24	
TP	50	5177-5187	10	0.04	0.40	
Note:		5187-5373	186	Interval not sampled. assigned average grade of 0.04 based on visual inspection.		7.44
TP	51					
TP	51	5373-5383	10	0.04	0.40	3.90 / 30 = 0.13
TP	52	5383-5393	10	0.32	3.20	
TP	53	5393-5403	10	0.03	0.30	
Note:		5403-5688	285	Interval not sampled. assigned average grade of 0.03 based on visual inspection.		8.55
TP	54	5688-5698	10	0.02	0.20	1.4 / 5 = 0.28
	55	5698-5708	10	0.03	0.30	
	56	5708-5718	10	0.03	0.30	
	57	5718-5728	10	0.02	0.20	
TP	58	5728-5738	10	0.04	0.40	
		Total Depth				

August 23, 1984

To: W. L. Kurtz

From: J. D. Sell

Assay Results
Drill Hole A-15
Superior East Project
Pinal County, AZ

Drill hole A-15 was collared 1050 feet east-southeast of hole A-8 and nearly equidistant between hole A-9 on the north and A-13 on the south.

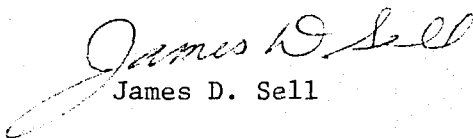
The hole intercepted an A-2 type slide block of altered and oxidized leached capping in Pinal Schist between 2905 feet and 3338 feet, with a trace of copper. Below the basal fault, which dipped gently, the oxidized bedrock of Pinal Schist was poorly mineralized.

The oxide-sulfide contact was at 3622 feet and low copper values (0.01%) continued to 3650 feet before assayable copper became noticeable. The first quartz sulfide vein in quartz-sericite alteration began at 3670 feet and variable mineralization continued to 4481 feet.

Several 1% copper zones of chalcocite-bornite were cut, namely from 3670 to 3739 feet and 3802 to 3918 feet. Elsewhere the intercept column ranged from 0.30% copper to 0.66% copper. The best interval was from 3670 feet to 3918 feet (248 feet) at 1.00% copper. The next best was 547 feet at 0.71% copper (3670'-4217'), while the overall was 831 feet at 0.60% copper (3650'-4481). Below 4481 feet and to the bottom of the hole at 4699 feet, the copper value was 0.09%.

This drill hole has added some 30 million tons at 0.67% copper to the probable and indicated mineralization.

Attached are the assay-footage tabulations with the indicated qsv and porphyry intervals and assay groups, the assay sheets, and a graphic log of the hole.


James D. Sell

JDS/cg

Attachments: Table 1
Assay Sheets
Graphic Log #2486-T

Table 1

DDH A-15 Assays

<u>Assay Number</u>	<u>Footage</u>	<u>Feet</u>	<u>% Cu</u>
<u>Tertiary Whitetail Conglomerate</u>			
A-15- 1	2260-2270	10	0.12
- 2	2320-2330	10	0.02
- 3	2400-2410	10	0.02
- 4	2490-2500	10	0.01
- 5	2800-2810	10	0.04
- 6	2890-2900	10	0.08
<u>Tertiary Slide Block A-2 Type</u>			
- 7	2920-2930	10	0.03
- 8	3000-3010	10	0.27
- 9	3100-3110	10	0.02
-10	3200-3210	10	0.02
-11	3300-3310	10	0.01
<u>Oxidized Bedrock of Pinal Schist</u>			
-12	3400-3410	10	0.01
-13	3500-3510	10	0.01
-14	3600-3610	10	0.01
-15	3610-3618	8	0.01
-16	3618-3622	4	0.01
<u>Sulfide Bedrock of Pinal Schist*</u>			
-17	3622-3632	10	0.01
-18	3632-3645	13	0.01
-19	3645-3650	5	0.09

Assay
Number

Footage

Feet

% Cu

Sulfide Bedrock of Pinal Schist* (Cont.)

Assay Number	Footage	Feet	% Cu	Notes
A-15-20	3650-3660	10	0.24	20' @
-21	3660-3670	10	0.35	0.30%
-22	3670-3684	14	2.00	qsv
-23	3684-3700	16	0.73	69' @
-24	3700-3712	12	0.76	0.98%
-25	3712-3730	18	0.58	
-26	3730-3739	9	0.94	qsv
-27	3739-3752	13	0.38	
-28	3752-3766	14	0.50	63' @
-29	3766-3778	12	0.44	0.46%
-30	3778-3792	14	0.55	
-31	3792-3802	10	0.38	
-32	3802-3813	11	1.45	qsv
-33	3813-3821	8	3.00	qsv
-34	3821-3830	9	0.58	
-35	3830-3840	10	0.46	116' @
-36	3840-3853	13	0.48	1.31%
-37	3853-3858	5	0.80	
-38	3858-3861	3	9.70	qsv
-39	3861-3867	6	1.00	qsv
-40	3867-3881	14	0.62	248' @
-41	3881-3890	9	0.49	1.00%
-42	3890-3895	5	5.80	qsv
-43	3895-3907	12	0.62	
-44	3907-3918	11	0.65	
-45	3918-3929	11	0.46	
-46	3929-3942	13	0.46	547' @
-47	3942-3953	11	0.28	0.71%
-48	3953-3961	8	0.52	
-49	3961-3974	13	0.52	

322
6.57/48:
48' at 11

248'
@
1.00%

547'
@
0.71%

<u>Assay Number</u>	<u>Footage</u>	<u>Feet</u>	<u>% Cu</u>
-------------------------	----------------	-------------	-------------

Sulfide Bedrock of Pinal Schist* (Cont.)

A-15-50	3974-3989	15	0.36		
-51	3989-4011	22	0.56		
-52	4011-4021	10	0.49		
-53	4021-4027	6	0.62	164'	
-54	4027-4035	8	0.41	@	
-55	4035-4044	9	0.31	0.48%	
-56	4044-4054	10	0.45		
-57	4054-4056	2	1.05	qsv	
-58	4056-4067	11	0.39		
-59	4067-4082	15	0.64		
-60	4082-4089	7	0.54		
-61	4089-4098	9	0.64		
-62	4098-4105	7	0.24		
-63	4105-4114	9	0.51		
-64	4114-4128	14	0.35		
-65	4128-4140	12	0.37	135'	
-66	4140-4143	3	0.28	@	
-67	4143-4155	12	0.42	0.44%	
-68	4155-4166	11	0.53		
-69	4166-4179	13	0.17		
-70	4179-4191	12	0.26		
-71	4191-4206	15	0.15		
-72	4206-4217	11	1.40		
-73	4217-4223	6	0.20		
-74	4223-4236	13	0.12		
-75	4236-4244	8	0.08		
-76	4244-4252	8	0.24		
-77	4252-4264	12	0.06		
-78	4264-4277	13	0.26		
-79	4277-4282	5	0.31		
					831' @ 0.60%

<u>Assay Number</u>	<u>Footage</u>	<u>Feet</u>	<u>% Cu</u>	
<u>Sulfide Bedrock of Pinal Schist* (Cont.)</u>				
A-15-80	4282-4291	9	0.23	
-81	4291-4295	4	0.90	
-82	4295-4308	13	0.49	
-83	4308-4324	16	0.22	
-84	4324-4337	13	0.29	165'
-85	4337-4346	9	0.23	@
-86	4346-4360	14	0.32	0.26%
-87	4360-4366	6	0.08	Tp
-88	4366-4377	11	0.44	
-89	4377-4382	5	0.27	
-90	4382-4392	10	1.10	qsv
-91	4392-4395	3	0.24	
-92	4395-4402	7	0.18	
-93	4402-4411	9	0.57	99'
-94	4411-4417	6	0.52	@
-95	4417-4423	6	0.14	0.66%
-96	4423-4432	9	1.34	qsv
-97	4432-4435	3	0.25	
-98	4435-4450	15	0.91	qsv
-99	4450-4462	12	0.68	
-100	4462-4467	5	0.29	
-101	4467-4470	3	0.39	Tp
-102	4470-4481	11	0.56	
-103	4481-4498	17	0.10	
-104	4498-4506	8	0.08	
-105	4506-4521	15	0.13	
-106	4521-4526	5	0.07	
-107	4526-4539	13	0.09	
-108	4539-4557	18	0.12	
-109	4557-4561	4	0.19	

<u>Assay Number</u>	<u>Footage</u>	<u>Feet</u>	<u>% Cu</u>	
<u>Sulfide Bedrock of Pinal Schist* (Cont.)</u>				
A-15-110	4561-4577	16	0.07	
-111	4577-4587	10	0.09	Tp
-112	4587-4593	6	0.16	Tp
-113	4593-4603	10	0.07	Tp
-114	4603-4612	9	0.22	
-115	4612-4622	10	0.12	
-116	4622-4632	10	0.08	218'
-117	4632-4640	8	0.05	@
-118	4640-4655	15	0.03	0.09%
-119	4655-4673	18	0.04	
-120	4673-4682	9	0.13	
-121	4682-4699	17	0.08	Tp
Total Depth				

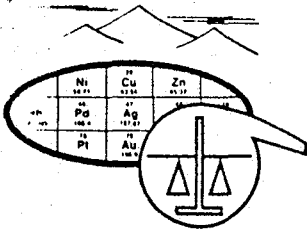
*qsv - quartz sulfide vein

Tp - Tertiary biotite feldspar porphyry

Sample assays below 0.30% copper reported by Skyline as ppm copper and converted to % copper.

Recap of Various Intervals

<u>Interval</u>	<u>Feet</u>	<u>% Cu</u>	
3650-3670	20	0.30	
3670-3918	248	1.00	
3918-4217	299	0.46	or 547' @ 0.71%
4217-4481	264	0.41	or 831' @ 0.60%



SKYLINE LABS, INC.
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 Tucson, Arizona 85703
 (602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 358
 May 2, 1984
 A-15-1 THRU A-15-4
 W.L. KURTZ
 PAGE 1 OF 1

ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Analysis of 4 Core Samples

ITEM	SAMPLE NO.	Cu (ppm)	Cu (%)
1	A-15-1	1200.	0.12
2	A-15-2	215.	0.02
3	A-15-3	220.	0.02
4	A-15-4	150.	0.01

cc: Asarco Incorporated
 Attn.: Mr. W.L. Kurtz
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Handwritten note:
 1/24/84
 JLM

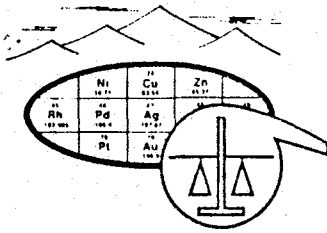
APPROVED FOR PAYMENT
 By: _____
 (Signature)

Handwritten signature: William L. Lehbeck
 William L. Lehbeck
 Manager
 (Seal: ARIZONA ASSAYERS ASSOCIATION)

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MAY - 3 1984

S. W. U. S. EXPL.



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Tucson, Arizona 85703

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REPORT OF ANALYSIS

JOB NO. TAJ 374

June 27, 1984

PROJECT: SUPERIOR EAST

A-15-5 THRU A-15-26

PAGE 1 OF 2

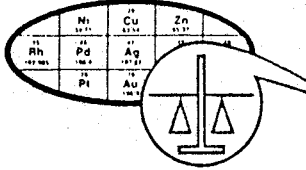
ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 22 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Cu (%)
1	A-15-5	410.	0.04
2	A-15-6	790.	0.08
3	A-15-7	300.	0.03
4	A-15-8	2700.	0.27
5	A-15-9	220.	0.02
6	A-15-10	155.	0.02
7	A-15-11	70.	0.01
8	A-15-12	115.	0.01
9	A-15-13	125.	0.01
10	A-15-14	120.	0.01
11	A-15-15	95.	0.01
12	A-15-16	60.	0.01
13	A-15-17	90.	0.01
14	A-15-18	60.	0.01
15	A-15-19	900.	0.09

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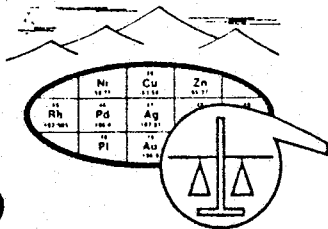
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 Tucson, Arizona 85703
 (602) 622-4836



JOB NO. TAJ 374
 June 27, 1984
 PAGE 2 OF 2

ITEM	SAMPLE NUMBER	Cu (ppm)	Cu (%)
16	A-15-20	2400.	0.24
17	A-15-21		.35
18	A-15-22		2.00
19	A-15-23		.73
20	A-15-24		.76
21	A-15-25		.58
22	A-15-26		.94

William L. Lehmbek
 William L. Lehmbek
 Manager
 Arizona



SKYLINE LABS, INC.
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Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 375
June 26, 1984
PROJECT: SUPERIOR EAST
A-15-27 THRU A-15-47
PAGE 1 OF 2

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

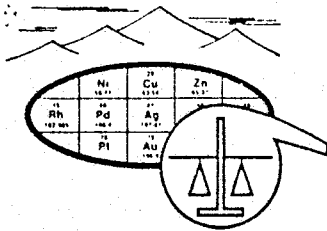
Analysis of 21 Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-15-27	.38
2	A-15-28	.50
3	A-15-29	.44
4	A-15-30	.55
5	A-15-31	.38
6	A-15-32	1.45
7	A-15-33	3.00
8	A-15-34	.58
9	A-15-35	.46
10	A-15-36	.48
11	A-15-37	.80
12	A-15-38	9.70
13	A-15-39	1.00
14	A-15-40	.62
15	A-15-41	.49

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JUN 29 1984

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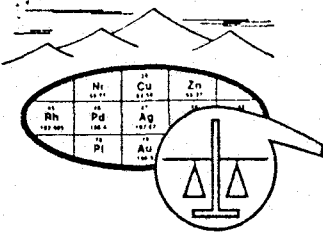
JOB NO. TAJ 375

June 26, 1984

PAGE 2 OF 2

ITEM	SAMPLE NUMBER	Cu (%)
16	A-15-42	5.80
17	A-15-43	.62
18	A-15-44	.65
19	A-15-45	.46
20	A-15-46	.46
21	A-15-47	.28

William L. Lehbeck
William L. Lehbeck
Manager
Arizona - U.S.A.



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REPORT OF ANALYSIS

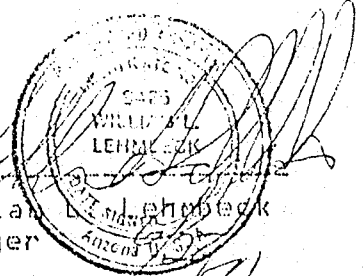
JOB NO. TAJ 377
June 26, 1984
PROJECT: SUPERIOR EAST
A15-48 THRU A15-59
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 12 Core Samples

ITEM	SAMPLE NO.	Cu (%)
1	A15-48	.52
2	A15-49	.52
3	A15-50	.36
4	A15-51	.56
5	A15-52	.49
6	A15-53	.62
7	A15-54	.41
8	A15-55	.31
9	A15-56	.45
10	A15-57	1.05
11	A15-58	.39
12	A15-59	.64

William L. Lehmbek
Manager



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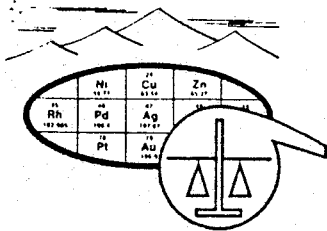
JUN 29 1984

EXPLORATION DEPARTMENT

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbek
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122



SKYLINE LABS, INC.
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REPORT OF ANALYSIS

JOB NO. TAJ 380
 July 18, 1984
 PROJECT NO.: EA-0010
 SHIPMENT NO.: ONE
 PAGE 1 OF 1

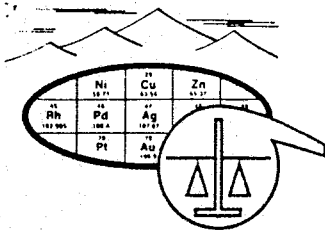
ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Analysis of 17 Split Drill Core Samples

ITEM	SAMPLE NUMBER	Cu (%)	Cu (ppm)
1	A-15-60	.54	
2	A-15-61	.64	
3	A-15-62	0.24	2400.
4	A-15-63	.51	
5	A-15-64	.35	
6	A-15-65	.37	
7	A-15-66	0.28	2800.
8	A-15-67	.42	

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REGISTERED ASSAYER
 CERTIFICATE NO. 9428
 WILLIAM L. LEHMBECK
 Manager
 Arizona 8-7-84



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 Tucson, Arizona 85703
 (602) 622-4836

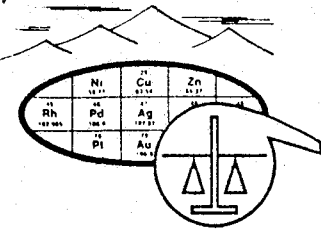
REPORT OF ANALYSIS

JOB NO. TAJ 382
 August 8, 1984
 PAGE 1 OF 2

ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Analysis of 38 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Cu (%)
1	A-15 68		.53
2	A-15 69	1700.	0.17
3	A-15 70	2600.	0.26
4	A-15 71	1500.	0.15
5	A-15 72		1.40
6	A-15 73	2000.	0.20
7	A-15 74	1200.	0.12
8	A-15 75	850.	0.08
9	A-15 76	2400.	0.24
10	A-15 77	630.	0.06
11	A-15 78	2600.	0.26
12	A-15 79		.31
13	A-15 80	2300.	0.23
14	A-15 81		.90
15	A-15 82		.49
16	A-15 83	2200.	0.22
17	A-15 84	2900.	0.29
18	A-15 85	2300.	0.23
19	A-15 86		.32
20	A-15 87	840.	0.08
21	A-15 88		.44
22	A-15 89	2700.	0.27



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REPORT OF ANALYSIS

JOB NO. TAJ 380
 July 18, 1984
 PROJECT NO.: EA-0010
 SHIPMENT NO.: ONE
 PAGE 1 OF 1

ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

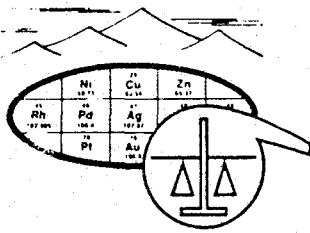
Analysis of 17 Split Drill Core Samples

ITEM	SAMPLE NUMBER	Cu (%)	Cu (ppm)
9	A-15-90	1.10	
10	A-15-91	0.24	2400.
11	A-15-92	0.18	1800.
12	A-15-93	.57	
13	A-15-94	.52	
14	A-15-95	0.14	1400.
15	A-15-96	1.34	
16	A-15-97	0.25	2500.
17	A-15-98	.91	

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William L. Lehmbek
 Manager

cj file



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(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 379

July 3, 1984

PROJECT NO.: SUPERIOR EAST
A15-99 TO A15-105

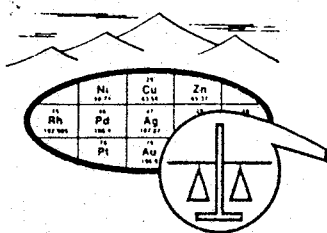
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 7 Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A15-99	.680
2	A15-100	.290
3	A15-101	.390
4	A15-102	.560
5	A15-103	.097
6	A15-104	.082
7	A15-105	.130

(Handwritten signature)
 WILLIAM L. LEHMBECK
 Manager
 7/3/84



SKYLINE LABS, INC.
 1775 W. Sahuaro Dr. • P.O. Box 50106
 Tucson, Arizona 85703
 (602) 622-4836

REPORT OF ANALYSIS

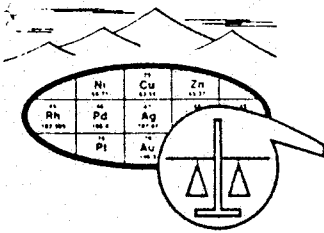
JOB NO. TAJ 382
 August 8, 1984
 PAGE 1 OF 2

ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Analysis of 38 Core Samples

ITEM	SAMPLE NUMBER	Cu (ppm)	Cu (%)
------	---------------	-------------	-----------

23	A-15 106	660.	<i>Cu</i> <i>(%)</i> 0.07
24	A-15 107	940.	0.09
25	A-15 108	1200.	0.12



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106

Tucson, Arizona 85703

(602) 622-4836

JOB NO. TAJ 382

August 8, 1984

PAGE 2 OF 2

ITEM	SAMPLE NUMBER	Cu (ppm)	Cu (%)
26	A-15 109	1900.	0.19
27	A-15 110	680.	0.07
28	A-15 111	950.	0.09
29	A-15 112	1600.	0.16
30	A-15 113	670.	0.07
31	A-15 114	2200.	0.22
32	A-15 115	1250.	0.12
33	A-15 116	800.	0.08
34	A-15 117	495.	0.05
35	A-15 118	345.	0.03
36	A-15 119	460.	0.04
37	A-15 120	1350.	0.13
38	A-15 121	770.	0.08

T.D.

A-15

Collar Elev. 4628' 4635' (Surveyed)

ASARCO DRILL HOLE-15

Surface-11" Rock Bit 6'4"

CORE: 11-1101 NC
1101-2029 NX
2029-4699 BX

JOY MANUFACTURING CO.

JOY-22, Heavy Duty

Surface - 2029'
Feb. 16 - April 6, 1983
2029 - 4699 T.D.
April 2 - July 6, 1984

NOTE: Casing left in hole.
11' of 4" Surface (0-11')
650' of NX (441'-1101')
529' of BX (1500'-2029')

DACITE

EARLIER VOLCANICS

Andesite-basalt flows of 12'-98' thickness with rubble or oxidized tops.

WHITETAIL CONGLOMERATE

Sandy to gritty to muddy matrix with clasts of pre-Whitetail units. Minor Cu^o

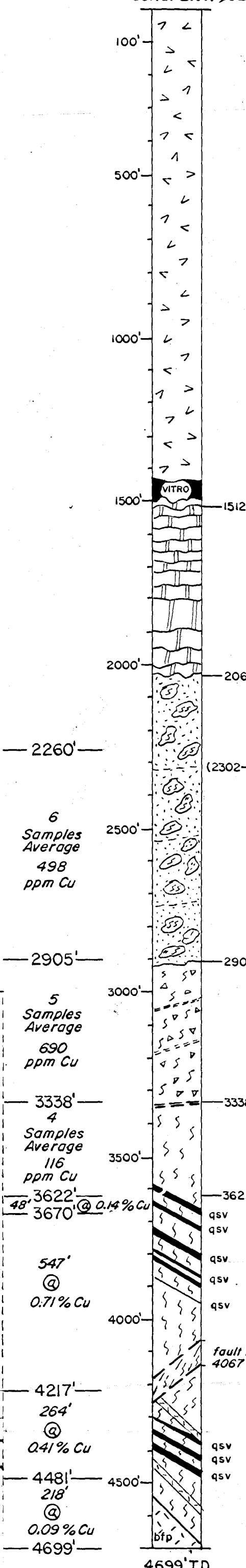
- (2302-04')
- 2069'-2302' green tan grit matrix 25%, Clasts: 99+% sch, tr. qtzite, tr. db.
- 2302'-2304' marker bed, fresh water lms w/ash grit matrix.
- 2304'-2520' green brown to brown matrix 27%, Clasts: 63% sch, 27% db, 8% qtzite, 2% pC sh-lms
- 2520'-2720' reddish muddy brown matrix 21%, Clasts: 76% sch, 22% db, 2% qtzite
- 2720'-2905' reddish adobe to dark brown matrix 26%, Clasts: 65% sch, 18% db, 16% Lr gr porp, 1% pC lms

SLIDE BLOCK of A-2 type. Pinal schist, altered, oxidized leached capping type, with hematite, specularite, & some native copper. gouge-breccia zones throughout.

PINAL SCHIST cut by minor Laramide biotite feldspar porphyry, (Lbfp), dikes.

Top portion oxidized of very poor leached capping characteristics which continues to 3670' where the first 45° dipping structures with cc-bornite is encountered.

Sulfide zones of bx-gouge bordering qtz-sericite and qtz veins with variable mineral content of cc-bornite, (qtz-sulf veins qsv) grading downward into cp below 4200' minor pyrite throughout. Zones dipping generally 30° or less.



NOTE: Individual assays are found in Assay Report dated Aug. 24, 1984

T. 1 S., R. 13 E.

NE 1/4, SW 1/4, SW 1/4 of Sec. 23

GRAPHIC LOG & ASSAY RESULTS

DRILL HOLE A-15
SUPERIOR EAST PROJECT

Pinal County, Arizona

SCALE: 1" = 300'

J.D. Sell

July, 1984

MVK 2486-T

TO ACCOMPANY	<i>Memo To</i>
	<i>Kurtz</i>
DATED	<i>8/23/84</i>
BY	<i>J.D. Sell</i>

October 17, 1984

File Memorandum

Composite Assays, Hole A-15
Superior East Project
Pinal County, AZ

The mineral intercept of drill hole A-15 was composited in the intervals as previously determined and re-analyzed for Cu, Mo, and fire assayed for gold and silver. As shown on the attached Skyline assay sheet, the gold is less than 0.005 opt and silver less than 0.01 opt over the footage 3622 to 4217 feet. These values are lower than spot assays of other holes in the area. The moly values range from 0.003% Mo to 0.013% Mo and the 3622-4217' interval of 595' section composite is 0.0047% Mo.

Table 1 compares the individual assays which were tabulated into composite intervals, vs. the pulps which were composited and then re-assayed as shown on the attached sheets (TAJ-389).

Table 1. Copper Composite Comparison

Depth (Feet)	Individual Combination	Pulps Combination & Re-assay
3622-3670	0.14%	0.14%
3670-3739	0.98%	1.01%
3739-3802	0.46%	0.45%
3802-3918	1.31%	1.34%
3918-4082	0.48%	0.52%
4082-4217	0.44%	0.44%

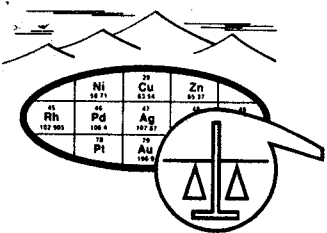
The close agreement indicates that Skyline pulp preparation and assay procedures are excellent.



