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AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 29, 1963

Mr. C. P. Pollock, Exploration Manager
American Smelting and Refining Company
120 Broadway
New York 5, New York

SUMMARIZING REPORT - POSTON BUTTE PROJECT

Dear Sir:

This will transmit Mr. Kirkpatrick's final report on the subject exploration project.

This report gives a very lucid account of the history, geology, drilling procedures and performance, and an analysis of costs of the project. Drill hole logs and maps are included.

Yours very truly,

Kenyon Richard

KENYON RICHARD

KR/kw
Attachment (1)
cc: DJPope, w/att.

POSTON BUTTE PROJECT
Pinal County, Arizona

SUMMARY OF EXPLORATION BY DRILLING

CONTENTS

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

January 7, 1963

MEMORANDUM FOR KENYON RICHARD

POSTON BUTTE PROJECT
Blackwater Mining District
Pinal County, Arizona

The following is my report summarizing the exploration by drilling in the Poston Butte area.

INTRODUCTION

An area in the vicinity of Poston Butte, about three miles northwest of Florence, was first recognized as a porphyry copper prospect in early 1960 by A. G. Blucher and J. E. Kinnison as the result of regional mapping and investigation. Subsequently, geophysical surveys were made by W. E. Saegart, and the prospect explored by drilling in two different periods, the first early in 1961 and the second in last half of 1962 after an option had been obtained on the McFarland farm.

Several reports containing abundant information about the area and the first period of drilling have been submitted to you in the past. Repetition of this information herein is not warranted; a reader seeking further data may find them in the following reports:

Blackwater and Poston Butte Prospects, A. G. Blucher, June, 1960
Poston Butte Drilling Project, A. G. Blucher, June, 1961
Preliminary Geophysical Report, W. E. Saegart, Dec., 1961
Final Geophysical Report, W. E. Saegart, March, 1961
Induced Polarization Surveys, W. E. Saegart, Sept., 1962

David P. Cadwell acted as my assistant during the 1962 drilling and has helped in compiling some of the data for this report.

SUMMARY

The Poston Butte area was explored by 22 holes, 7 drilled in 1961 and 15 drilled in a later program in 1962. A porphyry-copper type of alteration zone about a mile wide and two miles long was found to exist below 300 to 400 feet of overburden that blankets most of the area. Secondary enrichment is generally absent and no commercial copper ore was found. However, oxidized and primary mineralization with a grade of about 0.4 per cent copper was found in three holes, the largest intercept being 381' of 0.42 per cent copper.

Drilling data are summarized in a subsequent table. A total of 12,509 feet was drilled at a:

direct cost per foot of	$ 5.54
indirect cost per foot	1.72
Total	$ 7.26

The total cost of the project (to Dec. 1, 1962) was $152,133, divided as follows:

Land	$ 48,985	(32%)
Geophysical Work	12,264	(8%)
Direct Drilling	69,305	(46%)
Indirect Drilling	21,579	(14%)

GEOLOGY

Blucher's two reports contain a detailed description of the regional and local geology, including that revealed by the first seven drill holes, which will not be repeated.

Except for the small, basalt-capped Poston Butte, roughly 1000 feet in diameter, the topography of the area is gently rolling in the northern part and almost flat in the southern part where cotton and other crops are cultivated. The basement rocks outcrop as a narrow band on the west side of Poston Butte, but in the rest of the area they are covered with a thick layer of post-mineral material of comparatively recent age. The material penetrated by the drill holes may conveniently be divided into the basement rocks and the layered post-mineral cover.

Post-Mineral Cover

The cover overlying the basement rocks varies from 1360 feet thick in hole No. 10 to zero at hole No. 1. Over most of the area prospected it ranges from 300 to 400 feet, and consists of the material called "Gila River gravels" by Blucher.

