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James Doyle Sell Mining Collection

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SE
Petrography
Assays.
Skeleton Core

TAB

Petrography

ASARCO Southwestern Exploration Division

February 26, 1986

TO: H. G. Kreis

FROM: J. D. Sell

Thin-, Polished-, Heat Stage Sections
Superior East Project
Pinal and Gila Co's, AZ

I understand you have read the Superior East file of reports, drill hole data, assays, etc.

Attached is a list of the thin-sections, polished sections, and heat-stage sections of the collection from the Superior East Project and nearby areas. A list of reports on various parts of the collection is also attached and often noted on the individual drill hole or area list.

You are requested to study and write up each section available with particular attention to the igneous rock types, alteration phases, fluid inclusion types, and sulfide phases.

The thrust of the study is:

1. To better define the relationship of the igneous phases to each other and to the sulfide mineralization.
2. The zoning pattern in wall-rock and veins through changes in alteration and sulfide distribution.
3. The thermal zoning pattern.

A preliminary progress report should be completed on each hole. Conceptual notes written to suggest and guide future studies. Suggestions on additional material that may be needed for a final report should also be noted.

The present study is time limited.

James D. Sell
J. D. Sell

JDS/gb

Attachments

cc: FTGraybeal
WLKurtz

Petrography - Age Dates - Metallurgy Reports.

—

OF-1A & M-1 (Earlier Volcanics basalt) March 5, 1971.
Microprobe of Native Copper from hole M-1A, Tw. July 13, 1971.
DCA-1A (zeolite Hornblendite from Tw). Nov. 30, 1971.
Microprobe of Native Copper - Cuprite from A-4 (2) Dec. 10, 1971.
DCA-1A. (fossils from Naco & Escabrosa). Jan 12, 1972.
Cactus bx & Whitetail Cgl, outcrop & DDH. Jan. 19, 1972
Core Holes M-1A (1) & A-4 (4). Jan. 20, 1972
Age-Date from Holes M-1A & A-4 Jan. 27, 1972
Photomicrograph of Chalcocite-Hematite, A-2. March 22, 1972
Submitted of Ten Core Samples from hole A-2. March 30, 1972
Petrographic Exam of Maintop Gr. (4) & Last Gulch qm. (1) May 5, 19
Hydrothermal Alteration in Holes AI-1 (11) & A-2 (14) June 17, 1974
Petrography of Ray West, RW-54, g. latite porphyry. Oct. 24, 1974.
Hydrothermal Alteration in hole DCA-34 (8) Nov. 8, 1974
Metallurgical Tests on Native Copper Ore. Dec. 13, 1974.
Sample Preparation & Metallurgical Testing of Cu° Ore - Jan. 31, 1975.
Fluid Inclusions in LB-4 (5) Feb. 13, 1975
Notes on Sample Identification. April 25, 1975.
Further Metallurgical Testing of Native Cu Ore April 30, 1975
Age-Date Request for Tuff in Whitetail Cgl. March 3, 1977.
Beneficiation of Native Cu Ore - Az & Michigan July 20, 1977.
Identification of "bladed" chalcocite-bornite w/py, A-9. Feb. 23, 1978
Thin-Section, hole B-6 (Newmont) (3). May 31, 1978
Sulfide Assemblages from A-8 (3) & A-9 (1). March 11, 1980.
* Sample List Series & Number-Types of Thin-sections, double polished thin-sections, and Polished Thin Sections, & Polished Sections June 30, 1982

Sample List Series: 6/30/82

Hole:

A-1

A-2

A-2W

A-3

A-4

A-7

A-8

A-9

A-10
A-11
A-12

A-12-A
A-13
A-14
AOF-1

DCA-1A

DCA-2A

DCA-3A

M-1A

OF-1A (Kerr-McGee)

LB-4 (P. Kayser)

Socaton basal flt.

QDC-5

X & Z, Lost Gulch gm. & Manitou gr.

Hole B-6, A-B-C, Sect. 6 (Magma).

QC-Series (7 samples) (Queen Creek).

Thin-section, etc. collection

Drill Hole No. A-1

Sample No.	Thin section	Polished thin-section	Polished section	K-Ar Sample	Remarks
TBX-4-A-1-1397					breccia
TBX-6-A-1-1509					breccia
TBX-5-A-1-1557					Tw
A-12100					PEPi

TBX samples, see report Jan 19, 1972 by GJS.

Trans-section, etc., correlation

Drill Hole No. A-2

Sample No.	Thin Sec. Fine	Polished Thin Sec. Fine	Polished Section	Kyte Shale	Remarks
A-2-4253					A-2 type
A-2-4262					" "
A-2-4263					" "
A-2-3 (4301)					*
A-2-4308					
A-2-4340					
A-2-4360					
A-2-4 (4394)					*
A-2-4401					
A-2-5 (4403)					*
A-2-4412					
A-2-4419					
A-2-4445					
A-2-4457					
A-2-6 (4499)					*
2-4229		Double Polished			forhead stage work.

Also see V. Kuchuyk report of March 22, 1972, on sample A-2 (4076-4078) X-ray diffract. & photomicrograph.

* See report June 17, 1974 by FTG

Thin-section, etc., collection

Drill Hole No. A-2 W (wedge)

Sample No	Thin Section	Polished Thin Section	Polished Section	Rock Chip Sample	Remarks	
A-2W4242				■	porp.	
A-2W 4248				■	schist	
A-2W 4309					porp.?	
A-2W 4325					schist	
A-2W 4541				■	porp.	
A-2W 4545					schist	
A-2-7 (4457)						*
A-2W 4760					schist	
A-2W 4736					porp	
A-2-8 (4864)						*
A-2-9 (4910)						*
A-2W 4928				■	blk porp	
2W-4300		Double Polished			for heat stress work.	

* See report of June 17, 1974 by FTG.

Thin-section, etc. collection

Drill Hole No. A-3

Sample No.	Thin Section	Polished Thin Section	Polished Section	Kystone Slab	Remarks
A-33674 Vert cut					tuff
A-33674 Horiz cut					"
A-34488					"

Polished Section

Drill Hole No. A-4

Sample No.	Thin Sections	Polished Thin Sections	Polished Sections	Kystal Balls	Remarks
A-43810 Vert					tuff
A-43978 Vert.					"
A-44202 Vert					"
A-45084 Horiz				?	" Cu marks
A-45084 Vert.				?	" " "
A-45098 Horiz					" " "
A-45108 Vert					"
A-4-4-6562					Eocalmara bx ✓
A-4-2-6602					Sand - blk grap ✓
A-4-4-6612					blk pop. ✓
A-4-1-6656					blk pop. ✓
A-4-6657					blk pop.

See report of Jan 20, 1972 by G.J.S. also contains reports on bars at 6573', & 6445.

See report of Jan 17, 1974 by FTG.

Also see report by V. Kudrysh (Dec. 10, 1971) on microspic & microprobe report of
A-4 - 5090 (lithic tuff)
& A-4 - 5106 (conglomerate)

Also see report by Isotopic Laboratories, Jan. 20, 1972, on age dots of samples A-4-C 121 (depth of 6620-6630).

Thin-section, etc. collection

Drill Hole No. A-7

Sample No.	Thin-section	Polished Thin-section	Polished Section	Kystein Slide	Remarks
A-7 4691 Hoy					tuff-lava
A-7 4694 Hoy					" "
A-7 5710 Hoy					"Supai ss"

Thin-section, etc. collection

Drill Hole No. A-8

Sample No.	Thin-section	Polished Thin-section	Polished Section	Kistler Slab	Remarks
A-8 3198					Tw
A-8 3252					A-2 type SB
A-8 3449					" " "
A-8 3543					" " " Lgraplite old act.
A-8 3687					" " "
A-8 3814					leached BR
A-8 3883					self. Lbfp (andesite-weathered) old act.
A-8 3891					" pEpi " "
A-8 3958					pEpi py-cc " "
A-8 3978 *					
A-8 4023					Lbfp gb-sulf vn " "
A-8 4088					pEpi gb-sulf vn " "
A-8 4111					Lbfp " "
A-8 4202 (see 4402)					
A-8 4249 A-8 4253					
A-8 4614 A-8 4355 A-8 4402					Lbfp " "
A-8 4622					Lbfp " "
A-8 4726					Lbfp blue feldspar " "
A-8 4835					pEpi K-spar vn " "
A-8 4925					
* A-8 3978					py cp, bn-cc
A-8 4249					bn-cc
A-8 4253					bn-cc
A-8 4355					py-cp, bn-cc
A-8 4402 (Note, marked 4202)					spec. bx, py-cc
8-4064		Double Polished			for heat-stage work
8-4157		"			" " " "

Thin-section, etc. collection

Drill Hole No. A-9

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kyfan Slide	Remarks	
A-9 2916 Vent					tuff lens	old sect.
A-9 3252					Tur	
A-9 3306					MIA SB	
A-9 3347					A-2 SB	
A-9 3429					" "	
A-9 3598					" "	
A-9 3634					" "	
A-9 4023					leached BR	
A-9 4026					" "	
A-9 4068					aelfid	
A-9 4070						
A-9 4136						
A-9 4159						
A-9 4202					foliated porp.	old sect.
A-9 4279						
A-9 4282		NO				
A-9 4437					b.f.p	old sect.
A-9 4449						
A-9 4580					xb	" "
A-9 4734						
A-9 4737						
A-9 4902						
9-4055		Double Polished			for heat-stress work.	
9-4428		"			* See V. Kudryk report of March 10, 1977 for sample A-9-449.	
9-4856		"			" " " "	

Thin-section, etc. collection

Drill Hole No. A-10

Sample No.	Thin Section	Polished Thin Section	Polished Section	Kystin Slab	Remarks	
A-10 3369					TW	
A-10 3388					M-1A-SB	
A-10 3436					A-2 SB	
A-10 3442					" "	
A-10 3597					" "	
A-10 3691					" " blk pay	
A-10 3697					" "	
A-10 3765						
A-10 3829					" "	
A-10 3891					leached BR	
A-10 3899					" "	
A-10 3961						
A-10 4052					blk pay	
A-10 4163						old section
A-10 4180						" "
A-10 4235						
A-10 4264						" "
A-10 4278						" "
10-3990		Doubly Polished			for heat-stage work	
10-4272		"			" " " "	

Thin-section, etc. collection

Drill Hole No. A-11

Sample No.	Thin-section	Polished Thin-section	Polished section	Kystron slide	Remarks
11-4283		Doubly Polished			for heat-stage work
11-4503		"			" " " "

Thin-section, etc. collection

Drill Hole No. A-12 and A-12-A (wedge).

Sample No.	Thin Section	Polished Thin Section	Polished Section on glass slides	K-ylon Stain Slide on glass slides	Remarks
A-12-3530	X				schist bx
A-12-3764	X				schist w/hematite
A-12-4021	X			Stole	schist, qtz-seri alt; hem after cc?
A-12-A-4100			X		schist capping w/ Cu°
A-12-A-4110	X			X	schist capping
A-12-A-4129	X			X	porphyry bx, leached capping, qtz-seri. ~~schist w/ cc-py vn~~
A-12-A-4136	X			X	Porphyry, 90% alt to qtz-seri.
A-12-A-4146			X		schist w/ Cu-Specularite vn (oxidized)
A-12-A-4167		X (marked "4167P")	X		schist w/ cc oxidized vein
A-12-A-4172			X		schist, sulfide cc
A-12-A-4178			X		schist, py-cc vn & diss.
A-12-A-4195	X			X	porphyry & qtz + qtz-seri.
A-12-A-4208			X		schist, py-cp-cc vn
A-12-4219		X			schist w/ cc-py vn
A-12-4220			X		schist w/ cc-py vn
A-12-A-4223		X			schist w/diss cc in schistosity, qtz-seri
A-12-A-4236			X		schist, py-cc vein + diss.
A-12-4256	X			Stolen	Lbfp, alt band
A-12-4355		X			schist w/ cc-py vn
A-12-4448			X		massive py-cp-cc-bn?
A-12-4527			X		massive py-cp-bn-cc in qtz vn
A-12-4587			X		vn of py-bn rest in schist
A-12-4589	X			X	Lbfp w/ alt band
A-12-4627	X			X	Lbfp w/ alt band

continued

Thin-section, etc. collection

Drill Hole No. A-12 & A-12-A Continued (2)

Sample No.	Thin-Section	Polished Thin Section	Polished Section	K-Stain Slab	Remarks
A-12-4633		X			schist bx w/ py-bn
A-12-4666			X		qtz vn w/ bn
A-12-4669		X			alt schist w/ irregular bn
A-12-4822			X		py-cp-bn in qtz-porphyry
A-12-4826	X			X	Lbfp w/ diss bn.
A-12-4848		X			schist, alt, w/ diss bn
A-12-4850			X		massive bn-py
A-12-4898			X		massive py-cp-bn (cc)
A-12-4970		X	X		py-cp-bn vn in Lbfp qtz-seri band
A-12-5113			X		py-cp w/ bn ?
A-12-5127			X		cp
A-12-5131			X		cp-bn
A-12-5155		X			cp-specularite
A-12-5174		X			aplite vn w/ cp-bn
A-12-5252	X			X	blk biotite schist w/ sugar qtz vn
A-12-5260	X			X	qtz infiltrated schist w/ cp
A-12-5348	X			X	schist w/ qtz + K-spar vn
A-12-5356	X			X	schist w/ qtz + K-spar vn
A-12-5358	X			X	Lbfp. bx
A-12-5368	X			X	Lbfp w/ qtz-seri vn
A-12-5375	X			X	Lbfp w/ qtz-seri vn & enhanced feldspar
A-12-5393	X			X	Lbfp w/ qtz-seri vn & enhanced feldspar
A-12-5411	X			X	Lbfp as above (greenish) + py-hematite
A-12-5417	X			X	Lbfp as above ; no py-hem.

Continued

Thin-section, etc. collection

Drill Hole No. A-12 & A-12-A Continued

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	K-Stain Slab	Remarks
A-12-5434		~~X~~ w/K-stain "blank"		X	Lbfp bx w/qtz-seri + cp-hem.
A-12-5486	X			X	Lbfp, enhanced feldspars
A-12-5551	X			X	Lbfp, enhanced feldspars
A-12-5622	X			X	Lbfp, slightly stained
A-12-5623	X			X	Lbfp, more stained w/ hem fractures.
A-12-5625	X			X	Lbfp, more stained w/ qtz-seri.
A-12-5627	X			X	Lbfp, sheared & gouge
A-12-5633	X			X	Lbfp, very sheared & gouge
A-12-5665	X			X	schist, cataclastic crushing
A-12-5692	X			X	schist, silica overprint, fine alunite?
A-12-5716	X			X	schist, with alunite? vn.

Drill Hole No. A-13

13-3552	Double Polished	for heat-stage work
13-3950	"	" " " "

Dull Hole A-14

14-4147	Double Polished	for heat-stage work
14-4262	"	" " " "
14-5170	"	" " " "
14-5735	"	" " " "

Thin-section, etc. collection

Drill Hole No. AI-1

Sample No.	Thin Section	Polished Thin Section	Polished Section	Key Shale	Remarks	
AI-12822				■	M-1A SB	
AI-12997					" "	
AI-13054					A-2 SB.	
AI-13199					" "	
A-I-1 (3241)						*
A-I-14 (3304)						*
AI-13342				■	BR	
AI-13498				■		
A-I-15 (3511)						*
AI-13547				■		
AI-13557					pepi, anhydrite	
A-I-16 (3624)						*
A-I-17 (3711)						*
A-I-18 (3810)						*
AI-13921					pirite	
A-I-19 (3949)						*
A-I-20 (3963)						*

* See report June 17, 1974 by FTG.

Thin-section, etc. collection

Drill Hole No. AOF-1 of Inspiration Con. Copper Co.

Sample No.	Thin section	Polished Thin section	Polished section	Kystein slide	Remarks
3450					pepi

Thin-section, etc. collection

Drill Hole No. DCA-1A

Sample No.	Thin-Section	Polished Thin Section	Polished Section	Kystein Slide	Remarks
					See report by Emanuel Nieves on samples DCA-1A-4716 & DCA-1A-5201 (fossil identification), dated Jan. 12, 1972.

Thin-section, etc. collection

Drill Hole No. DCA-2A

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Crystal Slide	Remarks
DCA-2 1538					schist
DCA-2 1547					schultze
DCA-2 1928					schist
DCA-2 2393					schist

Thin-section, etc. collection

Drill Hole No. DCA-3A

Sample No	Thin Section	Polished Thin Section	Polished Section	Kryptol Slab	Remarks	
DCA-33205 Vs	—				tuff-lava	
DCA-34100	—				M-1A SB	
DCA-34193	—				Tw	
DCA-34334	—			—	M1A SB	
DCA-3A-4387	—					*
DCA-3A-4460	—					*
DCA-34512	—			—	A-2 SB	
DCA-34637	—			—	" "	
DCA-3A-4662	—					*
DCA-3A-4693	—					*
DCA-3A-4717	—					*
DCA-34747	—			—	BR	
DCA-3A-4780	—					*
DCA-34858	—			—		
DCA-3A-4874	—					*
DCA-3A-4975	—					*
DCA-34991	—					
DCA-35137	—					
3A-4699		Double Polished			for heat-stage work	
3A-4805		"			" " " "	

* See report of Nov. 8, 1974 by FTG

Thin-section, etc. collection

Drill Hole No. M-1A

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystal Slide	Remarks
M-1 - 2241' ~~(1820')~~					one sample, one 1 other 11 in core axis. ~~other~~ earlier volcanics See report March 5, 1971 GRK.
M-2 - 2241' ~~(1820')~~					
M-1A-1-2981					M-1A SB See report Jan 20, 1972 by GJS.
TBX-7-M-1A-2457					Tw TBX sample: See report Jan 19, 1972 by GJS.
TBX-8-M-1A-3125					Tw
TBX-9-M-1A-4275					Tw
M-1A 3515 Vent					tuff

Also see report by V Kudrysh to Collins July 13, 1971 on microscopic & microprobe work on sample M-1A - 4209.

Also see osedate report by George Salisbury Jan 20, 1972 on sample M-1A-A (293-294.

Drill Hole No. ~~OFA-1 & OFA-2~~ OF-1A hole of Kern-McGee ~~of Kern McGee~~ collection

Sample No.	Thin Section	Polished Thin Section	Polished Section	Key Tan Slab	Remarks
OFA-1-2140'					fine sample, one cut ⊥, other ∥ to core axis. earlier volcanics ⊥ 2140 See page March 5, 19
OFA-2-2140'					" " ∥ 2140 JKK
~~OFA-2~~					earlier ~~volcanics~~

Thin-section, etc. collection

Drill Hole No. LB-4

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystom Slide	Remarks
LB-4-2600				slide	* See report Feb. 13, 1975 by F TG on fluid inclusion
LB-4-3092				~~slide~~ No	*
LB-4-3410				slide	*
LB-4-4200				slide	*
LB-4-4850				slide	*

Thin-section, etc. collection

Drill Hole No. Saccaton Basal Fault

Sample No.	Thin-section	Polished Thin-section	Polished Section	Kistler Slide	Remarks
SACBF-1					
SACBF-2					

Thin-section, etc. collection

Drill Hole No. QDC-5

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystein Slide	Remarks
QDC-5538	—				
QDC-5575	—				
QDC-51806	—				
QDC-52729	—			? —	
QDC-52802	—				
QDC-52811	—			? —	
QDC-52858	—				
QDC-52887	—				
QDC-52900	—				
QDC-53202	—				
DC-53502	—				

Thin-section, etc. collection

Drill Hole No. Other Samples From District

Sample No	Thin-section	Polished Thin-section	Polished Section	Kryptol Slide	Remarks
X-14		in basement file			Lost Gabel quartz monzonite
Z-1		in basement file			Manitou granite
Z-2					
Z-3					
Z-4					

See report May 5, 1972 by GSS.

Thin-section, etc. collection

Drill Hole No. Magma B-6 hole.

Sample No	Thin section	Polished Thin section	Polished Section	Kystal plate	Remarks
B-6-A		■			Troz w/ cc on fg.
B-6-B	■				Martin negl texture
B-6-C		■			Troz, w/ mn

Thin-section, etc., collection

Drill Hole No. Queen Creek (Superior, Az) QC- Series

Sample No	Thin-Sec. Sec. Fac.	Polished Thin Sec. Sec. Fac.	Polished Sec. Fac.	Key to Slide	Remarks
QC-1A					middle Naco ; mn nicks
QC-2A					top Escabrosa ; mn-nicks
QC-3A					middle Escabrosa ; excell. repl. textures
QC-7A					lower Martin ; excellent repl. textures
QC-8A					upper Bolsa qtzite Fe-stained
QC-101					lower Naco ; 45' above Karst above QC-102
QC-102					upper Escabrosa ; mushroom Mn, below karst.

Take out 15 OF 15 samples & send rest to WP — mc as to status of slab (also on log sheet)

Things to be found.

One polished section of OF-1A (found) (piece of slab only).
One polished section of M-1 (both E. vole.).

A-2-1 (4078') ~~E. vole.~~
A-2-2 (4212') ~~E. vole.~~
~~A-2-7 (4053')~~

A-4-3 (6573') flt gouge
A-4-5 (6445') Escabrosa Bx

Pat Lawrence

A-I-10 (2884')
A-I-11 (2981')
A-I-12 (3092')
A-I-13 (3200')

DCA-1A-4714 Moco (2 samples?) Mannies Sample
DCA-1A-5201 Escobrosa

Dr. Val Kedrych, Manager
Central Research ~~Laboratories~~ Department
ASARCO Incorporated 901 Coh Street Road
South Plainfield, New Jersey 07080.

Sent 2/23/78

Call Jim Goley on polished section work.

Tuff Beds to Check:

Elev.

E of RHC.

E4720 — A-1 — Tw 1527-1564 — ash flow tuff 1532-1535 — E4720 — +3185
BR 1564 — (+3155).

E4800 — DCA-2A — Tw 1415-1442, Trt 1442-1452 — check "dacite" motley Tw @ 1410-1415 ?? — E4800 — +3350
BR 1452 — (+3350).

E4975 — AOF-2 — Tw 800-3058 T.D. — Silicic motley @ 2690, few rhy frags @ 2890 — E4975 — (?+2285) ? +2085
BR below 3058. — (below +1915)

E4240 — AOF-1 — Tw 1106-2939 — None reported; increase Cu° 2100' — E4240 — ? +1440
BR 2939 — (+1300)

Between RHC & DC.

E4640 — DCA-3A — Tw 2430-4454. — Tuff marker; best tuff; "Tw" 3204-3205 — No increase in Cu° (See A92916V) — E4640 DCA 33205V — +1435
BR 4454 (SB) — (+185)

E4625 — AI-1 — Tw 2250-3073 — None recorded — E4625 — –
BR 3073 (SB). — (+1550)

E4685 — A-8 — Tw 2213-3224 — chaos of 3200'; increased Cu° — E4685 — ? +1485
BR 3224 (SB). — (+1460)

E4340 — A-2 — Tw 2020-3920 — None reported. ch Cu° — E4340 — –
BR 3920 (SB). — (+420)

A-9 A92916V fresh water, Lms (See DCA 33205 V)

Tuff Beds to Check (Continued).

W of DC.

4785 DCA-1A. Tw 2210-4669 None noted in rotary cuttings nor core E4785 —
BR 4669 (+ 115)

4500 M-1A Tw 2428-4998 E4500
ch lithic SS & tuff @ 2430 ? + 2070 ?
ch vitric tuff 2903-2906 ? + 1595
ch gray tuff modular M1A3818V 3818-2819 & 3837-3838 ? + 680
Also ch lithic SS in Lupai at 4998-4922-4936
& below to base at 5108 (ch 5040-5006 Th).
BR 4998 (-500)

4020 A-5 Tw 2600-3145 T.D. None reported in rotary cuttings E4020 —
BR below 3145 (below + 870)

4210 A-7 Tw 2445-5610. ? tuff beds or lens ? @ 4690-4695. Cu below A74691H A74694H E4210 -480
ch tuff SS in Lupai @ 5663-5748. A75710H
BR 5610 (-1400)

4100 A-4 Tw 2133-6484 lithic ~~SS~~ tuff ~~2943~~ 3808-3810 A43810V E4100 (+290 ~~? + 2070~~)
~~lithic below~~ tuff ~~2906~~ 3976-3984 A43978V (+120) (~~2 + 1595~~).
lithic ~~gray tuff~~ ~~modular~~ 4201½-4203 A44202V (-100)
lithic tuff w/ Cu below. 5083-5102 & to 5112 A45084H Horizontal A45098H Vertical A45108V -1000
BR 6484 (-2385)

4125 A-3 Tw 1430-6008 T.D. lithic tuff 3671-3677 T.S. 3674 E4125 +450
" " silic 4485-4490 w/ Cu T.S. 4488 -360
BR below 6008 (below -1885)

Petrography - Age Dates - Metallurgy Reports.

—

OF-1A & M-1 (Earlier Volcanics basalt) March 5, 1971.
Microprobe of Native Copper from hole M-1A, Tw. July 13, 1971.
DCA-1A (zeolite Hornblende from Tw). Nov. 30, 1971.
Microprobe of Native Copper - Cuprite from A-4 (2) Dec. 10, 1971.
DCA-1A. (fossils from Naco & Escabrosa). Jan 12, 1972.
Cactus bx & Whitetail Cgl, outcrop & DDH. Jan. 19, 1972
Core Holes M-1A (1) & A-4 (4). Jan. 20, 1972
Age-Date from Holes M-1A & A-4 Jan. 27, 1972
Photomicrograph of Chalcocite-Hematite, A-2. March 22, 1972.
Submittal of Ten Core Samples from hole A-2. March 30, 1972
Petrographic Exam of Mainlow Gr (4) & Last Gulch qm. (1) May 5, 1972
Hydrothermal Alteration in Holes AI-1 (11) & A-2 (14) June 17, 1974
Petrography of Ray West, RW-54, g. latite porphyry. Oct. 24, 1974.
Hydrothermal Alteration in hole DCA-34 (8) Nov 8, 1974
Metallurgical Tests on Native Copper Ore. Dec. 13, 1974.
Sample Preparation & Metallurgical Testing of Cu° Ore. Jan. 31, 1975.
Fluid Inclusions in LB-4 (5) Feb. 13, 1975
Notes on Sample Identification. April 25, 1975.
Further Metallurgical Testing of Native Cu Ore April 30, 1975
Age-Date Request for Tuff in Whitetail Cgl. March 3, 1977.
Beneficiation of Native Cu Ore - Az & Michigan July 20, 1977.
Identification of "bladed" chalcocite-bornite w/py, A-9. Feb. 23, 1978
Thin-Section, hole B-6 (Newmont) (3). May 31, 1978
Sulfide Assemblages from A-8 (3) & A-9 (1). March 11, 1980.
* Sample List Series & Number-Types of Thin-sections, double polished thin sections, and Polished Thin Sections, & Polished Sections June 30, 1982.

Sample List Series: 6/30/82

Hole:

A-1

A-2

A-2W

A-3

A-4

A-7

A-8

A-9

A-10
A-11
A-12

A-12-A
A-13
A-14
AOF-1

DCA-1A

DCA-2A

DCA-3A

M-1A

OF-1A (Kerr-McGee)

LB-4 (P. Kayser)

Sacaton basal flt.

QDC-5

X & Z, Lost Gulch gm. & Manitou gr.

Hole B-6, A-B-C, Sect. 6 (Magma).

QC-Series (7 samples) (Queen Creek).

Thin-section, etc. collection

Drill Hole No. A-1

Sample No.	Thin Section	Polished Thin Section	Polished Section	Rock Chip Slide	Remarks
TBX-4-A-1-1397					breccia
TBX-6-A-1-1509					breccia
TBX-5-A-1-1557					Tw
A-12100					PEpi

TBX samples, see report Jan 19, 1972 by GJS.

Thin-section, etc. collection

Drill Hole No. A-2

Sample No.	Thin-Section	Polished Thin-Section	Polished Slabs	Rock Slab	Remarks	
A-2-4253					A-2 type	
A-2-4262					" "	
A-2-4263					" "	
A-2-3 (4301)						*
A-2-4308						
A-2-4340						
A-2-4360						
A-2-4 (4394)						*
A-2-4401						
A-2-5 (4403)						*
A-2-4412						
A-2-4419						
A-2-4445						
A-2-4459						
A-2-6 (4499)						*
2-4229		Double Polished			forhead stage work.	

Also see V. Kuchinski report March 22, 1972 on sample A-2 (4076-4078) X-ray diffraction & photomicrograph.

* See report June 17, 1974 by FTG

Thin-section, etc., collection

Drill Hole No. A-2 W (wedge)

Sample No	Thin Section	Polished Thin Section	Polished Section	Kodak Slide	Remarks
A-2W4242					porp.
A-2W 4248					schist
A-2W 4309					porp.?
A-2W 4325					schist
A-2W 4541					porp.
A-2W 4545					schist
A-2-7 (4657)					*
A-2W 4710					schist
A-2W 4736					porp
A-2-8 (4864)					*
A-2-9 (4910)					*
A-2W 4928					blk porp
2W-4300		Double Polished			for heat stage work.

* See report of June 17, 1974 by FTG.

Thin-section, etc. collection

Drill Hole No. A-3

Sample No.	Thin-section	Polished Thin-section	Polished Section	K-feldspar stain	Remarks
A-33674 Vat cut					toff
A-33674 Hog cut					"
A-34488					"

old sections

Thin-section, etc. collection

Drill Hole No. A-4

Sample No.	Thin Section	Polished Thin Section	Polished Section	Rock Chips	Remarks
A-43810 Vert	■				tuff
A-43978 Vert.	■				"
A-44202 Vert	■				"
A-45084 Horiz	■			■ ?	" Cu marks
A-45084 Vert.	■			■ ?	" " "
A-45098 Horiz	■				" " "
A-45108 Vert	■				"
A-4-4-6562	■				Eocalcareous bx ✓
A-4-2-6602	■				fund - blk grap ✓
A-4-6-6612	■				blk pay. ✓
A-4-1-6656	■				blk pay. ✓
A-4-6657	■				blk pay.

} see report of Jan 20, 1972 by GJS. also contains reports on samples at 6573', & 6445.

see report of June 17, 1974 by FTG.

Also see report by V. Kudrych (Dec. 10, 1971) on microspic & microprobe result of
A-4 - 5090 (lithic tuff)
& A-4 - 5106 (conglomerate)

Also see report by Isotopic Laboratories, Jan 20, 1972, on age dates of sample A-4-C 121 (depth of 6620-6630).

Thin-section, etc. collection

Drill Hole No. A-7

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystone Slab	Remarks
A-7 4691 Horz					tuff-lava
A-7 4694 Horz					" "
A-7 5710 Horz					"Sepai ss"

Thin-section, etc. collection

Drill Hole No. A-8

Sample No	Thin-Section	Polished Thin-Section	Polished Section	K-Ar Sample	Remarks
A-8 3198					Tw
A-8 3252					A-2 type SB
A-8 3449					" " "
A-8 3543					" " " Lgraplite old sect.
A-8 3687					" " "
A-8 3814					leached BR
A-8 3883					sulf. L bfp (oxidized mostly) old sect.
A-8 3891					" pEpi " "
A-8 3958					pEpi py-cc. " "
A-8 3978 *					
A-8 4023					L bfp qtz-sulf vn " "
A-8 4088					pEpi qtz-sulf vn " "
A-8 4111					L bfp " "
A-8 4202 (see 4402)					
A-8 4249 A-8 4253					
A-8 4614 A-8 4355 A-8 4402					L bfp " "
A-8 4422					L bfp " "
A-8 4726					L bfp. blue feldspar " "
A-8 4835					pEpi K-spar vn " "
A-8 4905					
* A-8 3978					py-cp, bn-cc
A-8 4249					bn-cc
A-8 4253			4		bn-cc
A-8 4355					py-cp, bn-cc
A-8 4402 (Note, marked 4202)					special bx, py-cc
8-4044		Double Polished			for heat-stress work
8-4157		"			" " " "

Thin-section, etc. collection

Drill Hole No. A-9

Sample No.	Thin-section	Polished Thin-section	Polished Section	Kitchen Slab	Remarks	
A-9 2914 Vat					tuff lens	old sect.
A-9 3252					Tw	
A-9 3306					MIA SB	
A-9 3347					A-2 SB	
A-9 3429					" "	
A-9 3598					" "	
A-9 3634					" "	
A-9 4023					leached BR	
A-9 4026					" "	
A-9 4068					ocelfid	
A-9 4070						
A-9 4136						
A-9 4159						
A-9 4202					foliated porp.	old sect.
A-9 4279						
A-9 4282		NO				
A-9 4437					bfp	old sect.
A-9 4449						
A-9 4580					xb	" " *
A-9 4734						
A-9 4737						
A-9 4902						
9-4055		Double Polished			for heat-stress work.	
9-4428		"			" " " "	
9-4856		"			" " " "	

* See V. Kudrick report of March 10, 1977 for sample A-9-4473.

Thin-section, etc. collection

Drill Hole No. A-10

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystone Slab	Remarks	
A-10 3369	■				TW	
A-10 3388	■				M-1A-SB	
A-10 3436	■			■	A-2 SB	
A-10 3442	■			■	" "	
A-10 3597	■				" "	
A-10 3691	■			■	" " blk pay	
A-10 3697	■			■	" "	
A-10 3765			■			
A-10 3829	■				" "	
A-10 3891	■			■	leached BR	
A-10 3899	■				" "	
A-10 3961			■			
A-10 4052	■			■	blk pay	
A-10 4163	■			■		old section
A-10 4180	■			■		" "
A-10 4235			■			
A-10 4264	■			■		" "
A-10 4278	■			■		" "
10-3990		Double Polished			for heat-stage work	
10-4272		"			" " " "	

Thin-section, etc. collection

Drill Hole No. A-11

Sample No.	Thin-section	Polished Thin-section	Polished section	Kistler Slab	Remarks
11-4283		Double Polished			for heat-stage work
11-4503		"			" " " "

Thin-section, etc. collection

Drill Hole No. A-12 and A-12-A (wedge). 1of3

Sample No.	Thin-section	Polished Thin-section	Polished section on glass slides	K-stain slab on glass slides	Remarks
A-12-3530	X				schist bx
A-12-3764	X				schist w/hematite
A-12-4021	X			SLX	schist, qtz-seri alt; hem after cc?
A-12-A-4100			X		schist capping w/ Cu°
A-12-A-4110	X			X	schist capping
A-12-A-4129	X			X	porphyry bx, leached capping, qtz-seri. ~~schist w/ cc py vn~~
A-12-A-4136	X			X	Porphyry, 50% alt to qtz-seri.
A-12-A-4146			X		schist w/ Cu-specularite vn (coalcite)
A-12-A-4167		X (marked -4167PT)	X		schist w/ cc coalized vein
A-12-A-4172			X		schist, sulfide cc
A-12-A-4178			X		schist, py-cc vn + diss.
A-12-A-4195	X			X	porphyry + qtz + qtz-seri.
A-12-A-4208			X		schist, py-cp-cc vn
A-12-4219		X			schist w/ cc-py vn
A-12-4220			X		schist w/ cc-py vn
A-12-A-4223		X			schist w/diss cc in schistosity, qtz-seri
A-12-A-4236			X		schist, py-cc vein + diss.
A-12-4256	X			Stoolle	Lbfp, alt band
A-12-4355		X			schist w/ cc-py vn
A-12-4448			X		massive py-cp-cc-bn?
A-12-4527			X		massive py-cp-bn-cc in qtz vn
A-12-4587			X		vn of py-bn repl in schist
A-12-4589	X			X	Lbfp w/ alt band
A-12-4627	X			X	Lbfp w/ alt band

continued

Thin-section, etc. collection

Drill Hole No. A-12 & A-12-A Continued (2) 2of3

Sample No.	Thin-section	Polished Thin-section	Polished Section	K-stain slab	Remarks
A-12-4633		X			schist bx w/ py-bn
A-12-4666			X		qtz vn w/ bn
A-12-4669		X			alt schist w/ irregular bn
A-12-4822			X		py-cp-bn in qtz-porphyry
A-12-4826	X			X	Lbfp w/ diss bn.
A-12-4848		X			schist, alt, w/ diss bn
A-12-4850			X		massive bn-py
A-12-4898			X		massive py-cp-bn (cc)
A-12-4970		X	X		py-cp-bn vn in Lbfp qtz-seri band
A-12-5113			X		py-cp w/ bn ?
A-12-5127			X		cp
A-12-5131			X		cp-bn
A-12-5155		X			cp-specularite
A-12-5174		X			aplite vn w/ cp-bn
A-12-5252	X			X	blk biotite schist w/ sugary qtz vn
A-12-5260	X			X	qtz infiltrated schist w/ cp
A-12-5348	X			X	schist w/ qtz + K-spar vn
A-12-5356	X			X	schist w/ qtz + K-spar vn
A-12-5358	X			X	Lbfp, bx
A-12-5368	X			X	Lbfp w/ qtz-seri vn
A-12-5375	X			X	Lbfp w/ qtz-seri vn & enhanced feldspar
A-12-5393	X			X	Lbfp w/ qtz-seri vn & enhanced feldspar
A-12-5411	X			X	Lbfp as above (greenish) + py-hematite?
A-12-5417	X			X	Lbfp as above ; no py-hem.

Continued

Thin-section, etc. collection

Drill Hole No. A-12 & A-12-A Continued 3 of 3

Sample No.	Thin-section	Polished Thin-section	Polished Section	K-stain Slab	Remarks
A-12-5434		X w/K-stain "blank"		X	Lbfp bx w/qtz-seri + cp-hem.
A-12-5486	X			X	Lbfp, enhanced feldspars
A-12-5551	X			X	Lbfp, enhanced feldspars
A-12-5622	X			X	Lbfp, slightly stained
A-12-5623	X			X	Lbfp, more stained w/ hem fractures.
A-12-5625	X			X	Lbfp, more stained w/ qtz-seri.
A-12-5627	X			X	Lbfp, sheared & gouge
A-12-5633	X			X	Lbfp, very sheared & gouge
A-12-5665	X			X	schist, cataclastic crushing
A-12-5692	X			X	schist, silica overprint, fine alunite?
A-12-5716	X			X	schist, with alunite? vn.

Drill Hole No. A-13

13-3552	Double Polished	for heat-stage work
13-3950	"	" " " "

Dull Hole A-14

14-4147	Doubly Polished	for heat-stage work
14-4262	"	" " " "
14-5170	"	" " " "
14-5735	"	" " " "

Thin-section, etc. collection

Drill Hole No. AI-1

Sample No	Thin-section	Polished Thin-section	Polished Section	Kryptol Slab	Remarks	
AI-12822	▬			▬	M-1A SB	
AI-12997	▬				" "	
AI-13054	▬				A-2 SB.	
AI-13199	▬				" "	
A-I-1 (3261)	▬					*
A-I-14 (3304)	▬					*
AI-13342	▬			▬	BR	
AI-13498	▬			▬		
A-I-15 (3511)	▬					*
AI-13547	▬			▬		
AI-13557	▬				pepi, anhydrite	
A-I-16 (3624)	▬					*
A-I-17 (3711)	▬					*
A-I-18 (3810)	▬					*
AI-13921	▬				pirrol	
A-I-19 (3949)	▬					*
A-I-20 (3963)	▬					*

* See report June 17, 1974 by FTG.

Thin-section, etc. collection

Drill Hole No. AOF-1 of Inspiration Con. Copper Co.

Sample No.	Thin-Sec. Frac.	Polished Thin-Sec.	Polished Sec. Frac.	K-Ty. Stain Slab	Remarks
3450					pepi

Thin-section, etc. collection

Drill Hole No. DCA-1A

Sample No.	Thin-section	Polished Thin-section	Polished section	K-Stain slab	Remarks
					See report by Emanuel Nieves on samples DCA-1A-4716 & DCA-1A-5201 (fossil identification), dated Jan. 12, 1972.

Thin-section, etc. collection

Drill Hole No. DCA-2A

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystein Slab	Remarks
DCA-2 1538					schist
DCA-2 1547					schultze
DCA-2 1928					schist
DCA-2 2393					schist

Thin-section, etc. collection

Drill Hole No. DCA-3A

Sample No	Thin Section	Polished Thin Section	Polished Section	Kodak Slide	Remarks	
DCA-33205 Vet					tuff-lam	
DCA-34100					M-1A SB	
DCA-34193					Tw	
DCA-34334					M1A SB	
DCA-3A-4387						*
DCA-3A-4460						*
DCA-34512					A-2 SB	
DCA-34637					" "	
DCA-3A-4662						*
DCA-3A-4693						*
DCA-3A-4717						*
DCA-34747					BR	
DCA-3A-4780						*
DCA-34858						
DCA-3A-4874						*
DCA-3A-4975						*
DCA-34991						
DCA-35137						
3A-4699		Doubly Polished			for heat-stage work	
3A-4805		"			" " " "	

* See report of Nov. 8, 1974 by FTG

Thin-section, etc. collection

Drill Hole No. M-1A

Sample No	Thin-Section	Polished Thin-Section	Polished Section	K-Stain Slab	Remarks
M-1-2241' ~~(1825')~~	■				} 1 same sample, one ⊥ other ∥ to core axis. ~~altered~~ earlier volcanics — See report March 5, 1971 GRK.
M-2-2241' ~~(1825')~~	■				" "
M-1A-1-2981	■				M-1A SB — See report Jan 20, 1972 by GJS.
TBX-7-M-1A-2457	■				Tw — TBX samples: See report Jan. 19, 1972 by GJS.
TBX-8-M-1A-312.5	■				Tw
TBX-9-M-1A-4278	■				Tw
M-1A 3518 Vert	■				tuff

Also see report by V. Kachigh to Collins July 13, 1971 on microscopic & microprobe work on sample M-1A - 4209.

Also see age date report by Geochron Laboratories Jan 20, 1972 on sample M-1A-A (2935-2945)

Thin-section, etc. collection

Drill Hole No. OF-1A hole of Ken-McGee ~~OFA-1 & OFA-2~~ ~~of Ken McGee~~

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystic Slab	Remarks
OFA-1-2140'					same sample, one cut ⊥, other ∥ to core axis. earlier volcanics #2140 See report March 5, 1971
OFA-2-2140'					" " #2140 JRK
~~OFA-2~~					earlier ~~volcanics~~

Thin-section, etc. collection

Drill Hole No. LB-4

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	K-Stain Slab	Remarks
LB-4-2600				slide	* See report Feb 13, 1975 by F TG on fluid inclusion
LB-4-3092				No	*
LB-4-3410				slide	*
LB-4-4200				slide	*
LB-4-4850				slide	*

Thin-section, etc. collection

Drill Hole No. Sacaton Basal Fault

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	Kystone Slab	Remarks
SACBF-1					
SACBF-2					

Thin-section, etc. collection

Drill Hole No. QDC-5

Sample No.	Thin-Section	Polished Thin-Section	Polished Section	K-Ar Fan Slab	Remarks
QDC-5538	—				
QDC-5595	—				
QDC-51806	—				
QDC-52729	—			? —	
QDC-52802	—				
QDC-52811	—			? —	
QDC-52858	—				
QDC-52887	—				
QDC-52900	—				
QDC-53202	—				
DC-53502	—				

Thin-section, etc. collection

Drill Hole No. Other Samples From District

Sample No.	Thin Section	Polished Thin Section	Polished Section	Rock Chip Sample	Remarks
X-14		in basement file			Lost Galeb quartz monzonite
Z-1					See report May 5, 1972 by GSS.
Z-2		in basement file			Manitou granite
Z-3					
Z-4					

Thin-section, etc. collection

Drill Hole No. Magma B-6 hole.

Sample No.	Thin-section	Polished Thin-section	Polished Section	Rock Chip Slab	Remarks
B-6-A					Trace w/ cc on fg.
B-6-B					Martin vegl texture
B-6-C					Trace, w/ mn

10/7/77

FROM: F. T. GRAYBEAL

TO: JDSell

In view of Ag production at Belmont how about ppm Ag analyses of Newmont (B-6) drill samples?

Not sufficient samples.
Go collect more

37		Standard	
38			
39			Potato Rico
40	B-6-A		
41	B-6-B		
42	B-6-C		
43			
44			
45	Hole B-6, Sec. 16		SE
46			
47			
48	9/22/77		
49			
50			
TOTALS			

SE get est together on completing hole A-10

B-6

Fe-stained qzite ∈ ~~XXX~~ mcc / /
rexls lms (Dm) w/ pyseudo I, II, mm.
dsg
selc lms (?) III
weak hydrothermal alt dk II
pE basalt - I
blk lms II

Noco
Esc.
Martin ++
Troy +++
dk basalt
dsg

Fe: D.K.
shallow core
600 boxes

B-6-A Polished thin section of cc or py in Troy.
B-6-B Thin-Section, repl test. Martin
B-6-C Polished thin-section of mn in Troy.
B-6-D Noco, unreplaced geochem. Cu Mn Pb Zn Fe
B-6-E Escobosa " "
B-6-F Martin, partially replaced, oxidized.
B-6-G Troy, oxidized w/ Fe pseudomorphs, some Mn, ? cc.
B-6-H Dolian weak oxidation & stain, feldspars magnetic partially altered.

AAL

B-7-A. Total chip geochem Cu Mn Pb Zn
40% matrix
60% clast of: 45% Troy
45% dolian
10% Esc & Bolsa.

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO, INC. DATE Sept. 29, 1977

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	Percent Fe	
B-6-D			75	372	97	7	1.84	
B-6-E			73	458	692	11	1.69	
B-6-F			54	66	279	5	1.79	
B-6-G			72	208	117	10	2.15	
B-6-H			583	124	1679	8	8.50	
B-7-A			73	134	339	6	5.43	

CHARGES $ 63.00

INVOICE NO. 15361

REGISTERED ASSAYER
CERTIFICATE NO. 6852
PETE S. FLORES
Date Signed 9/29/77
Arizona U.S.A.

ASSAYER-CHEMIST

Thin-section, etc. collection

Drill Hole No. Queen Creek (Superior, Az) QC- Series

Sample No	Thin-section	Polished Thin-section	Polished Section	Kystler slab	Remarks
QC-1A					middle Naco ; mn rich
QC-2A					top Escabrosa: mn-rich
QC-3A					middle Escabrosa ; excell. repl. textures
QC-7A					lower Martin ; excellent repl. textures
QC-8A					upper Bolsa qtzite Fe-stained
QC-101					lower Naco ; 45' above Kaist above QC-102
QC-102					upper Escabrosa ; mushroom Mn, below Kaist.

Take out PS & PTS samples & send rest to WP — ma as to stain of slab (also on log sheet)

Things to be found:

One polished section of OF-1A (found) (piece of slab only).
One polished section of M-1 (both E. vole.).

A-2-1 (4078') ~~E. vole~~
A-2-2 (4212') ~~E. vole~~
~~A-2-7 (4053?~~

?

A-4-3 (6573') felt gouge
A-4-5 (6445') Escabrosa Bx

Bob Cummings

A-I-10 (2884')
A-I-11 (2981')
A-I-12 (3092')
A-I-13 (3200')

DCA-1A-4714 Naco (2 samples?) Mannies Sampler
DCA-1A-5201 Escabrosa

Dr. Val Kendrick, Manager
Central Research ~~Laboratories~~ Department
ASARCO Incorporated 901 Cok Street Road
South Plainfield, New Jersey 07080.

Sent 2/23/76

Call Jim Goley on polished section work.

WESTERN PETROGRAPHIC

20 W. Flores • Tucson, Arizona 85705 • (602) 792-4348

JOB NUMBER _____

☐ Check for rush service

SUBMITTED BY:

SHIP TO: (include street addr.)
☐ (√if same as sub. by)

BILL TO:
☐ (√if same as ship to)

Person: _____

Company: _____

Address: _____

ZIP: _____

Telephone: _____ P.O. No: _____ Shipped Via: _____

No. of Samples: _____ Date Shipped: _____

Signature: _____ Date Received: _____

EXCESS MATERIAL
☐ Return
☐ Discard

NOTE: Precut chips should be approx. ½ inch thick when possible.

	SAMPLE NO.	STANDARD T.S. (27 x 46 mm)	PRECUT TO SIZE	NO COVERGLASS	1½ x 3" T.S.	2 x 3" T.S.	K—FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMP.	GRAIN MOUNT	1 ARROW ORIENTATION	IMPREGNATION WITH EPOXY	GRINDING IN OIL			SAMPLE NO.	STANDARD T.S. (27 x 46 mm)	PRECUT TO SIZE	NO COVERGLASS	1½ x 3" T.S.	2 x 3" T.S.	K—FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMP.	GRAIN MOUNT	1 ARROW ORIENTATION	IMPREGNATION WITH EPOXY	GRINDING IN OIL
1															51													
2															52													
3															53													
4															54													
5															55													
6															56													
7															57													
8															58													
9															59													
10															60													
11															61													
12															62													
13															63													
14															64													
15															65													

Thin-section, etc. collection

Drill Hole No.

Sample No.	Thin-section	Polished Thin-section	Polished section	K-stain slab	Remarks

ASARCO

Exploration Department
Southwestern United States Division

January 27, 1982

Westerm Petrographics
20 W. Flores
Tucson, Arizona 85705

Note: Western Petrographics number code is 82-0077-#, as listed below.

List B-31 for Thin-sections (T) of A-12-# and A-12-A-#. Please stain for potassium, those marked "K-Stain."

A-12-#

3530T = #1
3764T = #2
4021T = #3
4256T, K-Stain = #4
4589T, K-Stain = #5
4627T, K-Stain = #6
4826T, K-Stain = #7
5252T, K-Stain = #8
5260T = #9
5348T, K-Stain = #10
5356T, K-Stain = #11
5358T, K-Stain = #12
5368T, K-Stain = #13
5375T, K-Stain = #14
5393T, K-Stain = #15
5411T, K-Stain = #16
5417T, K-Stain = #17
5486T, K-Stain = #18
5551T, K-Stain = #19
5622T, K-Stain = #20
5623T, K-Stain = #21
5625T, K-Stain = #22
5627T, K-Stain = #23
5633T, K-Stain = #24
5665T, K-Stain = #25
5692T, K-Stain = #26
5716T, K-Stain = #27

A-12-A-#

4110T = #28
4129T, K-Stain = #29
4136T, K-Stain = #30
4195T, K-Stain = #31

James D. Sell, SWED

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703
1150 North 7th Avenue (602) 792-3010

ASARCO

Exploration Department
Southwestern United States Division

January 27, 1982

Dr. Rudolf von Huene
Thin-section Laboratory
1555 East Walnut Street
Pasadena, Calif. 91106

List B-31 for Polished Section (P) and Polished Thin-Section (PT) preparation of samples A-12-# and A-12-A-#

A-12-#

4220P 1
4448P 2
4527P 3
4587P 4
4666P 5
4822P 6
4850P 7
4898P 8
4970P 9
5113P 10
5127P 11
5131P 12

A-12-A-#

4100P 13
4146P 14
4167P 15
4172P 16
4178P 17
4208P 18
4236P 19

A-12-#

4219PT 20
4355PT 21
4633PT 22
4669PT 23 ~~4669P~~
4848PT 24
4970PT 25 (same sample as 4970P)
5155PT 26
5174PT 27
5434PT 30 K-stain for K-Feldspar, not polished

A-12-A-#

4167PT 28 (same sample as 4167P)
4223PT 29

matched as: A-12-A-4467 PT

James D. Sell

James D. Sell, SWED
ASARCO Incorporated
P.O. Box 5747
Tucson, Arizona 85703
Phone: (602) 792-3010

ASARCO

Southwestern Exploration Division

JDS

January 27, 1982

FILE MEMO

Polished, Polished-Thin, and
Thin Sections
Holes A-12 and A-12-A
Superior East Project
Pinal County, Arizona

Rock samples for nineteen (19) polished sections and eleven (11) polished-thin sections have been sent for processing to Dr. Rudolf von Huene (California).

Rock samples for thirty-one (31) thin-sections have been sent to Western Petrographics (Tucson).

It is anticipated that these samples along with the previous collection will provide a more definitive handle on the alterations--mineralization of the A-8-A-12 zone.

James D. Sell

James D. Sell

Attachments:

1. List to von Huene
2. List to Western Petrographics

ASARCO

Exploration Department
Southwestern United States Division

January 27, 1982

Dr. Rudolf von Huene
Thin-section Laboratory
1555 East Walnut Street
Pasadena, Calif. 91106

List B-31 for Polished Section (P) and Polished Thin-Section (PT) preparation of samples A-12-# and A-12-A-#

A-12-#

4220P
4448P
4527P
4587P
4666P
4822P
4850P
4898P
4970P
5113P
5127P
5131P

A-12-A-#

4100P
4146P
4167P
4172P
4178P
4208P
4236P

A-12-#

4219PT
4355PT
4633PT
4669PT
4848PT
4970PT (same sample as 4970P)
5155PT
5174PT
5434PT, K-stain for K-Feldspar

A-12-A-#

4167PT (same sample as 4167P)
4223PT

James D. Sell, SWED
ASARCO Incorporated
P.O. Box 5747
Tucson, Arizona 85703
Phone: (602) 792-3010

ASARCO

Exploration Department
Southwestern United States Division

January 27, 1982

Westerm Petrographics
20 W. Flores
Tucson, Arizona 85705

List B-31 for Thin-sections (T) of A-12-# and A-12-A-#. Please stain for potassium, those marked "K-Stain."

A-12-#	A-12-A-#
3530T	4110T
3764T	4129T, K-Stain
4021T	4136T, K-Stain
4256T, K-Stain	4195T, K-Stain
4589T, K-Stain	
4627T, K-Stain	
4826T, K-Stain	
5252T, K-Stain	
5260T	
5348T, K-Stain	
5356T, K-Stain	
5358T, K-Stain	
5368T, K-Stain	
5375T, K-Stain	
5393T, K-Stain	
5411T, K-Stain	
5417T, K-Stain	
5486T, K-Stain	
5551T, K-Stain	
5622T, K-Stain	
5623T, K-Stain	
5625T, K-Stain	
5627T, K-Stain	
5633T, K-Stain	
5665T, K-Stain	
5692T, K-Stain	
5716T, K-Stain	

James D. Sell, SWED

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703
1150 North 7th Avenue (602) 792-3010

POLISHED SECTIONS

POLISHED THINSECTIONS $11.00

POLISHED THINSECTIONS
for Microprobe-1" disk $12.00

DOUBLE POLISHED THINSECTIONS $20.00

POLISHED SECTIONS
20x30mm sample on std. slide ..... $ 8.00

GENERAL INFORMATION

RUSH ORDERS — 50% EXTRA

1-15 samples — Will be shipped within 1-2 days.

15 & over — or orders which require impregnation or polishing — will be shipped within 2 - 5 work days.

SURPLUS MATERIAL — will be returned.

MINIMUM CHARGE per order $15.00

SHIPMENTS by BUS — Delivery charge $10.00

PRICES are F.O.B. Pasadena, CA & subject to change without notice.

We adjust our prices according to the index of living cost without notice.

RUDOLF VON HUENE

THINSECTION LABORATORY
SINCE 1934

1555 EAST WALNUT STREET
PASADENA, CALIFORNIA 91106
TEL: (213) 792-1511

PRICE LIST

Prices adjusted to April 1, 1981

STANDARD THINSECTIONS

25 x 45 mm slides, with cover glass, 30 micron thick*

1 - 24 ..... $ 5.00

25 - 74 ..... $ 4.75

75 - over ..... $ 4.50

Without cover glass deduct 20¢

Standard orders normally shipped within 5-10 days after receipt of material.

* Tolerance ± 5 micron

SPECIAL THINSECTIONS

GRAIN THINSECTIONS ..... $ 6.50

ULTRA THIN SECTIONS ..... $ 6.00

OVERSIZED THINSECTIONS

2 x 3" $11.00

3¼ x 4" $20.00

Without cover glass deduct 30¢

SPECIAL TREATMENT

EPOXY IMPREGNATION $1.00-2.00

STAINING: K-FELDSPAR ..... $ 1.00

CALCITE ..... $ .50

SAWING CHARGE
for rocks over ½ lb. ..... $1.00/lb.

ORIENTATION — 1 arrow ..... $ .50

— from sketch or
2 arrows ..... $ 1.50

SCRIBING — over 10 digits per slide ..... $ .50

SPECIAL MOUNTING — Quartz or glass
mounted around fragile sample .... $ 2.00

HARD MATERIAL—extra grinding ..... $ 1.00

SPECIAL WORK prepared on
TIME BASIS ..... $20.00/hr.

For additional information phone or write to us.

NEW PRICE LIST

RUDOLF VON HUENE
THINSECTION LABORATORY
1555 EAST WALNUT STREET
PASADENA, CALIFORNIA 91106

RUDOLF VON HUENE

THINSECTION LABORATORY
SINCE 1934

1555 EAST WALNUT STREET
PASADENA, CALIFORNIA 91106
TEL: (213) 792-1511

PRICE LIST

ASARCO

Exploration Department
Southwestern United States Division

January 27, 1982

Westerm Petrographics
20 W. Flores
Tucson, Arizona 85705

List B-31 for Thin-sections (T) of A-12-# and A-12-A-#. Please stain for potassium, those marked "K-Stain."

A-12-#	A-12-A-#
3530T	4110T
3764T	4129T, K-Stain
4021T	4136T, K-Stain
4256T, K-Stain	4195T, K-Stain
4589T, K-Stain	
4627T, K-Stain	
4826T, K-Stain	
5252T, K-Stain	
5260T	
5348T, K-Stain	
5356T, K-Stain	
5358T, K-Stain	
5368T, K-Stain	
5375T, K-Stain	
5393T, K-Stain	
5411T, K-Stain	
5417T, K-Stain	
5486T, K-Stain	
5551T, K-Stain	
5622T, K-Stain	
5623T, K-Stain	
5625T, K-Stain	
5627T, K-Stain	
5633T, K-Stain	
5665T, K-Stain	
5692T, K-Stain	
5716T, K-Stain	

James D. Sell, SWED

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703
1150 North 7th Avenue (602) 792-3010

Exploration Department
Southwestern United States Division

January 27, 1982

Dr. Rudolf von Huene
Thin-section Laboratory
1555 East Walnut Street
Pasadena, Calif. 91106

List B-31 for Polished Section (P) and Polished Thin-Section (PT) preparation of samples A-12-# and A-12-A-#

A-12-#

4220P
4448P
4527P
4587P
4666P
4822P
4850P
4898P
4970P
5113P
5127P
5131P

A-12-A-#

4100P
4146P
4167P
4172P
4178P
4208P
4236P

A-12-#

4219PT
4355PT
4633PT
4669PT
4848PT
4970PT (same sample as 4970P)
5155PT
5174PT
5434PT, K-stain for K-Feldspar

A-12-A-#

4167PT (same sample as 4167P)
4223PT

James D. Sell, SWED
ASARCO Incorporated
P.O. Box 5747
Tucson, Arizona 85703
Phone: (602) 792-3010

Job # -82
Sell
19 PS + 10 PTS
1 Blank-stain k-spar

PS
A-12-#
4220 P (1)

PS
A-12-#
4448 P (2)

PS
A-12-#
4527 P (3)

PS
A-12-#
4587 P (4)

PS
A-12-#
4666 P (5)

PS
A-12-#
4822 P (6)

PS
A-12-#
4850 P (7)

PS
A-12-#
4898 P (8)

PS
A-12-#
4970 P (9)

PS
A-12#
5113 P (10)

PS
A-12-#
5127 P (11)

PS
A-12-#
5131 P (12)

Job # -82
Sell
19 PS + 10 PTS
1 Blank-stain k-spar

PS
A-12-A-#
4100 P (13)

PS
A-12-A-#
4146 P (14)

PS
A-12-A-#
4167 P (15)

PS
A-12-A-#
4172 P (16)

PS
A-12-A-#
4178 P (17)

PS
A-12-A-#
4208 P (18)

PS
A-12-A-#
4236 P (19)

PTS
A-12-#
4219 PT (20)

PTS
A-12-#
4355 PT (21)

PTS
A-12-#
4633 PT (22)

PTS
A-12-#
4669 PT (23)

PTS
A-12-#
4848 PT (24)

Job # -82
Sell
19 PS + 10 PTS
1 Blank-stain k-spar

PTS
A-12-#
4970 PT (25)

PTS
A-12-#
5155 PT (26)

PTS
A-12-#
5174 PT (27)

PTS
A-12-A-#
4667 PT (28)

A-12-A-#
4223 PT (29)

Blank
A-12-#
5434 PT (30)

Received 3/15/82

Rudolf von Huene

Office: 1757 Paloma Street
Pasadena, California 91104

Laboratory: 1555 East Walnut Street
Pasadena, California 91106

****

THIS PACKAGE CONTAINS:

1 ☑ THIN SECTIONS stained for Kspar

19 ☑ POLISHED SECTIONS

10 ☑ POLISHED THIN-SECTIONS

☐ SETS OF GRAIN THIN-SECTIONS

☐ SETS OF ORIENTED SECTIONS

☑ LEFT OVER ROCK MATERIAL

Please send all packages to:
1555 East Walnut Street
Pasadena, California 91106

Since staining would ruin the polish on a polished thin section, we prepared one uncovered thin section and stained it for Kspar & also the corresponding chip. We will charge you only for the staining & not for the section, since the section was prepared by mistake.