James D. Sell

JDS/cg

Attachment



SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 389
October 9, 1984
SUPERIOR EAST PROJECT
DDH A-15 PULPS
3600-3622 A-15 14-16C
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 7 Composites from 59 Pulp Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY			
		Au (oz/t)	Ag (oz/t)	Cu (%)	Mo (%)
1	3600-3622 A-15 14-16C	<.005	<.01	<.01	.002
2	3622-3670 A-15 17-21C	<.005	<.01	.14	.013
3	3670-3739 A-15 22-26C	<.005	<.01	1.01	.010
4	3739-3802 A-15 27-31C	<.005	<.01	.45	.004
5	3802-3918 A-15 32-44C	<.005	<.01	1.34	.003
6	3918-4082 A-15 45-61C	<.005	<.01	.52	.003
7	4082-4217 A-15 62-72C	<.005	<.01	.44	.003

August 23, 1984

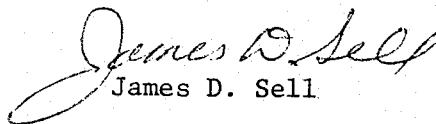
To: H. M. Stone

From: J. D. Sell

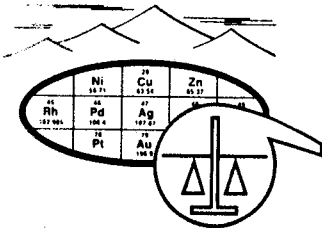
DDH A-15 Pulps
Superior East Project
Pinal County, AZ

Please secure the following pulps and have a composite sample put together. On the composite, have fire assay-AA for gold and silver, plus a copper assay at Skyline Labs.

<u>Footage</u>	<u>Pulp Nos. A-15-</u>
3600-3622	14 thru 16
3622-3670	17 thru 21
3670-3739	22 thru 26
3739-3802	27 thru 31
3802-3918	32 thru 44
3918-4082	45 thru 61
4082-4217	62 thru 72


James D. Sell

JDS/cg



SKYLINE LABS, INC.
 1775 W. Sahuaro Dr. • P.O. Box 50106
 Tucson, Arizona 85703
 (602) 622-4836

INVOICE
NET 30 DAYS

JOB NO. TAJ 374
June 27, 1984
PROJECT: SUPERIOR EAST
A-15-5 THRU A-15-26

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 22 Core Samples

16 Cu(ppm) @ \$ 2.40.....	\$	38.40
6 Cu(%) @ \$ 4.20.....	\$	25.20
22 Samples crushed, split and pulverized @ \$ 3.90.\$		85.80

TOTAL \$ 149.40

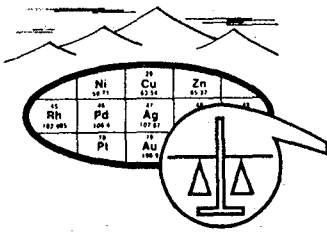
RECEIVED

JUN 29 1984

EXPLORATION DEPARTMENT

APPROVED FOR PAYMENT

By: James D. Sell
 ((Signature)) EA-0010



SKYLINE LABS, INC.
 1775 W. Sahuaro Dr. • P.O. Box 50106
 Tucson, Arizona 85703
 (602) 622-4836

INVOICE
NET 30 DAYS

JOB NO. TAJ 375
June 26, 1984
PROJECT: SUPERIOR EAST
A-15-27 THRU A-15-47

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

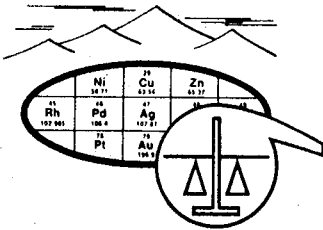
Analysis of 21 Core Samples

21 Cu(Z) @ \$ 4.20.....	\$	88.20
21 Samples crushed, split and pulverized @ \$ 3.40..	\$	71.40

TOTAL \$ 159.60

APPROVED FOR PAYMENT
 By: *James D. Sell*
 ((Signature), EA-0010

RECEIVED
JUN 29 1984
EXPLORATION DEPARTMENT



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

**INVOICE
NET 30 DAYS**

**JOB NO. TAJ 377
June 26, 1984
PROJECT: SUPERIOR EAST
A15-48 THRU A15-59**

**ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703**

Analysis of 12 Core Samples

12 Cu(%) @ \$ 4.20.....\$	50.40
12 Samples crushed, split and pulverized @ \$ 3.40.\$	40.80
TOTAL \$	91.20

APPROVED FOR PAYMENT

By: James D. Sell
(Signature) EA-0010

RECEIVED

JUN 29 1984

EXPLORATION DEPARTMENT

Depth	Sample	Assay ppm	Ft-%	Calc
3600-3610	10	120		} = 22' @ 0.01%
3	8	95	22' @ 2200	
-3622	4	60		
oxide surface		0%		
3622-	10	0.009		
	13	0.006		48' @ 6.52 ft% = 0.14%
	5	0.09		
	10	0.24		
-3670	10	0.35		20' @ 5.90 = 0.30%
3670-	14	2.00		
	14	0.73		
	12	0.76		69' @ 6.70 ft% = 0.98%
	18	0.58		
-3739	9	0.94		
3739	13	0.38		
	14	0.50		63' @ 28.72 ft% = 0.46%
	12	0.44		
	14	0.55		
-3802	10	0.38		
3802	11	1.45		
	8	3.00		
	9	0.58		
	10	0.44		
	13	0.48		
	5	0.80		
	3	9.70		
	6	1.00		

3845-
-3918

14	0.62
9	0.49
5	5.80
12	0.62
11	0.65

116' @ 151.79 ft% = 1.31 %

3918-

11	0.46
13	0.46
11	0.28
8	0.52
13	0.52
15	0.34
22	0.56
10	0.49
6	0.62
8	0.41
9	0.31
10	0.45
2	1.05
11	0.39
15	0.64

~~144' @ 77.94 ft% = 0.48~~

164' @ 77.94 = 0.48

-4082

~~3670-3918~~

~~248'~~

~~@ 248.21 ft% = 1.00%~~

~~3670-4082~~

~~412'~~

~~@ 326.15 ft% = 0.79%~~

~~3622-4082~~

~~460~~

~~@ 332.67 ft% = 0.72%~~

Depth	Footage	Assay	FT-%	Value
4082-	7	0.54		
	9	0.64		
	7	0.24		
	9	0.51		
	14	0.35		
	12	0.37		
	3	0.28		
-4155	12	0.42		
4155	11	0.53		
4160	13	0.17		
	12	0.26		
	15	0.15		
-4217	11	1.40		
4217-	6	0.20		
	13	0.12		
	8	0.08		
	8	0.24		
	12	0.06		
	13	0.26		
	5	0.31		
	9	0.23		
	4	0.90		
	18	0.49		
	16	0.22		
	13	0.29		
	9	0.23		
-4360	14	0.32		

135 @ 59.84 = 0.44%

299' @ 137.78 ft% = 0.46%

13 @ 31.03 ft% = 0.425%

~~16 @ 26.84 ft% = 0.439%~~

165' @ 43.52 ft% = 0.26%

Depth	Footage	Area	FT-%	Value
4380-	4	0.08		
	11	0.44		
-4382	5	0.27		
4382-	10	1.10		
	3	0.24		
	7	0.18		
	9	0.57		
	6	0.52		
	6	0.14		99' @ 45.47 ft% = 0.44%
	9	1.34		
	3	0.25		
	15	0.91		
	12	0.68		
	5	0.29		
	3	0.39		
-4481	11	0.56		
4481-	17	0.10		
	8	0.08		
	15	0.13		
	5	0.07		
	13	0.09		
	18	0.12		21.8' @ 20.49 ft% = 0.09%
	4	0.19		
	14	0.07		
	10	0.09		
	6	0.14		
	10	0.07		
-4612	9	0.22		

4612-

10 0.12

10 0.08

8 0.05

15 0.03

18 0.04

9 0.13

-4699

17 0.08

~~7~~

3670-3918

248'

@ 248.21 ft² = 1.00%

~~3670-4082~~

~~412~~

~~@ 326.15 ft² = 0.77%~~

3670-4217

547

@ 385.99 ft² = 0.71%

3670-4481

811

@ 494.98 ft² = 0.61%

4217-4481

264'

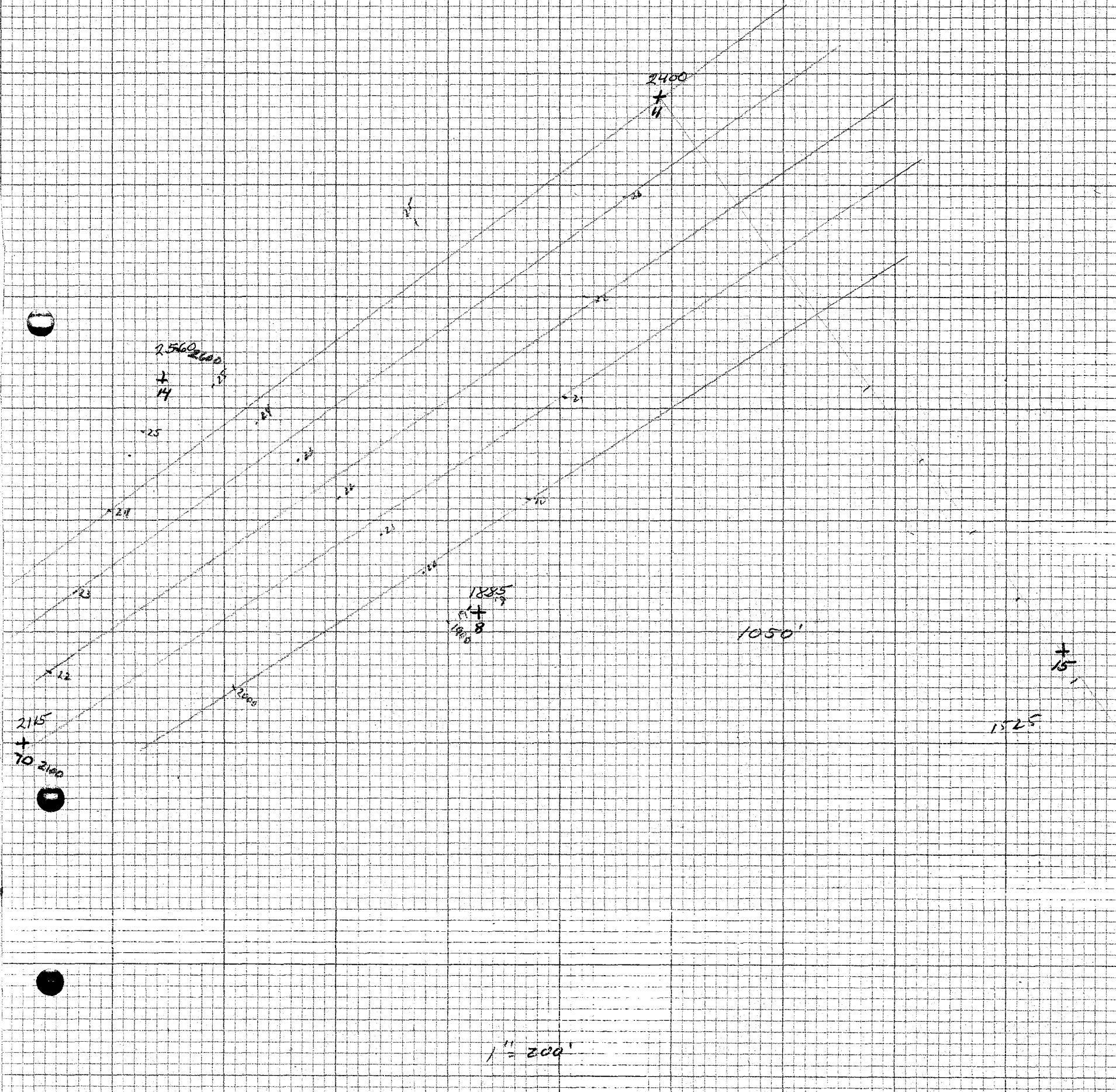
@ 108.99 ft² = 0.41%

3650-4481

831

500.88
85.005
@ 544.40 ft² = 0.60%

8
10
11
14
15



1" = 200'

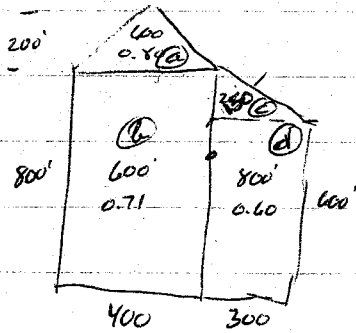
Overlay Figure 4

A-15. ~~3338~~ $\frac{3338}{-2905}$
 $\frac{433}{}$ all Pinal Schist - No intrusive

Figure 4

A-15 $\frac{4699}{-3338}$
 $\frac{1361}{}$ total 52' of biotite feldspar porphyry.
 or

$\frac{52}{1361} \times \frac{x}{100} = 3.8$ or 4% Lbf



$\textcircled{A} \frac{1}{2} \times 400 \times 200 \times 600 = 1,920,000 \text{ tons} \textcircled{0.80}$
 $\textcircled{B} \frac{400 \times 800 \times 600}{12.5} = 15,360,000 \text{ tons} \textcircled{0.71}$
 $\textcircled{C} \frac{1}{2} \times 150 \times 350 \times 600 = 1,260,000 \text{ tons} \textcircled{0.60}$
 $\textcircled{D} \frac{300 \times 600 \times 800}{12.5} = 11,520,000 \text{ tons} \textcircled{0.60}$

 $30,060,000 \text{ tons} \textcircled{0.67}$

Tons %

$\textcircled{A} 1,536,000$
 $\textcircled{B} 10,905,600$
 $\textcircled{C} 756,000$
 $\textcircled{D} 4,912,000$

 $20,109,600$

ORDER FOR ANALYTICAL SERVICES

TAJ 377
Rec. 6-15-84
hand

Samples Sent to:

SKYLINE LABS, INC.

1775 W. SAHUARO • P.O. BOX 50106
TUCSON, ARIZONA 85703
(602) 622-4836

(Report and invoice in duplicate will be sent to address below unless otherwise instructed)

Address Report To:

J.D. Sell
asarco
Box 5747
Tucson Arizona
85703

Tel. 602-792-3010

PROJ. NO. Separation East
P.O. NO.: _____
SHIPMENT NO.: J.D. Sell
DATE SHIPPED: 6/15/84
SHIPPED VIA: _____
NO. OF CARTONS: _____
NO. OF SAMPLES: 11
(Information above helps us trace lost shipments)

Send Invoice To: _____

Send Copy of Report To: _____

LIST SAMPLE NOS.	DESCRIBE MATERIAL (ROCK CHIP, SOIL, WATER, DRILL CORE, ETC.)	LIST ELEMENTS TO BE DETERMINED (Give anticipated range of values, if possible) Describe any special sample preparation procedures desired.	INDICATE METHOD OF ANALYSIS*	✓ IF 31 - ELEMENT EMISSION SPEC SCAN DESIRED
A15 - 40 thru 59	Core	CU PPM over 13 assay	Geo	

PAYMENT FOR SERVICES REQUESTED MUST ACCOMPANY ORDER UNLESS CREDIT ARRANGED

Signature of person authorizing work: Harold M. Stone
(Use Continuation Sheet If Necessary)

INSTRUCTIONS

*METHOD OF ANALYSIS: G-Geochem, Q-Routine Quantitative Assay
F-Fire Assay

†SAMPLE STORAGE: Pulps stored 90 days pending instructions, bulk rejects stored 30 days pending instructions.

Enclose yellow original with samples, send white copy by mail, retain pink copy. White copy will be returned to shipper as an acknowledgement that shipment has been received.

INDICATE DESIRED DISPOSITION OF SAMPLES AFTER ANALYSIS	Bulk Rejects	Pulp
Return at customer's expense via:		
Store temporarily pending instructions†	✓	✓
Discard immediately		

*Johnellen
622-7901*

ORDER FOR ANALYTICAL SERVICES

*TAJ 380
Rec. 7-9 84
hand*

Samples Sent to:

SKYLINE LABS, INC.

1775 W. SAHUARO • P.O. BOX 50106
TUCSON, ARIZONA 85703
(602) 622-4836

(Report and invoice in duplicate will be sent to address below unless otherwise instructed)

Address Report To:

*JAMES D. SELL
SWEED, ASARCO Div.
PO Box 5747
TUCSON, AZ
85703
Tel. 792-3010*

PROJ. NO. EA-0010
P.O. NO.: _____
SHIPMENT NO.: One
DATE SHIPPED: 7/9/84
SHIPPED VIA: hand
NO. OF CARTONS: None
NO. OF SAMPLES: 17
(Information above helps us trace lost shipments)

Send Invoice To: _____

Send Copy of Report To: _____

LIST SAMPLE NOS.	DESCRIBE MATERIAL (ROCK CHIP, SOIL, WATER, DRILL CORE, ETC.)	LIST ELEMENTS TO BE DETERMINED (Give anticipated range of values, if possible) Describe any special sample preparation procedures desired.	INDICATE METHOD OF ANALYSIS*	✓ IF 31 - ELEMENT EMISSION SPEC SCAN DESIRED
<i>A-15-60</i>	<i>all elements split</i>	<i>Cu only, mostly low values</i>		
<i>↓</i>				
<i>15-67</i>				
<i>and</i>				
<i>A-15-90</i>				
<i>↓</i>				
<i>A-15-98</i>				
<i>Need more pulp boxes in A Skyline</i>				

PAYMENT FOR SERVICES REQUESTED MUST ACCOMPANY ORDER UNLESS CREDIT ARRANGED

Signature of person authorizing work: *James D. Sell*

(Use Continuation Sheet If Necessary)

INSTRUCTIONS:

*METHOD OF ANALYSIS: G-Geochem, Q-Routine Quantitative Assay
F-Fire Assay

†SAMPLE STORAGE: Pulps stored 90 days pending instructions, bulk rejects stored 30 days pending instructions.

Enclose yellow original with samples, send white copy by mail, retain pink copy. White copy will be returned to shipper as an acknowledgement that shipment has been received.

INDICATE DESIRED DISPOSITION OF SAMPLES AFTER ANALYSIS	Bulk Rejects	Pulp
Return at customer's expense via:		
Store temporarily pending instructions†	<i>well packed</i>	<i>equally well</i>
Discard immediately		

CLIENT

	Collar	X fault	
A-14	4694	2135	2559
A-8	4671	2786	1885
A-11	4608	2207	2401
A-10	4585	2471	2114

Central A-15

260,000 feet N
 - 13,190
 846,810 N

770,000 feet E (Central)
 + 5,050
 775,050 E

✓ N E 1/4 SW 1/4 SW 1/4

Sec. 23

5280
 2440
 1320

2588
 2115 40 7.9
 ----- 15.8
 473 = 12.7 237

2115
 1885

 230 42 = 5.5

2560
 1085

 475 = 19.3

2560
 2400 57

 160 = 3

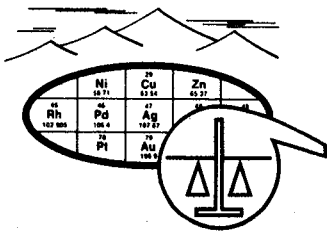
2780
 1885 49

 515 = 10.5

47

4628
 1525

 3100



SKYLINE LABS, INC.
 1775 W. Sahuaro Dr. • P.O. Box 50106
 Tucson, Arizona 85703
 (602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 358
 May 2, 1984
 A-15-1 THRU A-15-4
 W.L. KURTZ
 PAGE 1 OF 1

ASARCO INCORPORATED
 Attn: Mr. James D. Sell
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

Analysis of 4 Core Samples

ITEM	SAMPLE NO.	Cu (ppm)
1	A-15-1	1200.
2	A-15-2	215.
3	A-15-3	220.
4	A-15-4	150.

cc: Asarco Incorporated
 Attn.: Mr. W.L. Kurtz
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

*See also files
5/3*

APPROVED FOR PAYMENT
 By: _____
 ((Signature))

TAB

Superior East

Reports - Assay III

M-1A; DCA-SERVICE

ETC.

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 13, 1972

TO: J. D. Sell

FROM: R. B. Cummings

ASSAY RESULTS
DRILL HOLE M-1A
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA

Attached is a list of samples and corresponding assays for drill hole M-1A. All are core split samples. They are listed in order of increasing depth.

R. B. Cummings
R. B. Cummings

RBC:lad
Attach.

ASSAY RESULTS DRILL HOLE M-1A
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Cu %	Weighted Average	Au & Ag		
M-1A-44	2440-2460	20'	0.12			2428	<u>Tev</u>
M-1A-45	2540-2560	20'	0.01				Tw
M-1A-46	2640-2660	20'	0.03				
M-1A-47	2740-2760	20'	0.02	492 ft. @ ± 0.05% Cu			
M-1A-48	2840-2860	20'	0.07			2920	<u>Tw</u>
M-1A-49	2940-2960	20'	0.02	188 ft. @ ± 0.02% Cu			<u>Qm</u>
M-1A-50	3040-3060	20'	0.03			3108	<u>slide</u>
M-1A-51	3140-3160	20'	0.13				Tw
M-1A-52	3240-3260	20'	0.09	262 ft. @ ± 0.09% Cu			
M-1A-36	3350-3360	10'	0.04				
M-1A-37	3360-3370	10'	0.05				
M-1A-1	3370-3380	10'	0.305				
M-1A-2	3380-3390	10'	0.348				
M-1A-3	3390-3400	10'	0.152				
M-1A-4	3400-3410	10'	0.130				
M-1A-5	3410-3420	10'	0.100				
M-1A-6	3420-3430	10'	0.082				
M-1A-7	3430-3440	10'	0.092				
M-1A-8	3440-3450	10'	0.110				
M-1A-9	3450-3460	10'	0.090				
M-1A-10	3460-3470	10'	0.075				
M-1A-11	3470-3480	10'	0.130				
M-1A-12	3480-3490	10'	0.222				
M-1A-13	3490-3500	10'	0.220				
M-1A-14	3500-3510	10'	0.140				
M-1A-15	3510-3520	10'	0.122				
M-1A-53	3540-3560	20'	0.07				
M-1A-54	3640-3660	20'	0.03				
M-1A-55	3740-3760	20'	0.11				
M-1A-17	3850-3856.2 3857.3-3860	8.9'	0.11	330 ft. @ ± 0.07% Cu			
M-1A-16	3856.2-3857.3	1.1'	0.61				
M-1A-18	3860-3870	10'	0.14				
M-1A-19	3870-3880	10'	0.09				

Composite - Trace Au
and 0.02 oz./ton Ag

ASSAY RESULTS DRILL HOLE M-1A - Cont'd.
SUPERIOR EAST PROJECT

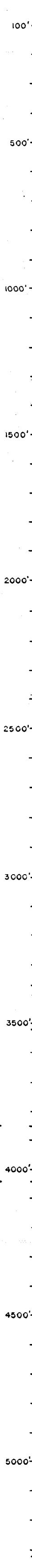
ASARCO Sample No.	Depth	Interval	Cu %	Weighted Average	Au & Ag
M-1A-20	3880-3890	10'	0.08	190 ft. @ 0.10% Cu — 858 ft. @ ± 0.08% Cu —	
M-1A-21	3890-3900	10'	0.13		
M-1A-22	3900-3910	10'	0.11		
M-1A-23	3910-3920	10'	0.13		
M-1A-24	3920-3930	10'	0.10		
M-1A-25	3930-3940	10'	0.07		
M-1A-26	3940-3950	10'	0.09		
M-1A-27	3950-3960	10'	0.09		
M-1A-28	3960-3970	10'	0.10		
M-1A-29	3970-3980	10'	0.08		
M-1A-30	3980-3990	10'	0.08		
M-1A-31	3990-4000	10'	0.11		
M-1A-32	4000-4010	10'	0.09		
M-1A-33	4010-4020	10'	0.08		
M-1A-34	4020-4030	10'	0.06		
M-1A-35	4030-4040	10'	0.06		
M-1A-56	4040-4060	20'	0.05		
M-1A-57	4140-4160	20'	0.08		
M-1A-58	4240-4260	20'	0.08		
M-1A-59	4340-4360	20'	0.11		
M-1A-60	4440-4460	20'	0.06		
M-1A-61	4540-4560	20'	0.05		
M-1A-62	4640-4660	20'	0.12		
M-1A-63	4740-4760	20'	0.10		
M-1A-64	4840-4860	20'	0.07		
M-1A-38	4940-4960	20'	0.08		
M-1A-39	5040-5060	20'	Trace		
M-1A-40	5140-5160	20'	Trace		
M-1A-41	5240-5260	20'	Trace		
M-1A-42	5300-5310	10'	Trace		
M-1A-43	5310-5322	12'	Trace		

4898 $\frac{Tw}{Pn}$

TD

M-1A

Collar Elev. 4500'



Continental Rotary Hole M-1
Surface -2402' with core from 2252'-2261' (Sept.-Oct. 1970)
ASARCO Core Hole M-1A
2402'-5322' (April 11 - July 3, 1971)

NOTE: Assays recorded are Copper Values sampled on 10' intervals.

Dacite

VITRO
VITRO
tuff

Rubble 1890'

Earlier Volcanics

2428'

Whitetail Conglomerate with clasts of qm, sch, db, qtzite in mudstone, sparse amounts of Native Copper

Available assays in this 492 foot section of Whitetail suggest the section will average 0.05 % copper.

2920'

Brecciated Quartz Monzonite "Slide Block" with Native Copper

Available assays in this 188 foot section of Quartz Monzonite "slide block" will average 0.02 % copper.

3108'

% Cu

from 3370' to 3520'

- 0.305
- 0.348
- 0.152
- 0.130
- 0.100
- 0.082
- 0.092
- 0.110
- 0.090
- 0.075
- 0.130
- 0.222
- 0.220
- 0.140
- 0.122

from 3850' to 4040'

- 0.16
- 0.14
- 0.09
- 0.08
- 0.13
- 0.11
- 0.13
- 0.10
- 0.07
- 0.09
- 0.09
- 0.10
- 0.08
- 0.08
- 0.11
- 0.09
- 0.08
- 0.06

Whitetail Conglomerate with clasts of qm, db, qtzite, lms, & sch-gn with altered porphyry fragments. Sparse to Trace amounts of Native Copper throughout section. Limestone clasts toward base

Native copper in this 1790 foot section of Whitetail, from 3108 to 4898 feet, based on available assays, suggest the entire section will average 0.09 % copper.