Gila River Gravels

This is essentially poorly sorted, unconsolidated alluvium consisting of lenticular gravel, sand, silt, and clay. The bulk of the material is silt containing irregularly distributed pebbles and boulders. A troublesome feature of this formation is a bed of gravel and well-rounded cobbles --- usually 30 or 40 feet thick --- that lies within a few feet of the surface. This gravel was difficult to drill and hold open with the rotary drills and was a prime factor in increasing rotary drilling costs. Progress through the bed was always slow due to the necessity of repeated cementing. The alluvium below the major gravel bed was rotary drilled rapidly and without trouble. The Gila River alluvium was present in all of the holes drilled in 1962 and constituted the entire recognizable cover in most of the holes.

Conglomerate

An indurated, poorly sorted conglomerate is one of the covering formations in part of the Poston Butte area. We definitely identified conglomerate in only one of the holes drilled in 1962, No. 10, in which approximately 1000 feet was intersected. Possibly conglomerate was present in some of the other holes, particularly in hole No. 17 east of Poston Butte, but not identified due to the lack of core runs and general similarity of its rock bit cuttings to those of parts of the Gila gravels.

Basalt

Layers of hard, black basalt were cut within the cover material in holes

No. 17 and No. 20 east of Poston Butte. In No. 17 two beds of basalt, 120 feet and 80 feet thick, were separated by 330 feet of alluvium,and in hole No. 20 a bed 138 feet thick was intersected.

Basement Rocks

Three types of basement rocks were intersected in the holes drilled in 1962: granite, monzonite porphyry, and felsite. Diabase was identified by Blucher in two of the holes drilled in 1961. Possibly more than one granite and one monzonite porphyry are present in the Poston Butte area, but with the limited information available we have only classified the rocks into the general types.

Granite

Most of the pre-mineral basement rock in the drilled area is granite. Typically, it is a coarse-textured biotite-granite containing large, pink feldspar crystals, and is generally similar to granites of the region that have been classified as Precambrian in age.

Monzonite Porphyry

Dikes of monzonite porphyry were cut in holes 9 and 11 in the 1962 drilling. On the northwest side of the drilled area, holes 13 and 14 were stopped after penetrating a few feet of weakly altered monzonite. From the distribution of monzonite in the drill holes it appears that a small stock may be present in the vicinity of holes 2 and 3 with dikes penetrating the surrounding granite. The monzonite of holes 13 and 14 contains more mafic minerals than that of the other holes and may be a separate and different intrusive.

Felsite

A light-colored, dense, aphanitic rock containing small quartz and chlorite(?) phenocrysts, which we interpreted as probably a post-mineral dike, was penetrated for 160 feet in hole 16. As most post-mineral dikes of this type of rock are generally relatively narrow, an offset hole, No. 18, was drilled in an unsuccessful attempt to miss the felsite.

Structure

Three possible northerly trending faults are indicated by the abrupt change in the depth to bedrock in several of the drill holes. Generalized locations of the postulated faults are shown on Attachment C.

Alteration

The approximate outline of a zone of pervasive alteration of the porphyry-copper type, as I interpret it from the drill holes, is shown on the accompanying map (Attachment C). The known zone is about 4000 feet wide and 12,000 feet long; alteration varies from weak to locally strong, and overall might be considered of moderate intensity. An unfortunate circumstance is that pyrite without the hoped-for chalcopyrite is the dominant sulfide in most of the zone.

The southeast side of the alteration zone is not clearly defined by the drill holes and a remote possibility exists that the zone may continue to the southeast. The sludge from a well in the southeast corner of section 27 contains

pyritized, altered granite. Northeast of the well the nearest drill holes, which penetrated fresh or very weakly altered granite, are over a mile away. However, the low copper content of the east end of the alteration zone does not make a possible extension attractive for exploration.

Copper Mineralization

Small amounts of copper are present throughout most of the alteration zone, but only in one area, outlined on the map (Attachment C), was appreciable, but sub-commercial, copper mineralization found.