BEFORE DISCARDING PACKING MATERIAL
PLEASE CHECK ALL ITEMS MARKED ABOVE

CUSTOMER'S NAME. Dr. James D. Sell, ASARCO, Inc., Exploration Dept.

CUSTOMER'S ADDRESS. P.O. Box 5747, Tucson, Arizona 85703

RUDOLF VON HUENE

THIN SECTION LABORATORY

1555 EAST WALNUT STREET • PASADENA, CALIFORNIA 91106
TEL: (213) 792-1511

PRICE LIST

March 1, 1982

STANDARD THINSECTIONS

25 x 45 mm slides, with cover glass, 30 micron thick*

1 - 100	$ 5.50
over 100	$ 5.00

Without cover glass — deduct .20¢
Prepared from precut samples (1½" x 1" x ¼") — deduct .50¢

SPECIAL THINSECTIONS

GRAIN THINSECTIONS	$ 6.50
ULTRA THIN SECTIONS	$ 8.00
SECTIONS of teeth, ceramics, potsherds or fibres	$ 8.00

OVERSIZED THINSECTIONS

2" x 3"	$ 11.50

Without cover glass — deduct .50¢

POLISHED SECTIONS

POLISHED THINSECTIONS	$ 12.00
POLISHED THINSECTIONS on 1" disks	$ 12.75
DOUBLE POLISHED THINSECTIONS	$ 22.00
DOUBLE POLISHED SECTIONS, 100-150 micron thickness, removable from slide	$ 24.00
POLISHED SECTIONS — 20 x 30 mm sample on std. slide	$ 8.50

SPECIAL TREATMENT

CLEAR EPOXY IMPREGNATION	$1.00-$2.00
BLUE EPOXY IMPREGNATION for pore study	$ 2.25
STAINING: K-FELDSPAR	$ 1.25
CALCITE	$ .50
SAWING CHARGE for rocks over ½ lb.	$1.00 / lb.
ORIENTATION — 1 arrow	$ .50
— from sketch or 2 arrows	$ 1.50
SCRIBING — over 10 digits per slide	$ .50
SPECIAL MOUNTING — Quartz or glass around fragile sample	$ 2.00
HARD MATERIAL — extra grinding	$ 1.50
OIL GRINDING — upon request	no charge
SPECIAL WORK — prepared on TIME BASIS	$ 25.00 / hr.

GENERAL INFORMATION

RUSH ORDERS — 50% EXTRA
— 1-15 samples — shipped within 3-4 days
— over 15 samples — & orders requiring impregnation & polishing will be shipped within 4-10 days

STANDARD ORDERS — are normally shipped within 2-3 weeks after receipt of material, depending on present work load.

SURPLUS MATERIAL — will be returned

MINIMUM CHARGE per order $ 20.00

PRICES are F.O.B. Pasadena, CA & subject to change without notice.

For ADDITIONAL INFORMATION phone or write.

**TOLERANCE — plus or minus 5 micron*

WESTERN PETROGRAPHIC

20 W. Flores Tucson, Arizona 85705 (602) 792-4348

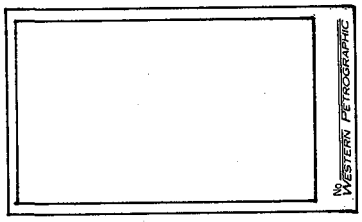
- ONE WEEK SERVICE on orders of 50 thin sections or less
- TOP QUALITY WORK
- EPOXY IMPREGNATIONS NOW DONE UNDER HIGH PRESSURE
- ALL SECTIONS HAND FINISHED AND INDIVIDUALLY CHECKED FOR QUALITY AND THICKNESS
- LOW PRICES
- INSTRUMENTAL SERVICES ALSO AVAILABLE

The following charges are for rocks which require only normal cutting, mounting, grinding, and finishing. For .rocks and material which require extra treatment, see the SPECIAL SERVICES section.

STANDARD PETROGRAPHIC THIN SECTIONS

On 27 x 46 mm slide, 24 x 40 mm coverglass, hand finished to 30 microns.

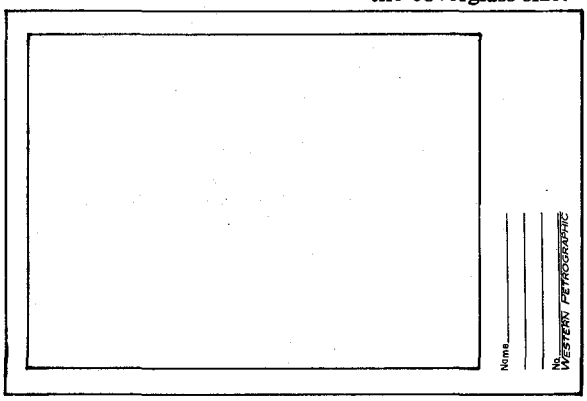
No.	Each	Precut to size*	Deductions
1-24	$3.75	$3.25	No coverglass . . . deduct $.15 ea.
25-49	3.25	2.75	
50 & over	2.75	2.50	*Approx. 3/8 to 1/2 inch thick and not larger than the coverglass size.



LARGE PETROGRAPHIC THIN SECTIONS

Hand finished to 30 microns, with coverglass.

Slide Size	Coverglass	Each	Deductions
1 x 3 inch	24 x 60 mm	$4.00	Precut to size* . . . . . deduct $.50 ea.
1½ x 3	35 x 60	5.00	No coverglass . . . . . deduct $.15 ea.
2 x 3	45 x 60	6.00	*Approx. 3/8 to 1/2 inch thick and not larger than the coverglass size.



POLISHED SECTIONS

From rocks, ores, or metals, mounted on 1-1/4-inch diameter plastic cylinder and polished . . . . . $5.00 ea.

POLISHED THIN SECTIONS

On 27 x 46 mm slide, 30 microns thick . . . . . $8.00 ea.
On 1-1/4-inch diameter round microprobe slide . . . . . $8.00 ea.
On 1-inch diameter round microprobe slide . . . . . $8.00 ea.

SPECIAL SERVICES

IMPREGNATION UNDER HIGH PRESSURE

Clear epoxy . . . . . $.50 ea. Blue-dyed epoxy . . . $1.00 ea.

GRINDING IN OIL

For water soluble minerals, etc. . . . . $.50 ea.

STAINING

K-feldspar . . . . . $.75 ea. Calcite . . . . . $.25 ea.
Plagioclase . . . . . $1.00 ea.

GRAIN-MOUNTING

For consolidation of drill chips, well cuttings, loose sands, concentrates, etc. . . . . $.50 ea.

ORIENTATION

From line around specimen . . . . . No Charge
1 arrow marking on slide . . . . . $.25 ea.

EXTRA-HARD MATERIALS

Requiring extra sawing and grinding time . . . . . $.50-1.00 ea.

SPECIAL LABORATORY TIME

For special preparations; mineral separations (heavy liquid, magnetic, etc); density determinations of rock, mineral, etc., samples; other laboratory research; etc. . . . . $10.00 per hour

PETROGRAPHIC SERVICES

MICROSCOPIC INVESTIGATIONS

Petrographic, for rock determinations, alteration studies, mineral identification, etc., per hour $20.00

Ore microscopy, for mineral identification, paragenetic studies, flotation and tailings products, etc., per hour $20.00

PHOTOMICROGRAPHY

Either in conjunction with microscopic investigations, or on marked slides or polished sections furnished by customer, per hour $20.00
(plus cost of film and processing)
Custom work is done on all photographic work to ensure proper color, contrast, etc.
Black-and-white prints, 3-1/2 x 5 inches . . . . . $.75 ea.
Color prints, 3-1/2 x 5 inches . . . . . 1.25 ea.

GENERAL INFORMATION

STANDARD ORDERS

Normally shipped within one to two weeks after receipt, depending on size and nature of work. (Orders of up to 50 thin sections normally shipped within one week.)

RUSH ORDERS

Done in overtime; normally shipped within 3 to 4 working days after receipt of order. Add 50% to above charges.

SURPLUS MATERIAL

All surplus material is returned unless otherwise specified.

QUOTED CHARGES

All quoted charges are F.O.B. Tucson, Arizona, and are subject to change without notice.

MINIMUM CHARGE PER ORDER

The minimum charge per order is $7.50.

Sept., 1976

RUDOLF VON HUENE

THIN SECTION LABORATORY

1555 EAST WALNUT STREET • PASADENA, CALIFORNIA 91106
TEL: (213) 792-1511

PRICE LIST

March 1, 1982

STANDARD THINSECTIONS

25 x 45 mm slides, with cover glass, 30 micron thick*

1 - 100	$ 5.50
over 100	$ 5.00

Without cover glass — deduct .20¢
Prepared from precut samples (1½'' x 1'' x ¼'') — deduct .50¢

SPECIAL THINSECTIONS

GRAIN THINSECTIONS	$ 6.50
ULTRA THIN SECTIONS	$ 8.00
SECTIONS of teeth, ceramics, potsherds or fibres	$ 8.00

OVERSIZED THINSECTIONS

2'' x 3''	$ 11.50

Without cover glass — deduct .50¢

POLISHED SECTIONS

POLISHED THINSECTIONS	$ 12.00
POLISHED THINSECTIONS on 1'' disks	$ 12.75
DOUBLE POLISHED THINSECTIONS	$ 22.00
DOUBLE POLISHED SECTIONS, 100-150 micron thickness, removable from slide	$ 24.00
POLISHED SECTIONS — 20 x 30 mm sample on std. slide	$ 8.50

SPECIAL TREATMENT

CLEAR EPOXY IMPREGNATION	$1.00-$2.00
BLUE EPOXY IMPREGNATION for pore study	$ 2.25
STAINING: K-FELDSPAR	$ 1.25
CALCITE	$ .50
SAWING CHARGE for rocks over ½ lb.	$1.00 / lb.
ORIENTATION — 1 arrow	$ .50
— from sketch or 2 arrows	$ 1.50
SCRIBING — over 10 digits per slide	$ .50
SPECIAL MOUNTING — Quartz or glass around fragile sample	$ 2.00
HARD MATERIAL — extra grinding	$ 1.50
OIL GRINDING — upon request	no charge
SPECIAL WORK — prepared on TIME BASIS	$ 25.00 / hr.

GENERAL INFORMATION

RUSH ORDERS — 50% EXTRA
— 1-15 samples — shipped within 3-4 days
— over 15 samples — & orders requiring impregnation & polishing will be shipped within 4-10 days

STANDARD ORDERS — are normally shipped within 2-3 weeks after receipt of material, depending on present work load.

SURPLUS MATERIAL — will be returned

MINIMUM CHARGE per order $ 20.00

PRICES are F.O.B. Pasadena, CA & subject to change without notice.

For ADDITIONAL INFORMATION phone or write.

**TOLERANCE — plus or minus 5 micron*

WESTERN PETROGRAPHIC

20 W. Flores • Tucson, Arizona 85705 • (602) 792-4348

Billing

COMPANY: ASARCO Incorporated

ADDRESS: P.O. Box 5747

Tucson, Az ZIP 85703

SUBMITTED BY: JR. Sell PHONE 792-3010

NO. OF SAMPLES: 39 P.O. NO. SE-1

DATE SHIPPED: 2/23/78 SHIPPED VIA: Fed

JOB NUMBER: 78208 slides

DATE RECEIVED:

PAGE 1 OF 2

DATE NEEDED:

☐ CHECK FOR RUSH SERVICE

EXCESS SAMPLE MATERIAL

☒ RETURN ☐ DISCARD

NOTE: IF THIN SECTION SAMPLES ARE SUBMITTED ALREADY SLABBED, THE SLABS SHOULD BE APPROX. 3/8 INCH THICK.

		THIN SECTIONS						STAIN, ETC.		POL. SECT.		SPECIAL						MICROSCOPIC ANALYSIS				PHOTO.		INSTR. ANALYS			
	SAMPLE NO.	STANDARD THIN SECTION	FRECUT TO SIZE	NO COVERGLASS	1 x 3" THIN SECTION	1½ x 3" THIN SECTION	2 x 3" THIN SECTION	K-FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMPREG.	POLISHED SECTION	POL. THIN SECT. (27x46mm)	POL. THIN SECT. (1¼" RD)	GRAIN MOUNT	SLAB ONLY (NO SECTION)	POLISH SLAB	1 ARROW ORIENTATION	IMPREGNATION W/EPOXY	GRINDING IN OIL	PETROGRAPHIC DESCRIPT.	ALTERATION DESCRIPTION	POL. SECT. DESCRIPTION	MAJOR MINERALS DETERM.	ALL MINERALS DETERM'D	POINT COUNT	MICROGRAPHS (COLOR)	MICROGRAPHS (B & W)	INFRARED ANALYSIS	X-RAY DIFFRACTION	DEBYE-SCHERRER	SPECIAL INSTRUCTIONS
1	SACBF-1		✓	Rec 3/13																											
2	SACBF-2		✓																												
3	DC-53202		✓																												
4	DC-53502		✓																												
5	A-103269		✓																												
6	A-103385		✓																												
7	A-103597		✓																												
8	A-103529		✓																												
9	A-103899		✓																												
10	A-93252		✓																												
11	A-93306		✓																												
12	A-93347		✓																												
13	A-93598		✓																												
14	A-93634		✓																												
15	A-94737		✓																												
16	A-83198		✓																												
17	A-83252		✓																												
18	A-83449		✓																												
19	A-83687		✓																												
20	A-83814		✓																												
21	A-84905		✓																												
22	A-204309		✓																												
23	A-204325		✓																												
24	A-204545		✓																												
25	A-204710		✓																												
26	A-204736		✓																												
27	DCA-34100		✓																												
28	DCA-34193		✓																												
29	DCA-34991		✓																												
30	DCA-35137		✓																												
31	AI-12997		✓																												
32	AI-13054		✓																												
33	AI-13199		✓																												
34	AI-13557		✓																												
35	AI-13921		✓																												
36	DCA-21532		✓																												
37	DCA-21928		✓																												
38	DCA-22373		✓																												
39	A-12100		✓																												

WESTERN PETROGRAPHIC

20 W. Flores • Tucson, Arizona 85705 • (602) 792-4348

Billing 78210

COMPANY: ASARCO Incorporated

ADDRESS: P.O. Box 5747

Tucson, Az ZIP 85703

SUBMITTED BY: J.D. SELL PHONE 792-3010

NO. OF SAMPLES: 28

P.O. NO. SE-2

DATE SHIPPED: 2/23/75

SHIPPED VIA: Land

JOB NUMBER

DATE RECEIVED

PAGE 2 OF 2

DATE NEEDED

☐ CHECK FOR RUSH SERVICE

EXCESS SAMPLE MATERIAL

☒ RETURN ☐ DISCARD

NOTE: IF THIN SECTION SAMPLES ARE SUBMITTED ALREADY SLABBED, THE SLABS SHOULD BE APPROX. 3/8 INCH THICK.

		THIN SECTIONS						STAIN, ETC.		POL. SECT.	SPECIAL								MICROSCOPIC ANALYSIS				PHOTO.		INSTR. ANALYS		
	SAMPLE NO.	STANDARD THIN SECTION	PRECUT TO SIZE	NO COVERGLASS	1 x 3" THIN SECTION	1½ x 3" THIN SECTION	2 x 3" THIN SECTION	K-FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMPREG.	POLISHED SECTION	POL. THIN SECT.	POL. THIN SECT. (27x46mm)	GRAIN MOUNT	SLAB ONLY (NO SECTION)	POLISH SLAB	ARROW ORIENTATION	IMPREGNATION W/EPOXY	GRINDING IN OIL	PETROGRAPHIC DESCRIPT.	ALTERATION DESCRIPTION	POL. SECT. DESCRIPTION	MAJOR MINERALS DETERM'D	ALL MINERALS DETERM'D	POINT COUNT	MICROGRAPHS (COLOR)	MICROGRAPHS (B & W)	INFRARED ANALYSIS	X-RAY DIFFRACTION	DEBYE-SCHERRER	SPECIAL INSTRUCTIONS
1	KB-1								✓																						
2	A-103436								✓																						
3	A-103442								✓																						
4	A-103691								✓																						
5	A-103697								✓																						
6	A-103891								✓																						
7	A-104052								✓																						
8	A-93429								✓																						
9	A-94023								✓																						
10	A-94026								✓																						
11	A-94159								✓																						
12	A-94734								✓																						
13	A-94902								✓																						
14	A-2W4242								✓																						
15	A-2W4248								✓																						
16	A-2W4541								✓																						
17	A-2W4928								✓																						
18	DCA-34334								✓																						
19	DCA-34512								✓																						
20	DCA-34637								✓																						
21	DCA-34747								✓																						
22	DCA-34858								✓																						
23	AE-12822								✓																						
24	AE-13342								✓																						
25	AE-13498								✓																						
26	AE-13547								✓																						
27	DCA-21547								✓																						
28	LTM-1								✓																						
29																															
30																															
31																															
32																															
33																															
34																															
35																															
36																															
37																															

Rec 3/13

Thin Sections & Polished Sections

✓ T.S. — DC-53202

T.S. - DC-53502, gouge.

✓ T.S- A-103369 Tw

T.S. A-103388 MIA, SB

T.S. A-103436 Lbfp A-2, SB

T.S. A-103442 sch. w/gb, vns

T.S. A-103587 sch w/ hem-cc? along schistosity

T.S. A-103691 blk pop

TS A-103697 bfp

T.S. A-103829 sch bx spec. cement? matrix?

T.S. A-103891 bfp w/ grains (oxid) Bedrock

T.S. A-103899 sch. (oxid)

Polished S. A-103961 py-cc in gb vn.

T.S. A-104052 blk pop w/ py-cc?

Polished S. A-104235 born-cc-spec cutting altsch vn.

T.S. A-93252 Tw

✓ T.S. A-93306 MIA, SB

T.S. A-93347 A-2 SB sch.

T.S. A-93429 Lgm, gb-sci.

T.S. A-93598 sch w/ gb-sci - spec. hem. bx.

TS. A-93634 sch w/ hem in schistosity Bedrock

TS A-94023 sch w/ hem, biotite (secondary?).

T.S. A-94026 Lg oxide (alt bfp?)

Polished Sect A-94068 py-cc, spec. in gb-sci

Polished Sect. A-94070 py-cc

Polished Sec. A-94136 cc-born.

This Section of Polished Section Continued

A-9 Continued

TS A-94159 lamp

Polished A-94279 schizopyrenthum

Polished A-94282 schizo "

TS A-94734 bbp

TS A-94737 sch

TS A-94902 sch w/exhibit?

TS A-83198 Tee

TS A-83252 A-2 SB bacteriostatic

TS A-83449 A-2 SB bacteriostatic

TS A-83487 A-2 SB " " " "

TS A-83814 A-2 SB? gfb-sci.

TS A-84905 bact-sci.

TS A-2W 4242 pop w/seizures A-2 SB?

TS A-2W 4248 sch.

TS A-2W 4307 ox coppice bulrush pop

TS A-2W 4375 schizophrenia

TS A-2W 4541 pop

TS A-2W 4545 sch pg

TS A-2W 4710 sch pyogly

TS A-2W 4736 pop gh-sci

TS A-2W 4928 blk pop

Thin Section Catalog (3)

TS-DCA-34100 MASB

TS-DCA-34193 Tcu

TS-DCA-34254 [illegible] (MIA Typ)

TS-DCA-34572 A-2 [illegible]

TS-DCA-34637 [illegible]

TS-DCA-34747 [illegible] (Schultz)

TS-DCA-34858 [illegible]

TS-DCA-34991 sch

TS-DCA-35137 sch

TS-AI-12822 [illegible] MIA Typ

TS-AI-12897 Scho " " " "

TS-AI-13342 [illegible]

TS-AI-13498 [illegible]

TS-AI-13547 muscovite schultz (dike)

TS-AI-13[illegible] andalusite in pi

TS-AI-13721 sch

TS-AI-13054 [illegible] A-2 Typ

TS-AI-13199 " " " " " "

TS-DCA-21538 sch

TS-DCA-21547 schultz

TS-DCA-21928 sch (granite)

TS-DCA-23393 sch

TS-A-12100 sch

SMCFB-1 [illegible]

SMCFB-2 [illegible]

DCA [illegible]

AI [illegible]

KB-1	Kimberlite Bx from State-Line Kimberlite, Colo-Wyo
SACBF-1	upper 1/2 of Sacatar basal fault) in shaft @ 1233'
SACBF-2	lower 1/2 of Sacatar basal fault) level.
LTM-1	bx from Little Tobe mtn

Sacaton Shaft Visit

Sacaton basal fault; 1233 level.
(from surface as zero).

Sheared & intragouge igneous units. Hanging Wall

Sacaton Basal fault { 2' of dark grey-brown slip gouge
2' of green, slightly gritty clay gouge

cataclastic & broken Foot Wall schist-gneiss units

Visit of:
w/ RB Cummings &
H G Kreisitt.

Billing 78232 ~~78261~~

WESTERN PETROGRAPHIC

20 W. Flores • Tucson, Arizona 85705 • (602) 792-4348

COMPANY ASARCO Incorporated

ADDRESS Po Box 5747

Tucson, Az ZIP 85703

SUBMITTED BY J.R. Sell PHONE 792-3010

NO. OF SAMPLES 1

DATE SHIPPED 3/1/78

SHIPPED VIA. hand

P.O. NO. [redacted] AOF

JOB NUMBER

DATE RECEIVED

PAGE 1 OF 1

DATE NEEDED

☐ CHECK FOR RUSH SERVICE

EXCESS SAMPLE MATERIAL

X RETURN ☐ DISCARD

NOTE: IF THIN SECTION SAMPLES ARE SUBMITTED ALREADY SLABBED, THE SLABS SHOULD BE APPROX. 3/8 INCH THICK.

SAMPLE NO.	THIN SECTIONS: STANDARD THIN SECTION	PRECUT TO SIZE	NO COVERGLASS	1 x 3" THIN SECTION	1½ x 3" THIN SECTION	2 x 3" THIN SECTION	STAIN, ETC.: K-FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMPREG.	POL. SECT.: POLISHED SECTION	POL. THIN SECT. (27x46mm)	POL. THIN SECT. (1¼" RD)	GRAIN MOUNT	SLAB ONLY (NO SECTION)	POLISH SLAB	SPECIAL: ARROW ORIENTATION	IMPREGNATION W/ EPOXY	GRINDING IN OIL	PETROGRAPHIC DESCRIPT.	ALTERATION DESCRIPTION	POL. SECT. DESCRIPTION	MICROSCOPIC ANALYSIS: MAJOR MINERALS DETERM'D	ALL MINERALS DETERM'D	POINT COUNT	MICROGRAPHS (COLOR)	MICROGRAPHS (B & W)	PHOTO.	INSTR. ANALYS: INFRARED ANALYSIS	X-RAY DIFFRACTION	DEBYE-SCHERRER	SPECIAL INSTRUCTIONS
AOF-1340																																
1																																

Slab only

Rec 3/13

Same Specimen as AOF-1341, Case

Special Select, Corner

4" x 3" x 16"

WESTERN PETROGRAPHIC

20 W. Flores • Tucson, Arizona 85705 • (602) 792-4348

JOB NUMBER _____

☐ Check for rush service

SUBMITTED BY:

SHIP TO: (Include street addr.) ☐ (√ if same as sub. by)

BILL TO: ☐ (√ if same as ship to)

Person: JAMES D. SELL Superior East.

Company:

Address:

ZIP:

Telephone: P.O. No: Shipped Via:

No. of Samples: Date Shipped:

Signature: Date Received:

EXCESS MATERIAL:

☐ Return

☐ Discard

NOTE: Precut chips should be approx. ½ inch thick when possible.

Western Petrographic Code 82-0077-#

A-12 & A-12-A

	SAMPLE NO.	STANDARD T.S. (27 x 46 mm)	PRECUT TO SIZE	NO COVERGLASS	1½ x 3" T.S.	2 x 3" T.S.	K—FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMP.	GRAIN MOUNT	1 ARROW ORIENTATION	IMPREGNATION WITH EPOXY	GRINDING IN OIL			SAMPLE NO.	STANDARD T.S. (27 x 46 mm)	PRECUT TO SIZE	NO COVERGLASS	1½ x 3" T.S.	2 x 3" T.S.	K—FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMP	GRAIN MOUNT	1 ARROW ORIENTATION	IMPREGNATION WITH EPOXY	GRINDING IN OIL
1	A-12-3530														51													
2	-3764														52													
3	-4021														53													
4	-4256						Sample lost								54													
5	-4589														55													
6	-4627														56													
7	-4826														57													
8	-5252														58													
9	-5260							not enough left to be							59													
10	-5348														60													
11	-5356														61													
12	-5358														62													
13	-5368														63													
14	-5375														64													
15	-5393														65													
16	-5411														66													
17	-5417														67													
18	-5418														68													
19	-5551														69													
20	-5622														70													
21	-5623														71													
22	-5625														72													
23	-5627														73													
24	-5633														74													
25	-5665														75													
	-5692														76													
27	-5716														77													
28	A-12-A-4110							not enough left to be							78													
29	-4129														79													
30	-4136														80													
31	-4195														81													
32															82													
33															83													

THIN SECTION DESCRIPTION

PROJECT OR AREA:	NUMBER:

Hand Specimen (or thin section chip) Description:

MINERAL NAME	%	COMMENTS

K-spar Stained? Yes ☐ No ☐

Grain Size:

Texture:

General Comments (alteration, paragenesis, etc.):

SAC/mlm
10/81

EXTRA COPY

ASARCO

Southwestern Exploration Division

March 27, 1986

TO: J. D. Sell

FROM: H. G. Kreis

Superior East Project
March Monthly Report
Pinal County, Arizona

The Superior East thin sections are being described. Particular attention is being paid to the alteration and the texture and composition of the igneous rocks.

The igneous rocks exhibit some textural and mineral composition variations. The textures vary from medium-grained, hipidiomorphic granular in drill hole LB-4 to varying degrees of porphyritic development in fine-grain sized rock to a strongly developed porphyritic texture having very fine-grained groundmass. When thin sections of igneous rocks from each of the drill holes has been described, the textures will be compared to see if they indicate a heat source in a particular direction.

Most of the igneous rocks in the A-2 and A-10 area, an area of good copper mineralization, are altered by clay. Typically, the plagioclose is partially to totally altered by kaolinite with small amounts of biotite, sericite-muscovite, and calcite. Primary biotite and K-feldspar remain unaltered. Superimposed on this alteration is locally strong sericitization. This sericitization occurs in selvages along quartz veins. So far, too few thin sections have been examined to develop well defined zoning patterns as was done at Santa Cruz.

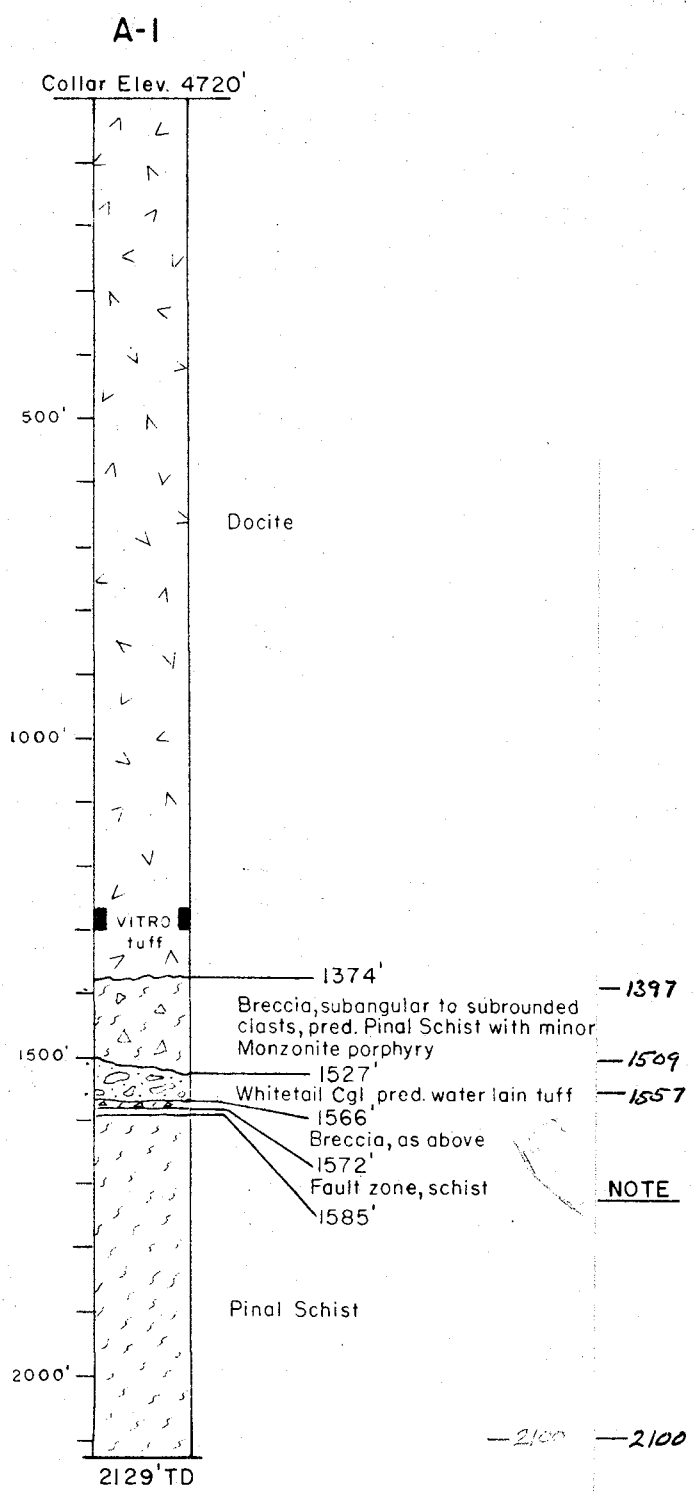
A few thin sections of Pinal Schist were casually examined. There may be some difficulty telling metamorphic minerals from alteration minerals. If this turns out to be the case, the alteration zoning patterns may have to be determined from the alteration of the igneous rocks.

H. G. Kreis

H. G. Kreis

HGK/kh

Thin-section
Polished Section
DATA



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 ¼ SW ¼ - SE ¼ of Sec. 2

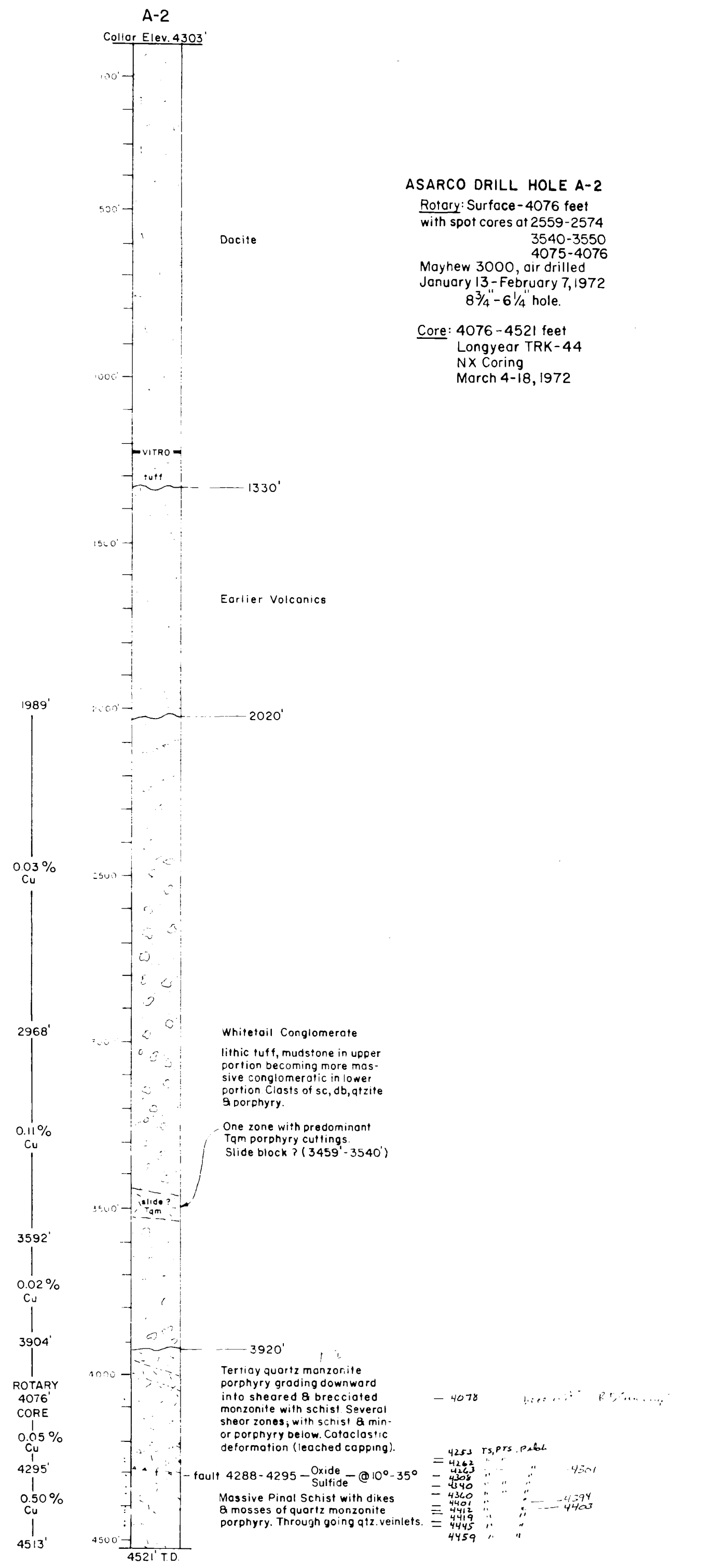
GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-1

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE: 1" = 300'

J.D.S. Oct. 5, 1971



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
8¾"-6¼" 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-2 W (map # 2486-F) for wedged hole.

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

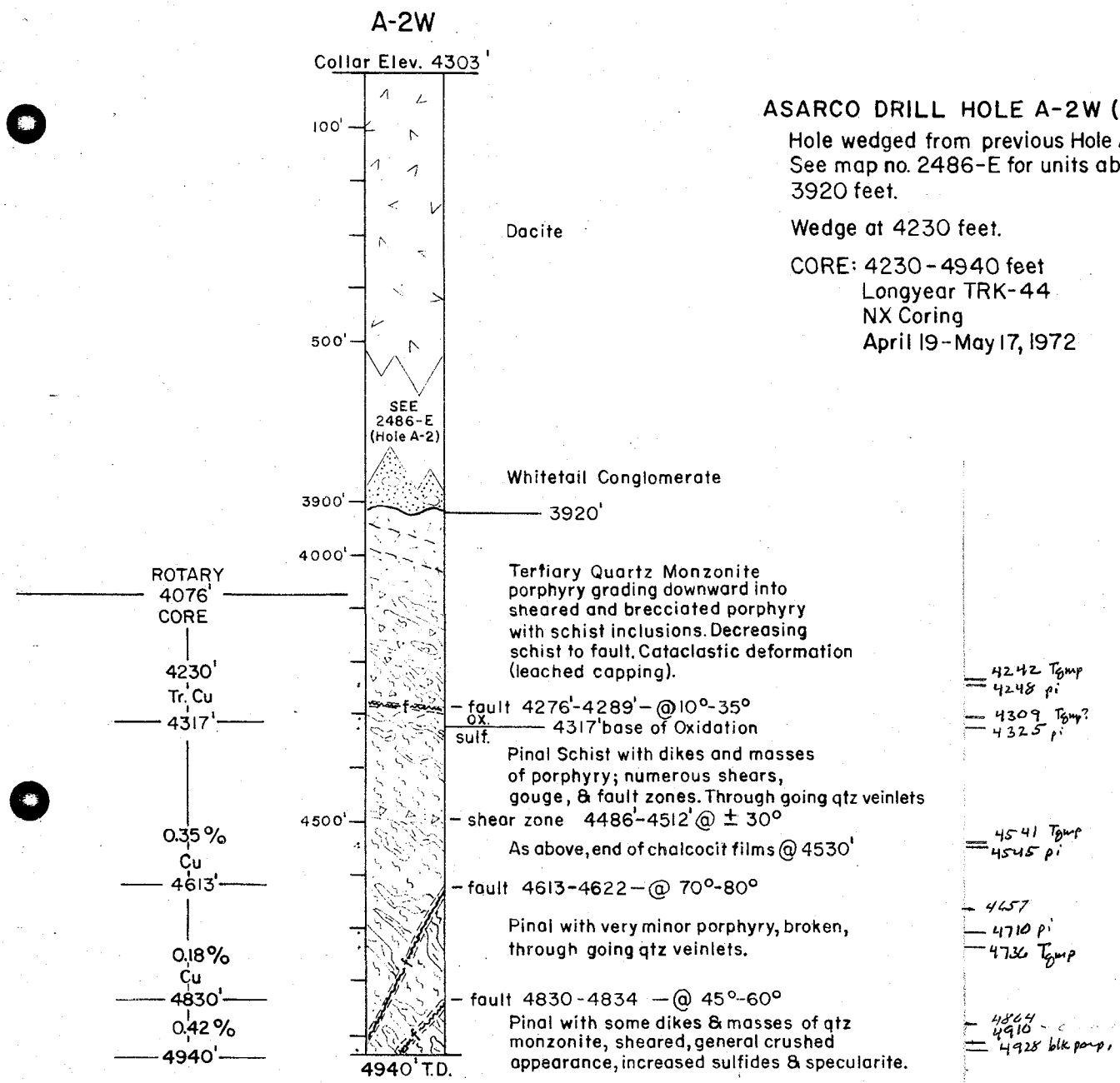
T 1 S, R 13 E.
NW ¼ NE ¼ SE ¼ of Sec. 22

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

2486-E



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

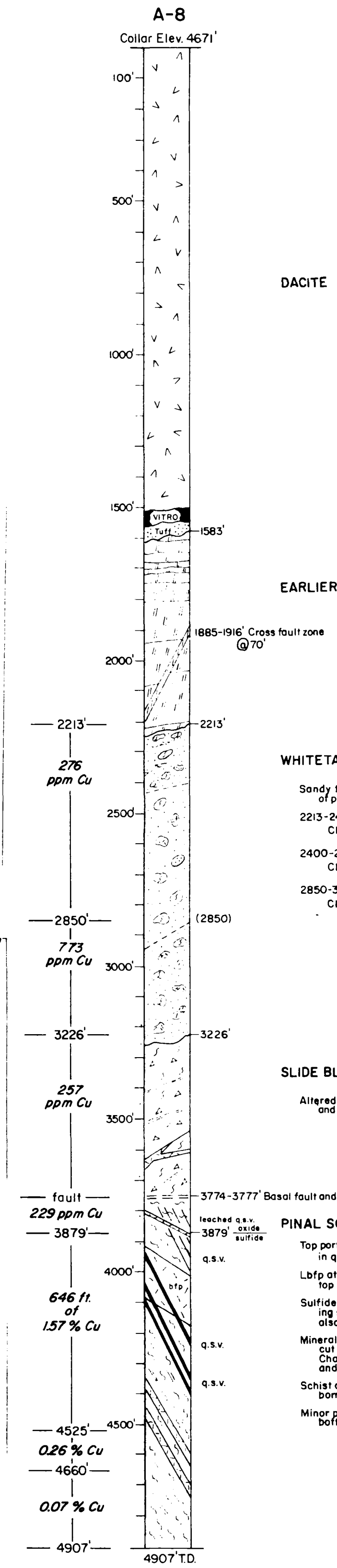
GRAPHIC LOG & ASSAY RESULTS of DRILL HOLE A-2W

SUPERIOR EAST PROJECT

GILA & PINAL COUNTIES, ARIZONA

SCALE 1" = 300'

J.D.S. July 8, 1972



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.

WHITETAIL CONGLOMERATE

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

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

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

2850-3226' Medium brown to red-brown at base, matrix 25 %.
Clasts: 66 % sc, 20 % db, 13 % Schultze and porphyry, 1 % p€ qtzite, 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° (Leached Capping).

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.

3198
3252
3449
3543
3687
3814
3883
3891
PS 3958 PTS
3978
4023 PTS
4088 PTS
4111
4249
PS 4253
PS 4355
PS 4402
4614 PTS
4622
4726
4835
4905

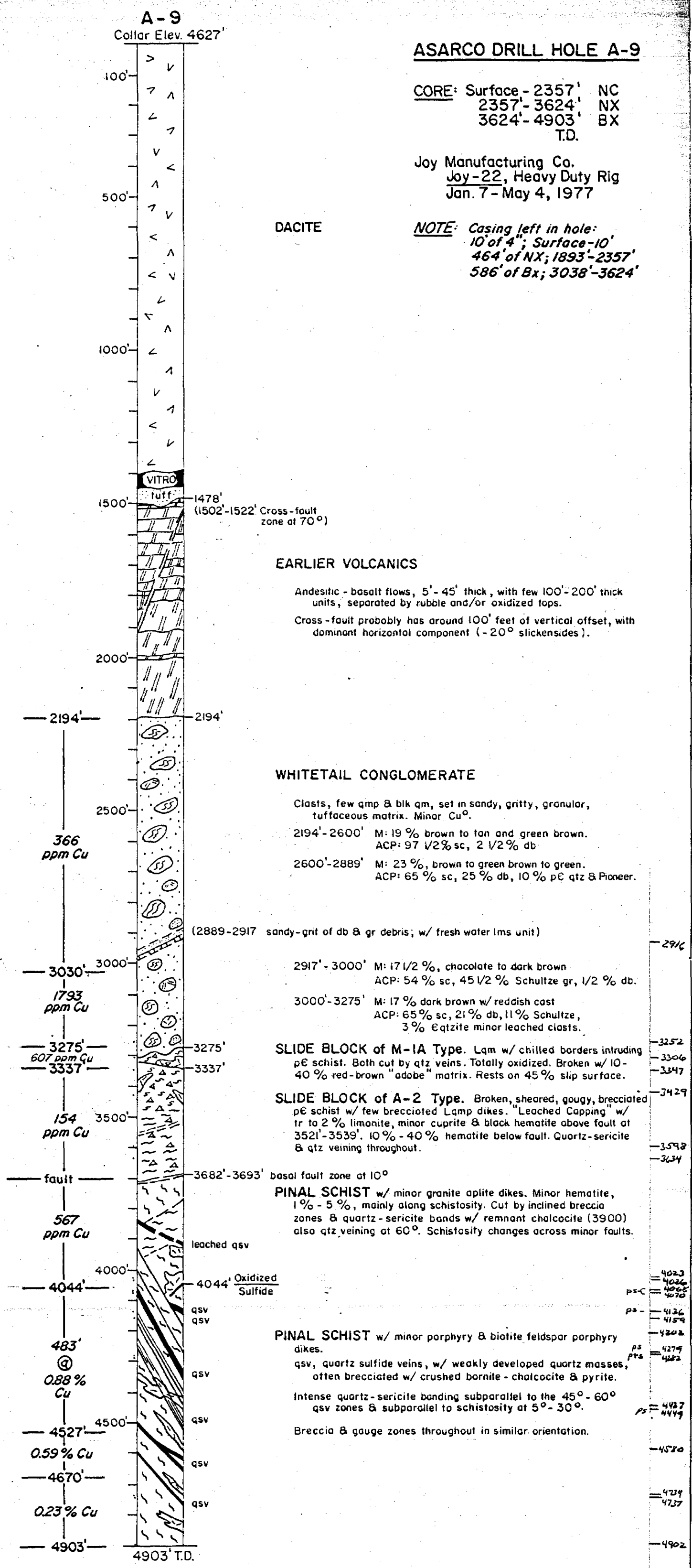
NOTE: Individual assays are found in Assay Report dated Feb. 10, 1977.

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'

J.D.S. Feb. 1977
MVK 2486-K



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 4"; Surface-10' 464' of NX; 1893'-2357' 586' of Bx; 3038'-3624'

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

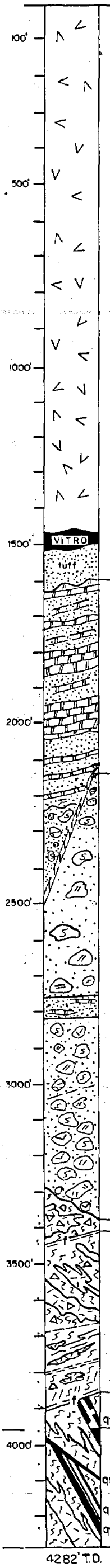
DRILL HOLE A-9
SUPERIOR EAST PROJECT
PINAL COUNTY, ARIZONA
SCALE 1" = 300'

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.

Fragmental 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% pЄsed, 5% pЄgr, 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% pЄsed, 2% db, trace of pЄgr and Paleozoic

2390'-2752' M: 20.5% brown to green brown, sandy grit
ACP: 71% sch, 24% db, 4% pЄsed, 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% pЄsed 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% pЄsed with minor Cu°, dipping 20°-40°

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 biotitizations 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°.

3369
3388
3436
3492
3597
3691 blk porp.
3697
ps 3765
3829
3891
3899
ps 3961
4052 blk p.
4163
4180
ps 4235
4264
4278

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'

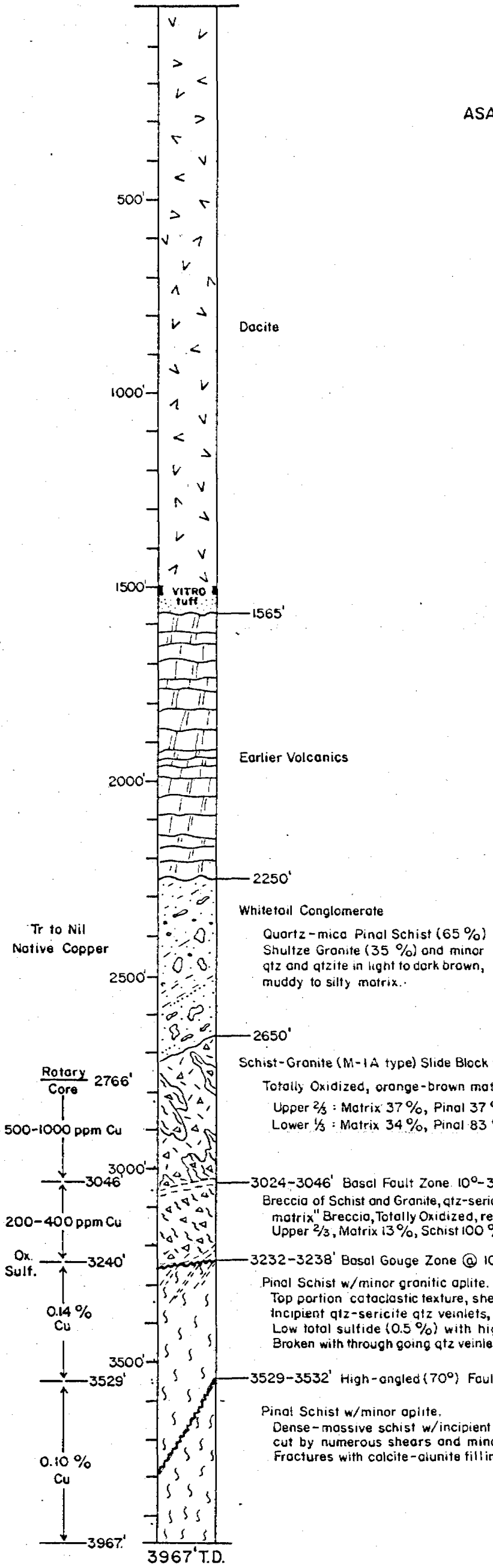
NOTE: Individual assays are found in ASSAY REPORT dated January 13, 1978

J.D.S. Jan., 1978

mn-2486-o dam

AI-1

Collar Elev. 4620'



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 1 S, R 13 E.

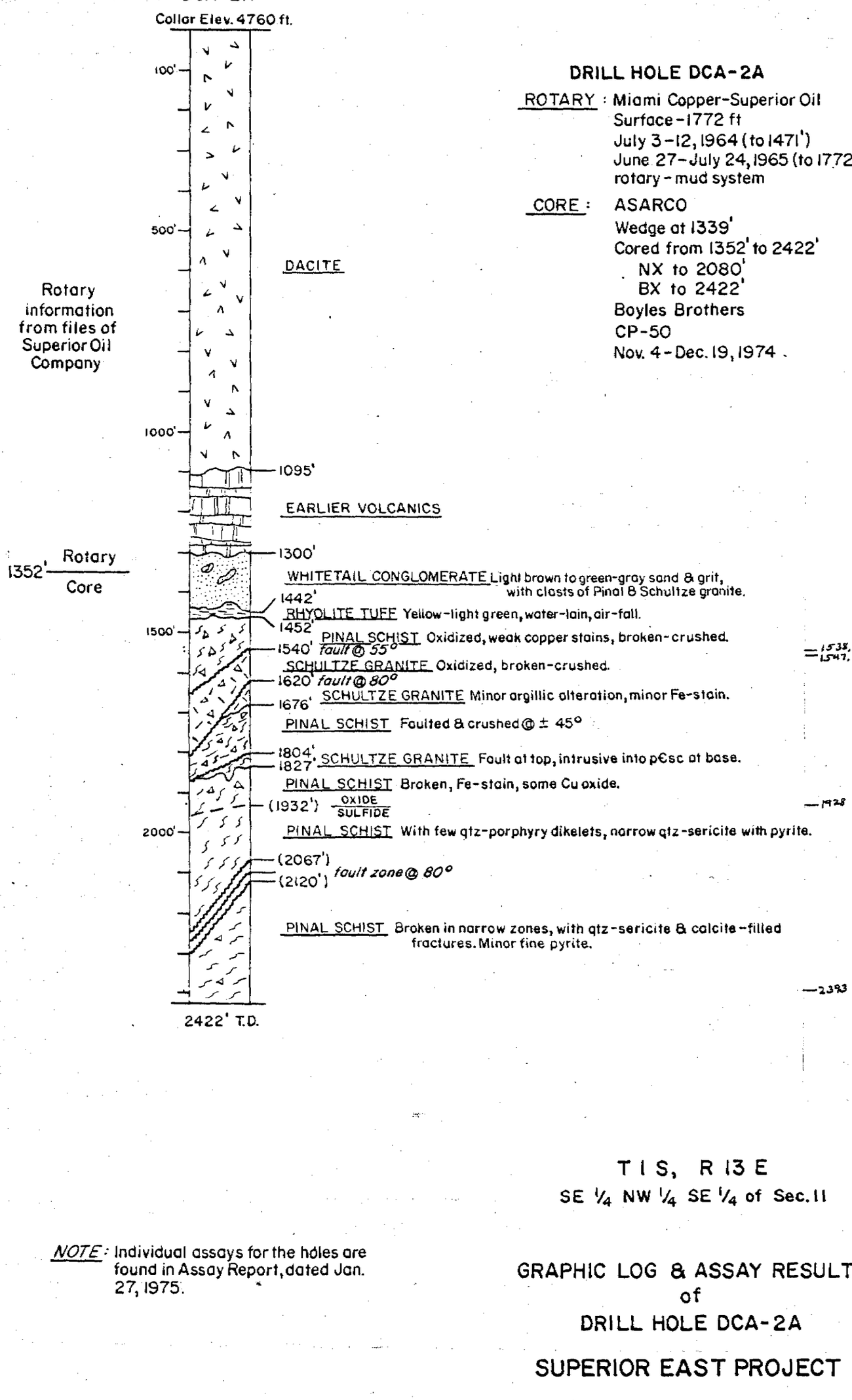
SE 1/4 SW 1/4 NE 1/4 of Sec. 23

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



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

T 1 S, R 13 E
SE ¼ NW ¼ SE ¼ of Sec. 11

NOTE: Individual assays for the holes are found in Assay Report, dated Jan. 27, 1975.

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

MVK 2486-I

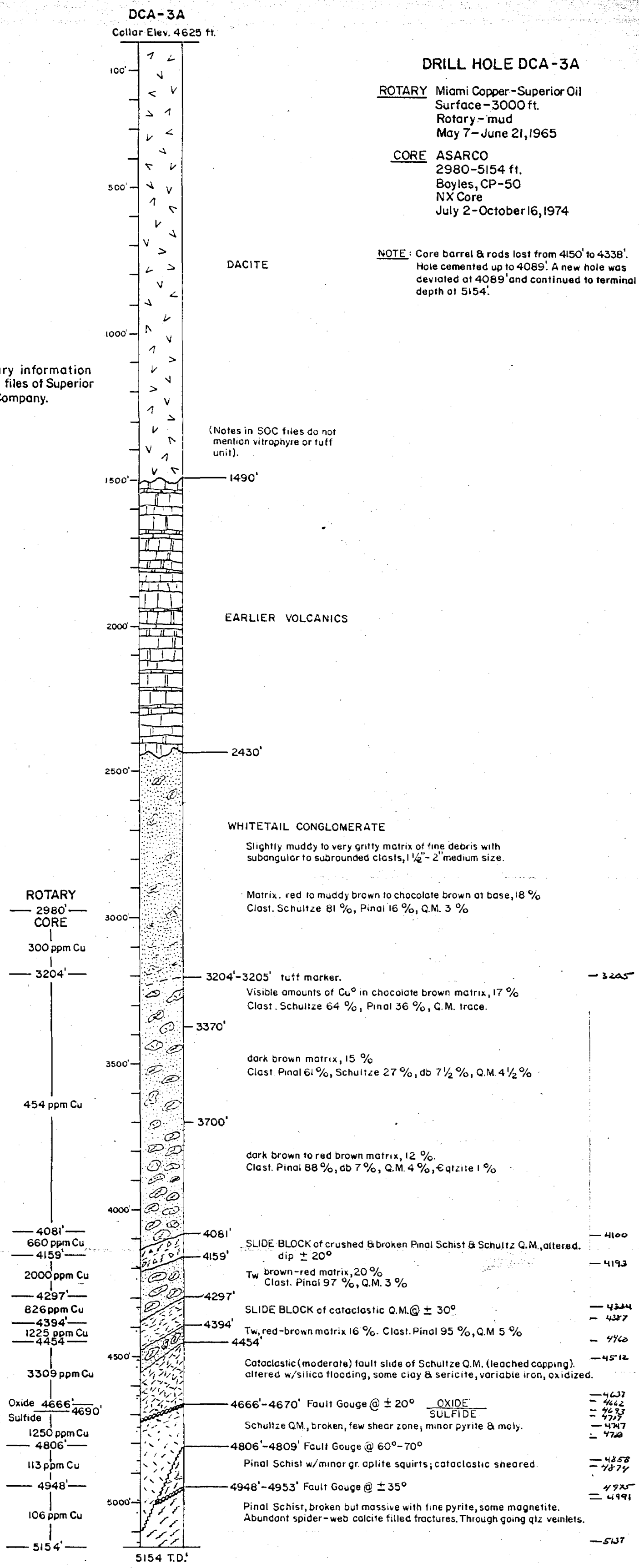
DRILL HOLE DCA-3A

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 in files of Superior Company.



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

T 1 S, R 13 E
SW ¼ NE ¼ NW ¼ 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

JDS

ASARCO

Southwestern Exploration Division

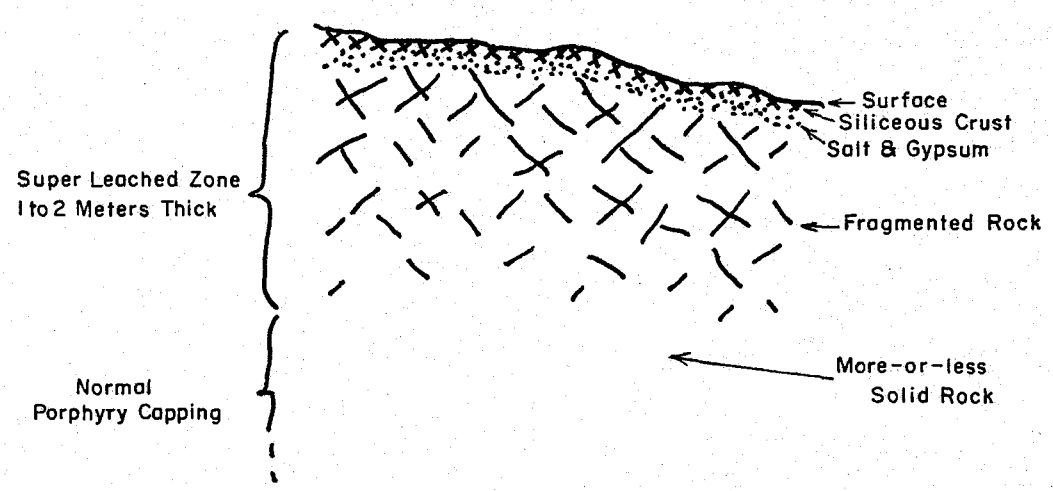
May 3, 1984

FILE MEMO

Porphyry Copper Leached Cappings in Atacama Desert, Chile

Porphyry copper capping is not a very hot topic in the States these days; however, Dave Lowell's presentation at the MCSW monthly speakers luncheon, April 27, contained some very interesting observations on occurrences in Chile. Following is a brief summary.

A particularly dry portion of the Atacama Desert forms a belt which includes (within its eastern fringe) Chuquicamata, Escondida (200 kilometers south of Chuqui), and El Salvador. As an example of the aridity of this region, records of precipitation at Chuqui, kept for the past 35 years, show a total rainfall of ¼ inch during that time. Evidence indicates that this extreme dessication has prevailed for several million years; however, water (derived from the high Andes to the east) is present (found in drilling) a hundred meters or so under the desert floor. In such an environment, moisture moves upward, forming surface, or near surface salt deposits. Crystallization of the salt breaks up the rock, producing what is termed a "super leached" layer deficient in limonite compared to normal leached capping 1 or 2 meters below. Shallow pits dug at Escondida (sometime after the discovery by drilling was made) revealed a veneer of capping fragments impregnated with supergene silica. This is underlain by a layer of salt and gypsum which passes downward into a zone of coarse rock fragments and then into more or less solid, undisturbed leached capping with a normal abundance of limonite, including hematite after chalcocite.



A significant effect of this process was removal of much of the limonite (both indigenous and transported) in the zone of "super leaching" ---- creating a deceptively weak appearance to the mineralization in outcrops above strong chalcocite enrichment (outcrop samples averaged 100 ppm Cu).* Having been reduced to powder, the "missing" limonites were no doubt carried away by desert winds.

Utah International is well along with plans at Escondida to open pit mine 400 million metric tons of 2.0% Cu. This higher grade portion of a plus one billion ton deposit is closely associated with intrusive breccias ---- essentially all of which were concealed by alluvium.

J. H. Courtright

J. H. Courtright

JHC:mek

*Dave did not mention geochem results, but the average was that of several hundred samples from outcrops 200 to 300 meters above a 125 meter thick cc blanket containing 1.3% Cu.

cc: R. L. Brown
J. C. Balla
R. E. Gale
R. S. Gray
D. D. Harper
W. L. Kurtz
J. D. Sell
D. M. Smith
P. G. Vikre
H. C. Williamson

TAB

ASSAYS

INVOICE

3226 East 46th Street

No. 6015

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

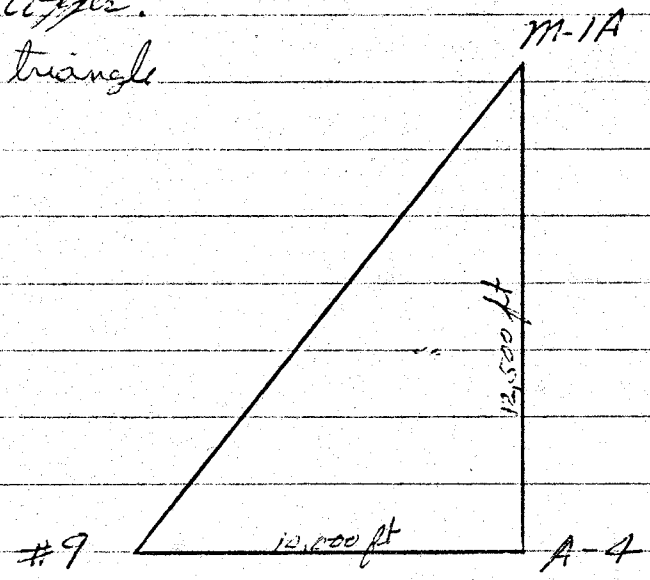
SAMPLE SUBMITTED BY American Smelting & Refining Company
Mr. James D. Sell

DATE 2-3-71

SAMPLE MARKED	ANALYSIS	CHARGES
GS-1 -- GS-8		
D-1 -- D -3		
HC-1 -- HC-3	Geo-Chem Cu, Zn, Mo	$63.00
	Ceramic Plate Pulverizing	7.00
	Total	$70.00

Whitetail Copper.

Total triangle



Hole Number	True Thickness	Composite Assay	ft-%
M-1A	2282 ft	@ 0.10% Cu	= 228.20 ft%
A-4	4242 ft	@ 0.25% Cu	= 1060.50 ft%
#9	1375 ft	@ 0.20% Cu	= 275.00 ft%
	7899		1563.70

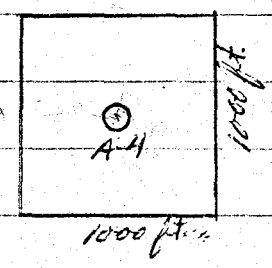
÷ 3 = 2633 ft ave thickness @ 0.20% Cu

Tonnage $\frac{1/2 \times 10{,}000 \times 12{,}500}{12.0} \times 2633$ = 13+ billion tons material

containing 43+ billion lbs of copper.