4500'

(POST-MINERAL) 4898'

Naco Limestone (Pennsylvanian) fossiliferous, & associated red bed shales, trace pyrite & specularite

5322' TD

T 1 S, R 13 E.
NW 1/4 SW 1/4 SW 1/4 of Sec. 15

GRAPHIC LOG & ASSAY RESULTS

of

DRILL HOLE M-1A

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

J.D.S.

July 8, 1971

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

April 4, 1972

TO: J. D. Sell
FROM: R. B. Cummings

ASSAY RESULTS
DRILL HOLE DCA-1A
SUPERIOR EAST PROJECT

Attached is a list of samples and corresponding assays for drill hole DCA-1A. All samples are split core samples. Samples are listed in order of increasing depth.

R.B. Cummings
R. B. Cummings

RBC:sg
attach.

ASSAY RESULTS DRILL HOLE DCA-1A
SUPERIOR EAST PROJECT

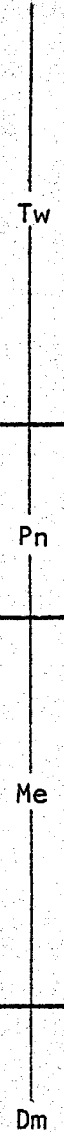
<u>ASARCO Sample No.</u>		<u>Depth</u>	<u>Interval</u>	<u>Cu ppm</u>	<u>Zn ppm</u>	<u>Mo ppm</u>	<u>SiO₂ %</u>	<u>CaO %</u>	<u>MgO %</u>	<u>Total Fe, %</u>	<u>Rock Type</u>
DCA-1A-1		4002-4020	18'	44	245	7					
-2		4100-4120	20'	53	285	7					
-3		4200-4220	20'	55	263	5					
-4	Tw	4300-4320	20'	77	441	10					
-5		4400-4420	20'	84	640	9					
-6		4500-4520	20'	49	609	5					
-7		4600-4620	20'	24	174	9					
-8		4700-4720	20'	6	92	7					Shaley Lms.
-9	Pn	4800-4820	20'	7	156	5					Shaley Lms
-10		4900-4920	20'	5	123	7					Shaley Lms.
-11		5194-5202	8'	31	74	10	16.9	28.1	14.5	0.80	Dolomitic Lms
-12		5202-5210	8'	19	56	13	3.7	30.7	20.8	0.80	Replaced Texture
-13	Me	5210-5218	8'	11	37	11	2.1	51.7	1.2	0.35	Limestone
-14		5392-5401	9'	18	68	12	3.0	30.5	21.0	0.75	Dolomitic Lms.
-15		5401-5410	9'	33	93	9	2.5	31.8	20.0	0.80	Replaced Texture
-16		5410-5419	9'	21	47	9	3.2	30.9	22.0	0.60	Dolomitic Lms. Dolomitic Lms.
-17		5575-5595	20'	42	48	9	13.7	44.2	2.3	0.95	Shaley Lms. Shaley Lms.
-18	Dm	5595-5605	10'	39	46	12	36.1	20.2	9.9	1.25	Replaced Texture

ASSAY RESULTS DRILL HOLE DCA-1A (Cont'd.)
SUPERIOR EAST PROJECT

<u>ASARCO Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Cu ppm</u>	<u>Zn ppm</u>	<u>Mo ppm</u>	<u>SiO₂ %</u>	<u>CaO %</u>	<u>MgO %</u>	<u>Total Fe, %</u>	<u>Rock Type</u>
DCA-1A-19	5650-5660	10'	20	53	11	6.5	30.3	19.9	0.90	Replaced Texture
-20	5709-5719	10'	337	30	12	10.8	28.1	18.2	0.95	Replaced Texture

ASSAY RESULTS DRILL HOLE DCA-1A
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Cu ppm	Zn ppm	Mo ppm	SiO ₂ %	CaO %	MgO %	Total Fe, %	Rock Type
DCA GDA-1A-1	4002-4020	18'	44	245	7					
-2	4100-4120	20'	53	285	7					
-3	4200-4220	20'	55	263	5					
-4	4300-4320	20'	77	441	10					
-5	4400-4420	20'	84	640	9					
-6	4500-4520	20'	49	609	5					
-7	4600-4620	20'	24	174	9					
-8	4700-4720	20'	6	92	7					Shaley lms.
-9	4800-4820	20'	7	156	5					Shaley lms
-10	4900-4920	20'	5	123	7					Shale and lms.
-11	5194-5202	8'	31	74	10	16.9	17.28.1	14.5	0.80	Dolomitic Lms. ^{chert band}
-12	5202-5210	8'	19	56	13	3.7	8.3 30.7	20.8	0.80	Replaced Texture
-13	5210-5218	8'	11	37	11	2.1	24.6 51.7	1.2	0.35	limestone
-14	5392-5401	9'	18	68	12	3.0	16.2 30.5	21.0	0.75	Dolomitic lms.
-15	5401-5410	9'	33	93	9	2.5	12.7 31.8	20.0	0.80	Replaced Texture
-16	5410-5419	9'	21	47	9	3.2	9.7 30.9	22.0	0.60	Dolomitic lms
-17	5575-5595	20'	42	48	9	13.7	32 44.2	2.3	0.95	Shaley lms.
-18	5595-5605	10'	39	46	12	36.1	0.6 20.2	9.9	1.25	Replaced Texture

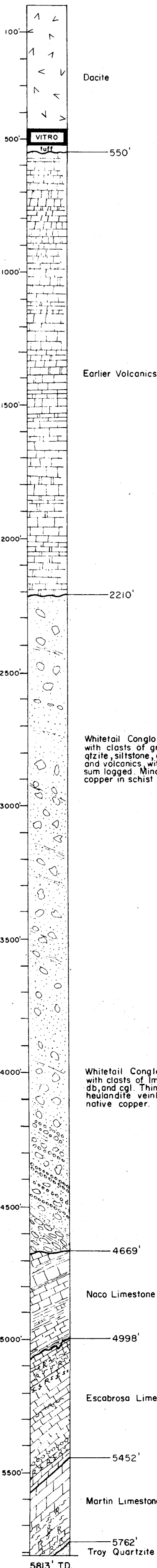


ASSAY RESULTS DRILL HOLE DCA-1A (Cont'd.)
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Cu</u> <u>ppm</u>	<u>Zn</u> <u>ppm</u>	<u>Mo</u> <u>ppm</u>	<u>SiO₂</u> <u>%</u>	<u>CaO</u> <u>%</u>	<u>MgO</u> <u>%</u>	<u>Total</u> <u>Fe, %</u>	<u>Rock</u> <u>Type</u>
DCA-1A-19	5650-5660	10'	20	53	11	6.54	730.3	19.9	0.90	Replaced texture
-20	5709-5719	10'	337	30	12	10.8	2628.1	18.2	0.95	Replaced texture
			<u>271</u>	<u>55.2</u>	<u>10.8</u>	<u>98.5</u>	<u>3265</u>	<u>149.8</u>	<u>8.75</u>	
			<u>274</u>	<u>55.4</u>	<u>11.0</u>	<u>9.9</u>	<u>32.7</u>	<u>15.0</u>	<u>0.88</u>	7.8
										<u>CaO</u> <u>SiO₂</u>
		<i>ortho.</i>				<u>11.9</u>	<u>28.2</u>	<u>17.8</u>	<u>0.94</u>	
		<i>Repl. (5)</i>	30	56	5	<u>59.6</u>	<u>141.1</u>	<u>88.8</u>	<u>514.70</u>	5.8
		<i>Dol. (3)</i>	23	63	3	<u>7.7</u>	<u>29.8</u>	<u>19.2</u>	<u>0.72</u>	7.2
		<i>Stalagm. (1)</i>	42	48		13.7	44.2	2.3	0.95	3.2
		<i>Lms (1)</i>	11	37		2.1	51.7	1.2	0.35	24.6

DCA - IA

Collar Elev. 4760'



MIAMI COPPER - Superior Oil Rotary Hole DCA-1
Surface - 4002' with spot cores

at 1668' - 1675'
2959' - 2971'
3514' - 3525'
3525' - 3542'
3542' - 3552'
3552' - 3568'
4000' - 4011.5'

May 18 - June 26 1964
9" Hole

ASARCO Core Hole DCA-IA

4002' - 5813'
Nov. 17, 1971 - Feb. 9, 1972
NX Hole

12' of 0.024% Cu
(0.010% Oxide)

11' of 0.024% Cu
(0.008% Oxide)

ASARCO SAMPLES*

Footage	ppm	
	Cu	Zn
18'	44	245
20'	53	285
20'	55	263
20'	77	441
20'	84	640
20'	49	609
20'	24	174
20'	6	92
20'	7	156
20'	5	123
8'	31	74
8'	19	56
8'	11	37
9'	18	68
9'	33	93
9'	21	47
20'	42	48
10'	39	46
10'	26	53
10'	37	30

* Sample list and values for Cu, Zn, Mo, in ppm, and SiO₂, CaO, MgO, and total Fe in %, submitted by separate memo.

* -R - Replacement textured zone

T 1 S, R 13 E.
NW 1/4 NE 1/4 of Sec. 3

GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE DCA-IA
SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

J.D.S. SCALE 1" = 300'
March 31, 1972

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

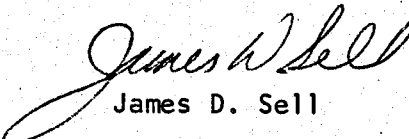
January 27, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Assay Results
Drill Hole DCA-2A
Superior East Project
Pinal County, Arizona

Attached is a list of samples and corresponding assays, depth, and rock type for drill hole DCA-2A. No rotary samples are included, as the rotary hole portion was originally drilled in 1964-1965. ASARCO reentered the hole, cleaned to 1339, set casing with wedge and secured the first core at 1352 feet. The hole was terminated at 2422 feet. AARL assays attached also contain the lead and zinc values.


James D. Sell

JDS:lb
Attachs.

ASSAY RESULTS
 Drill Hole DCA-2A
Superior East Project

ASARCO Number	Unit	Depth	ppm		Note
			Copper	Moly	
DCA-2A-1	Tw	1390-1400	373	26	High clast content
-2	Tw	1430-1440	86	2	Few clasts
-3	Trt	1442-1452	344	1	Rhyolite tuff
-4	pēpi	1460-1470	1036	7	Broken, oxidized, chrysocolla
-5	Tsg	1580-1590	343	13	Broken, oxidized
-6	Tsg	1630-1640	620	8	Sheared, oxidized
-7	Tsg	1640-1650	1004	9	Sheared, oxidized, chrysocolla
-8	pēpi	1700-1710	639	5	Oxidized
-9	Tsg	1810-1820	434	11	Weak oxidation
-10	pēpi	1840-1850	707	6	Weak oxidation
-11	pēpi	1910-1920	2000	9	Minor copper oxide, oxidized
-12	pēpi	2000-2010	261	6	Sulfides, trace pyrite
-13	pēpi	2120-2130	245	5	Sulfides, trace fine pyrite
-14	pēpi	2200-2210	48	8	Trace pyrite, sheared
-15	pēpi	2310-2320	103	4	Trace pyrite
-16	pēpi	2410-2420	121	3	Trace pyrite

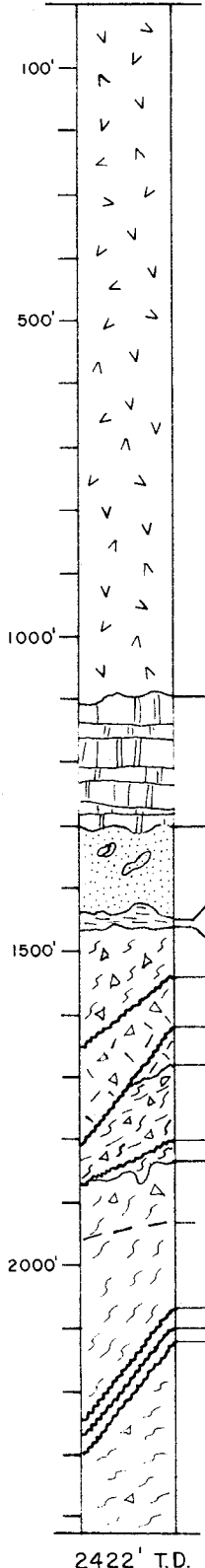
DCA-2A

Collar Elev. 4760 ft.

Rotary information from files of Superior Oil Company

Rotary Core
1352'

could have



DRILL HOLE DCA-2A

ROTARY : Miami Copper-Superior Oil
Surface-1772 ft
July 3-12, 1964 (to 1471')
June 27-July 24, 1965 (to 1772')
rotary - mud system

CORE : ASARCO
Wedge at 1339'
Cored from 1352' to 2422'
NX to 2080'
BX to 2422'
Boyles Brothers
CP-50
Nov. 4-Dec. 19, 1974

DACITE

EARLIER VOLCANICS

1300' WHITETAIL CONGLOMERATE Light brown to green-gray sand & grit, with clasts of Pinal & Schultze granite.

1442' RHYOLITE TUFF Yellow-light green, water-lain, air-fall.

1452' PINAL SCHIST Oxidized, weak copper stains, broken-crushed.

1540' SCHULTZE GRANITE Oxidized, broken-crushed.

1620' SCHULTZE GRANITE Minor argillic alteration, minor Fe-stain.

1676' PINAL SCHIST Faulted & crushed @ ± 45°

1804' SCHULTZE GRANITE Fault at top, intrusive into pEsc at base.

1827' PINAL SCHIST Broken, Fe-stain, some Cu oxide.

(1932') OXIDE SULFIDE

PINAL SCHIST With few qtz-porphry dikelets, narrow qtz-sericite with pyrite.

(2067') fault zone @ 80°

(2120') fault zone @ 80°

PINAL SCHIST Broken in narrow zones, with qtz-sericite & calcite-filled fractures. Minor fine pyrite.

2422' T.D.

T 1 S, R 13 E
SE 1/4 NW 1/4 SE 1/4 of Sec. 11

**GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE DCA-2A**

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

J.D.S. SCALE 1" = 300' Jan. 30, 1975

NOTE: Individual assays for the holes are found in Assay Report, dated Jan. 27, 1975.

MVK 2486-I

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

November 20, 1974

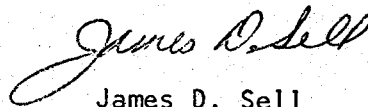
TO: W. L. Kurtz

FROM: J. D. Sell

Assay Results
Drill Hole DCA-3A
Superior East Project

Attached is a list of samples and corresponding assays, depth, and rock type for drill hole DCA-3A. No rotary samples are included as the rotary hole portion was originally drilled in 1965 and ASARCO reentered the hole, cleaned to bottom and set casing for core drilling.

From the core splits, copper, lead, zinc, moly, and some iron, silica, and alumina assays were recorded. All values are given on the attached AARL reports.


James D. Sell

JDS:lb
Attachs.

ASSAY RESULTS DRILL HOLE DCA-3A
SUPERIOR EAST PROJECT

ASARCO Number	Unit	Depth	ppm		Note
			Copper	Moly	
DCA-3A-1	Tw	3000-3010	300	9	
-2	"	3100-3110	305	6	
-3	"	3200-3210	503	7	Includes tuff marker w/cuprite
-4	"	3300-3310	131	11	
-5	"	3400-3410	565	11	
-6	"	3500-3510	343	9	
-7	"	3600-3610	335	14	
-8	"	3700-3710	562	20	
-9	"	3800-3810	600	18	
-10	"	3900-3910	618	24	
-11	"	4000-4010	431	18	
-12	SB of sc-gr	4099-4110	660	27	Taken in schist portion
-13	Tw	4200-4210	2000	38	
-14	SB of Q.M.	4300-4310	326	16	Fe = 2.32%, py pseudomorphs
-15	"	4330-4338	1210	42	Fe = 4.84%
-16	"	4380-4394	943	20	Fe = 1.97%
-17	Tw	4430-4440	1225	43	Fe = 3.13%
-18	Tsg, cata.	4460-4470	1008 ppm	16	Fe = 1.82%
-19	" "	4530-4534	1.40%	18	Fe = 1.56%; OxCu = 1.30%
-20	" "	4534-4540	0.32%	16	Fe = 1.51%; OxCu = 0.12%
-21	" "	4640-4650	320 ppm	7	Fe = 1.71%
-22	Tsg, massive	4690-4700	988	9	Fe = 1.51% (oxide-sulfide)
-23	" "	4740-4750	672	14	Fe = 1.66% (sulfide)
-24	" "	4760-4770	1800	13	Fe = 1.56%
-25	" "	4790-4800	290	16	
-26	pepi, cata.	4820-4830	171	9	
-27	" "	4870-4880	55	7	
-28	pepi, massive	4970-4980	100	12	Fe = 3.4%
-29	" "	5140-5150	112	58	

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

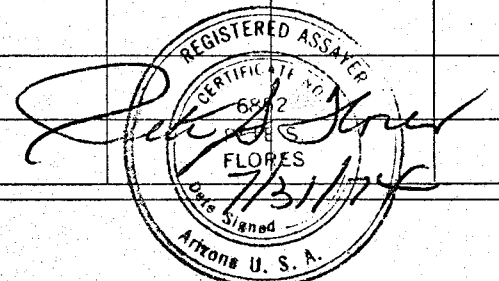
SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE July 31, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	V. G. K.
3A DCA -3-1			300	179	106	9		AUG 6 1974
2			305	32	32	6		
3			503	37	34	7		
4			131	32	35	11		
5			565	34	74	11		
6			343	37	36	9		
7			335	43	40	14		
8			562	30	57	20		
9			600	26	118	18		
10			618	38	70	24		
11			431	28	33	18		
<i>Ave</i>			427	47	58	13		

Invoice # 11226

CHARGES \$ 55.00



ASSAYER - CHEMIST

DCA-3A

Collar Elev. 4640 ft.

DRILL HOLE DCA-3A

ROTARY Miami Copper-Superior Oil
Surface - 3000 ft.
Rotary - mud
May 7 - June 21, 1965

CORE ASARCO
2980-5154 ft.
Boyles, CP-50
NX Core
July 2 - October 16, 1974

NOTE: Core barrel & rods lost from 4150' to 4338'.
Hole cemented up to 4089'. A new hole was
deviated at 4089' and continued to terminal
depth at 5154'.

Rotary information
from files of Superior
Oil Company.

(Notes in SOC files do not
mention vitrophyre or tuff
unit).

**ROTARY
CORE**

2980'

300 ppm Cu

3204'

3370'

3500'

454 ppm Cu

3700'

4000'

4081'

660 ppm Cu

4159'

2000 ppm Cu

4297'

826 ppm Cu

4394'

1225 ppm Cu

4454'

4500'

3309 ppm Cu

Oxide 4666'

Sulfide 4690'

1250 ppm Cu

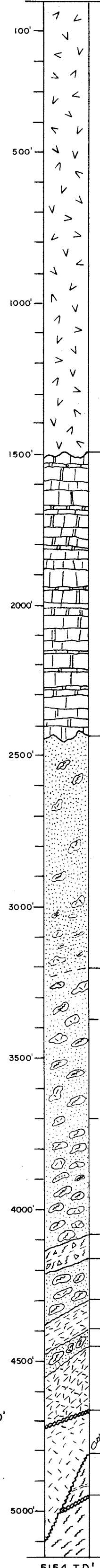
4806'

113 ppm Cu

4948'

106 ppm Cu

5154'



DACITE

EARLIER VOLCANICS

WHITETAIL CONGLOMERATE

Slightly muddy to very gritty matrix of fine debris with
subangular to subrounded clasts, 1 1/2" - 2" medium size.

Matrix: red to muddy brown to chocolate brown at base, 18 %
Clast. Schultze 81 %, Pinal 16 %, Q.M. 3 %

3204'-3205' tuff marker
Visible amounts of Cu^o in chocolate brown matrix, 17 %
Clast. Schultze 64 %, Pinal 36 %, Q.M. trace.

dark brown matrix, 15 %
Clast. Pinal 61 %, Schultze 27 %, db 7 1/2 %, Q.M. 4 1/2 %

dark brown to red brown matrix, 12 %
Clast. Pinal 88 %, db 7 %, Q.M. 4 %, Qtzite 1 %

4081'
SLIDE BLOCK of crushed & broken Pinal Schist & Schultz Q.M., altered.
dip ± 20°

4159'
Tw brown-red matrix, 20 %
Clast. Pinal 97 %, Q.M. 3 %

4297'
SLIDE BLOCK of cataclastic Q.M. @ ± 30°

4394'
Tw, red-brown matrix 16 %. Clast. Pinal 95 %, Q.M. 5 %

4454'
Cataclastic (moderate) fault slide of Schultze Q.M. (leached capping).
altered w/silica flooding, some clay & sericite, variable iron, oxidized.

4666'-4670' Fault Gouge @ ± 20°
Schultze Q.M., broken, few shear zone, minor pyrite & moly.

4806'-4809' Fault Gouge @ 60°-70°
Pinal Schist w/minor gr. aplite squirts, cataclastic sheared.

4948'-4953' Fault Gouge @ ± 35°
Pinal Schist, broken but massive with fine pyrite, some magnetite.
Abundant spider-web calcite filled fractures. Through going qtz veinlets.

NOTE: Individual assays for the
hole are found in Assay
Report, dated Nov. 20, 1974

T 1 S, R 13 E
SW 1/4 NE 1/4 NW 1/4 of Sec. 23

**GRAPHIC LOG & ASSAY RESULTS
of**

DRILL HOLE DCA-3A

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

J.D.S.

July 8, 1974

MVK 2486-H

ASSAY RESULTS DRILL HOLE A-1
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Pb, %</u>	<u>Zn, %</u>	<u>Mo, %</u>	<u>Cu, %</u>
A-1-6	1380-1390	10'	Tr	0.01	.0053	0.18
A-1-7	1390-1400	10'	Tr	0.01	.0034	0.19
A-1-8	1420-1430	10'	0.01	Tr	.0039	0.12
A-1-9	1480-1490	10'	Tr	Tr	.0012	0.03
A-1-10	1510-1520	10'	0.01	0.01	.0011	0.15
A-1-11	1540-1550	10'	Tr	0.01	.0003	0.02
A-1-12	1620-1630	10'	Tr	0.01	.0032	0.02
A-1-13	1660-1670	10'	Tr	Tr	.0009	Tr
A-1-14	1750-1760	10'	Tr	0.01	.0008	0.01
A-1-15	1820-1830	10'	Tr	Tr	.0012	0.01
A-1-16	1880-1890	10'	Tr	Tr	.0009	0.01
A-1-1	1920-1930	10'	Tr	Tr	.0010	0.02
A-1-2	1930-1940	10'	Tr	Tr	.0010	0.02
A-1-3	1940-1950	10'	Tr	0.01	.0135	0.06
A-1-4	1950-1960	10'	Tr	0.01	.0009	0.04
A-1-5	1960-1970	10'	Tr	0.01	.0011	0.02
A-1-17	2030-2040	10'	Tr	Tr	.0014	0.02
A-1-18	2100-2110	10'	0.01	Tr	.0010	0.03
A-1-19	2120-2129	10'	Tr	Tr	.0010	0.03

NOTE: A composite of all nineteen samples assayed as follows:

Au - Trace
Ag - 0.19 02/ton

ASSAY RESULTS DRILL HOLE A-2

SUPERIOR EAST PROJECT

ASARCO Sample No.		Depth	Interval	Total Cu, %	Weighted Average
ROTARY CUTTINGS					
A-2-1	Tev	1989-2021	32'	Trace	947 ft. @ 0.03% Cu.
A-2-2		2021-2052	31'	0.02	
A-2-3		2052-2081	29'	0.01	
A-2-4		2081-2112	31'	0.01	
A-2-5		2112-2143	31'	0.01	
A-2-6		2143-2174	31'	0.01	
A-2-7		2174-2205	31'	0.01	
A-2-8		2205-2236	31'	0.01	
A-2-9		2236-2267	31'	0.03	
A-2-10		2267-2297	30'	0.04	
A-2-11		2297-2327	30'	0.05	
A-2-12		2327-2358	31'	0.04	
A-2-13		2358-2390	32'	0.04	
A-2-14		2390-2422	32'	0.03	
A-2-15		2422-2452	30'	0.03	
A-2-16		2452-2484	32'	0.04	
A-2-17		2484-2515	31'	0.04	
A-2-18		2515-2546	31'	0.03	
A-2-19		2546-2559	13'	0.03	
A-2-20		2559-2572	13'	0.04	
A-2-21		2572-2602	30'	0.03	
A-2-22		2602-2633	31'	0.03	
A-2-23	TW	2633-2662	29'	0.04	
A-2-24		2662-2694	32'	0.02	
A-2-25		2694-2725	31'	0.02	
A-2-26		2725-2756	31'	0.03	
A-2-27		2756-2787	31'	0.04	
A-2-28		2787-2818	31'	0.05	
A-2-29		2818-2848	30'	0.02	
A-2-30		2848-2878	30'	0.05	
A-2-31		2878-2909	31'	0.07	
A-2-32		2909-2938	29'	0.05	
A-2-33		2938-2968	30'	0.03	
A-2-34		2968-3004	36'	0.10	
A-2-35		3004-3034	30'	0.03	
A-2-36		3034-3064	30'	0.10	
A-2-37		3064-3095	31'	0.07	
A-2-38		3095-3126	31'	0.09	
A-2-39		3126-3157	31'	0.08	
A-2-40		3157-3188	31'	0.09	
A-2-41		3188-3217	29'	0.03	

ASARCO
Sample No.