A summary of the assays of the three best holes, all within the outlined area, follows:

Hole No.	Thickness	% Cu	Type of Cu Mineralization
5	120'	0.28	Partly oxidized
	20	0.85	Enriched (Chalcocite)
	73	0.25	Primary (Chalcopyrite)
	213'		
9	324'	0.42	Oxidized
	57	0.42	Primary (Chalcopyrite)
	381'		
11	257'	0.43	Oxidized

Hole No. 5 had a 20' zone of chalcocite, in hole 9 the chalcocite was negligible, and hole No. 11 was not drilled to sulfides. Some of the feldspars in holes 9 and 11 were stained blue-green and undoubtedly had absorbed enough copper to give the assays obtained. It seems probable that the copper of the sulfide minerals was reprecipitated as copper oxide or silicate (largely within the feldspars) without any appreciable downward movement. Small discrete spots of oxidized copper minerals may have originally been grains of chalcopyrite.

PROPERTY

Land controlled for the Poston Butte project, in approximate acreage, was:

State land, prospecting permits	1120 acres
Federal land, lode claims	3000 "
Private land, options	1570 "
Total	5690

The distribution of the land that was controlled is shown on Attachment B.

DRILLING & SAMPLING PROCEDURES

The method of drilling on the Poston Butte project is essentially the same as that used on the Sacaton project, which has been described in detail in a report under preparation by J. R. Wojcik.

In brief, a rotary drill using a $4\frac{1}{2}$" rockbit was used to drill through the alluvium and covering formations to the basement rock and a wireline diamond drill with an NX size bit was used to core the mineralized bedrock. Cores were taken at times with the rotary drills, using standard core barrels, in the deeper holes where the type of rock being drilled with rotary drill was in question. After the rotary drill had penetrated bedrock a core was usually taken to determine whether the degree of mineralization warranted further drilling of the bedrock with a diamond drill using a wireline core barrel. Wireline coring was

used in only five of the fifteen holes drilled in the 1962 program.

Drilling mud consisting of bentonite (trade name: Wyo-Gel) mixed with water and conditioned with quebracho and caustic soda was circulated in all of the drilling. The mud appeared to assist materially in removing rockbit cuttings from the holes and maintaining the walls of uncased rotary holes.

Drilling on the 1962 program was started on July 11 and was terminated on November 20. Three drills used on this program were:

(1) A Joy 22 hydraulic pulldown diamond drill. This rig was used for rockbit drilling, coring with a standard core-barrel and the rotary rods, and wireline diamond drilling. The rig was versatile and very satisfactory for rotary drilling to depths of 500 feet. It was not used on deeper rotary drilling.

(2) A Joy 75 chain-pulldown rotary drill. This rig proved quite satisfactory for the shallower rotary holes (to 500 feet) and for obtaining short cores at the shallow depths. However, on hole No. 10 the drill reached its capacity at 1000 feet, and the Joy 250 drill was brought onto the project to finish the hole.

(3) A Joy 250 drill. This drill, which is much larger than the 22 and 75 drills, was imported to finish the deep No. 10 hole. It was also used on shallower holes, but I believe that its most economical usage would be on rotary holes over 600 or 700 feet deep.

A trailer was used for a field office and moved with the drilling, usually to the hole being diamond drilled. Samples of the rockbit cuttings were taken for each 10' interval and stored in labelled plastic vials. In practice, the drillers usually took the samples of the rockbit cuttings. The drillers were quite willing to do this, and in my opinion their sampling results were fully as accurate as that of Company samplers. Most of the drillers carefully watched for changes in the cuttings. Near the anticipated depth of bedrock a Company sampler or geologist was usually on hand to watch for any change in the material being drilled.

Diamond drill core was placed in cardboard-paper core boxes at the drill by a sampler and then taken to the trailer-laboratory for weighing for the core recovery computation and splitting for assay. Samples were delivered daily to Jacobs Assay office in Tucson for assaying. Drill cores, rejects and pulp samples have now been stored temporarily at the Company's laboratory in Casa Grande.

CONTRACT DRILLING PRICES

Contract prices for the 1961 and 1962 drilling programs are tabulated below. The prices for 1962 are those in effect after August 1; rockbit drilling prices were changed after the first month. The information gained during 1961, showing the presence of the gravel difficult to drill, is one of the chief reasons for the increase in contract prices for rockbit drilling in 1962 over those of 1961.