Whitetail Copper

1000 ft. square block around A-4



Tonnage $= \frac{1000 \times 1000 \times 1}{12} = 83{,}000$ tons per foot

with thickness of 840 ft = 69 million tons material

with assay of 0.80% Cu = 1.1 billions lbs of copper.

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE Feb. 4, 1971

Re-Runs - 5 g Mr. J. Sell PPM PPM

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	~~PERCENT~~ COPPER	PERCENT LEAD	~~PERCENT~~ ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
SK - 1			24		50			W. G. K.
SK - 6			14		30			FEB 8 1971
CC - 3			165		113			
WT - 5			164		107			

REGISTERED ASSAYER LICENSE No. 255 PETE S. FLORES Date 2/4/71 Signed Arizona U. S. A.

Invoice # 5925

CHARGES $ 8.00

ASSAYER-CHEMIST

INVOICE

3226 East 46th Street

No. 5923

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company
Mr. G. Barnnett

DATE 2-4-71

SAMPLE MARKED		ANALYSIS	CHARGES
		W. C. A.	
TB - Cu		FEB 3 1971	
TB - Hill			
[illegible] - 1		Geo-Chem Cu, Pb, Zn, Ox Cu 1 Fe	$16.25

OK
James D. Sell
Separation East
MA #0010-02

Metallurgical Consulting to the Chemical Industry

METCON
LABORATORY

J. D. Sell

602 624-2581
P.O. Box 50225
Tucson, Arizona
85703

RECEIVED
JUN 24 1971
S. W. U. S. EXPL. DIV.

W.E.S.
JUN 21 1971

June 23, 1971

American Smelting & Refining Company
P.O. Box 5747
Tucson, Arizona

ATTN: Mr. Bill Kurtz

Dear Sir:

Enclosed is the "Assay and Sample Identification List" covering core samples prepared for assaying at our laboratory.

These samples were sent to American Analytical Laboratory under our assay number to be assayed for total copper. A notation was made on the envelope that the sample contained metallic copper.

A duplicate pulp was made of each sample submitted. These pulps and the sample rejects are at our laboratory waiting for your disposition.

It has been a pleasure to be of service to you.

Sincerely,

R F Fisher

Rudolph Fisher
Laboratory Manager

RF:ct

Enclosure

American Smelting and Refining Company July 12, 1971

Project No. AR-40.6

METALLICS: Screen Technique

METCON Assay Number	ASARCO Sample Number	Screen Size	Weight (grams)	Assay Percent Copper	Content (grams)	Calc. Assay Percent Cu	Assay by Standard Method
7123	M-1A-18	+150	81.5	0.30	0.2445	0.17	0.14
7124	M-1A-18	-150	218.5	0.12	0.2622		
7125	M-1A-19	+150	50.9	0.21	0.1068	0.11	0.09
7126	M-1A-19	-150	249.1	0.09	0.2241		
7127	M-1A-26	+150	66.1	0.12	0.0793	0.09	0.09
7128	M-1A-26	-150	233.9	0.08	0.1871		
7129	M-1A-31	+150	45.3	0.21	0.0951	0.13	0.11
7130	M-1A-31	-150	254.7	0.11	0.2801		
7131	M-1A-35	+150	59.8	0.11	0.0657	0.05	0.06
7132	M-1A-35	-150	240.2	0.04	0.0960		

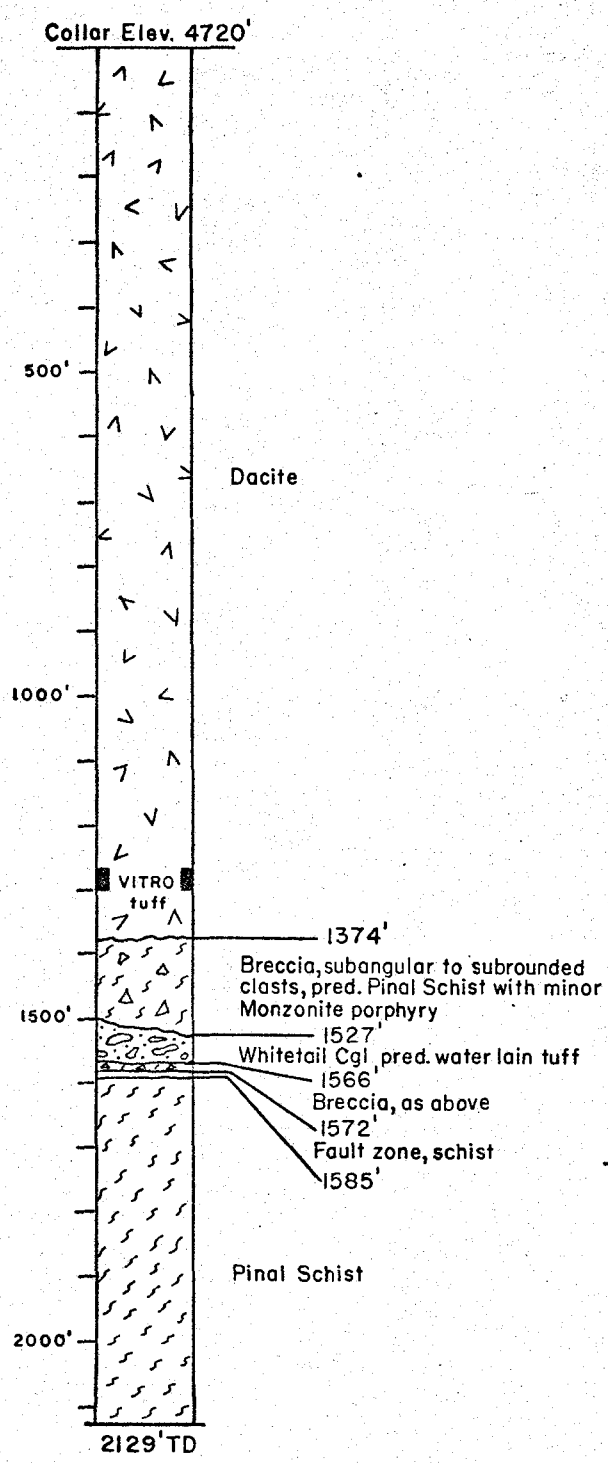
HOLE				
A-1	Samples	A-1-1	thru	A-1-19
A-2	"	A-2-1	"	A-2-70
A-2C	"	A-2C-1	"	A-2C-45
A-4	"	A-4-1	"	A-4-54 (34A-34B)
A-4C	"	A-4-C1	"	A-4-C143
M-1A	"	M-1A-1	"	M-1A-64
DCA-1A	"	DCA-1A-1	"	DCA-1A-20

~~Customer 7176 Met. Lab # 40.6~~

Customer #	Meteon Lab #
7160 thru 7184	40.6

14 - 54

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 ¼ SW ¼ SE ¼ of Sec. 2

GRAPHIC LOG & ASSAY RESULTS
of
DRILL HOLE A-1

SUPERIOR EAST PROJECT

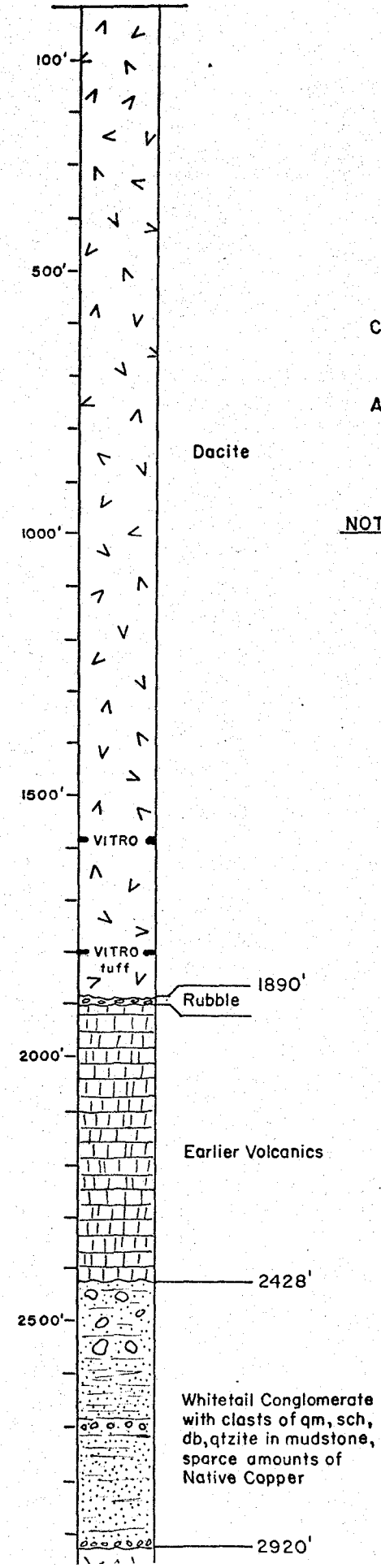
GILA & PINAL COUNTIES, ARIZONA

SCALE: 1" = 300'

J.D.S. Oct. 5. 1971

M-IA

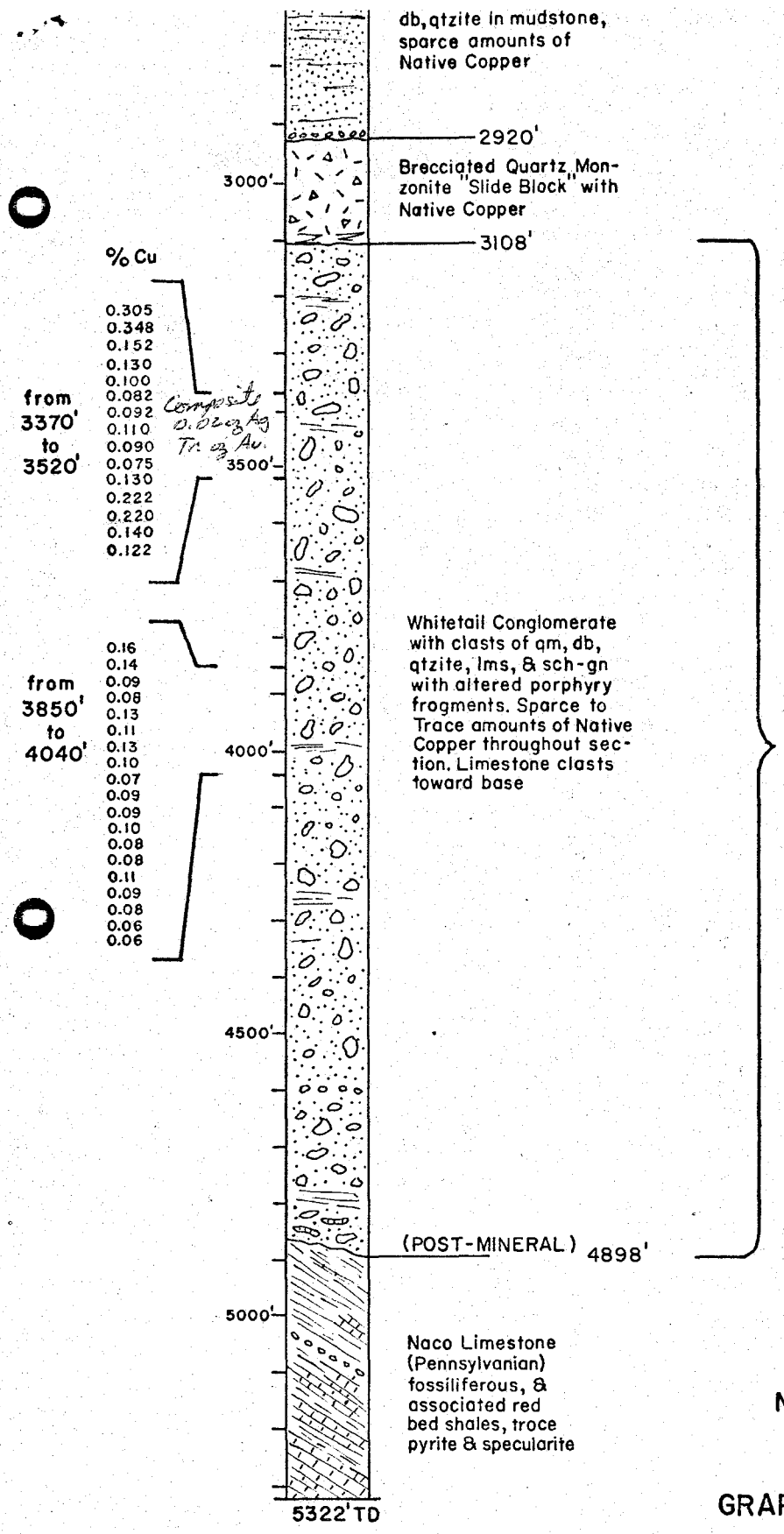
Collar Elev. 4550'



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

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

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



Visual estimate of native copper in this 1790 foot section of Whitetail, from 3108 to 4898 feet, and based on available assays suggest the entire section will average 0.10 +% copper

T 1 S, R 13 E.

NW ¼ SW ¼ SW ¼ 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

2486

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE July 10, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7103			0.61					
7104			0.11					
7105			0.14					
7106			0.09					
7107			0.08					
7108			0.13					
7109			0.11					
7110			0.13					
7111			0.10					
7112			0.07					
7113			0.09					
7114			0.09					
7115			0.10					
7116			0.08					
7117			0.08					
7118			0.11					
7119			0.09					
7120			0.08					
7121			0.06					
7122			0.06					
7123			0.30					
7124			0.12					
7125			0.21					
7126			0.09					
7127			0.12					

Invoice # 6490

CHARGES $ 37.50

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 7/10/71 Arizona U. S. A.

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE July 10, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7128			0.08					
7129			0.21					
7130			0.11					
7131			0.11					
7132			0.04					

Invoice # 6490

CHARGES $ 7.50

REGISTERED ASSAYER
CERTIFICATE NO. 6862
PETE S. FLORES
Date Signed 7/10/71
Arizona U. S. A.

ASSAYER - CHEMIST

Copy sent to ABC

7-71

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company (Metcon Research, Inc.)

DATE July 12, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7134			0.04					
7135			0.04					
7136			0.05					
7137			0.09					
7138			0.08					
7139			0.05					
7140			0.07					
7141			0.07					
7142			0.11					
7143			0.12					
7144			0.14					
7145			0.18					
7146			0.13					

REGISTERED ASSAYER CERTIFICATE NO. 6854 PETE S. FLORES Date Signed 7/12/71 Arizona U. S. A.

Invoice # 6499

CHARGES $ 19.50

ASSAYER-CHEMIST

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 12, 1971

TO: J. D. Sell

FROM: R. B. Cummings

Recently a number of samples from drill holes M-1A and A-4 were delivered to Met-Con Research in Tucson for sample preparation and copper assay. The samples from Hole M-1A are core splits of Whitetail conglomerate with trace amounts of exotic native copper mineralization. The sample numbers and corresponding depths are as follows:

SAMPLE NUMBER	DEPTH
M-1A-16	3856.2 - 3857.3
M-1A-17	3850 - 3856.2 and 3857.3 - 3860
M-1A-18	3860 - 3870
M-1A-19	3870 - 3880
M-1A-20	3880 - 3890
M-1A-21	3890 - 3900
M-1A-22	3900 - 3910
M-1A-23	3910 - 3920
M-1A-24	3920 - 3930
M-1A-25	3930 - 3940
M-1A-26	3940 - 3950
M-1A-27	3950 - 3960
M-1A-28	3960 - 3970
M-1A-29	3970 - 3980
M-1A-30	3980 - 3990
M-1A-31	3990 - 4000
M-1A-32	4000 - 4010
M-1A-33	4010 - 4020
M-1A-34	4020 - 4030
M-1A-35	4030 - 4040

Samples from hole A-4 are rotary cuttings of the Whitetail conglomerate with varying amounts of exotic native copper mineralization. The sample numbers and corresponding depths are as follows:

SAMPLE NUMBER	DEPTH
A-4-1	2497 - 2535
A-4-2	2624 - 2640
A-4-3	2640 - 2659
A-4-4	2670 - 2700
A-4-5	2700 - 2708
A-4-6	2708 - 2737
A-4-7	2737 - 2764
A-4-8	2764 - 2785
A-4-9	2785 - 2814

SAMPLE NUMBER	DEPTH
A-4-10	2814 - 2844
A-4-11	2868 - 2898
A-4-12	2898 - 2920
A-4-13	2928 - 2958

It should be noted that the above samples do not represent a continuous interval. The remaining samples are now being processed for shipment as are the two core runs from Hole A-4. Notice also that all samples do not represent equal intervals. This was necessary in order to simplify the sampling operation with respect to drilling progress. Efforts are now being made to keep the sample interval at 30'.

R. B. Cummings

R. B. Cummings

RBC:van

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 12, 1971

TO: J. D. Sell

FROM: R. B. Cummings

Recently a number of samples from drill holes M-1A and A-4 were delivered to Met-Con Research in Tucson for sample preparation and copper assay. The samples from Hole M-1A are core splits of Whitetail conglomerate with trace amounts of exotic native copper mineralization. The sample numbers and corresponding depths are as follows:

SAMPLE NUMBER	DEPTH
M-1A-16 } 1 Test sample	3856.2 - 3857.3
M-1A-17 }	3850 - 3856.2 and 3857.3 - 3860
M-1A-18	3860 - 3870
M-1A-19	3870 - 3880
M-1A-20	3880 - 3890
M-1A-21	3890 - 3900
M-1A-22	3900 - 3910
M-1A-23	3910 - 3920
M-1A-24	3920 - 3930
M-1A-25	3930 - 3940
M-1A-26	3940 - 3950
M-1A-27	3950 - 3960
M-1A-28	3960 - 3970
M-1A-29	3970 - 3980
M-1A-30	3980 - 3990
M-1A-31	3990 - 4000
M-1A-32	4000 - 4010
M-1A-33	4010 - 4020
M-1A-34	4020 - 4030
M-1A-35	4030 - 4040

Samples from hole A-4 are rotary cuttings of the Whitetail conglomerate with varying amounts of exotic native copper mineralization. The sample numbers and corresponding depths are as follows:

SAMPLE NUMBER	DEPTH
A-4-1	2497 - 2535
A-4-2	2624 - 2640
A-4-3	2640 - 2659
A-4-4	2670 - 2700
A-4-5	2700 - 2708
A-4-6	2708 - 2737
A-4-7	2737 - 2764
A-4-8	2764 - 2785
A-4-9	2785 - 2814

SAMPLE NUMBER	DEPTH
A-4-10	2814 - 2844
A-4-11	2868 - 2898
A-4-12	2898 - 2920
A-4-13	2928 - 2958

It should be noted that the above samples do not represent a continuous interval. The remaining samples are now being processed for shipment as are the two core runs from Hole A-4. Notice also that all samples do not represent equal intervals. This was necessary in order to simplify the sampling operation with respect to drilling progress. Efforts are now being made to keep the sample interval at 30'.

R. B. Cummings

RBC:van

Metallurgical Consulting to the Chemical Industry

METCON
LABORATORY

602 624-2581
P.O. Box 50225
Tucson, Arizona
85703

July 12, 1971

American Smelting & Refining Company
Post Office Box 5747
Tucson, Arizona

ATTN: Mr. Jim Sells

Please find enclosed an "Assay and Sample Identification List" for the samples prepared in our laboratory for assaying. The assay values as relayed to us by telephone from American Analytical are tabulated on the following pages. The relatively high assay value of your sample No. M-1A-16 should be noted.

As directed by ASARCO, five of the core samples were prepared by the standard technique for metallic copper as well as by screening the metallics through 65, 100 and 150 mesh screens. The +65, +100 and +150 metallics were combined for assay. The calculated assays based on the weights and assays of the +150 and -150 fractions are tabulated. These may be compared with the assays obtained by the standard sample procedure for metallic copper samples.

A duplicate pulp was made of each sample submitted. These pulps and the sample rejects were picked up this morning by one of your men.

It has been a pleasure to be of service to you.

Sincerely,

Gopalan Ramadorai

Gopalan Ramadorai
Research Associate

GR:ct

Enclosures

Met-Con AARL Results

	footage	Assay	
M-1A-16	~~ft~~ 1.1 } = 10.0'	0.61 = 0.671	} = 0.165
-17	8.9	0.11 = 0.979	

M-1A 16 & 17 = ten feet @ 0.16

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

0.06

0.06

19) 1.85 = 0.098 ave

Orig Sample = 15 × 0.154 = 2.310

New " = 19 × 0.098 = 1.855

34) 4.165 = 0.123% copper in sampled area

American Smelting and Refining Company July 12, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Core Samples

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper	ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
M-1A-16	7103	0.61	M-1A-31	7118	0.11
M-1A-17	7104	0.11	M-1A-32	7119	0.09
M-1A-18	7105	0.14	M-1A-33	7120	0.08
M-1A-19	7106	0.09	M-1A-34	7121	0.06
M-1A-20	7107	0.08	M-1A-35	7122	0.06
M-1A-21	7108	0.13			
M-1A-22	7109	0.11			
M-1A-23	7110	0.13			
M-1A-24	7111	0.10			
M-1A-25	7112	0.07			
M-1A-26	7113	0.09			
M-1A-27	7114	0.09			
M-1A-28	7115	0.10			
M-1A-29	7116	0.08			
M-1A-30	7117	0.08			

0.16 avg

American Smelting and Refining Company July 12, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Rotary Drill Cuttings

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-1	7134	0.04
A-4-2	7135	0.04
A-4-3	7136	0.05
A-4-4	7137	0.09
A-4-5	7138	0.08
A-4-6	7139	0.05
A-4-7	7140	0.07
A-4-8	7141	0.07
A-4-9	7142	0.11
A-4-10	7143	0.12
A-4-11	7144	0.14
A-4-12	7145	0.18
A-4-13	7146	0.13

3226 East 46th Street

Phone 624-004[illegible]

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company (Metcon Research, Inc.)

DATE July 12, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7134			0.04					
7135			0.04					
7136			0.05					
7137			0.09					
7138			0.08					
7139			0.05					
7140			0.07					
7141			0.07					
7142			0.11					
7143			0.12					
7144			0.14					
7145			0.18					
7146			0.13					

REGISTERED ASSAYER
CERTIFICATE NO. 685
PETE S. FLORES
Date signed 7/12/71
Arizona U. S. A.

Invoice # 6499

19 50

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Metcon Research Incorporated (American Smelting & Refining Company) DATE July 19, 1971

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ. / TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7160			0.01					
7161			0.01					
7162			0.02					
7163			0.02					
7164			0.04					
7165			0.13					
7166			0.08					
7167			0.06					
7168			0.04					
7169			0.04					
7170			0.04					
7171			0.04					
7172			0.04					
7173			0.11					
7174			0.15					
7175			0.12					
7176			0.10					
7177			0.10					
7178			0.07					
7179			0.07					
7180			0.09					
7181			0.17					
7182			0.05					
7183			0.05					
7184			0.05					

Invoice # 6535

CHARGES $ 37.50

REGISTERED ASSAYER CERTIFICATE NO. 6852 DEE S. FLORES Date Signed 7/19/71 Arizona U. S. A.

ASSAYER · CHEMIST

cpy [illegible]

Metallurgical Consulting to the Chemical Industry

METCON LABORATORY

602 624-2581
P.O. Box 50225
Tucson, Arizona
85703

RECEIVED
JUL 27 1971
S.W. U.S. EXPL. DIV.

July 26, 1971

Mr. William Kurtz
American Smelting & Refining Company
Post Office Box 5747
Tucson, Arizona

Dear Mr. Kurtz:

Please find enclosed an "Assay and Sample Identification List" for the samples prepared by our laboratory for assaying by American Analytical.

Thank you for this opportunity to be of service to you.

Sincerely,

Rudolph Fisher

Rudolph Fisher
Laboratory Manager

RF:ct

Enclosures

East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Metcon Research Incorporated

DATE July 19, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7160			0.01					
7161			0.01					
7162			0.02					
7163			0.02					
7164			0.04					
7165			0.13					
7166			0.08					
7167			0.06					
7168			0.04					
7169			0.04					
7170			0.04					
7171			0.04					
7172			0.04					
7173			0.11					
7174			0.15					
7175			0.12					
7176			0.10					
7177			0.10					
7178			0.07					
7179			0.07					
7180			0.09					
7181			0.17					
7182			0.05					
7183			0.05					
7184			0.05					

REGISTERED ASSAYER
CERTIFICATE NO. 6852
PETE S. FLORES
Date Signed 7/19/71
Arizona U. S. A.

Invoice # 6535

CHARGES $ 37.50

American Smelting and Refining Company July 22, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Rotary Drill Cuttings

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-14	7160	0.01
A-4-15	7161	0.01
A-4-16	7162	0.02
A-4-17	7163	0.02
A-4-18	7164	0.04
A-4-19	7165	0.13
A-4-20	7166	0.08
A-4-21	7167	0.06
A-4-22	7168	0.04
A-4-23	7169	0.04
A-4-24	7170	0.04
A-4-25	7171	0.04
A-4-26	7172	0.04
A-4-27	7173	0.11
A-4-28	7174	0.15
A-4-29	7175	0.12
A-4-30	7176	0.10
A-4-31	7177	0.10
A-4-32	7178	0.07
A-4-33	7179	0.07
A-4-34A	7180	0.09
A-4-34B	7181	0.17

Core Samples

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-C1	7182	0.05
A-4-C2	7183	0.05
A-4-C3	7184	0.05

American Smelting and Refining Company June 23, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Sample No.	Assay No.	Assay % Cu
M-1A-1	7062	.295 .315
M-1A-2	7063	.335 .360
M-1A-3	7064	.150 .155
M-1A-4	7065	.130 .130
M-1A-5	7066	.100 .100
M-1A-6	7067	.085 .080
M-1A-7	7068	.100 .085
M-1A-8	7069	.115 .105
M-1A-9	7070	.090 .090
M-1A-10	7071	.080 .070
M-1A-11	7072	.120 .140
M-1A-12	7073	.220 .225
M-1A-13	7074	.220 .220
M-1A-14	7075	.140 .140
M-1A-15	7076	.125 .125

3226 East 46th Street

JDS – do you need this for Foregant incorporation in files? If not consider this an extra

Phone 0[illegible]

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Metcon Research Incorporated

DATE June 23, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
7062			0.295					
7062			0.315					
7063			0.335					
7063			0.360					
7064			0.150					
7064			0.155					
7065			0.130					
7065			0.130					
7066			0.100					
7066			0.100					
7067			0.085					
7067			0.080					
7068			0.100					
7068			0.085					
7069			0.115					
7069			0.105					
7070			0.090					
7070			0.090					
7071			0.080					
7071			0.070					
7072			0.120					
7072			0.140					
7073			0.220					
7073			0.225					
7074			0.220					

Invoice # 6430

CHARGES $ 75.00

REGISTERED ASSAYER ARIZONA U. S. A.

Peter J. Hone 6/23/71

ASSAYER-CHEMIST

PLEASE USE INVOICE NUMBER WITH YOUR REMITTANCE

Metallurgical Consulting to the Chemical and Mining Industry

METCON RESEARCH, INC.

PHONE 623-5045

BOX 50225
TUCSON, ARIZONA
85703

American Smelting & Refining
P.O. Box 5747
Tucson, Arizona

ATTN: Mr. Bill Kurtz

INVOICE No. 458

W. L. K
AUG 05 1971

K.V.D.S.
AUG 4 1971

Project No. AR - 40.6

Sample Preparation

62 Samples @ $7.00/ea.	$434.00
Total Due	$434.00

APPROVED FOR PAYMENT

By: (Signature)

Superior East

August 2, 1971

crt

for [illegible] – Copy sent to R.R.B.C.

8

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE August 10, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-1-1			0.02					
A-1-2			0.02					
A-1-3			0.06					
A-1-4			0.04					
A-1-5			0.02					

Invoice # 6631

CHARGES $ 10.00

REGISTERED ASSAYER CERTIFICATE NO. 852 ARIZONA

8/10/71

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE August 10, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-1-1			0.02					
A-1-2			0.02					
A-1-3			0.06					
A-1-4			0.04					
A-1-5			0.02					

INVOICE

3226 East 46th Street No. 6631

K.V.D.S. AUG 12 1971

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company See DATE August 10, 1971

SAMPLE MARKED	ANALYSIS	CHARGES
A-1-1 - A-1-5	Cu	$10.00

Approved for payment
Superior East MA-0016
D. W. Self

Invoice # 6631

CHARGES $ 10.00

8/10/71

J.D.Sell

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Metcon Research Incorporated

FOR (AMERICAN SMELTING & REFINING COMPANY)

DATE August 23, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
40.6								
7320			0.11					
7321			0.05					
7322			0.05					
7323			0.03					
7324			0.03					
7325			0.05					
7326			0.04					
7327			0.05					
7328			0.07					
7329			0.05					
7330			0.09					
7331			0.07					
7332			0.05					
7333			0.06					
7334			0.08					
7335			0.06					
7336			0.05					
7337			0.08					
7338			0.08					
7339			0.07					

REGISTERED ASSAYER
CERTIFICATE No. 5852
PETE S. FLORES
Date Signed 8/23/71
Ariz.

Invoice # 6672

CHARGES $ 30.00

Phone 624-00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Metcon Research Incorporated DATE August 23, 197

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ. / TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
40.6								
7320			0.11					
7321			0.05					
7322			0.05					
7323			0.03					
7324			0.03					
7325			0.05					
7326			0.04					
7327			0.05					
7328			0.07					
7329			0.05					
7330			0.09					
7331			0.07					
7332			0.05					
7333			0.06					
7334			0.08					
7335			0.06					
7336			0.05					
7337			0.08					
7338			0.08					
7339			0.07					

Invoice # 6672

CHARGES $ 30.00

REGISTERED ASSAYER PETE S. FLORES Date Signed 8/23/7 Arizona U.S.A.

ASSAYER-CHEMIST

Cd Sell Cummings

W. L. K.

SEP 8 1971

K.B.Cummiggs

RECEIVED

SEP 7 1971

S. W. U. S. EXPL. DIV.

American Smelting and Refining Company August 31, 1971

Project No. AR - 40.6

have

Assay and Sample Identification List

Rotary Drill Cuttings

Metcon Sample No.	ASARCO Sample No.	Assay Percent Copper
7320	A-4-35	0.11
7321	A-4-36	0.05
7322	A-4-37	0.05
7323	A-4-38	0.03
7324	A-4-39	0.03
7325	A-4-40	0.05
7326	A-4-41	0.04
7327	A-4-42	0.05
7328	A-4-43	0.07
7329	A-4-44	0.05
7330	A-4-45	0.09
7331	A-4-46	0.07
7332	A-4-47	0.05
7333	A-4-48	0.06
7334	A-4-49	0.08
7335	A-4-50	0.06
7336	A-4-51	0.05
7337	A-4-52	0.08
7338	A-4-53	0.08
7339	A-4-54	0.07

American Smelting and Refining Company July 22, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Rotary Drill Cuttings

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-14	7160	0.01
A-4-15	7161	0.01
A-4-16	7162	0.02
A-4-17	7163	0.02
A-4-18	7164	0.04
A-4-19	7165	0.13
A-4-20	7166	0.08
A-4-21	7167	0.06
A-4-22	7168	0.04
A-4-23	7169	0.04
A-4-24	7170	0.04
A-4-25	7171	0.04
A-4-26	7172	0.04
A-4-27	7173	0.11
A-4-28	7174	0.15
A-4-29	7175	0.12
A-4-30	7176	0.10
A-4-31	7177	0.10
A-4-32	7178	0.07
A-4-33	7179	0.07
A-4-34A	7180	0.09
A-4-34B	7181	0.17

Core Samples

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-C1	7182	0.05
A-4-C2	7183	0.05
A-4-C3	7184	0.05

American Smelting and Refining Company July 12, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Rotary Drill Cuttings

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
A-4-1	7134	0.04
A-4-2	7135	0.04
A-4-3	7136	0.05
A-4-4	7137	0.09
A-4-5	7138	0.08
A-4-6	7139	0.05
A-4-7	7140	0.07
A-4-8	7141	0.07
A-4-9	7142	0.11
A-4-10	7143	0.12
A-4-11	7144	0.14
A-4-12	7145	0.18
A-4-13	7146	0.13

Do not have
molecules
8/2/74

American Smelting and Refining Company July 12, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Core Samples

ASARCO Sample Number	METCON Assay Number	Assay Percent Copper	ASARCO Sample Number	METCON Assay Number	Assay Percent Copper
M-1A-16	7103	0.61 } 0.16	M-1A-31	7118	0.11
M-1A-17	7104	0.11	M-1A-32	7119	0.09
M-1A-18	7105	0.14	M-1A-33	7120	0.08
M-1A-19	7106	0.09	M-1A-34	7121	0.06
M-1A-20	7107	0.08	M-1A-35	7122	0.06
M-1A-21	7108	0.13			
M-1A-22	7109	0.11			
M-1A-23	7110	0.13			
M-1A-24	7111	0.10			
M-1A-25	7112	0.07			
M-1A-26	7113	0.09			
M-1A-27	7114	0.09			
M-1A-28	7115	0.10			
M-1A-29	7116	0.08			
M-1A-30	7117	0.08			

Do not have Metcon sacks 8/2/74

American Smelting and Refining Company June 23, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Sample No.	Assay No.	Assay % Cu
M-1A-1	7062	.295 .315
M-1A-2	7063	.335 .360
M-1A-3	7064	.150 .155
M-1A-4	7065	.130 .130
M-1A-5	7066	.100 .100
M-1A-6	7067	.085 .080
M-1A-7	7068	.100 .085
M-1A-8	7069	.115 .105
M-1A-9	7070	.090 .090
M-1A-10	7071	.080 .070
M-1A-11	7072	.120 .140
M-1A-12	7073	.220 .225
M-1A-13	7074	.220 .220
M-1A-14	7075	.140 .140
M-1A-15	7076	.125 .125 — .120 Reported by Amer An.

Missing

ARR also missing

American Smelting and Refining Company

July 12, 1971

Project No. AR-40.6

METALLICS: Screen Technique

METCON Assay Number	ASARCO Sample Number	Screen Size	Weight (grams)	Assay Percent Copper	Content (grams)	Calc. Assay Percent Cu	Assay by Standard Method
7123	M-1A-18	+150	81.5	0.30	0.2445	0.17	0.14
7124	M-1A-18	-150	218.5	0.12	0.2622		
7125	M-1A-19	+150	50.9	0.21	0.1068	0.11	0.09
7126	M-1A-19	-150	249.1	0.09	0.2241		
7127	M-1A-26	+150	66.1	0.12	0.0793	0.09	0.09
7128	M-1A-26	-150	233.9	0.08	0.1871		
7129	M-1A-31	+150	45.3	0.21	0.0951	0.13	0.11
7130	M-1A-31	-150	254.7	0.11	0.2801		
7131	M-1A-35	+150	59.8	0.11	0.0657	0.05	0.06
7132	M-1A-35	-150	240.2	0.04	0.0960		

Cpy Sell Company

J.D.SELL

W. L. K.

SEP 8 1971

RECEIVED

SEP 7 1971

S. W. U. S. EXPL. DIV.

American Smelting and Refining Company August 31, 1971

Project No. AR - 40.6

Assay and Sample Identification List

Rotary Drill Cuttings

Metcon Sample No.	ASARCO Sample No.	Assay Percent Copper
7320	A-4-35	0.11
7321	A-4-36	0.05
7322	A-4-37	0.05
7323	A-4-38	0.03
7324	A-4-39	0.03
7325	A-4-40	0.05
7326	A-4-41	0.04
7327	A-4-42	0.05
7328	A-4-43	0.07
7329	A-4-44	0.05
7330	A-4-45	0.09
7331	A-4-46	0.07
7332	A-4-47	0.05
7333	A-4-48	0.06
7334	A-4-49	0.08
7335	A-4-50	0.06
7336	A-4-51	0.05
7337	A-4-52	0.08
7338	A-4-53	0.08
7339	A-4-54	0.07

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE October 28, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM [redacted] COPPER	PERCENT LEAD	PPM [redacted] ZINC	PPM [redacted] MOLYBDENUM	PERCENT IRON	
A-1-a			73		38	4		
A-1-c			62		69	2		
A-1-d			48		40	2		
M-1-a			77		182	4		
M-1-b			522		113	1		
M-1-c			330		201	13		
A-4-b			1870		413	18		
A-4-d			579		249	51		
Su-1			108		57	3		
Su-2			124		123	2		
Su-3			383		170	5		

K.V.E.S.
NOV 1 1971

REGISTERED ASSAYER
CERTIFICATE NO. 6859
FLORES
Date Signed 10/28/71
Arizona U. S. A.

Invoice # 6921

CHARGES $ 49.50

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

Project # AR 40.6

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Nov. 15, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
M-I-A-36			0.04					
M-I-A-37			0.05					

K.V.D.S.
NOV 17 1971

REGISTERED ASSAYER
CERTIFICATE No. 152
STATE OF
FLORES
Date Signed 11/15/71
Arizona U. S. A.

Invoice # 6997

CHARGES $ 3.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 14, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
M-1A-44			0.12					
M-1A-45			0.01					
M-1A-46			0.03					
M-1A-47			0.02					
M-1A-48			0.07					
M-1A-49			0.02					
M-1A-50			0.03					
M-1A-51			0.13					
M-1A-52			0.09					
M-1A-53			0.07					
-1A-54			0.03					
M-1A-55			0.11					
M-1A-56			0.05					
M-1A-57			0.08					
M-1A-58			0.08					

K.V.D.S.
DEC 15 1971

Invoice # 7092

CHARGES $ 30.00

REGISTERED ASSAYER
CERTIFICATE No. 6852
PETE S. FLORES
Pete Flores
12/14/71
Arizona U. S. A.

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE December 15, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM [redacted] COPPER	PERCENT LEAD	PPM [redacted] ZINC	PPM [redacted] MOLYBDENUM	PERCENT IRON	
DCA-1A-1			44		245	7		
DCA-1A-2			53		285	7		
DCA-1A-3			55		263	5		

K.V. DEC 1 0 1971

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 12/15/71 Arizona U. S. A.

ASSAYER - CHEMIST

Invoice # 7110

CHARGES $ 13.50

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 27, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM [redacted] COPPER	PERCENT LEAD	PPM [redacted] ZINC	PPM [redacted] MOLYBDENUM	PERCENT IRON	
DCA-1A-4			77		441	10		
DCA-1A-5			84		640	9		
DCA-1A-6			49		609	5		
DCA-1A-7			24		174	9		
DCA-1A-8			6		92	7		
DCA-1A-9			7		156	5		
DCA-1A-10			5		123	7		

Invoice # 7151

CHARGES $ 31.50

REGISTERED ASSAYER CERTIFICATE NO. 5652 PETE S. FLORES Date Signed 12/27/71 Arizona U.S.A.

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company

DATE March 6, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-2C-1 Re-Run Orig.			0.16				
A-2C-1 2nd Cut			0.15				

K.V.D.S.
MAR 6 1972

CHARGES $ N/C

3/6/72

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

K.V.L.S. MAR 3 1972

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 28, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM [redacted] MOLYBDENUM	PERCENT IRON	
A-2C-1			1.59			36		

Invoice # 7379

CHARGES $ 3.00

REGISTERED ASSAYER CERTIFICATE NO. 5862 PETE S. FLORES Date Signed 2/28/72 Arizona U. S. A.

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company

See

DATE March 20, 1972

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ. / TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-2C-21			0.01			32	
A-2C-22			0.01			23	
A-2C-23			0.01			8	
A-2C-24			Trace			17	
A-2C-25			Trace			11	
A-2C-26			0.22			11	
A-2C-27			0.20			12	

K.V.D.S.
MAR 21 1972

Invoice #7462

CHARGES $ 28.00

ASSAYER - CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company DATE March 22, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2C 28			0.11			12		
29			0.37			8		
30			0.63			12		
31			0.39			8		
32			0.40			16		
33			0.36			11		
34			0.35			118		
35			0.42			14		
36			0.51			7		
37			0.31			24		
38			0.35			20		
39			0.27			5		
40			0.33			12		
41			0.48			67		
42			0.49			16		
43			2.40			6		
44			0.42			7		
45			1.01			18		

REGISTERED ASSAYER CERTIFICATE FLORA Date Signed 3/22/72 Arizona U. S. A.

Invoice #7479

CHARGES $ 72.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE April 3, 1972

COMPOSITES

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2C 25-29	Trace	0.07						
30-34	Trace	0.04						
35-39	Trace	0.10						
40-44	Trace	0.10						

Invoice # 7524

CHARGES $ 16.00

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 4/3/72 Arizona U. S. A.

ASSAYER - CHEMIST

HAWLEY & HAWLEY

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

Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %			
A-2C-25				0.01					
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					
Composites:									
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 " @$7.25				29.00	
				20 Composites @$.25				5.00	

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

REMARKS:

Verified analysis

Analysis Cert. By

Preparation $ 5.00
Analysis $ 97.25

ACC:	Date Spl. Received	Date Compl.		$
AMERICAN SMELTING & REFINING CO.	7/7/72	8/10/72	TUC 366098	102.25

HH3

HAWLEY & HAWLEY

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

Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %			
A-2C-25				0.01					
26				0.20					
27				0.30					
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				0.39					
A-2C-40				0.37					
41				0.50					
42				0.55					
43				2.71					
44				0.43					
A-2C-45				1.05					
Composites:									
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 " @$7.25					29.00
				20 Composites @$.25					5.00

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

REMARKS:

Verified analysis

Analysis Cert. By

Preparation $ [illegible]
Analysis $ 97.25

ACC: AMERICAN SMELTING & REFINING CO.
Date Spl. Received 6/7/72
Date Compl. 6/10/72
TUC 346056
$ 102.25

HH3

HAWLEY & HAWLEY

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

Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	AARL % Cu	Mo. %
A-2C-25				0.01	trace	
26				0.20	0.22	
27				0.20	0.20	
28				0.11	0.11	
A-2C-29				0.37	0.37	
A-2C-30				0.65	0.63	
31				0.40	0.39	
32				0.42	0.40	
33				0.39	0.36	
A-2C-34				0.38	0.35	
A-2C-35				0.43	0.42	
36				0.54	0.51	
37				0.30	0.31	
38				0.38	0.35	
A-2C-39				0.29	0.27	
A-2C-40				0.37	0.33	
41				0.50	0.48	
42				0.55	0.49	
43				2.71	2.40	
44				0.43	0.42	
A-2C-45				1.09	1.01	
Composites:				Au	Ag	
A-2C-25, 26, 27, 28, 29	< 0.005	0.03		trace	0.07	
A-2C-30, 31, 32, 33, 34	< 0.005	0.05		trace	0.04	
A-2C-35, 36, 37, 38, 39	< 0.005	0.11		trace	0.10	
A-2C-40, 41, 42, 43, 44	None	0.01		trace	0.10	

Comparison assays submitted on same pulps

21 Cu, verified,	@$3.25	$ 68.25
4 Au & Ag "	@$7.25	29.00
20 Composites	@$.25	5.00

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

REMARKS:

Verified analysis

Analysis Cert. By 5784
H. E. Hawley
Registered Assayer
Certificate No. 5784
Arizona U. S. A.

Preparation $ 5.00
Analysis $ 97.25

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

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY James D. Sell % ASARCO DATE May 18, 1972

SINGLE ANALYSIS ☐

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	% Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	ppm Mo	S	
A-2C-46			0.25								32		4510-4512½

ATTACHMENT 1

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT Pioneer
COUNTY, STATE Pinal County, Arizona

DRILL HOLE A-2
FINAL DEPTH 4521'
NW 1/4 NE 1/4 SE 1/4
Sec. 22, T 1 S, R 13 E.

DATE 1/20/72 - 3/18/72
LOG BY R. B. Cummings

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
0	720	Td			Dacite - gray
720	1120	Td			Dacite - orange
1120	1225	Td			Dacite - brown
1225	1231	Td			Dacite - vitrophyre
1231	1302	Td			Dacite - brown
1302	1330	Td			Dacite - tuff
1330	2020	Tev			Andesitic basalt. Dark gray to reddish brown. Very fine grained.
2020	2425	Tw	Traces of native copper with schist.		Whitetail. Greenish to brownish gritty mudstone with minor schist conglomerate.
2425	2810	Tw	Traces of native copper with schist.		Whitetail. Conglomerate with light green to brn. gritty matrix and mainly schist fragments with minor diabase and qtzite.
Cored from 2559 to 2574					
2810	3459	Tw	Traces of native copper. Traces of cuprite, malachite and azurite from approximately 3339-3459		Whitetail. Conglomerate with brn. gritty matrix. Fragments are schist and weakly altered qtz. monzonite with some diabase.
3459	3540	Tw?	Traces of native copper, cuprite, malachite and azurite.		Whitetail(?) Conglomerate? No matrix in cuttings. Fragments mostly fine-grained qtz. monzonite - wkly alterated. Note: This interval may be a qtz. monzonite slide block.
Cored from 3540 to 3550					
3540	3920	Tw	Traces of cuprite, native copper, malachite and azurite.		Whitetail. Conglomerate with red to red-bı gritty matrix. Fragments as 2810'-3459'.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT
COUNTY, STATE

DRILL HOLE A-2
FINAL DEPTH

DATE
LOG BY

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
3920	4208	Tqm	Traces of py and cc. dissemin-	Strong. Varies from wk ar-	Tertiary Qtz. monzonite. Medium-grained
Note: Coring			ated and on fractures. Str.	gillic to strong qtz-seri-	and slightly porphyritic with minor
started at 4075'			cc in local qtz-sericite pods	cite and silicification.	biotite. Numerous small inclusion of
			as 4081-82.5 & 4021-26. Total	Str. qtz veining.	of biotite schist. Large inclusions
			FeOx → sulf. varies from		4110-20, 4158-66 and 4182-88. Fracturing
			< 1% to 2-4%. Substantial		very strong - brecciated (post mineral).
			portion of FeOx probably		Lower contact - Fault zone?. Flat gouge
			after cc.		bx in schist 4203-08.
4208	4288	p€pi &	Sparce py and cc. as above.	Wk-str in schist - chloriti-	Biotite schist with dikes (?) of Tqm.
		Tqm	FeOx → sulf. (some of which	zation and silicification to	Tqm @ 4226-32, 4236-43 and 4248-75.
			is probably cc). varies from	str qtz-sericite. Mod-str	Total section is strongly brecciated.
			< 1/2% to 2-4%. Best from	in Tqm as above. Strong qtz	Tqm has a sheared, granulated look.
			4262-88. Traces of specular-	veining in both.	
			ite.		
4288	4295	p€pi	1-2% FeOx — sulfide.	Wk chloritization to strong	Flat Fault. Rock is schist as above.
		Flat Fault		argillization.	Strong brecciation. Strong light
					colored gouge. Gouge Bx.

NOTE: This fault zone marks a major change. Above the zone the dominant rock type is Tqm, the rock is strongly brecciated and thoroughly oxidized. Below this zone the dominant rock type is schist, the rock is un-brecciated and only weakly oxidized.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT
COUNTY, STATE

DRILL HOLE A-2
FINAL DEPTH

DATE
LOG BY

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
4295	4321	Tqm	Traces of cc. replacing py on fractures and in disseminations. 1% FeOx—sulfides from 4295-4314. (Only traces of oxidation below 4314). Traces of specularite.	Wk to str argillization with local str qtz-sericite. Minor qtz veining.	Tqm. As 3920-4208 from 4295-4314. From 4314-21 - Fine grained salmon colored qm with 2% biotite.
4321	4471	pЄpi	1/2-2% py on fractures with qtz veinlets and disseminated Wk cc. replacing py. Wk bor. as very fine grained disseminated.	Str. silicification. Schist has probably been recrystallized along schistosity with remobilization of biotite. Some argillization along schistosity. Minor qtz-sericite with qtz veining. Mod-str. irregular qtz veinlets.	Biotite schist. Schistosity 45-90° Tqm dikes 4393-94, 4410-17 & 4432-33 - also some smaller.
4471	4513	pЄpi	1-2% py, cc., and bor. Local str development of cc-4484-89 and 4500-4510. Str. bor. 4505.	Str argillization on fractures. Local areas of str qtz-sericite. Str. silicification and qtz veining (irregular) Tqm-str. argillization and local str qtz-sericite.	Schist as above. Tqm dike(?) 4509-?. Crushed gouge-bx zones with rounded fragments @ 4481.5-83.5, 4484.5-85.0, 4487-88, 4498-4500 (w/qtz veinlets) and 4505-09 (w/qtz veinlets). Fault Bx - well healed at 4504-70°.
4513	4521	?	Core barrel and several hundred feet of rods were lost in the hole. Recovery attempts were unsuccessful. The hole was deflected at 4230 with a wedge.	See log of A-2W for hole continuation.	

A-2

Spot cores

	0-1330	Td	
	1330-2020	Tw	
	2020-3459	Tw, greenish matrix	2559-2574
	3459-3540	Tgm slide block (?).	
	3540-3920	Tw, reddish matrix	3540-3550
190	3920-4110	Tgm, brittle, leached capping	4075-4076
(35)	(4076 NX coring w/ Ken, year 44)		oxidized cc blocks
10	4110-4120	pEpi, leached	
38	4120-4158	Tgm, leached.	
8	4158-4166	pEpi, "	
10½	4166-4182½	Tgm, "	
5½	4182½-4188	pEpi, "	
15	4188-4203	Tgm, "	
23	4203-4226	pEpi, "	
6	4226-4232	Tgm aplite (dike?)	
4½	4232-4236½	pEpi, leached	
6½	4236½-4243	Tgm, "	
5	4243-4248	pEpi "	
27	4248-4275	Tgm " , sheared	
109 Tgm (65%) 70 pEpi 13	4275-4288	pEpi " , " , lv.	
	base of intense oxidation & leaching		
7	4288-4295	pEpi, extreme gouge, lv. w/ft alteration	
26	4295-4321	Tgm, some leaching; sulfides @ 4314.	
13	4321-4334	pEpi, py, cc (primary) & barite	
9½ 4	4334-4342	Tgm & pEpi, end of leaching effects.	
121	4342-4463	pEpi, py, cc (primary) & barite. highly veined & faults pass-thy.	Tgm dikes @ 4393-4394 & 4410-4417.

A-2

18 4463 – 4481 Pariol Schist py, cc & bornite in qtz seam & veins.

9 4481 – 4490 Pariol schist. chlorid. slickenside, crushed & sandy zones. Noticeable cc-bornite in thick shiner (4485 – 4490)

19 4490 – 4509 Pariol schist increased silica flooding & veining with scattered heavy sulfides. Bottom 4 feet crushed & sandy (fault?).

4 4509 – 4512½. Tgm crushed & qtz veinlets linear qtz veining plus qtz veins w/ py, cp, cc, bornite – also some disseminated.

34 Tgm
84 sc. (71%)

Drill Hole A-2W

Wedged off of DDH A-2 @ 4230 feet.

100% 3 4230 – 4233 pЄ Pinal Schist. Qtz sericite schist, sheared and broken, oxidized with 2-4% FeOx after sulfides.

100% 3 4233 - 4236 T qtz mon porphy. Strong argillic w/ qtz-sericite alt.; oxidized with 2-4% FeOx after sulfide, some leached chalcocite in fissures and veinlets. Has crushed appearance.

2 4236 – 4238 pЄ Pinal schist qtz-seri schist cut by massive qtz: oxidized with 1-2% FeOx → sulf.

31 4238 – 4269 Tgmp pred w/ schist, Both show shearing, crushing & cataclastic texture. oxidized, 1-3% FeOx → sulf w/ leached chalcocite 1" quartz zone dipping 40° at base.

41 7 4269 – 4276. Tgm argillic w/ qtz sericite & cut by qtz & qtz-musc veinlets. Upper 3 feet fairly massive. Lower part increasingly sheared and crushed. 2-3% FeOx → sulf in veinlets & fissures. All oxidized

18 13 4276 – 4289 Pєpi. Qtz-biotite-sericite schist w/ silica injection & veinlets oxidized 2-4% FeOx along schistosity. Broken and brecciated, especially near base. Probable base of brecciated & broken unit

4289 – 4297 Tgm argillic minor qtz sericite. No biotite. Somewhat cataclastic texture w/ some crushed zones mod to steep angles. Oxidized. 1-2% FeOx → sulfide. Some silicification near base of unit.

4297 – 4307 T biotite qtz mon porp. Argillic alt with minor qtz-sericite, minor qtz veining. <1% FeOx.

4307 – 4320 Tgm aplitic w/ some bio gmp & qtz-biotite schist. Weak argillic; some silicification. <1% FeOx, mainly in silicified & veinlet areas. Oxidized 4317 base of intense oxidation.

A-2W Continued — (2)

Oxidized

mor. 4320 – 4330 pt Pinal schist. Dense qtz-biotite, fresh, cut by numerous qtz veinlets; pyrite, minor cpy, partially oxidized.

4330 – 4337. Tgm. salmon colored, aplitic with disseminated pyrite and chalcocite replacement, minor oxidation.

4337 – 4357 pt Pinal schist + Tgm intr. Dense qtz biotite, fresh, cut by numerous qtz veinlets. Minor pyrite & rare chalcocite. Sheared gouge @ 4341; Tgm aplitic alt w/ minor veinlets & disseminated pyrite & chalcocite.

4357 – 4364. pt Pinal. Foliated qtz biotite with qtz. veinlets & silica filled pres. w/ minor pyrite, cc. & bornite.

4364 – 4374 pt Pinal Foliated qtz. biotite w/ increased qtz veining & sericite, dense in py-cc. bornite. Broken-gouge zone at base

4374 – 4410 pt Pinal Filled pres. qtz with qtz veining & sericite. Seams & minor veins of pyrite with some bornite-cc. One foot of biotite gmp @ 4396 – 4397.; aplitic gmp @ 4408 – 4410 with seams & disseminated py, cc, born.

4410 – 4436 pt Pinal increased qtz veining & stockwork w/ increased py, cc, born. Gouge seam at 4436.

4436 – 4475 pt Pinal foliated, filled pres. type with qtz veining & stockwork parallel to schistosity @ 45-60° py cp bornite along filled pres qtz. with up to 2-3% total sulfide. Fringe under Tgm @ 4458 & 4460. Few gouge zones

4475 – 4488. pt Pinal foliated filled pres w/ qtz, some sericite veining. Increased shearing, some brecciation, & gouge zones. Sulfide content same.

4488 – 4512. Tgmp, some biotite; aplitic & qtz, sericite altered with minor seams of qtz & some qtz overgrowths. py, cp, bor, & cc in numerous shear veinlets & disseminated. Intense zone cataclastic texture with numerous shear zones & gouge zones @ end of core.

A-2W continued (3)

4512 – 4516 pt pinch. Silt & sm qtz, w/ qtz-sericite bleached veinlets with py, cc.

4516 – 4519½ Silica ... incipient Tgm & included pt pi completely overprinted with silica, devoid of few veinlets (qtz-chlorite) with py, cp, cc.

4519½ – 4521 pt pi very broken, minor py, cp, cc.

4521 – 26 Tgmp, brecc. argillic & minor qtz-sericite, no qtz veining, highly fractured, sparsely disseminated gouge. minor py, ~~cp, cc~~ with very minor cp & cc film.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY _____ PAGE 4 of _____

MINING DISTRICT _____ DRILL HOLE A-2W DATE _____

COUNTY, STATE _____ FINAL DEPTH _____ LOG BY [illegible]

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
4521	4528	Tgmp	Biotite. Argillic & minor qtz-sericite, one qtz vein,	badly fractured, also argillic	
			gouge. Minor py with very minor cp & cc below.		hoof foot gouge at bottom. 1% sulf.
4528	4542	Tgmp	Biotite. Argillic & minor qtz-sericite, some smoky qtz veins with py, cp & moly.		
			also disseminated pyrite. 1½ foot gouge zone ~~[illegible]~~ @ 4538½-4540.		2-4%
4542	4544	pCpi w/ minor Tgm	& lithic clasts & masses. Increased milky smoky qtz		Increased qtz-sericite
			alteration with qtz veins, & pods of py, cp, & molybdenite. Crushed shear zones @ 4550-53,		
			4555, & 4561-62, 4564 & 4565-66. Heavy sulfide 1% 6" qtz moly-cp vein @ 4557.		
4566	4578	Tgmp & included pCpi	All incipiently altered to qtz-sericite with qtz veinlets & incipient flooding		
			py, cp & moly disem & min. veinlet & masses.		2-3%
4578	4603	pCpi	Numerous veinlets of qtz & areas of incipient qtz-sericite alteration. Diss & veinlet		
			py, cp & minor moly, & minor specularite. Badly sheared & gouge @ 4582-4598.		1" cp veinlet @ 4593.
4603	4613	pCpi	Blocked biotite schist set in qtz flooding & veining. diss & veinlet py, cp, some specularite		1-2% sulfides.
4613	4622	fault gouge.	Heavy gouge and broken pCpi with qtz seams and diss-veinlet py, cp.		
4622	4630	pCpi	Qtz biotite schist w/ qtz seams & minor py, cp. Badly broken & gouge.		less 1% sulfides.
4630	4639	pCpi	Qtz biotite schist with qtz seams. Minor diss. but 1/16-1/8" veins of py, minor cp.		less 1% sulf.
4639	4646	Tgm	Silicified with few glassy biotite flakes. Very weakly argillic alt but		
			cut by crisscrossing veinlet 1/8" - 1" of qtz sericite w/ diss & veinlet py, minor cp.		
			1% sulfide. Includes 1 ft schist bands @ 4641 & 4643.		
4646	4658	pCpi	Qtz biotite schist, relatively fresh, cut by qtz vein. Minor (<1%) pyrite & cp.		
4658	4678	Tgm	with minor schist zones, badly argillic altered (<1% sulfide) with minor disem. py and		
			cut by veinlet of qtz-sericite with diss. py & veinlet py, rare cp (1% total sulf.).		
4678	4692	pCpi	Qtz biotite, cut by numerous, mainly barren qtz veins, minor py.		Last two feet is Tgm as above.
4692	4693	Vein.	Qtz, pyrite, molybdenite vein, with shear & fault slips.		Qtz-sericite alt. fracturing @ 45° to core
4693	4729	pCpi	Qtz biotite schist cut by qtz veinlets, mostly barren, some	py, rare cp.	Qtz, py, moly veins @ 4707-4708, 4722,
			minor Tgm fingers @ 4713, 4718, with minor sulfide		

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY _____

MINING DISTRICT _____

COUNTY, STATE _____

DRILL HOLE A-2W

FINAL DEPTH _____

DATE _____

LOG BY JWDell

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
4729	4736	Vein	Crushed schist with quartz, py, cp, moly; abundant gouge; minor sphalerite, fluorite		45-60° to core
4736	4748	pepi	Qtz biotite, fresh, cut by barren qtz; minor py. 3" Cp-bem veinlet (fault) @ 4746.		
4748	4769	pepi (65%) + Tgm (35%)	Schist as above, minor py veinlets with qtz veinlets mainly barren; Tgm veinlets altered but cut by qtz-sericite veinlets, minor py cp.		
4769	4809	pepi	Qtz biotite, fresh, cut by barren qtz, minor pyrite & cp. + specularite. Shear, crushed zone 4769-4772 at 45° to core. Weak incipient qtz-sericite development in narrow zones throughout.		
4809	4830	pepi	Qtz biotite, mostly weak incipient qtz-sericite with qtz stringers & py, cp, specularite 1% total sulfides. Entire zone with numerous slips, crushed zones & ~~minor~~ gouge development.		
4830	4834	fault	Crushed & gouge zone in pepi. Minor py, specularite; 2" cp-specularite vein at end. Slickensided.		
4834	4848	pepi	Qtz-biotite, with qtz veinlets & incipient qtz-sericite w/ py, minor cp-specularite. Few gouge zones.		
4848	4855	Tgm	with minor pepi. Re-modified argillic alt cut by qtz & qtz-sericite veinlets. Minor py, cp.		
4855	4868	pepi-Tgm	All incipient qtz & qtz-sericite alt with py-cp (1%) and increasing specularite; cut by numerous high angled (+60°) shear, gouge zones.		
4868	4906	pepi-Tgm	Qtz & qtz-sericite alteration cut by 60° to vertical veinlets of xln specularite & masses of cp & py (3% total sulfides-~~sericite~~). Entire zone cut by gouge & high angled fractures, increasing at end.		
4906	4940	Tgm	Minor schist; argillic alt with silica overflooding & all cut by qtz & qtz-sericite veinlets & gouges. Biotite partly chloritized, minor 1% py, cp, & specularite. Cut by few shears & gouge zones.		