Sample No.	Depth	Interval	Total Cu, %	Weighted Average	No ppm
A-2-42	3217-3248	31'	0.10	624 ft. @ 0.11% Cu	
A-2-43	3248-3278	30'	0.08		
A-2-44	3278-3308	30'	0.13		
A-2-45	3308-3339	31'	0.11		
A-2-46	3339-3370	31'	0.19		
A-2-47	3370-3400	30'	0.27		
A-2-48	3400-3429	29'	0.17		
A-2-49	3429-3459	30'	0.10		
A-2-50	3459-3490	31'	0.07		
A-2-51	3490-3522	32'	0.05		
A-2-52	3522-3550	28'	0.11		
A-2-53	3550-3561	11'	0.22		
A-2-54	3561-3592	31'	0.16		
A-2-55	3592-3622	30'	0.05		
A-2-56	3622-3653	31'	0.03		
A-2-57	3653-3685	32'	0.02		
A-2-58	3685-3716	31'	0.03		
A-2-59	3716-3747	31'	0.02		
A-2-60	3747-3779	32'	0.01		
A-2-61	3779-3810	31'	0.02		
A-2-62	3810-3841	31'	0.02		
A-2-63	3841-3873	32'	0.02		
A-2-64	3873-3904	31'	0.03		
A-2-65	3904-3935	31'	0.03		
A-2-66	3935-3964	29'	0.02		
A-2-67	3964-3995	31'	0.12		
A-2-68	3995-4027	32'	0.03		
A-2-69	4027-4055	28'	0.04		
A-2-70	4055-4076	21'	0.04		

CONTINUOUS CORE SAMPLES

A-2C-1	4076-4078	2'	0.16	36
A-2C-2	4078-4080	2'	0.18	11
A-2C-3	4080-4090	10'	0.14	14
A-2C-4	4090-4100	10'	0.01	26
A-2C-5	4100-4110	10'	0.02	30
A-2C-6	4110-4120	10'	0.05	12
A-2C-7	4120-4130	10'	0.30	24
A-2C-8	4130-4140	10'	0.01	33
A-2C-9	4140-4150	10'	0.01	16
A-2C-10	4150-4160	10'	0.01	34
A-2C-11	4160-4170	10'	0.01	21
A-2C-12	4170-4180	10'	0.07	32
A-2C-13	4180-4190	10'	Trace	17
A-2C-14	4190-4200	10'	0.06	14
A-2C-15	4200-4210	10'	0.01	20

oxidized and leached,
no sulfides remaining.

Tqm &
p&pi

ASARCO
Sample No.

Depth

Interval

Total
Cu, %

Weighted
Average

Mo
ppm

ASARCO Sample No.	Depth	Interval	Total Cu, %	Weighted Average	Mo ppm
A-2C-16	4210-4220	10'	0.16	406 ft. @ 0.05% Cu	53
A-2C-17	4220-4230	10'	0.26		25
A-2C-18	4230-4240	10'	Trace		23
A-2C-19	4240-4250	10'	0.01		15
A-2C-20	4250-4260	10'	0.01		14
A-2C-21	4260-4270	10'	0.01		32
A-2C-22	4270-4280	10'	0.01		23
A-2C-23	4280-4290	10'	0.01		8
A-2C-24	4290-4300	10'	Trace		17
A-2C-25	4300-4310	10'	Trace		11
A-2C-26	4310-4320	10'	0.22	170 ft. @ 0.36% Cu	11
A-2C-27	4320-4330	10'	0.20		12
A-2C-28	4330-4340	10'	0.11		12
A-2C-29	4340-4350	10'	0.37		8
A-2C-30	4350-4360	10'	0.63		12
A-2C-31	4360-4370	10'	0.39		8
A-2C-32	4370-4380	10'	0.40		16
A-2C-33	4380-4390	10'	0.36		11
A-2C-34	4390-4400	10'	0.35		118
A-2C-35	4400-4410	10'	0.42		14
A-2C-36	4410-4420	10'	0.51	203 ft. @ 0.50% Cu	7
A-2C-37	4420-4430	10'	0.31		24
A-2C-38	4430-4440	10'	0.35		20
A-2C-39	4440-4450	10'	0.27		5
A-2C-40	4450-4460	10'	0.33		12
A-2C-41	4460-4470	10'	0.48		67
A-2C-42	4470-4480	10'	0.49		16
A-2C-43	4480-4490	10'	2.40		6
A-2C-44	4490-4500	10'	0.42		7
A-2C-45	4500-4510	10'	1.01		18
A-2C-46	4510-4513	3'	0.25	32	

Tqm & bsp
Tqm
bsp
Tqm

33 ft. @ 1.18% Cu
Tr Au, 0.10 oz Ag
Tr Au, 0.07 oz Ag
Tr Au, 0.04 oz Ag

oxidized and leached,
no sulfides remaining

fault 4295 ft.

first sulfide 4314 ft

last of oxidation
effects.

ASSAY RESULTS DRILL HOLE A-2W
SUPERIOR EAST PROJECT

ASARCO Sample Number	Footage Depth	Footage Interval	Percent Copper	PPM Moly	Weighted Average % Cu
A-2W-1	4230-4240	10'	Tr	16	
A-2W-2	4240-4250	10'	Tr	23	
A-2W-3	4250-4260	10'	Tr	14	
A-2W-4	4260-4270	10'	Tr	17	
A-2W-5	4270-4280	10'	Tr	21	
A-2W-6	4280-4290	10'	0.01	14	
A-2W-7	4290-4300	10'	Tr	18	
A-2W-8	4300-4310	10'	Tr	7	
A-2W-9	4310-4320	10'	0.02	24	
A-2W-10	4320-4330	10'	0.19	8	
A-2W-11	4330-4340	10'	0.72	12	
A-2W-12	4340-4350	10'	0.66	12	
A-2W-13	4350-4360	10'	0.32	10	
A-2W-14	4360-4370	10'	0.41	10	
A-2W-15	4370-4380	10'	0.25	11	
A-2W-16	4380-4390	10'	0.60	64	
A-2W-17	4390-4400	10'	0.53	15	
A-2W-18	4400-4410	10'	0.38	11	
A-2W-19	4410-4420	10'	0.28	24	
A-2W-20	4420-4430	10'	0.36	9	
A-2W-21	4430-4440	10'	0.30	12	
A-2W-22	4440-4450	10'	0.30	9	
A-2W-23	4450-4460	10'	0.25	11	
A-2W-24	4460-4470	10'	0.37	19	
A-2W-25	4470-4480	10'	0.45	10	
A-2W-26	4480-4490	10'	0.32	15	
A-2W-27	4490-4500	10'	0.67	12	
A-2W-28	4500-4510	10'	0.24	11	
A-2W-29	4510-4520	10'	0.07	10	
A-2W-30	4520-4530	10'	0.13	21	
A-2W-31	4530-4540	10'	0.12	68	
A-2W-32	4540-4550	10'	0.08	5	
A-2W-33	4550-4560	10'	0.46	0.0928%	
A-2W-34	4560-4570	10'	0.48	66	
A-2W-35	4570-4580	10'	0.18	122	
A-2W-36	4580-4590	10'	0.55	10	
A-2W-37	4590-4600	10'	0.43	10	
A-2W-38	4600-4610	10'	0.19	11	
A-2W-39	4610-4620	10'	0.10	8	
A-2W-40	4620-4630	10'	0.06	18	
A-2W-41	4630-4640	10'	0.14	25	
A-2W-42	4640-4650	10'	0.13	77	
A-2W-43	4650-4660	10'	0.13	8	

pCpi &
masses of Tqm

4289 Fault
Tqm

4317 base oxidation
pCpi &
minor Tqm
with veinlets
and dissem.

210 ft. @ 0.37% Cu
30 ft. @ 0.31% Cu
620 ft. @ 0.31% Cu for entire sulfide intercept

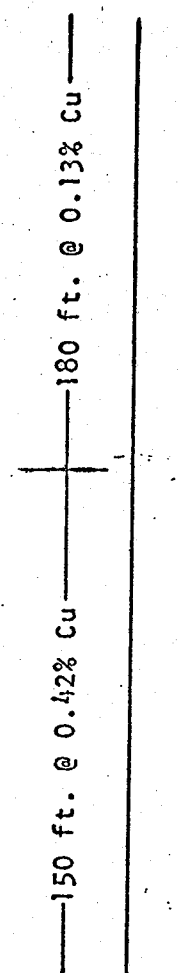
end of cc films

4613-4622 fault zone
drop in mineralization
Predominantly vein
mineralization

A-2W-44	4660-4670	10'	0.25	18
A-2W-45	4670-4680	10'	0.07	18
A-2W-46	4680-4690	10'	0.12	0.0295%
A-2W-47	4690-4700	10'	0.17	0.0257%
A-2W-48	4700-4710	10'	0.10	12
A-2W-49	4710-4720	10'	0.05	10
A-2W-50	4720-4730	10'	0.13	12
A-2W-51	4730-4740	10'	0.30	6
A-2W-52	4740-4750	10'	0.28	14
A-2W-53	4750-4760	10'	0.07	18
A-2W-54	4760-4770	10'	0.09	13
A-2W-55	4770-4780	10'	0.08	15
A-2W-56	4780-4790	10'	0.09	11
A-2W-57	4790-4800	10'	0.20	37
A-2W-58	4800-4810	10'	0.82	26
A-2W-59	4810-4820	10'	0.41	21
A-2W-60	4820-4830	10'	0.26	19
A-2W-61	4830-4840	10'	0.50	8
A-2W-62	4840-4850	10'	0.11	11
A-2W-63	4850-4860	10'	0.19	15
A-2W-64	4860-4870	10'	0.34	32
A-2W-65	4870-4880	10'	0.37	7
A-2W-66	4880-4890	10'	0.63	79
A-2W-67	4890-4900	10'	1.18	24
A-2W-68	4900-4910	10'	0.56	17
A-2W-69	4910-4920	10'	0.07	10
A-2W-70	4920-4930	10'	0.10	13
A-2W-71	4930-4940	10'	0.54	73

220 ft. @ 0.1%

110 ft. @ 0.42%



4830-4834 fault
increased sulfides
& specularite

**Assay Results
Hole A-7
Superior East Project**

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Southwestern Assayers	
			Total Copper	Weighted Average	Total Copper %	Weighted Average
A-7-1		2555-2577	60	2445 to 3150 705' @ 60 ppm		
-2		3200-3210	908			
-3		3300-3310	319			
-4	Tw	3400-3410	572	3150 to 3682		
-5		3500-3510	379	532' @ 806 ppm		
-6		3550-3560	224			
-7		3560-3570	2100			
-8		3600-3610	1138			
-9	Slide	3700-3710	1576	3682 to 3730 48' @ 1576 ppm		
-12		3790-3795	670			
-10		3795-3805	660			
-13		3805-3810	583	3730 to 4275		
-11	Tw	3900-3910	128	545' @ 454 ppm		
-14		4000-4010	230			
-15		4100-4110	492			
-16		4200-4210	588			
-17	Slide?	4300-4310	390	4275 to 4332 57' @ 390 ppm		
-18		4400-4410	2000			
-19		4500-4510	279	4332 to 4695		
-20	Tw	4600-4610	784	363' @ 823 ppm		
-21		4680-4690	329			
-22		4690-4695	626			
-23		4695-4700	0.50		0.52	
-24		4700-4710	0.67	4695 to	0.62	4695 to
-25		4710-4720	0.59	4750	0.60	4750
-26	Tw	4720-4730	1.47	55' @	1.64	55' @
-27		4730-4740	2.83	1.17%	2.92	1.24%
-28		4740-4750	0.62		0.77	
-29		4750-4760	0.04		0.05	
-30		4760-4770	0.12	4750 to	0.18	4750 to
-31		4770-4780	0.08	4800	0.07	4800
-32		4780-4790	0.06	50' @	0.08	50' @
-33		4790-4800	0.20	0.10%	0.12	0.10%

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Southwestern Assayers	
			Total Copper	Weighted Average	Total Copper %	Weighted Average
A-7-34	Tw	4800-4810	1.09		0.38	
-35		4810-4820	0.62		0.63	
-36		4820-4830	0.31	4800 to	0.36	4800 to
-37		4830-4840	1.79	4910	2.13	4910
-38		4840-4850	1.97	110' @	1.72	110' @
-39		4850-4860	1.61	1.46%	1.82	1.51%
-40		4860-4870	1.83		1.99	
-41		4870-4880	1.46		1.54	
-42		4880-4890	1.48		1.72	
-43		4890-4900	2.03		2.17	
-44		4900-4910	1.83	4910 to	2.17	4910 to
-45		4910-4920	0.24	4960	0.25	4960
-46		4920-4930	0.20	50' @	0.10	50' @
-47		4930-4940	0.09	0.16%	0.08	0.13%
-48		4940-4950	0.04		0.04	
-49		4950-4960	0.22		0.16	
-50		4960-4970	1.34		0.92	
-51		4970-4980	0.52		0.60	
-52		4980-4990	0.37		0.33	
-53		4990-5000	0.18	4960 to	0.22	4960 to
-54		5000-5010	0.29	5070	0.27	5070
-55		5010-5020	0.29	110' @	0.26	110' @
-56		5020-5030	1.30	0.70%	1.04	0.58%
-57		5030-5040	0.68		0.67	
-58		5940-5050	1.46		0.67	
-59		5050-5060	1.04		0.85	
-60		5060-5070	0.28		0.50	
-61		5070-5080	0.18	5070 to	0.16	5070 to
-62		5080-5090	0.30	5120	0.23	5120
-63		5090-5100	0.24	50' @	0.32	50' @
-64		5100-5110	0.40	0.31%	0.36	0.32%
-65		5110-5120	0.41		0.52	
				as ppm below		
-66			5120-5130	835		
-67			5130-5140	280		
-68			5140-5150	471		
-69			5150-5160	471		
-70			5160-5170	442		
-71			5170-5180	452		
-72			5180-5190	350	5120 to	
-73			5190-5200	554	5360	
-74			5200-5210	367	240' @	
-75			5210-5220	504	583 ppm	
-76			5220-5230	495		
-77			5230-5240	684		
-78			5240-5250	938		

Sample Number	Unit	Footage	Amer. Anal. Reas. Lab.		Amer. Anal. Reas. Lab.	
			Total Copper	Weighted Average	Total Zinc ppm	Weighted Average
A-7-79	Tw	5250-5260	as ppm below 628			
-80		5260-5270	601			
-81		5270-5280	692			
-82		5280-5290	580			
-83		5290-5300	583			
-84		5300-5310	832			
-85		5310-5320	888			
-86		5320-5330	765			
-87		5330-5340	616			
-88		5340-5350	421			
-89		5350-5360	553			
-90		5360-5370	1059			311
-91		5370-5380	1076			414
-92		5380-5390	1498			489
-93	5390-5400	1419			404	
-94	5400-5410	2300			399	
-95	5410-5420	1710			428	
-96	5420-5430	1990			535	
-97	5430-5440	965			578	
-98	5440-5450	1410			1690	
-99	5450-5460	1630		5360 to	2500	
-100	5460-5470	1100		5610	1820	
-101	5470-5480	720		250' @	1380	
-102	5480-5490	1290		1380 ppm	1350	
-103	5490-5500	543			1227	
-104	5500-5510	738			1700	
-105	5510-5520	835			1630	
-106	5520-5530	616			1018	
-107	5530-5540	823			1685	
-108	5540-5550	903			2900	
-109	5550-5560	1198			3400	
-110	5560-5570	1947			3900	
-111	5570-5580	1705	1977		3400	
-112	5580-5590	3600			2800	
-113	5590-5600	515			1140	
-114	5600-5610	2900			1575	
-115	Ps	5610-5620	10,600			1425
-117		5620-5630	1210			590
-118		5630-5640	6700			1470
-119		5640-5650	1590			597
-120		5650-5660	709			384
-121		5660-5663	629			740
-122		5663-5670	508			354
-123	5670-5680	495			330	
-116	5680-5690	736			2800	

5360 to 5440
80' @
445 ppm

5440 to 5610
170' @
2066 ppm

Synopsis:

<u>Unit</u>	<u>Footage</u>	<u>Feet</u>	<u>Total Copper</u>	<u>Weighted Average</u>
Tw	2445-3150	705	60 ppm	2445 to 5610 3165 ft. @ 1550 ppm or 0.155%
	3150-3682	532	806 ppm	
	3682-3730	48	1576 ppm	
	3730-4275	545	454 ppm	
	4275-4332	57	390 ppm	
	4332-4695	363	823 ppm	
	4695-4750	55	1.17%	
	4750-4800	50	0.10%	
	4800-4910	110	1.46%	
	4910-4960	50	0.16%	
	4960-5070	110	0.70%	
	5070-5120	50	0.31%	
	5120-5360	240	583 ppm	
	5360-5610	250	1380 ppm	
Ps	5610-5690	80	2823 ppm	2823 ppm

Various Combinations:

Tw	2445-5610	3165	0.16%
	or		
Tw	2445-4695	2250	0.05%
Tw	4695-5610	915	0.43%
	or		
Tw	4695-5120	425	0.78%
	or		
Tw	4695-5070	375	0.84%
	5070-5610	540	0.12%
	or		
Tw	4695-4910	215	1.07%

ASSAY RESULTS DRILL HOLE DCA-1A
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>		<u>Depth</u>	<u>Interval</u>	<u>Cu</u> <u>ppm</u>	<u>Zn</u> <u>ppm</u>	<u>Mo</u> <u>ppm</u>	<u>SiO₂</u> <u>%</u>	<u>CaO</u> <u>%</u>	<u>MgO</u> <u>%</u>	<u>Total</u> <u>Fe, %</u>	<u>Rock</u> <u>Type</u>
DCA-1A-1		4002-4020	18'	44	245	7					
-2		4100-4120	20'	53	285	7					
-3		4200-4220	20'	55	263	5					
-4	Tw	4300-4320	20'	77	441	10					
-5		4400-4420	20'	84	640	9					
-6		4500-4520	20'	49	609	5					
-7		4600-4620	20'	24	174	9					
-8		4700-4720	20'	6	92	7					Shaley Lms.
-9	Pn	4800-4820	20'	7	156	5					Shaley Lms
-10		4900-4920	20'	5	123	7					Shaley Lms.
-11		5194-5202	8'	31	74	10	16.9	28.1	14.5	0.80	Dolomitic Lms
-12		5202-5210	8'	19	56	13	3.7	30.7	20.8	0.80	Replaced Texture
-13	Me	5210-5218	8'	11	37	11	2.1	51.7	1.2	0.35	Limestone
-14		5392-5401	9'	18	68	12	3.0	30.5	21.0	0.75	Dolomitic Lms.
-15		5401-5410	9'	33	93	9	2.5	31.8	20.0	0.80	Replaced Texture
-16		5410-5419	9'	21	47	9	3.2	30.9	22.0	0.60	Dolomitic Lms
-17		5575-5595	20'	42	48	9	13.7	44.2	2.3	0.95	Shaley Lms.
-18	Dm	5595-5605	10'	39	46	12	36.1	20.2	9.9	1.25	Shaley Lms. Replaced Texture

ASSAY RESULTS DRILL HOLE DCA-1A (Cont'd.)
SUPERIOR EAST PROJECT

<u>ASARCO</u> <u>Sample No.</u>	<u>Depth</u>	<u>Interval</u>	<u>Cu</u> <u>ppm</u>	<u>Zn</u> <u>ppm</u>	<u>Mo</u> <u>ppm</u>	<u>SiO₂</u> <u>%</u>	<u>CaO</u> <u>%</u>	<u>MgO</u> <u>%</u>	<u>Total</u> <u>Fe, %</u>	<u>Rock</u> <u>Type</u>
DCA-1A-19	5650-5660	10'	20	53	11	6.5	30.3	19.9	0.90	Replaced Texture
-20	5709-5719	10'	37	30	12	10.8	28.1	18.2	0.95	Replaced Texture

ASSAY RESULTS
 Drill Hole DCA-2A
Superior East Project

ASARCO Number	Unit	Depth	ppm		Note
			Copper	Moly	
DCA-2A-1	Tw	1390-1400	373	26	High clast content
-2	Tw	1430-1440	86	2	Few clasts
-3	Trt	1442-1452	344	1	Rhyolite tuff
-4	pEpi	1460-1470	1036	7	Broken, oxidized, chrysocolla
-5	Tsg	1580-1590	343	13	Broken, oxidized
-6	Tsg	1630-1640	620	8	Sheared, oxidized
-7	Tsg	1640-1650	1004	9	Sheared, oxidized, chrysocolla
-8	pEpi	1700-1710	639	5	Oxidized
-9	Tsg	1810-1820	434	11	Weak oxidation
-10	pEpi	1840-1850	707	6	Weak oxidation
-11	pEpi	1910-1920	2000	9	Minor copper oxide, oxidized
-12	pEpi	2000-2010	261	6	Sulfides, trace pyrite
-13	pEpi	2120-2130	245	5	Sulfides, trace fine pyrite
-14	pEpi	2200-2210	48	8	Trace pyrite, sheared
-15	pEpi	2310-2320	103	4	Trace pyrite
-16	pEpi	2410-2420	121	3	Trace pyrite

ASSAY RESULTS DRILL HOLE DCA-3A
SUPERIOR EAST PROJECT

ASARCO Number	Unit	Depth	ppm		Note
			Copper	Moly	
DCA-3A-1	Tw	3000-3010	300	9	
-2	"	3100-3110	305	6	
-3	"	3200-3210	503	7	Includes tuff marker w/cuprite
-4	"	3300-3310	131	11	
-5	"	3400-3410	565	11	
-6	"	3500-3510	343	9	
-7	"	3600-3610	335	14	
-8	"	3700-3710	562	20	
-9	"	3800-3810	600	18	
-10	"	3900-3910	618	24	
-11	"	4000-4010	431	18	
-12	SB of sc-gr	4099-4110	660	27	Taken in schist portion
-13	Tw	4200-4210	2000	38	
-14	SB of Q.M.	4300-4310	326	16	Fe = 2.32%, py pseudomorphs
-15	"	4330-4338	1210	42	Fe = 4.84%
-16	"	4380-4394	943	20	Fe = 1.97%
-17	Tw	4430-4440	1225	43	Fe = 3.13%
-18	Tsg, cata.	4460-4470	1008 ppm	16	Fe = 1.82%
-19	" "	4530-4534	1.40%	18	Fe = 1.56%; OxCu = 1.30%
-20	" "	4534-4540	0.32%	16	Fe = 1.51%; OxCu = 0.12%
-21	" "	4640-4650	320 ppm	7	Fe = 1.71%
-22	Tsg, massive	4690-4700	988	9	Fe = 1.51% (oxide-sulfide)
-23	" "	4740-4750	672	14	Fe = 1.66% (sulfide)
-24	" "	4760-4770	1800	13	Fe = 1.56%
-25	" "	4790-4800	290	16	
-26	pcpi, cata.	4820-4830	171	9	
-27	" "	4870-4880	55	7	
-28	pcpi, massive	4970-4980	100	12	Fe = 3.4%
-29	" "	5140-5150	112	58	

ASSAY RESULTS DRILL HOLE M-1A
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Cu %	Weighted Average	Au & Ag	
M-1A-44	2440-2460	20'	0.12	492 ft. @ ± 0.05% Cu		2428 $\frac{Tev}{Tw}$
M-1A-45	2540-2560	20'	0.01			
M-1A-46	2640-2660	20'	0.03			
M-1A-47	2740-2760	20'	0.02			
M-1A-48	2840-2860	20'	0.07			
M-1A-49	2940-2960	20'	0.02	188 ft. @ ± 0.02% Cu	2920 $\frac{Qm}{slide}$	
M-1A-50	3040-3060	20'	0.03			
M-1A-51	3140-3160	20'	0.13	262 ft. @ ± 0.09% Cu	3108 $\frac{Tw}{Tw}$	
M-1A-52	3240-3260	20'	0.09			
M-1A-36	3350-3360	10'	0.04	150 ft. @ 0.154% Cu Composite - Trace Au and 0.02 oz./ton Ag		
M-1A-37	3360-3370	10'	0.05			
M-1A-1	3370-3380	10'	0.305			
M-1A-2	3380-3390	10'	0.348			
M-1A-3	3390-3400	10'	0.152			
M-1A-4	3400-3410	10'	0.130			
M-1A-5	3410-3420	10'	0.100			
M-1A-6	3420-3430	10'	0.082			
M-1A-7	3430-3440	10'	0.092			
M-1A-8	3440-3450	10'	0.110			
M-1A-9	3450-3460	10'	0.090			
M-1A-10	3460-3470	10'	0.075			
M-1A-11	3470-3480	10'	0.130			
M-1A-12	3480-3490	10'	0.222			
M-1A-13	3490-3500	10'	0.220			
M-1A-14	3500-3510	10'	0.140			
M-1A-15	3510-3520	10'	0.122			
M-1A-53	3540-3560	20'	0.07	330 ft. @ ± 0.07% Cu		
M-1A-54	3640-3660	20'	0.03			
M-1A-55	3740-3760	20'	0.11			
M-1A-17	3850-3856.2 3857.3-3860	8.9'	0.11			
M-1A-16	3856.2-3857.3	1.1'	0.61			
M-1A-18	3860-3870	10'	0.14			
M-1A-19	3870-3880	10'	0.09			

mountain states research & development
 CERTIFICATE OF ASSAY



Certificate No. 511

Project No. B-31

Date 6/18/81

OXIDIZED
SULFIDE
OXIDIZED
SULFIDE

Date	Sample No.	Ft.	Footage		Au	Ag	Cu	Mo
			From	To	Oz/T	Oz/T	%	%
15793	AI-2-1	5	2614	2621	0.002	N.D.	0.036	0.003
15794	AI-2-2	10	2621	2631	N.D.	N.D.	0.022	0.004
15795	AI-2-3	10	2631	2641	0.001	N.D.	0.013	0.003
15796	AI-2-4	10	2641	2651	---	---	0.018	0.004
15797	AI-2-5	10	2651	2661	---	---	0.016	0.004
15798	AI-2-6	10	2661	2671	---	---	0.006	0.004
15799	AI-2-7	10	2671	2681	---	---	0.009	0.004
15800	AI-2-8	10	2681	2691	---	---	0.011	0.004
15801	AI-2-9	10	2691	2701	0.001	N.D.	0.012	0.005
15802	AI-2-10		2701	2709 1/2	N.D.	0.02	0.008	0.005
15803	AI-2-11		2709 1/2	2720	0.001	0.04	0.006	0.005
15804	AI-2-12		2720	2730	0.001	N.D.	0.014	0.006
15805	AI-2-13		2730	2740	0.001	0.02	0.008	0.004
15806	AI-2-14		2740	2748 1/2	0.001	N.D.	0.009	0.007
15807	AI-2-15		2748 1/2	2758	0.001	0.02	0.013	0.005
15808	AI-2-16		2758	2768	0.001	0.03	0.022	0.005
15809	AI-2-17		2768	2775	0.001	N.D.	0.024	0.004
15810	AI-2-18		2776 2776	2787	0.001	0.08	0.036	0.004
15811	AI-2-19		2787	2797	0.001	0.03	0.028	0.005
15812	AI-2-20		2797	2805	0.001	0.04	0.022	0.006
15813	AI-2-21		2805	2815	0.001	0.04	0.077	0.018
15814	AI-2-22		2815	2824	0.001	0.04	0.070	0.011
15815	AI-2-23		2825	2831 1/2	0.001	0.06	0.38	0.030
15816	AI-2-24		2831 1/2	2840	0.001	N.D.	0.026	0.005

Total Charge \$ 455.50 # 111.50 SAMPLE PREP
 344.00 ASSAYS

F. L. F. Install
 Chief Chemist

mountain states research & development
CERTIFICATE OF ASSAY

Certificate No. 512

Project No. B-31

Date 6/19/81

} OXIDIZED
 } PARTIALLY OXIDIZED
 } SULFIDE

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
15817	AI-2-25	2840	2850	0.001	0.05	0.038	0.004
15818	AI-2-26	2850	2860	0.001	0.03	0.115	0.005
15819	AI-2-27	2860	2871	0.001	0.09	0.78	0.003
15820	AI-2-28	2871	2881	N.D.	N.D.	0.155	0.003
15821	AI-2-29	2881	2891	N.D.	N.D.	0.144	0.003
15822	AI-2-30	2891	2901	N.D.	N.D.	0.112	0.003
15823	AI-2-31	2901	2910	N.D.	N.D.	0.078	0.002
15824	AI-2-32	2910	2920	0.001	0.02	0.154	0.003
15825	AI-2-33	2920	2930	0.001	0.03	0.34	0.006
15826	AI-2-34	2930	2940	0.001	0.04	0.37	0.006
15827	AI-2-35	2940	2950	0.001	N.D.	0.28	0.002
15828	AI-2-36	2950	2960	0.001	N.D.	0.47	0.003
15829	AI-2-37	2960	2970	0.002	N.D.	0.32	0.009
15830	AI-2-38	2970	2980	0.001	N.D.	0.20	0.004

15836	AI-2-39	2980	2990	---	---	0.41	0.008
15837	AI-2-40	2990	3000	---	---	0.29	0.001
15838	AI-2-41	3000	3010	---	---	0.27	0.006
15839	AI-2-42	3010	3020	---	---	0.128	0.024
15840	AI-2-43	3020	3030	---	---	0.243	0.004

Total Charge \$ 111.50 SAMPLE PREP
344.00 ASSAYS
455.50

F. R. Lindell
 Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 513

Project No. B-31

Date 6/18/81

PARTIALLY UNDRILLED

Date	Sample No.	Footage		Au	Ag	Cu	Mo	
		From	To	Oz/T	Oz/T	%	%	
15841	AI-2-44	3030	3040	0.001	N.D.	0.81	0.002	
15842	AI-2-45	3040	3050	0.001	N.D.	0.52	0.001	
15843	AI-2-46	3050	3060	0.001	N.D.	0.45	0.003	
15844	AI-2-47	3060	3070	0.001	N.D.	0.42	0.021	
15845	AI-2-48	3070	3080	0.001	0.02	0.45	0.002	
15846	AI-2-49	3080	3090	0.001	N.D.	0.72	0.005	
15847	AI-2-50	3090	3100	0.001	0.02	0.37	0.001	
15848	AI-2-51	3100	3110	---	---	1.54	0.003	
15849	AI-2-52	3110	3120	---	---	0.143	0.004	
15850	AI-2-53	3120	3130	---	---	0.34	0.007	
15851	AI-2-54	3130	3140	---	---	0.184	0.003	
15852	AI-2-55	3140	3150	---	---	0.46	0.003	
15853	AI-2-56	3150	3160	---	---	0.227	0.001	
15854	AI-2-57	3160	3170	---	---	0.154	0.001	
15855	AI-2-58	3170	3180	---	---	0.137	0.003	
15856	AI-2-59	3180	3190	---	---	0.115	0.002	
15857	AI-2-60	3190	3200	---	---	0.053	0.002	
15859	AI-2-61	<i>Low grade interval from 3200 to 3290 was not split</i> 3290		3300	0.001	N.D.	0.039	0.004
15860	AI-2-62	3300	3310	0.001	N.D.	0.055	0.002	
15861	AI-2-63	3310	3320	0.001	0.03	0.107	0.022	
15862	AI-2-64	<i>Low grade interval from 3320 to 3394 1/2 was not split.</i> 3394 1/2		3404	---	---	0.069	0.002
15863	AI-2-65	3404	3407	---	---	0.251	0.006	
15864	AI-2-66	3407	3415 1/2	---	---	0.042	0.004	
15865	AI-2-67	<i>Low grade interval from 3415 1/2 to 349 1/2 was not split</i> 349 1/2		3502	---	---	0.027	0.002

Total Charge \$ 111.50 SAMPLE PREP.
272.00 ASSAYS
383.50



Chief Chemist

mountain states research & development
CERTIFICATE OF ASSAY

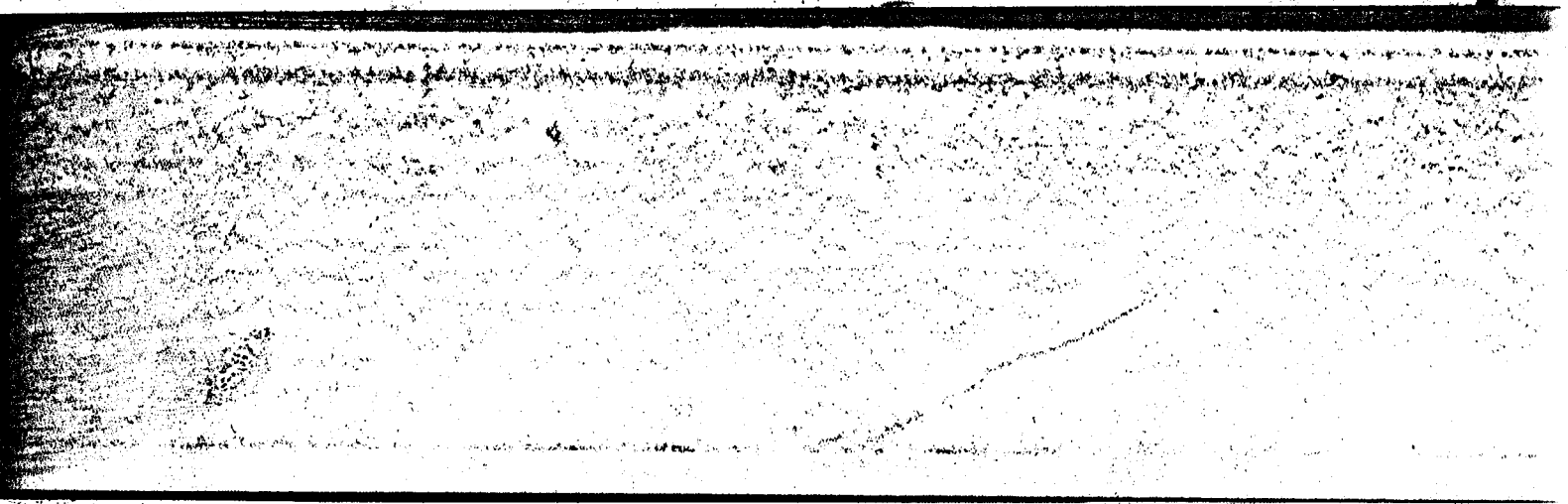
Certificate No. 514

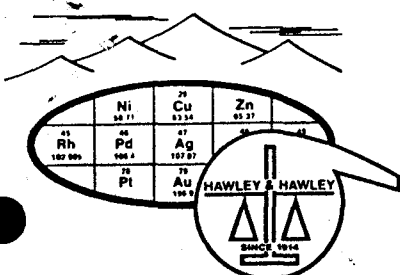
Project No. B-31

Date 6/19/81

PARTIALLY OXIDIZED

Date	Sample No.	Footage		Au	Ag	Cu	Mo
		From	To	Oz/T	Oz/T	%	%
15866	AI-2-68	3502	3511	---	---	0.055	0.001
15867	AI-2-69	3511	3521	---	---	0.061	0.001
15868	AI-2-70	<i>low grade interval from 3521 to 3585 was not split</i>		0.001	N.D.	0.146	0.003
15869	AI-2-71	3593 1/2	3604	0.001	0.03	0.126	0.001
15870	AI-2-72	3604	3607 1/2	0.001	N.D.	0.253	0.001
15871	AI-2-73	3607 1/2	3612	0.001	N.D.	0.39	0.001
	<i>Total Depth</i>						





SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106 • 1700 West Grant Road
Tucson, Arizona 85703
(602) 622-4836

*copy to gox
7-6-78*

REPORT OF SPECTROGRAPHIC ANALYSIS

Job No. DSJ076
H & H No. TAJ-019
June 27, 1978

ASARCO
P.O. Box 5747
Tucson, Arizona 85703

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the cube root of ten. The "accepted" value for each element is considered to be within ± 1 step of the range reported at the 68 percent confidence level and within ± 2 steps at the 95 percent confidence level.

ITEM NO. SAMPLE NO.

1 = QC-1A
 2 = QC-2A
 3 = QC-3A
 4 = QC-7A
 5 = QC-8A
 6 = QC-101
 7 = QC-102

ITEM	1	2	3	4	5	6	7
ELEMENT							
Fe	0. 1%	0. 5%	0. 5%	0. 5%	7%	0. 5%	0. 7%
Ca	3%	5%	>20%	20%	0. 5%	>20%	0. 2%
Mg	0. 05%	0. 05%	10%	10%	0. 05%	0. 1%	0. 05%
Ag	15	200	1	1	1	10	100
As	<500	<500	<500	<500	<500	<500	<500
B	<10	10	<10	<10	10	<10	<10
Ba	200	<10	<10	<10	<10	<10	300
Be	<2	<2	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10	<10	<10
Cd	<50	<50	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	<5	<5	<5
Cr	10	20	10	<10	150	10	70
Cu	100	200	10	30	500	20	200
Ga	<10	10	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20
La	50	70	20	20	<20	30	20
Mn	>10000	>10000	1500	1500	1000	>10000	>10000
Mo	<2	20	<2	<2	5	2	15
Nb	<20	<20	<20	<20	20	<20	<20
Ni	5	5	<5	5	<5	5	7
Pb	70	1000	70	30	20	50	2000
Sb	<100	<100	<100	<100	<100	<100	<100
Sc	<10	<10	<10	<10	<10	<10	<10
Sn	<10	10	10	<10	<10	10	<10
Sr	500	300	<100	<100	500	200	200
Ti	50	70	20	50	1500	200	50
V	70	50	10	50	50	30	50
W	<50	<50	<50	<50	<50	<50	<50
Y	<10	10	<10	<10	<10	<10	<10
Zn	1000	5000	200	500	200	200	10000
Zr	<20	<20	<20	<20	100	<20	<20

SKYLINE LABS, INC.

SPECIALISTS IN EXPLORATION GEOCHEMISTRY

TAB

ICC AOF-1 75

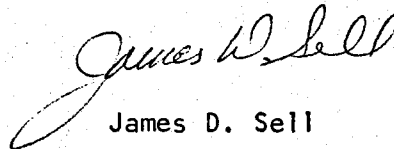
AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

May 16, 1973

FILE MEMORANDUM

ICC Geologic Drill Logs
AOF (American Oak Flat Series)
Rawhide Project Area
Pinal County, Arizona

Attached is a set of geologic drill logs and sparse geochem copper value data (Xerox) submitted to us by ICC covering their drill holes AOF Nos. 1, 2, 4, and 5. The logs are supplements to the File Memorandum on Daily Drill Data-Unit Contacts for the holes submitted April 17, 1973.


James D. Sell

JDS:lb
Attach.

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. OAK FLAT DDH # 1
 FROM 0 ft TO 175 ft
 ELEVATION
 COORDINATES N E
 DIRECTION -90°
 INCLINATION -90° DEPTH
 STARTED April 6, 1964 COMPLETED Oct 27, 1964

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
		Rock Bit Tri Cone												
		0' Dacite	5'											
		Rock Bit 4" - flush casing 40 feet												
		35' of dacite in 4 hours. WL machine @ slow rate												
		Aquegel - Bentonite Mud & Soda Ash												
		30' H ₂ O table - 4-9-1964	30'											
		40' 2 7/16 core, 3 7/8 hole, med-soft dacite, frac. every 3" or less, inclusion upto 7/8 inch.	40'	100%										
		43.8 Aphanitic dacite, cryptocrystalline groundmass, flowlines, inclusions to 3/4"; Soft black coating of Mn(?) on fractured surfaces. Fractures every 3"-6" apart, often more.	43.8'	86%										
		63'	63'	70%										
		68'	68'											
		78'-114' Sections & members of soft dacite. Therefore poor recovery. Drill 'drops' thru this soft material	78'	60%										
		90' H ₂ O Table; 4-13-1964	90'	35%										
		100'	100'	50%										
		106'-107' Brecciated	106'	29%										
		112'-114' Brecciated	112'	30%										
		114'-164' Moderate to strongly broken up soft dacite	114'											
		120' Fractures 3"-6" apart, phenocrysts upto 5/8" size	120'	30%										
		133'-134' Gauge material	133'											
		142'-147' Strongly broken up core	142'	69%										
		146'-147' Gauge material	147'	76%										
		159'-162' Brecciated	159'											
		160'	160'	100%										
		163'-164' Strongly broken up & fractured.	164'											
		166'-168' Strongly fractured & broken up core. Lost 6" gauge material. Black soft Mn sm on fracture surfaces.	168'	100%										
		168'-172' Moderately fractured & broken up core.	172'											

sketchy core 4-6 pieces

100' orange brown matrix all brittle

150' brown matrix some thin matrix on brittle

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT DDH #1
 FROM 175' - 350'
 ELEVATION
 COORDINATES N E
 DIRECTION - 90°
 INCLINATION - 90° DEPTH
 STARTED April 6, 1964 COMPLETED

SECTION	COL.	G E O L O G Y	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS						
					SECTION	CU.			SECTION	CU.					
175'		175'-177' Strongly fractured; core grounded up; some what gouge material present.													
177'		184' Lost Water & mud circulation.													
		185'-187' strongly fractured													
188'		187'-188' gouge zone.													
194'		190'-194' core strongly fractured & soft. At 194' shut drilling down. Rigged to ream hole 4" to 194' for flush casing. 4-11-64. Resume drilling 4-14-64.													
200'		205'-211' Soft & broken up. At 210.3'-211' gouge zone. Black Mn stn. on fracture surface.													
211'		211'-224' Fractured & broken up core. Gouge zone at 223.6-224													
224'		Core grounded up. No core recovery													
229'		Fractures 2"-6" apart;													
231'		236'-237' gouge zone													
238'		238'-239' core fairly solid but soft.													
250'		239'-243 Strongly fractured core with slickensides and Mn (blk) stn on frac. surface.													
254'		253'-254' Gouge zone													
		Soft & weakly broken up. Fractures 2"-10" apart													
274'		Moderately fractured core; black Mn & brn Fe ₂ O ₃ stn on fracture surfaces. Inclusion of 1 1/2" size in ground-mass.													
292'															
306'															
304'															
312.5'		312'-312.5' gouge zone.													
		Moderately fractured core; fractures 3"-8" apart. Mn stn. on fracture surfaces.													
324'															
344'		Fractures more closely spaced. 1"-2" apart.													
350'															

200' brownish w/ blk bottle

250' orange/brownish blk bottle

350' pale brown blk bottle

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT I.D.D.H. #1
 FROM 350-525
 ELEVATION
 COORDINATES N E
 DIRECTION -90
 INCLINATION -90 DEPTH
 STARTED April 6, 1964 COMPLETED

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU.	SECTION	CU.
	-354'	Fairly solid core with weak fracturing 2"-7" apart black Mn str on frac. pl.	354'	26%				
				65%				
	-368		365'					
				7%				
	-378'		378'					
				67%				
	-393.5'		393.5					
	-404'	At 401' 2" of gouge material, some fractures with slickensides. At 410' 6" of gouge.	404'	90%	400'	pale brown - tan blk hist.		
	-411'		411'	96%				
				78%				
	-421'	419.5'-421' Strongly broken up & fractured. At 421' lost circulation. Cemented hole with 1 sack of portland cement, 1/4 sack gypsum, 1/5 sack brand.	421'	66%				
	-424	421'-424' core strongly broken up & fractured. Frac. 2"-3" apart.	424'	94%				
	-431	Lost circulation at 431'. Cemented the hole with portland cement.	431'	100%				
	-440	437'-438' Core strongly fractured & broken up.	440'	100%				
	-450	Dacite moderately hard & solid	450'	100%	450'	becoming welded pale brown - tan blk hist.	slight orange coat	
	-460		460'	100%				
	-471	At 465' broken up with gouge material.	471'	100%				
	-479		479'	100%				
	-494		494'	100%				
	-499	497'-499' core strongly broken up	499'	100%	500'	pale brown - tan blk hist.	welded	
	-503		503	100%				
	-520		520'	100%				

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT DDH # 1
 FROM 525'-705'
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION - 90
 INCLINATION - 90 DEPTH.....
 STARTED April 6, 1964 COMPLETED.....

SECTION	COL.	G E O L O G Y	SURVEY	% CORE RECOV-D	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU.	SECTION	CU.
				100%				
				100%				
				100%				
		520'-612' Moderately hard and compact dacite, core generally solid with occasionally some moderate to weak fracturing 2"-12" apart and often more. Some calcite deposition on fracture pls.		100%				
				100%				
				100%				
				100%				
				100%				
				100%				
				100%				
		616'-624' Strongly fractured core		100%				
		612'-705' Moderately hard & compact dacite. Often present with vugs and water courses. Deposition of calcite in fracture planes.		100%				
				100%				
				100%				
		647.5'-649' Strongly broken up.		100%				
		655'-662' highly broken up core.		100%				
		662' Lost complete circulation.		100%				
		662'-674' strongly fractured & broken up core, some slickensides present on fracture surfaces.		100%				
				100%				
		At 681'-682' Lost circulation.		100%				
				100%				
		694'-695' core strongly broken up & fractured.		94%				
		700' From 700' Used wire line						

550' pale tan brown, welded
 blk biot.

600' pale tan brown, welded
 blk biot.

650' dense pale brown to brown
 w/ few orange wisps
 blk biot.

700' dense pale brown, few orange wisps

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT I.D.P.H. # 1
 FROM 880' - 1055'
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION -90°
 INCLINATION -90° DEPTH.....
 STARTED April 6, 1964 COMPLETED.....

SECTION	COL	G E O L O G Y	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
			880'	100%										
		Inclusions of sch. db angular. Wk Tr of brn Fe ₂ O ₃ stn & black Mn stn on fracture pls												
			890'	100%										
		Angular & lenticular fragments of Ps, qtz, upto 1" size. No fillings in the fractures.												
			898'	100%										
		Fragments of Ps, qtz, db, lat. upto 1" size Wk Tr of brn Fe ₂ O ₃ stn & blk Mn stn (-), CaCO ₃ in frac. pls.												
			909'	100%										
			919'	100%										
		Fragments of Ps, db, qtz upto 1 1/2" size												
			929'	100%										
			935'	100%										
		At 936.5' black inclusion 1"-1 1/4" size, wkly magnetic		90%										
			945'	100%										
			955'	100%										
			965'	100%										
			975'	100%										
			985'	100%										
		Moderately fractured		100%										
			995'	100%										
			1005'	100%										
			1015'	100%										
		Weakly fractured, from 1022'-1025' dark brown to grey in color.		100%										
			1025'	100%										
		<u>1025.5' Diabase - Vitrophyre contact</u>		100%										
		Black colored glassy, porphyritic Vitrophyre.		100%										
		Moderately fractured. Frac. pls. occupied by chlorite & serpentine & wk Tr of brn, org. Fe ₂ O ₃ stn.		100%										
			1045'	100%										
		Strongly broken & fractured.		100%										
			1048'	100%										
			1050'	100%										
			1055'	100%										

950' uniform orange brown dense blk list.

1000' dirty brown, very dense few orange specks & blk list.

1050' vitrophyre

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT D.D.H. #1
 FROM 1055' - 1230'
 ELEVATION
 COORDINATES N E
 DIRECTION - 90°
 INCLINATION - 90° DEPTH
 STARTED April 6, 1964 COMPLETED

SECTION	COL	GEOLOGY	SURVEY	P. CORE RECOV-D	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU.	SECTION	CU.
		1055'-1086' Firm cryptocrystalline, glassy Vitrophyre with light colored phenocryst, and Ps, db fragments. Fragments upto 1/2" in size. Vitrophyre moderately fractured, and weakly filled with thin film of chlorite & Serpentina.	1058'	100%				
			1071'	100%				
			1076'	89%				
		1086'-1105' Lower section of dacite, many (+) fragments of early vol, qtz, ash upto 1/2" in size. Well consolidated	1086'	100%				
		Ash. More Ash towards the bottom, frags of Ps upto 1", older Ash.	1096'	100%				
		Whitetail Conglomerate; 1" - 4 1/2" fragments of limestone, Fragment of Ps upto 1", older ash. Fragments semi-rounded.	1106'	100%				
		Lot of diabase in this zone of 1' - 1 1/2'	1116'	80%				
		Dark cement binding fragments (well-rounded) to 2" of diabase, Ps, lat, granite & some quartzite.	1118'	115 1/3				
		Core multi broken thru this zone	1131'	100%				
			1134'	100%				
		Few zones of fine grain bedded sand; fragments to 2" of db, and, Ps, qtz, cementing material heavy on diabase side, green color & diabase texture.	1141'	100%				
			1151'	100%				
		1151'-1230' Sub angular to rounded fragments of diabase, maderia diorite, Ps, qtz & few lat, maximum size upto 4". Ground mass derived from mainly db & diorite; greenish with weak calcareous material & wh tr of Fe ox str. None of Ps fragments is Fe stained.	1161'	100%				
			1161'	100%				
			1171'	100%				
			1181'	100%				
			1191'	78%				
			1197'	100%				
			1200'	100%				
			1210'	100%				
			1220'	100%				
			1230'	100%				

760
 or 1125 ??
 1150 reddish brown 70%
 70 sch
 2.5 Apr chert
 5 mus (mercal ?)
 1150 greenish gray qtz 40%
 SCLD
 dl-40

1200 4" clast (?) of laminated fine grained schist
 as in log
 or schist

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. QAK.FLAT DRH #1
 FROM 1405' to 1580'
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION 90°
 INCLINATION 90° DEPTH.....
 STARTED APRIL 6, 1964 COMPLETED.....

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
				100%									
		1413' 1411'-1413' Core strongly broken & fractured.	1413'	100%									
		1423' 1421'-1423' Strongly fractured zone, devp. of chlorite on frac. pla. w/ brn & red FeO ₂ str (-).	1423'	100%									
		1433' 1429'-1433' Strongly fractured zone. chlorite & brn FeO ₂ str on frac. pla.	1433'	100%									
		1442' 9" of gouge material @ 1441.1' to 1442'.	1442'	100%									
		1445' 1444.6'-1445' Strongly fractured.	1445'	90%									
		1455' 1405'-1580' White tail cgl. fragments of Ps, Db, Qtz, with minor amount of Psh, Td, med dio. Sub angular to subrounded, 50% fragment, 50% matrix, maximum size upto 2". Matrix is generally of ferro-mag material brown to green in color; Occ. calcareous material & Fe ₂ O ₃ in matrix.	1455'	100%	1450								
		1457' matrix, maximum size upto 2". Matrix is generally of ferro-mag material brown to green in color; Occ. calcareous material & Fe ₂ O ₃ in matrix.	1457'	50%									
			1467'	100%									
		At 1473' core w/gouge material, w/some slickensides devp.	1467'	100%									
		1477' 1478'-1479.3' Shale block (P.sh)	1477'	100%									
		1483' 1482'-1483' Strongly frac. & broken up, slickensides, Fe chlorite & red FeO ₂ str on frac. pla. 1483'-1484.5 sh. broken up core	1483'	100%									
		1493' 1491'-1493' core strongly broken up & fractured	1493'	100%									
			1503'	100%	1500								
		1512' At 1524' hole size reduced to NX-WL.	1512'	100%									
		1524' 1524'-1525' broken.	1524'	100%									
		1534' 1532'-1534' Largest fragments 3" size. Closed hole.	1534'	100%									
			1544'	100%									
			1554'	100%	1550								
			1564'	100%									
			1573'	88%	1568								
			1573'		1580								

1450 coarse gr. 1/8" - 1/4" w/ calcareous (?) & hrs. result could be broken fragment

1500
 ① 3" pyritic schist
 ② 2" brown grey, clay matrix, schist few sh. & med. dio? ± 20° apparent dip to shallow schist
 ③ 3" grey brown matrix (308) 1 1/2" calcareous sch. & dio. sch. 150

1550
 ① 2" silty schist
 ② 3" light brown fine sandy - med. dio. w/ sh. 50; sh. 15, med. phyl. ⑤

1568 6" basalt & pyroclastic material

1580 brown matrix, calc? sch. 50

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT DDH #1
 FROM 1755'-1930'
 ELEVATION.....
 COORDINATES..... N..... E
 DIRECTION... -90°
 INCLINATION... 90° DEPTH.....
 STARTED April 6, 1964..... COMPLETED.....

SECTION	COL.	G E O L O G Y	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
		Rounded to Semi rounded, frag Maximum 4" of Gran, db, Md qtz. (-) & Ps. Diabase sand, dk green brn to brn.		100%									
		1785' Fragments up to 3" maximum size, mostly Md, Ps & db w/minor qtz.	1785'	100%									
		1775' core dk green to brown, fragments up to 2" max. size.	1775'	100%									
		1786' variegated db sand, & maroon brown silt; fragments of Ps, Md, qtz & some quartzite.	1786'	100%									
		1795' sporadic uneven "rhythms" of angular cobbles, and laminated brn sands mainly of db origin. Matrix sometimes chloritized.	1795'	100%	1800'		light tan 40% sch 2db						gully, water with water, sand
		1808.3 sand, laminated @ 10' @ 1809 dip upto 10°. Mostly db sand w/ frag. of Pion. sh, db, Ps, & qtz. angular.	1805'	100%									
		1815' 1817'-18" brn qtz. (Troy?) overlaying 6" frag. of db. Angular frags. of Pion sh, db, qtz, Ps. coarse granully sand from 1820'-22'	1815'	100%	1820'		tanish brown 60% sch 4db 10%						
		1825' No core except 1 1/2"; basalt (?). Possibly large fault zone (?)	1825'	0.02%									
		1835' At 1835' weathered erosional discontinuity. Frag. of Ps w/ calc 23 units.	1835'	30%									
		1845' Fairly large sub ang. cobbles max. size 3". Db cobble zone 1839-1839.8'. Sandier zone 1840'-41.1'	1836'	100% (+)									
		1855' Fragments of qtz, Ps, in db sand, upto 2" sub angular.	1845'	100%									
		1855'-1858' db sand w/few streaks to 1/2" of red slichen sided siltier clay.	1855'	100%	1860'		Tan brown 60% sch, dk db & siltier frags 27						
		1865' Good db sand matrix, rounded to sub rounded frags. w/some medera diorite.	1865'	100%	1870'		20% dip similar, abundant (siltier frags (smaller))						
		1875' 1878'-1880' db sand w/dk maroon brown silt to 1".	1875'	100%									
		1885' Sub rounded to rounded frag. more fragments than sand.	1885'	100%									
		1895' 1902-1905 db sand w/few frags. possibly 3" db clay.	1895'	100%									
		1905' cementing material dk brn to bluish green mostly db material.	1905'	100%									
		1915' some basalt fragments	1915'	100%									
		1921' 1921'-1923 1/2 basalt fragments.	1921'	100%	1920'		tanish water 10% sch diorite (smaller)						

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. DAK. FLAT. DDH. #1
 FROM 1930' - 2105'
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION -90'
 INCLINATION -90' DEPTH.....
 STARTED April 6, 1964 COMPLETED.....