April 3, 1972

Assay Results

Superior East

Core boxes outlined in purple for holes

A-2
A-4
WCA-1A

ASSAY RESULTS DRILL HOLE A-1
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Pb,%	Zn,%	Mo,%	Cu,%
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	
A-2-2	Tw	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		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'	0.08	

ASARCO Sample No.		Depth	Interval	Total Cu, %	Weighted Average	
A-2-42		3217-3248	31'	0.10		
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	Tw	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		Mo
A-2-64		3873-3904	31'	0.03		ppm
A-2-65		3904-3935	31'	0.03		26
A-2-66		3935-3964	29'	0.02		21
A-2-67	Tqm	3964-3995	31'	0.12		37
A-2-68		3995-4027	32'	0.03		52
A-2-69		4027-4055	28'	0.04		66
A-2-70		4055-4076	21'	0.04		89
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	Tqm	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	Tqm & pЄpl	4200-4210	10'	0.01		20

ASARCO Sample No.		Depth	Interval	Total Cu, %	Weighted Average	Mo ppm
A-2C-16	Tqm & pЄpi	4210-4220	10'	0.16		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	oxidized leach	32
A-2C-22		4270-4280	10'	0.01		23
A-2C-23		4280-4290	10'	0.01	fault	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	sulfides	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	pЄpi	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

HAWLEY & HAWLEY

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

Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	AARL % Cu ~~Zinc %~~	Mo. %
A-2C-25				0.01	trace	
26				0.20	0.22	
27				0.20	0.20	
28				0.11	0.11	
A-2C-29				0.37	0.37	
A-2C-30				0.65	0.63	
31				0.40	0.39	
32				0.42	0.40	
33				0.39	0.36	
A-2C-34				0.38	0.35	
A-2C-35				0.43	0.42	
36				0.54	0.51	
37				0.30	0.31	
38				0.38	0.35	
A-2C-39				0.29	0.27	
A-2C-40				0.37	0.33	
41				0.50	0.48	
42				0.55	0.49	
43				2.71	2.40	
44				0.43	0.42	
A-2C-45				1.09	1.01	
Composites:				Au	Ag	
A-2C-25, 26, 27, 28, 29	< 0.005	0.03		trace	0.07	
A-2C-30, 31, 32, 33, 34	< 0.005	0.05		trace	0.04	
A-2C-35, 36, 37, 38, 39	< 0.005	0.11		trace	0.10	
A-2C-40, 41, 42, 43, 44	None	0.01		trace	0.10	

Comparison Assays submitted on same pulps

21 Cu, verified,	@$3.25	$ 68.25
4 Au & Ag "	@$7.25	29.00
20 Composites	@$0.25	5.00

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

REMARKS:

Verified analysis

Analysis Coll. by H. E.

REGISTERED ASSAYER CERTIFICATE NO. 6734 Tucson Arizona U.S.A.

Preparation	$ 5.00
Analysis	$ 97.25
	$ 102.25

ACC: AMERICAN SMELTING & REFINING CO.

Date Spl. Received 4/7/72 | Date Compl. 4/10/72 | TUC 346098

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE April 3, 1972

OMPOSITES

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
-2C 25-29	Trace	0.07	4300 -	4350	start of sulfide zone		
30-34	Trace	0.04	4350 -	4400			
35-39	Trace	0.10	4400 -	4450			
40-44	Trace	0.10	4450 -	4500			

REGISTERED ASSAYER
Arizona U. S. A.
4/3/72

Invoice # 7524

CHARGES $ 16.00

ASSAYER · CHEMIST

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average
Rotary Cuttings:					
A-4-14	2212-2236	24'	0.01		573 ft. @ 0.05% Cu
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		353 ft. @ 0.12% Cu
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		

Tw

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.		Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Rotary Cuttings (cont'd.):							
A-4-36	Tw	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	Tw	3593-3610	17'	0.09		1,487 ft. @ 0.08% Cu	
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			

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Core Samples	(cont'd.):					
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 - .002 oz/ton Au, 0.10 oz/ton Ag

SUPERIOR EAST PROJECT

ASARCO Sample No.		Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Core Samples (cont'd.):							
A-4-C40	Tw	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			
A-4-C56		5970-5980	10'	0.47		170 ft. @ 1.12% Cu	
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			
A-4-C74		6150-6160	10'	0.29			
A-4-C75		6160-6170	10'	0.26			
A-4-C76		6170-6180	10'	0.44		190 ft. @ 0.35% Cu	
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'	0.23			
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.		Depth	Interval	Total Cu, %	Oxide Cu, %	Mo, %	Weighted Average	Au & Ag
Core Samples (cont'd.):								
A-4-C92	Lms Slide Block	6330-6340	10'	1.05			120 ft. @ 3.04% Cu	
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	Tw	6440-6450	10'	1.09			30 ft @ 0.59 %Cu	
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	Lms & Lms bx	6490-6500	10'	0.72			90 ft.@0.81% Cu	
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	fault	6570-6580	10'	1.58			30 ft. @ 0.21 %Cu	
A-4-C117	Intrusive	6580-6590	10'	0.14		.0044	84 ft.@ 0.16% Cu	
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		

210 ft. @ 2.14% Cu

Composite .003 oz/ ton Au, 0.13 oz/ ton Ag

Composite .002 oz/ ton Au, 0.10 oz/ ton Ag

Note: 5080-6540 = 1460 feet of 0.76% Cu
5680-6540 = 860 feet of 0.98% Cu

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 ~~CDA~~-1A-1		4002-4020	18'	144	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					Shaly [illegible]
-9	Pn	4800-4820	20'	7	156	5					Shaly [illegible]
-10		4900-4920	20'	5	123	7	CaO / SiO_2				Shale and [illegible]
-11		5194-5202	8'	31	74	10	16.9 1.7	28.1	14.5	0.80	Dolomitic [illegible]
-12		5202-5210	8'	19	56	13	3.7 8.3	30.7	20.8	0.80	Replaced Tert
-13	Me	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 10.2	30.5	21.0	0.75	Dolomitic [illegible]
-15		5401-5410	9'	33	93	9	2.5 12.7	31.8	20.0	0.80	Replaced Tert
-16		5410-5419	9'	21	47	9	3.2 9.7	30.9	22.0	0.60	Dolomitic [illegible]
-17		5575-5595	20'	42	48	9	13.7 3.2	44.2	2.3	0.95	Shaly [illegible]
-18	Dm	5595-5605	10'	39	46	12	36.1 0.6	20.2	9.9	1.25	Replaced Tert

ASSAY RESULTS DRILL HOLE DCA-1A (Cont'd.)
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Cu ppm	Zn ppm	Mo ppm	SiO_2 %	CaO %	MgO %	Total Fe, %	Rock Type
DCA-1A-19	5650-5660	10'	20	53	11	6.5 4.7	30.3	19.9	0.90	Replaced Skarn
-20	5709-5719	10'	337	30	12	10.8 2.6	28.1	18.2	0.95	Replaced Skarn
			271	552	10 8	—				
			274	554	11 (10)	98.5	326.5	149.8	8.75	
						9.9	32.7	15.0	0.88	7.8
										CaO / SiO_2
actual avg.						11.9	28.2	17.8	0.94	
						5\59.6 =	5\141.1	5\88.8	5\4.70	5.8
Repl. (5)			30	56		7.7	29.8	19.2	0.72	
						3\23.1 =	3\89.5	3\57.5	3\2.15	7.2
Dol. (3)			23	63		13.7	44.2	2.3	0.95	3.2
Stockpiles (1)			42	48		2.1	51.7	1.2	0.35	24.6
Ins (1)			11	37						

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	
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	
M-1A-50	3040-3060	20'	0.03		
M-1A-51	3140-3160	20'	0.13	262 ft. @ ± 0.09% Cu	
M-1A-52	3240-3260	20'	0.09		
M-1A-36	3350-3360	10'	0.04		
M-1A-37	3360-3370	10'	0.05		
M-1A-1	3370-3380	10'	0.305	150 ft. @ 0.154% Cu	Composite - Trace Au and 0.02 oz./ton Ag
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		

2428 Tev / Tw

2920 Tw / Qm slide

3108 Tw

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	
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	858 ft. @ ± 0.08% Cu	
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		
	TD				

4898 Tw / Pn

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT Pioneer
COUNTY, STATE Pinal County, Arizona

DRILL HOLE A-2W (Wedge)
FINAL DEPTH 4940 NW1/4 NE1/4 SE1/4
Sec. 22, T 1 S, R 13 E

DATE 4/19/72 - 5/17/72
LOG BY J.D.Sell

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
		NOTE: Drill hole A-2W is wedged off of the original drill hole A-2.			
4230	4238	pCpi	Limonite, 1-4% after sulfides. Minor leached chalcocite qtz. veins.	Silica and qtz-sericite in schist & monzonite. Argillic in monzonite.	Monzonite dike @ 4233-4236. All rock broken somewhat sheared & crushed.
4238	4276	Tqm	Oxidized, leached, 1-3% after sulfides. Minor leached chalcocite. Veinlets & disseminated.	Argillic with some qtz, qtz-sericite veinlets.	Increased shearing at base.
4276	4289	pCpi	Oxidized, leached, 2-4% after sulfides.	Qtz-sericite and silica injection and veinlets.	Crushed and brecciated.
		Probable	base of faulted section.		
4289	4320	Tqm	Oxidized, leached, 1-2% after sulfides. Minor qtz veining.	Argillic with weak qtz-sericite, some silicification.	Base of intense oxidation @ 4317.
4320	4357	pCpi & Tqm	Qtz & pyrite, minor chalcocite.	Argillic in monzonite. Silica in monzonite & schist.	Minor oxidation in monzonite @ 4330-4337.
4357	4488	pCpi	Filter-press quartz & veining with py, cp, cc & bornite, & disseminated.	Qtz & minor qtz-sericite as stockwork, veining.	Tqm @ 4396-4397, aplitic @ 4408-4410. Few gouge seams.
4488	4512	Tqm	Py, cp, cc, bornite in shear veinlets & disseminated.	Argillic w/ qtz-sericite & qtz veinlets & flooding.	Entire zone cataclastic texture with numerous slips, shears, & gouge zones.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT
COUNTY, STATE

DRILL HOLE A-2W
FINAL DEPTH

DATE
LOG BY

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
4512	4521	pCpi	Filter press qtz & complete silica overflooding @ 4516-4519. Py, minor cp, cc.	Qtz & minor qtz-sericite.	Stockwork qtz.
4521	4528 ~~4526~~	Tgm	Minor diss. py, less cp, cc films.	Argillic, minor qtz-sericite.	No qtz veining; highly fractured, steep angled gouge.
4528	4542	Tgm	Smoky qtz veinlets w/ py, cp, moly, some dissemination. 2-4% sulf.	Decreased qtz, and qtz-serici	
4542	4578	Tgm and pEpi	Smoky qtz veinlets (w/ py, cp, moly & molybdenite) also dissem. 2-3% sulfides	Qtz veinlets and pervasive incipient qtz-sericite	Crushed and shear zones @ 4550-4553; 4555; 4561-4562; 4564; and 4565-4566.
4578	4613	pEpi	Dissem. & veinlet py, cp, minor moly & specularite. 1-2% sulf.	Qtz veining & flooding with incipient qtz-sericite	Gouge & shear zone at 4582-4598. Mineral decreasing below zone.
4613	4622	Fault	Heavy gouge and crushed pEpi with qtz seams & dissem. veinlets of py & cp.		
4622	4639	pEpi	Minor dissem & veinlets of py; very minor cp. <1% sulf.	Minor qtz seams	Upper eight feet badly broken and gouge.
4639	4646	Tgm	Intersecting qtz veinlets w/ py, minor cp.	Very weak argillic w/ intersecting qtz-sericite veinlets	Included schist bands one foot wide at 4641 and 4643.
4646	4658	pEpi	Minor (<1%) py & cp.	Fresh, cut by few qtz veins.	
4658	4678	Tgm	Minor diss py & qtz veins w/ py, rare cp.	Weak argillic; few qtz-sericite veinlets & qtz veinlet	1% total sulfides; minor inclusion of schist.
4678	4748	pEpi	Minor pyrite throughout; with discreet qtz-py-cp, moly, specularite veins @ 4692-4693, 4707-4708, 4722, 4729-4736 @ 45-60° to core.	Barren qtz veinlets, except in vein areas where qtz & qtz-sericite are associated	Essentially fresh qtz-biotite schist with dikelets of Tgm @ 4690-4692, 4713, 4718. Fault vein @ 4746.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Superior East Project
MINING DISTRICT
COUNTY, STATE

DRILL HOLE A-2W
FINAL DEPTH

DATE
LOG BY

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
4748	4830	pЄpi & minor Tgm	Barren qtz veinlets, increasing with py, cp, specularite towards bottom (1% sulfides) in qtz-sericite veinlets	Schist fresh at top, increasing incipient qtz-sericite & veinlets towards base. Tgm weak argillic.	Increasing crushed and shear zones with gouge development toward base.
4830	4834	Fault	Minor py, cp, specularite		Steep angled zone, +60° to core
4834	4848	pЄpi	Minor py, cp, specularite	qtz veinlets, weak qtz-sericite	Few gouge zones
4848	4940	Tgm (73%) and pЄpi (27%)	Increasing py, cp, specularite, qtz veining and silica overflooding from top to bottom. Up to 3% sulfides in zones.	Moderate argillic alt in Tgm, increasing qtz veins & qtz-sericite alt throughout. Silica overflooding towards base. Biotites partly chloritized.	Tgm increases to base, last 34 feet is Tgm. Entire zone cut by numerous slips, shears, & gouge zones, at +60° to core.

Drill pipe stuck seven feet off of bottom. Pipe cut at 4115 feet and recovered. 818 feet of NQ (NX) rods, connectors, and one barrel lost.

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company DATE May 3, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2-W 1			Trace					
2			Trace					
3			Trace					
4			Trace					
5			Trace					
6			0.01					
7			Trace					
8			Trace					
9			0.02					
10			0.19					
11			0.72					
12			0.66					
13			0.32					
14			0.41					
15			0.25					
16			0.60					
17			0.53					
18			0.38					
19			0.28					
20			0.36					
21			0.30					
22			0.30					
23			0.25					
24			0.37					
25			0.45					

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 5/3/72 Arizona U. S. A.

Pete S. Flores

Invoice # 7625

CHARGES $ 50.00

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company

DATE May 3, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2-W 26			0.32					
27			0.67					
28			0.24					
29			0.07					

REGISTERED ASSAYER
CERTIFICATE NO. 6852
PETE S. FLORES
Date Signed 5/3/72
Arizona U. S. A.

Pete S. Flores

Invoice # 7625

CHARGES $ 8.00

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 4, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2-W 1						16		
2						23		
3						14		
4						17		
5						21		
6						14		
7						18		
8						7		
9						24		
10						8		
11						12		
12						12		
13						10		
14						10		
15						11		
16						64		
17						15		
18						11		
19						24		
20						9		
21						12		
22						9		
23						11		
24						19		
25						10		

REGISTERED ASSAYER CERTIFICATE NO. 6652 PETE S. FLORES Date Signed 5/4/72 Arizona U. S. A.

Invoice # 7634

CHARGES $ 50.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 4, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2-W 26						15		
27						12		
28						11		
29						10		

REGISTERED ASSAYER CERTIFICATE NO. PETE S. CLARK Arizona U.S.A.

Pete S. Clark 5/4/72

Invoice # 7634

CHARGES $ 8.00

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 11, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2-W 30			0.13			21		
31			0.12			68		
32			0.08			5		
33			0.46					
34			0.48			66		
35			0.18			122		
36			0.55			10		
37			0.43			10		
38			0.19			11		
39			0.10			8		
40			0.06			18		
41			0.14			25		
42			0.13			77		

REGISTERED ASSAYER CERTIFICATE No. 6852 PETE S. FLORES Date Signed 5/11/72 Arizona U. S. A.

Invoice # 7661

CHARGES $ 50.00

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 10, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2W-33						.0928		

REGISTERED ASSAYER CERTIFICATE 8852 PETE S. FLORES Date Issued Arizona U. S. A.

Pete S. Flores 5/10/72

Invoice # 7661

CHARGES $3.25

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE May 13, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2W-43			0.13			8		
A-2W-44			0.25			18		
A-2W-45			0.07			18		
A-2W-46			0.12			2000 +		
A-2W-47			0.17			2000 +		
A-2W-48			0.10			12		
A-2W-49			0.05			10		
A-2W-50			0.13			12		
A-2W-51			0.30			6		
A-2W-52			0.28			14		
A-2W-53			0.07			18		
A-2W-54			0.09			13		

Invoice # 7680

CHARGES $ 48.00

REGISTERED ASSAYER
CERTIFICATE NO.
ARIZONA
PETER J. FLORES
Date Signed 5/13/72
Arizona U.S.A.

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE May 13, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2W-46						.0295		
A-2W-47						.0257		

Invoice # 7680

CHARGES $ 6.50

REGISTERED ASSAYER CERTIFICATE NO. 6042 PETER J. FLORES Date Signed 5-13-72 Arizona U. S. A.

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY James D. Sell DATE May 19, 1972

SINGLE ANALYSIS ☐

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	% Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	ppm Mo	S	
A-2W-55			0.08								15		4770 - 4780
-56			0.09								11		80-
-57			0.20								37		90-
-58			0.82								26		4800-
-59			0.41								21		10-
-60			0.26								19		20-
-61			0.50								8		30-
-62			0.11								11		40-
-63			0.19								15		50-
-64			0.34								32		60-
-65			0.37								7		70-
-66			0.63								79		80-
-67			1.18								24		90-
-68			0.56								17		4900-
-69			0.07								10		10-
-70			0.10								13		20-
A-2W-71			0.54								73		4930 - 4940

3225 East 46th Street

Phone 624-00

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company DATE May 3, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-2-W 1			Trace					
2			Trace					
3			Trace					
4			Trace					
5			Trace					
6			0.01					
7			Trace					
8			Trace					
9			0.02					
10			0.19					
11			0.72					
12			0.66					
13			0.32					
14			0.41					
15			0.25					
16			0.60					
17			0.53					
18			0.38					
19			0.28					
20			0.36					
21			0.30					
22			0.30					
23			0.25					
24			0.37					
25			0.45					

Invoice # 7625

CHARGES $ 50.00

REGISTERED ASSAYER CERTIFICATE 69 ARIZONA U.S.A. DATE 5/3/72

Peter D. Flores

ASSAYER - CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company DATE May 3, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
-2-W 26			0.32					
27			0.67					
28			0.24					
29			0.07					

REGISTERED ASSAYER FLORES Arizona U. S. A.

Pete S. Flores 5/3/72

Invoice # 7625

CHARGES $ 8.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-00-

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 4, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
A-2-W 1						16		
2						23		
3						14		
4						17		
5						21		
6						14		
7						18		
8						7		
9						24		
10						8		
11						12		
12						12		
13						10		
14						10		
15						11		
16						64		
17						15		
18						11		
19						24		
20						9		
21						12		
22						9		
23						11		
24						19		
25						10		

Pete S. Flores 5/4/72

Invoice # 7634

CHARGES $ 50.00

ASSAYER-CHEMIST

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 4, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
2-W 26						15	
27						12	
28						11	
29						10	

5/4/72

Invoice # 7634

CHARGES $ 8.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 11,

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-2-W 30			0.13			21	
31			0.12			68	
32			0.08			5	
33			0.46				
34			0.48			66	
35			0.18			122	
36			0.55			10	
37			0.43			10	
38			0.19			11	
39			0.10			8	
40			0.06			18	
41			0.14			25	
42			0.13			77	

REGISTERED ASSAYER PETE S. KNIT ARIZONA 5/11/72

Invoice # 7661

3226 East 46th Street

Phone 624

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85

SAMPLE SUBMITTED BY American Smelting and Refining Company Tucson

DATE May 10, 19

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-2W-33						.0928	

Peter S. Ilner

5/10/72

3226 East 46th Street

Phone

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE May 13,

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-2W-43			0.13			8	
A-2W-44			0.25			18	
A-2W-45			0.07			18	
A-2W-46			0.12			2000 +	
A-2W-47			0.17			2000 +	
A-2W-48			0.10			12	
A-2W-49			0.05			10	
A-2W-50			0.13			12	
A-2W-51			0.30			6	
A-2W-52			0.28			14	
A-2W-53			0.07			18	
A-2W-54			0.09			13	

Peter S. Flower

5/13/72

Invoice # 7680

CHARGES $ 48.00

3226 East 46th Street

Phone 6

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE May 13, 1

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
A-2W-46						.0295	
A-2W-47						.0257	

Invoice # 7680

CHARGES $ 6.50

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting and Refining Company

DATE May 24, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON	
55			0.08			15		
56			0.09			11		
57			0.20			37		
58			0.82			26		
59			0.41			21		
60			0.26			19		
61			0.50			8		
62			0.11			11		
63			0.19			15		
64			0.34			32		
65			0.37			7		
66			0.63			79		
67			1.18			24		
68			0.56			17		
69			0.07			10		
70			0.10			13		
71			0.54			73		

REGISTERED ASSAYER CERTIFICATE NO. 685 PHILIP S. FLORES 5/24/72 Signature Signed Arizona U. S. A.

Invoice # 7712

CHARGES $ 68.00

ASSAYER - CHEMIST

3226 East 46th Street

Phone 624-004

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY The American Smelting and Refining Company DATE May 24, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM. MOLYBDENUM	PERCENT IRON	
A-2C-46			0.25			32		

REGISTERED ASSAYER CERTIFICATE NO. 8842 ASSAYS FLUXES Date 5/24/72 Tucson Arizona U. S. A.

Invoice # 7712

CHARGES $4.00

ASSAYER-CHEMIST

Assay Charges: May

AARL	May 4	$50.00	(A-2W-1 thru 25)	
"	" "	8.00	(26 thru 29)	
AARL	May 3	$50.00	(A-2W-1 thru 25)	Cu
"	"	8.00	(26 - 29)	Cu
"	May 4	50.00	(-1 - 25)	Mo
"	"	8.00	(26-29)	Mo
"	May 10	3.25	(33)	Mo
"	May 11	50.00	(30 - 42)	Cu-Mo and 33
"	May 13	48.00	(43-54)	Cu-Mo.
"	2 "	6.50	(46-47)	dup Mo%
		223.75		

Add May 30th ??

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

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 %	~~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. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875

P.O. BOX 7517
TUCSON, ARIZONA 85725

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

American Smelting

JOB # 015220 Continued
RECEIVED
REPORTED

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	XXXX		MOLYBDENUM %
A-7:					A-Cold Oxide % Cu.	B-Hot Oxide % Cu.	
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

J D Sell

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

May 24, 1974

MEMORANDUM TO GEOLOGISTS

Assays -
American Analytical

Effective immediately, Mrs. Bormolini is the only person authorized to obtain assay data by phone. If you have special need for assays sooner than received by ordinary mail, inform Mrs. Bormolini of your needs.

W. L. Kurtz

W. L. Kurtz

WLK:lb

cc: Mr. Pete Flores
American Analytical & Research Labs
3441 East Milber
Tucson, Arizona 85714

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 1, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A-4-C-8			1.17					0.66
A-4-C-9			0.31					0.07
A-4-C-10			0.93					0.34
A-4-C-11			0.57					0.27
A-4-C-12			0.19					0.04
A-4-C-13			0.93					0.49
A-4-C-14			0.83					0.59
A-4-C-15			0.97					0.35
A-4-C-16			0.81					0.46
A-4-C-17			0.91					0.44
A-4-C-18			1.22					0.65
A-4-C-19			0.79					0.40
A-4-C-20			0.15					0.10
A-4-C-21			0.06					
A-4-C-22			0.05					
A-4-C-23			0.03					
A-4-C-24			0.27					
A-4-C-25			0.65					
A-4-C-26			0.04					
A-4-C-27			0.04					
A-4-C-28			1.42					
A-4-C-29			0.77					

K.V.D.S.
NOV 5 1971

REGISTERED ASSAYER
CERTIFICATE NO. 1352
PETER S. FLORES
Date 11/1/71
Signed
Arizona U. S. A.

Invoice # 6930

CHARGES $ 59.00

OK PBC
MA 0010
5410-25

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY R. B. Cummings - ASARCO DATE Sept. 1, 1971

SINGLE ANALYSIS ☑ ~~[illegible]~~

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.	
A-1-1	Au-Ag			✓	✓						✓		You have paper
1-2				✓	✓						✓		from previous
1-3				✓	✓						✓		Cu analysis
1-4				✓	✓						✓		"
1-5				✓	✓						✓		"
1-6			✓	✓	✓						✓		Samples being
1-7			✓	✓	✓						✓		submitted
1-8			✓	✓	✓						✓		"
1-9			✓	✓	✓						✓		
1-10			✓	✓	✓						✓		
1-11			✓	✓	✓						✓		
1-12			✓	✓	✓						✓		
1-13			✓	✓	✓						✓		
1-14			✓	✓	✓						✓		
1-15			✓	✓	✓						✓		
1-16			✓	✓	✓						✓		
1-17			✓	✓	✓						✓		
1-18			✓	✓	✓						✓		
A-1-19			✓	✓	✓						✓		

Composite of all samples & fire-assay

P.S. Please send several packets of your assay form (this type of sheet) for Mr. Cummings use. Thanks

TO W. L. Kurtz & J. D. Sell

FROM R. B. Cummings

SUBJECT

DATE 10 / 8 / 71

MESSAGE A4 is at 5783' in Whitetail

The haven't received the assay results yet. The samples containing Cuprite all went over 1% copper.

Sample No.		% Copper	% Oxide Copper	
A-4-C4	5070'-5080'	0.03%	0.01%	
A-4-C5	5080'-5090'	1.36%	1.01%	0.35
A-4-C6	5090'-5100'	1.24%	0.93%	0.31
A-4-C7	5195'-5215'	1.38%	0.90%	0.40

SIGNED

REPLY

Lois

SIGNED

DATE / /

SEND PARTS 1 AND 3 WITH CARBON INTACT - PART 3 WILL BE RETURNED WITH REPLY.

Rediform® 4S 472

DETACH AND FILE FOR FOLLOW-UP

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

PROJECT # AR - 40.6

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 16, 19

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-56			0.47					
C-57			0.63					
C-58			0.13					
C-59			0.19					
C-60			0.39					
C-61			3.81					
C-62			1.91					
C-63			0.11					
C-64			0.04					
C-65			0.18					
C-66			0.94					
C-67			2.15					
C-68			1.91					
C-69			2.04					
C-70			2.38					
C-71			1.32					
C-72			0.36					
C-73			0.19					

Invoice # 6700

CHARGES $ 36.00

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 11/16/71 Arizona U.S.A.

ASSAYER CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

Project # AR 40.6

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 18, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A-4-C-74			0.29					
A-4-C-75			0.26					
A-4-C-76			0.44					
A-4-C-77			0.60					
A-4-C-78			0.14					
A-4-C-79			0.45					
A-4-C-80			0.76					
A-4-C-81			0.47					
A-4-C-82			0.65					
A-4-C-83			0.38					
A-4-C-84			0.19					
A-4-C-85			0.31					
A-4-C-86			0.36					
A-4-C-87			0.23					
A-4-C-88			0.30					
A-4-C-89			0.26					
A-4-C-90			0.19					
A-4-C-91			0.11					
A-4-C-92			1.05					
A-4-C-93			0.68					
A-4-C-94			1.09					
A-4-C-95			0.59					
A-4-C-96			1.06					
A-4-C-97			4.08					1.17
A-4-C-98			6.56					5.47

Invoice # 6704

CHARGES $ 54.00

REGISTERED ASSAYER CERTIFICATE NO. 5852 PETE S. FLORES Date Signed 11/19/71 Arizona U. S. A.

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

Project # AR 40.6

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE November 18, 19

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-99			4.30					
A-4-C-100			0.10					
A-4-C-101			0.24					
A-4-C-102			0.57					
A-4-C-103			1.09					
A-4-C-104			0.57					
A-4-C-105			0.84					
A-4-C-106			0.36					
A-4-C-107			1.26					
A-4-C-108			0.72					
-4-C-109			1.16					
A-4-C-110			0.69					
A-4-C-111			0.28					
A-4-C-112			2.55					

Invoice # 6704

CHARGES $ 28.00

REGISTERED ASSAYER CERTIFICATE NO. PETE S. FLORES Date Signed 11/18/71 Arizona U.S.A.

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE November 19, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-117			0.14			.0044		
A-4-C-118			0.20			.0122		
A-4-C-119			0.81			.0045		
A-4-C-120			0.05			.0026		
A-4-C-121			0.04			.0018		
A-4-C-122			0.03			.0023		
A-4-C-123			0.04			.0012		
A-4-C-124			0.05			.0040		
A-4-C-125			0.05			.0023		

K.V.D.S. NOV 26 1971

REGISTERED ASSAYER CERTIFICATE NO. 6952 PETE S. FLORES Date Signed 11/19/71 Arizona U. S. A.

Invoice # 7011

CHARGES $ 47.25

ASSAYER-CHEMIST

226 East 46th Street

INVOICE

No. 7019

K.V.D.S.
NOV 24 1971

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

AMPLE SUBMITTED BY American Smelting & Refining Company See

DATE November 23, 1971

SAMPLE MARKED	ANALYSIS	CHARGES
COMPOSITES		
A-4-C-117-A-4-C-125	Au, Ag	$4.00
# 1 7062-7076, # 2 A-4-C-5,6,8,9,10, 11, # 3 A-4-C- 108-109,110,111, 112	Au, Ag	12.00
36 Samples	Compositing Charge	7.20
	Total	$23.20

PROVED FOR PAYMENT

: James W Sell (Signature)

Superior East
MA-0010-04

REGISTERED ASSAYER
CERTIFICATE NO.
PETE S. FLORES
Date Signed 11/23/71
Arizona U. S. A.

ASSAYER - CHEMIST

Invoice # 7019

CHARGES $ 12.00

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE November 23, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
# 1 7062-7076	Trace	0.02		M-1A	from 3370 to 3520 ft			
# 2 A-4-C-C5-6,8,9,10,11	.002	0.10						
# 3 A-4-C-108-109,110,111,112	.003	0.13						

Invoice # 7019

CHARGES $ 12.00

REGISTERED ASSAYER CERTIFICATE No. 5652 PETE S. FLORES Date Signed 11/23/71 Arizona U. S. A.

ASSAYER • CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE November 23, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-117-A-4-C-125	.002	0.10						

Invoice # 7019

CHARGES $ 4.00

REGISTERED ASSAYER CERTIFICATE NO. 6350 PAUL S. FLORES Date Signed 11/23/71 Arizona U. S. A.

ASSAYER-CHEMIST

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

Project # AR 40.6

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 26, 197

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-113			0.09					
A-4-C-114			0.47					
A-4-C-115			0.07					
A-4-C-116			1.58					
A-4-C-131			0.12	3583-3610				
A-4-C-132			0.05	3690-3710				
A-4-C-133			0.05	3790-3810				

REVIEW 10/29/71

Invoice # 7030

CHARGES $ 10.50

REGISTERED ASSAYER CERTIFICATE 6852 PETER S. FLORES Date Signed 11/26/71 Arizona U. S. A.

ASSAYER-CHEMIST

226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 26, 1971

SAMPLE MARKED	GOLD OZ/TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4-C-126 ✓			0.20	4890 -	4910			
A-4-C-127 ✓			0.07	4990 -	5010			
A-4-C-128 ✓			0.07	5010 -	5030			
A-4-C-129 ✓			0.07	5030 -	5050			
A-4-C-130 ✓			0.06	5050 -	5070			
A-4-C-134 ✓			0.06	3890 -	3910			
A-4-C-135 ✓			0.18	3990 -	4010			
A-4-C-136 ✓			0.05	4090 -	4110			
A-4-C-137 ✓			0.09	4190 -	4210			
A-4-C-138 ✓			0.05	4290 -	4310			
A-4-C-139 ✓			0.05	4390 -	4410			
A-4-C-140 ✓			0.04	4490 -	4510			
A-4-C-141 ✓			0.16	4590 -	4610			
A-4-C-142 ✓			0.06	4690 -	4710			
A-4-C-143 ✓			0.04	4790 -	4810			
M-IA-38			0.08					
M-IA-39			Trace					
M-IA-40			Trace					
M-IA-41			Trace					
M-IA-42			Trace					
M-IA-43			Trace					

K.V.D. NOV 29

Chief of Mine 11/26/71

Invoice # 7032

CHARGES $ 42.00

C/7 JDX RBC

PLEASE USE INVOICE NUMBER WITH YOUR REMITTANCE

Metallurgical Consulting to the Chemical and Mining Industry

METCON RESEARCH, INC.

PHONE 623-5045

BOX 50225
TUCSON, ARIZONA
85703

American Smelting & Refining Co.
P.O. Box 5747
Tucson, Arizona
ATTN: Mr. Bill Kurtz

INVOICE No. 450

Project No. AR - 40.6

Sample Preparation

K.V.D.S.
DEC 3 1971

Laboratory Services for November, 1971:

73 Samples @ $7.00/ea.	$511.00
(M-I-A-36 & 37) (A-4-C-30 thru A-4-C-36) (A-4-C-56 thru A-4-C-116) (A-4-C-131 thru A-4-C-133)	
Total Due	$511.00

December 2, 1971

crt

APPROVED FOR PAYMENT

By: (Signature)

Supervisor Engr

Order No. ____ Quant. O.K. ____
Ship. Recd. ____ Price O.K. ____
Inv. Recd. ____ Exten. O.K. ____
Fr. ____ Exp. ____ Trk. ____ Mail. ____
Charge ____

INVOICE

No. 7110

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 10, 1971

SAMPLE MARKED	ANALYSIS	CHARGES
DGA-1A-1 - DGA-1-1-3	Geo Chem Cu, Mo, Zn	$13.50

K.V.D.S.
DEC 16 1971

METALLURGICAL LABORATORIES, INC. CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET • SAN FRANCISCO, CALIFORNIA 94103 • AREA CODE 415 863-8575

Qualitative Spectrographic Analysis

Submitted by American Analytical & Research Laboratories 3226 East 46th Street Tucson, Arizona 85713

Date December 16, 1971

Sample of Mineral

P. O. No.

Lab. No. 0151-1

METALS FOUND AND PERCENTAGE RANGE

SAMPLE MARK	LESS THAN 0.01%	.01 TO .10%	.10 TO 1.0%	1.0 TO 10.0%	MAJOR
#1 - 7062 - 7076	Chromium	Copper	Sodium	Aluminum	Silicon
	Vanadium	Barium	Calcium	Iron	
	Boron	Strontium	Titanium	Potassium	
	Bismuth	Zirconium		Magnesium	
	Molybdenum	Manganese			
	Cobalt				
	Nickel				
	Lead				
	Silver				

K.V.D.S.
DEC 23 1971

REMARKS:

METALLURGICAL LABORATORIES, INC.

By _____ SPECTROCHEMIST

METALLURGICAL LABORATORIES, INC. CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET • SAN FRANCISCO, CALIFORNIA 94103 • AREA CODE 415 863-8575

Qualitative Spectrographic Analysis

Submitted by American Analytical & Research Laboratories 3226 East 46th Street Tucson, Arizona 85713

Date December 16, 1971

Sample of Mineral

P. O. No.

Lab. No. 0151-2

METALS FOUND AND PERCENTAGE RANGE

SAMPLE MARK	LESS THAN 0.01%	.01 TO .10%	.10 TO 1.0%	1.0 TO 10.0%	MAJOR
#2 A4C5-A4C-11	Cobalt	Barium	Sodium	Aluminum	Silicon
	Chromium	Strontium	Copper	Iron	
	Vanadium	Zirconium	Titanium	Potassium	
	Boron		Manganese	Magnesium	
	Bismuth			Calcium	
	Molybdenum				
	Nickel				
	Lead				
	Silver				

K.V.D.S. DEC 23 1971

REMARKS:

METALLURGICAL LABORATORIES, INC.

By [signature] SPECTROCHEMIST

METALLURGICAL LABORATORIES, INC. CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET • SAN FRANCISCO, CALIFORNIA 94103 • AREA CODE 415 863-8575

Qualitative Spectrographic Analysis

Submitted by American Analytical & Research Laboratories 3226 East 46th Street Tucson, Arizona 85713

Date December 16, 1971

Sample of Mineral

P. O. No.

Lab. No. 0151-3

METALS FOUND AND PERCENTAGE RANGE

SAMPLE MARK	LESS THAN 0.01%	.01 TO .10%	.10 TO 1.0%	1.0 TO 10.0%	MAJOR
#3A-4C 108-A4-C112	Chromium	Calcium	Aluminum	Silicon	Iron
	Tin	Magnesium	Magnesium		
	Vanadium	Sodium	Copper		
	Strontium	Potassium			
	Zirconium	Titanium			
	Boron	Manganese			
	Bismuth				
	Molybdenum				
	Cobalt				
	Nickel				
	Lead				
	Silver				

K.V.D.S. DEC 25 1971

REMARKS:

METALLURGICAL LABORATORIES, INC.

By [signature] SPECTROCHEMIST

METALLURGICAL LABORATORIES, INC. CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET • SAN FRANCISCO, CALIFORNIA 94103 • AREA CODE 415 863-8575

Qualitative Spectrographic Analysis

Submitted by American Analytical & Research Laboratories
3226 East 46th Street
Tucson, Arizona 85713

Date December 16,1971

Sample of Mineral

P. O. No.

Lab. No. 0151-4

METALS FOUND AND PERCENTAGE RANGE

SAMPLE MARK	LESS THAN 0.01%	.01 TO .10%	.10 TO 1.0%	1.0 TO 10.0%	MAJOR
A-4-C117-A4C125	Chromium	Titanium	Calcium	Aluminum	Silicon
	Vanadium	Copper		Sodium	
	Boron	Barium		Potassium	
	Molybdenum	Strontium		Iron	
	Cobalt	Zirconium			
	Nickel	Manganese			
	Lead				
	Silver				

K.V.D.S.
DEC 23 1971

REMARKS:

METALLURGICAL LABORATORIES, INC.

By [signature]
SPECTROCHEMIST

INVOICE

No. 7149

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 27, 1971

SAMPLE MARKED	ANALYSIS	CHARGES
M-1A-59 - M-1A-64	Cu	$12.00

K.V.D.S.
DEC 29 1971

APPROVED FOR PAYMENT
By: James W. Sell
(Signature)
Supervisor East
MA-0010

INVOICE

No. 7151

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 27, 1971

SAMPLE MARKED	ANALYSIS	CHARGES
DCA-1A-4 - DCA-1A-10	Geo Chem Cu, Zn, Mo	$31.50

K.V.D.S.
DEC 29 1971

APPROVED FOR PAYMENT
By: James W. Sell
(Signature)
Sup East MA-0010

INVOICE

No. 7105

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 20, 197

SAMPLE MARKED	ANALYSIS	CHARGES
A-4-C-99	Ox Cu	$2.00

APPROVED FOR PAYMENT

By: James W. Bell (Signature) M4-00.0-04

Supervisor East

K.V.D.S.
DEC 22 1971

INVOICE

No. 7134

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December [illegible]

SAMPLE MARKED	ANALYSIS	CHARGES
#1-7062-7076 #2-A4C5-A4C11 #3-A4C108-A4C112 #4-A4C117-A4-C125	4 Spectrographic Analysds	$40.00

K.V.D.S.
DEC 23 1971

INVOICE

No. 7134

3226 East 46th Street

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

Phone 624-0049

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 21, 19

SAMPLE MARKED	ANALYSIS	CHARGES
#1-7062-7076 #2-A4C5-A4C11 #3-A4C108-A4C112 #4-A4C117-A4-C125	4 Spectrographic Analysds	$40.00

K.V.D.S.
DEC 23 1971

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 20, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A-4-C-99								7.72

Ent

K.V.S. DEC 29 1971

REGISTERED ASSAYER CERTIFICATE No. 1052 PETE S. FLORES Date Signed 12/20/71 Arizona U. S. A.

Invoice # 7105

CHARGES $ 2.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

Corrected Report

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE December 20, 1971

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	Percent Ox Cu
A-4-C-97								8.15
A-4-C-98								13.20
A-4-C-99								8.65

K.V.D.S.
DEC 22 1971

REGISTERED ASSAYER
CERTIFICATE No. 8652
PETE S. FLORES
Date Signed 12/20/71
Arizona U. S. A.

CHARGES $ N/C

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 15, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM [redacted] COPPER	PPM [redacted] LEAD	PPM [redacted] ZINC	PPM [redacted] MOLYBDENUM	PERCENT IRON	
X-1			48	34	33	20		
X-2			615	39	496	16		
X-3			188	28	68	12		
X-4			2000 +	1392	2000 +	19		
X-5			106	36	40	25		
X-6			2000 +	18	54	19		
X-7			1193	23	72	18		
X-8			287	24	72	11		
X-9			2000 +	20	25	123		
X-10			349	27	63	18		
X-11			121	19	15	11		
X-12			484	13	18	48		
X-13			2000 +	2000 +	429	603		
X-14			70	38	26	15		
X-15			45	24	29	32		
X-16			370	24	23	32		
X-17			1648	13	24	39		

K.V.D.S.
JAN 17 1972

Invoice # 7201

CHARGES $ 93.50

Peter A. Thomas
1/15/72

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

W. G. K.

ASSAYERS - CHEMISTS - METALLURGISTS

JAN 26 1972

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE Jan. 25, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
Z-1			33	26	13	11		
Z-2			116	30	18	10		
Z-3			32	23	39	10		
Z-4			24	29	26	11		

REGISTERED ASSAYER
CERTIFICATE NO. 6952
REYES FLORES
Date Signed 1/25/72
Arizona U. S. A.

Invoice # 7226

CHARGES $ 22.00

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE January 29, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
JH-1			69		382	7		
JH-2			60		248	9		
JH-3			80		311	6		
JH-4			72		124	8		

Invoice # 7243

CHARGES $ 18.00

REGISTERED ASSAYER CERTIFICATE NO. 6852 PETE S. FLORES Date Signed 1/29/72 Arizona U. S. A.

ASSAYER-CHEMIST

ES Samples.

✓ 1. QC-1 Tpn middle repl. mu. oxidized
✓ 2. QC-2 Me upper repl) mu oxidized
✓ 3 QC-3 Me (upper middle. vn + repl) mu. oxidized
✓ 4. QC-4 Me (repl middle) total Fe only.
✓ 5. QC-5 Me (repl middle) unit
✓ 6. QC-6 Dm (repl lower) total Fe
✓ 7. QC-7 Dm (repl lower) unit
✓ 8. QC-8 Eb
✓ – 8a QC-9 Me (~~middle~~ upper repl & vn.
✓ – 9. PR-1 Schultze Gr. Tsgr.
✓ – 10. A-2C-3 (4080-4090) St alt. Tgm & pi mixed oxidized
✓ – 11. A-2C-17 (4220-4230) med. alt. Tgm & pi mixed oxidized
– 12. A-2C-34 (4390-4400) St. silic pi
✓ – 13. A-2W-68 (4900-4910) qtz veining pi & Tgm (?).
✓ – 14. AA-1-8 (105-120) Tsgr.
✓ – 15. A-4-C 95 (6340-6370) Slick blk, py in Me & oxid Cu.
✓ – 16. A-4-C 96 (6370-6380) " " repl. text. lms w/oxid
✓ – have 17. A-4-C 111 (6520-6530) Me Fe repl, totally oxidized
18. ~~A-4-C-118~~ (6590-6600) Tgm & pi
19. A-4-C-124 (6450-6660) Tgm.
20. M-1 A-49 (2940-2960) Slick black Tgm.
21. M-1 A-42 (5300-5310) Tpn, rare py.
✓ – have 22 JH-1 Dm, lower repl.
✓ – 23 JH-2 Me, main middle repl.
✓ – 24 JH-3 Me, upper repl
✓ – 25 CS-1 Brecciated Rhyol schist from chem drill hole.
✓ – 26 CS-2 Tsgr oxidized.

DCA-1A has Cu Zn Mn SiO_2 CaO MgO Total Fe assay. Lee.

✓ Z-1 thru 4 ES results of Manitou gr.
AH-1 & AH-2

~~Water from QC~~
~~this week~~

Zone 3

Drill Hole HS-8

Sample # 11, 12, 13, , 15, 16, 27?

↓

from Adit at site # 13

SR-13-2 13-3 13-4

Above samples Au, Ag Cu Pb Zn Mo Cu

ES Samples

See Roll Map for locations

Queen Creek Area (QC-)

QC-1. First road cut west of Superior Highway tunnel, west ~~side~~ side, north side. Upper portion of Naco Limestone. Replacement bed 4 to 8 feet thick with Mn, minor Fe, SiO_2. Up dip from main underground workings. NE¼ NW¼ Sec. 36

QC-2. On curve ¼ mile ~~east~~ west of QC-1. West side of highway & south of #4 Shaft. Replacement bed in upper Escabrosa lying just below maroon shale marker bed. Open cut mined. 2 - 8 to 10 ft beds of Mn-SiO_2 with weaker replacement manganiferous limestone of 1 10 feet between. Very vuggy with SiO_2 streaks & cavity linings. Up dip from main underground workings. NW¼ NW¼ Sec. 36

QC-3. Extension of Queen Creek fault, ½ mile east of cut-off road ~~(bypass)~~ (overpass) to Superior. East side of highway. Replacement & vein mineralization of Mn, Fe, & Si very strong replacement in Escabrosa (middle upper). 50 foot cut in width. SE¼ SW¼ Sec. 36

QC-4. South side of Queen Creek fault. North side of road cut 3/8 mile east of cut off road ~~bypass~~ (overpass) to Superior. Main middle Escabrosa Repl. horizon. 1 to 2 foot zone of total Fe SiO_2 repl bed, totally oxidized. SW¼ SW¼ Sec. 36.

QC-5. Same location as QC-4. 50 foot width of replacement limestone with variable Fe, Mn, SiO_2, & pyrite pseudomorph

QC-6. First road cut east, ¼ mile, of overpass cut off road to Superior. South side of road ~~cut~~. Lower Devonian repl. horizon, 5 feet of total Fe & SiO_2 replacement (oxidized) NE¼ NW¼ Sec. 2 (just barely!) Note Sections are offset!

2- ES Samples Continued.

QC-7. Opposite from QC-6 on north side of road cut Lower Devonian repl. horizon, 12 feet of repl bed with minor Fe, Mn, SiO_2, & pseudo py. SW¼SW¼ Sec. 36

QC-8. About ⅛ mile west of QC-6 & 7 area in first roadcut North wall. Heavy black & red iron stain on Bolsa Quartzite in fractures & joint planes. 15' Very SW Corner Sec. 36.

QC-9 In first roadcut on south side of main bridge over Queen Creek. West side of cut. Extention of veins mined in area, mainly Vn Mn in upper Escabrosa under the maroon shale ± 4 feet NE¼ SW¼ Sec. 36.

Pinal Ranch Area (PR-)

PR-1 East wall of road opposite turnoff to Powers Gulch between Pinal Ranch & Henderson's road. Unaltered Schultze Granite. NW¼ NE½ Sec. 13.

Carlotta South Area (CS-)

CS-1 Pinal Schist, mostly unoxidized, from ICC chum drill hole, most SW hole of 1972-1973 series. NE¼NW¼ Sec. 12. 20? ft. — just below D Fried burned samples? etc.

CS-2 Schultze Granite from road cut bank (S side) Slightly altered but biotite fresh; abundant FeOx along fractures & seams weak in stain. SE¼ NW¼ Sec.

Jewell Hill Area (JH-)

JH-1. East slope of Jewell Hill. Lower Devonian replacement horizon with massive chert-silica & Fe, minor Mn repl. 5 ~~and~~

3 - ES Samples Continued

JH-2 East slope of Jewell Hill just below oolitic cliff. Middle Escabrosa replacement horizon. Weak Mn repl along bedding cut by more massive Mn-calcite veinlets. 10.

JH-3. North slope of Jewell Hill. Upper Escabrosa repl horizon below maroon shale. Excellent repl texture, leached cavities w/ minor Mn & veining. 15

3226 East 46th Street Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

NOV 2 1972

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE Feb. 28, 1972

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PPM MOLYBDENUM	PERCENT IRON
A-2C-1			1.59 %			36 ppm	

2 foot core

Flores has agreed to check value by assaying another split from the pulp sample and also by taking a portion of the reject sample and preparing a separate pulp.

JOS 3/2/72

Flores has agreed to check value by assaying another split from the pulp sample and also by taking a portion of the reject sample and preparing a separate pulp.

In rechecking a new pulp — Flores found it contained only 0.15% copper. Rechecking the original assay he found that his weight man sampled for geochem copper which is ten times the weight for a wet copper assay — thus calculation of 1.59% copper is ten times high — the value should be 0.159% copper. Flores reran the original pulp and it assayed 0.16% copper

JOS
11:43 AM
3/6/72

REGISTERED ASSAYER CERTIFICATE 1952 PETE S. FLORES DATE ISSUED Arizona U.S.A.

2/28/72

Invoice # 7379

CHARGES $ 3.00

ASSAYER-CHEMIST

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

March 24, 1972

TO: J. D. Sell

FROM: W. L. Kurtz

Superior East
A-2

Please have several composites, say 50' intervals, assayed for gold and silver.

W. L. Kurtz

WLK:lad

Lost and minerals

INVOICE
No. 9536

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE July 27, 1977

SAMPLE MARKED	ANALYSIS	CHARGES
QC - 1 —— QC - 8, PR - 1 (9)	Preparation Only	$ 4.50
	Behne Project MA-0037	

INVOICE
No. 9580

3626 East 46th Street
Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company Sell DATE August 7, 1973

SAMPLE MARKED	ANALYSIS	CHARGES
Samples sent in by Mr. Sell		
JH-1 —— JH-3		
SC-1 —— SC-2	Preparation Only	$ 3.00
QC -9		

APPROVED FOR PAYMENT

By:

SUPERIOR REJECTS

A-1-2		A-1-1, 3, 4, 5 (Missing)
A-1-6	through	A-1-11
A-1-12	through	A-1-19
DCA-1A-1	through	DCA-1A-3
DCA-1A-4	through	DCA-1A-6
DCA-1A-7	through	DCA-1A-10
M-1A-36	through	M-1A-41
M-1A-42	(Missing)	
M-1A-43	through	M-1A-45
M-1A-46	through	M-1A-47
M-1A-48	through	M-1A-50
M-1A-51	through	M-1A-53
M-1A-54	through	M-1A-56
M-1A-57	through	M-1A-59
M-1A-60	through	M-1A-62
M-1A-63	through	M-1A-64
A-4-C-4	through	A-4-C-7
A-4-C-8	through	A-4-C-10
A-4-C-11	through	A-4-C-13
A-4-C-14	through	A-4-C-16
A-4-C-17	through	A-4-C-19
A-4-C-20	through	A-4-C-23
A-4-C-24	through	A-4-C-29
A-4-C-30	through	A-4-C-34
A-4-C-35	through	A-4-C-39
A-4-C-40	through	A-4-C-44
A-4-C-45	through	A-4-C-49
A-4-C-50	through	A-4-C-54
A-4-C-55	through	A-4-C-59
A-4-C-60	through	A-4-C-64
A-4-C-65	through	A-4-C-69
A-4-C-70	through	A-4-C-74
A-4-C-75	through	A-4-C-79
A-4-C-80	through	A-4-C-84
A-4-C-85	through	A-4-C-89
A-4-C-90	through	A-4-C-94
A-4-C-95	through	A-4-C-99
A-4-C-100	through	A-4-C-104
A-4-C-105	through	A-4-C-109
A-4-C-110	through	A-4-C-114
A-4-C-115	through	A-4-C-119
A-4-C-120	through	A-4-C-124
A-4-C-121	(Missing)	
A-4-C-125	through	A-4-C-129
A-4-C-130	through	A-4-C-136
A-4-C-137	through	A-4-C-139
A-4-C-140	through	A-4-C-143

SUPERIOR REJECTS

A-1-2		A-1-1, 3, 4, 5 (Missing)
A-1-6	through	A-1-11
A-1-12	through	A-1-19
DCA-1A-1	through	DCA-1A-3
DCA-1A-4	through	DCA-1A-6
DCA-1A-7	through	DCA-1A-10
M-1A-36	through	M-1A-41
M-1A-42	(Missing)	
M-1A-43	through	M-1A-45
M-1A-46	through	M-1A-47
M-1A-48	through	M-1A-50
M-1A-51	through	M-1A-53
M-1A-54	through	M-1A-56
M-1A-57	through	M-1A-59
M-1A-60	through	M-1A-62
M-1A-63	through	M-1A-64
A-4-C-4	through	A-4-C-7
A-4-C-8	through	A-4-C-10
A-4-C-11	through	A-4-C-13
A-4-C-14	through	A-4-C-16
A-4-C-17	through	A-4-C-19
A-4-C-20	through	A-4-C-23
A-4-C-24	through	A-4-C-29
A-4-C-30	through	A-4-C-34
A-4-C-35	through	A-4-C-39
A-4-C-40	through	A-4-C-44
A-4-C-45	through	A-4-C-49
A-4-C-50	through	A-4-C-54
A-4-C-55	through	A-4-C-59
A-4-C-60	through	A-4-C-64
A-4-C-65	through	A-4-C-69
A-4-C-70	through	A-4-C-74
A-4-C-75	through	A-4-C-79
A-4-C-80	through	A-4-C-84
A-4-C-85	through	A-4-C-89
A-4-C-90	through	A-4-C-94
A-4-C-95	through	A-4-C-99
A-4-C-100	through	A-4-C-104
A-4-C-105	through	A-4-C-109
A-4-C-110	through	A-4-C-114
A-4-C-115	through	A-4-C-119
A-4-C-120	through	A-4-C-124
A-4-C-121	(Missing)	
A-4-C-125	through	A-4-C-129
A-4-C-130	through	A-4-C-136
A-4-C-137	through	A-4-C-139
A-4-C-140	through	A-4-C-143

SUPERIOR PULPS

MIA-36
MIA-37

A-4 C-8 through A-4 C-100

A4-C113 through A4-C116
A4-C131 through A4-C133

RECORD OF SAMPLE TRANSMITTAL

JOB NO. 58086
RECEIVED
AUG 13 1973
SKYLINE LABS, INC.
BY

Samples Sent to:

SKYLINE LABS, INC.
12090 W. 50TH PLACE
WHEAT RIDGE, COLORADO 80033
TEL.: (303) 424-7718

Samples Submitted By:
American Smelting and Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

(Report and invoice in duplicate will be sent to above address unless otherwise instructed)

Bohnie-MA-0037

SHIPMENT NO.:
DATE SHIPPED:
SHIPPED VIA: 1st class mail
NO. OF CARTONS:
NO. OF SAMPLES: 23

Send Additional Report(s) of Analysis to:
(or Special Instructions:)

LIST SAMPLE NOS.	DESCRIBE MATERIAL	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
A-2C-3,17,34		Si		✓
A-2W-68				
A-4C-95,96,111				
A-A-1-8				
SC-1,2				
JH-1,2,3				
PR-1				
QC-1,2,3,4,5 6, 7, 8,9				

(Use Continuation Sheet If Necessary)

INSTRUCTIONS

*METHOD OF ANALYSIS: G-Geochem, Q-Quantitative
W-Wet 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	Bulk Rejects	Pulp
Return at customer's expense via:		X
Retain pending instructions †		
Discard		

JOB NO. 58086
RECEIVED
AUG 13 1973
SKYLINE LABS, INC.
BY 1150 NORTH 7TH AVENUE
TELEPHONE 602-792-3010

ASARCO
AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN EXPLORATION DIVISION
P. O. BOX 5747, TUCSON, ARIZONA 85703

August 9, 1973

Skyline Labs, Inc.
12090 West 50th Place
Wheat Ridge, Colorado 80033

Gentlemen:

I'm sending under separate cover twenty-three sample pulps, the numbers of which are as follows: A-2C-3, A-2C-17, A-2C-34, A-2W-68, A-4C-95, A-4C-96, A-4C-111, A-A-1, CS-1, CS-2, JH-1, JH-2, JH-3, PR-1, QC-1, QC-2, QC-3, QC-4, QC-5, QC-6, QC-7, QC-8, and QC-9.

I request a routine Emission Spectrograph Analysis plus Silica Analysis on each pulp. Also, assay for Manganese, total Iron, Calcium, and Magnesium on the samples showing higher values of these elements above your normal ES cut-off value.

Please do not hesitate to contact me on any question. Please add "Bohme MA-0037" to your billing for identification purposes.

Also, please return old pulps to me as in structed in my previous order of March 5, 1973.

Sincerely,

James D. Sell

James D. Sell
phone: 602-792-3010, Ext. 57

JDS:lb

SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106 • 1700 West Grant Road
Tucson, Arizona 85703
(602) 622-4836

Job No.: 348221

Date : November 16, 1973

American Smelting & Refining Company
Southwestern Exploration Division
Box 5747
Tucson, Arizona 85703

Attention: Mr. James D. Sell

SEMIQUANTITATIVE ANALYSIS

	#1 % (Metal cuttings from drill hole)	#2 % (4" casing pipe)	#3 % (4" casing coupling)	#4 % (NC drill rod thread)
Cr	0.016	0.012	0.033	0.023
Ni	0.0049	0.0029	0.0058	0.0076
Si	1.0	0.17	0.18	0.19
Mn	0.71	0.84	0.58	1.2
Mg	0.0057	<0.001	0.0017	0.0018
Al	0.039	0.012	0.024	0.014
Mo	0.051	0.010	0.016	0.19
Cu	0.072	0.020	0.014	0.045
Zn	<0.03	<0.03	0.42	<0.03
Ti	0.0043	<0.002	<0.002	<0.002
	1.9329	1.1050	1.2812	1.7079
Co	0.0084	0.0051	0.0047	0.0045
Sb	<0.05	<0.05	<0.05	<0.05
As	<0.20	<0.20	<0.20	<0.20
Ba	<0.30	<0.30	<0.30	<0.30
Be	<0.0005	<0.0005	<0.0005	<0.0005
Bi	<0.0009	<0.0009	<0.0009	<0.0009
B	<0.005	<0.005	<0.005	<0.005
Ca	<0.0004	<0.0004	<0.0004	<0.0004
Cd	<0.06	<0.06	<0.06	<0.06
Cs	<0.40	<0.40	<0.40	<0.40
Nb	<0.02	<0.02	<0.02	<0.02
Ga	<0.01	<0.01	<0.01	<0.01
Ge	<0.005	<0.005	<0.005	<0.005
Au	<0.008	<0.008	<0.008	<0.008
Hf	<0.10	<0.10	<0.10	<0.10
In	<0.003	<0.003	<0.003	<0.003
Pb	<0.02	<0.02	<0.02	<0.02
Li	<0.06	<0.06	<0.06	<0.06
Hg	<0.02	<0.02	<0.02	<0.02
Pt	<0.005	<0.005	<0.005	<0.005

MINERAL

NOV 19 1973

BENEFICIATION DEPT

Job No.: 348221

Date : November 16, 1973

	#1 %	#2 %	#3 %	#4 %
P	<1.0	<1.0	<1.0	<1.0
K	<0.40	<0.40	<0.40	<0.40
Re	<0.005	<0.005	<0.005	<0.005
Ru	<0.04	<0.04	<0.04	<0.04
Rb	<0.40	<0.40	<0.40	<0.40
Ag	<0.0002	<0.0002	<0.0002	<0.0002
Na	<0.06	<0.06	<0.06	<0.06
Sr	<0.003	<0.003	<0.003	<0.003
Ta	<0.08	<0.08	<0.08	<0.08
Te	<0.09	<0.09	<0.09	<0.09
Tl	<1.0	<1.0	<1.0	<1.0
Sn	<0.003	<0.003	<0.003	<0.003
W	<0.05	<0.05	<0.05	<0.05
V	<0.002	<0.002	<0.002	<0.002
Zr	<0.02	<0.02	<0.02	<0.02
Rare Earths	Nil	Nil	Nil	Nil

REGISTERED ASSAYER
CERTIFICATE NO. 8784
H. E. RICHARD
Date Signed
Arizona U. S. A.

MINERAL
NOV 19 1973
BENEFICIATION DEPT

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN EXPLORATION DIVISION
P. O. BOX 5747, TUCSON, ARIZONA 85703

1150 NORTH 7TH AVENUE
TELEPHONE 602-792-3010

November 1, 1973

H & H of Skyline Labs
1700 West Grant Road
Tucson, Arizona 85705

Dear Sir:

I am sending to you four items. I request your normal emission spectrograph analysis on each item. The results will be used for comparative checking between the items. As noted, all samples are metal.

The items marked in sacks are:

1) Metal cuttings from a drilling operation.
2) A piece of casing (4").
3) A piece of casing coupling, threaded (large).
4) A piece of drill pipe thread (small).

Thank you for your interest in the problem.

Very truly yours,

James D. Sell

James D. Sell

JDS:lb

cc: RBCrist

SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106 • 1700 West Grant Road
Tucson, Arizona 85703
(602) 622-4836

Job No.: 348221

Date : November 16, 1973

American Smelting & Refining Company
Southwestern Exploration Division
Box 5747
Tucson, Arizona 85703

Attention: Mr. James D. Sell

SEMIQUANTITATIVE ANALYSIS

	#1 % (Metal cuttings from drill hole)	#2 % (4" casing pipe)	#3 % (4" casing coupling)	#4 % (NC drill rod thread)
Cr	0.016	0.012	0.033	0.023
Ni	0.0049	0.0029	0.0058	0.0076
Si	1.0	0.17	0.18	0.19
Mn	0.71	0.84	0.58	1.2
Mg	0.0057	<0.001	0.0017	0.0018
Al	0.039	0.012	0.024	0.014
Mo	0.051	0.010	0.016	0.19
Cu	0.072	0.020	0.014	0.045
Zn	<0.03	<0.03	0.42	<0.03
Ti	0.0043	<0.002	<0.002	<0.002
Co	0.0084	0.0051	0.0047	0.0045
Sb	<0.05	<0.05	<0.05	<0.05
As	<0.20	<0.20	<0.20	<0.20
Ba	<0.30	<0.30	<0.30	<0.30
Be	<0.0005	<0.0005	<0.0005	<0.0005
Bi	<0.0009	<0.0009	<0.0009	<0.0009
B	<0.005	<0.005	<0.005	<0.005
Ca	<0.0004	<0.0004	<0.0004	<0.0004
Cd	<0.06	<0.06	<0.06	<0.06
Cs	<0.40	<0.40	<0.40	<0.40
Nb	<0.02	<0.02	<0.02	<0.02
Ga	<0.01	<0.01	<0.01	<0.01
Ge	<0.005	<0.005	<0.005	<0.005
Au	<0.008	<0.008	<0.008	<0.008
Hf	<0.10	<0.10	<0.10	<0.10
In	<0.003	<0.003	<0.003	<0.003
Pb	<0.02	<0.02	<0.02	<0.02
Li	<0.06	<0.06	<0.06	<0.06
Hg	<0.02	<0.02	<0.02	<0.02
Pt	<0.005	<0.005	<0.005	<0.005

MINERAL

NOV 19 1973

BENEFICIATION DEPT

Job No.: 348221

Date : November 16, 1973

	#1 %	#2 %	#3 %	#4 %
P	<1.0	<1.0	<1.0	<1.0
K	<0.40	<0.40	<0.40	<0.40
Re	<0.005	<0.005	<0.005	<0.005
Ru	<0.04	<0.04	<0.04	<0.04
Rb	<0.40	<0.40	<0.40	<0.40
Ag	<0.0002	<0.0002	<0.0002	<0.0002
Na	<0.06	<0.06	<0.06	<0.06
Sr	<0.003	<0.003	<0.003	<0.003
Ta	<0.08	<0.08	<0.08	<0.08
Te	<0.09	<0.09	<0.09	<0.09
Tl	<1.0	<1.0	<1.0	<1.0
Sn	<0.003	<0.003	<0.003	<0.003
W	<0.05	<0.05	<0.05	<0.05
V	<0.002	<0.002	<0.002	<0.002
Zr	<0.02	<0.02	<0.02	<0.02
Rare Earths	Nil	Nil	Nil	Nil

REGISTERED ASSAYER
CERTIFICATE NO. 6784
H. E. RICHARD
Date Signed
Arizona U. S. A.

MINERAL
NOV 19 1973
BENEFICIATION DEPT

SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106 • 1700 West Grant Road
Tucson, Arizona 85703
(602) 622-4836

INVOICE

INVOICE NO.:
JOB NO.: 348221
P.O. NO.:

SOLD TO: American Smelting & Refining Company
Southwestern Exploration Division
Box 5747
Tucson, Arizona 85703

DATE: November 16, 1973

TERMS: NET 30 DAYS

Attention: Mr. James D. Sell

Analysis of 4 Metal Samples

4 Spectrographic analysis @ $20.00	$80.00
Sample preparation	5.00
Total	$85.00

Tuc. General

This is a memorandum of charges. A Statement will be rendered at the end of the Month.

MINERAL

NOV 19 1973

BENEFICIATION DEPT

INVOICE COPY

INVOICE

3441 East Milber

No. 10271

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company Sell DATE January 9, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A - 7 - 14 —— A - 7 - 31	Geo-Chem Cu, Pb, Zn, Mo	$ 90.00
18 Samples	Geo-Chem Preparation	9.00
18 Samples	Ceramic Handling	9.00
	Total	$ 108.00

A.D.C

JAN 10 1974

OK for Payment

INVOICE

3441 East Milber

No. 10330

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 17, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A - 7 - 21 —— A - 7 - 31	Ox Cu	$ 24.75

A.D.C.
JAN 21 1974

Sep. East.

3441 East Milber

INVOICE
No. 10346

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 18, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A-7-32 — A-7-43	Cu, Ox Cu, Geo-Chem Pb, Zn, Mo	$ 102.00
12 Samples	Ceramic Handling	6.00
	Total	$ 108.00

A.D.C.
JAN 22 1974

APPROVED FOR PAYMENT
By: (Signature)

COPY

SE

3441 East Milber

INVOICE
No. 10359

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 22, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A - 7 - 32 --- A - 7 - 41 (5)	Cu (2nd Cut)	$ 11.25

A.D.C
JAN 23 1974

COPY

APPROVED FOR PAYMENT

By: _____
(Signature)

INVOICE

No. 10405

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 30, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A-7-44 --- A-7-62	Geo-Chem Mo	$ 38.00

A.D.C
JAN 31 1974

COPY

INVOICE

3441 East Milber

No. 10436

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company See DATE February 6, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
	A. D. C.	
A-7-63 --- A-7-82	Geo-Chem Cu, Pb, Zn, Mo FEB 8 1974	$ 100.00
A-7-63 --- A-7-68 (5)	3- Cu, 2- Zn	10.75
20 Samples	Geo-Chem Preparation	10.00
	Total	$ 120.75

INVOICE

3441 East Milber | No. 10443 | Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE February 7, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A - 7 - 83 — A - 7 - 113	Geo-Chem Cu, Pb, Zn, Mo	$ 115.00
A - 7 - 86 94 (ran 2000+ PPM Cu) 99	Cu-1, Zn-2	7.25
23 Samples	Geo-Chem Preparation	11.50
	Total	$ 133.75

A. D. C.
FEB 11 1974

APPROVED FOR PAYMENT

By: (Signature)
MA-0010

3441 East Milber

INVOICE

No. 10570

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company Sell DATE March 12, 1974

W. G. K.

MAR 14 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A-7-103 —— A-7-116	Geo-Chem Cu, Pb, Zn, Mo, 1- Fe, Mn	$ 61.2
AH-4-1 —— AH-4-2	Geo-Chem Cu, Pb, Zn, Mo, Fe	16.5
A-7-108 —— A-7-116 (ran 2000+ PPM)	2- Cu, 6- Zn	20.0
10 Samples	Geo-Chem Preparation	5.0
	Total	$ 102.7

INVOICE

3441 East Milber

No. 10624

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company Sell

DATE March 19, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
A-7-112 (ran 2000+ PPM)	Cu	$ 1.75

W. G. K.

MAR 20 1974

APPROVED FOR PAYMENT

By: (Signature)

INVOICE

3441 East Milber

No. 10650

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE March 25, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
	W. G. K. MAR 29 1974	
A-7-117 —— A-7-123	Geo-Chem Cu, Pb, Zn, Mo	$ 35.00
A-7-118 (ran 2000+ PPM)	Cu	2.00
7 Samples	Geo-Chem Preparation	3.50
7 Samples	Ceramic Handling	3.50
	Total	$ 44.00

APPROVED FOR PAYMENT

By: _____
(Signature)

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

January 23, 1974

Memorandum for J. D. Sell

From: W. L. Kurtz

Superior East Project
Core Logging

If you are not, I think you should record percentage of native copper that appears in the matrix and wrapped around pebbles vs. the amount that appears within the pebbles and not associated with main fractures. I am thinking of what native copper might "fall free" during mining and coarse crushing vs. that which would require a fine grind to free it.

W. L. Kurtz/lb
W. L. Kurtz

WLK:lb

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE January 25, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
L-2-2			31	770	59	10		
	Anzio Mining (Kayser) Drill cuttings (rotary)							

A.D.C.
JAN 28 1974

REGISTERED ASSAYER
CERTIFICATE 6852
PETE S. FLORES
Date Signed 1/28/74
Arizona U.S.A.

Invoice # 10366

CHARGES $ 5.00

ASSAYER-CHEMIST

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

March 22, 1974

FILE MEMORANDUM:

Method of Analysis
Soluble Copper
Superior East Project
Pinal County, Arizona

The question arose as to what method and process of analysis American Analytical and the Southwestern Assayers used in running the native copper and cuprite mineralization in the Superior East Project.

Attached are three sheets, two from American and one from Southwestern explaining their procedures.

James D. Sell

JDS:lb
Attachs.

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
ARIZONA REG. NO. 8205
WIL WRIGHT
ARIZONA REG. NO. 5875
RICHARD M. AROS
ARIZONA REG. NO. 9072

P. O. BOX 7517
TUCSON, ARIZONA 85725

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

14 February 1974

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

Dear Mr. Sell:

Enclosed are the results on the fifty samples submitted to Southwestern Assayers for analysis of Total Copper and Oxide Copper. In column A we are reporting on Soluble Copper extracted using a cold solution of 5 per cent H_2SO_4 saturated with SO_2 gas for five hours. In column B is reported the Copper extracted using a 1 minute leach with hot 5 per cent H_2SO_4.

I guess you can take your pick as to what is best indicated by your Mineralogy. It is extremely difficult to arrive at an Oxide Copper value, or I should say a "true Oxide value", on samples containing cuprite and native Copper. About the best we, as assayers can do is give you the "soluble values".

I hope this information is what you are asking for. There was no extra charge made for the extra run for soluble Copper.

Thank You,

Wil Wright
President

Encl.
WDW:tjw

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

3226 East 46th Street
Tucson, Arizona 85713

Phone 624-0049

ASSAYERS · CHEMISTS
METALLURGICAL RESEARCH

ORE TESTING
FLOTATION · LEACHING
ELECTROLYSIS

OXIDIZED COPPER

A. D. C
FEB 2 ? 1974

1. WEIGHTS:

Heads, Tails, Blast Hole, DD Hole - 5 grams.
Concecntrate - 2 grams.

2. PROCEDURE:

Weigh sample into 250 ml beaker. Add 10 ml of water and swirl. Remove metallic iron with magnet. Transfer into 250 ml flasks. Add 25 ml of 5.5% Sulfuric Acid solution saturated with Sulfur Dioxide. If effervescence is noted, add more of the 5.5% Sulfuric solution to assure a definite acid leach. Place stoppers on flasks and set on table shaking at intervals of not more than 5 minutes for a period of two hours. Filter into 400 ml beakers through 15 cm. Whatman # 2 filter paper with pulp. Wash three times with hot water. Add 10 ml of 1-1 Sulfuric Acid to filtrate and swirl. Add 10 ml of 50% Sodium thiosulfate to filtrate. Boil gently for approximately 40 minutes until all copper is precipitated and solution is clear. Filter through 12½ cm Reeve Angel # 711 and wash four times with hot water. Place paper with copper sulfide back into the same 400 ml beaker. Add 10 ml of Nitric Acid and 5 ml of Perchloric Acid and place on plate. As soon as sulfur is completely decomposed, remove watch glasses. When dry remove beakers from plate and cool. Wash sides down with fine jet of water. Add enough water so volume is about 20 ml. Cool. Add 10 ml of Acetic Acid, a pinch of Ammonium Bifluoride and swirl. Add Potassium Iodide in accordance to the amount of copper present. Add Potassium Iodide until a clear liquor is obtained before proceeding to the titration. Titrate as total copper with standard Sodium Thiosulfate solution.

3. CALCULATIONS:

On 5 g sample using strong solution $\frac{T}{10}$ = %

On 2 g sample using strong solution $\frac{T}{4}$ = %

On 5 g sample using weak (.1g) solution $\frac{T}{50}$ = %

On 2 g sample using weak (.1g) solution $\frac{T}{20}$ = %

T = No. of ml. consumed.

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

3226 East 46th Street
Tucson, Arizona 85713

Phone 624-0049

ASSAYERS · CHEMISTS
METALLURGICAL RESEARCH

ORE TESTING
FLOTATION · LEACHING
ELECTROLYSIS

A A Ox Cu

1. Weigh 200 milligrams into a 250 milliliter beaker.
2. Add a small jet of water.
3. Remove metallic iron with a magnet.
4. Using as little water as possible, transfer to a 250 milliliter flask.
5. Add 15 milliliters of SO_4 solution.
6. Leach for 2 hours swirling every 5 minutes.
7. Filter through Whatman #2 into 300 milliliter beakers. Wash 3 times with hot water.
8. Place filtrate on plate on medium heat to evaporate SO_2 fumes. Cool, add 10 milligrams of HCL. Bring up to volume in 200 milliliter volumetric flasks.
9. Stir on magnetic stirrer.

ASSAY RESULTS DRILL HOLE A-1
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Pb,%	Zn,%	Mo,%	Cu,%
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	
A-2-2	Tw	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		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'	0.08	

ASARCO Sample No.		Depth	Interval	Total Cu, %	Weighted Average	
A-2-42	Tw	3217-3248	31'	0.10		
A-2-43	Tw	3248-3278	30'	0.08		
A-2-44	Tw	3278-3308	30'	0.13		
A-2-45	Tw	3308-3339	31'	0.11		
A-2-46	Tw	3339-3370	31'	0.19		
A-2-47	Tw	3370-3400	30'	0.27		
A-2-48	Tw	3400-3429	29'	0.17		
A-2-49	Tw	3429-3459	30'	0.10		
A-2-50	Tw	3459-3490	31'	0.07		
A-2-51	Tw	3490-3522	32'	0.05		
A-2-52	Tw	3522-3550	28'	0.11		
A-2-53	Tw	3550-3561	11'	0.22		
A-2-54	Tw	3561-3592	31'	0.16		
A-2-55	Tw	3592-3622	30'	0.05		
A-2-56	Tw	3622-3653	31'	0.03		
A-2-57	Tw	3653-3685	32'	0.02		
A-2-58	Tw	3685-3716	31'	0.03		
A-2-59	Tw	3716-3747	31'	0.02		
A-2-60	Tw	3747-3779	32'	0.01		
A-2-61	Tw	3779-3810	31'	0.02		
A-2-62	Tw	3810-3841	31'	0.02		
A-2-63	Tw	3841-3873	32'	0.02		Mo
A-2-64	Tw	3873-3904	31'	0.03		ppm
A-2-65	Tw	3904-3935	31'	0.03		26
A-2-66	Tw	3935-3964	29'	0.02		21
A-2-67	Tqm	3964-3995	31'	0.12		37
A-2-68	Tqm	3995-4027	32'	0.03		52
A-2-69	Tqm	4027-4055	28'	0.04		66
A-2-70	Tqm	4055-4076	21'	0.04		89
CONTINUOUS CORE SAMPLES						
A-2C-1	Tqm	4076-4078	2'	0.16		36
A-2C-2	Tqm	4078-4080	2'	0.18		11
A-2C-3	Tqm	4080-4090	10'	0.14		14
A-2C-4	Tqm	4090-4100	10'	0.01		26
A-2C-5	Tqm	4100-4110	10'	0.02		30
A-2C-6	Tqm	4110-4120	10'	0.05		12
A-2C-7	Tqm	4120-4130	10'	0.30		24
A-2C-8	Tqm	4130-4140	10'	0.01		33
A-2C-9	Tqm	4140-4150	10'	0.01		16
A-2C-10	Tqm	4150-4160	10'	0.01		34
A-2C-11	Tqm	4160-4170	10'	0.01		21
A-2C-12	Tqm	4170-4180	10'	0.07		32
A-2C-13	Tqm	4180-4190	10'	Trace		17
A-2C-14	Tqm	4190-4200	10'	0.06		14
A-2C-15	Tqm & pЄpl	4200-4210	10'	0.01		20

ASARCO Sample No.		Depth	Interval	Total Cu, %	Weighted Average	Mo ppm
A-2C-16	Tqm & pЄpi	4210-4220	10'	0.16		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	oxidized leached	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	fault	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	sulfides	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	pЄpi	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
A22-46		4510-4513	3	0.25		38

HAWLEY & HAWLEY

Registered Assayers
OVER 50 YEARS

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 %	AARL % Cu ~~Zinc %~~	Mo. %			
A-2C-25				0.01	trace				
26				0.20	0.22				
27				0.20	0.20				
28				0.11	0.11				
A-2C-29				0.37	0.37				
A-2C-30				0.65	0.63				
31				0.40	0.39				
32				0.42	0.40				
33				0.39	0.36				
A-2C-34				0.38	0.35				
A-2C-35				0.43	0.42				
36				0.54	0.51				
37				0.30	0.31				
38				0.38	0.35				
A-2C-39				0.29	0.27				
A-2C-40				0.37	0.33				
41				0.50	0.48				
42				0.55	0.49				
43				2.71	2.40				
44				0.43	0.42				
A-2C-45				1.09	1.01				
Composites:				Au	Ag				
A-2C-25, 26, 27, 28, 29	< 0.005	0.03		trace	0.07				
A-2C-30, 31, 32, 33, 34	< 0.005	0.05		trace	0.04				
A-2C-35, 36, 37, 38, 39	< 0.005	0.11		trace	0.10				
A-2C-40, 41, 42, 43, 44	None	0.01		trace	0.10				
				21 Cu, verified, @$3.25				$ 68.25	
				4 Au & Ag " @$7.25				29.00	
				20 Composites @$.25				5.00	

Comparison Assays submitted on same pulps

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

REMARKS:

Verified analysis

Analysis Cert. 6784
H. E.

REGISTERED ASSAYER CERTIFICATE NO. 6784 Arizona U. S. A.

Preparation $ 5.00
Analysis $ 97.25

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

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE April 3, 1972

OMPOSITES

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
-2C 25-29	Trace	0.07	4300 -	4350	start of sulfide zone			
30-34	Trace	0.04	4350 -	4400				
35-39	Trace	0.10	4400 -	4450				
40-44	Trace	0.10	4450 -	4500				

REGISTERED ASSAYER
Peter A. Flores
4/3/72
Arizona U. S. A.

Invoice # 7524

CHARGES $ 16.00

ASSAYER-CHEMIST

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average
Rotary Cuttings:					
A-4-14	2212-2236	24'	0.01		573 ft. @ 0.05% Cu
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		353 ft. @ 0.12% Cu
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		

Tw

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.		Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Rotary Cuttings (cont'd.):							
A-4-36	Tw	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	Tw	3593-3610	17'	0.09		1,487 ft. @ 0.08% Cu	
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			

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.	Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Core Samples (cont'd.):						
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	270 ft. @ 0.89% Cu	Composite - .002 oz/ton Au, 0.10 oz/ton Ag
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		
Tw						
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		330 ft. @ 0.08% Cu	
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		130 ft. @ 0.86% Cu	

ASSAY RESULTS DRILL HOLE A-4
SUPERIOR EAST PROJECT

ASARCO Sample No.		Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Core Samples (cont'd.):							
A-4-C40	Tw	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			
A-4-C56		5970-5980	10'	0.47		170 ft. @ 1.12% Cu	
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		190 ft. @ 0.35% Cu	
A-4-C73		6140-6150	10'	0.19			
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'	0.23			
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.		Depth	Interval	Total Cu, %	Oxide Cu, %	Weighted Average	Au & Ag
Core Samples (cont'd.):							
A-4-C92	Lms Slide Block	6330-6340	10'	1.05		120 ft. @ 3.04% Cu	
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	Tw	6450-6460	10'	0.57		30 ft @ 0.59 %Cu	
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	Lms & Lms bx	6490-6500	10'	0.72		90 ft.@0.81% Cu	
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	fault	6570-6580	10'	1.58	Mo, %		
A-4-C117	Intrusive	6580-6590	10'	0.14	.0044	84 ft.@ 0.16% Cu	
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		

210 ft. @ 2.14% Cu

30 ft. @ 0.21 %Cu

Composite .003 oz/ ton Au, 0.13 oz/ ton Ag

Composite .002 oz/ ton Au, 0.10 oz/ ton Ag

Note: 5080-6540 = 1460 feet of 0.76% Cu
5680-6540 = 860 feet of 0.98% Cu

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 ~~CDA~~-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					Shaly Lms.
-9	Pn	4800-4820	20'	7	156	5					Shaly Lms
-10		4900-4920	20'	5	123	7	CaO / SiO_2				Shale and Lms.
-11		5194-5202	8'	31	74	10	16.9 1.7	28.1	14.5	0.80	Dolomitic Lms
-12		5202-5210	8'	19	56	13	3.7 8.3	30.7	20.8	0.80	Replaced Texture
-13	Me	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 10.2	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 3.2	44.2	2.3	0.95	Shaly Lms.
-18	Dm	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

ASARCO Sample No.	Depth	Interval	Cu ppm	Zn ppm	Mo ppm	SiO_2 %	CaO %	MgO %	Total Fe, %	Rock Type
DCA-1A-19	5650-5660	10'	20	53	11	6.5 4.7	30.3	19.9	0.90	Replaced ~~[illegible]~~
-20	5709-5719	10'	337	30	12	10.8 2.6	28.1	18.2	0.95	Replaced ~~[illegible]~~
			271	552	108					
			274	554	11 (10)	98.5	326.5	149.8	8.75	
						9.9	32.7	15.0	0.88	7.8
										CaO / SiO_2
average						11.9	28.2	17.8	0.94	
Repl. (5)			30	56		5 | 59.6 =	5 | 141.1 =	5 | 88.8	5 | 4.70	5.8
Dol. (3)			23	63		7.7 3 | 23.1 =	29.8 3 | 89.5	19.2 3 | 57.5	0.72 3 | 2.15	7.2
Stockpiles (1)			42	48		13.7	44.2	2.3	0.95	3.2
Lms (1)			11	37		2.1	51.7	1.2	0.35	24.6

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	
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	
M-1A-50	3040-3060	20'	0.03		
M-1A-51	3140-3160	20'	0.13		
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	150 ft. @ 0.154% Cu	Composite - Trace Au and 0.02 oz./ton Ag
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		

2428 — Tev / Tw

2920 — Tw / Qm slide

3108 — Tw

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	
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	858 ft. @ ± 0.08% Cu	
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		
	TD				

4898 Tw / Pn

INVOICE

3441 East Milber

No. 10988

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company Lee DATE June 11, 1974

SAMPLE MARKED	ANALYSIS	CHARGES
	W. G. K. JUN 12 1974	
A - 3 - 1 — A - 3 - 5	Geo-Chem Cu, Mo, Pb, Zn	$ 25.00
A - 6 - 1 — A - 6 - 3	Geo-Chem Cu, Mo, Pb, Zn	15.00
8 Samples	Geo-Chem Preparation	4.00
	Total	$ 44.00

APPROVED FOR PAYMENT

By: _____
(Signature)

J.D.S.

7-10-74

FROM: W. L. KURTZ

TO: Project Supervisors
Mrs. Kellogg

Please put significant assay data on your monthly drill progress maps, starting with July map.

SUPERIOR EAST HOLE A-7

A-7-1	Missing
A-7-2	Missing
A-7-3	Missing
A-7-4	Missing
A-7-5	Missing
A-7-6	
A-7-7	
A-7-8	
A-7-9	
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A-7-111	Missing
A-7-112	Missing
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A-7-114	Missing
A-7-115	Missing
A-7-116	Missing
A-7-117	Missing
A-7-118	Missing
A-7-119	Missing
A-7-120	Missing
A-7-121	Missing
A-7-122	Missing
A-7-123	Missing

HELP HELP *AARL

ASARCO Missing Crushed Reject Bags. Sept. 10, 1979

G.D. Seelp

	Series	Sample Numbers
9	A-1-	1 thru 5
0	A-2-	1 thru 5
	A-2-	45
	A-2-	53 thru 70
71	A-2W-	1 thru 71
46	A-2C-	1
5	A-3	1 thru 5.
43	A-4C-	121
3	A-6	1 thru 3.
123	A-7-	1 thru 5.
	A-7-	103.
	A-7-	106 thru 116.
64	M-1A-	412
15	DCA-3A-	2 thru 14
19	RW-5	1 thru 19
8	RW-32	thru 37.

HCLP HELP HARL

ASARCO Missing Crushed Reject Bags. Sept. 10, 1979

JWSell

Series	Sample Numbers
A-1-	1 thru 5
A-2-	1 thru 5
A-2-	45
A-2-	53 thru 70
A-2W-	1 thru 71
A-2C-	1
A-3	1 thru 5
A-4C-	121
A-6	1 thru 3
A-7-	1 thru 5 missing
A-7-	103
A-7-	106 thru 116.
M-1A-	42
DCA-3A-	2 thru 14
RW-5	1 thru 19
RW-32	thru 37.

Pat Pacher
Found 10/15

One More HELP

ASARCO
Jim Sell

Missing Assay Pulps.

Sept. 10, 1974

Series	Numbers	
A-1-	1 thru 19	
A-4C-	117 thru 130.	
A-4C-	134 thru 143.	
M-1A-	1 thru 15.	May have Metcon # 7062 thru 7076.
M-1A-	38 thru 58.	
DCA-1A-	1 thru 3	
RW-5-	5 thru 19	
RW-31 thru 37		
B-5		
L-2-1		
L-2-2		
A-7- 83 thru 123		

Assay Pulps.

A-1 1 thru 19 (MISSING) Missing
A-1-1 thru 19 Composite pulp.

A-2 1 thru 70 (Rotary) Complete
A-2C 1 thru 46 (Core) Complete
Composite of A-2C - (25-29), (30-34), (35-39), (40-44) Complete.
A-2W 1 thru 71 (Core) Complete

A-3 1 thru 5 (Rotary) Complete

A-4- 1 thru 13 (Rotary) Meteor # 7134 thru 7146 ?
1 thru 13, AARL rerun of Meteor numbers Complete
A-4- 14 thru 34b (Rotary) Meteor # 7140 thru 7181 ?
14 thru 34b, AARL rerun of Meteor numbers Complete
A-4- 35 thru 54 (Rotary) Meteor # 7320 thru 7339 ?
35 thru 54, AARL rerun of Meteor numbers Complete
A-4C- 1 thru 3 (Core) Meteor # 7182 thru 7184 ?
1 thru 3, AARL duplicate of Meteor numbers Complete
A-4C- 4 thru 7 (Core) Meteor # ?
4 thru 7, AARL pulp sacks ? Complete
A-4C- 8 thru 100. (Core) Meteor # in Pima Min. Co. sacks Complete
A-4C- 30 thru 100 (Core) AARL rerun of Meteor bag pulps? Complete
A-4C- 101 thru 116 (Core) Meteor in Pima Min. Co. sacks. Complete
A-4C- 117 thru 130 (Core) Missing
A-4C- 131 thru 133 (Core) Meteor in Pima Min. Co. Sacks. Complete
A-4C- 134 thru 142 (Core) [illegible]

Assay Pulps Sheet 2

Have Meteor coarse crushing in large paper sacks of:

→ A-4C- 1 thru 7 (MISSING)

A-4C- 8 thru 114 Complete

→ A-4C- 117 thru 130 (MISSING)

A-4C 131 thru 133 Complete

→ A-4C 133 thru 143 (MISSING). Did Meteor have Them?

M-1A - 36 & 37 Complete

→ Other M-1A ??

A-5 No Samples Rotary

A-6 1 thru 3 (Rotary) Complete

A-7-1 (Rotary) Complete

A-7- 2 thru 82 (Core) AARL Complete

A-7- 21 thru 70 (Core) Duplicate by SW Assayers Complete

→ M-1A - 1 thru 15 (Core) Meteor # 7062 thru 7076 Missing

M-1A - 16 thru 35 (Core) AARL Rerun of Meteor # 7103 thru 7122 Complete

{M-1A- 36 thru 37 (Core) Meteor in Pima Min Co. Sacks. Complete

{M-1A- 36 thru 37 (Core) AARL rerun of Meteor Complete

→ M-1A- 38 thru 58 (Core) ? Missing

M-1A- 59 thru 64 (Core) AARL Complete

Assay Profs Sheet 3

→ DCA-1A- 1 thru 3 (Core) Missing
DCA-1A- 4 thru 20 (Core) Complete

DCA-3A - 1 thru 15 (Core) (9/5/74). Complete
DCA-3A - 16 (In Progress).

AI-1- 1 thru 69 [illegible] Complete

AH-1- 1 thru 45 (Core) Complete
AH-2- 1 thru 37 (Core) Complete
AH-3- 1 thru 35 (Core) Complete
AH-4- 1 thru 6 (Core) Complete
AH-5- 1 thru 35 (Core) Complete

→ RW-5 - 1 thru 19 (Core) Have 1-4

→ RW-31 thru 37 Rock Chip & Cuttings

→ B-5

→ L-2- Missing 1, 2, 2A, 3, & 4.

8/2/74

SUPERIOR REJECTS in burlap Sacks

from Tucson Warehouse

in Storeroom Claypool

A-1-2		A-1-1, 3, 4, 5 (Missing)
A-1-6	through	A-1-11
A-1-12	through	A-1-19
DCA-1A-1	through	DCA-1A-3
DCA-1A-4	through	DCA-1A-6
DCA-1A-7	through	DCA-1A-10
M-1A-36	through	M-1A-41
M-1A-42	(Missing)	
M-1A-43	through	M-1A-45
M-1A-46	through	M-1A-47
M-1A-48	through	M-1A-50
M-1A-51	through	M-1A-53
M-1A-54	through	M-1A-56
M-1A-57	through	M-1A-59
M-1A-60	through	M-1A-62
M-1A-63	through	M-1A-64
A-4-C-1	through	A-4-C-3
A-4-C-4	through	A-4-C-7
A-4-C-8	through	A-4-C-10
A-4-C-11	through	A-4-C-13
A-4-C-14	through	A-4-C-16
A-4-C-17	through	A-4-C-19
A-4-C-20	through	A-4-C-23
A-4-C-24	through	A-4-C-29
A-4-C-30	through	A-4-C-34
A-4-C-35	through	A-4-C-39
A-4-C-40	through	A-4-C-44
A-4-C-45	through	A-4-C-49
A-4-C-50	through	A-4-C-54
A-4-C-55	through	A-4-C-59
A-4-C-60	through	A-4-C-64
A-4-C-65	through	A-4-C-69
A-4-C-70	through	A-4-C-74
A-4-C-75	through	A-4-C-79
A-4-C-80	through	A-4-C-84
A-4-C-85	through	A-4-C-89
A-4-C-90	through	A-4-C-94
A-4-C-95	through	A-4-C-99
A-4-C-100	through	A-4-C-104
A-4-C-105	through	A-4-C-109
A-4-C-110	through	A-4-C-114
A-4-C-115	through	A-4-C-119
A-4-C-120	through	A-4-C-124
A-4-C-121	(Missing)	
A-4-C-125	through	A-4-C-129
A-4-C-130	through	A-4-C-136
A-4-C-137	through	A-4-C-139
A-4-C-140	through	A-4-C-143

M-1A- 1 thru 15, 14 " 35, 36 " 41, 42 missing, ~~43 thru 44~~ breakdown

A-2- 1 thru 3 missing, A-2- 4 thru 30 (A-2-5 missing) 1

A-2- 31 thru 52 (A-2-45 missing) 2

DCA-1A-11 thru 14 ok → " 17 thru 20

A-2- 53 thru 70 missing breakdown

Sacked

A-2C- 2 thru 11, 12 " 18, 19 " 25, 26 " 32, 33 " 39, 40 thru 46

A-4- 1 thru 54 breakdown.

Rejects in Burlap bags.

SUPERIOR EAST HOLE A-7

A-7-1	Missing
A-7-2	Missing
A-7-3	Missing
A-7-4	Missing
A-7-5	Missing
A-7-6	
A-7-7	
A-7-8	
A-7-9	
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A-7-100	
A-7-101	
A-7-102	
A-7-103	Missing
A-7-104	
A-7-105	
A-7-106	Missing
A-7-107	Missing
A-7-108	Missing
A-7-109	Missing
A-7-110	Missing
A-7-111	Missing
A-7-112	Missing
A-7-113	
A-7-114	Missing
A-7-115	Missing
A-7-116	Missing
A-7-117	~~Missing~~
A-7-118	~~Missing~~ Sacked in claypool.
A-7-119	~~Missing~~
A-7-120	~~Missing~~
A-7-121	~~Missing~~
A-7-122	~~Missing~~
A-7-123	~~Missing~~

DCA-3A - Have 1, 5, 10, 12, 15

Have RW-5 - 17

Have RW-30
RW-31

Have B-5

SUPERIOR PULPS

large meteor paper sack original crush?

MIA-36
MIA-37

A-4 C-8 through A-4 C-100
A-4C-101 " A-4C-112

A4-C113 through A4-C116
A4-C131 through A4-C133

One More HELP

ASARCO
Jim Sell
Sept. 10, 1974

Missing Assay Pulps.

Series	Numbers	
A-1-	1 thru 19	
A-4C-	117 thru 130.	
A-4C-	134 thru 143.	
M-1A-	1 thru 15.	May have Metcon # 7042 thru 7076.
M-1A-	38 thru 58.	
DCA-1A-	1 thru 3	
RW-5-	5 thru ~~19~~ 17 In Claypool	RW-5 - 18 & 19 missing
RW-31 thru 37	In Claypool	
B-5		
L-2-1		
L-2-2	In Claypool	
A-7-	83 thru 123	In Claypool

All others Not found at AAPL as of 10/15/74

of Samples

Assay Pulps.

(19) A-1 1 thru 19 (MISSING) Missing
A-1-1 thru 19 Composite pulp.

(70) A-2 1 thru 70 (Rotary) Complete
(46) A-2C 1 thru 46 (Core) Complete
Composite of A-2C - (25-29), (30-34), (35-39), (40-45) Complete.
(71) A-2W 1 thru 71 (Core) Complete

(5) A-3 1 thru 5 (Rotary) Complete

(54) A-4- 1 thru 13 (Rotary) Meteor # 7134 thru 7146 ?
1 thru 13, AARL reruns of Meteor numbers Complete
A-4- 14 thru 34b (Rotary) Meteor # 7140 thru 7181 ?
14 thru 34b, AARL reruns of Meteor numbers Complete
A-4- 35 thru 54 (Rotary) Meteor # 7320 thru 7339 ?
35 thru 54, AARL reruns of Meteor numbers Complete
(143) A-4C- 1 thru 3 (Core) Meteor # 7182 thru 7184 ?
1 thru 3, AARL duplicate of Meteor numbers Complete
A-4C- 4 thru 7 (Core) Meteor # ?
4 thru 7, AARL pulp sacks ? Complete
A-4C - 5 thru 11 Composite missing
A-4C- 8 thru 100. (Core) Meteor # in Pima Min. Co. Sacks Complete
A-4C- 30 thru 100 (Core) AARL reruns of Meteor large pulps? Complete
A-4C- 101 thru 116 (Core) Meteor in Pima Min. Co. Sacks. Complete
A-4C 108 thru 112 Composite missing
A-4C- 117 thru 130 (Core) Missing
A-4C-117 thru 125 Composite missing
A-4C- 131 thru 133 (Core) Meteor in Pima Min. Co. Sacks. Complete
A-4C- 134 thru 143 (Core) Missing

Assay Pulps Sheet 2

Have Meteor coarse crushing in large paper sacks of:

→ A-4C- 1 thru 7 (MISSING)

A-4C- 8 thru 114 Complete

→ A-4C- 117 thru 130 (MISSING)

A-4C 131 thru 133 Complete

→ A-4C 133 thru 143 (MISSING). Did Meteor have these?

M-1A - 36 & 37 Complete

→ Other M-1A ??

A-5 No Samples Rotary

(3) A-6 1 thru 3 (Rotary) Complete

(123) A-7-1 (Rotary) Complete

A-7- 2 thru 82 (Core) AARL Complete

A-7- 21 thru 70 (Core) Duplicate by SW Assayers Complete

→ A-7 83 thru 123 (Core) AARL Complete

→ (64) M-1A - 1 thru 15 (Core) Meteor # 7062 thru 7076 Missing

M-1A - 16 thru 35 (Core) AARL Rerun of Meteor # 3103 thru 7122 Complete

M-1A- 36 thru 37 (Core) Meteor in Pima Min. Co. Sacks. Complete

M-1A- 36 thru 37 (Core) AARL rerun of Meteor Complete

→ M-1A- 38 thru 58 (Core) ? Missing

M-1A- 59 thru 64 (Core) AARL Complete

→ M-1A- 1 thru 15 Composite Missing.

Assay Profs Sheet 3

→ (20) DCA-1A- 1 thru 3 (Core) Missing
DCA-1A- 4 thru 20 (Core) Complete

DCA-3A - 1 thru 15 (Core) (9/5/74). Complete
DCA-3A - 16 In Progress).

(LA) AI-1- 1 thru 69 (Core) Complete

AH-1- 1 thru 45 (Core) Complete
AH-2- 1 thru 37 (Core) Complete
AH-3- 1 thru 35 (Core) Complete
AH-4- 1 thru 6 (Core) Complete
AH-5- 1 thru 35 (Core) Complete

→ RW-5 - 1 thru 19 (Core) Have 1 thru 17.

→ RW-3 have 1 thru 37 Rock Chip & Cuttings

→ B-5 Missing

→ L-2- 1 missing, 2, 2A, 3, & 4. Have

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE November 29, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
DCA-2A-1			373	91	55	26		
2			86	104	109	2		
3			344	96	121	1		
4			1036	140	73	7		
5			343	723	108	13		
6			620	105	42	8		
7			1004	66	56	9		
8			639	92	62	5		

REGISTERED ASSAYER
CERTIFICATE NO. 655
JOSE S. FLORES
Date Signed 11/29/74
Arizona U. S. A.

Invoice # 11775

CHARGES $ 40.00

ASSAYER-CHEMIST

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Dec. 5, 1974

SAMPLE MARKED	GOLD OZ./TON	Percent Copper	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
DCA-2A- 9			434	50	45	11		
10			707	43	64	6		
11		0.20	2000+	41	92	9		
12			261	29	84	6		

REGISTERED ASSAYER CERTIFICATE NO. 6352 PETE S. FLORES Arizona U. S. A.

Invoice # 11805

CHARGES $ 21.75

ASSAYER - CHEMIST

10 Dec 74

To Jim Sell

This is a list of bagged assay pulp rejects in the back room at our Claypool warehouse, as of 20 Aug 1974.

Lingan W. Ashby Fleming

LIST OF BAGGED ASSAY PULP REJECTS IN BACK ROOM AT CLAYPOOL, BY BAGS

HOLE	SAMPLES / BAG
A-1	2 missing 1,3,4,5
	6 to 11
	12 to 19
A-2	4, 6-30 missing 1,2,3,5
	30-44, 46-52 missing 45
A-2-C	2 to 11 missing 1
	12-18
	19-25
	26-32
	33-39
	40-46
A-2-W	1-4
	5-9
	10-14
	15-19
	20-24
	25-29
	30-34
	35-39
	40-44
	45-49

HOLE	SAMPLES/BAG
A-2-W (CONT)	50-54
	55-59
	60-64
	65-69
	70-71
A-4	1-54
A-4-C	1-3
	4-7
	8-10
	11-13
	14-16
	17-19
	20-23
	24-29
	30-34
	35-39
	40-44
	45-49
	50-54
	55-59
	60-64
	65-69

HOLE	SAMPLES/BAG
A-4-C (CONT.)	70 - 74
	75 - 79
	80 - 84
	85 - 89
	90 - 94
	95 - 99
	105 - 109
	110 - 114
	115 - 119
	120, 122-125 missing 121
	126 - 129
	130 - 136
	137 - 139
	140 - 143
A - 5 all in one bag	594-625
	658-690
	721-752
	752-775
	908-940
A - 7	117 - 123
AH-4	3 - 6

HOLE	SAMPLES/BAG	
AH-5	~~[illegible]~~	
	1-6	
	7-10	
	11-17	
	18-24	
~~B~~CA-1A	1-3	2 each
	4-6	2 each
	7-10	2 each
	11-16	
	17-20	2 #17
M-1A	1-4	
	5-9	
	10-14	
	15-19	
	20-24	
	25-29	
	30-35	
	36-41	
	43-45	42 missi
	46-47	
	48-50	
	51-53	
	54-56	
	57-59	
	60-62	
	63-64	

Original DCA-2A drilled by GV Miami Copper - Superior Oil
July 3 - July 12, 1964 (Sample 0-1471).
June 27 - July 24, 1965 (1471-1772).
Boyles Brothers, CP-50 rig
reconditioned, set 4" casing w/packer to 1337

GEOLOGIC LOG

PROJECT Superior East

Superior 7½' Quad. (1948)
SE¼ NW¼ SE¼ of Sec. 11
T1S, R13E.

FEET (Central)

PROJECT Superior East
Collar elev. 4760 ft
Coord N. 858,220 ft
Inclination Vertical
Logged by JaBell
Date start Nov. 4, 1974

HOLE NO. DCA-2A
Final depth 2422 ft
Coord E. 777,820 ft
Page 1 of 4
Date finish Dec. 19, 1974

	DEPTH from	DEPTH to	int'vl	% CORE RECOV.	Sample No. DCA-2A-	P.P.M. ASSAY Geochem. Cu	Pb	Zn	Mo	ORE MINERALS	GANGUE MINERALS (MATRIX Clr %; CLASTS)	STRUCTURE	ROCK TYPE and REMARKS
	See original log of Miami Copper - Superior Oil									Fe hydroxides.			
Tw	1352	1360	8	95									
	1360	1370	10	80							pk brn 60; 5; 85; 10		WHITETAIL CONGLOMERATE. Semi-brecciated gh. bitt. matrix w/ poorly sorted clasts ¼"-2", median 1" w/ few 6"-10", subangular. Shit fe-stained, wk alt., fresh granite w/ biotite, bright. Clay-crushed feldspar contact "sticky" zones. Subhorizontal ??
	1370	1380	10	60							lt brn 35; 30; 30; 35		
	1380	1390	10	80							lt brn 30; 50; 50		
	1390	1400	10	80	-1	373	91	55	26		lt brn 70; 60; 10		
	1400	1410	10	100							lt brn 20; 20; 80 *		* last foot is green-gray ¼"-½" packed, fine granulated type.
	1410	1415	5	80							wht brn 15; 5; 95		matrix has "baked" or "bacon" texture.
	1415	1420	5	100							gm blk 80; 20; * 80	few stringers + 50° w/ 20°	WHITETAIL CONGLOMERATE. Gray-green, fine sand & gravel size, similar to above.
Tw	1420	1430	10	98							gm blk 100; —; —	few stringers + 50° w/ 20°	* possibly a volcanic, mica calcite, some orange & black dust. Chlorite only in top 2 feet. Egg-white
	1430	1440	10	100	-2	86	104	109	2		gm blk 100; —; —	few stringers + 50° w/ 20°	is sand; bottom contact depositional.
	1440	1442	2	100							gm blk 100; —; —	few stringers + 50° w/ 20°	
Trt	1442												RHYOLITE TUFF. Water bin. air-fall, yellow-light green to a variegated (?) & also oxidized fragmentals. Fine magnetite (x/w). Basal 8" fine varicoloured mud-lake tuff.
	1452	1460	8	100									
pepi	1460	1470	10	100	-4	1036	140	73	7	Few qz-calcite sericiti (¼") & weak chlorite-sericiti stain spots of chlorite is pig throughout pepi interval.		Totally broken & crushed for pepi interval	PINAL SCHIST. Essentially fresh, dense, massive gh-biotite w/ fair phyllic zones. Some qz-sericiti zones, numerous weak Fe-stained fractures. Very broken, some gravelly coarse spots. Totally oxidized: few biotite stringers.
	1470	1480	10	100									
	1480	1500	10	100									Some open-cavities as 1/16 bx-vertices.
	1500	1510	10	100									
	1510	1520	10	100									
	1520	1530	10	100									
	1530	1540	10	100									
	1540	1550	10	100						Minor amount clay w/ mica-chlorite 1557'-61.	Mod. to heavy Fe stain throughout.		basal zone crushed, fault grit @ +55°
	1550	1560	10	100								Very broken & crushed fractures, partially crushed zones.	SCHULTZE GRANITE. Small fresh biotite and granular fresh. Fairly many muscovite gh. oxidized, with Fe stain. Broken. Fractures +15°, +40°; some open-cavity, bx type. No copper stain except as metal.
Tsg	1560	1570	10	100									
	1570	1580	10	100									
	1580	1590	10	100	-5	342	723	108	13				
	1590	1600	10	100									
	1600	1610	10	100									100-100th - crushed zone w/ gh-muscovite.
	1610	1613	3	100								increased +50° fracs	
+50° fault	1613	1620	7	100									FAULT ZONE. Crushed, gouge, strong gh-muscovite, heavy Fe stain, +10°
	1620	1630	10	100									SCHULTZE GRANITE. As previous, top 4' hi gh-muscovite of numerous
Tsg	1630	1640	10	100	-6	620	105	42	8			Numerous 80° shears w/ Fe stain.	high-angled shears & heavy Fe-stain. Gradually changing to bright biotite
	1640	1650	10	100	-7	1004	66	56	9	minor amount clay-muscovite zone w/ minor chlorite 1639'-1645'.			granite, w/ few gh-muscovite shears & decrease of Fe-stain to 1650
	1650	1660	10	100						increased gh & gh-muscovite locally (up to 50% of rock)		+10° shears w/ 30° fracs	fractures. Silica gouge veins, also gh-muscovite veins or zones, (maybe
	1660	1670	10	100						as above and Mn (?) on +10° shears @ 1664-1664'			central fracture). Chiefly feldspar throughout
	1670	1676	6	100						gh & gh-muscovite throughout, angelic w/ minor chlorite. Fe stain on 45° shears		3" gouge w/ fault shear	broken, numerous 45-60° shears 3" gouge shear. Contact @ 45° w/ schist.
pepi	1676	1680	4	100									PINAL SCHIST. gh-biotite-muscovite schist w/ prevalent gh zones. Clots &
	1680	1682	12	100						Increased gh-sericiti & stain.			lenses of biotite, esp. secondary. Only chlorite cover stains & masses in
	1682	1692	1	100						Fe stain & chlorite.			gh-muscovite-biotite veinlets. Slightly at +20°
E	1692	1693	1	100								Crushed-fault	Crushed, fault zone @ 45°-55°, heavy Fe & Cu stains & masses; brecciated; Chlorite on both sides.
	1693	1700	7	100									Schist as above, w/ Fe stain shears @ 45°.

mn 2555 dm

Bayles, CP-50
NX Core

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East
Collar elev. 4760
Coord N.
Inclination Vertical
Logged by JDP-LO
Date start

HOLE NO. DCA-2A
Final depth
Coord E.
Page 2 of 4
Date finish

	DEPTH from	DEPTH to	int'vl	% CORE RECOV.	Sample No. DCA-2A	P.P.M. ASSAY Geochem. Cu	Pb	Zn	Mo	ORE MINERALS	GANGUE MINERALS	STRUCTURE	ROCK TYPE and REMARKS
pepi	1700	1710	10	100	-8	639	92	62	5				PINAL SCHIST Qtz-biotite-muscovite schist, Fe stain on shears, fresh, small cuts
±45° fault	1710											Crushed zone gouge.	FAULT ZONE Flattish to +45° fow steep. Very strongly yellow oxidate replaced and flooded w/ limonite filled cavities. Silicosite bar-veinlets.
		1717	7	100								fow steep, Fe-stain	PINAL SCHIST Qtz-biotite-muscovite schist, wk Fe staining on shear fractures
	1717	1720	3	100									Dark gray, sulfidic ±20° schistosity, fresh, minor Fe on shears, crushed zone than
	1720	1730	10	100									
	1730	1740	10	100						Cu Ox in crushed zone @ 1730	<0.1%	11- 6" crushed zone	Aphanitic cut by 4 crushed zones increased Fe-stain, Cu ox in top crushed zone
	1740	1750	10	100								2- " "	Crushed zones at slips of ±45°
	1750	1760	10	100						Cu ox in crushed zone @ 1749-1751'	<0.1%	2- 4"-8" " "	Few steeper zones, such as 4" zone on 1755' @ ±75°
	1760	1767	7	100									few 45° zones Fe-stain on shears
crushed	1767	1772	5	40								Crushed 1767-1772.	fault? crushed rubble zone Fe oxide stain, weldable
	1772	1780	8	100									top 2' crushed as above.
	1780	1790	10	100								Crushed ±20°	Crushed throughout, except for 1785-1787, mined sericite + Fe stain
pepi	1790	1800	10	100								±70°	Generally crushed throughout, at ± 45°
	1800	1801	1	40?						Moderate Fe oxide		Crushed	Crushed, Fe-stained
	1801	1804	3	40?						Weak Fe-oxide stain		Crushed Zone	Crushed zone, predominantly Tsg fragments.
	1804												SHULTZE GRANITE. Pinkish coat w/ silica overlaid biotite, partly altered to leucoxene & muscovite, wk alt of feldspars. Biotite shattered wispy suggesting wk-pervasive cataclastic development. Wk oxid, pyrite.
Tsg		1810	6	100									
	1810	1820	10	100	-9	434	50	45	11			Crushed zone	Generally crushed w/ ±45°-60° shears. Fe oxide overprint.
intrusive	1820	1827	7	100								Sericite crushed zones	Crushed zone in qtz-carbonate veinlet zones. Intrusive contact w/ schist
pepi	1827	1834	7	100									PINAL SCHIST Broken Qtz-biotite, some muscovite; qtz lenses. Minor Fe stain.
crushed zone	1834	1837	3	60								Crushed-gouge	Crushed gouge zone, increased Fe-stain; few Tsg fragments
	1837	1840	3	100									Moderately crushed; 6" Tsg piece @ 1837' (Alto?) Weak Fe-shear stain
	1840	1850	10	100	-10	707	43	64	6				Arsenic minor stain. Tsg dikelet @ 1845-46. Steep to shear 1849-1852.
	1850	1860	10	100								±75° fracture, 1858-1860'	4" Tsg dikelet @ 1850 + 1858 @ ±45° to cavities parallel to foliation.
Pepi	1860	1870	10	100						Spot Cu Ox @ 1867'			Generally sheared at 45° to 70°. Increased Fe-stain on fractures
	1870	1880	10	100									few small crushed zones. Tsg dikelet w/ qtz-sericite fracture filling @ 1878-80'
	1880	1889	9	100						Cu Ox 0.3-0.6% 1884-1889'		Generally broken, w/ Cu oxides filling fractures	
Tsg dike	1889	1896	7	100								to 1893	SHULTZE GRANITE Essentially fresh, sharp basal contact +40°±5° DIKE contact zone
	1896	1900	4	100						Cu Ox on hematitic schist on clay shear	<0.1%	Broken	PINAL SCHIST. Broken contact schist essentially fresh, weak Fe stain on shears
	1900	1910	10	100								Crushed	Broken crushed zone gouge. Few sericite + increased Fe stain (veinlet zones?)
pepi	1910	1920	10	100	-11	2000	41	92	9	Minor Cu Ox 1912-1913, <0.1		Crushed-gouge (Sericite ±45°)	Crushed gouge zone throughout @ ±45°, parallel to schistosity
	1920	1923	3	100						Weak Fe oxide stain		Crushed-gouge (±55° incl.)	Gouge + crushed Pinal, weak Fe oxide stain throughout
	1923	1932	9	100						No Fe-oxide stain		Crushed-gouge (incl.)	Gouge + crushed Pinal. No Fe oxide stain.
	1932	1940	8	100						1934' 1" veinlet very fine disseminated pyrite			Broken, numerous fractures w/ films of sericite-clay. Schist fresh fair stain
	1940	1950	10	100									As above, schist qtz veins at crushed zones @ ±45°-55°. Carb. films.
	1950	1960	10	100									Incipiently broken, w/ sericite-clay films, crushed zones @ 1955-1960 incipient
	1960	1970	10	100						Py <0.1%			As above, increased internal sericite accompanied by fine disseminated pyrite
	1970	1980	10	100									As above, less pyrite.
	1980	1990	10	100									As above.
	1990	2000	10	100									Continued as above, numerous quartz-crushed zones, internal sericite, some pyrite
	2000	2010	10	100	-12	261	29	84	6	Some disseminated <0.1%			As above, schistosity @ 40°, qtz veining, sericite 2004' & 2007'.
pepi	2010	2020	10	100								Gouge zone.	Gouge from 2015 → 2021.

Fault-Crushed Zone

mn 2555 dm

Boyles, CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East
Collar elev. 4760
Coord N.
Inclination Vertical
Logged by J.B. Boone
Date start

HOLE NO. DCA-2A
Final depth
Coord E.
Page 3 of 4
Date finish

	DEPTH from	DEPTH to	int'vl	% CORE RECOV.	Sample No DCA-2A-	Geochem ASSAY P.P.M. Cu	Pb	Zn	Mo	ORE MINERALS	GANGUE MINERALS	STRUCTURE	ROCK TYPE and REMARKS
pEpi	2020												PINAL SCHIST qtz-biotite-muscovite schist, w/ interval muscovite-sericite, few qtz zone, few sericite-clay filled fractures, rare pyrite, schistosity 35°-45°, few shear zones & broken zones. Throughout, qtz zone & violets
	2030	10	100										As above, pinkish quartz @ 2036
2030	2040	10	100										As above, pinkish quartz 2041-42-44. 1/2"-1 1/2"
2040	2050	10	100										" " " " 2052-53-54-56-57 & 58
2050	2060	10	100										few pinkish quartz
2060	2067	7	100									Gouge-crushed	Gouge & crushed zone
gouge 2067	2069	2	100										As previous, sericitic broken, qtz-pinkish quartz, sericite-clay fractures
2069	2076	7	100							(Rod broke off drill @ 1932.2') (Rod continues 1600')		crushed, gouge	Gouge & crushed broken zone @ 4.5-1.8'. 2" qtz pinkish @ 2074'. sericite clay on schistosity 45°
2076	2080	4	100										
	Rods broken off @ 1932' during pull for bit change.												
	Fishpoint @ 1600'												
	Rods left, hole cemented and size reduced to BX Core.												
	BX CORE												
2080	2090	10	98									crushed-gouge	Crushed @ +45° Crushed w/gouge.
2090	2100	10	100									crushed-gouge	Crushed and broken gouge. 1"- fine pyrite @ 2093 Schistosity @ +50°
2100	2110	10	100									broken-gouge	Broken, crushed & gouge
2110	2120	10	98									broken-gouge	Mostly broken, some gouge zone
2120	2130	10	100	-13	245	65	87	5					Schistosity @ +45° calcite fractures @ 45° in two sets, not parallel to schistosity, gouge zone @ 2128-2130. 2132', 2136
2130	2140	10	100										
2140	2150	10	100									fractured	Calcite on steep fractures. Core blab of cp @ 2141 w/qtz
2150	2160	10	100									fractured	Somewhat broken-fractured gouge @ 2156 & 2160. Cutting calcite fractures
2160	2170	10	100									steep fractures	Steep fracture zone @ +80° from 2162-2171.
2170	2180	10	100										Core laminated w/ schistosity 45°, few calcite filled fractures
2180	2190	10	100										As above
2190	2200	10	100										
2200	2210	10	100	-14	48	44	80	8					
2210	2220	10	100										As above
2220	2230	10	100										Increased calcite filled fractures w/ qtz
2230	2240	10	100										As above. py violet @ 2232'
2240	2250	10	100									broken-gouge 2242-51	As above w/ broken & some gouge zone @ 2242-2251; +45° parallel to schistosity
2250	2260	10	100										Few broken zones
2260	2270	10	100										Broken, partially crushed.
2270	2280	10	100										Broken crushed @ 2278.
2280	2290	10	100										Few broken zones of 3-4' Mill bit (1/4") @ 2289'
2290	2300	10	100								± 10' intermix (Geo. to) lava dike?		Broken crushed esp. 2296-2301
2300													Broken crushed zone continue @ 2303'. 4" qtz-calcite vuggy vein @ 2301. Core
	2310	10	98								Fe-sulfide stringers? <0.1% after 2308'		was calcite in qtz zone below with minor fine grained pyrite. Sericite continues.
2310	2320	10	100	-15	103	32	91	4					Sericite, fine sulfides (<0.05%) & Fe-color oxide coarse (<0.1%).
2320	2330	10	100										few sericite-clay fractures.
2330	2340	10	100										As above fractured zones, minor sericite, fine pyrite & Fe-oxide cubes, & sericite-clay fractures
2340	2350	10	100										
pEpi	2350	2360	10	100									

mn 2555 dm

Bayles CP-50

GEOLOGIC LOG

PROJECT Superior East

PROJECT Superior East
Collar elev. 4760
Coord N.
Inclination Vertical
Logged by [illegible]
Date start

HOLE NO. D-A-2A
Final depth 2422'
Coord E.
Page 4 of 4
Date finish Dec 17 1974

DEPTH from	DEPTH to	DEPTH int'vl	% CORE RECOV.	Sample No. DA-2A-	Geochem ASSAY P.P.M. Cu	Pb	Zn	Mo	ORE MINERALS	GANGUE MINERALS	STRUCTURE	ROCK TYPE and REMARKS
pepi 2360	2370	10	100									PINAL SCHIST Gty. biotite-muscovite schist, laminated ms ss, few qtz veinlets some with vugs, few crushed zones, minor laminated qtz-sericite, fine py, some cp, with minor pyrrhotite cubes, few sericite-clay fractures & slips.
2370	2380	10	100									
2380	2390	10	100							2382-2392	Hi angle open, bleached fractures w/sericite-clay.	
2390	2400	10	100									
2400	2410	10	100									Broken zone, open 2400-2402.
2410	2420	10	100	-16	121	36	78	3				Continued small, narrow, open fractures w/sericite-clay (last circulation zones).
2420	2422	2	100									

Terminated Hole. Lost circulation very bad.

4" Casing w/washer at 1339 Cemented into old hole w/ 16th.
Cut and Lost NX rod from 1932' - 1520'. (?)
Cut and lost BX rod from 1320' - 1930'

mo 2555 drm

3441 East Milber

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS · CHEMISTS · METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE PICKED UP FOR _____ DATE _____

INDIVIDUAL SAMPLES ☐

COMPOSITES ☐

Reject

SIGNATURE

DCA-3A-13✓ -8✓	AH-5-30	RW-5-15✓ -5✓	RW-55✓
-6✓ -9✓	-29	-16✓ -12✓	59✓
29✓	~~-20~~ -28	-18✓ -3✓	52✓
27✓	~~A~~ ~~-7~~ -35	-2✓ -9✓	67✓
26✓	-32	-7✓ -4✓	66✓
25✓	-27	-8✓ -11✓	47✓
28✓	-25	-6✓ -13✓	58✓
18✓	-34	-19✓ -10✓	60✓
17✓	-26	-14✓ -1✓	64✓
20✓	-31		69✓
21✓	-33		49✓
19✓			61✓
24✓		-34✓ -34✓	43✓
23✓		38✓ ~~-40~~ -35✓	39✓
22✓	A-3-5✓ A-6-1✓	44✓ -33✓	62✓
16✓	-2✓ -2✓	54✓ -37✓	65✓
7✓	-3✓ -3✓	40✓ -32✓	41✓
14✓	-4✓	53✓	57✓
11✓	-1✓	68✓	70✓
3✓		48✓	50✓
2✓		56✓	63✓
-4✓		42✓	45✓
		51✓ ←	46✓

AL-2

over for Missing

3353

DCA-3A - 1 RW-5-17

- 5
- 10
- 12
- 15 ? RW-31

Pulps

Have RW-30 thru 37
RW-54 thru 70

Missing 38 thru 53

RW-5 - 1 thru ~~7~~ 17 missing 18 & 19

WG-1 thru 3 complete

CHECK

LD-1 thru 3

L-1
~~L-1A~~
L-2

L-2-2
L-2A
~~L-2-3~~
L

Have
L-1, L-1A
L-2-1 (orig. hole)
L-2-2 (second hole)
L-2-2A "
L-2-3 "
L-2-4 "

DCA-3A - 1 thru 29
Complete

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TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Dec. 27, 1974

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
DCA-2A-13			245	65	87	5		
14			48	44	80	8		
15			103	32	91	4		
16			121	36	78	3		

Invoice # 11883

CHARGES $ 20.00

REGISTERED ASSAYER CERTIFICATE NO. 6894 PETE S. FLORES Date Signed 2/20/75 Arizona U. S. A.

ASSAYER-CHEMIST

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY J.O. Sell & Assocs Tucson DATE Feb 4, 1975

SINGLE ANALYSIS ☒ GEOCHEM

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.	
A-2W-11				✓									
-12													
-13													
-14													
-41													In Pulp envelopes.
-42													
-43													
-44													
68													
69													
70													
A-2W-71													
A-4C-115			✓	✓	✓						✓		
-116													
-117													In Reject Sacks
-118													
-119													make new pulps
-120													
-121													missing
-122													
-123													
-124													
-125													

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Joe Ed Zapata Tucson DATE Feb 4, 1975

SINGLE ANALYSIS ☒

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

Geochem

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.	
~~LB-1B-48~~			✓	✓	✓						✓		du Reject Sacks
-49			↓	↓	↓						↓		make new
-50			↓	↓	↓						↓		pulps
LB-4-~~2600~~			✓	✓	✓						✓		Footage 2600'
-4-~~3092~~			↓	↓	↓						↓		3092
-4-~~3410~~			↓	↓	↓						↓		3410
-4-~~4200~~			↓	↓	↓						↓		4200
-4-~~4850~~			↓	↓	↓						↓		4850

PICK UP REJECT @ AARL
" " " Burlap Bags

C-5 Attachment

Reassay for Pb &/or

~~A-1 Samples~~

A-2 Samples A-2W, - 11, 12, 13, 14 Picked up
A-2W, - 41, 42, 43, 44
A-2W, - 68, 69, 70, 71

Have Moly →

all missing

Have Moly → A-4 Samples C-117, 118, 119, 120, 121, 122, & 123 repeat

~~A-5 (Slide) A-7 - 9, & 17~~

missing

M-1A Slide 49 & 50 repeat Need Pb & Mo

~~A-7 Slide~~

LB-4 See Rejects on Table need Cu Pb Zn Mo
5 Samples.