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
			1931'	100%									
			1941'	63%									
			1949'	100%	1950	greenish brown	60%						
			1957'	100%		siliceous sch	0						? siliceous fine bottle feed
			1965'	100%		interior	(unattest)						
			1975'	100%									
			1985'	100%									
		1931'-2106' Dark chloritic diabase sand with subrounded to subangular fragments of qtz., Ps, db, M diorite, maximum size upto 3". Occasional silt bands maroon, red & green color. Few places fragments of db upto 5".	1995'	100%	2000	greenish brown	60%						
			2005'	100%		sch	200						
			2015'	100%	2020	greenish brown	40						
			2025'	100%	2025	40 clay-sew	sch						in fine bot feed powder, see spec
			2035'	100%	2030	greenish brown	40?						
			2045'	100%		wash	40						
			2055'	100%		greenish brown	50%						2250' ? fine ss to mud
			2065'	100%		sch. db.	qtz, diorite						
			2075'	100%	2050	greenish brown	15%						
			2085'	100%		sch,	granite, qtz, db, opac.						
			2095'	100%									
			2097'	100%									
			2100'	100%	2100	coarse silt	db, quartz, diorite, feldspar						

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. CAK FLAT DDH # 1
 FROM 2280' - 2455'
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION -90
 INCLINATION -90 DEPTH 3475'
 STARTED April 6, 1964 COMPLETED NOV. 26, 1964

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU.	SECTION	CU.
		2280' Strongly broken & grounded up core.	2280'	100%				
		-2283' Mostly angular frags. moderately brkn up.	2283'	50%				
		-2291' Strongly broken up. Last 1' somewhat gouge mat.	2291'	93%				
		-2294' Moderately brkn, w/ k Fax on frag. pts.	2294'	70%				
		-2304' 6" of ground up core, without any frags. mostly gouge.	2304'	50%				
		-2306' Mostly Ps frag. at 2306'. good db sand.	2306'	100%				
		-2309' Chloritic Ps frag - some db frag. w/db sand.	2309'	100%				
		-2312' Firm cgl. frag. angular	2312'	100%				
		-2322' Firm cgl. frag. angular, mostly Ps & db.	2322'	100%				
		-2332' 2340'-2342' softer, somewhat broken	2332'	100%				
		-2342' Brkn cgl., abun Ps fragments.	2342'	100%				
		-2348' closely broken core w/ abun Ps frag.	2348'	100%	2350	green brown 50% w/ schist for		part few other types
		-2354' closely broken w/ abun. Ps frag & db matrix.	2354'	100%				
		-2359' closely brkn core, frag. Ps, db, ls in db matrix	2359'	100%				
		-2369' some med diorite along w/ Ps & db frag.	2369'	100%				
		-2371' Frags. of Ps, db, M dio. in db sand - angular	2371'	100%				
		-2377' Minor limestone fragments.	2377'	100%				
		-2382' Strongly broken up.	2382'	86%				
		-2390' Strongly broken up.	2390'	86%				
		-2397' Strongly broken up.	2397'	100%				
		-2401' Strongly broken up.	2401'	100%	2400	red brown 50% clay, ds, db & ficial		
		-2404' Strongly broken up.	2404'	26%				
		-2406' Strongly broken up.	2406'	100%				
		-2415' Strongly broken up.	2415'	100%				
		-2425' 2397' - 2455' semi rounded frags. of Ps, db mostly with minor amount of M dio & gzt. Matrix db sand - brn & altered.	2425'	100%				
		-2431' Strongly broken up.	2431'	100%				
		-2434' Strongly broken up.	2434'	100%				
		-2444' Strongly broken up.	2444'	100%				
		-2451' Strongly broken up.	2451'	100%	2450	green brown 20% sch. db. ficial		

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE No. OAK FLAT D.D.H. #1
 FROM 2455' - 2630'
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION -90
 INCLINATION -90 DEPTH 3475'
 STARTED April 6, 1964 COMPLETED NOV. 26, 1964

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
-2457		2457'-2513' white tail conglomerate with sub rounded fragments of db, Ps, Pshale in altered diabase sand. Fragments upto 2 1/2" size. Occ. upto 4". Some xolaine CaCO ₃ on frac. pls.	-2457	100%										
-2462			-2462	100%										
-2463			-2463	100%										
-2474			-2474	100%										
-2477			-2477	100%										
-2479			-2479	100%										
-2487			-2487	100%										
-2492		Some what rhythmically bedded.	-2492	100%	2500									
-2503		Some hornfels & lime stone fragments At 2510' 1/8" seem Fe ₃ O ₄ , wk red Fe ₂ O ₃ stain	-2503	100%										
-2513			-2513	100%										
-2523		some Madera diorite at 2528	-2523	100%	2530									
-2533		sub rounded db, Ps, qtz, lst. & Tr. mdio. in db sand. Broken fractured zone 2543', about a 3' wide.	-2533	100%										
-2543		mostly Ps & db fragments minor qtz. wkly frac. some lime stone fragments present.	-2543	100%										
-2549		sub rounded to rounded fragments mostly large db & Ps w/minor qtz. wkly frac. wk brn-red Fe ₂ O ₃ stain on frac.	-2549	100%										
-2559		core wkly frac. Fe ₂ O ₃ (-) stain w/some CaCO ₃ on frac. pls.	-2559	100%										
-2565		Moderately fractured w/wk brn Fe ₂ O ₃ stain & CaCO ₃ on frac. pls.	-2565	100%	2570									
-2575		With large frag. upto 5" Ps & db mostly. Moderately frac. w/CaCO ₃ & brn Fe ₂ O ₃ stain (-) on frac. pls.	-2575	100%										
-2585		Some composition of the qtz. wk. dqtz. present. Fe ₂ O ₃ halo around db fragments.	-2585	100%										
-2595		Sub angular to sub rounded frag. mostly Ps & db- minor qtz. 2602'-2603' db sand matrix w/brn Fe ₂ O ₃ stain. Last 9" strongly brkn up.	-2595	100%										
-2605		Sub angular to sub rounded frag. Ps & db w/minor dqtz. coarse db sand matrix.	-2605	100%										
-2610		Fragments mostly 1/2"-1" size w/occ. upto 7" frag. of Ps. Last 9" strongly fractured.	-2610	100%										
-2625			-2625											

red brown 30
 bl 50 dsg 30
 Troy 20

red brown 30?
 large angular stat of sch @ +60
 rest sh & gss

3" contact spotted sch.

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. ORR EXP. D.H. 1
 FROM 2805 TO 2980
 ELEVATION.....
 COORDINATES.....N.....E
 DIRECTION.....90
 INCLINATION.....90.....DEPTH.....
 STARTED April 6, 1964.....COMPLETED.....

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS			SLUDGE ASSAYS		
					SECTION	CU. PPM		SECTION	CU.	
		2802'-2812' frag. of Ps. db. w/minor frag. of qtz. diorite. in dk green db sand; Ps frag. acc. weakly altered w/calcite vnlts. Native Cu @ 2807' & 2811' on frac. pl. Br & red Feox stn on frac. few spec. Horn. frag.	2812'	100%		300				
		Mostly frag of Ps & db w/minor frag of qtz & diorite - ground mass of coarse grain db sand. spec. Horn on frac. (-) calcite vnlts in Ps. Native Cu @ 2819' & 2822' very weak (few spec.)	2822'	100%		40				
		Brown & red Feox on frac. Core moderately broken up.								
		Mostly frag of Ps & db w/minor frag of qtz. Ps & db frag upto 7". Ground mass db sand. Br & red Feox stn on frac. spec. Horn. (-) on frac. & a small frag. 2829'-2831' few spec. of Native Cu scattered on some frac. Last 6" strgly broken up.	2832'	100%		80				
		2832'-2846' Mostly db frag with some Ps and minor qtz frag. in dk grn coarse grn db sand. Moderately frac. Core. wk dk brn & red Feox stn on frac. plus. Few grains of Native Cu in frac. of Ps associated with qtz vnlts.	2842'	100%		40				
		2846'	85%		40					
		Mostly Ps frag w/some db & minor amount of qtz. Ps don't have any alteration, few calcite vnlts in Ps. acc. wk Tr of Native Cu on frac. plus. Last 9" strongly brk. w/Nat Cu (negligible).	2855'	100%		20				
		Moderately broken up core, frag of Ps & db w/minor qtz. Br & red Feox stn on frac. some Ps frag. moderately altered. wk Tr of Native Cu at 2856' along fracture plus. (negligible)	2865'	100%		20				
		2865'-2884' mostly subrounded frag. of Ps, db and Tr of qtz. Core moderately broken up. Reddish-brn Feox stn on some frac. plus. Some of frag. up to 6" in size. Few calcite vnlts on Ps - some Ps frag. weakly altered, & occasionally a few blobs of Native Cu along with it. (negligible)	2875'	100%		20				
		2877'	75%		40					
		Core strongly broken up at 2875'-2877' & 2883'-2884' with some gouge material.	2883'	100%		40				
		2884'-2899' Sub to subrounded frag of Ps, db & qtz (-) in coarse grain dk grn db sand. Some Ps frag. weakly altered & w/some calcite vnlts. A few pieces of specularite at 2888' w/minor box work showing. Native Cu at 2893' (negligible)	2895'	100%		150				
		Sub to subrounded frag of Ps, db & qtz (-); Maximum size of frag. upto 4". Moderately fractured; minor Feox stn reddish brown on frac. plus; Some thin films of calcite deposition on frac. w/occasionally few blobs of Native Cu. 1" gauge zone at 2901'.	2905'	100%		40				
		Mostly sub rounded fragments of db & Ps in coarse db sand. Core moderately broken up w/fractures. Brown-red Feox stn on frac.	2915'	100%		80				
		Sub angular to sub rounded fragments of Ps & db w/coarse brown db sand ground mass. Frag upto 2 1/2". Mostly 1/2" - 1" size. Some fracturing in the core.	2925'	100%		40				
		Sub angular to sub rounded fragments of Ps & db - ground mass mostly db sand w/weak calcareous material in cement. Core moderately fractured. At 2929' some slickensid in frac. pl. Some red-brn Feox stn on frac. some Ps frag weakly altered.	2935'	100%		10				
		<u>Diabase - Whitetail Cg contact 2939' contact normal</u>				20				
		Dark green coarse grained diabase. Moderately fractured up. w/red-brn Feox stn and calcite vnlts in frac. plus. occasionally few blobs of native Cu (negligible) in frac. Most of the hornblende is transformed to biotite & chlorite.	2945'	100%		10				
		At 2947' sharp high angle fault; 2948' 3" gauge - fault	2952'	100%		10				
		Core strongly broken up & fractured. Red-brown Feox stn & calcite deposition on frac. Plus. some frac. w/slickensides. Diabase medium grained from 2957'	2962'	100%		10				
		Core ground up. only 3" recovery.	2972'	3%		10				
		3" of broken up core.	2974'	16%						
		Moderately frac. some frac. pl w/slickensides; calcite vnlts on frac. A few blobs of Native Cu. (negligible)	2974'	100%		20				

2850' light brown ss
sh 50 db 50 to top angular

2870 light brown ss
sh 70 db 25 ps 5 angular

2900' 3" alt db.

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. DAK FLAT CD# 1
 FROM 2980-3155
 ELEVATION.....
 COORDINATES..... N..... E.....
 DIRECTION -90°
 INCLINATION -20° DEPTH.....
 STARTED April 9, 1969 COMPLETED.....

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU. PPM	SECTION	CU.
		2981 Moderately fractured medium grained diabase. Strong shear zone 2983'-2985'. Core strongly frac. at 2987.5 - 2988.5'. Few bleds of Nat. Cu on frac. along w/ Feo. str (red). & calcite. 2990 - 2991 strg. brkn. <u>seldom</u> few Ps frag (1)	2981	100%		20		
		2991 Fractured up core - calcite vnlts, red brn Feo. str & occasional strong development of chlorite in frac pls. Most frac. pls. w/ slicken sides. 2998' - 3003' strongly brkn. up. A few grains of Nat. Cu along frac. pls.	2991	100%		20		
		3001' - 3015' Medium to fine grained diabase moderately fractured. Occasionally a few Ps(?) inclusions present. Frac. pls w/ devp. of strong chlorite, calcite & red Feo. str (-). A few grains of Native Cu on frac.	3001	100%		20		
		3007	3007	100%		20		
		3015 strongly fractured & broken up core. chlorite & calcite in frac. pls w/ wk Feo. str red-brn, some slicken-sides. 3018' - 3022' some shearing. A few inclusions of Ps(?); some times along fractured zone. 3024 - 25' some what gouge zone.	3015	100%		10		
		3025 Strongly frac. db w/ inclusions of Ps. Calcite vnlts & Feo. str on frac. At 3034' some what brx.	3025	100%		10		
		3035 Brx diabase w/ inclusion Ps to 3036. More inclusion of Ps to 3040. Sharp <u>db & Ps contact @ 3040</u> . 3040' - 45' brx Ps. Feo. vnlts on Ps frac. Most frac. with slickensides & occ. calcite deposition.	3035	100%		Nil		
		3045 extremely broken up Ps. Ps somewhat calcitic. Fract. Black Feo. vnlts (-) on Ps.	3045	100%		Nil		
		3047 3047.5 - 3050.3 similar to subhor. frags of schist w. detrital material in interstices. <u>3050.3 - 3053.7 Diabase</u> qtz. w. db calcite. db sand in interstices.	3047	100%		Nil		
		3055 3053.7 - 3055.3 - Broken Ps detrital grains between frags. (Bx db - schist calcite base material at top)	3055	100%		Nil		
		3055.3 - 3062.0 - Grayish yw, yellow and orange Feo. str. slm. slm. altered brd looking schist		100%		Nil		
		3065 3062.0 - 3073. Brd db.	3065	100%		Nil		
		3067 - 3069.5 - Alt faulted, chler, db.		100%		Nil		
		3072 - 3073. Pulverized diabase (looks like ordinary soil)		100%		Nil		
		3075 - 3077.5 - Solid db w. heavy CaCO ₃ on frac.	3075	100%		10		
		3079.5 - 3090 - Faulted broken chler db.	3080	100%		20		
		3090 3090 - 3091 - Brd db.		100%		20		
		3091 - 3097 - Solid db w. minor slips		100%		20		
		3097 - 3098.3 Brd db. w. some kaolinized all frags (white)	3090	100%		Nil		
		3098.3 - 3092 - Solid db. To Feo. str at 3094.		100%		Nil		
		3092 - 3096. Small pink white bleached db.		100%		Nil		
		3096 - 3096.7. Brd & fract db.	3098	96%		Nil		
		3096.7 - 3098. Soft chler db w. db clay gouge.		100%		20		
		3098 - 3100. Brd db w. CaCO ₃ on frac.	3104	100%		20		
		3100 - 3123 Solid dark green diabase w. abun slips and fractures - w. calcogon frags.		100%		10		
		3113 3113 - 3115. Some minor disc Feo. str	3113	100%		15		
		3118 3118 - 3123. Somewhat alt. partly kaolinized and calcitized db.	3118	100%		10		
		3123 strongly fractured db; slickenside and calcogon frac. pls.	3123	100%		Nil		
		3127 strongly fractured - slickenside and calcog on frac. pls. - Some Feo. str brown (-). Prob from broken down Ferro-mg minerals.	3127	100%		Nil		
		3134 very strongly frac. db. Some calcite dep. on frac.	3134	100%		4.1		
		3145 Moderately altered. Some chlorite development.	3145	100%		Nil		
		3144 strongly frac. db. w/ calcog and some Feo. str on frac. 3144 some what gouge zone. 3145' gouge material	3144	100%		Nil		
		3148 Case of hole, i.e.oring BX	3148	100%		Nil		
		3148 Moderately fractured and broken up core some what gouge zone 3155' - 3158.5'. some		100%		Nil		

3000 fine grained db, minor Fe blbs
 calcog. few fractures
 1/4" gbs strong

~~3145 - 3148 - 3149 - 3150 - 3151 - 3152 - 3153 - 3154 - 3155 - 3156 - 3157 - 3158 - 3159 - 3160 - 3161 - 3162 - 3163 - 3164 - 3165 - 3166 - 3167 - 3168 - 3169 - 3170 - 3171 - 3172 - 3173 - 3174 - 3175 - 3176 - 3177 - 3178 - 3179 - 3180 - 3181 - 3182 - 3183 - 3184 - 3185 - 3186 - 3187 - 3188 - 3189 - 3190 - 3191 - 3192 - 3193 - 3194 - 3195 - 3196 - 3197 - 3198 - 3199 - 3200 - 3201 - 3202 - 3203 - 3204 - 3205 - 3206 - 3207 - 3208 - 3209 - 3210 - 3211 - 3212 - 3213 - 3214 - 3215 - 3216 - 3217 - 3218 - 3219 - 3220 - 3221 - 3222 - 3223 - 3224 - 3225 - 3226 - 3227 - 3228 - 3229 - 3230 - 3231 - 3232 - 3233 - 3234 - 3235 - 3236 - 3237 - 3238 - 3239 - 3240 - 3241 - 3242 - 3243 - 3244 - 3245 - 3246 - 3247 - 3248 - 3249 - 3250 - 3251 - 3252 - 3253 - 3254 - 3255 - 3256 - 3257 - 3258 - 3259 - 3260 - 3261 - 3262 - 3263 - 3264 - 3265 - 3266 - 3267 - 3268 - 3269 - 3270 - 3271 - 3272 - 3273 - 3274 - 3275 - 3276 - 3277 - 3278 - 3279 - 3280 - 3281 - 3282 - 3283 - 3284 - 3285 - 3286 - 3287 - 3288 - 3289 - 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3576 - 3577 - 3578 - 3579 - 3580 - 3581 - 3582 - 3583 - 3584 - 3585 - 3586 - 3587 - 3588 - 3589 - 3590 - 3591 - 3592 - 3593 - 3594 - 3595 - 3596 - 3597 - 3598 - 3599 - 3600 - 3601 - 3602 - 3603 - 3604 - 3605 - 3606 - 3607 - 3608 - 3609 - 3610 - 3611 - 3612 - 3613 - 3614 - 3615 - 3616 - 3617 - 3618 - 3619 - 3620 - 3621 - 3622 - 3623 - 3624 - 3625 - 3626 - 3627 - 3628 - 3629 - 3630 - 3631 - 3632 - 3633 - 3634 - 3635 - 3636 - 3637 - 3638 - 3639 - 3640 - 3641 - 3642 - 3643 - 3644 - 3645 - 3646 - 3647 - 3648 - 3649 - 3650 - 3651 - 3652 - 3653 - 3654 - 3655 - 3656 - 3657 - 3658 - 3659 - 3660 - 3661 - 3662 - 3663 - 3664 - 3665 - 3666 - 3667 - 3668 - 3669 - 3670 - 3671 - 3672 - 3673 - 3674 - 3675 - 3676 - 3677 - 3678 - 3679 - 3680 - 3681 - 3682 - 3683 - 3684 - 3685 - 3686 - 3687 - 3688 - 3689 - 3690 - 3691 - 3692 - 3693 - 3694 - 3695 - 3696 - 3697 - 3698 - 3699 - 3700 - 3701 - 3702 - 3703 - 3704 - 3705 - 3706 - 3707 - 3708 - 3709 - 3710 - 3711 - 3712 - 3713 - 3714 - 3715 - 3716 - 3717 - 3718 - 3719 - 3720 - 3721 - 3722 - 3723 - 3724 - 3725 - 3726 - 3727 - 3728 - 3729 - 3730 - 3731 - 3732 - 3733 - 3734 - 3735 - 3736 - 3737 - 3738 - 3739 - 3740 - 3741 - 3742 - 3743 - 3744 - 3745 - 3746 - 3747 - 3748 - 3749 - 3750 - 3751 - 3752 - 3753 - 3754 - 3755 - 3756 - 3757 - 3758 - 3759 - 3760 - 3761 - 3762 - 3763 - 3764 - 3765 - 3766 - 3767 - 3768 - 3769 - 3770 - 3771 - 3772 - 3773 - 3774 - 3775 - 3776 - 3777 - 3778 - 3779 - 3780 - 3781 - 3782 - 3783 - 3784 - 3785 - 3786 - 3787 - 3788 - 3789 - 3790 - 3791 - 3792 - 3793 - 3794 - 3795 - 3796 - 3797 - 3798 - 3799 - 3800 - 3801 - 3802 - 3803 - 3804 - 3805 - 3806 - 3807 - 3808 - 3809 - 3810 - 3811 - 3812 - 3813 - 3814 - 3815 - 3816 - 3817 - 3818 - 3819 - 3820 - 3821 - 3822 - 3823 - 3824 - 3825 - 3826 - 3827 - 3828 - 3829 - 3830 - 3831 - 3832 - 3833 - 3834 - 3835 - 3836 - 3837 - 3838 - 3839 - 3840 - 3841 - 3842 - 3843 - 3844 - 3845 - 3846 - 3847 - 3848 - 3849 - 3850 - 3851 - 3852 - 3853 - 3854 - 3855 - 3856 - 3857 - 3858 - 3859 - 3860 - 3861 - 3862 - 3863 - 3864 - 3865 - 3866 - 3867 - 3868 - 3869 - 3870 - 3871 - 3872 - 3873 - 3874 - 3875 - 3876 - 3877 - 3878 - 3879 - 3880 - 3881 - 3882 - 3883 - 3884 - 3885 - 3886 - 3887 - 3888 - 3889 - 3890 - 3891 - 3892 - 3893 - 3894 - 3895 - 3896 - 3897 - 3898 - 3899 - 3900 - 3901 - 3902 - 3903 - 3904 - 3905 - 3906 - 3907 - 3908 - 3909 - 3910 - 3911 - 3912 - 3913 - 3914 - 3915 - 3916 - 3917 - 3918 - 3919 - 3920 - 3921 - 3922 - 3923 - 3924 - 3925 - 3926 - 3927 - 3928 - 3929 - 3930 - 3931 - 3932 - 3933 - 3934 - 3935 - 3936 - 3937 - 3938 - 3939 - 3940 - 3941 - 3942 - 3943 - 3944 - 3945 - 3946 - 3947 - 3948 - 3949 - 3950 - 3951 - 3952 - 3953 - 3954 - 3955 - 3956 - 3957 - 3958 - 3959 - 3960 - 3961 - 3962 - 3963 - 3964 - 3965 - 3966 - 3967 - 3968 - 3969 - 3970 - 3971 - 3972 - 3973 - 3974 - 3975 - 3976 - 3977 - 3978 - 3979 - 3980 - 3981 - 3982 - 3983 - 3984 - 3985 - 3986 - 3987 - 3988 - 3989 - 3990 - 3991 - 3992 - 3993 - 3994 - 3995 - 3996 - 3997 - 3998 - 3999 - 4000~~

3145 med grained db, few Fe blbs
 1/4 - 1/8" gbs in fractures
 depth NX core sheared 70°, Fe stain db

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. OAK FLAT DRILL #1
 FROM 3155' - 3330'
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION -90°
 INCLINATION -90° DEPTH 3158 - 3320
 STARTED April 6, 1964 COMPLETED _____

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU. FPM.	SECTION	CU.
	3158 1/2	Calcite deposition & minor brn FeOx str on frag.	3158 1/2	100%	Nil			
	3164	Moderately fractured - CaCO3 on frag. pls. 3162 somewhat gouge zone. weakly altered, chlorite.	3164	100%	Nil			
	3172	Moderately fractured db, some calcite vltts in frac. pls. At places development of chlorite, occ. few spec. of FeS2 clss. At 3172 3" of Fe inclusion.	3172	100%	80			
	3173	3172-3173. V. f. gr. dark gr db - wk CaCO3 on frags. Fine grained partly chlor db. - heavy CaCO3	3173	75%	10			
	3180	Ground up core in fault zone. on frags. Some wkly clss FeS2.	3180	100%	110			
	3182	3180-82 - Db. wk diss FeS2 & spechem. - Core partly ground up and lost.						
	3182-3191	Fine grained fract wkly chlor db. Some CaCO3 along frags. - wk epidote						
	3191	3191-3201	3191	100%	Nil			
	3201	3191-3201 - Coarser grained db in sharp fault contact w. mat. above. Well fractured w. white CaCO3 chrs throughout. Partly chloritized wk epidote	3201	100%	Nil			
	3210	Med gr db - some chlorite - wk. epidotization.	3210	100%	Nil			
	3216	Med gr db - fair chlor on frags. - wk. epidotization white CaCO3 on frags.	3216	100%	Nil			
	3218	Med gr db fair chlor. - white CaCO3 on frags. To diss FeS2.	3218	100%	Nil			
	3225	Med gr db, Tr chlor on frags. irreg. Sio2, CaCO3 sigs w. fair FeS2.	3225	100%	Nil			
	3226	0.2' bed fault zone w. FeS2, clustres spec. FeS2						
	3232-3233	12' bed zone w. CaCO3 clms. wk. Sio2 & FeS2 sigs	3235	100%	Nil			
	3235	Db becomes finer grained below 3233	3235	100%	3236-3237-20			
	3240	3235-3240. V. f. gr. db. w. CaCO3 sigs - small pockets spechem. Tr MnS2, wk. sigs FeS2	3240	100%	3237-3238-3238.3			
	3244	3240-3244. 4 1/2' med gy ser. chlor. Final schist. v. f. gr. E v. well laminated. - wk powdery CaCO3 on frags.	3244	100%	Nil			
	3248	3244-48. Ps. - wk diss Sio2 blabs w. FeS2	3248	75%	Nil			
	3249	Heavy congl. below 3250 - prob steep fault. wk CaCO3 on frags.	3249	25%	Nil			
	3255.5	Ps. - bvd. down to 593 - abundantly chlor. & ser.	3255.5	100%	Nil			
	3260	3260	3260	100%	Nil			
	3263	Broken piece fairly hard chlor ser Ps. - almost vertically oriented	3263	6%	Nil			
	3267	3263-68. few remnants hard qtz ser Ps w. wk trace scattered FeS2 xls & red stnd casts.	3267	100%	Nil			
	3271	3267-71. Slightly lam. Ps. - w. wk CaCO3 on frags. - wk chlor. Fairly strong ser.	3271	42%	3271-3274.5			
	3275	3271-74.5. Very well ser. chlor Ps. - med. gy color. - wk powdery CaCO3 on frags.	3275	60%	Nil			
	3276	3276-78. Highly fractured 1194 green vertically foliated Ps. Local fine FeS2 on frags. - some v. wk diss FeS2.	3276	100%	20			
	3278	3278-82. med. vertically foliated gray green Ps. 2 1/2' FeS2 clss.	3278	100%	20			
	3283	3283-85. Badly Fr. Light gray Ps. Ser FeS2, etc.	3283	75%	Nil			
	3287	Schistosity parallel hole.	3287	100%	Nil			
	3290	Faulting bx	3290	100%	Nil			
	3295	Faulting FeS2 cubes in gouge.	3295	100%	20			
	3297	3297 Mn, FeS2, Fe2O3	3297	100%	Nil			
	3302	3302	3302	66%	Nil			
	3306	Greenish gray, ser schist. Bx patches Fe2O3 frags.	3306	100%	10			
	3315	Schist & clay gouge (FeS2)	3315	19%	Nil			
	3320	3320	3320	50%	Nil			

7' depth 70° circular schist & gouge from bottom depth. Bx Co. Bx

med to fine
 db w/ ch. epid. vltts of feldspar heavy; mostly relatively untouched. fts in fracture

5200 med db. relatively fresh. minor chrs of feldspar.