~~DCA-2A # 12, 13, 14, 15, 16 Assay Rec. Slide Reg'd by AARL~~

Pick up DCA-2A
reject & Pulps

16 samples

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY _____ DATE April 4, 1975

SINGLE ANALYSIS ☐

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.
AM-1	✓	✓	✓	✓	✓						✓	
Other 5	✓	✓	✓	✓	✓						✓	

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 10, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
LB-4 ± 2600'			72	29	54	8		
3092'			10	33	52	5		
3410'			13	42	48	5		
4200'			11	35	46	5		
4850'			15	60	38	5		
			121	199	238	28		
		ave	24	40	48	6		

Invoice # 12207

CHARGES $ 30.00

REGISTERED ASSAYER CERTIFICATE NO. 5 PETE S FLORES Date Signed 2/10/75 Arizona U. S. A.

ASSAYER - CHEMIST

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 10, 1975

SAMPLE MARKED	~~GOLD~~ ft. ~~OZ./TON~~	ppm ~~SILVER~~ Cu ~~OZ./TON~~	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	Pb/Mo ~~PERCENT~~ ~~IRON~~	
		previous assay					previous assay	
A-4C - 115	6560-6570	700	505	88	201	43	—	Lms
116	6570-6580	15,800	19,000 2000+	82	570	82		fault zone
117	6580-6590	1,400	1140	13	123	61	44	
118	6590-6600	2,000	2200 2000+	10	60	126	122	
119	6600-6610	8,100	8600 2000+	20	67	29	45	
120	6610-6620	500	482	12	65	18	26	
121	6620-6630	400					18	
122	6630-6640	300	296	11	57	43	23	
123	6640-6650	400	443	7	56	8	12	
124	6650-6660	500	465	15	57	28	40	
125	6660-6664	500	423	12	55	26	23	
				270		464		
				27		46		
					Pb/Mo=0.58			

REGISTERED ASSAYER CERTIFICATE NO. 0352 DATE G. FLORES Date Signed 2/10/75 Arizona U. S. A.

Invoice # 12207

CHARGES $ 60.00

ASSAYER-CHEMIST

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Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

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TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 11, 1975

2000+

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
A-4C - 116			1.90					
118			0.22					
119			0.86					

REGISTERED ASSAYER CERTIFICATE NO. 6252 PETE FLORES Date Signed 2/11/75 Arizona U. S. A.

Invoice # 12215

CHARGES $ 6.00

ASSAYER-CHEMIST

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 10, 1975

SAMPLE MARKED	~~GOLD~~ OZ/TON Footage	SILVER OZ./TON	PER CENT COPPER	PPM LEAD	PERCENT ZINC	~~PERCENT~~ PPM MOLYBDENUM *	PERCENT IRON	
A-2W-11	4330-4340			31		12		Sulfide
12	4340-4350			36		12		Oxidized
13	4350-4360			27		10		
14	4360-4370			24	118 (30)	10	44 (11)	2.7
41	4630-4640			55		25		
42	4640-4650			39		77		
43	4650-4660			26		8		
44	4660-4670			23	143 (36)	18	128 (32)	1.1
68	4900-4910			13		17		
69	4910-4920			17		10		
70	4920-4930			95		13		
71	4930-4940			51	176 (44)	73	113 (28)	1.6
				437		285		1.5
			ave	36		24		
* See Previous reports.					Pb/Mo = 1.50			

REGISTERED ASSAYER CERTIFICATE NO. 6652 PETE S. FLORES Date Signed 2/10/75 Arizona U. S. A.

Invoice # 12207

CHARGES $ 15.00

ASSAYER-CHEMIST

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

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TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE Feb. 10, 1975

SAMPLE MARKED	~~GOLD~~ ~~OZ./TON~~	Pt, Pd ~~SILVER~~ Au ~~OZ./TON~~ prev.	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PERCENT IRON	
M-I-A - 48	2040-60	700	598	105	240	118	Tw	Pb/Mo = 0.9
49	2940-60	200	179	49	47	10	PM Slide Block	
50	3040-60	300	241	18	26	5		
				67		15		
					Pb/Mo = 4.5			

REGISTERED ASSAYER CERTIFICATE No. 252 PETE S. FLORES Date Signed 2/10/75 Arizona U. S. A.

Invoice # 12207

CHARGES $ 18.00

ASSAYER-CHEMIST

Nov '70

Pick up All Reject & Pulp

including A-3, 17 thru 54
A-4, 15-16, 43, 44
A-11C 57 Thru 60
A-7 - 11 thru 14

& duplicate pulps A-3 - 25 thru 34.

Take Maps etc for East Side

Take Gibson Material - Log hole charges.

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY James Sell, ASARCO Expl. DATE 12/11/75

SINGLE ANALYSIS ☒ Regular Assay (%) Use Ceramic Plates

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.	
A-4-15			.01										
A-4-16			.01										
A-4-43			.11										
A-4-44			.04										
A-4C-57			.85										
A-4C-58			.17										
A-4C-59			.13										
A-4C-60			.31										
A-7-11			.02										
A-7-12			.07										
A-7-13			.05										
A-7-14			.02										

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY JD SELL % ASARCO Tucson DATE Nov. 6, 1975

SINGLE ANALYSIS ☒

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

Caution — USE CERAMIC PLATES

Mix throughly

SAMPLE	Au	Ag	% Cu	% Pb	% Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	% Mo	S.
A-3-1			.01	.05	.05						.0004	
-2			.01	.04	.04						.0005	
-3			.01	.03	.04						.0001	
-4			.03	.06	.05						Tr.	
-5			.02	.05	.04						.0005	
-6			.02	.04	.01						Tr.	
-7			.02	.03	.05						Tr.	
-8			.01	.03	.06						.0003	
-9			.01	.02	.04						.0004	
-10			.01	.03	.01						.0005	
-11			.01	.04	.05						.0004	
-12			.01	.04	.06						Tr.	
-13			.01	.03	.07						.0006	
-14			.01	.04	.06						Tr	
-15			.02	.05	.06						.0001	
-16			.01	.05	.06						.0001	
-17			.02	.03	.05						Tr	
-18			.01	.07	.06						.0002	
-19			.01	.04	.08						Tr	
-20			.01	.04	.07						.0002	
-21			.01	.06	.06						.0003	
-22			.03	.04	.06						Tr.	

3226 East 46th Street

Sheet 2 of 2

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY J. D. SELL, % ASARCO, TUCSON DATE Nov. 6 1975

SINGLE ANALYSIS ☒

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

USE CERAMIC PLATES

SAMPLE	Au	Ag	% Cu	% Pb	% Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	% Mo	S.
A-3-23			.01	.04	.06						.0001	
-24			.02	.04	.07						.0001	
-25			.04	.03	.05						.0002	
-26			.03	.05	.06						.0005	
-27			.05	.04	.05						.0003	
-28			.06	.07	.06						.0009	
-29			.05	.03	.05						.0009	
-30			.05	.05	.04						.0001	
-31			.07	.04	.01						.0032	
-32			.04	.05	.04						.0016	
-33			.06	.04	.04						.0019	
A-3-34			.06	.06	.06						.0006	

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY JAMES SELL, ASARCO Expl. DATE 12/11/75

SINGLE ANALYSIS ☒ Regular Assay (%)

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

Use Ceramic Plates

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.
A-3-35			.06	X	X						X	
-36			.05									
-37			.03									
-38			.04									
-39			.05									
-40			.04									
-41			.04									
-42			.04									
-43			.07									
-44			.04									
-45			.04									
-46			.05									
-47			.05									
-48			.04									
-49			.04									
-50			.05									
-51			.06									
-52			.06									
-53			.20									
A-3-54			.07									

ASARCO

Southwestern Exploration Division

December 28, 1976

TO: T. C. Osborne

FROM: F. T. Graybeal

Hole A-8
Superior East Project
Pinal County, Arizona

The attached report by J. D. Sell lists the individual assays obtained to date from hole A-8 along with an outline of the geology. It should be noted that the mineralization in A-8 is not typical of porphyry copper deposits in general, although it bears some similarity to the veins in the Magma mine three miles to the west. Hole A-9 will be drilled 900 ft. east of A-8 and will be collared the first week in January 1977.

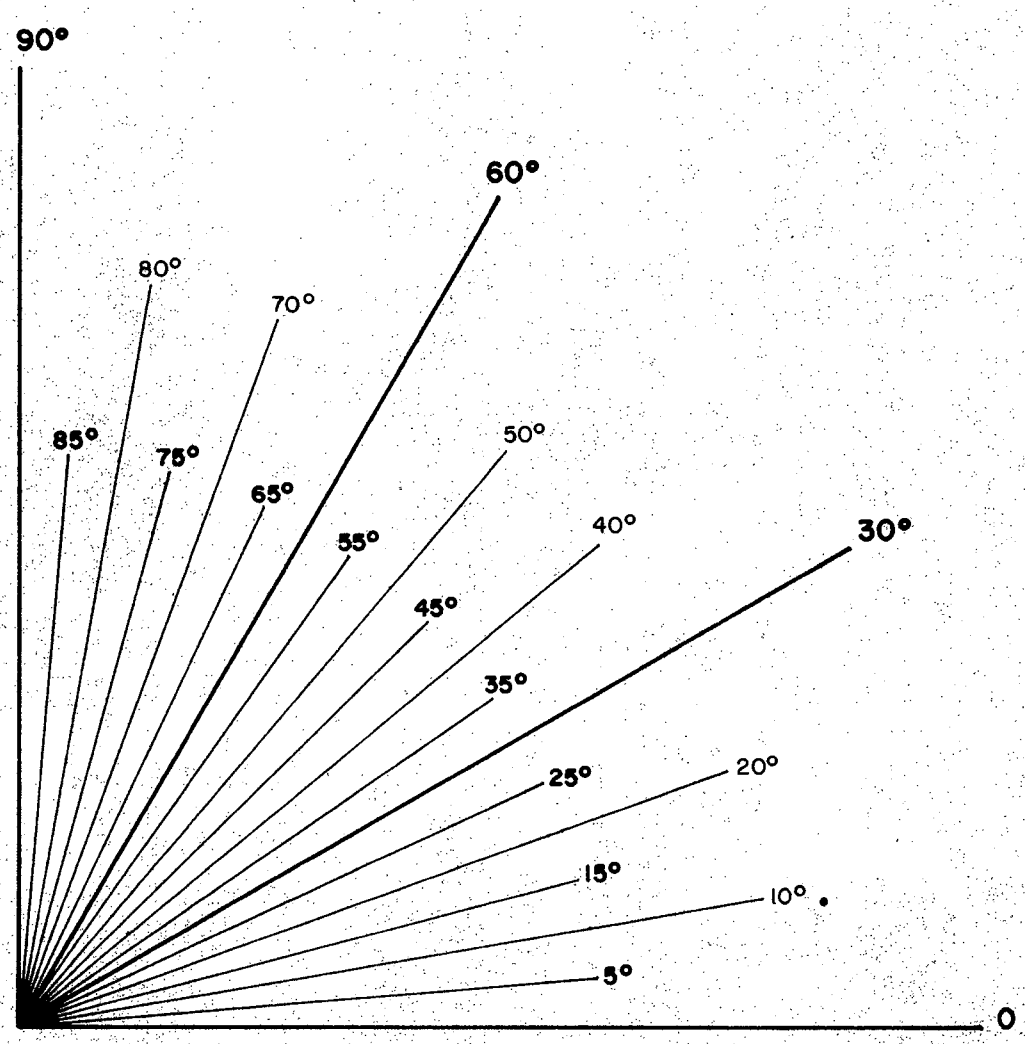
F. T. Graybeal

F. T. Graybeal

FTG:lb
Att.

cc: JDSell-w/o att.
WLKurtz-w/att.

CORETRACTOR



3015

3441 East Milber

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

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TUCSON, ARIZONA 85714

SAMPLE PICKED UP FOR ASARCO DATE 11/21/77

INDIVIDUAL SAMPLES ☐

COMPOSITES ☐

James D Bell
SIGNATURE

B-5-WR			
B-6-D			
B-6-E			
B-6-F			
B-6-G	Pulps Only		
B-6-H			
B-6-L			
B-6-Q			
B-7-A			
QDC-5-15			
QDC-5-16	Pulps & Rejects		
AT-96-19			

JDSell

Superior E
Section 5 Area

Review your memos shows analyses only for Cu, Mo, Pb, Zn, Fe, Au, Ag. Any interest in running for some of other metals found to be of interest from Colo Inst. work?

FTG
10/17/78

JDSeIT

LMS REPL.

It would be useful to have a chart showing calculated averages for every emmission spec. element for each rock type. Could you prepare one. It might show 1.) average, 2.) range, 3.) number of analyses for each rock type.

I would suggests averages for each of Tables 1A - 4A, 6A, 7A, 8A, 9A, 10A. Table 5A includes several rocks which could also be separated and listed. A chart of average values would make it far easier to see geochem. changes.

FTG 10/11/78

yes, excellent points — were attempted but not completed because of 1) getting the initial report out & 2) these are about 1/2 the number of LS's we have

FTG copy

RECEIVED
SEP 29 1978
S. W. EXPL. DIV.

Rocky Mountain
Exploration Division

September 20, 1978

F.T.G.

Limestone Replacement Search
Compilation of Emission-Spec Values
Colorado

rs found in the various units
earch, the following compilation

ion, generally original deposi-
res such as silica, calcite,

eadville Limestone. Note
lues.

ng recrystallized replacement
y minor secondary features
, secondary dolomite and
i manganese additions.

Note by WKK say: "and maybe limit chart to the "pathfinder elements" "

Table Two A. Emission-Spec Values of Leadville dolomite with only minor secondary features. Note abnormal magnesium versus calcium values, variable but often abnormal silver, barium, manganese, molybdenum, lead, and zinc values. Note also that limestone samples generally show lower values even though they have some otherwise favorable secondary characteristics.

Table Three. Leadville dolomite, pervasive recrystallized replacement texture with abundant secondary features such as zebra and birdseye development, secondary dolomite crystals replacing zebra stripes, knots, and filling vugs, also quartz crystal growths which are often iron stained, vug development, sanding development, silica development, and brecciation, with variable, but generally low to non-observable iron-manganese addition and replacement.

Table Three A. Emission-Spec Values of Leadville dolomite with pervasive replacement texture and abundant secondary features.

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AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS • CHEMISTS • METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY ASARCO INC, JIM SELLS DATE 7-25-80
TUCSON OFFICE CC. W.L KURTZ

SINGLE ANALYSIS ☒

VERIFIED ANALYSIS ☐

UMPIRE QUALITY ☐

SAMPLE	Au	Ag	Cu	Pb	Zn	Ox Cu	Fe	Insol	Al_2O_3	SiO_2	Mo	S.
-13: 4040-4048	*	*	*								*	

May 18 - June 25, 1981

MSR&D Proj. B-31 Invoice #5172

Certificate No. 511.

24 Samples, Sample Prep $111.50* = $4.4458 per sample.

Certificate No. 512

24 Samples @ 111.50 = $4.4458 per sample

14 AI-2 for Au Ag Cu Mo @ $16.00 = $224.00

5 AI-2 for Cu Mo @ $8.00 = 40.00

5 A-13 for Au Ag Cu Mo @ $16.00 = 80.00

$344.00

Certificate No. 513

24 Samples @ 111.50 = $4.4458 per sample.

Certificate No. 514 (#1)

20 Samples @ 102.30 = $5.115 per sample.

2 AI-2 for Cu Mo @ 8.00 = 16.00

4 AI-2 for Au Ag Cu Mo @ 16.00 = 64.00

6 A-14 for Cu Mo @ 8.00 = 48.00

8 A-14 for Au Ag Cu Mo @ 16.00 = 128.00

$256.00

Certificate No. 514 (#2)

14 samples @ 95.00 = $6.7857 per sample.

Certificate No. 344

24 Samples @ $144.00 = $6.000 per sample.

Certificate No. 345

13 Samples @ $84.00 = $6.4615 per sample.

Sample Prep based on $19.00 per hour work of preparing samples. This varies by size, hardness, number, etc.

Sample Prep. (4.646)(5.115)(4.785) (6.00) ~~(10.00)~~ $19/hr of work

Au } 8.00
Ag }
Cu } 3.00 5.00 above 1st Cu
Mo } 5.00

Jim Minto Sample Dept ext 267

June 81

Cost Distribution:

Hole No – Assay No.	Certificate No.	Charges: Sample Prep	Charges: Assay
AI-2-1 thru AI-2-24	511	111.50	344.00
AI-2-25 thru AI-2-43	512	88.27	264.00
AI-2-44 thru AI-2-67	513	111.50	272.00
AI-2-68 thru AI-2-73 (T.D.)	514-1	30.69	80.00
		341.96	960.00
		$1,301.96	
A-13-102 thru A-13-106	512	23.23	80.00
		$103.23	
A-14-46 thru A-14-59	514-1	71.61	176.00
A-14-9 thru A-14-32	344	144.00	384.00
A-14-33 thru A-14-45	345	84.00	136.00
		299.61	696.00
		$995.61	
A-12-1 thru A-12-14	514-2	95.00	224.00
		$319.00	

Invoice No. 5172 on above. Total $2,719.80

Rawhide Project $1,301.96

Superior East Project $1,417.84

$2,719.80

mountain states research & development

Post Office Box 17960
Tucson, Arizona 85731
(602) 792-2800
Telex: (MSME TUC) 66-6490

A Division of Mountain States Mineral Enterprises, Inc.

June 28, 1981

To: ASARCO, Inc.
1150 N. 7th Ave.
P.O. Box 5747
Tucson, Arizona 85703

Attn: ~~Pete Vikre~~ → JAMES SELL

Project No.: B-31

Invoice No.: 5172

P.O. Number:

Period Covered: May 18 - June 28, 1981

Terms: Net - Upon Receipt

MSR&D Employee Compensation:

Hours	$	Factor		
		x	=	$

Consultation:

Hours	Days	$		
			Per Hour/Per Day =	$

Assaying:	=	$ 2,719.80
Expenses: (Per Attached Summary)	=	$
Other:		
	=	$
Total Invoice:	=	$ 2,719.80

Project To Date Total: _____

REMARKS: Interim Billing _____ Final Billing _____

Rawhide Proj. $ 1,301.96
Superior East Proj. $ 1,417.84
2,719.80

REMIT TO:
MOUNTAIN STATES MINERAL ENTERPRISES, INC.
SORT #8750
NEW YORK, N.Y. 10043

OK for Payment
James R. Sell

ASARCO

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

Chief Chemist

mard-08

mountain states research & development

ASARCO

CERTIFICATE OF ASSAY

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
	$136.00 Assays									
	$84.00 Sample Prep.									

Total Charge $ 220 00

REGISTERED ASSAYER CERTIFICATE NO. 9973 FRANK M. [illegible]

Chief Chemist

mard-08

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 511

Project No. B-31

Date 6/18/81

Date	Sample No.			Au		Ag		Cu		Mo
				Oz/T		Oz/T		%		%
15793	AI-2-1			0.002		N.D.		0.036		0.003
15794	AI-2-2			N.D.		N.D.		0.022		0.004
15795	AI-2-3			0.001		N.D.		0.013		0.003
15796	AI-2-4			---		---		0.018		0.004
15797	AI-2-5			---		---		0.016		0.004
15798	AI-2-6			---		---		0.006		0.004
15799	AI-2-7			---		---		0.009		0.004
15800	AI-2-8			---		---		0.011		0.004
15801	AI-2-9			0.001		N.D.		0.012		0.005
15802	AI-2-10			N.D.		0.02		0.008		0.005
15803	AI-2-11			0.001		0.04		0.006		0.005
15804	AI-2-12			0.001		N.D.		0.014		0.006
15805	AI-2-13			0.001		0.02		0.008		0.004
15806	AI-2-14			0.001		N.D.		0.009		0.007
15807	AI-2-15			0.001		0.02		0.013		0.005
15808	AI-2-16			0.001		0.03		0.022		0.005
15809	AI-2-17			0.001		N.D.		0.024		0.004
15810	AI-2-18			0.001		0.08		0.036		0.004
15811	AI-2-19			0.001		0.03		0.028		0.005
15812	AI-2-20			0.001		0.04		0.022		0.006
15813	AI-2-21			0.001		0.04		0.077		0.018
15814	AI-2-22			0.001		0.04		0.070		0.011
15815	AI-2-23			0.001		0.06		0.38		0.030
15816	AI-2-24			0.001		N.D.		0.026		0.005

$ 111.50 SAMPLE PREP
344.00 ASSAYS
455.50

Total Charge $

Chief Chemist

msrd 08

Mountain States Research & Development

CERTIFICATE OF ASSAY

Certificate No. 512

Project No. B-31 Date 6/19/81

Date	Sample No.			Au		Ag		Cu		Mo
				Oz/T		Oz/T		%		%
15817	AI-2-25			0.001		0.05		0.038		0.004
15818	AI-2-26			0.001		0.03		0.115		0.005
15819	AI-2-27			0.001		0.09		0.78		0.003
15820	AI-2-28			N.D.		N.D.		0.155		0.003
15821	AI-2-29			N.D.		N.D.		0.144		0.003
15822	AI-2-30			N.D.		N.D.		0.112		0.003
15823	AI-2-31			N.D.		N.D.		0.078		0.002
15824	AI-2-32			0.001		0.02		0.154		0.003
15825	AI-2-33			0.001		0.03		0.34		0.006
15826	AI-2-34			0.001		0.04		0.37		0.006
15827	AI-2-35			0.001		N.D.		0.28		0.002
15828	AI-2-36			0.001		N.D.		0.47		0.003
15829	AI-2-37			0.002		N.D.		0.32		0.009
15830	AI-2-38			0.001		N.D.		0.20		0.004
15831	AI-13-102			0.001		N.D.		0.018		0.002
15832	AI-13-103			0.001		N.D.		0.087		0.002
15833	AI-13-104			0.001		0.02		0.028		0.001
15834	AI-13-105			0.001		N.D.		0.150		0.001
15835	AI-13-106			0.001		N.D.		0.202		0.001
15836	AI-2-39			---		---		0.41		0.008
15837	AI-2-40			---		---		0.29		0.001
15838	AI-2-41			---		---		0.27		0.006
15839	AI-2-42			---		---		0.128		0.024
15840	AI-2-43			---		---		0.243		0.004

$ 111.50 SAMPLE PREP
344.00 ASSAYS
455.50

Total Charge $

Chief Chemist

msrd-08

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 513

Project No. B-31 Date 6/18/81

Date	Sample No.			Au		Ag		Cu		Mo
				Oz/T		Oz/T		%		%
15841	AI-2-44			0.001		N.D.		0.81		0.002
15842	AI-2-45			0.001		N.D.		0.52		0.001
15843	AI-2-46			0.001		N.D.		0.45		0.003
15844	AI-2-47			0.001		N.D.		0.42		0.021
15845	AI-2-48			0.001		0.02		0.45		0.002
15846	AI-2-49			0.001		N.D.		0.72		0.005
15847	AI-2-50			0.001		0.02		0.37		0.001
15848	AI-2-51			---		---		1.54		0.003
15849	AI-2-52			---		---		0.143		0.004
15850	AI-2-53			---		---		0.34		0.007
15851	AI-2-54			---		---		0.184		0.003
15852	AI-2-55			---		---		0.46		0.003
15853	AI-2-56			---		---		0.227		0.001
15854	AI-2-57			---		---		0.154		0.001
15855	AI-2-58			---		---		0.137		0.003
15856	AI-2-59			---		---		0.115		0.002
15857	AI-2-60			---		---		0.053		0.002
15859	AI-2-61			0.001		N.D.		0.039		0.004
15860	AI-2-62			0.001		N.D.		0.055		0.002
15861	AI-2-63			0.001		0.03		0.107		0.022
15862	AI-2-64			---		---		0.069		0.002
15863	AI-2-65			---		---		0.251		0.006
15864	AI-2-66			---		---		0.042		0.004
15865	AI-2-67			---		---		0.027		0.002

@ 111.50 SAMPLE PREP.
272.00 ASSAYS

Total Charge $ 383.50

Chief Chemist

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 514 (#1)

Project No. B-31

Date 6/19/81

Date	Sample No.			Au		Ag		Cu		Mo
				Oz/T		Oz/T		%		%
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

102.30 SAMPLE PREP
256.00 ASSAYS

Total Charge $ 358.30

Chief Chemist

msrd-08

mountain states research & development

CERTIFICATE OF ASSAY

Certificate No. 514 #2

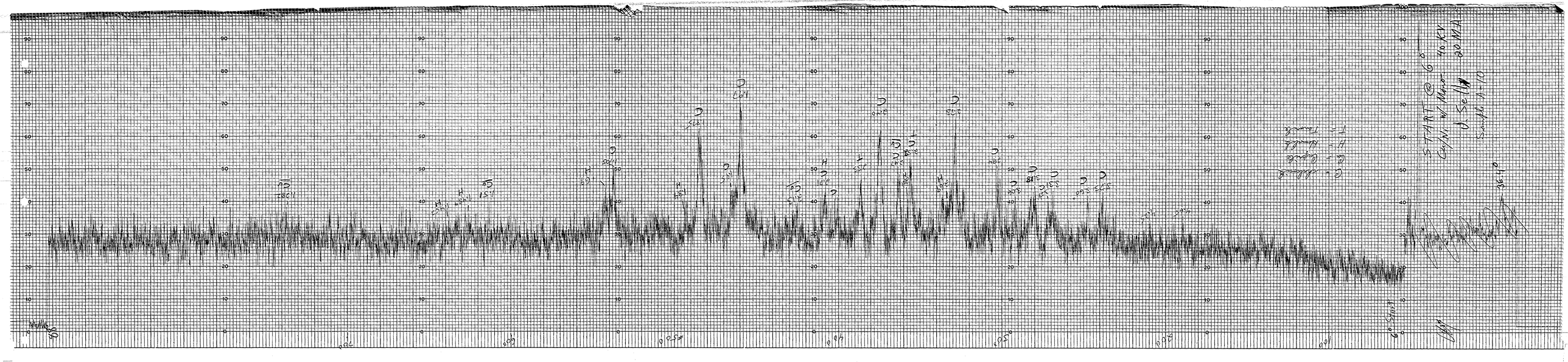
Project No. B-31 Date 6/19/81

Date	Sample No.			Au		Ag		Cu		Mo
				Oz/T		Oz/T		%		%
16370	A-12-1			0.001		N.D.		1.80		0.003
16371	A-12-2			0.001		N.D.		1.70		0.008
16372	A-12-3			0.001		0.04		0.251		0.002
16373	A-12-4			0.001		N.D.		0.149		0.005
16374	A-12-5			0.001		0.02		0.46		0.003
16375	A-12-6			0.001		0.04		0.44		0.001
16376	A-12-7			0.001		N.D.		0.40		0.003
16377	A-12-8			0.001		0.04		0.40		0.001
16378	A-12-9			0.001		0.02		0.48		0.002
16379	A-12-10			0.001		0.05		0.50		0.001
16380	A-12-11			0.001		N.D.		0.39		0.004
16381	A-12-12			0.001		N.D.		0.234		0.002
16382	A-12-13			0.001		N.D.		0.46		0.001
16383	A-12-14			0.001		0.03		0.43		0.001
	95.00 SAMPLE PREP									
	224.00 ASSAYS									

Total Charge $ 319.00

Chief Chemist

msrd-08



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JDS

ASARCO

Southwestern Exploration Division

January 9, 1991

John J. Malusa

A-16 Split/Assay
Superior East Project
Pinal County, Arizona

A-16 Split & Assay for Cu, Mo, Pb, Zn, Au, Ag.

Interval	
3121 - 3131	10'
3190 - 3200	10'
3300 - 3310	10'
3340 - 3350	10'
3370 - 3378	8'
3378 - 3380	2'
3380 - 3390	10'
3450 - 3460	10'
3500 - 3510	10'
3550 - 3560	10'

Place block at start and stop of split/assay interval with red marker pen. If sample split at present block, then box number with red marker pen.

Stack all boxes, including skeleton core, out of the way, on outside benches till we get assays back.

James D. Sell

JDS:mek

James D. Sell

cc: W.L. Kurtz

JDS

ASARCO

Southwestern Exploration Division

January 17, ~~1990~~ 1991

J.D. Sell

A-16 Split/Assay Revised
Superior East Project
Pinal County, Arizona

On January 9, 1991, I received a memo instructing me to split and assay several intervals from hole A-16. A couple of changes were made in the intervals. These are as follows:

Initial Interval		Status	Actual Interval Split/Assayed	
3121 - 3131	10'	Same	3121 - 3131	10'
3190 - 3200	10'	Same	3190 - 3200	10'
3300 - 3310	10'	Changed	3290 - 3300	10'
3340 - 3350	10'	Same	3340 - 3350	10'
3370 - 3378	8'	Changed	----------	
3378 - 3380	2'	Same	3378 - 3380	2'
3380 - 3390	10'	Same	3380 - 3390	10'
3450 - 3460	10'	Same	3450 - 3460	10'
3500 - 3510	10'	Same	3500 - 3510	10'
3550 - 3560	10'	Same	3550 - 3560	10'

- Interval 3201 to 3202 is a Fletcher Standard "C".

JJM:mek

John J. Malusa

cc: W.L. Kurtz

JDS

ASARCO

Southwestern Exploration Division

January 18, 1991

J.J. Malusa

Core Splitting
A-16
Superior East
Pinal County, AZ

Intervals to split:

3610 - 3620
3700 - 3710
3800 - 3810

JDS:mek

James D. Sell

cc: W.L. Kurtz

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 710
January 21, 1991

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JAN 23 1991
SW Exploration

Analysis of 10 Split Drill Core Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Cu (ppm)	Cu %
1	A-16 3290-3300	<.002	<.01	205.	0.021
2	A-16 3121-3131	.002	<.01	150.	0.015
3	A-16 3450-3460	<.002	<.01	70.	0.007
4	A-16 3380-3390	<.002	<.01	210.	0.021
5	A-16 3340-3350	<.002	<.01	185.	0.019
6	A-16 3378-3380	<.002	<.01	200.	0.020
7	A-16 3190-3200	<.002	<.01	170.	0.017
8	A-16 3500-3510	<.002	<.01	70.	0.007
9	A-16 3550-3560	<.002	<.01	105.	0.011
~~10~~	~~A-16 3201-3202~~	~~.050~~	~~.20~~	~~425.~~	~~0.043~~ control

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 710
January 21, 1991

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)
1	A-16 3290-3300	42.	4.	16.
2	A-16 3121-3131	100.	8.	20.
3	A-16 3450-3460	40.	4.	18.
4	A-16 3380-3390	26.	6.	26.
5	A-16 3340-3350	34.	6.	16.
6	A-16 3378-3380	20.	4.	30.
7	A-16 3190-3200	32.	6.	32.
8	A-16 3500-3510	8.	<2.	6.
9	A-16 3550-3560	24.	4.	22.
~~10~~	~~A-16 3201-3202~~	~~24.~~	~~420.~~	~~345.~~ control

cc: Mr. John Malusa

ASARCO Incorporated
JAN 23 1991
SW Exploration

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 711
February 14, 1991
PROJECT NO.: EA-0010
A-16 3610 TO 3702

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 4 Split Core Samples

4 Au(ppm) @ $5.20.....	$20.80
4 Ag,Cu,Mo,Pb,Zn @ $7.70*.....	$30.80
4 samples crushed, split and pulverized @ $4.40	$17.60
Totals	$69.20

* Multi Element Discount

COPY

ASARCO Incorporated
FEB 19 1991
SW Exploration

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 711
February 14, 1991
PROJECT NO.: EA-0010
A-16 3610 TO 3702
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
FEB 19 1991
Southwestern Exploration

Analysis of 4 Split Core Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	Cu (ppm)	% Cu
1	A-16 3610-3620 ✓	<.02	.10	165.	0.017
2	A-16 3700-3710 ✓	<.02	.10	145.	0.015
3	A-16 3800-3810 ✓	<.02	.10	140.	0.014
~~4~~	~~A-16 3701-3702~~	~~<.02~~	~~4.50~~	~~440.~~	control

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)	
1	A-16 3610-3620	16.	18.	26.	
2	A-16 3700-3710	12.	8.	26.	
3	A-16 3800-3810	10.	8.	22.	
~~4~~	~~A-16 3701-3702~~	~~22.~~	~~385.~~	~~325.~~	control

cc: Mr. John Malusa

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK ARIZONA

William L. Lehmbeck
Manager
2/14/91

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 710
January 21, 1991

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 10 Split Drill Core Samples

10 Au&Ag(oz/t) @ $10.00	$100.00
10 Cu,Mo,Pb,Zn(ppm) @ $7.00*	$70.00
10 samples crushed, split and pulverized @ $4.08	$40.80
Totals	$210.80

* Multi Element Discount

ASARCO Incorporated
JAN 23 1991
SW Exploration

COPY

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 718
March 19, 1991
PROJECT NO.: EA-0010
A-16 3390 TO 5090

ASARCO Incorporated
MAR 21 1991
SW Exploration

Collated

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 43 Split Core Samples

ITEM	SAMPLE NUMBER		Cu (%)
1	A-16 3390-3400		.02
2	A-16 3400-3410		.02
3	A-16 3410-3420		.03
4	A-16 3420-3430		.02
5	A-16 3430-3440		.01
6	A-16 3440-3450		.01
7	A-16 3450-3460	* lost	.00 .01
8	A-16 3460-3470		.01
9	A-16 3470-3480		.02
1	A-16 3810-3820		.03
2	A-16 3820-3830		.11
3	A-16 3830-3840		.05
4	A-16 3840-3850		.03
5	A-16 3850-3860		.01
6	A-16 3860-3870		.17
7	A-16 3870-3880		.13
1	A-16 3880-3890	10	.29
2	A-16 3890-3899	9	.14
3	A-16 3899-3908	9	.78
4	A-16 3908-3920	12	.28
5	A-16 3920-3930	10	.20
6	A-16 3930-3940		.29
7	A-16 3940-3950		.20
8	A-16 3950-3960		.41
9	A-16 3960-3970		.33
10	A-16 3970-3980		.26
11	A-16 3980-3990		.50
12	A-16 3990-4000		.25

182
92
30
123.15 / 410 = 0.30

3860 - 4042 = 182'

59.61 / 182 = 0.328

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

②

JOB NO. TAJ 729
June 14, 1991
SUPERIOR EAST A-16

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JUN 17 1991
SW Exploration

Analysis of 62 Drill Core Samples

ITEM	SAMPLE NUMBER		Cu (%)	
8	A-16 4000-4007	7	.31	
9	A-16 4007-4010	3	.32	
10	A-16 4010-4018	8	.36	
11	A-16 4018-4028	10	.65	
12	A-16 4028-4038	10	.42	
13	A-16 4038-4042	4	.24	
14	A-16 4042-4050	8	.12	
15	A-16 4050-4060	10	.19	
16	A-16 4060-4070		.23	4042-4134 = 92'
17	A-16 4070-4080		.17	15.22/92 = 0.165
18	A-16 4080-4090		.23	
19	A-16 4090-4100		.30	
20	A-16 4100-4110		.10	
21	A-16 4110-4120		.09	
22	A-16 4120-4130	10	.08	
23	A-16 4130-4134	4	.09	
24	A-16 4134-4140	6	.26	
25	A-16 4140-4150	10	.23	
14	A-16 4150-4160		.22	
15	A-16 4160-4170		.12	
16	A-16 4170-4180		.09	4134-4270 = 136'
17	A-16 4180-4190		.22	48.32/136 = 0.355
18	A-16 4190-4200	10	.19	
19	A-16 4200-4209	9	.27	
20	A-16 4209-4212	3	.93	
21	A-16 4212-4213	1	13.50	
22	A-16 4213-4216	3	.52	
23	A-16 4216-4220	4	.40	
24	A-16 4220-4230	10	.39	
25	A-16 4230-4234	4	.16	

(602) 622-4836

(3)

ITEM	SAMPLE NUMBER		Cu (%)
26	A-16 4234-4240	6	.49
27	A-16 4240-4250	10	.22
26	A-16 4250-4260		.26
27	A-16 4260-4270		.19
28	A-16 4270-4280		.08
29	A-16 4280-4290		.12
30	A-16 4290-4300		.13
31	A-16 4300-4310		.24
32	A-16 4310-4320		.61
33	A-16 4320-4330		.12
34	A-16 4330-4340		.16
35	A-16 4340-4350		.08
36	A-16 4350-4360		.14
37	A-16 4360-4370		.14
38	A-16 4370-4380		.16
39	A-16 4380-4390	10	.12
40	A-16 4390-4398	8	.12
41	A-16 4398-4403	5	.29
42	A-16 4403-4412	9	.03
43	A-16 4412-4420	8	.01
44	A-16 4420-4430	10	.01
45	A-16 4430-4440	10	.09
46	A-16 4440-4453*	13	.04
47	A-16 4453-4462*	9	.03
48	A-16 4462-4470	8	.01
11	A-16 4470-4480	10	.03
12	A-16 4480-4490		.02
13	A-16 4490-4500		.01
14	A-16 4500-4510		.02
15	A-16 4510-4520		.05
16	A-16 4520-4525	5	.03
17	A-16 4525-4528	3	1.03
18	A-16 4528-4540	12	.14
19	A-16 4540-4545	5	.04
20	A-16 4545-4550	5	1.23
21	A-16 4550-4560		.12
22	A-16 4560-4570		.05

4270-4320=50'
11.80/50=0.236

3860-4320=46
13.495/460=0.29

4320-4525=205
15.28/205=0.07

4320-5212=892'
79.615/892=0.089

11.12/25=0.44

4525-4550
25'

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

Superior E

REPORT OF ANALYSIS

(4)

JOB NO. TAJ 721
March 29, 1991
PROJECT NO.: EA-0010
A-16 4570 TO 5000

ASARCO Incorporated
APR 1 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 36 Split Core Samples

ITEM	SAMPLE NUMBER		Cu (%)
1	A-16 4570-4580		<.01
2	A-16 4580-4590	10	.04
3	A-16 4590-4597	9	.06
4	A-16 4597-4606	7	.02
5	A-16 4606-4610	4	.66
6	A-16 4610-4620		.78
7	A-16 4620-4630		.15
8	A-16 4630-4640		.12
9	A-16 4640-4650		.02
10	A-16 4650-4660		.02
11	A-16 4660-4670		.01
~~12~~	~~A-16 4671-4672~~		~~.05~~ Control
13	A-16 4670-4680		.01
14	A-16 4680-4690		.01
15	A-16 4690-4700		.02
16	A-16 4700-4710		.26 ✓
17	A-16 4710-4720		.02
18	A-16 4720-4730		.01
19	A-16 4730-4740		.02
20	A-16 4740-4750		.04
21	A-16 4750-4760		.03
22	A-16 4760-4770		.07
23	A-16 4770-4780		.05
24	A-16 4780-4790		.17
25	A-16 4790-4800		.09

4550-4606 = 56'
= 2.69 = 0.048 = 0.05

4606-4640 = 34'
= 13.14 = 0.38 = 0.39

4640-5212 TD = 572'
= 37.845 = 0.06 = 0.07

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

(5)

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER		Cu (%)
23	A-16 4800-4810		.18
24	A-16 4810-4820		.10
25	A-16 4820-4830		.13
26	A-16 4830-4840		.04
27	A-16 4840-4850		.04
28	A-16 4850-4860		.61
29	A-16 4860-4870		.05
30	A-16 4870-4880		.19
31	A-16 4880-4890		.19
32	A-16 4890-4900		.02
26	A-16 4900-4910	.01	
27	A-16 4910-4920	.01	
28	A-16 4920-4930	<.01	
~~29~~	~~A-16 4932-4933~~	~~.01~~	Control
30	A-16 4930-4940	<.01	
31	A-16 4940-4950	<.01	
32	A-16 4950-4960	.01	
33	A-16 4960-4970	.02	
34	A-16 4970-4980	.02	
35	A-16 4980-4990	.02	
36	A-16 4990-5000	.03	
34	A-16 5000-5010	10	.03
35	A-16 5010-5019	9	.05
36	A-16 5019-5021	2	.02
37	A-16 5021-5030	9	.02
38	A-16 5030-5040	10	.09
39	A-16 5040-5050	10	.02
40	A-16 5050-5057	7	.09
41	A-16 5057-5060	3	.32
42	A-16 5060-5070	10	.21
43	A-16 5070-5079	9	.17
44	A-16 5079-5090	11	.04
49	A-16 5090-5100	10	.04
50	A-16 5100-5105	5	.14

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

(6)

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER		Cu (%)
51	A-16 5105-5110	5	.15
52	A-16 5110-5120	10	.04
53	A-16 5120-5130	10	.03
54	A-16 5130-5136 1/2	6 1/2	.12
55	A-16 5136 1/2-5140	3 1/2	.01
56	A-16 5140-5150	10	.01
57	A-16 5150-5160		.01
58	A-16 5160-5170		.01
59	A-16 5170-5180		.02
60	A-16 5180-5190		.02
61	A-16 5190-5200	10	.01
62	A-16 5200-5212	12	.05

*NOTE: These two sample bags were marked 4454 not 4453 as on advice.

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK

William L. Lehmbeck
Manager

6/A/91

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 729
June 14, 1991
SUPERIOR EAST A-16

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO
JUN 17 1991
SW Exploration

Analysis of 62 Drill Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 3810-3820	.03
2	A-16 3820-3830	.11
3	A-16 3830-3840	.05
4	A-16 3840-3850	.03
5	A-16 3850-3860	.01
6	A-16 3860-3870	.17
7	A-16 3870-3880	.13
8	A-16 4000-4007	.31
9	A-16 4007-4010	.32
10	A-16 4010-4018	.36
11	A-16 4018-4028	.65
12	A-16 4028-4038	.42
13	A-16 4038-4042	.24
14	A-16 4042-4050	.12
15	A-16 4050-4060	.19
16	A-16 4060-4070	.23
17	A-16 4070-4080	.17
18	A-16 4080-4090	.23
19	A-16 4090-4100	.30
20	A-16 4100-4110	.10
21	A-16 4110-4120	.09
22	A-16 4120-4130	.08
23	A-16 4130-4134	.09
24	A-16 4134-4140	.26
25	A-16 4140-4150	.23

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4250-4260	.26
27	A-16 4260-4270	.19
28	A-16 4270-4280	.08
29	A-16 4280-4290	.12
30	A-16 4290-4300	.13
31	A-16 4300-4310	.24
32	A-16 4310-4320	.61
33	A-16 4320-4330	.12
34	A-16 4330-4340	.16
35	A-16 4340-4350	.08
36	A-16 4350-4360	.14
37	A-16 4360-4370	.14
38	A-16 4370-4380	.16
39	A-16 4380-4390	.12
40	A-16 4390-4398	.12
41	A-16 4398-4403	.29
42	A-16 4403-4412	.03
43	A-16 4412-4420	.01
44	A-16 4420-4430	.01
45	A-16 4430-4440	.09
46	A-16 4440-4453*	.04
47	A-16 4453-4462*	.03
48	A-16 4462-4470	.01
49	A-16 5090-5100	.04
50	A-16 5100-5105	.14

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER	Cu (%)
51	A-16 5105-5110	.15
52	A-16 5110-5120	.04
53	A-16 5120-5130	.03
54	A-16 5130-5136 1/2	.12
55	A-16 5136 1/2-5140	.01
56	A-16 5140-5150	.01
57	A-16 5150-5160	.01
58	A-16 5160-5170	.01
59	A-16 5170-5180	.02
60	A-16 5180-5190	.02
61	A-16 5190-5200	.01
62	A-16 5200-5212	.05

*NOTE: These two sample bags were marked 4454 not 4453 as on advice.

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 729
June 14, 1991
SUPERIOR EAST A-16

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 62 Drill Core Samples

62 Cu(%) @ $5.15	$319.30
62 samples crushed, split and pulverized @ $4.07	$252.34
Totals	$571.64

COPY

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 710
January 21, 1991

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JAN 23 1991
SW Exploration

Analysis of 10 Split Drill Core Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Cu (ppm)	
1	A-16 3290-3300	<.002	<.01	205.	
2	A-16 3121-3131	.002	<.01	150.	
3	A-16 3450-3460	<.002	<.01	70.	
4	A-16 3380-3390	<.002	<.01	210.	
5	A-16 3340-3350	<.002	<.01	185.	
6	A-16 3378-3380	<.002	<.01	200.	
7	A-16 3190-3200	<.002	<.01	170.	
8	A-16 3500-3510	<.002	<.01	70.	
9	A-16 3550-3560	<.002	<.01	105.	
10	~~A-16 3201-3202~~	~~.050~~	~~.20~~	~~425.~~	control

Make up set in numerical order.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 710
January 21, 1991

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)
1	A-16 3290-3300	42.	4.	16.
2	A-16 3121-3131	100.	8.	20.
3	A-16 3450-3460	40.	4.	18.
4	A-16 3380-3390	26.	6.	26.
5	A-16 3340-3350	34.	6.	16.
6	A-16 3378-3380	20.	4.	30.
7	A-16 3190-3200	32.	6.	32.
8	A-16 3500-3510	8.	<2.	6.
9	A-16 3550-3560	24.	4.	22.
10	~~A-16 3201-3202~~	~~24.~~	~~420.~~	~~345.~~ contd

cc: Mr. John Malusa

ASARCO Incorporated
JAN 23 1991
SW Exploration

REGISTERED ASSAYER
CERTIFICATE NO. 9425
WILLIAM L. LEHMBECK
ARIZONA, U.S.A.

William L. Lehmbeck
Manager

FILE
Sergeevin East

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 711
February 14, 1991
PROJECT NO.: EA-0010
A-16 3610 TO 3702
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
FEB 19 1991
Southwestern Exploration

Analysis of 4 Split Core Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	Cu (ppm)
1	A-16 3610-3620	<.02	.10	165.
2	A-16 3700-3710	<.02	.10	145.
3	A-16 3800-3810	<.02	.10	140.
~~4~~	~~A-16 3701-3702~~	~~<.02~~	~~4.50~~	~~440.~~ control

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)
1	A-16 3610-3620	16.	18.	26.
2	A-16 3700-3710	12.	8.	26.
3	A-16 3800-3810	10.	8.	22.
~~4~~	~~A-16 3701-3702~~	~~22.~~	~~385.~~	~~325.~~ control

cc: Mr. John Malusa

REGISTERED ASSAYER INSTITUTE No. 9425 WILLIAM L. LEHMBECK

William L. Lehmbeck
Manager
2/14/91

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 718
March 19, 1991
PROJECT NO.: EA-0010
A-16 3390 TO 5090

ASARCO Incorporated
MAR 21 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 43 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 3390-3400	.02
2	A-16 3400-3410	.02
3	A-16 3410-3420	.03
4	A-16 3420-3430	.02
5	A-16 3430-3440	.01
6	A-16 3440-3450	.01
7	A-16 3450-3460 *	.00
8	A-16 3460-3470	.01
9	A-16 3470-3480	.02
~~10~~	~~A-16 3481-3482~~	~~.05~~ contd
11	A-16 4470-4480	.03
12	A-16 4480-4490	.02
13	A-16 4490-4500	.01
14	A-16 4500-4510	.02
15	A-16 4510-4520	.05
16	A-16 4520-4525	.03
17	A-16 4525-4528	1.03
18	A-16 4528-4540	.14
19	A-16 4540-4545	.04
20	A-16 4545-4550	1.23
21	A-16 4550-4560	.12
22	A-16 4560-4570	.05
23	A-16 4800-4810	.18
24	A-16 4810-4820	.10
25	A-16 4820-4830	.13

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 718
March 19, 1991

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4830-4840	.04
27	A-16 4840-4850	.04
28	A-16 4850-4860	.61
29	A-16 4860-4870	.05
30	A-16 4870-4880	.19
31	A-16 4880-4890	.19
32	A-16 4890-4900	.02
~~33~~	~~A-16 4902-4903~~	~~.01~~ Control
34	A-16 5000-5010	.03
35	A-16 5010-5019	.05
36	A-16 5019-5021	.02
37	A-16 5021-5030	.02
38	A-16 5030-5040	.09
39	A-16 5040-5050	.02
40	A-16 5050-5057	.09
41	A-16 5057-5060	.32
42	A-16 5060-5070	.21
43	A-16 5070-5079	.17
44	A-16 5079-5090	.04

cc: Mr. John J. Malusa

*NOTE: Sample not received.

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK ARIZONA U.S.A.

William L. Lehmbeck
Manager

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 719
March 28, 1991
PROJECT NO.: EA-0010
A-16 3880 TO 4253

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 28 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)	
1	A-16 3880-3890	.29	
2	A-16 3890-3899	.14	
3	A-16 3899-3908	.78	
4	A-16 3908-3920	.28	
5	A-16 3920-3930	.20	
6	A-16 3930-3940	.29	
7	A-16 3940-3950	.20	
8	A-16 3950-3960	.41	
9	A-16 3960-3970	.33	
10	A-16 3970-3980	.26	
11	A-16 3980-3990	.50	
12	A-16 3990-4000	.25	
~~13~~	~~A-16 4001-4002~~	~~.06~~	Control
14	A-16 4150-4160	.22	
15	A-16 4160-4170	.12	
16	A-16 4170-4180	.09	
17	A-16 4180-4190	.22	
18	A-16 4190-4200	.19	
19	A-16 4200-4209	.27	
20	A-16 4209-4212	.93	
21	A-16 4212-4213	13.50	
22	A-16 4213-4216	.52	
23	A-16 4216-4220	.40	
24	A-16 4220-4230	.39	
25	A-16 4230-4234	.16	

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 719
March 28, 1991

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4234-4240	.49
27	A-16 4240-4250	.22
~~28~~	~~A-16 4252-4253~~	~~.01~~ Control

cc: Asarco Incorporated
Attn.: Mr. John Malusa
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Charles E. Thompson
Chief Chemist
3/28/91

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

Superior E

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 721
March 29, 1991
PROJECT NO.: EA-0010
A-16 4570 TO 5000
PAGE 1 OF 2

ASARCO Incorporated
APR 1 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 36 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 4570-4580	<.01
2	A-16 4580-4590	.04
3	A-16 4590-4597	.06
4	A-16 4597-4606	.02
5	A-16 4606-4610	.66
6	A-16 4610-4620	.78
7	A-16 4620-4630	.15
8	A-16 4630-4640	.12
9	A-16 4640-4650	.02
10	A-16 4650-4660	.02
11	A-16 4660-4670	.01
~~12~~	~~A-16 4671-4672~~	~~.05~~ Control
13	A-16 4670-4680	.01
14	A-16 4680-4690	.01
15	A-16 4690-4700	.02
16	A-16 4700-4710	.26
17	A-16 4710-4720	.02
18	A-16 4720-4730	.01
19	A-16 4730-4740	.02
20	A-16 4740-4750	.04
21	A-16 4750-4760	.03
22	A-16 4760-4770	.07
23	A-16 4770-4780	.05
24	A-16 4780-4790	.17
25	A-16 4790-4800	.09

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

ASARCO Incorporated

APR 1 1991

JOB NO. TAJ 721
March 29, 1991

ITEM	SAMPLE NUMBER	Cu (%)	
26	A-16 4900-4910	.01	
27	A-16 4910-4920	.01	
28	A-16 4920-4930	<.01	
~~29~~	~~A-16 4932-4933~~	~~.01~~	Control
30	A-16 4930-4940	<.01	
31	A-16 4940-4950	<.01	
32	A-16 4950-4960	.01	
33	A-16 4960-4970	.02	
34	A-16 4970-4980	.02	
35	A-16 4980-4990	.02	
36	A-16 4990-5000	.03	

cc: Mr. John J. Malusa

REGISTERED ASSAYER CERTIFICATE No. 9425 WILLIAM L. LEHMBECK ARIZONA U.S.A.

William L. Lehmbeck
Manager

FILE

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 729
June 14, 1991
SUPERIOR EAST A-16

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JUN 17 1991
SW Exploration

Analysis of 62 Drill Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 3810-3820	.03
2	A-16 3820-3830	.11
3	A-16 3830-3840	.05
4	A-16 3840-3850	.03
5	A-16 3850-3860	.01
6	A-16 3860-3870	.17
7	A-16 3870-3880	.13
8	A-16 4000-4007	.31
9	A-16 4007-4010	.32
10	A-16 4010-4018	.36
11	A-16 4018-4028	.65
12	A-16 4028-4038	.42
13	A-16 4038-4042	.24
14	A-16 4042-4050	.12
15	A-16 4050-4060	.19
16	A-16 4060-4070	.23
17	A-16 4070-4080	.17
18	A-16 4080-4090	.23
19	A-16 4090-4100	.30
20	A-16 4100-4110	.10
21	A-16 4110-4120	.09
22	A-16 4120-4130	.08
23	A-16 4130-4134	.09
24	A-16 4134-4140	.26
25	A-16 4140-4150	.23

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4250-4260	.26
27	A-16 4260-4270	.19
28	A-16 4270-4280	.08
29	A-16 4280-4290	.12
30	A-16 4290-4300	.13
31	A-16 4300-4310	.24
32	A-16 4310-4320	.61
33	A-16 4320-4330	.12
34	A-16 4330-4340	.16
35	A-16 4340-4350	.08
36	A-16 4350-4360	.14
37	A-16 4360-4370	.14
38	A-16 4370-4380	.16
39	A-16 4380-4390	.12
40	A-16 4390-4398	.12
41	A-16 4398-4403	.29
42	A-16 4403-4412	.03
43	A-16 4412-4420	.01
44	A-16 4420-4430	.01
45	A-16 4430-4440	.09
46	A-16 4440-4453*	.04
47	A-16 4453-4462*	.03
48	A-16 4462-4470	.01
49	A-16 5090-5100	.04
50	A-16 5100-5105	.14

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER	Cu (%)
51	A-16 5105-5110	.15
52	A-16 5110-5120	.04
53	A-16 5120-5130	.03
54	A-16 5130-5136 1/2	.12
55	A-16 5136 1/2-5140	.01
56	A-16 5140-5150	.01
57	A-16 5150-5160	.01
58	A-16 5160-5170	.01
59	A-16 5170-5180	.02
60	A-16 5180-5190	.02
61	A-16 5190-5200	.01
62	A-16 5200-5212	.05

*NOTE: These two sample bags were marked 4454 not 4453 as on advice.

REGISTERED ASSAYER
CERTIFICATE NO.
9425
WILLIAM L.
LEHMBECK

William L. Lehmbeck
Manager

6/A/91

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 710
January 21, 1991

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JAN 23 1991
SW Exploration

Analysis of 10 Split Drill Core Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY Au (oz/t)	Ag (oz/t)	Cu (ppm)
1	A-16 3290-3300	<.002	<.01	205.
2	A-16 3121-3131	.002	<.01	150.
3	A-16 3450-3460	<.002	<.01	70.
4	A-16 3380-3390	<.002	<.01	210.
5	A-16 3340-3350	<.002	<.01	185.
6	A-16 3378-3380	<.002	<.01	200.
7	A-16 3190-3200	<.002	<.01	170.
8	A-16 3500-3510	<.002	<.01	70.
9	A-16 3550-3560	<.002	<.01	105.
10	~~A-16 3201-3202~~	~~.050~~	~~.20~~	~~425.~~ control

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 710
January 21, 1991

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)
1	A-16 3290-3300	42.	4.	16.
2	A-16 3121-3131	100.	8.	20.
3	A-16 3450-3460	40.	4.	18.
4	A-16 3380-3390	26.	6.	26.
5	A-16 3340-3350	34.	6.	16.
6	A-16 3378-3380	20.	4.	30.
7	A-16 3190-3200	32.	6.	32.
8	A-16 3500-3510	8.	<2.	6.
9	A-16 3550-3560	24.	4.	22.
10	~~A-16 3201-3202~~	~~24.~~	~~420.~~	~~345.~~ control

cc: Mr. John Malusa

ASARCO Incorporated
JAN 23 1991
SW Exploration

REGISTERED ASSAYER
CERTIFICATE NO. 9425
WILLIAM L. LEHMBECK
TUCSON, ARIZONA, U.S.A.

William L. Lehmbeck
Manager

FILE
Sergeant East

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 711
February 14, 1991
PROJECT NO.: EA-0010
A-16 3610 TO 3702
PAGE 1 OF 1

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
FEB 19 1991
Southwestern Exploration

Analysis of 4 Split Core Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)	Cu (ppm)
1	A-16 3610-3620	<.02	.10	165.
2	A-16 3700-3710	<.02	.10	145.
3	A-16 3800-3810	<.02	.10	140.
~~4~~	~~A-16 3701-3702~~	~~<.02~~	~~4.50~~	~~440.~~ control

ITEM	SAMPLE NUMBER	Mo (ppm)	Pb (ppm)	Zn (ppm)
1	A-16 3610-3620	16.	18.	26.
2	A-16 3700-3710	12.	8.	26.
3	A-16 3800-3810	10.	8.	22.
~~4~~	~~A-16 3701-3702~~	~~22.~~	~~385.~~	~~325.~~ control

cc: Mr. John Malusa

William L. Lehmbeck
Manager
2/14/91

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 718
March 19, 1991
PROJECT NO.: EA-0010
A-16 3390 TO 5090

ASARCO Incorporated
MAR 21 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 43 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 3390-3400	.02
2	A-16 3400-3410	.02
3	A-16 3410-3420	.03
4	A-16 3420-3430	.02
5	A-16 3430-3440	.01
6	A-16 3440-3450	.01
7	A-16 3450-3460 *	.00
8	A-16 3460-3470	.01
9	A-16 3470-3480	.02
1	A-16 3810-3820	.03
2	A-16 3820-3830	.11
3	A-16 3830-3840	.05
4	A-16 3840-3850	.03
5	A-16 3850-3860	.01
6	A-16 3860-3870	.17
7	A-16 3870-3880	.13
1	A-16 3880-3890	.29
2	A-16 3890-3899	.14
3	A-16 3899-3908	.78
4	A-16 3908-3920	.28
5	A-16 3920-3930	.20
6	A-16 3930-3940	.29
7	A-16 3940-3950	.20
8	A-16 3950-3960	.41
9	A-16 3960-3970	.33
10	A-16 3970-3980	.26
11	A-16 3980-3990	.50
12	A-16 3990-4000	.25

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

(2)

JOB NO. TAJ 729
June 14, 1991
SUPERIOR EAST A-16

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
JUN 17 1991
SW Exploration

Analysis of 62 Drill Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
8	A-16 4000-4007	.31
9	A-16 4007-4010	.32
10	A-16 4010-4018	.36
11	A-16 4018-4028	.65
12	A-16 4028-4038	.42
13	A-16 4038-4042	.24
14	A-16 4042-4050	.12
15	A-16 4050-4060	.19
16	A-16 4060-4070	.23
17	A-16 4070-4080	.17
18	A-16 4080-4090	.23
19	A-16 4090-4100	.30
20	A-16 4100-4110	.10
21	A-16 4110-4120	.09
22	A-16 4120-4130	.08
23	A-16 4130-4134	.09
24	A-16 4134-4140	.26
25	A-16 4140-4150	.23
14	A-16 4150-4160	.22
15	A-16 4160-4170	.12
16	A-16 4170-4180	.09
17	A-16 4180-4190	.22
18	A-16 4190-4200	.19
19	A-16 4200-4209	.27
20	A-16 4209-4212	.93
21	A-16 4212-4213	13.50
22	A-16 4213-4216	.52
23	A-16 4216-4220	.40
24	A-16 4220-4230	.39
25	A-16 4230-4234	.16

Tucson, Arizona 85703
(602) 622-4836

(3)

JOB NO. TAJ 719
March 28, 1991

ITEM	SAMPLE NUMBER	Cu (%)	
26	A-16 4234-4240	.49	
27	A-16 4240-4250	.22	
26	A-16 4250-4260		.26
27	A-16 4260-4270		.19
28	A-16 4270-4280		.08
29	A-16 4280-4290		.12
30	A-16 4290-4300		.13
31	A-16 4300-4310		.24
32	A-16 4310-4320		.61
33	A-16 4320-4330		.12
34	A-16 4330-4340		.16
35	A-16 4340-4350		.08
36	A-16 4350-4360		.14
37	A-16 4360-4370		.14
38	A-16 4370-4380		.16
39	A-16 4380-4390		.12
40	A-16 4390-4398		.12
41	A-16 4398-4403		.29
42	A-16 4403-4412		.03
43	A-16 4412-4420		.01
44	A-16 4420-4430		.01
45	A-16 4430-4440		.09
46	A-16 4440-4453*		.04
47	A-16 4453-4462*		.03
48	A-16 4462-4470		.01
11	A-16 4470-4480		.03
12	A-16 4480-4490		.02
13	A-16 4490-4500		.01
14	A-16 4500-4510		.02
15	A-16 4510-4520		.05
16	A-16 4520-4525		.03
17	A-16 4525-4528		1.03
18	A-16 4528-4540		.14
19	A-16 4540-4545		.04
20	A-16 4545-4550		1.23
21	A-16 4550-4560		.12
22	A-16 4560-4570		.05

Superior E

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

(4)

JOB NO. TAJ 721
March 29, 1991
PROJECT NO.: EA-0010
A-16 4570 TO 5000
PAGE 1 OF 2

ASARCO Incorporated
APR 1 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 36 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)	
1	A-16 4570-4580	<.01	
2	A-16 4580-4590	.04	
3	A-16 4590-4597	.06	
4	A-16 4597-4606	.02	
5	A-16 4606-4610	.66	
6	A-16 4610-4620	.78	
7	A-16 4620-4630	.15	
8	A-16 4630-4640	.12	
9	A-16 4640-4650	.02	
10	A-16 4650-4660	.02	
11	A-16 4660-4670	.01	
~~12~~	~~A-16 4671-4672~~	~~.05~~	Control
13	A-16 4670-4680	.01	
14	A-16 4680-4690	.01	
15	A-16 4690-4700	.02	
16	A-16 4700-4710	.26	
17	A-16 4710-4720	.02	
18	A-16 4720-4730	.01	
19	A-16 4730-4740	.02	
20	A-16 4740-4750	.04	
21	A-16 4750-4760	.03	
22	A-16 4760-4770	.07	
23	A-16 4770-4780	.05	
24	A-16 4780-4790	.17	
25	A-16 4790-4800	.09	

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

5

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER		Cu (%)	
23	A-16 4800-4810		.18	
24	A-16 4810-4820		.10	
25	A-16 4820-4830		.13	
26	A-16 4830-4840		.04	
27	A-16 4840-4850		.04	
28	A-16 4850-4860		.61	
29	A-16 4860-4870		.05	
30	A-16 4870-4880		.19	
31	A-16 4880-4890		.19	
32	A-16 4890-4900		.02	
26	A-16 4900-4910	.01		
27	A-16 4910-4920	.01		
28	A-16 4920-4930	<.01		
~~29~~	~~A-16 4932-4933~~	~~.01~~		Control
30	A-16 4930-4940	<.01		
31	A-16 4940-4950	<.01		
32	A-16 4950-4960	.01		
33	A-16 4960-4970	.02		
34	A-16 4970-4980	.02		
35	A-16 4980-4990	.02		
36	A-16 4990-5000	.03		
34	A-16 5000-5010		.03	
35	A-16 5010-5019		.05	
36	A-16 5019-5021		.02	
37	A-16 5021-5030		.02	
38	A-16 5030-5040		.09	
39	A-16 5040-5050		.02	
40	A-16 5050-5057		.09	
41	A-16 5057-5060		.32	
42	A-16 5060-5070		.21	
43	A-16 5070-5079		.17	
44	A-16 5079-5090		.04	
49	A-16 5090-5100		.04	
50	A-16 5100-5105		.14	

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

(C)

JOB NO. TAJ 729
June 14, 1991

ITEM	SAMPLE NUMBER	Cu (%)
51	A-16 5105-5110	.15
52	A-16 5110-5120	.04
53	A-16 5120-5130	.03
54	A-16 5130-5136 1/2	.12
55	A-16 5136 1/2-5140	.01
56	A-16 5140-5150	.01
57	A-16 5150-5160	.01
58	A-16 5160-5170	.01
59	A-16 5170-5180	.02
60	A-16 5180-5190	.02
61	A-16 5190-5200	.01
62	A-16 5200-5212	.05

*NOTE: These two sample bags were marked 4454 not 4453 as on advice.

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK

William L. Lehmbeck
Manager

6/14/91

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 718
March 19, 1991
PROJECT NO.: EA-0010
A-16 3390 TO 5090
PAGE 1 OF 2

ASARCO Incorporated
MAR 21 1991
SW Exploration

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 43 Split Core Samples

ITEM	SAMPLE NUMBER		Cu (%)	
1	A-16 3390-3400		.02	
2	A-16 3400-3410		.02	
3	A-16 3410-3420		.03	
4	A-16 3420-3430		.02	
5	A-16 3430-3440		.01	
6	A-16 3440-3450		.01	
7	A-16 3450-3460 *		.00	
8	A-16 3460-3470		.01	
9	A-16 3470-3480		.02	
~~10~~	~~A-16 3481-3482~~		~~.05~~	control
11	A-16 4470-4480		.03	
12	A-16 4480-4490		.02	
13	A-16 4490-4500		.01	
14	A-16 4500-4510		.02	
15	A-16 4510-4520		.05	
16	A-16 4520-4525		.03	
17	A-16 4525-4528	3	1.03	4525-4550 = 25'
18	A-16 4528-4540	12	.14	25' @ 0.44
19	A-16 4540-4545	5	.04	
20	A-16 4545-4550	5	1.23	11.12/25=
21	A-16 4550-4560		.12	
22	A-16 4560-4570		.05	
23	A-16 4800-4810		.18	
24	A-16 4810-4820		.10	
25	A-16 4820-4830		.13	

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 718
March 19, 1991

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4830-4840	.04
27	A-16 4840-4850	.04
28	A-16 4850-4860	.61
29	A-16 4860-4870	.05
30	A-16 4870-4880	.19
31	A-16 4880-4890	.19
32	A-16 4890-4900	.02
~~33~~	~~A-16 4902-4903~~	~~.01~~ control
34	A-16 5000-5010	.03
35	A-16 5010-5019	.05
36	A-16 5019-5021	.02
37	A-16 5021-5030	.02
38	A-16 5030-5040	.09
39	A-16 5040-5050	.02
40	A-16 5050-5057	.09
41	A-16 5057-5060	.32
42	A-16 5060-5070	.21
43	A-16 5070-5079	.17
44	A-16 5079-5090	.04

cc: Mr. John J. Malusa

*NOTE: Sample not received.

JD 5

SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 718
March 19, 1991
PROJECT NO.: EA-0010
A-16 3390 TO 5090

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 43 Split Core Samples

43 Cu(%) @ $5.15	$221.45
43 samples crushed, split and pulverized @ $4.04	$173.72
Totals	$395.17

ASARCO Inc. SW
MAR 21 1991
SW Exploration

COPY

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

JDS

ASARCO

Southwestern Exploration Division

March 21, 1991

J.D. Sell

Standard Intervals
Superior East Project
Pinal County, Arizona
EA-0010

Submitted standard intervals for Superior East hole A-16 with respect to Skyline job numbers are as follows:

Skyline Job Number	Intervals	Fletcher Standard C or D
TAJ-710	3201 - 3202	C
TAJ-711	3701 - 3702	C
TAJ-718	3481 - 3482	C
	4902 - 4903	D
TAJ-719	4001 - 4002	C
	4252 - 4253	D
TAJ-721	4671 - 4672	C
	4932 - 4933	D

JJM:mek

J.J. Malusa

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 719
March 28, 1991
PROJECT NO.: EA-0010
A-16 3880 TO 4253

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 28 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 3880-3890	.29
2	A-16 3890-3899	.14
3	A-16 3899-3908	.78
4	A-16 3908-3920	.28
5	A-16 3920-3930	.20
6	A-16 3930-3940	.29
7	A-16 3940-3950	.20
8	A-16 3950-3960	.41
9	A-16 3960-3970	.33
10	A-16 3970-3980	.26
11	A-16 3980-3990	.50
12	A-16 3990-4000	.25
~~13~~	~~A-16 4001-4002~~	~~.06~~ Control
14	A-16 4150-4160	.22
15	A-16 4160-4170	.12
16	A-16 4170-4180	.09
17	A-16 4180-4190	.22
18	A-16 4190-4200	.19
19	A-16 4200-4209	.27
20	A-16 4209-4212	.93
21	A-16 4212-4213	13.50
22	A-16 4213-4216	.52
23	A-16 4216-4220	.40
24	A-16 4220-4230	.39
25	A-16 4230-4234	.16

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 719
March 28, 1991

ITEM	SAMPLE NUMBER	Cu (%)
26	A-16 4234-4240	.49
27	A-16 4240-4250	.22
~~28~~	~~A-16 4252-4253~~	~~.01~~ Control

cc: Asarco Incorporated
Attn.: Mr. John Malusa
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 719
March 28, 1991
PROJECT NO.: EA-0010
A-16 3880 TO 4253

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 28 Split Core Samples

28 Cu(%) @ $5.15	$144.20
28 samples crushed, split and pulverized @ $4.03	$112.84
Totals	$257.04

Signed Collecoates
4/1/91

COPY

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

JDS

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 721
March 29, 1991
PROJECT NO.: EA-0010
A-16 4570 TO 5000

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Incorporated
APR 1 1991
Div. Exploration

Analysis of 36 Split Core Samples

ITEM	SAMPLE NUMBER	Cu (%)
1	A-16 4570-4580	<.01
2	A-16 4580-4590	.04
3	A-16 4590-4597	.06
4	A-16 4597-4606	.02
5	A-16 4606-4610	.66
6	A-16 4610-4620	.78
7	A-16 4620-4630	.15
8	A-16 4630-4640	.12
9	A-16 4640-4650	.02
10	A-16 4650-4660	.02
11	A-16 4660-4670	.01
~~12~~	~~A-16 4671-4672~~	~~.05~~ control
13	A-16 4670-4680	.01
14	A-16 4680-4690	.01
15	A-16 4690-4700	.02
16	A-16 4700-4710	.26
17	A-16 4710-4720	.02
18	A-16 4720-4730	.01
19	A-16 4730-4740	.02
20	A-16 4740-4750	.04
21	A-16 4750-4760	.03
22	A-16 4760-4770	.07
23	A-16 4770-4780	.05
24	A-16 4780-4790	.17
25	A-16 4790-4800	.09

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

ASARCO Inc.

APR 1 1991

SW Exploration

JOB NO. TAJ 721
March 29, 1991

ITEM	SAMPLE NUMBER	Cu (%)	
26	A-16 4900-4910	.01	
27	A-16 4910-4920	.01	
28	A-16 4920-4930	<.01	
~~29~~	~~A-16 4932-4933~~	~~.01~~	contd
30	A-16 4930-4940	<.01	
31	A-16 4940-4950	<.01	
32	A-16 4950-4960	.01	
33	A-16 4960-4970	.02	
34	A-16 4970-4980	.02	
35	A-16 4980-4990	.02	
36	A-16 4990-5000	.03	

cc: Mr. John J. Malusa

SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 721
March 29, 1991
PROJECT NO.: EA-0010
A-16 4570 TO 5000

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 36 Split Core Samples

36 Cu(%) @ $5.15	$185.40
36 samples crushed, split and pulverized @ $3.70	$133.20
10 samples dried @ $0.65	$6.50
Totals	$325.10

ASARCO Inc.
APR 1 1991
SW Exploration

COPY

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

TAB

Skeleton Core
Superior East, etc

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. _____ total boxes _____

Box No.	Size	Footage		Rotary/Core

Are ready to move 5/10/89

2/24/83 + M Stone

Tucson Warehouse

Skeleton Core

QDC

DC-1 501-1457

DC-2 558-2739

DC-4 1269-3997

Thin Section Rejects

A 3	AI	A-10
A 4	DCA-3	QDC-5
A 5	AOF-1	
A 7	A-1	
A 8	A 2W	
A 9	A 8	
A 10	A 9	

All Behind	AH-1	3 boxes	3763TD	(2 sets)	also rot cuttings
	AH-2	3 boxes	3781TD	(2 sets)	" " "
	AH-3	3 boxes	3614 TD	(2 sets)	
	AH-4	2 boxes	2807TD	(2 sets)	" " "
	AH-5	5 boxes	4295TD	(2 sets) + rotary (2 box)	

Rawhide AI-1 6 boxes 3967 TD. ~~also rot cuttings~~

OF-1A 2 boxes.

Marquet-1 ≡ M-1A 1 box. to 2261

RW-5 rotary cuttings (2) + 2 box spot cores.

A-14 3 boxes of rotary cuttings

A-1 2 rot cuttings

4/23/84

HMS-TCB

Additional Skeletons
Superior East-Rawhide etc.
Miami Warehouse, Az

As you find time between other things I wish to have the Whitetail and other units skeletonized. Charge all this work to Arizona General.

You should remove about a foot from each ten foot box for the skeleton sample and discard the remainder. Save all wooden blocks in sample sacks for me.

Dump the discard on a) the access road when it needs it or b) on on ~~the~~ of the available flat spots/drill sites where it can be picked up and used as road fill. Do not throw the core ~~away~~ over a bank where it cannot be used.

After all holes are skeletonized as per the attached list then revamp the Miami warehouse.

Start with the racks on the office-street side and move back towards the overhead door; then move to the ten by the front window & move back toward the logging benches. Leave the last rack by the door empty to be used for "current" hole temporary storage.

Collect all rotary boxes, spot cores, & your skeleton cores and put in sequence for each hole.

Make a list of holes and stack alphabetically such as the odd series, AA, AI-1 & 2, DCA-1A thru -3A, ~~MI~~ M-1A QDC 1, 2, 4, & 5 (note 1, 2, & 4 are supposedly in Tucson Ventura warehouse — move to ~~Fo~~ Miami warehouse), etc. Then start with ASARCO 1 thru 15 (current).

Skeletonize:

AI-1 ~~2766'~~ → Save all.

AI-2 ~~1700'~~ — 2600' cgl, save rest.

DCA-1A ~~4002'~~ → 4650, cgl, save rest.

DCA-2A ~~Save all~~

DCA-3A 2980' — 3200' skeleton
Save 3200 to 3210
3210 → 4070 skeleton
Save 4070 to 4090
4090 → 4150 skeleton
Save 4150 to 4165
4165 → 4290 skeleton
Save 4290 to 4320
4320 → 4390 skeleton
4390 save all the rest.

M-1A. 2402' → 2910 skeleton
save 2916 to 2926 (in 2920 contact) Box 57
2930 → 3100 skeleton
save 3105 to 3115 (in, 3108' contact) Box 78
3115 → 3350 skeleton
save 3340' to 3533 Box 105 thru Box 126
3540 → 3840 skeleton
save 3847 to 4042 Box 162 thru 183
4042 → 4869 skeleton
save all the rest. Box 280 thru 328

A-4. 3593' → 5050, save rest.

A-7. 3150' → 4450', save rest.

A-8 2213' → 3220 skeleton
save 3220 to 3235
3235 → 3750 skeleton
save rest.

A-9 2194' → 2885 skeleton
save 2885 to 2920
2920 → 3250' skeleton
save rest.

A-10 2135 → 3350, save rest

A-11 2215 → 3450, save rest.

A-13 2036 → 3050, save rest

A-14 2289 → 2620 skeleton
save 2620 to 2640
2640 → 3500' skeleton
save rest.

Ultimately need list showing <u>all</u> boxes of rotary, spot, & skeletons for each hole.

ASARCO

Southwestern Exploration Division

JDS

April 24, 1984

T. C. Benavidez
H. M. Stone

Additional Skeletons
Miami Warehouse, AZ

When you have time to work on securing additional skeleton samples, see Carol G. for the list.

James D. Sell

JDS/cg

4/23/84

HMS-TCB

Additional Skeletons
Superior East-Randolph etc
Miami Warehouse, AZ

As you find time between other things I wish to have the whitetail and other units skeletonized. Charge all this work to Arizona General.

You should remove about a foot from each ten foot box for the skeleton sample and discard the remainder. Save all wooden blocks in sample sacks for me.

Dump the discard on a) the access road where it needs it or b) on one of the available flat spots/drill sites where it can be picked up and used as road fill. Do not throw the core ~~orgect~~ over a bank where it cannot be used.

After all holes are skeletonized as per the attached list then revamp the Miami warehouse.

Start with the racks on the office-street side and move back towards the overhead door; then move to the tier by the front window & move back toward the logging benches. Leave the last rack by the door empty to be used for "current" hole temporary storage.

Collect all rotary boxes, spot cores, & your skeleton cores and put in sequence for each hole.

Make a list of holes and stack alphabetically such as the old series, AA, AI-1 & 2, DCA-1A thru 3A, ~~AI~~ M-1A, ADC 1, 2, 4, & 5 (note 1, 2, & 4 are supposedly in Tucson Vertina warehouse — move to ~~to~~ Miami warehouse), etc. Then start with ASARCO 1 thru 15 (current).

Skeletonize:

AI-1 2766' → Save all. ~~prob complete~~

AI-2 1700' → 2600' cgl, save rest.

DCA-1A 4002' → 4650, cgl, save rest.

DCA-2A Save all

DCA-3A 2980' → 3200' skeleton
Save 3200 to 3210
3210 → 4070 skeleton
Save 4070 to 4090
4090 → 4150 skeleton
Save 4150 to 4165
4165 → 4290 skeleton
Save 4290 to 4320
4320 → 4390 skeleton
4390 save all the rest.

M-1A. 2402' → 2910' skeleton
save 2910 to 2930 (is 2920 contact)
2930 → 3100 skeleton
save 3100 to 3115 (is, 3108' contact)
3115 → 3350 skeleton
save 3350' to 3530' (No, ~~to save~~ see yellow sheet.
3540 → 3850 skeleton
save 3850 to 4040 No, see yellow sheet)
4040 → 4870 skeleton
save all the rest. No sergll

A-4. 3593' → 5050, save rest.

A-7. 3150' → 4650', save rest.

A-8 2213' → 3220 skeleton
save 3220 to 3235
3235 → 3750 skeleton
save rest.

A-9 2194' → 2885 skeleton
save 2885 to 2920
2920 → 3250' skeleton
save rest.

A-10 2138 → 3350, save rest

A-11 2215 → 3450, save rest.

A-13 2036 → 3050, save rest

A-14 2289 → 2620 skeleton

save 2620 to 2640

2640 → 3800' skeleton

save rest.

5/1/89 Extraneous 6/85

American Mine:

✓ AA-1 Rotary cuttings Box 1 (0-230). Rotary

Bohne:

✓ AH-1. Rotary cuttings Box 1 (Surf.) → Box 2 (1690). Rotary.
✓ " Skeleton Box 1 (1710) → Box 3 (3863 T.D). 2 sets.
✓ AH-2 Rotary cuttings Box 1 (Surf) → Box 2 (1995). Rotary
✓ " Skeleton Box 1 (2019) → Box 3 (3781 T.D). 2 sets.
✓ AH-3 Rotary cuttings Box 1 (Surface → 1173'). Rotary
✓ " Skeleton Box 1 (1173') → Box 3 (3614 T.D.) 2 sets.
✓ AH-4 Rotary cuttings Box 1 (Surf) → Box 2 (1820) Rotary
✓ " Skeleton Box 1 (1820') → Box 2 (2592 T.D.) 2 sets
✓ AH-5 Rotary cuttings Box 1 (Surf.) → Box 2 (894) Rotary
✓ " Skeleton Box 1 (892) → Box 5 (4295 T.D.) 2 sets

Ray West:

✓ RW-5 Rotary Box 1 (Surf) → Box 3 (2498). Rotary
✓ " Spot Cores Box 1 (1950 - 2499 T.D.) Spot cores

Devils Canyon:

✓ DDC-5 Skeleton Box 1 (Surf) → Box 5 (4405)
✓ Box 6 (Box 427) (4405 - 4409 T.D).

DC-1, 2, 84 in Ventura warehouse 2/4/86

Superior East:

Oak Flat:

OF-1A Box 1 (2130) → Box 2 (2148½ T.D.).

(Devils Canyon):

? DCA-1A Skeleton

" Box 159 (5453) → Box 197 (5813 T.D.).

DCA-2A Box 1 (1352) → Box 115 (2422 T.D.).

4454' top premin DCA-3A Box 1 (2980) → Box 229 (5144 T.D.). 5154 TD ✓

Margaret:

✓ M-1 Rotary Box 1 (Surf) → Box 7 (4202) shoulder 2400 Rotary cutting

✓ M-1 Spot Cores Box 1 (2252-2261).

M-1A. Box 1 (2400) → Bx 326 (5306 T.D). (5322 TD)

Inspiration:

✓ AI-1. Rotary cutting Box 1 (Surf) → Box 3 (2766) Rotary

✓ " Skeleton Box 1 (2300) → Box 4 (3967 T.D) sk.

✓ 2650' top premin " Core ~~Box 1 (2300)~~ → Box 130 (3967 T.D) ✓

✓ AI-2 Skeleton Box 1 (Surf) → Box 4 (2614)

~~Box 178 (1523) → Box 226 (1967)~~

Core? Box 175 (1499) → Box 226 (1967) NC

26[illegible] top premin Core? Box 1 (1967) → Box 181 (3612 T.D) NX

Superior East:

✓ A-1 rotary Box 1 (Surf) → Box 2 (1317)

✓ A-1 Skeletons Box 1 (1309-1387) in same box as A-3 Box 1.

" Box 1 (1309) → Box 96 (2129 T.D.).

where is rotary cuttings Venture

A-2 Spot Cores Box 1 (#1, #2, & #3 - 2559-4080) 2559-2574 3540-3550 4075-4076

" # Core Box 2 (4079½') → Box 46 (4492) unknown hole depth in box 46 (4492 TD)

see culture cutlines list

✓ A-2W Skeletons Box 1 (4230) → Box 3 (4940) sk.

A-2W Box 1 (4230) → Box 79 (4940 T.D).

3920' Ergot-pleum.

✓ A-3 Rotary cuttings Box 1 (Surf) → Box 2 (1949) Rotary

✓ " skeletons Box 1 (1941) → Box 10 (4008 T.D) sk.

? " Cores Box 2 (1949-1957)

? " " Box 2 (2169-2179)

? " " Box 2 (2179-2188)

✓ Box 2A 2172-2183

? " " Box 3 (1957-1967)

✓ Box 4A (3469-3479)

" " Box 31 (2215-2224).

2 sets?

✓ A-4 Rotary Cuttings ~~Skeletons~~ Box 1 (Surf) → Box 2 (1317) Rotary

✓ Rotary Cuttings Box 1 (Surf) → Box 5 (3599) Rotary

" Spot Cores Box 1 (2708) → Box 4 (3119) Sp. Cores

✓ " " Box 1 2708-2710, 2714-2721, 2734-2737,

" Core Box 1 (3593) → Box 341 (4464 T.D).

✓ A-4c sk 5780-5768

✓ A-5 Rotary Cuttings Box 1 (Surf) → Box 3 (3149) Rotary

" Spot Cores Box 1 (1335) → Box 3 (1358) Sp. Cores.

✓ " " Box 1 1348-1350, 1354-1358

A-6 Rotary cuttings Box 1 (Surf) → Box 3 (2746') Rotary

✓ Box 1 → Box 2 (1455)

5
5
4
5
7
1
5
1
8
6
10 A-1
14 A-3
4 A-5
2 A-6
40
15
12
9
20
14
29
28
140
80
115
87
67
48
2
113
14
40
37
55

100
974
1074

= 1100 homes

$25 \overline{)1100}$ = 44

2

14 per side 28 per side

∴ 2 rocks 18' long

Superior East:

(See Ventura warehouse list) A-7 Skeleton ??

" Box 1 (3157) → Box 313 (6042 T.D)

✓ A-8 Skeleton Box 1 (24) → Box 10 (2215) sk.

✓ " Spot boxes Box 141 (1532-1541)

✓ " " " Box 144 (1574-1587)

✓ " " " Box 173 (1444-1450)

✓ " " " Box 206 (1932-1941)

3226' top premin " Core Box 236 (2198) → Box 526 (4891) 4907 T.D

✓ A-9 Skeleton Box 1 (Surf) → Box 5 (2186) sk

327[illegible] top premin " Core Box 234 (2186) → Box 533 (4903 T.D).

✓ A-10 Skeleton Box 1 (23) → Box 8 (2138) sk.

✓ Box 120 (1598-1608)

3375' top premin " Core Box 229 (2130') → Box 461 (4282 T.D).

✓ A-11 Skeleton Box 1 (12) → Box 6 (2209) sk

3492' top premin " Core Box 236 (2210) → Box 559 (5173 T.D).

✓ A-12 Skeleton Box 1 (2754) → Box 4 (4217) sk

±3500' top premin " Core Box 1 (2754) → Box 261 (5724 T.D)

A-12A (Wedge) Box 1 (4093) → Box 16 (4240) end of wedge drill

✓ A-13 Skeleton Box 1 (Surf) → Box 5 (3071) sk.

3071' top premin " Core Box 173 (1414) → Box 514 (4454 T.D).

Sequence East:

~~A-14 Skeleton Box~~

✓ A-14 Rotary cutting Box 1 (Surf) → Box 3 (1535) Rotary

✓ " Skeleton Box 1 (1534) → Box 5 (3841) sk.

3841 top premin " core Box 1 (1534) → Box 481 (5738 T.D)

✓ A-15 Skeleton Box 1 (Surf) → Box 17 (3610) sk.

2905' top premin " core Box 92 (3608) → Box 152 (4186)

Superior East in Ventura St. Warehouse, Tucson

A-2. Rotary Cuttings Box 1 (Surface) → Box 4 (4081)
Skeleton Box 1 (4078) → Box 2 (4513)

A-3 Skeleton Box 1 (1941) → Box 14 (4992).

A-4 Skeleton Box 1 (2703) → Box 15 (4664)

A-7 Skeleton Box 1 (69) → Box 3 (3150)
" Box 1 (3148) → Box 13 (4040)

Note 20NC
24NX
3213X) per column height

1/24/86

AI-1 Skeleton box 1 (2500) → Box C (3967 T.D).

if good enough then toss rest ~~or call drop line~~

csg to 2650

m-1A sh to 3029

OR toss remainder

flt 3029-3046

in pl. bx to 3232

cx/sulf 3232-3238 w/flt.

pi 0.14% 3529

flt 3529-3532

pi to 3967 TD. (0.10%)

Save best hole

AI-2 shel Box 1 (Seq) → Box 4 (2614) ~~top of bdrk~~ OK

apparently have Box 175 (1499) → Box 22C (1967) NC, interval if

if so. toss (call drop).

also Box 1 (1967) → Box 181 (3612 TD) NX

20 4 1/2 → 1/2 1 3 3 3

There in Tw to 2614

2709 ex Seequil

A-2 top bx sh to 2748 1/2 2824

shelterring & toss

call Inv.

bo/sulf 2748 1/2 - 2794) w/sulf.

pi 0.0% to 2840

pi 0.37% to 2940-3160

SAVE 2840-3202

pi ±0.10% to 3612 TD.

3585/3612

save last hole

M-1A. See April 24 '84 sheet

~~Left~~ 24 cont. save (3350-3530) interval:
3370 - 3390 (0.3% Cu)
3480 - 3500 (0.2% Cu) sk rest.

50 24 50
50
10/box
3 15 boxes
10/column

Save (in 3850 → 4040 interval)
3850-3940 (up to 0.6% Cu)
sk rest.

Save (in 4870 → 5322 TD Naco Lime interval.
save contact @ 4898
" red bed shale - lime contact ; sk rest. to TD.

DCA-1 should have core from 4002 in Tw → 5813 TD.

3 sk 4002 → 4400 TW No Cu.
1 save contact ~~4400~~ 4465 - 4675 Box 72 w/ Lms Naco.
1½ sk 4980 - 5010 Box 106, 107, 108
2 save contact ~~4980 - 5015~~ Nc - Esb contact
1 sk & save some real tex slitty near top & bottom of Esc.
5434 - 5470 Box 157, 158, 159, 160
2 save contact ~~5445 - 5465~~ Esc - Mnt contact
1½ sk & save some real tex in mt ~~some~~ Some ½
5738 - 5767 Box 190, 191, 192,
save contact ~~5755 - 5775~~ Mnt - Tw contact
4 boxes 12 boxes
sk & save bottom Tw @ 5813 TD.
5803 - 5813 Save Box 197 TD

DCA-2 should have core from 1352 → 2422 TD.
sk 1352 - 1451
sk Tw - save shy tuff @ ~~2442~~ 1451 - 1409 (Box 10) 1452 o cont w/ pi. sk 1459 - 1538
flt 1540 pi/sqz Save Box 20 1538 1547
flt 1620 sqz/sqz sk 1547 - 1620
contact 1676 sqz/pi Save Box 35 (1670-1680)
~~contact 1827~~ flt 1904 w/ sqz @ 1827 intervals in the pi. pi to TD best +0.2% = 1910-192

SK 1450-1901
Save Box 41-42-43
SK 1928-2409
Save Box 114-115 (2422)
Save 1803-1809
SAVE Box 41, 42, 43
ox/sand/2000
49 boxes

DCA-3/4 sh 2980 (Box 1) → 3200 TW

SAVE 4292-4301 — SK 2980-3200 save Tuff marke 3204-3205

SAVE 3200-3210 sh TW to 4075 low Cu

SK 4301-4450 — SK 3210-4073

SAVE 4073-4077 save contact & interior of SB QM @ 4081-4159.

SAVE Box 118-119 sh TW (@ 0.2% Cu) to 4290

SAVE 4450-4456 — SK 4101-4157

SAVE Box 126 save & sh catoclastic QM SB 4297-4354.

SK 4456-4529 — SK 4166-4290 sh TW

SAVE 4290-4299 save contact & bedrock contact 4450-4465

SAVE 4529-4540 — SK Box 139-142

10 box — SAVE Box 143-144 save ±1.0% @ 4530-4540

Ore needed — SK Box 145 (4255') save flt and ox/sul contact @ 4660-4670

then Box 147 save x flt @ 4800-4809

Sure last box save 5154 TD

A-1 Remove A-1 from A-3 Box 1 ~~and put in new~~

make new box 1 (in 1309-1387)

sh bx pi then save cont ~~1720-1735~~ 1520-1535

ox/sul 1670→1750 sh TW, then save 1560 → 1590 TW 1 box 1 flt/pi

sh pi to 2129 TD.

14 box — sure last box

A-2 sh bedrock QM 4079½ → 4280

save flt ox/sul @ 4280 ~~4300~~ 4325 to follow of hole @ 4513. (ave 0.52 Cu)

~~sh to 4521 TD (4513 last core — lost barrel & bottom core~~

~~A224~~

A-2W sh TW 4230

save flt ox-sulf 4270-~~4300 4320~~ 4625 (ave 0.35 c

sh low grade 4625 → ~~4700~~ 4790

save ~~4700~~ 4790 → 4946 TD @ 0.42 Cu

A-3 done. but did need 2 sets of saved cores ??

~~no Box 2 1949-1957~~
~~Box 3 1957-1967~~
~~Box 2 2169-2179~~
~~c(6) 2179-2180~~
~~Box 31 (2215-2224)~~

Remember?

A-4 3593 →

sh TW 3593 → 5070

save tuff-cuttings 5070 – ~~5110~~ → 5380 (0.9%) ~~334~~ 200 / 163

sh 5380 → 5470

save 5470 → 5830 0.8% 249 b / 221 / 29

sh 5830 – 5960

save 5960 – 6160 (1.1%) 215 / 263 / 22

sh 6160 – 6330

save to TD 6664. 341 / 303 / 38

6 / 6 / 31 / 1 / 29 / 22 / 1 / 38 / 140 cores

A-5 completed (Rotary only) + spot cores. done

A-6 ~~rotary only~~. done

A-7 rotary to 3150 (3157 core)

sh TW to 3475

save SS1 SB 3475 → 3740 65 / 57

sh TW 3740 – 4260

save SS1-SC SB 4260-4340 129 / 120

sh TW 4340 – 4680

save 4680 – 4760 (1.1%) 177 / 167 / 9

sh TW 4760 – 4790

save 4790 – 4920 (1.5%) 192 / 179 / 14

→ ~~save~~ sh 4920 – 4950

save 4950 – 5090 (0.7%)

sh 5090 – 5550

save Tuf/Ps cuttings 5550 – 5670 (* 0.3-0.4) 273 / 260 / 14

sh 5670 – 5800

save cut 5800 – 5820 w/ Naco

sh 5820 → 6042 save last box TD.

2½ / 2 / 10 / 11½ / 9 / 14 / 4 / 2 / 14 / 1 / 2 / 2 / 80 boxes

A-8 done @ 2215

sh TW to 3200 ~~contact → 3240. w/ SB~~ bx.

save contact TW/SB 3200-3240 342

sh 3240 - 3760

save flt 3760 - 3790 405-408

sh 3790 - 3840

save 3840-3845 (vn) 414

sh 3845 — 3870

save ox/sulf 3870 - ~~3885~~ 4535 1.57% 490 414 75

sh 4535 - 4600

save 4600 - 4620 (+1%) 490 497

sh 4620 - 4640

save 4640 - 4650 (0.7%) 501 500

sh 4650 — TD (4907) in out of Pi/Lbfp.

have 10 box sh to 2215

10
4
2
4
75
1
2
3
1
2
1
115 boxes

A-9 done @ 2186 bx 234

sh TW 2186 — 2880

save tuff marker 2880 - 2925 312 → 316

sh 2925 — 3265

save contact TW/MIASB 3265-3285 354 → 357

sh 3285 - 3330

save MIASB/A-2SB contact 3330-3345 361-368

sh 3345 - 3675 A2SB

save flt 3675 - 3700 ~~371~~ → 402

sh 3700 - ± 3900 leached gsv

save leached gsv ± 3900

sh ± 3900 - 4035 ~~p 424 → 437~~

save ox/sulf 4035 → 4680 437 → 509 0.8%

sh 4680 → 4903 TD w/ save 4750-4755 & last box.

3
5
1½
4½
3
1
4
1
1
5
3
2
87 boxes

A-10 sh to 2138 done. SAVE part of next box of TW is contact.

then sh ±2140 → 2750

save tuff marker 2750 - 2820 396-303

sh 2820 - 3365

Save contact TW - MASB A-25B 3365 - 3415. 364-309

sh 3415 - 3850

save flt 3850 - 3870 417 419

sh 3870 - 3940

save ox/scaf 3940 → TD (0.3%) 427 → 461

A-11 sh to ~~3071~~ 2209 done

save cont TW/TW 2209 - 2220

sh TW 2220 - 2595

Save tuff bed 2595 - 2610 28-29

sh TW 2610 - 3490

save cont TW/SB 3490 - 3510 379 → 381

sh SB 3510 - 4050

save flt 4050 - 4090 442-444

sh 4090 - 4250

~~save 0.4% 4250 - 45~~

save ox/scaf cont 4250 - 4270 449-446 487-489

sh 4270 - 4530 ± 0.4% SAVE 4320 - 4335 471-473 4465-4480 4385-4395 478-479

save 4530 - 5090 1.1% 494 - 511

sh 5090 → 5175 TD save last box.

Note → SAVE A-11 Wedge ± 4930 - 4940 ?+
box 533 → 534

6 sh to 2209
1 1/2
2
4
2
5 1/2
2
1
15
15
3
64 boxes
+ 21
85 boxes

9 sh to 2138
1
9
1 1/2
4
2
3
1
34
68 boxes

A-12 sh to 4217 Navidrill spot cores.

constantid 4217

4 sh to 4217

71
2
1
2
9
4
2
3
2
1
2
2
3
1
2
4
1
3
bows

save 4217 - ~~4235~~ - 4750 0.8g

~~sh 4235~~ sh 4750 - 4810

save 4810 - 4830 vm 154-161 Save 88A Navidrill cuttings

sh 4830 - 4845

save 4845 - 4860 vm 163-164

sh 4860 - 4890

save 4890 - 4910 vm 165-170

sh 4910 - 4955

save 4955 - 5001 undesirm 176 - 181

sh 5001 - 5020

save 5020 - 5035 vm 184-185

sh 5035 - 5110

save 5110 - 5135 vm 194-196

sh 5135 - 5170 ~~see Hardy~~ sheet

save 5170 - 5175 vm 201

sh 5175 - 5210

save 5210 - 5225 vm 205-206

sh 5225 - 5285

save 5285 - 5290 vm hx hinado 213-214

sh 5290 - 5370

save 5370 - 5375 vm 221-223

sh 5375 - 5724 TD save last hox.

save several feet in in save intrid no need to save all vm

A-12-A Wedge: 4093-4240

14 boxes

sh 4093 - 4165

14 boxes

save ox-seaf 4165 - 4240 TD.

A-13. done sh to 3071 done.

save TW/SB contact 3071 - 3080. 336-337

sh 3080 - 3235

9 sh to 3071

save flt 3235-3265 356-359

2

1

4

1

3

2

1

1

10

4

40 bbls

sh 3265 - 3465

save sprayy bx/lambrahm 3465-3480 contact. 382-391

sh 3480 - 3495

save ox/sof 3495 - 3505 386-387

sh 3505 - 3635

~~save 3635 - 4030 (0.7%)~~

~~sh 4030 - 4663 TD save lost box.~~

save 3635 - 3690 1% 402-408

sh 3690 - 3940 0.3%

save 3940 - 4030 1.7% 436-445

sh 4030-4663 TD save lost box.

A-14 sh to 3841 done

8 sh to 3841

3

3

5

5

3

1

4

6

67 bbls

save 3841 - 3850 contact TW/12SB 265-269

sh 3850 - 4000

save flt 4000-4020 284-286

sh 4020 - 4090

save ox/sof 4090-~~4110~~ 4125 (0.7%) 295-299

sh 4125 - 4245 (±0.3%)

save 4245 - 4280 (1.2%) 313-317

sh 4280 - 4400 (0.07%)

save 4400 - 4420 (0.6%) 330 333

sh 4420 - 5738 TD save lost box.

A-15 Sh 3610 done

save 3615 - 3625 ox-surf.

20 box sh
1
9
15
2
3
2
2
55 boxes

sh 3625 - 3665

save 3665 - 3745 (1%) 98 - 106

sh 3745 - 3800 (0.5%)

save 3800 - 3930 (1%) 112 - 124

sh 3930 - 4050 (0.4)

save 4050 - 4060 VN 138 - 139

sh 4060 - 4200 (0.4)

save 4200 - 4220 (1.4) 154 - 156

sh 4220 - 4380 (0.3)

save 4380 - 4490 (0.7) 173 - 174

sh 4490 - 4499 TD save last box.

Save all contacts

A-1 ~~Dacite~~ 0-1374. skeletonize. 1309. to 1387

A-2 rotary hole to 4076 (bedrock).
A-2W (wedge hole in bedrock).

A-3 rotary to 1445 in cgl. Done 1941 - 6008 TD
all qtz in cgl & intrablock of diabase) skeletonize

A-4 rotary to 3593 in cgl.

A-5 rotary to 3145 in cgl.
not cored yet.

A-6 rotary to 1665 in cgl.
not cored yet.

A-7 rotary to 3150 in cgl.

A-8 Dacite 0-1583 Partially done skeletonize
Earlier Volc. 1583-2213 Done "

A-9 Dacite 0-1478 Done skeletonize
E Volc. 1478-2194 "

A-10 Dacite 0-1599 done skeletonize
E Volc. 1599-2138 "

A-11 Dacite 0 - 1458 - 2215 — Skeletonize
E Volc 1458 - 2215 — Done — "

A-12 Deviated hole, Never-drill & spot core — Save all

A-13 ~~Dacite 0 - 1580~~ — ~~Skeletonize~~
~~E Volc. 1580 - 2036~~ — Done — "

A-14 ~~Dacite 0 - 1652~~ — ~~Skeletonize~~
~~E Volc. 1652 - 2289~~ — Done — "

A-15 Skeletonized at rig.

M-1A. ASARCO core from 2402 — Save all
0-2402 rotary & spot core above 2402 from Cont. Mat. Co.

DCA-1A. ASARCO core from 4002 - 4450 in cgl. — Save all
0-4002 rotary of Sup. Oil Co. (Log only available).

DCA-2A. ASARCO core from 1352 in cgl — Save all
0-1352 rotary core of Sup. Oil Co. (Log only available)

DCA-3A. ASARCO core from 2980 in cgl — Save all
0-2980 rotary-core of Sup. Oil Co (Log only available)

QDC-5 already skeletonized (in Miami)
DC-1, 2, & 4 " " (in Tucson Vault)

AI-1 rotary to 2766 into bedrock.

~~AI-2~~

AI-2 Noah 0-1472

E Vola 1472-1780.

Done

Tuff Beds to Check:

Elev.

E of RHC.

E4720 A-1 Tw 1527-1564 ash flow tuff 1532-1535 E4720 +3185
BR 1564 (+3155).

E4800 DCA-2A Tw 1415-1442 Trt 1442-1452 check "dacite" motif Tw @ 1410-1415 ?? E4800 +3350
BR 1452 (+3350).

E4975 AOF-2 Tw 800-3058 T.D. Silicic motif @ 2690 few ohy frags @ 2890 E4975 (?+ 220 ? +2085
BR below 3058. (below +1915)

E4240 AOF-1 Tw 1106-2939 None reported; increased Cu @ 2700' E4240 ? + 1440
BR 2939 (+1300)

Between RHC & DC.

E4640 DCA-3A Tw 2430-4454. Tuff marker; hot tuff; "Tw" 3204-3205 No increase in Cu° E4640 DCA 33205V Se A92916V + 1435
BR 4454 (SB) (+185)

E4625 AI-1 Tw 2250-3073 None recorded E4625 —
BR 3073 (SB). (+1550)

E4485 A-8 Tw 2213-3224 chance of 3200'; increased Cu° E4485 ? +1485
BR 3224 (SB). (+1460)

E4340 A-2 Tw 2020-3920 None reported. E4340 —
BR 3920 (SB). (+420)

A-9 A92916V fresh water Lms (Se DCA 33205V)

Tuff Beds to Check (Continued).

W of DC.

E 4785 DCA-1A. Tw 2210-4669 None noted in rotary cuttings nor core E4785 —
BR 4669 (+ 115)

E4500 M-1A Tw 2428-4998 E4500
ch lithic SS & tuff @ 2430 ? + 2070
ch vitric tuff 2903-2906 ? + 1595
M1A3818V
ch gray tuff mudstone 3818-2819 & 3837-3838 ? + 680
Also ch lithic SS in Supai at 4998-4922-4936
& below to base at 5108 (ch 5040-5086 Tm).
BR 4998 (-500)

E 4020 A-5 Tw 2600-3145 T.D. None reported in rotary cuttings E4020 —
BR below 3145 (below + 870)

E4210 A-7 Tw 2445-5610. ? tuff beds or lens @ 4690-4695. Cu below A74691H A74694H -480
E4210
ch tuff SS in Supai @ 5463-5748. A75710H
BR 5610 (-1400)

E4100 A-4 Tw 2133-6484 lithic ~~SS~~ tuff ~~2943-2943~~ 3808-3810 A43810V E4100 (~~? + 2070~~) + 290
~~lithic~~ tuff ~~2903-2906~~ 3976-3984 A43978V (~~2 + 1595~~) (+ 120)
lithic ~~gray tuff~~ ~~mudstone~~ 4201½-4203 A44202V (-100)
A-45084H Horizontal
lithic tuff w/ Cu below. 5083-5102 & Cu 5112 A45098H -1000
A45108V
BR 6484 (-2385)

E4125 A-3 Tw 1450-6008 T.D. lithic tuff 3671-3677 T.S. 3674 E4125 + 450
" " silic 4485-4490 w/ Cu T.S. 4488 -360
BR below 6008 (below -1885)

May 5 '89

Hole	# of Boxes	
AA-1	1 TD 230	American Mine
A-1	5 T.D 2127	
K-7W OF-1A	2130-2148½ 1 bx	
~~MA-1~~	~~Rot Test Core + 7 Bex Rot cuttings (2402)~~	
~~M-1A~~	~~See list to skeleton + save.~~ 107 Boxes	
RW-5	Rot Box 1-3, Spot Core 1-2;	
QDC-5	6 boxes.	
AH-1	5 boxes.	
AH-2	5 boxes	
AH-3	4 boxes	
AH-4	5 boxes	
AH-5	7 boxes	
AI-1	10 boxes	
AI-2	50 boxes	
M-1	Rot Test Core (1 bx) + 7 Bx Rot Cuttings to 2402!	
M-1A	107 boxes (5322 T.D.)	
DCA-1A	4002 - 5813,	boxes T.D.
DCA-2A	1352 - 2422,	boxes T.D.
DCA-3A	2980 - 5154,	boxes T.D.

Superior East Project

Cuttings/Skeleton Samples

American Mine

Sheet 1 of 1

Hole No. AA-1 total boxes 1

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	230 T.D.	Rotary

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Bodine

Hole No. AH-1 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	BX	Surface	1060	Rotary
2	BX	1060	1690	R
1 sk	NX	1710	2500	Core
2 sk	NX	2500	3490	Core
3 sk	NX	3490	3863 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Bohme

Hole No. AH-2 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	Bx	Surf.	1086	Rotary
2	Bx	1086	1985	R
1 sk	NX	2019	2900	Core
2 sk	NX	2900	3618	Core
3 sk	NX	3618	3781 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Bohme

Hole No. AH-3 total boxes 4

Box No.	Size	Footage		Rotary/Core
1	NX	Surface	1173	Rotary
1sk	NC	1173	1991	Core
2sk	NX	1991	2953	Core
3sk	NX	2953	3614 TD	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Bohme

Hole No. AH-4 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	920	Rotary
2	BX	920	1820	R
3	BX	1820	1940	R
1 sh	NX	1940	2592	Core
2 sh	NX	2592	2807 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. AH-5 (Bohme) total boxes 7

Box No.	Size	Footage		Rotary/Core
1	Bx	Surf.	540	Rotary
2	Bx	540	894	Rotary
1 sk	NC	892	1608	Core
2 sk	NC	1608	2509	Core
3 sk	NX	2509	3356	Core
4 sk	NX	3356	3849	Core
5 sk	BX	3849	4295 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Rawhide

Sheet 1 of 1

Hole No. AI-1 total boxes 19

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	1624	R.
2	BX	~~5~~ 1624	2610	R
3	BX	2610	2766	R
1 sh	NC	2800	3003	Core
2 sh	NC	3003	3182	Core
3 sh	NC	3182	3358	Core
4 sh	NX	3358	3606	Core
5 sh	NX	3606	3854	Core
6 sh	NX	3854	3967 T.D.	Core
(130) 7 sh	NX	3965	3967 T.D	Core, last box

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 3

Rawhide

Hole No. AI-2 total boxes 50

Box No.	Size	Footage		Rotary/Core
1 sh	NQ	Surface	1200	Core
2 sh	"	1200	1750	"
3	"	1750	2260	"
4	NX	2260	2616	"
5	"	2616	2740	"
6	"	2740	2750	"
7	NX/BX	2750	2842 1/2	"
8	BX	2842 1/2	2851 1/2 ~~3262~~	"
9	"	2851 1/2	2860 1/2	"
10	"	2860 1/2	2868 1/2	"
11	"	2868 1/2	2881	"
12	"	2881	2888	"
13	"	2888	2896	"
14	"	2896	2907	"
15	"	2907	2913	"
16	"	2913	2923 1/2	"
17	"	2923 1/2	2932	"
18	"	2932	2941	"
19	"	2941	2950	"
20	"	2950	2959	"
21	"	2959	2969	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 3

Rawhide

Hole No. AI-2 total boxes 50

Box No.	Size	Footage		Rotary/Core
22	BX	2969	2980	Core
23	"	2980	2990	"
24	"	2990	2999	"
25	"	2999	3008	"
26	"	3008	3016	"
27	"	3016	3026	"
28	"	3026	3035 1/2	"
29	"	3035 1/2	3045	"
30	"	3045	3055	"
31	"	3055	3066	"
32	"	3066	3075	"
33	"	3075	3085	"
34	"	3085	3095	"
35	"	3095	3105 1/2	"
36	"	3105 1/2	3117	"
37	"	3117	3127	"
38	"	3127	3136	"
39	"	3136	3144	"
40	"	3144	3154	"
41	"	3154	3164	"
42	"	3164	3172	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 3

Rawhide

Hole No. AI-2 total boxes 50

Box No.	Size	Footage		Rotary/Core
43	BX	3172	3181	Core
44	"	3181	3192	"
45		3192	3202	"
46	"	3202	3580	"
47	"	3580	3591	"
48	"	3591	3601	"
49	"	3601	3610	"
50	"	3610	3612	"
		Total	Depth	

Superior East Project

Cuttings/Skeleton Samples

Quintana's Devils Canyon Sheet 1 of 1

Hole No. DC-1 total boxes 2

Box No.	Size	Footage		Rotary/Core
1	NC/NX	501	1129	Core
2	N X	1129	1457	Core
		Total Depth	1458	
			~~1457~~	

Sent 1 carton washing 1st page [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Superior East Project

Cuttings/Skeleton Samples

Quintana's Devils Canyon

Sheet 1 of 1

Hole No. DC-2 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	NX	558	1134	Core
2	NX	1205	1752	Core
3	NX	1778	2219	Core
4	NX	2246	2477	Core
5	NX	2478	2739	Core
		Total	Depth	

Pinnacle [illegible]

5/8/89

Superior East Project

Cuttings/Skeleton Samples

Quintana's Devils Canyon Sheet 1 of 1

Hole No. DC-4 total boxes 6

Box No.	Size	Footage		Rotary/Core
1	NX	1269	1444	Core
2	NX	1487	2085	Core
3	NX	2074	2455	Core
4	NX	2468	2868	Core
5	NX	2889	3424	Core
6	NX	3443	3997	Core
		Total	Depth	

V

1-hole left site location 5/2/89

Superior East Project

Cuttings/Skeleton Samples

Quintana Devils Canyon Sheet 1 of 1

Hole No. QDC-5 total boxes 6

Box No.	Size	Footage		Rotary/Core
1 sh	NC	Surface	485	Core
2 sh	NC	485	1000	Core
3 sh	NC	1000	2400	Core
4 sh	NX	2400	4000	Core
5 sh	BX	4000	4405 1/2	Core
6	BX	4405	4409 T.D.	Core box 427 T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. DCA-1A Total boxes 19

Box No.	Size	Footage		Rotary/Core
1	NX	4002	4415	Core
2	NX	4415	4665	Core
3	NX	4665	4675	Core
4	NX	4675	4961	Core
5	NX	4961	4980	Core
6	NX	4980	4993	Core
7	NX	4993	5002	Core
8	NX	5002	5010	Core
9	NX	5010	5434	Core
10	NX	5434	5443	Core
11	NX	5443	5453	Core
12	NX	5453	5461	Core
13	NX	5461	5470	Core
14	NX	5470	5738	Core
15	NX	5738	5749	Core
16	NX	5749	5759	Core
17	NX	5759	5767	Core
18	NX	5767	5803	Core
19	NX	5803	5813 TD	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. DCA-2A total boxes 11

Box No.	Size	Footage		Rotary/Core
1	NX	1352	1455	core
2	NX	1455	1544	core
3	NX	1544	1677	core
4	NX	1677	1831	core
5	NX	1831	1901	core
6	NX	1901	1910	core
7	NX	1910	1919	core
8	NX	1919	1928	core
9	NX-BX	1928	2409	core
10	BX	2409	2418	core
11	BX	2418	2422 T.D.	core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 2

Hole No. DCA-3A total boxes 21

Box No.	Size	Footage		Rotary/Core
1	NX	2980	3204	Core
2	"	3204	3400	"
3	"	3400	3835	"
4	"	3835	4070	"
5	"	4070	4088	"
6	"	4088	4101	"
7	"	4101	4150	"
8	"	4150	4166	"
9	"	4166	4297	"
10	"	4297	4335	"
11	"	4335	4338	"
		Original Hole Lost at this		
		point. Deviated hole		
		started from wedge and		
		continued.		
12	NX	4244	4255	Core
13	"	4255	4300	"
14	"	4300	4456	"
15	"	4456	4520	"
16	"	4520	4538	"
17	"	4538	4664	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 2

Hole No. DCA-3A total boxes 21

Box No.	Size	Footage		Rotary/Core
18	NX	4664	4800	Core
19	"	4800	4930	"
20	"	4930	5139	"
21	"	5139	5154	"
		Total	Depth	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. M-1A total boxes 107

Box No.	Size	Footage		Rotary/Core
1	NC	2400	2524	Core
2	NC	2524	2744	Core
3	NC	2744	2810	Core
4	NC	2810	2891	Core
5	NC-NX	2891	3132	Core
6	NX	3132	3340	Core
7	NX	3340	3350	Rotary
8	NX	3350	3359	Core
9	NX	3359	3366	Core
10	NX	3366	3324	Core
11	NX	3324	3382	Core
12	NX	3382	3391	Core
13	NX	3391	3400	Core
14	NX	3400	3409	Core
15	NX	3409	3419	Core
16	NX	3419	3426	Core
17	NX	3426	3435	Core
18	NX	3435	3443	Core
19	NX	3443	3452	Core
20	NX	3452	3462	Core
21	NX	3462	3469	Core

5A
5B

Box No.	Size	Footage		Rotary Core
22	NX	3469	3479	Core
23	NX	3479	3488	" "
24	NX	3488	3498	" "
25	NX	3498	3505	" "
26	NX	3505	3514	" "
27	NX	3514	3524	" "
28	NX	3524	3533	" "
29	NX	3533	3769	" "
30	NX	3769	3838	" "
31	NX	3841	3849	" "
32	NX	3849	3858	" "
33	NX	3858	3868	" "
34	NX	3868	3876	" "
35	NX	3876	3886	" "
36	NX	3886	3894	" "
37	NX	3894	3903	" "
38	NX	3903	3912	Core

Box No.	Size	Footage		Rotary/Core
39	NX	3912	3921	Core
40	NX	3921	3928	" "
41	NX	3928	3938	" "
42	NX	3938	3947	" "
43	NX	3947	3955	" "
44	NX	3955	3964	" "
45	NX	3964	3972	" "
46	NX	3972	3981	" "
47	NX	3981	3990	
48	NX	3990	3998	
49	NX	3998	4008	
50	NX	4008	4016	
51	NX	4016	4026	
52	NX	4026	4034	
53	NX	4034	4042	
54	NX	4042	4385	
55		4385	4865	
56		4865	4879	
57		4879	4888	
58		4888	4897	
59		4897	4906	
60		4906	4913	
61	NX	4913	4923	
62		4923	4933	
63		4933	4942	
64		4942	4952	
65		4952	4961	

Box No.	Size	Footage		Rotary/Core
66		4961	4970	
67		4970	4980	
68		4980	4988	
69		4988	4998	
70		4998	5008	
71		5008	5017	
72		5017	5026	
73		5026	5036	
74		5036	5045	
75		5045	5054	
76		5054	5062	
77		5062	5073	
78		5073	5083	
79		5083	5091	
80		5091	5101	
81		5101	5110	
82		5110	5118	
83		5118	5126	
84		5126	5135	
85		5135	5144	
86		5144	5154	
87		5154	5163	
88		5163	5172	
89		5172	5180	
90		5180	5189	
91		5189	5198	
92		5198	5208	
93		5208	5213	

Box No.	Size	Footage		Rotary Core
94		5213	5222	
95		5222	5231	
96		5231	5240	
97		5240	5249	
98		5249	5259	
99		5259	5268	
100	X	5268	5278	
101	Z	5278	5288	
102		5288	5297	
103		5297	5306	
104		5306	5316	
105		5316	*5322	
5A	NC	2916	2926	
5B	NX	3105	3113	

90

** Bottom of hole

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 6

Hole No. M-1A Total boxes 107

Box No.	Size	Footage		Rotary/Core
1	NC	2400	2524	Core
2	"	2524	2744	"
3	"	2744	2810	"
4	"	2810	2891	"
5	NC-NX	2891	3132	"
5A	NC	2916	2926	"
5B	NX	3105	3113	"
6	"	3132	3240	"
7	"	3240	3250	"
8	"	3250	3259	"
9	"	3259	3266	"
10	"	3266	3324	"
11	"	3324	3382	"
12	"	3382	3391	"
13	"	3391	3400	"
14	"	3400	3409	"
15	"	3409	3419	"
16	"	3419	3426	"
17	"	3426	3435	"
18	"	3435	3443	"
19	"	3443	3452	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 6

Hole No. M-1A total boxes 127

Box No.	Size	Footage		Rotary/Core
20	NX	3452	3462	Core
21	"	3462	3469	"
22	"	3469	3479	"
23	"	3479	3488	"
24	"	3488	3498	"
25	"	3498	3505	"
26	"	3505	3514	"
27	"	3514	3524	"
28	"	3524	3533	"
29	"	3533	3769	"
30	"	3769	3838	"
31	"	3841	3849	"
32	"	3849	3858	"
33	"	3858	3868	"
34	"	3868	3876	"
35	"	3876	3886	"
36	"	3886	3894	"
37	"	3894	3903	"
38	"	3903	3912	"
39	"	3912	3921	"
40	"	3921	3928	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 6

Hole No. N-1A total boxes 107

Box No.	Size	Footage		Rotary/Core
41	NX	3928	3938	Core
42	"	3938	3947	"
43	"	3947	3955	"
44	"	3955	3964	"
45	"	3964	3972	"
46	"	3972	3981	"
47	"	3981	3990	"
48	"	3990	3998	"
49	"	3998	4008	"
50	"	4008	4016	"
51	"	4016	4026	"
52	"	4026	4034	"
53	"	4034	4042	"
54	"	4042	4385	"
55	"	4385	4865	
56	"	4865	4879	"
57	"	4879	4888	"
58	"	4888	4897	"
59	"	4897	4906	"
60	"	4906	4913	"
61	"	4913	4923	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 6

Hole No. M-1A total boxes 107

Box No.	Size	Footage		Rotary/Core
62	NX	4923	4933	Core
63	"	4933	4942	"
64	"	4942	4952	"
65	"	4952	4961	"
66	"	4961	4970	"
67	"	4970	4980	"
68	"	4980	4988	"
69	"	4988	4998	"
70	"	4998	5008	"
71	"	5008	5017	"
72	"	5017	5026	"
73	"	5026	5036	"
74	"	5036	5045	"
75	"	5045	5054	"
76	"	5054	5062	"
77	"	5062	5073	"
78	"	5073	5083	"
79	"	5083	5091	"
80	"	5091	5101	
81	"	5101	5110	
82	"	5110	5118	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 6

Hole No. M-1A total boxes 107

Box No.	Size	Footage		Rotary/Core
83	NX	5118	5126	Core
84	"	5126	5135	"
85	"	5135	5144	"
86	"	5144	5154	"
87	"	5154	5163	"
88	"	5163	5172	"
89	"	5172	5180	"
90	"	5180	5189	"
91	"	5189	5198	"
92	"	5198	5208	"
93	"	5208	5213	"
94	"	5213	5222	"
95	"	5222	5231	"
96	"	5231	5240	"
97	"	5240	5249	"
98	"	5249	5259	"
99	"	5259	5268	"
100	"	5268	5278	"
101	"	5278	5288	"
102	"	5288	5297	"
103	"	5297	5306	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 6

Hole No. M-1A Total boxes 107

Box No.	Size	Footage		Rotary/Core
104	NX	5306	5316	Core
105	NX	5316	5322	Core
		Total Depth.		

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. OF-1A total boxes 1

Box No.	Size	Footage		Rotary/Core
1 sh	NX	2130	2148½	Core
(bottom hole core from Kerr-McGee).				

Superior East Project

Cuttings/Skeleton Samples

Ray West

Sheet 1 of 1

Hole No. RW-5 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	Bx	Surface	900	Rotary
2	BX	900	1800	R
3	BX	1800	2498	R
1 spot	NX	1950	2499	Core, spot
2	NX	2499	2502 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. A-1 total boxes 5

Box No.	Size	Footage		Rotary/Core
1	NC (Box)	Surface	1317	Rotary
1	NC	1309	1374	Core
2	NC	1374	1642	"
3	NC	1642	1838	"
4	NC	1838	2048	"
5	NC	2048	2127 T.D.	"

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-2 total boxes ___

Box No.	Size	Footage		Rotary/Core
1	BX	Surface	1055	R
2	BX	1055	2143	R
3	BX	2143	3188	R
4	BX	3188	4081	R
1 sh	NX	4078	4390	Core
2 sh	NX	4390	4513	Core.

In Ventura warehouse 2/4/86.

See Skel Logs and at main

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 3

Hole No. A-2 total boxes 40

Box No.	Size	Footage		Rotary/Core
1A	BX	Surface	1060	Rotary
2A	BX	1060	2143	Rotary
3A	BX	2143	3188	Rotary
4A	BX	3188	4081	Rotary
1sk	NX	4078	4390	Core
2sk	NX	4390	4513	Core
JGM —	Toss out boxes at Miami down to about 4200. Then SAVE all remaining boxes to TD at 4513'.			

→ Art Ventura Warehouse

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 3

Hole No. A-2 total boxes 40

Box No.	Size	Footage		Rotary/Core
5	NX	4207	4217	CORE
6		4217	4226	
7		4226	4235	
8		4235	4244	
9		4244	4252	
10		4252	4261	
11		4261	4270	
12		4270	4279	
13		4279	4288	
14		4288	4297	
15		4297	4306	
16		4306	4315	
17		4315	4324	
18		4324	4333	
19		4333	4341	
20		4341	4349	
21		4349	4359	
22		4359	4367	
23		4367	4377	
24		4377	4385	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 3

Hole No. A-2 total boxes 40

Box No.	Size	Footage		Rotary/Core
25	NX	4385	4393.5	CORE
26		4393.5	4403	
27		4403	4411.5	
28		4411.5	4421	
29		4421	4431	
30		4431	4439	
31		4439	4448	
32		4448	4457	
33		4457	4466	
34		4466	4475	
35		4475	4484	
36		4484.	4492	
37		4492	4504	
T.D. 38		4504	4513	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-24 total boxes ___

Some sk chard

Box No.	Size	Footage		Rotary/Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 2

Hole No. A-3 total boxes 33 ~~17~~

Box No.	Size	Footage		Rotary/Core
1	NX	Surf	1113	Rotary
2	NX	1113	1940	Rotary
3	NC	1941	2120	Core
4	"	2121	2450	Core
5	"	2172	2183	Core (Rotary)
6	"	2459	2804	"
7	"	2820	3236	"
8	NX	3237	3618	"
9	"	3633	4020	"
10	"	3669	3679	" (Core)
11	"	4032	4463	"
12	"	4472	4868	"
13	"	4877	5364	"
14	"	5364	6008	"
1B	NC	1941	~~2169~~	Core
2B	NC	2169	2370	Core
3B	NC	2379	2568	Core
4B	NC	2578	2774	Core
5B	NC	2782	2968	Core
6B	NC	2978	3182	Core
7B	NX	3191	3385	Core

At Vanadium Warehouse

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 2

Hole No. A-3 Total boxes 33

Box No.	Size	Footage		Rotary/Core
8B	NX	3393	3595	Core
9B	NX	3610	3846	Core
10B	NX	3856	4063	Core
11B	NX	4070	4290	Core
12B	NX	4300	4518	Core
13B	NX	4528	4760	Core
14B	NX	4771	4992	Core
15B	NX	4995	5231	Core
16B	NX	5240	5434	Core
17B	NX	5449	5622	Core
18B	NX	5630	5835	Core
19B	NX	5844	6008	
			T.D.	