3320 sheared schist

INSPIRATION CONSOLIDATED COPPER COMPANY

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO.
 FROM
 ELEVATION
 COORDINATES N E
 DIRECTION
 INCLINATION VERT DEPTH 3320 - 3475
 STARTED Apr. 16, 1964 COMPLETED Oct 27, 1964

SECTION	COL.	GEOLOGY	SURVEY	# CORE	RECOV-D	CORE ASSAYS				SLUDGE ASSAYS					
						SECTION	CU.			SECTION	CU.				
		3320	3320												
			0.0	0.0											
		3338 Cr Ox ser sch. FeOx stain	3338		12%		10								
		3342 Broken to 3347.	3342				20								
		3349 Light gray ser schist.	3349		50%		10								
		3352	3352		100%		10								
		3353 3334-3370 more FeOx stain	3353		100%		Nil								
		3358 Broken Ps	3358		50%		Nil								
		3358 3359 Fe ₂ O ₃ (-)	3358		20%		Nil								
		3361 Slickensides FeOx. Broken sch.	3361		50%		Nil								
		3365 Crushed alt fault bx. Fe ₂ O ₃ .	3365		45%		10								
		3371 Crush and of min.	3371		25%		10								
		3373 Broken schist	3373		50%		20								
		3375 Broken schist	3375		50%		40								
		3376 Bally broken gray ser schist.	3376				10								
		3380 Broken weak FeOx.	3380		33%		20								
		3383 Diabase lense.	3383		75%		60								
		3389 Broken crushed Ps Qtz near bottom.	3389		50%		20								
		3392 Light gray Ps	3392		100%		40								
		3394 FeOx (-)	3394		100%		Nil								
					0.0										
		3404 Broken light gray Ps.	3404		10%		Nil								
		3414 FeOx (-)	3414		100%		10								
		3416	3416		100%		10								
		3419 Thin etgs FeOx (-)	3419		100%		Nil								
		3425 FeOx free. Qtz	3425		100%		10								
		3432 Free Ps	3432		100%		Nil								
		3432 Light gray ser schist.	3432		100%		Nil								
		3435 FeOx on free	3435		100%		Nil								
		3437 FeOx along free.	3437		100%		20								
		3440-3441 FeOx zone etgs FeOx Qtz FeOx	3440		100%		Nil								
		3443	3443		100%		40								
		3447 etgs FeOx, Qtz FeOx.	3447		100%		110								
		3450 Quartz lens.	3450		100%		100								
		3450 Weak mineralization.	3450		100%		10								
		3452 Light gray ser. schist FeOx near bottom.	3452		100%		20								
		3456 FeOx on free.	3456		100%		20								
		3461 Light gray ser schist	3461		100%		10								
		3466 w/ FeOx	3466		100%		20								
		3469	3469		100%		20								
		3476 Free broken light gray. ser schist	3476		25%		110								
		3475	3475		100%		10								
		Sample 3460-3475.													
		Bottom.													

3400 shaly gray schist

3450' deep siliceous compact schist

Hole 15 5.7 miles
Southwest of Scholze Ranch

INSPIRATION CONSOLIDATED COPPER CO.

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

SCALE 1" = 200ft

CROOK CLARK
HOLE NO. A.O.F. No 2
FROM SURFACE
ELEVATION _____
COORDINATES _____ N _____
DIRECTION _____
INCLINATION _____ DEPTH 205'
STARTED Aug. 31, 1966 COMPLETED Apr 9, 1967

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS						
					SECTION	CU.			SECTION	CU.					
0		DACITE													
10															
20															
30															
40															
50		vitrophyre fragments below 600' WATER at 750 ft, could not dry, had to use mud VITROPHYRE, dacite fragments													
60															
70															
80															
90															
100															
110															
120															
130															
140															
150															
160															
170															
180															
190															
200															
210															
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760															
770															
780															
790															
800															
810															
820															
830															
840															
850															
860															
870															
880															
890															
900															
910															
920															
930															
940															
950															
960															
970															
980															
990															
1000															

ROTARY DRILL (5" diam.)

ROTARY DRILL (5")

R.D. (5")

R.D. (5")

R.D. (5")

R.D. (5")

NX CORE
To bottom
of Hole

white Tail Congl.
Pinal schist
and diabase
fragments,
Native copper
in minor amounts
on surface of
fragments and
schist frag.
Cu > 0.06%
Most frag. have
angular edges

1021' 5' NX CORE
1026'
1180' 5' NX CORE
1185'
1300' 5' NX CORE
1305'
1490' 5' NX CORE
1495'
1581'

HOLE NO. A.O.F.D.D.H #2
 FROM _____
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION _____
 INCLINATION VERTICAL DEPTH _____
 STARTED _____ COMPLETED _____

INSPIRATION CONSOLIDATED COPPER CO.
 GEOLOGICAL DEPARTMENT
 DIAMOND DRILL RECORD

120'

SECTION	COL.	GEOLOGY	Sample Number	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS			
						SECTION	CU.			SECTION	CU.		
		white Tail Conglomerate Ps, db(-) & few sed. Fragments, greenish gray ground mass	9	1727	90	9							
		Some minor calciss in fragments & fractures within the conglomerate	10	1737	100	10							
		Mostly groundmass few large fragments minor Cu in db frag.	116677	5	1742	100	5	0.12					
			5	1747	100	5							
		Minor Cu in minor amounts few large frag.	10	1757	100	10							
			10	1767	100	10							
		white Tail Conglomerate Ps & db(-) angular fragments with rounded glass, few small quartz fragments.	10	1777	100	10							
		Minor yw FeOx in matrix to fine grained groundmass derived mainly from iron 50% hematite frag 1"t, 20% small frag & 60% groundmass	10	1787	100	10							
		dark FeOx dark brown	10	1795	100	8							
		white tail congl. Ps & db(-) frag. greenish groundmass, no sediments in fragments	10	1805	100	10							
			10	1815	100	10							
			9	1827	75	12							
		Minor Red FeOx (cuprite)	10	1837	100	10							
		Sharp to semi rounded edges in frag. Ps (G), db(-) gray to greenish gray groundmass	10	1847	100	10							
			10	1855	100	9.5							
		Large (upto 4") Ps Frag. Sharp edges in angular fragments	10	1866	100	9.6							
			10	1876	100	10							
		W.T congl. Large Ps (G) & db(-) frag. rounded edges dark grn-gray groundmass derived from db.	10	1886	100	10							
			10	1886	100	10							

INSPIRATION CONSOLIDATED COPPER CO.
 GEOLOGICAL DEPARTMENT
 DIAMOND DRILL RECORD

MOLE NO. A.C.E. DDH # 2
 FROM _____
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION _____
 INCLINATION VERTICAL DEPTH _____
 STARTED _____ COMPLETED _____

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
		White Tail Conglomerate Ps. & db fragments up to 6 in, greenish-gray ground mass derived from db. Frag. have rounded edges. No Sed. Frag.	10	1906	100	10							
		Nat. Cu (-) 50% Frag, 50% gnd. mass	10	1916	100	10							
		Nat. Cu (-)	10	1926	100	10							
			10	1936	100	10							
			10	1946	100	10							
		Minor Red FeOxStn	10	1955	100	9							
		Minor red FeOxStn. Frag with portion of vein w/ ZnS, FeS. Frag. 40%. gnd. mass 60%	10	1965	100	10							
		Minor red FeOxStn	10	1975	100	10							
		Minor red FeOxStn.	10	1985	100	10							
		Minor yw & Red FeOxStn. Angular Frag w/ rounded edges, Ps & db frag. db ground mass, no sed. Fragments. Ps Frag 40% db Frag. 60%.	10	1994	100	9							
		Minor yw & red FeOxStn	10	2004	100	10							
		Minor yw & red FeOxStn.	10	2014	100	10							
		wk red FeOxStn Tr Nat. Cu	9	2022	100	8							
		wk red FeOxStn Frag. 40%, ground mass 60%, Ps Frag 60% db Frag. 40%, no sediments in Fragments	10	2032	100	10							
		Minor red FeOxStn	10	2042	100	10							
		Nat Cu in Frag. within congl. ground mass 70% Frag. 30%	10	2052	100	10							
		wk red FeOxStn	9	2061	100	9							

3-30-67- Hole casing @ 2022'
estimated to stop casing

OAK FLAT

INSPIRATION CONSOLIDATED COPPER CO.

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. A.O.F. DDH # 2

FROM _____

ELEVATION _____

COORDINATES _____ N _____ E

DIRECTION _____

INCLINATION VERTICAL DEPTH _____

STARTED _____ COMPLETED _____

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.	Fe		SECTION	CU.			
10		Fractured Ps Frag. w/ Cu & apatite ass. with CaCO ₃	White Tail Congl. 70% ground mass, 30% Frag. Fe & db Frag.	9	2060	100	9						
0		minor red-brn FeOx		10	2070	100	10						
0				9	2077	100	9						
0			70% Frag. upto 6" 30% ground mass, about equal amounts of Ps & diabase	10	2109	100	10						
0		dark yw & red-brn FeOx		11	2120	100	11						
0			Small Frag. Less than 2' 50% Frag. 50% groundmass	9	2129	100	9						
10		Red-brn FeOx sh	FaOx stnd. Arkose frag. groundmass (G)	10	2139	100	10						
40		Red-brn FeOx cut	Arkose Frag(-), Ps Frag(+)	10	2155	62	16						
50		brn FeOx cut			2165		10						
10		brn FeOx	db & Ps Fragments and few small arkose frag.		2175		10						
30		brn FeOx			2185		10						
70		red-brn FeOx			2194		9						
80		db Frag + psim of wss, ZnS, FeOx red-brn FeOx			2202		9						
60		red-brn FeOx (B)			2213		10						
50		red-brn FeOx (-)		46674	2221		8						
70		red-brn FeOx (+)	Few small qtz frag	46683	2230		9	75					
70		red-brn FeOx (+)		46682	2239		9						
70				46681									

3-25-67 - Hole drilled again to 5130'

OAK FLAT
HOLE NO. A.O.F. N° 2

INSPIRATION CONSOLIDATED COPPER CO.
GEOLOGICAL DEPARTMENT
DIAMOND DRILL RECORD

FROM _____
ELEVATION _____
COORDINATES _____ N _____ E
DIRECTION _____
INCLINATION _____ DEPTH _____
STARTED _____ COMPLETED _____

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
50		white tail Congl. Ps(+) Frag & minor db Frag.	2248		9								
		Groundmass derived mainly from db.	2235	100	7								
60		50% Frag, 50% groundmass.	2264	100	9								
70		dk Rad-brn Faox	2274	100	10								
80		dk Rad-brn Faox	49814	10	2284	100	10	.040					
90		Tr. sd. Frag. 21% Ps & db frag. 50-50	49815	9	2292	100	8	.060					
		Radish-brn. rock Frag.	49816	8	2300	100	8	.040					
		Quartz. Frag with Cu	49817	10	2307	100	9.5	.040					
		Tr. Cu	49818	10	2317	100	9.5	.015					
20		2320 banded greenish-gray & brown (2?) Frag. Red-brn. rock Frag. (sd?)	49819	10	2330	100	11	.035					
30		Tr. Nat. Cu	49820	10	2341	100	11	.065					
40		Ps & db (50-50) frag. dark greenish gray groundmass, Frag up to 4"	49821	9	2350	100	9	.055					
50		Minor Red-br Faox	49822	9	2359	100	9	.010					
60		Tr. Red-brn Faox	49823	9	2368	100	9	.065					
		Reds twisted & CAVE ORIGINAL Hole Lost at 2374 Deflected at 2000' with wedge at 2022, bad cave at 2022 (cemented to 2052) See next page For Log. of deflected hole from 2374 down.	2374										
		Hole was Cased to: 1581 Cemented From: 1581-2100											

10/50-5

INSPIRATION CONSOLIDATED COPPER CO.
 GEOLOGICAL DEPARTMENT
 DIAMOND DRILL RECORD

HOLE NO. A.O.F. # 2 drilled
 FROM 2370
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION _____
 INCLINATION VERTICAL DEPTH _____
 STARTED _____ COMPLETED _____

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
550		2547-2550' clay material	WHITE TAIL Conglomerate Ps & db Frag. greenish-gray groundmass. derived from diabase	2547									
560		Tr Nat. Cu in schist		9	75	12							
570				10	2567	100							
580		Frag w/ rounded edges (+)		9	2575	100							
590				9	2582	100							
600				10	2592	100							
610		Tr Nat. Cu	Groundmass 60%	10	2602	100							
620		Tr Nat. Cu	Frag 40%	10	2611	100							
630			db frag 60%	10	2619	100							
640			Ps frag 40%	10	2628	100							
650		Minor red FeOx Stn		10	2637	90							
660		Tr Nat. Cu		10	2647	100							
670		wk Red FeOx Stn wk Tr Nat. Cu		10	2655	100	0.06						
680			Small thyl. Frag (-)	49824	10	2664	100						
690				10	2672	100							
700		Tr Nat. Cu	equal amounts Ps & db, some small Rhy. Frag.	49825	10	2682	100	2.02					
710				10	2689	100							
720		2696-2709 Fine grained groundmass SD2(+)	well cemented Conglomerate hard, silicified groundmass, small fragments	10	2699	100							
730					2709	100							
740		mostly db groundmass			2718	100							

INSPIRATION CONSOLIDATED COPPER CO.
 GEOLOGICAL DEPARTMENT
 DIAMOND DRILL RECORD

HOLE NO. A.O.F. #2 Deflected
 FROM 2370 (depth reached by A.O.F. #2)
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION _____
 INCLINATION VERTICAL? DEPTH _____
 STARTED _____ COMPLETED _____

SECTION	COL	GEOLOGY	Sample Number	SURVEY	% CORE RECOV'D	CORE ASSAYS				SLUDGE ASSAYS			
						SECTION	CU.			SECTION	CU.		
20		Tr. Nat. Cu	47826	2727	100		0.11						
30		1/2" dacite Fragment	9	2735	100		8						
40			9	2745	90		10						
50			9	2754	100		9						
60			9	2763	100		9						
70		wk brn Feox	9.5	2773	95		10						
80		wk brn Feox	9	2783	90		10						
90			9	2792	100		9						
100		wk brn Feox	9	2801	100		9						
110			9.5	2810	100		9						
120			8	2818	100		8						
130		Few small thylite Frag. Most fragments < 1.0 in, Few large (up to 2") Ps Frag. db Frag about 20% of total Frag. Mixed db & Ps groundmass	10	2828	100		10						
140			9	2837	100		9						
150			10	2844	90		11						
160			9	2854	100		8						
170		2" dacite Frag.	9	2864	90		10						
180		Nat Cu (-)	9	2876	90		10						
190			9	2884	100		8						
200		Ferrodacite & Rhyolite Frag.	9	2894	100		9						

INSPIRATION CONSOLIDATED COPPER CO.

GEOLOGICAL DEPARTMENT

DIAMOND DRILL RECORD

HOLE NO. A.O.F # 2 No. 10-100
 FROM 500 (depth) marked by R.S. # 2
 ELEVATION _____
 COORDINATES _____ N _____ E
 DIRECTION _____
 INCLINATION VERTICAL ? DEPTH _____
 STARTED _____ COMPLETED _____

SECTION	COL.	GEOLOGY	SAMPLE NUMBER	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
						SECTION	CU.			SECTION	CU.			
75		White Tail Congl. Ps(+) & db. <20% Fragments. Mixed db & Ps groundmass	8	2962	90	9								
10		Few. Rhyolite Frag. 80% Frag. are smaller than 2"	9	2911	100	9								
20			9	2920	100	9								
30			8	2928	100	8								
40			9	2937	100	8								
50		White Tail Congl. Pinal schist make up 80% of Total Fragments up to 1 foot long. 20% Fragments made up of diorite.	9	2945	100	8								
60		minor redish-brn FeOx	9	2950	100	9								
70		Fragments 70%, groundmass 30% Clayish, greenish gray, groundmass Most Fragments have sharp edges	9	2960	90	10								
80			9	2972	100	8								
90			9	2982	90	10								
			9	2993	81	11								
			9	3003	70	10								
10		chlorite(?) fault(?) Rock crushed at fault rounded edges on small fragments	9.5	3013	95	10								
2			9	3021	100	8								
3		3027 well cemented conglomerate, ground mass about 20% Frag. 50% mainly schist, sharp edges	9	3029	100	8								
4		contact?	9.5	3038	100	9								
5		3039 Pinal schist broken and well cemented, large continuous schist fragments	9	3041	90	7								
6			3058	0	10	Not Recovered								
7			Bottom of Hole											

PROJECT OAK FLAT ICC Co.

Area Pinal County, Ariz.

Hole No. RD No 2

Scale 1"=100ft

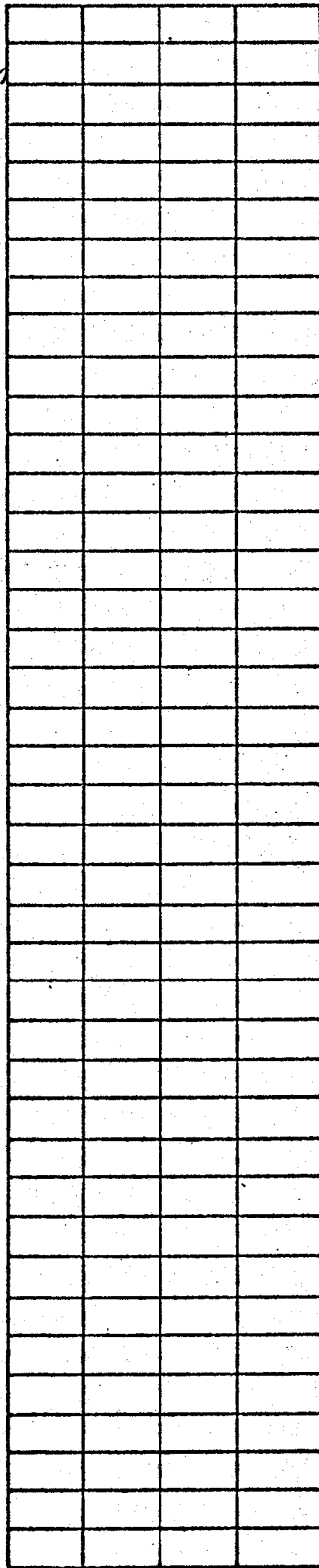
Date Aug. 31, 1970 to
Nov. 23, 1970

Coordinates _____

Elevation _____

ROCK TYPE _____ ASSAYS

*Dacite with
no mineralization*



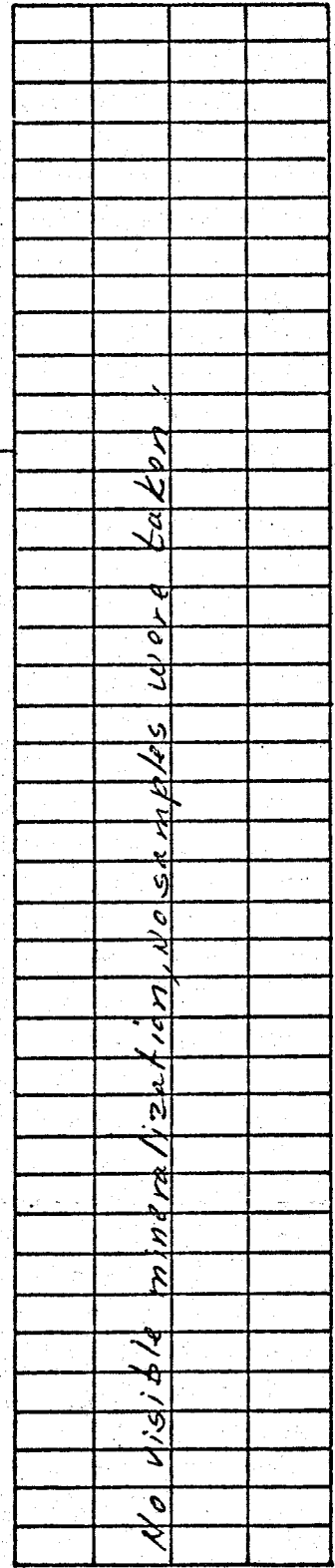
ROCK TYPE _____ ASSAYS

Dacite

*some vitrophyre frag.
1030*

*White Tail
Conglomerate
mostly schist
fragments in
dark groundmass*

*Few granite
fragments*



No visible mineralization, no samples were taken

May 17, 1990

FILE NOTE

Dept. of Energy (DOE)
Drilling
Oak Flats Area
Superior East Project
Pinal County, Arizona

The Department of Energy (DOE), Yucca Mountain Project -- Apache Leap prototype drilling was started earlier in the month and is now at 1280 feet in the welded tuff section of the dacite unit. They will probably terminate the program at around 1700 feet in dacite. Estimated depth to the base of the dacite is ± 1900 feet, based on adjacent Asarco hole A-4 and surface differential. The DOE hole is 900 feet west of A-4. Map attached.

This portion of the prototype drilling is using a Lang 3000 (only one of its kind) with a rotary bit with a core hole passage in the center. As the attached booklet indicates, the hole is started off (after surface casing of 20-50 feet has been set), with a core hole, then reamed down, then another core, ream, etc., etc. Note that the rotary bit stays on bottom all the time. They have now changed to 20 foot core advance as they have found that longer core runs tend to move off of center-line whereas the stiffer rotary pipe does not wander as much.

As this is a research project, they have tried many kinds of rotary bits and configurations, such as drag-tooth edges, etc., as well as flat-face diamond bit types.

This is all AIR drilling, with three big compressors for rotary (1500 cfm at 150 psi) and dropping back to 2 compressors (700 cfm at 250 psi) for coring. They cool the air down to 60°F before sending it to the bottom.

As large chunks of dacite are chipped off during the rotary reaming phase, it takes the large volume to put these on the surface for collecting.

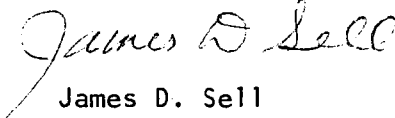
They set the first string of 10" ID pipe (in a 14½" hole) at 1100 feet to seal off the water which they hit from 300-400 feet. They are presently drilling a 9½" rotary hole with HQ core advancing a 4" hole.

They hope to complete the hole by the end of June and prepare it for a water well for the Forest Service by back filling with gravel to around 600 feet, fill with cement to 500 feet, then perforates the casing from 450 to 250 feet to include the water zone.

Numerous geophysical tools will be run in the hole in the open part prior to closing down.

I have asked for Asarco to be placed on their final report mailing list.

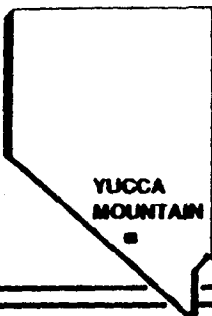
JDS:mek
Att.


James D. Sell

cc: W.L. Kurtz
F.T. Graybeal

U.S. DEPARTMENT OF ENERGY

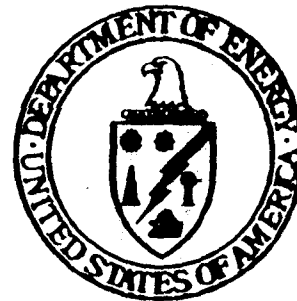
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YUCCA MOUNTAIN PROJECT

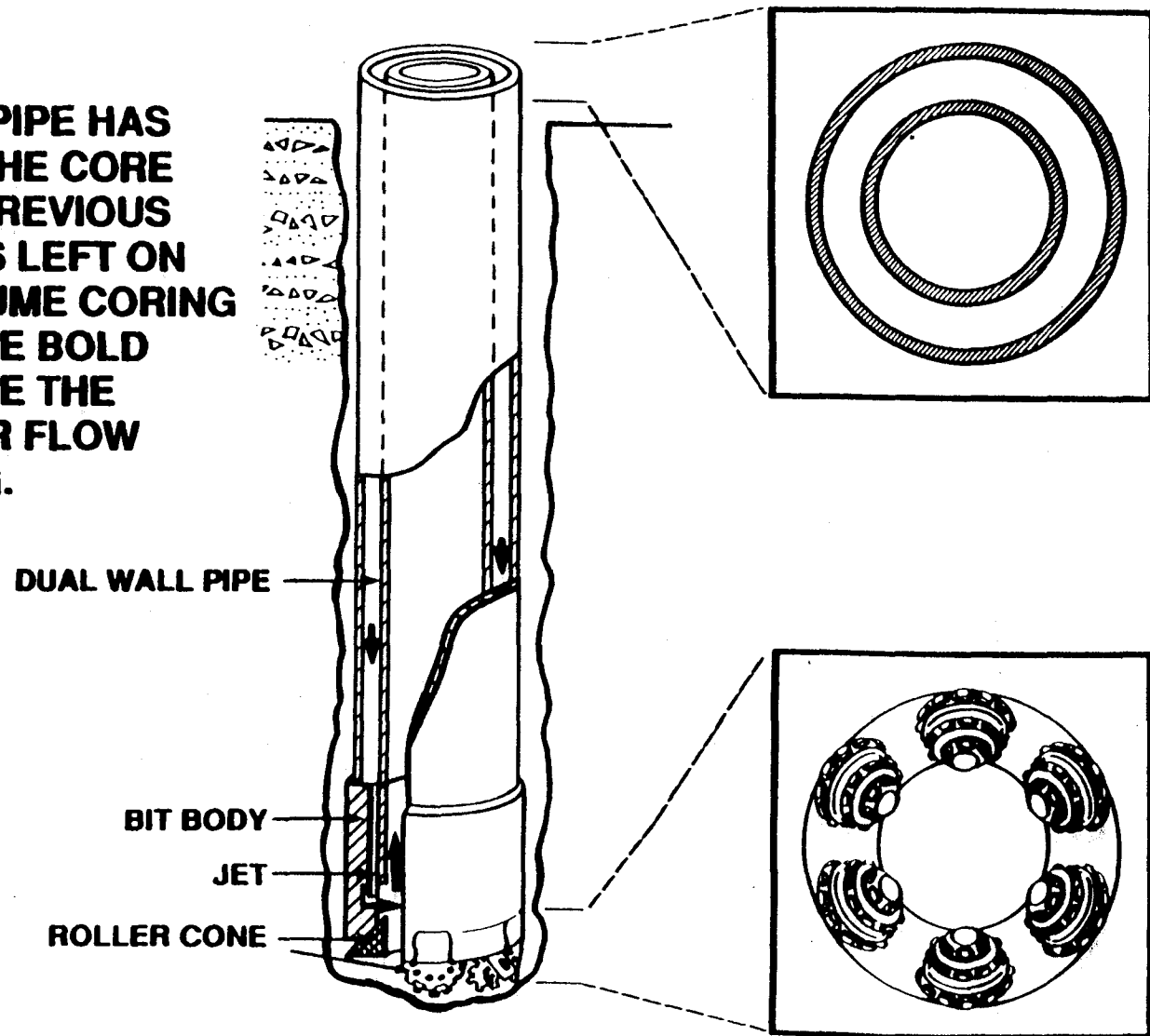
APACHE LEAP PROTOTYPE DRILLING

**UNITED STATES DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE/YUCCA MOUNTAIN PROJECT OFFICE**



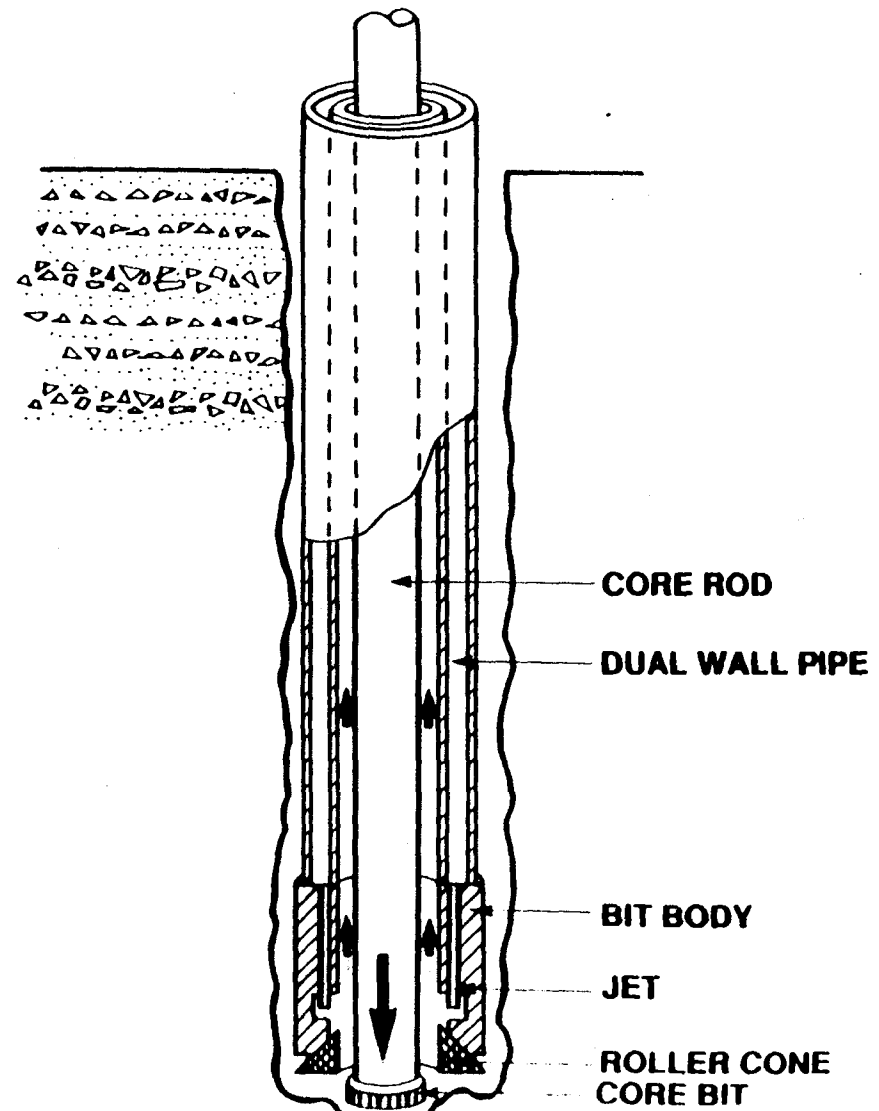
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 1

THE DUAL WALL PIPE HAS REAMED DOWN THE CORE TRACK FROM A PREVIOUS CORE RUN AND IS LEFT ON BOTTOM TO RESUME CORING OPERATIONS. THE BOLD ARROWS INDICATE THE DIRECTION OF AIR FLOW DURING REAMING.



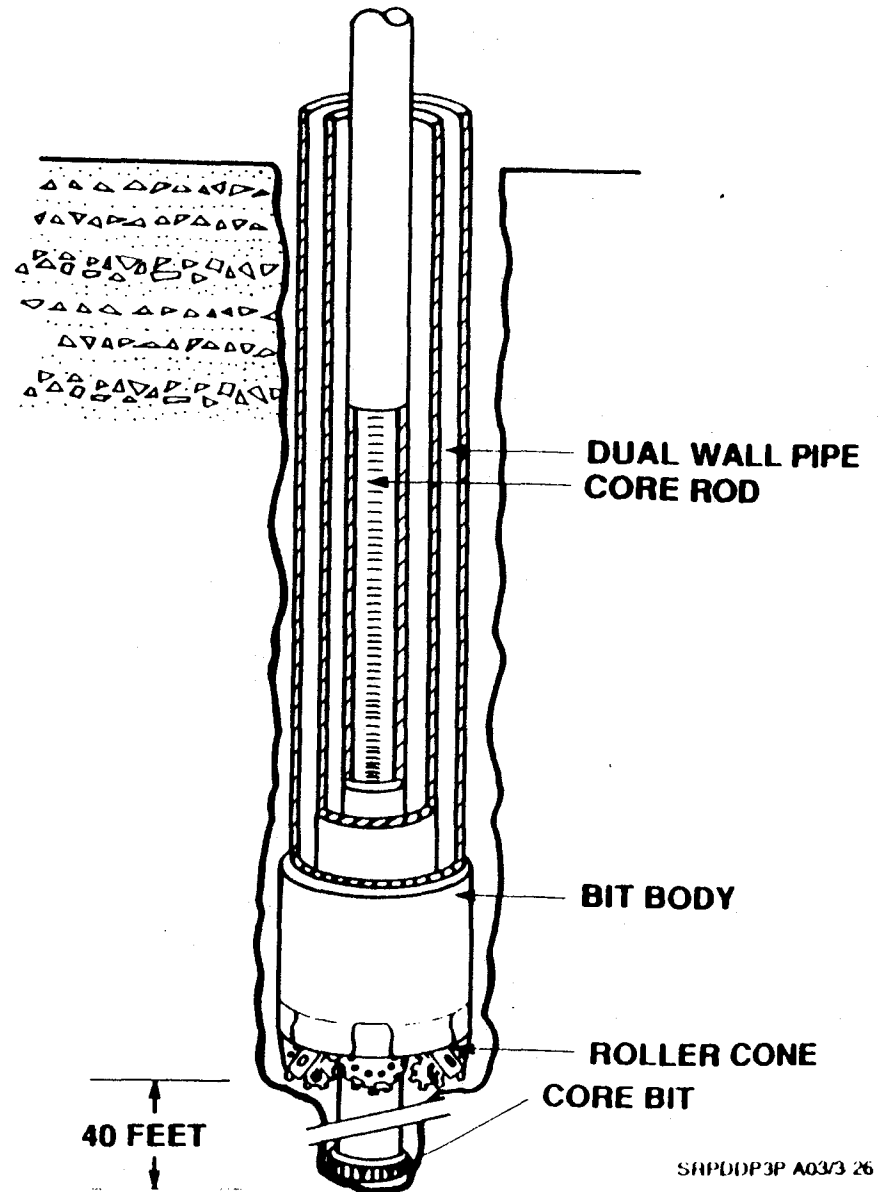
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 2

THE CORE ROD IS RUN IN THE HOLE INSIDE THE DUAL WALL PIPE. THE DRILLPIPE ACTS AS A PROTECTIVE CASING TO PROTECT THE CORE ROD FROM THE FORMATION AND TO PROTECT THE FORMATION FROM THE HIGH PRESSURE AIR AND CUTTINGS PRODUCED BY THE CORING OPERATION. ARROWS INSIDE AND ADJACENT TO CORING ASSEMBLY INDICATE DIRECTION OF AIR FLOW DURING CORING OPERATIONS.



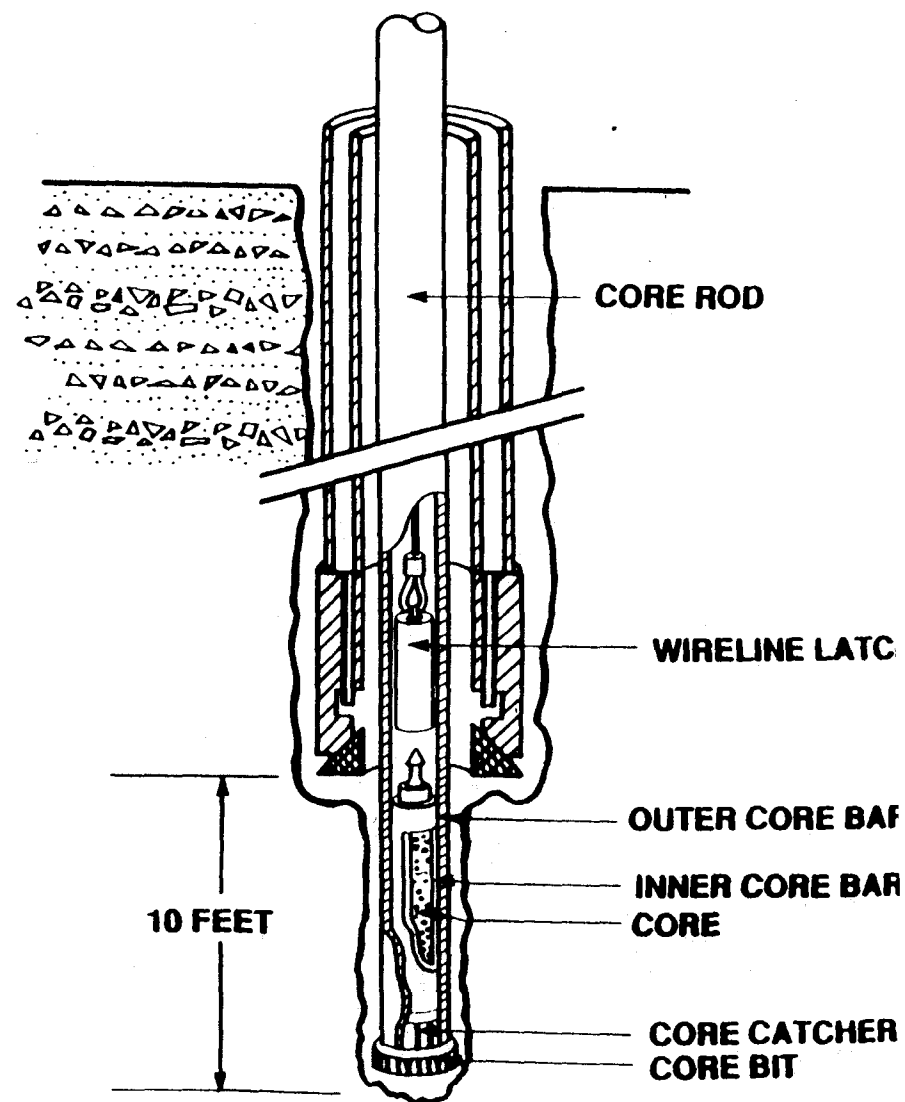
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 3

CORING OPERATIONS ARE COMMENCED AND THE CORE ROD IS ADVANCED 40 FEET AHEAD OF THE DUAL WALL PIPE IN 10 FOOT INCREMENTS (10 FOOT CORES). THE CORES ARE RETRIEVED BY CONVENTIONAL WIRELINE WHILE THE CORE ROD IS LEFT IN THE HOLE FOR THE DURATION OF THE 40 FOOT CORE RUN. THE 40 FOOT LIMIT IS USED TO PREVENT THE MORE FLEXIBLE CORE ROD FROM INITIATING A DEVIATION IN THE BOREHOLE AND CAUSING THE DRILLPIPE TO FOLLOW A DEVIATED PATH RESULTING IN BINDING OF THE DUAL WALL PIPE.



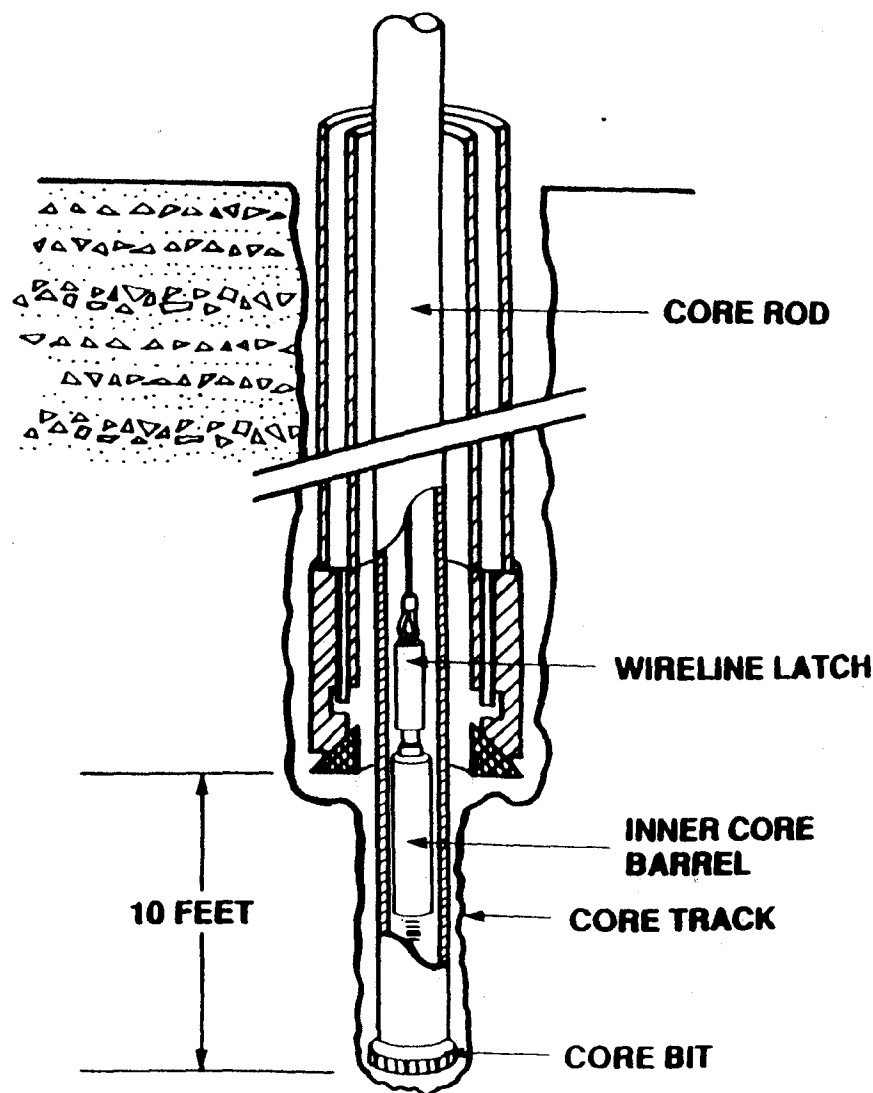
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO.4

AT THE END OF EACH 10 FOOT
CORED INTERVAL THE CORE ROD
IS PICKED UP SLIGHTLY AND THE
CORE IS BROKEN BY THE CORE
CATCHER JUST ABOVE THE
CORE BIT. THE CATCHER IS A
DEVICE WHICH ALLOWS THE
CORE TO ENTER THE INNER
BARREL BUT PREVENTS IT FROM
BACKING OUT. A WIRELINE
LATCH (OVERSHOT) IS THEN RUN
INSIDE THE CORE ROD AND THE
TOP OF THE INNER BARREL IS
"CAUGHT" WITH THE WIRELINE.



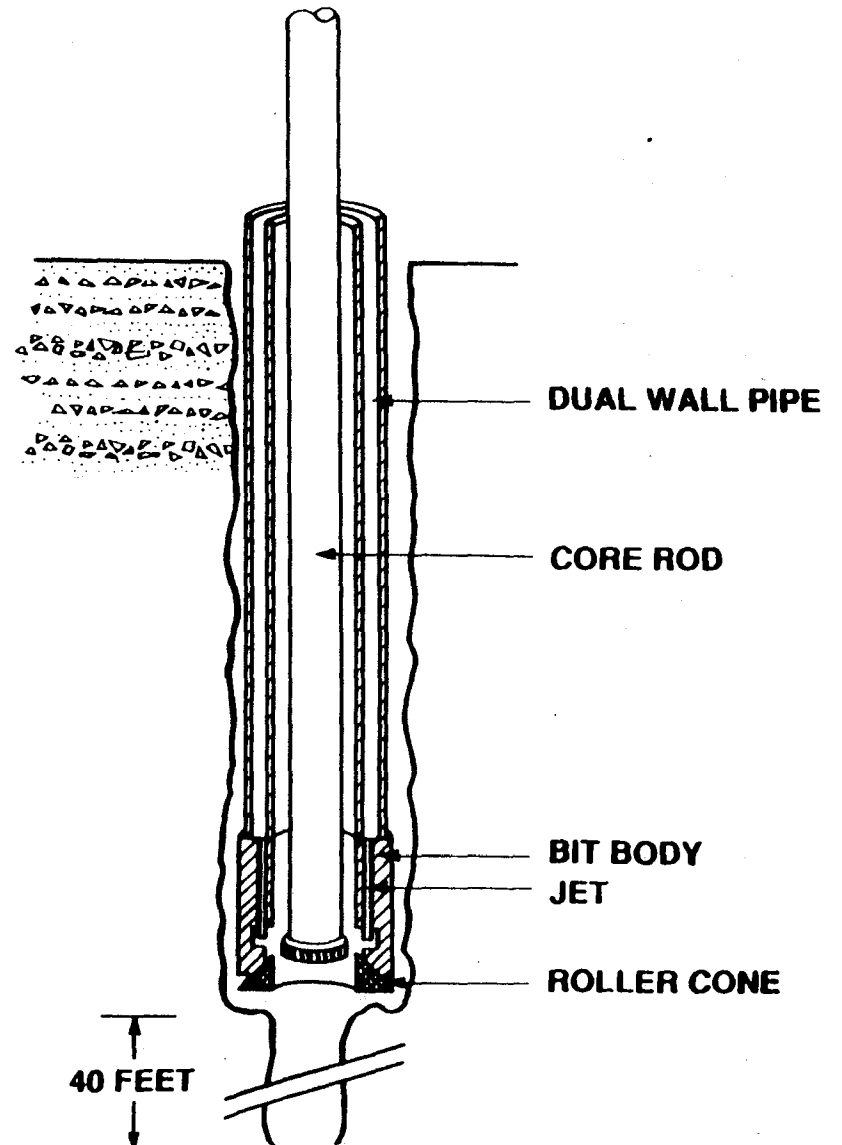
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 5

AFTER THE CORE IS BROKEN, THE INNER BARREL (WITH CORE HELD IN BY THE CORE CATCHER) IS PULLED OUT OF THE HOLE BY WIRELINE. A NEW (EMPTY) INNER BARREL IS THEN RUN IN HOLE, LATCHED INTO THE OUTER BARREL, AND THE WIRELINE IS REMOVED. THIS SEQUENCE IS REPEATED EACH TIME THE CORE TRACK IS ADVANCED 10 FEET.



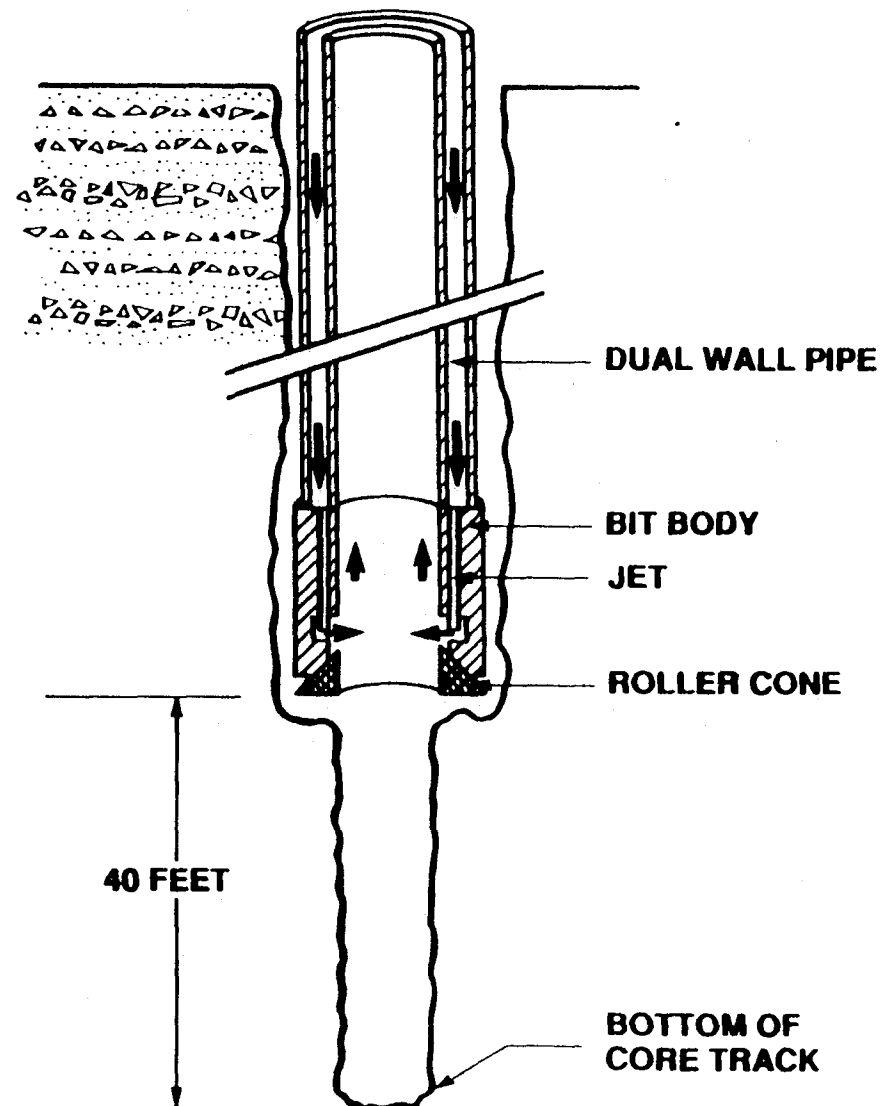
DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 6

THE CORING STRING IS PULLED
OUT OF THE HOLE AT THE END
OF THE 40 FOOT CORE RUN IN
PREPARATION FOR REAMING
DOWN THE CORE TRACK WITH
THE DUAL WALL PIPE.



DUAL WALL DRILLING/CORING SYSTEM DRAWING NO. 7

ONCE THE CORING ASSEMBLY IS OUT OF THE BOREHOLE, IT IS DRILLED/REAMED WITH THE DUAL WALL DRILL STRING TO THE BOTTOM OF THE CORE TRACK. THE FORMATION IS PROTECTED FROM CONTAMINATION NORMALLY ASSOCIATED WITH DRILLING BY CIRCULATING THE CUTTINGS UP THE CENTER OF THE DUAL WALL PIPE. CONTAMINATED FORMATION CAUSED BY THE CORING OPERATION IS REMOVED WHEN THE CORE TRACK IS REAMED DOWN. THE BOLD ARROWS INDICATE THE DIRECTION OF AIR FLOW DURING REAMING.



DRILLING/CORING SEQUENCE

- 1. CORE 40' IN 10' INTERVALS USING WIRELINE CORE RETRIEVAL**
 - 2. REMOVE CORE ROD**
 - 3. REAM WITH 12 1/4" BIT THROUGH CORED INTERVAL (LEAVE 12 1/4" STRING IN HOLE)**
 - 4. RUN-IN HOLE WITH CORE ROD**
- RETURN TO STEP 1**