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 2

Hole No. A-3 total boxes _____

Box No.	Size	Footage		Rotary/Core
~~A-3~~ 1B	NC	1941	2159	Core
2B	NC	2169	2370	
3B	NC	2379	2568	
4B	NC	2578	2779	
5B	NC	2782	2968	
6B	NC	2978	3182	
7B	NX	3191	3385	
8B	NX	3393	3595	
9B	"	3610	3846	
10B	"	3856	4063	
11B	"	4070	4290	
12B	"	4300	4518	
13B	"	4528	4760	
14B	"	4771	4992	
15B	"	4995	5231	
16B	"	5240	5434	
17B	"	5449	5622	
18B	"	5630	5835	
19B	"		6008	
		5844	T.D.	

At Vantana Warehouse

A-3

1 1941-2159 NC

2 2159-2370 "

3 2379-2568 "

4 2578-2779 "

5 2782-2968 "

6 2978-3182 "

7 → 19 [illegible]

at Ventura
[illegible]
2/4/86

A-3

7 3191-3388 C NX

8 3393-3595 C

9 3610-3846

10 3856-4063

11 4070-4298

12 4302-4518

13 4528-4760

14 4771-4992

15 4995-5281

16 5240-5484

17 5449-5622

18 5630-5835

19 5844-6008

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-3 total boxes 14

Box No.	Size	Footage		Rotary/Core
1	NX	Surf.	1113	R
2	NX	1113	1949	R
1 sh	NC	1941	2120	Core
2 sh	NC	2131 *	2450	Core
2A sh	NC	* 2172	2183	Core lim tuff
3 sh	NC	2459	2804	Core
4 sh	NC	2820	3236	Core
5 sh	NX	3287	3418	Core
6 sh	NX	3633 *	4020	Core
6A sh	NX	* 3669	3679	Core tuff
7 sh	NX	4032	4463	Core
8 sh	NX	4472	4868	Core
9 sh	NX	4877	5364	Core
10 sh	NX	5364	6008 T.D.	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet [redacted] of _____

Hole No. A-4 total boxes _____

Box No.	Size	Footage		Rotary/Core
JJM	~~SAVE all boxes from~~			
	Toss all boxes down to 5000'.			
	SAVE all boxes from			
	5000 to 6044 T.D.			

Some notes on shakers to save small intervals between 0 and 5000 ft. - I did not!

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
1	BX	Surface	548	Rotary
2	BX	548	1538	Rotary
3	BX	1538	2444	Rotary
4	BX	2444	3265	Rotary
4A	NC	2708	2737	Spot Cores
5	BX	3265	3599	Rotary
1B	NX	2708	3762	Core
2B	NX	3762	3942	Core
3B	NX	3952	4137	Core
4B	NX	4143	4341	Core
5B	NX	4341	4532	Core
6B	NX	4540	4743	Core
7B	NX	4743	4950	Core
8B	NX	4941	5177	Core
9B	NX	5184	5404	Core
10B	NX	5412	5602	Core
11B	NX	5611	5849	Core
12B	NX	5859	6143	Core
13B	NX	6152	6365	Core
14B	NX	6373	6591	Core
15B	NX	6600	6664	Core

At Ventura Warehouse

1 Key

2 Mag Signs

3 List

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
6	NX	4998	5006	CORE
7		5006	5015	
8		5015	5024	
9		5024	5032	
10		5032	5042	
11		5042	5051	
12		5051	5059	
13		5059	5069	
14		5069	5077	
15		5077	5087	
16		5087	5096	
16a		5096	5106	
17		5106	5115	
18		5115	5124	
19		5124	5133	
20		5133	5142	
21		5142	5150	
22		5150	5160	
23		5160	5168	
24		5168	5177	
25		5177	5186	
26		5186	5195	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
27		5195	5203	
28		5203	5212	
29		5212	5220	
30		5220	5229	
31		5229	5237	
32		5237	5246	
33		5246	5254	
34		5254	5263	
35	NX	5263	5272	CORE
36		5272	5280	
37		5280	5288	
38		5288	5297	
39		5297	5306	
40		5306	515	
41		5315	5323	
42		5323	5333	
43		5333	5342	
44		5342	5351	
45		5351	5360	
46		5360	5369	
47		5369	5378	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
48	NX	5378	5387	CORE
49		5387	5396	
50		5396	5404	
51		5404	5413	
52		5413	5422	
53		5422	5431	
54		5431	5440	
55		5440	5449	
56		5449	5458	
57		5458	5468	
58		5468	5477	
59		5477	5486	
60		5486	5494	
61		5494	5504	
62		5504	5513	
63		5513	5522	
64		5522	5530	
65		5530	5539	
66		5539	5542	
67		5542	5557	
68		5557	5566	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
69	NX	5566	5575	CORE
70		5575	5584	
71		5584	5594	
72		5594	5603	
73		5603	5612	
74		5612	5621	
75		5621	5630	
76		5630	5639	
77		5639	5648	
78		5648	5657	
79		5657	5666	
80		5666	5675	
81		5675	5685	
82		5685	5692	
83		5692	5701	
84		5701	5710	
85		5710	5720	
86		5720	5728	
87		5728	5736	
88		5736	5746	
89		5746	5755	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
90	NX	5755	5764	CORE
91		5764	5773	
92		5773	5782	
93		5782	5789	
94		5789	5798	
95		5798	5807	
96		5807	5016	
97		5816	5825	
98		5825	5834	
99		5834	5842	
100		5842	5851	
101		5851	5860	
102		5860	5869	
103		5869	5878	
104		5878	5886	
105		5886	5895	
106		5895	5904	
107		5904	5913	
108		5913	5922	
109		5922	5931	
110		5931	5940	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
111	NX	5940	5949	CORE
112		5949	5958	
113		5958	5967	
114		5967	5975	
115		5975	5984	
116		5984	5994	
117		5994	6002	
118		6002	6011	
119		6011	6020	
120		6020	6029	
121		6029	6038	
122		6038	6048	
123		6048	6056	
124		6056	6066	
125		6066	6075	
126		6075	6084	
127		6084	6093	
128		6093	6101	
129		6101	6109	
130		6109	6117	
131		6117	6126	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
132	NX	6126	6135	CORE
133		6135	6143	
134		6143	6152	
135		6152	6162	
136		6162	6171	
137		6171	6180	
138		6180	6189	
139		6189	6198	
140		6198	6207	
141		6207	6216	
142		6216	6225	
143		6225	6234	
144		6234	6243	
145		6243	6252	
146		6252	6261	
147		6261	6270	
148		6270	6280	
149		6280	6289	
150		6289	6297	
151		6297	6309	
152		6309	6319	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
153		6319	6328	
154		6328	6338	
155		6338	6347	
156		6347	6356	
157		6356	6365	
158		6365	6376	
159		6376	6386	
160		6386	6395	
161	NX	6395	6407	CORE
162		6407	6416	
163		6416	6425	
164		6425	6433	
165		6433	6442	
166		6442	6451	
167		6451	6460	
168		6460	6470	
169		6470	6479	
170		6479	6489	
171		6489	6497	
172		6497	6506	
173		6506	6514	

Superior East Project

Cuttings/Skeleton Samples

Sheet 10 of 10

Hole No. A-4 total boxes 114

Box No.	Size	Footage		Rotary/Core
174	NX	6514	6520	CORE
175		6520	6529	
176		6529	6539	
177		6539	6548	
178		6548	6556	
179		6556	6565	
180		6565	6574	
181		6574	6582	
182		6582	6588	
183		6588	6593	
184		6593	6602	
185		6602	6610	
186		6610	6617	
187		6617	6625	
188		6625	6633	
189		6633	6642	
190		6642	6649	
191		6649	6657	
192		6657	6664	

TD

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of ____

Hole No. A-4 total boxes ____

Box No.	Size	Footage		Rotary/Core
1	Bx	Surf	568	Rotary
2	Bx	568	1538	Rotary
3	Bx	1538	2444	Rotary
4	Bx	2444	3265	Rotary
5	Bx	3265	3599	Rotary
4Ash	NC	Spot Core	2708-2737	Spot Core

more

Start box 4Ash, core skeleton from 3593' (Box 1?) thru box(?) (5000')

SAVE all core below 5000' to T.D (6464).

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. _____ total boxes _____

at Venture

Box No.	Size	Footage		Rotary/Core
A4 1B	~~NX~~	2708	3742	Core
2	NX	3742	3942	Core
3	"	3952	4137	
4	"	4143	4341	
5	"	4341	4532	
6	"	4540	4743	
7	"	4343	4950	
8	"	4961	5177	
9	"	5184	5409	
10	"	5412	5602	
11	"	5611	5849	
12	"	5859	6143	
13	"	6152	6365	
14	"	6373	6591	
15	"	6600	6644 TD	

A-4

1 2708-3762 NK
2 3762-3942 "
3 3952-4137
4 4143-4341
5 4341-4532
6 4540-4743
7 4743-4950
8 4961-5177
9 5184-5404
10 5412-5602
11 5611-5849 "
12 5859-6143
13 6152-6365
14 6374-6591
15 6600-6644 + 070

Ventura Warehouse
2/4/86

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-4 total boxes ___

Box No.	Size	Footage		Rotary/Core
1	BX	Surf	568	R
2	BX	568	1538	R
3	BX	1538	2447	R
4	BX	2447 *	3265	R
4A sk	NC	* 2708-2710 2716-2721	2734-2735	C, spot Cores
5	BX	3265	3579	R

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. A-5 total boxes 4

Box No.	Size	Footage		Rotary/Core
1	Bx	Surface	1155	Rotary
2	Bx	1155	2219	Rotary
2A sk	NC	1335	1358	Spot Cores
3	Bx	2219	3149	Rotary
			T.D.	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-5 total boxes 4

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	1187	R
2	BX	1187	2219	R
3	BX	2219	3149	R
1 sh	NC	1335 1348	1339 1350	C, bottomhole spot.
"	NC	1354	1358 T.D.	C, bottomhole spot

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. A-6 total boxes 2

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	1148	Rotary
2	BX	1148	1655	Rotary
			T.D.	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-6 total boxes 2

Box No.	Size	Footage		Rotary/Core
1	BX	Surf.	1148	R
2	BX	1148	1655 T.D.	R.
	No bottom hole core.			

9105

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 6

Hole No. A-7 Total boxes 116

Box No.	Size	Footage		Rotary/Core
1A	BX	69	1576	Rotary
2A	BX	1576	2577	Rotary
3A	BX	2577	3150	Rotary
1B	NX	3168	3373	Core
2B	NX	3379	3581	Core
3B	NX	3591	3790	Core
4B	NX	3798	4023	Core
5B	NX	4032	4254	Core
6B	NX	4254	4483	Core
7B	NX	4483	4706	Core
8B	NX	4715	5011	Core
9B	NX	5020	5280	Core
10B	NX	5288	5552	Core
11B	NX	5560	5798	Core
12B	NX	5798	6020	Core
13B	NX	6020	6040	Core

At Ventura Warehouse

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 6

Hole No. A-7 total boxes 100

Box No.	Size	Footage		Rotary/Core
1		3157	3500	
2		3500	3675	
3		3675	3683	
4		3683	3722	
5		3722	3731	
6		3731	4025	
7		4025	4400	
8	NX	4400	4679	CORE
9		4679	4689	
10		4689	4699	
11		4699	4708	
12		4708	4718	
13		4718	4728	
14		4728	4737	
15		4737	4746	
16		4746	4755	
17		4755	4764	
18		4764	4774	
19		4774	4780	
20		4780	4790	
21		4790	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 6

Hole No. A-7 total boxes 100

Box No.	Size	Footage		Rotary/Core
22	NX	4798	4808	CORE
23		4808	4817	
24		4817	4826	
25		4826	4836	
26		4836	4845	
27		4845	4854	
28		4854	4863	
29		4863	4872	
30		4872	4882	
31		4882	4891	
32		4891	4901	
33		4901	4911	
34		4911	4921	
35		4921	4931	
36		4931	4940	
37		4940	4949	
38		4949	4958	
39		4958	4967	
40		4967	4975	
41		4975	4984	
42		4984	4994	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 4

Hole No. A-7 total boxes 100

Box No.	Size	Footage		Rotary/Core
43		4994	5003	
44		5003	5012	
45		5012	5022	
46		5022	5031	
47		5031	5040	
48		5040	5050	
49		5050	5059	
50		5059	5069	
51	NX	5069	5077	CORE
52		5077	5086	
53		5086	5096	
54		5096	5104	
55		5104	5113	
56		5113	5122	
57		5122	5131	
58		5131	5140	
59		5140	5149	
60		5149	5345	
61		5345	5354	
62		5354	5363	
63		5363	5372	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 6

Hole No. A-7 total boxes 100

Box No.	Size	Footage		Rotary/Core
64		5372	5381	
65		5381	5391	
66		5391	5400	
67		5400	5410	
68		5410	?	
69		5410	5419	
70		5419	5428	
71		5428	5436	
72		5436	544[illegible]	
73		5446	5456	
74		5456	546[illegible]	
75		5466	5475	
76		5475	5485	
77		5485	5494	
78		5494	5503	
79		5503	5513	
80		5513	5522	
81		5522	5532	
82		5532	5542	
83		5542	5552	
84		[illegible]	5561	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 6

Hole No. A-7 total boxes 100

Box No.	Size	Footage		Rotary/Core
85		5561	5571	
86		5571	5580	
87		5580	5590	
88		5590	5599	
89		5599	5609	
90		5609	5618	
91		5618	5628	
92	NX	5628	5638	CORE
93		5638	5648	
94		5648	5657	
95		[illegible]	5799	
96		5799	5809	
97		5809	816	
98		5816	5826	
99		5826	6040	
100		6040	6042	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. _____ total boxes _____

at Ventura

Box No.	Size	Footage		Rotary/Core
A-7/-1A	BX	69	1576	Rotary
2A	BX	1576	2577	Rotary
3A	BX	2577	3150	Rotary
1B	NX	3168	3373	Core
2B	NX	3379	3581	Core
3B	NX	3591	3798	Core
4B	NX	3798	4023	
5B	NX	4032	4254	
4B	NX	4254	4483	
7B	NX	4483	4706	
8B	"	4715	5011	
9B	"	5020	5280	
10B	"	5288	5552	
11B	"	5560	5798	
12B	"	5798	6020	
13B	"	6020	6040	

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of ____

Hole No. A-7 total boxes ____

R cuttings to 3150 why? Varluno?

	Box No.	Size	Footage		Rotary/Core
sh	Tw to	3682			
SAVE	Sch a	3682	3730		
&	Tw	3730	4680		
Save	Tw as long as	4680	- 5140		
&	Tw	5140	5350		
SAVE	Tw	5350	5600		
some save	Ps	5600	5650		
sh	Ps	5650	5800		
SAVE	Pn	5800	5820		
&	Pn	5820	6040		
	Save last box		BOX 313		

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-7 total boxes ___

Box No.	Size	Footage		Rotary/Core
1	BX	69	1576	R.
2	BX	1576	2577	R.
3	BX	2577	3150	R.
1 sh	NX	3168	3373	Core
2 sh	NX	3379	3581	Core
3 sh	NX	3891	3790	Core
4 sh	NX	3798	4023	Core
5 sh	NX	4032	4254	Core
6 sh	NX	4254	4483	Core
7 sh	NX	4483	4706	Core
8 sh	~~NX~~	4715	5011	Core
9 sh	NX	5020	5280	Core
10 sh	NX	5288	5552	Core
11 sh	NX	5560	5798	Core
12 sh	NX	5798	6020	Core
13	NX	6020	6040	Core

In Ventura Warehouse 2/4/86

Superior Case Project 2-7/83

Skeleton Samples 1 Sheet of 1

Hole No. A 8 Total Boxes 7

Footage	Footage	Footage
24 to	13 37	

Skeleton Samples
on shelf in superior warehouse
2/7/83
H Stone

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
1 A	NC	24	199	Core
2 A	NC	1209	411	Core
3 A	NC	419	642	Core
4 A	NC	651	868	Core
5 A	NC	878	1093	Core
6 A	NC	1102	1308	Core
7 A	NC	1308	1513	Core
8 A	NC	1519	1722	Core
9 A	NC	1722	2062	Core
10 A	NX	2062	2621	~~Core~~
	continue skeleton in this box!			
skeleton	Box 234 (2198) thru Box 345 (3197)			
SAVE	Box 346 (3197) thru Box 348 (3237)			
skeleton	Box 349 (3237) thru Box 404 (3751)			
SAVE	Box 405 (3751) thru end of hole box 524 (4707)			

found missing interval

Include skeleton & SAVE boxes!

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
1	NX	2621	2975	
2	NX	2975	3197	
3		3197	3219	
4		3219	3228	
5		3228	3237	
6		3237	3751	
7		3751	3763	
8	BX	3763	3773	CORE
9		3773	3784	
10		3784	3793	
11		3793	3802	
12		3802	3811	
13		3811	3821	
14		3821	3830	
15		3830	3839	
16		3839	3853	
17		3853	3863	
18		3863	3875	
19		3875	3885	
20		3885	3894	
21		3894	3902	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
22		3902	3911	
23		3911	3920	
24		3920	3929	
25		3929	3939	
26		3939	3949	
27		3949	3957	
28		3957	3965	
29	BX	3965	3974	CORE
30		3974	3983	
31		3983	3990	
32		3990	3999	
33		3999	4008	
34		4008	4017	
35		4017	4026	
36		4026	4035	
37		4035	4044	
38		4044	4054	
39		4054	4062.5	
40		4062.5	4071	
41		4071	4081	
42		4081	4091	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
43	BX	4091	4101	CORE
44		4101	4109	
45		4109	4117	
46		4117	4125	
47		4125	4135	
48		4135	4144	
49		4144	4152	
50		4152	4163	
51		4163	4172	
52		4172	4182	
53		4182	4193	
54		4193	4205	
55		4205	4220	
56		4220	4228	
57		4228	4237	
58		4237	4246.	
59		4246	4254.5	
60		4265	4274	
61		4254	4265	
62		4224	4283	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
63	BX	4283	4293	CORE
64		4293	4301	
65		4301	4308	
66		4308	4317	
67		4317	4325	
68		4325	4335	
69		4335	4345	
70		4345	4355	
71		4355	4363	
72		4363	4366	
73		4366	4375	
74		4375	4385	
75		4385	4394	
76		4394	4403	
77		4403	4401	
78		4401	4420	
79		4420	4429	
80		4429	4437	
81		4437	4447	
82		4447	4451	
83		4451	4465	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
84		4465	4473	
85		4473	4480	
86		4480	4489	
87		4489	4498	
88		4498	4506	
89		4506	4514	
90		4514	4524	
91	BX	4524	4533	CORE
92		4533	4542	
93		4542	4551	
94		4551	4560	
95		4560	4569	
96		4569	4578	
97		4578	4587	
98		4587	4598	
99		4598	4613	
100		4613	4622	
101		4622	4634	
102		4634	4644	
103		4644	4656	
104		4656	4664	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 8

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
105	BX	4664	4674	CORE
106		4674	4687	
107		4687	4696	
108		4696	4705	
109		4705	4714	
110		4714	4723	
111		4723	4733	
112		4733	4745	
113		4745	4756	
114		4756	4769	
115		4769	4782	
116		4782	4795	
117		4795	4804	
118		4804	4815	
119		4815	4826	
120		4826	4835	
121		4835	4844	
122		4844	4852	
123		4852	4863	
124		4863	4872	
125		4872	4882	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 9

Hole No. A-8 total boxes 137

Box No.	Size	Footage		Rotary/Core
126	BX	4882	4891	CORE
127	BX	4891	4901	CORE
128	1	4901	4907	1

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-8 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	24	199	Core
2 sh	NC	209	411	Core
3 sh	NC	419	642	Core
4 sh	NC	651	868	Core
5 sh	NC	878	1093	Core
6 sh	NC	~~[illegible]~~ 1102	1308	Core
7 sh	NC	1308	1513	Core
8 sh	NC	1519	1722	Core
9 sh	NC	1722	2062	Core
10 sh	NX	2062	2215	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
1-A	NC	Surf	584	Core
2-A	NC	593	1047	"
3-A	NC	1047	1491	"
3A-A	NC	1378	1388	"
3B-A	NC	1444	1484	"
4-A	NC	1507	1992	"
4A-A	NC	1902	1911	"
5-A	NC	2006	2186	"
Continued next page				
SAVE Tw/Tw	Box 234 (2184-2170)			
SK Tw	Box 235 (2195)	thru Box 311 (2878)		
SAVE tuff	Box 312 (2878)	thru Box 316 (2924)		
SK Tw	Box 317 (2924)	thru Box 354 (3260)		
SAVE A-1-A-2SB	Box 355 (3260)	thru Box 369 (3400)		
SK "	Box 370 (3400)	thru Box 398 (3660)		
SAVE LC	Box 399 (3669)	thru Box 533 (4908)		T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
1	NC-HQ	2186.5	2196	
2	NC-HQ	2196	2352	
3		2352	2775	
4		2775	2875.5	
5		2875.5	2887	
6		2887	2896.5	
7		2896.5	2905	
8	NX	2905	2915	CORE
9		2915	2924	
10		2924	3268	
11		3268	3275	
12		3275	3283	
13		3283	3292	
14		3292	3301	
15		3301	3311	
16		3311	3320	
17		3320	3330	
18		3330	3339	
19		3339	3347	
20		3347	3356	
21		3356	3365	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
22		3365	3374	
23	NX	3374	3383	
24		3383	3393	
25		3393	3400	
26		3400	3635	
27		3635	3669	
28		3669	3678	
29		3678	3687	
30		3687	3696	
31	BX	3696	3705	CORE
32		3705	3714	
33		3714	3725	
34		3725	3734	
35		3734	3743.5	
36		3743.5	3752	
37		3752	3761	
38		3761	3771	
39		3771	3781	
40		3781	3790.5	
41		3790.5	3800	
42		[illegible]	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
43	BX	3809	3819	CORE
44		3819	3827	
45		3827	3836	
46		3836	3846	
47		3846	3855	
48		3855	3863	
49		3863	3873	
50		3873	3882	
51		3882	3891	
52		3891	3901	
53		3901	3910	
54		3910	3920	
55		3920	3930	
56		3930	3940	
57		3940	3950	
58		3950	3960	
59		3960	3970	
60		3970	3978	
61		3978	3988	
62		3988	3997	
63		[illegible]	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
64		4008	4018	
65		4018	4026	
66		4026	4036	
67		4036	4041	
68		4041	4055	
69		4055	4063	
70		4063	4073	
71	BX	4073	4082	CORE
72		4082	4091	
73		4091	4099	
74		4099	4108	
75		4108	4117	
76		4117	4125	
77		4125	4134	
78		4134	4144	
79		4144	4152	
80		4152	4162	
81		4162	4170	
82		4170	4178	
83		4178	4187	
[illegible]		[illegible]	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
85	BX	4195	4205	CORE
86		4205	4213	
87		4243	4222	
88		4222	4231	
89		4231	4241	
90		4241	4249	
91		4249	4258	
92		4258	4267	
93		4267	4276	
94		4276	4285	
95		4285	4294	
96		4294	4303	
97		4303	4311	
98		4311	4320	
99		4320	4329	
100		4329	4338	
101		4338	4348	
102		4348	4357	
103		4357	4369	
104		4369	4376	
105		[illegible]	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
106	BX	4384	4393	CORE
107		4393	4402	
108		4402	4411	
109		4411	4420	
110		4420	4429	
111		4429	4438	
112		4438	4447	
113		4447	4456	
114		4456	4465	
115		4465	4474	
116		4474	4483	
117		4483	4493	
118		4493	4502	
119		4502	4511	
120		4511	4520	
121		4520	4529	
122		4529	4538	
123		4538	4547	
124		4547	4556	
125		4556	4566	
126		4566	[illegible]	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
127		4575	4587	
128		4587	4592	
129		4592	4602	
130		4602	4613	
131		4613	4620	
132		4620	4629	
133		4629	4639	
134	BX	4639	4647	CORE
135		4647	4657	
136		4657	4666	
137		4666	4676	
138		4676	4685	
139		4885	4694	
140		4694	4703	
141		4703	4712	
142		4712	4722	
143		4722	4732	
144		4732	4741	
145		4741	4750	
146		4750	4759	
147		4759	4767	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 9

Hole No. A-9 total boxes 170

Box No.	Size	Footage		Rotary/Core
148	BX	4767	4777	CORE
149		4777	4786	
150		4788	4796	
151		4796	4805	
152		4805	4814	
153		4814	4824	
154		4824	4832	
155		4832	4842	
156		4842	4850	
157		4850	4860	
158		4860	4869	
159		4869	4878	
160		4878	4887	
161		4887	4897	
162		4897	4903	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-9 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	Surf	584	Core
2 sh	NC	593	1029	Core
3 sh	NC	1047*	1491	Core
3-A sh	NC	* 1378	1388	Core box 145
3-B sh	NC	* 1474	1484	Core box 155
4 sh	NC	1507*	1992	Core
4-A sh	NC	* 1902	1911	Core box 203
5 sh	NC	2006	2186	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
1	NC	23	330	Core
2	"	340	576	"
3	"	586	801	"
4	"	811	1102	"
5	"	1112	1390	"
6	"	1410	1706	"
6A	"	1578	1608	"
7	"	1724	2037	"
8	"	2017	2241.5	"

Start by adding Skeleton to box 8 above

sk Box 229 (2130) thru Box 240 (2241)

SAVE — Box 241 (2241) thru Box 246 (2300)

sk Box 247 (2300) thru Box 295 (2747)

SAVE — Box 296 (2747) thru Box 303 (2821)

sk Box 304 (2821) thru Box 359 (3330)

SAVE Box 360 (3330) to End of hole

Box 461 (4282 T.D)

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
9		2241.5	2251	
10		2251	2261	
11	NC	2261	2271	
12		2271	2281	
13		2281	2290	
14		2290	2300	
15/SK		2300	2747.5	
16		2747.5	2756.5	CORE
17		2756.5	2766	
18		2766	2775	
19		2775	2784	
20		2784	2794	
21	NX	2794	2803	
22		2803	2812	
23		2812	2822	
24/SK		2822	3330	
25		3330	3339	
26		3339	3347	
27		3347	3356	
28		3356	3365	
29		3365	3373	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
30	NX	3373	3383	CORE
31		3383	3396	
32		3396	3399	
33		3399	3410	
34		3410	3417	
35		3417	3425	
36		3425	3434.5	
36a		3434.5	3443	
37		3443	3452	
38	BX	3452	3461	
39		3461	3471	
40		3471	3481	
41		3481	3489.5	
42		3489.5	3497.5	
43		3497.5	3506	
44		3506	3515	
45		3515	3525	
46		3525	3535	
47		3535	3544	
48		3544	3554	
49		3554	3563	
50		3563	3571	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
51	BX	3571	3579	CORE
52		3579	3589	
53		3589	3597.5	
54		3597.5	3607.5	
55		3607.5	3617	
56		3617	3621	
57		3621	3635.5	
58		3635.5	3645	
59		3645	3655	
60		3655	3662.5	
61		3662.5	3672	
62		3672	3681	
63		3681	3690	
64		3690	3699.5	
65		3699.5	3709	
66		3709	3717	
67		3717	3726.5	
68		3726.5	3736	
69		3736	3744	
70		3744	3753	
71		3753	3762	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
72	BX	3762	3772	CORE
73		3772	3780.5	
74		3780.5	3790	
75		3790	3799	
76		3799	3809	
77		3809	3819	
78		3819	3828	
79		3828	3837	
80		3837	3846	
81		3846	3855	
82		3855	3863	
83		3863	3873	
84		3873	3881	
85		3881	3890.5	
86		3890.5	3900	
87		3900	3909	
88		3909	3918	
89		3918	3927.5	
90		3927.5	3936	
91		3936	3945.5	
92		3945.5	3954	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
93	BX	3954	3963	
94		3963	3976.5	
95		3976.5	3987	
96		3987	3995	
97		3995	4005	
98		4005	4014.5	
99		4014.5	4023.5	
100		4023.5	4033	
101	AX	4033	4042.5	CORE
102		4042.5	4052	
103		4052	4061.5	
104		4061.5	4071	
105		4071	4081	
106		4081	4090	
107		4090	4098.5	
108		4098.5	4108	
109		4108	4118	
110		4118	4128.5	
111		4128.5	4139	
112		4139	4148	
113		4148	4157	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 7

Hole No. A-10 total boxes 127

Box No.	Size	Footage		Rotary/Core
114	AX	4157	4166.5	CORE
115		4166.6	4176	
116		4176	4186	
117		4186	4196	
118		4196	4207	
119		4207	4219.5	
120		4219.5	4235	
121		4235	4244.5	
~~122~~				
123		4244.5	4254.5	
124		4254.5	4254.5	
125		4264.5	4274	
T.D. 126		4274	4282	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-10 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	23	330	Core
2 sh	NC	240	576	Core
3 sh	NC	586	801	Core
4 sh	NC	811	1102	Core
5 sh	NC	1112	1390	Core
6 sh	NC	1410 *	1706	Core
~~7 sh~~	~~NC~~	~~1724~~	~~2037~~	~~Core~~
~~8 sh~~	~~NC~~	~~~~	~~~~	~~~~
6-A sh	NC	1598	1608	Core box 170
7 sh	NC	1724	2037	Core
8 sh	NC	2047	2138	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
1	NC	12	364	Core
2	"	370	698	"
3	"	707	1199	"
4	"	1208	1575	"
5	"	1588	1954	" "
6	"	1963	2209	"

start re-skeleton Box 7 (2210') → (ie Box 23b)

SAVE – Tw/Tw Box 23b (2210) thru Box 238 (2235)

sh Tw Box 239 (2235) thru Box 377 (3479)

SAVE cont Box 378 (3479) thru Box 391 (3595)

sh bx Box 392 (3595) thru Box 436 (4003)

SAVE wt Box 437 (4003) thru Box 559 (5175) T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
7	NC	2216	2216	
8	NC	2216	2226	
9	NC	2226	2235	
10		2235	2582	
11		2582	2975	
12		2975	3479	
13		3479	3487	CORE
14		3487	3496	
15	NX	3496	3505	
16		3505	3513	
17		3513	3521	
18		3521	3529	
19		3529	3539	
20		3539	3545	
21		3545	3553	
22		3553	3562	
23		3562	3570	
24		3570	3578	
25		3578	3585	
26		3585	3595	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
27	NX	3595	4003	
28		4003	4012	
29		4012	4020	
30		4020	4029	
31		4029	4038	
32		4038	4046	
33		4046	4055	
34		4055	4070	CORE
35	BX	4070	4078.5	
36		4078.5	4086.5	
37		4086.5	4097	
38		4097	4106	
39		4106	4116	
40		4116	4126	
41		4126	4135	
42		4135	4144	
43		4144	4151.5	
44		4151.5	4162	
45		4162	4169	
46		4169	4174	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
47	BX	4174	4188	CORE
48		4188	4197	
49		4197	4205	
50		4205	4214	
51		4214	4222	
52		4222	4232	
53		4232	4241	
54		4241	4230	
55		4230	4239	
56		4239	4268.5	
57		4268.5	4277	
58		4277	4286	
59		4286	4295	
60		4295	4304	
61		4304	4314	
62		4314	4322.5	
63		4322.5	4332	
64		4332	4341	
65		4341	4350	
66		4350	4360	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
67	BX	4360	4370	CORE
68		4370	4379	
69		4379	4388	
70		4388	4397	
71		4397	4406	
72		4406	4413	
73		4413	4424	
74		4424	4433	
75		4433	4442	
76		4442	4451	
77		4451	4459	
78		4459	4469	
79		4469	4478	
80		4478	4487.5	
81		4487.5	4495	
82		4495	4505	
83		4505	4515	
84		4515	4524	
85		4524	4533	
86		4533	4541	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
87	BX	4541	4549.5	CORE
88		4549.5	4559	
89		4559	4567	
90		4567	4577	
91		4577	4585	
92		4585	4595	
93		4595	4601	
94		4601	4609	
95		4609	4617	
96		4617	4630	
97		4630	4637	
98		4637	4646	
99		4646	4654	
100		4654	4662	
101		4662	4672	
102		4672	4681	
103		4681	4691	
104		4691	4699	
105		4699	4708	
106		4708	4717	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
107	BX	4717	4721	CORE
108		4721	4736	
109		4736	4748	
110		4748	4757	
111		4757	4765	
112		4765	4774	
113		4774	4782	
114		4782	4798	
115		4798	4809	
116		4809	4820	
117		4820	4830	
118		4830	4841	
119		4841	4850	
120		4850	4857	
121	AX	4857	4866	
122		4866	4880	
123		4880	4890	
124		4890	4911	
125		4911	4922	
126		4922	4938.5	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
127	AX	4924	4944	CORE
128		4944	4955	
129		4955	4964	
130		4964	4973	
131		4973	4981	
132		4981	4989	
133		4989	4997	
134		4997	5006	
135		5006	5017	
136		5017	5024	
137		5024	5035	
138		5035	5043	
139		5043	5052	
140		5052	5060	
141		5060	5071	
142		5071	5081	
143		5081	5089.5	
144		5089.5	5099	
145		5099	5106	
146		5106	5117	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 9

Hole No. A-11 total boxes 152

Box No.	Size	Footage		Rotary/Core
147	↑	5117	5127	↑
148		5127	5135.5	
149	AX	5135.5	5144.5	CORE
150		5144.5	5153	
151	↓	5153	5167.5	↓
152		5167.5	5175	

T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-11 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	12	364	Core
2 sh	NC	370	698	Core
3 sh	NC	707	1199	Core
4 sh	NC	1208	1575	Core
5 sh	NC	1588	1954	Core
6 sh	NC	1963	2209	Core

Superior Coal Project 2/7/83

Skeleton Samples 1 Sheet of 1.

Hole No. A 12 Total Boxes ..4...

Footage total	Footage	Footage
2754.5	4217	

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
Note: Hole A-12 is a deviated hole starting in Hole A-11 at 2750' depth as starting point.				
1	NX	2754½	2992	Core
2	"	2992	3501	"
3	"	3501	3850	"
4	"	3850	4217	"
SAVE	Box 88A (4088) thru Box 261 (5724) T.D.			
Note TOSS Box 1 thru 88 as they have been skeletonized				

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
5	BX	4088	4217	
6		4217	4224	
7		4224	4235	
8		4235	4242	
9		4242	4252	
10		4252	4261	
11		4261	4270	
12	NX	4270	4276	CORE
13		4276	4286	
14		4286	4295	
15		4295	4303	
16		4303	4310	
17		4310	4318	
18		4318	4328	
19		4328	4338	
20		4338	4346	
21		4346	4351	
22		4351	4359	
23		4359	4369	
24		4369	4377.5	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
25		4377.5	4386	
26		4386	4393	
27		4393	4402	
28		4402	4410	
29		4410	4417	
30		4417	4424	
31		4424	4433	
32	NX	4433	4448	CORE
33		4448	4455	
34		4455	4462	
35		4462	4470	
36		4470	4475	
37		4475	4487	
38		4487	4496	
39		4496	4505	
40		4505	4510	
41		4510	4519	
42		4519	4527	
43		4527	4535	
44		4535	4541	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
45		4541	4549	
46		4549	4556	
47		4556	4564	
48		4564	4573	
49		4573	4582	
50		4582	4590	
51		4590	4599	
52	NX	4599	4806	CORE
53		4606	4619	
54		4619	4626.5	
55		4626.5	4634	
56		4634	4641	
57		4641	4650	
58		4650	4654	
59		4654	4667.5	
60		4667.5	4676	
61		4676	4684	
62		4684	4693	
63		4693	4707	
64		4707	4714	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
65	NX	4714	4726.5	CORE
66		4726.5	4734.5	
67		4734.5	4742	
68		4742	4751.5	
69		4751.5	4760	
70		4760	4766	
71		4766	4775.5	
72		4775.5	4784	
73		4784	4792.5	
74		4792.5	4800	
75		4800	4808	
76		4808	4816	
77		4816	4826	
78		4826	4833.5	
79		4833.5	4843	
80		4843	4851	
81		4851	4859	
82		4859	4867	
83		4867	4876	
84		4876	4882.5	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
85	NX	4882.5	4891	CORE
86		4891	4900	
87		4900	4908	
88		4908	4916	
89		4916	4924	
90		4924	4933	
91		4933	4942	
92		4942	4951	
93		4951	4959	
94		4959	4968	
95		4968	4976	
96		4976	4984	
97		4984	4993	
98		4993	5001.5	
99		5001.5	5010	
100		5010	5018.5	
101		5018.5	5026	
102		5026	5034	
103		5034	5043	
104		5043	5050	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
105	NX	5050	5058.5	CORE
106		5058.5	5068	
107		5068	5077	
108		5077	5083	
109		5083	5092	
110		5092	5107	
111		5107	5117	
112		5117	5127	
113		5127	5135	
114		5135	5144	
115		5144	5152.5	
116	BX	5152.5	5160.5	
117		5160.5	5170	
118		5170	5178	
119		5178	5187	
120		5187	5197	
121		5197	5206	
122		5206	5214	
123		5214	5224	
124		5224	5233	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
125	BX	5233	5242	CORE
126		5242	5252	
127		5252	5261	
128		5261	5271	
129		5271	5280	
130		5280	5288	
131		5288	5300	
132		5300	5308	
133		5308	5317	
134		5317	5327	
135		5327	5335.5	
136		5335.5	5344	
137		5344	5352.5	
138		5352.5	5362	
139		5362	5371	
140		5371	5380	
141		5380	5389	
142		5389	5399	
143		5399	5408	
144		5408	5417	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
145	BX	5417	5426	CORE
146		5426	5434	
147		5434	5445	
148		5445	5452	
149		5452	5459.5	
150		5459.5	5469	
151		5469	5479	
152		5479	5488	
153		5488	5497	
154		5497	5507	
155		5507	5516	
156		5516	5525	
157		5525	5534	
158		5534	5542	
159		5542	5552	
160		5552	5562	
161		5562	5571	
162		5571	5580	
163		5580	5590	
164		5590	5598	

Superior East Project

Cuttings/Skeleton Samples

Sheet 10 of 10

Hole No. A-12 total boxes 178

Box No.	Size	Footage		Rotary/Core
165	BX	5598	5608	CORE
166		5608	5617	
167		5617	5626	
168		5626	5635	
169		5635	5645	
170		5645	5654	
171		5654	5665	
172		5665	5673	
173		5673	5684	
174		5684	5692	
175		5692	5702	
176		5702	5711	
177		5711	5720	
T.D. 178		5720	5724	

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-12 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NX	2754½	2992	Core
2 sh	NX	2992	3501	Core
3 sh	NX	3501	3850	Core
4 sh	NX	3850	4217	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of ____

Hole No. A-12-A total boxes ____

Box No.	Size	Footage		Rotary/Core
Hole	A-12-A	was wedged & cored	from	4093
thru	4240	to cover a	navi-drilled	
section				
1	BX	4093	4106	Core
2	"	4106	4115	"
3	"	4115	4125	"
4	"	4125	4135	"
5	"	4135	4144 1/2	"
6	"	4144 1/2	4153	"
7	"	4153	4161	"
8	"	4161	4172	"
9	"	4172	4181 1/2	"
10	"	4181 1/2	4191	"
11	"	4191	4199	"
12	"	4199	4206	"
13	"	4206	4215	"
14	"	4215	4224	"
15	"	4224	4232	"
16	"	4232	4240	"
		T.D. end of wedge hole		

Done

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

A-12A

Hole No. A-12 Wedge total boxes 16

Box No.	Size	Footage		Rotary/Core
1	BX	4093	4106	Core
2	BX	4106	4115	Core
3	BX	4115	4125	Core
4	BX	4125	4135	Core
5	BX	4135	4144½	Core
6	BX	4144½	4153	Core
7	BX	4153	4161	Core
8	BX	4161	4172.3	Core
9	BX	4172.3	4181.5	Core
10	BX	4181.5	4191	Core
11	BX	4191	4199	Core
12	BX	4199	4206	Core
13	BX	4206	4215	Core
14	BX	4215	4224	Core
15	BX	4224	4232	Core
16	BX	4232	4240 T.D.	Core

Superior Cast Project 2/7/83

Skeleton Samples 1 Sheet of 1.

Hole No. 413 Total Boxes 5

Footage	Footage	Footage
0 - 70	30 71	

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
1	NC	Surf.	1000	Core
2	NC	1000	1625	Core
3	NC	1625	1980	Core
4	NC	1980	2460	Core
5	BX	2460	3062.5	Core.

Note: Continue no-skeletonning by filling Box 5

SAVE & SAVE

Tuli Box 336 (3062½) thru Box 339 (3104)

P100 Box 340 (3101) thru Box 369 3354

Box 370 (3354) thru Box 516 (4656) TD

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
6		3062.5	3078	
7		3078	3084	
8		3084	3092.5	
9		3092.5	3101	
10		3101	3354	
11		3354	3364	
12		3364	3373	
13	NX	3373	3382	CORE
14		3382	3390	
15		3390	3399	
16		3399	3408.5	
17		3408.5	3417	
18		3417	3425.5	
19		3425.5	3434.5	
20		3434.5	3443	
21		3443	3452	
22		3452	3461.5	
23		3461.5	3469.5	
24		3469.5	3478	
25		3478	3487	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
26	NX	3487	3495	CORE
27		3495	3504	
28		3504	3514	
29		3514	3521.5	
30		3521.5	3530	
31		3530	3538	
32		3538	3545	
33		3545	3554	
34		3554	3562	
35		3562	3570	
36		3570	3579	
37		3579	3588	
38		3588	3595	
39		3595	3606	
40		3606	3614	
41		3614	3623	
42		3623	3633	
43		3633	3646	
44		3646	3650	
45		3650	3659	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
46	NX	3659	3668	CORE
47		3668	3677.5	
48		3677.5	3687	
49		3687	3695	
50		3695	3703.5	
51		3703.5	3712	
52		3712	3721	
53		3721	3731	
54		3731	3739.5	
55		3739.5	3749	
56		3749	3757	
57		3757	3766	
58		3766	3777	
59		3777	3786	
60		3786	3797	
61		3797	3805	
62		3805	3814	
63		3814	3822	
64		3822	3832	
65		3832	3840	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
66	NX	3840	3848	CORE
67		3848	3857	
68		3857	3865	
69		3865	3874.5	
70		3874.5	3882.5	
71		3882.5	3890.5	
72		3890.5	3900	
73		3900	3909	
74		3909	3917	
75		3917	3926	
76		3926	3936	
77		3936	3945	
78		3945	3953	
79		3953	3966	
80		3966	3975	
81		3975	3984	
82		3984	3992	
83		3992	4004	
84		4004	4013	
85		4013	4022	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
86	NX	4022	4031	CORE
87		4031	4039.5	
88		4039.5	4048	
89		4048	4057	
90		4057	4065.5	
91		4065.5	4074	
92		4074	4083.5	
93		4083.5	4093.5	
94		4093.5	4102	
95		4102	4111	
96		4111	4120.5	
97		4120.5	4129.5	
98		4129.5	4137.5	
99		4137.5	4146	
100		4146	4155	
101		4155	4165	
102		4165	4174	
103		4174	4185	
104		4185	4192.5	
105		4192.5	4202	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
106	NX	4202	4210	CORE
107		4210	4219	
108		4219	4228	
109		4228	4236	
110		4236	4245	
111		4245	4254	
112		4254	4262	
113		4262	4271.5	
114		4271.5	4280.8	
115		4280.8	4289	
116		4289	4298	
117		4298	4307	
118		4307	4315	
119		4315	4325	
120		4325	4334	
121		4334	4343.5	
122		4343.5	4352	
123		4352	4360	
124		4360	4364	
125		4364	4378	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
126		4378	4387	
127		4387	4395	
128		4395	4403	
129		4403	4413.5	
130		4413.5	4428.5	
131		4428.5	4431	
132		4431	4439.5	
133	NX	4439.5	446.5	CORE
134		4446.5	4455	
135		4455	4464	
136		4464	4475	
137		4475	4481	
138		4481	4489	
139		4489	4499	
140		4499	4510	
141		4510	4518	
142		4518	4527	
143		4527	4537	
144		4537	4547	
145		4547	4555	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 9

Hole No. A-13 total boxes 157

Box No.	Size	Footage		Rotary/Core
146	NX	4555	4564	CORE
147		4564	4575	
148		4575	4581	
149		4581	4591.5	
150		4591.5	4600	
151		4600	4609.5	
152		4609.5	4619	
153		4619	4627.5	
154		4627.5	4637	
155		4637	4645	
156		4645	4654	
157		4654	4656	

T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-13 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	Surf.	1000	Core
2 sh	NC	1000	1625	Core
3 sh	NC	1625	1980	Core
4 sh	NC	1980	2460	Core
5 sh	NX	2460		

Superior Coal Project 4/7/83

Skeleton Samples 1 Sheet of 1.

Hole No. A 14 Total Boxes ..5..

Footage	Footage	Footage
Rotary Cuttings 1534	~~including coal~~ 3841	

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
1	Bx	Surface	900	Rotary
2	Bx	900	1410	Rotary
3	Bx	1410	1534	Rotary
1 sk	NC	1534	1838	Core
2 sk	NC	1838	2130	Core
3 sk	NC	2130	2630	Core
4 sk	NC	2630	3240	Core
5 sk	NC	3240	3892	
continue filling box 5 sk				
sk	Two Box 246 (3843) thru Box 281 (3978½)			
SAVE	Box 282 (3978½) thru Box 481. (5738) TD.			
6/sk	NC	3892	3978.5	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
7		3978.5	3988	
8		3988	3998	
9		3998	4007	
10		4007	4014	
11		4014	4023	
12		4023	4029	
13		4029	4038	
14	NX	4038	4045.5	CORE
15		4045.5	4054	
16		4054	4063	
17		4063	4072.5	
18		4072.5	4079.5	
19		4079.5	4088	
20		4088	4097	
21		4097	4105	
22		4105	4113	
23		4113	4121	
24		4121	4130	
25		4130	4138	
26		4138	4146	
27		4146	4155	

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
28	NX	4155	4169	CORE
29		4169	4173	
30		4173	4182	
31		4182	4191	
32		4191	4202	
33		4202	4209	
34		4209	4217	
35		4217	4225	
36		4225	4234.5	
37		4234.5	4244	
38		4244	4253	
39		4253	4261	
40		4261	4269.5	
41		4269.5	4277	
42		4277	4287	
43		4287	4296.5	
44		4296.5	4305	
45		4305	4314	
46		4314	4325	
47		4325	4332	

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
48	NX	4332	4340	CORE
49		4340	4349	
50		4349	4357	
51		4357	4367	
52		4367	4375	
53		4375	4384	
54		4384	4393	
55		4393	4401	
56		4401	4410	
57		4410	4419	
58		4419	4427	
59		4427	4436	
60		4436	4445	
61		4445	4454	
62		4454	4462	
63		4462	4472	
64		4472	4478	
65		4478	4488	
66		4488	4497	
67		4497	4506	
68		4506	4514	

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
69	NX	4514	4522	CORE
70		4522	4531	
71		4531	4540	
72		4540	4549	
73		4549	4557	
74		4557	4566	
75		4566	4573	
76		4573	4583	
77		4583	4591	
78A		4591	4600	
78B		4600	4608	
79		4608	4617	
80		4617	4626	
81		4626	4635	
82		4635	4644	
83		4644	4653	
84		4653	4662	
85		4662	4671.5	
86		4671.5	4681	
87		4681	4689	
88		4689	4698	
89		4698	4706	

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
90	NX	4706	4716	CORE
91		4716	4725	
92		4725	4734	
93		4734	4744	
94		4744	4753	
95		4753	4761	
96		4761	4770.5	
97		4770.5	4780	
98		4780	4789	
99		4789	4798	
100		4798	4807	
101		4807	4814	
102		4814	4821	
103		4821	4831	
104		4831	4841	
105		4841	4849	
106		4849	4857.5	
107		4857.5	4866.5	
108		4866.5	4876	
109		4876	4886	
110		4886	4894	

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
111	NX	4894	4903	CORE
112		4903	4911	
113		4911	4920	
114		4920	4928	
115		4928	4939	
116		4939	4942	
117		4942	4957	
118		4957	4965	
119		4965	4974	
120		4974	4983	
121		4983	4992	
122		4992	5000	
123		5000	5008	
124		5008	5017	
125		5017	5025	
126		5025	5033	
127		5033	5042	
128		5042	5049	
129		5049	5058	
130		5058	5066	

Superior East Project

Cuttings/Skeleton Samples

Sheet 8 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
131	NX	5066	5074	CORE
132		5074	5083	
133		5083	5092	
134		5092	5102	
135		5102	5110	
136		5110	5118	
137		5118	5127	
138		5127	5135	
139		5135	5144	
140		5144	5153	
141		5153	5161	
142		5161	5169	
143		5169	5178	
144		5178	5187	
145		5187	5196	
146		5196	5203	
147		5203	5213	
148		5213	5222	
149		5222	5231	
150		5231	5240	

Superior East Project

Cuttings/Skeleton Samples

Sheet 9 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
151	NX	5240	5249	CORE
152		5249	5257	
153		5257	5266	
154		5266	5275	
155		5275	5284	
156		5284	5293	
157		5293	5301.5	
158		5301.5	5310	
159		5310	5319	
160		5319	5328	
161		5328	5337	
162		5337	5346	
163		5346	5353	
164		5353	5362.5	
165		5362.5	5371	
166		5371	5380	
167		5380	5389	
168		5389	5397	
169		5397	5405	
170		5405	5415	

Superior East Project

Cuttings/Skeleton Samples

Sheet 10 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
171		5415	5423	
172		5423	5431	
173		5431	5440	
174	NX	5440	5448	
175		5448	5457	
176		5457	5466.5	
177		5466.5	5476	CORE
178		5476	5484	
179		5484	5493	
180		5493	5513	
181		5513	5522	
182		5522	5532	
183		5532	5542	
184	BX	5542	5550	
185		5550	5564	
186		5564	5566	
187		5566	5578	
188		5578	5587	
189		5587	5596	
190		5596	5605	

Superior East Project

Cuttings/Skeleton Samples

Sheet 11 of 11

Hole No. A-14 total boxes 214

Box No.	Size	Footage		Rotary/Core
191	BX	5605	5614	CORE
192		5614	5621	
193		5621	5631	
194		5631	5640	
195		5640	5652.5	
196		5652.5	5662	
197		5662	5670	
198		5670	5678	
199		5678	5688	
200		5688	5698	
201		5698	5705	
202		5705	5715	
203		5715	5724	
204		5724	5733	
205		5733	5738	

T.D.

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-14 Total boxes ___

Box No.	Size	Footage		Rotary/Core
1	BX	Surface	900	R
2	BX	900	1410	R
3	BX	1410	1535	R
1 sh	NC	1534	1838	Core
2 sh	NC	1838	2130	Core
3 sh	NC	2130	2630	Core
4 sh	NC	2630	3260	Core
5 sh	NX	3260		

Superior East Project

Cuttings/Skeleton Samples

Sheet ___ of ___

Hole No. A-15 total boxes ___

Box No.	Size	Footage		Rotary/Core
1 sh	NC	Surf.	590	Core
2 sh	NC	590	1100	Core
3 sh	NX	1100	1506	Core
4 sh	NX	1506	1890	Core
5 sh	NX	1890	2030	Core
6 sh	BX	2030	2160	Core
7 sh	BX	2160	2360	Core
8 sh	BX	2360	2540	Core
9 sh	BX	2540	2675	Core
10 sh	BX	2675	2800	Core
11 sh	BX	2800	2900	Core
12 sh	BX	2900	2909	Core
13 sh	BX	2909	3063	Core
14 sh	BX	3063	3072	Core
15 sh	BX	3072	3081	Core
16 sh	BX	3081 *	3380	Core
16A sh	BX	* 3192	3200	Core
16B sh	BX	* 3276	3284	Core
16C sh	BX	* 3332	3341	Core
17 sh	BX	3380	3610	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
1	NC	Surf	590	Core
2	NC	590	1100	Core
3	NX	1100	1500	Core
4	NX	1500	1890	Core
5	NX	1890	2030	Core
6	BX	2030	2160	Core
7	BX	2160	2340	Core
8	BX	2340	2540	"
9	"	2540	2675	"
10	"	2675	2800	"
11	"	2800	2900	"
12	"	2900	2909	"
13	"	2909	3063	"
14	"	3063	3072	"
15	"	3072	3081	"
16	"	3081	3250	"
16A	"	3250	[illegible]	"
16B	"	3276	3284	"
16C	"	3332	3341	"
17		3340	3610	"
18	"	3608	3670	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 2 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
19	BX	3620	3628	Core
20	"	3628	3638	"
21	"	3638	3647	"
22	"	3647	3656	"
23	"	3656	3665	"
24	"	3665	3674	"
25	"	3674	3684	"
26	"	3684	3692	"
27	"	3692	3703	"
28	"	3703	3712	"
29	"	3712	3721	"
30	"	3721	3730	"
31	"	3730	[illegible]	"
32	"	3739	[illegible]	"
33	"	3747	3757	"
34	"	3757	3766	"
35	"	3766	3775	"
36	"	3775	3784	"
37	"	[illegible]	3792	"
38	"	3792	[illegible]	"
39	"	3800	3810	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 3 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
40	BX	3810	3821	Core
41	"	3821	3830	"
42	"	3830	3839	"
43	"	3839	3847	"
44	"	3847	3856	"
45	"	3856	3864	"
46	"	3864	3874	"
47	"	3874	3884	"
48	"	3884	3893	"
49	"	3893	[illegible]	"
50	"	[illegible]	3911	"
51	"	3911	3922	"
52	"	3922	3934	"
53	"	[illegible]	[illegible]	"
53	"	[illegible]	3953	"
55	"	3953	[illegible]	"
56	"	[illegible]	[illegible]	"
57	"	[illegible]	[illegible]	"
58	"	[illegible]	[illegible]	"
59	"	[illegible]	[illegible]	"
60	"	[illegible]	4017	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 4 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
61	BX	4017	4027	Core
62	"	4027	4037	"
63	"	4037	4046	"
64	"	4046	4055	"
65	"	4055	4064	"
66	"	4064	4073	"
67	"	4073	4082	"
68	"	4082	4090	"
69	"	4090	4099	"
70	"	4099	4108	"
71	"	4108	4117	"
72	"	4117	4129	"
73	"	4129	4139	"
74	"	4139	4150	"
75	"	4150	4158	"
76	"	4158	4162	"
77	"	4162	4170	"
78	"	4170	4180	"
79	"	4180	4195	"
80	"	4195	4204	"
81	"	4204	4216	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 5 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
82	BX	4214	4229	Core
83	"	4229	4238	"
84	"	4238	4248	"
85	"	4248	4256	"
86	"	4256	4265	"
87	"	4265	4275	"
88	"	4275	4285	"
89	"	4285	4294	"
90	"	4294	4303	"
91	"	4303	4312	"
92	"	4312	4322	"
93	"	4322	4331	"
94	"	4331	4340	"
95	"	4340	4350	"
96	"	4350	4359	"
97	"	4359	4369	"
98	"	4369	[illegible]	"
99	"	[illegible]	4388	"
100	"	4388	[illegible]	"
101	"	[illegible]	4409	"
102	"	4409	4418	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 6 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
103	BX	4418	4429	Core
104	"	4429	4438	"
105	"	4438	4447	"
106	"	4447	4456	"
107	"	4456	4465	"
108	"	4465	4474	"
109	"	4474	4484	"
110	"	4484	4493	"
111	"	4493	4504	"
112	"	4504	4514	"
113	"	4514	4526	"
114	"	4526	4535	"
115	"	4535	4544	"
116	"	4544	4555	"
117	"	4555	4565	"
118	"	4565	4575	"
119	"	4575	4585	"
120	"	4585	[illegible]	"
121	"	4594	4603	"
122	"	4603	[illegible]	"
123	"	[illegible]	[illegible]	"

Superior East Project

Cuttings/Skeleton Samples

Sheet 7 of 7

Hole No. A-15 total boxes 132

Box No.	Size	Footage		Rotary/Core
124	BX	4621	4630	Core
125		4630	4641	
126		4641	4651	
127		4651	4661	
128		4661	4670	
129		4670	4679	
130		4679	4688	
131		4688	4697	
132		4697	4699	
		T.D.		

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of ____

Hole No. A-16 total boxes ____

Box No.	Size	Footage		Rotary/Core
				Rotary
6?	NC	1028	1380	Core

Superior East Project

Cuttings/Skeleton Samples

Sheet 1 of 1

Hole No. A-14 total boxes 4

Box No.	Size	Footage		Rotary/Core
1	BX	Surface	450	Rotary
2	BX	450	900	Rotary
3	BX	900	1020	Rotary
4	NC	1028	1380	Core

mark box at Miami Warehouse

Tuff Beds to Check.

Elev.

E of RHC.

E4720 A-1 Tw 1527-1564 ash flow tuff 1532-1535 E4720 +3185
BR 1564 (+3155).

E4800 DCA-2A Tw 1415-1442 Trt 1442-1452 check "dacite" motley Tw @ 1410-1415 ?? E4800 +3350
BR 1452 (+3350).

E4975 AOF-2 Tw 800-3058 T.D. Sylvia motley @ 2690 few slay frag @ 2890 E4975 (?+228 ? +2085
BR below 3058. (below +1915)

E4240 AOF-1 Tw 1106-2939 None reported; increase Cu @ 2900' E4240 ? +1440
BR 2939 (+1300)

Between RHC & DC.

E4640 DCA-3A Tw 2430-4454. Tuff marker; hot tuff; "Tw" 3204-3205 No increase in Cu DCA 33205V (See A9 2916V) E4640 +1435
BR 4454 (SB) (+185)

E4625 AI-1 Tw 2250-3073 None recorded E4625 —
BR 3073 (SB). (+1550)

E4485 A-8 Tw 2213-3224 chance of 3200'; increased Cu E4485 ? +1485
BR 3224 (SB). (+1460)

E4340 A-2 Tw 2020-3920 None reported. E4340 —
BR 3920 (SB). (+420)

A-9 A92916V fresh water Lms (See DCA 33205V)

Tuff Beds to Check (Continued).

W of DC.

E 4785 DCA-1A. Tw 2210-4669 None noted in rotary cuttings nor core E4785 —
BR 4669 (+ 115)

E4500 M-1A Tw 2428-4998 E4500
ch lithic SS & tuff @ 2430 ? + 2070
ch vitric tuff 2903-2906 ? + 1595
ch gray tuff mudstone 3818-2819 & 3837-3838 M1A3818V ? + 680
Also ch lithic SS in Supai at 4998-4922-4936
& below to base at 5108 (ch 5040-5086 Tm).
BR 4998 (-500)

E 4020 A-5 Tw 2600-3145 T.D. None reported in rotary cuttings E4020 —
BR below 3145 (below + 870)

E4210 A-7 Tw 2445-5610. ? tuff beds or lens @ 4690-4695. Cu below A74694H A74691H -480
ch tuff SS in Supai @ 5643-5748. A75710H E4210
BR 5610 (-1400)

E4100 A-4 Tw 2133-6484 lithic ~~SS~~ tuff ~~3943-3943~~ 3808-3810 A43810V E4100 (~~+ 2070~~ + 290)
~~lithic below~~ tuff ~~2903-2906~~ 3976-3984 A43978V (~~+ 1595~~ + 120)
lithic ~~gray tuff~~ ~~mudstone~~ 4201½-4203 A44202V (-100)
lithic tuff w/ Cu below. 5083-5102 & 5112 A45084H horizontal A45098H vertical A45108V -1000
BR 6484 (-2385)

E4125 A-3 Tw 1430-6008 T.D. lithic tuff 3671-3677 T.S. 3671 E4125 +450
" " silic 4485-4490 w/ Cu T.S. 4488 -360
BR below 6008 (below -1885)

SUPERIOR EAST DRILL HOLES

HOLE #	TOTAL DEPTH	DEPTH TOP - BOTTOM WHITETAIL CONGLOMERATE
~~A-10~~		
A-10	4282'	2138 - 3405
A-11	5175'	2215 - 3492
A-12	5724' (WEDGE FROM A-11)	(A-11 2215) 2750'-3529
A-13	4663'	2460 - 3071
A-14	5738'	2289 - 3831
A-15		- 2905

To Don

Date 10/3 Time 3:30

WHILE YOU WERE OUT

M J P Sell

of

Phone
Area Code Number Extension

TELEPHONED	✓	PLEASE CALL	
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		URGENT	
RETURNED YOUR CALL			

Message On Superior East - wants to know how deep holes 14-13 are & also depth in C - A-10 thru A-15 He will call in tomorrow morning.

Operator

Mary

AMPAD EFFICIENCY®

23-000 50 SHT. PAD
23-001 250 SHT. DISPENSER BOX