1961
BOYLES BROTHERS

Rockbit drilling (all)	$ 2.60 per foot
Core drilling, NX size	
0 - 500'	6.00 " "
500 - 1000'	6.90 " "
Reaming	17.60 per hour
Cementing, casing, mixing mud, delays	11.60 " "
Drilling mud, cement, etc.	At Cost

1962
JOY MANUFACTURING CO.

Rockbit drilling:	
0 - 150'	$ 5.50
150 - 350	3.50
350 - 500	4.00
500 - 650	4.25
650 - 800	4.50
800 - 950	4.75
950 - 1100	5.00
1100 - 1250	5.25
1250 - 1400	5.50
Core drilling:	
0 - 500	$ 5.95 per foot
500 - 1000	6.45
1000 - 1500	7.20
1500 - 2000	8.20
Reaming, NX	3.00 per foot
Cementing, casing, mixing mud, delays	10.00 per hour
Drilling mud, cement, etc.	At Cost

Cost of principal materials used in 1962:

Drilling mud, per bag	$ 2.75
Cement, " "	1.50
Quebracho, " "	27.00

The contractor furnished a water truck; Asarco purchased water from farmers at $1.00 per 1000 gallons.

SUMMARY OF DRILLING PERFORMANCE AND COSTS

	1961	1962	Combined
Number of holes	7	15	22
Average depth	467'	615'	578'
Range in depth	307' - 809'	350' - 1438'	
Footage:			
Rockbit drilling	2,080 (64%)	8,043 (87%)	10,123' (81%)
Core drilling	1,188 (36%)	1,198 (13%)	2,386' (19%)
Total drilling	3,268 (100%)	9,241 (100%)	12,509' (100%)
Total shifts worked		337	
Advance per shift:			
Rockbit drilling (1)		33.8	
Core drilling (1)		12.1	
All drilling (1)		27.2	
Average core recovery:			
Rotary diamond coring		34.5%	
Wireline diamond coring		72.5%	
Contract cost per foot:			
Rockbit drilling	3.80 (2)	5.24	4.96
Core drilling	6.80 (2)	8.36	7.80
All drilling	4.90 (2)	5.67 (3)	5.54
Indirect cost per foot:			
All drilling	$ 1.70 (2)	$ 1.72	$ 1.72
Total cost per foot:			
Rockbit drilling	$ 5.50	$ 6.69	$ 6.68
Core drilling	$ 8.50	$10.08	$ 9.52
All drilling	$ 6.60	$ 7.39	$ 7.26

(1) Estimated from total shifts worked, which includes moving and down time.

(2) From A. G. Blucher's estimate.

(3) Contract costs based on total payments to Joy Manufacturing. Cost of drilling mud and mixing same, estimated at $0.57 per foot, is included.

ANALYSIS OF COST OF PROJECT

	Cost	% Total
Land Acquisition:		
Option payments	$ 19,000	12.5
Other expenses pertaining to land (legal, salaries, permits, digging location pits, surveying)	29,985	19.7
Total Cost of Land	$ 48,985	32.2
Geophysical Surveys:	$ 12,264	8.0
Direct Drilling Cost:	$ 69,305	45.6
Indirect Drilling Cost: (Includes all charges not listed above)	$ 21,579	14.2
Total Expenditures (1)	$152,133	100 %

(1) To December 1, 1962; small additional charges will be made to appropriations involved.

R.K. Kirkpatrick

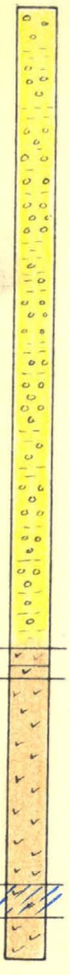
R. K. KIRKPATRICK

RKK/kw
Attachments

POSTEN BUTTE AREA

Hole No. 8

Generalized Log



Gila River Gravels

Sand, clay, gravel

Estimated bedrock — 334

344-350 NX core — 350

350 start NXWL core

Biotite Granite

Moderate to strong alteration
Leached; limonite, some LLm

Probable Fault Zone — 458
Sericite, py, cc — 475
Weak alteration, py, tr cpy — 496

350	108'	0.026 %	Cu
458	17'	0.24 %	Cu
475	21'	0.01 %	Cu
496			

Scale 1" = 100'

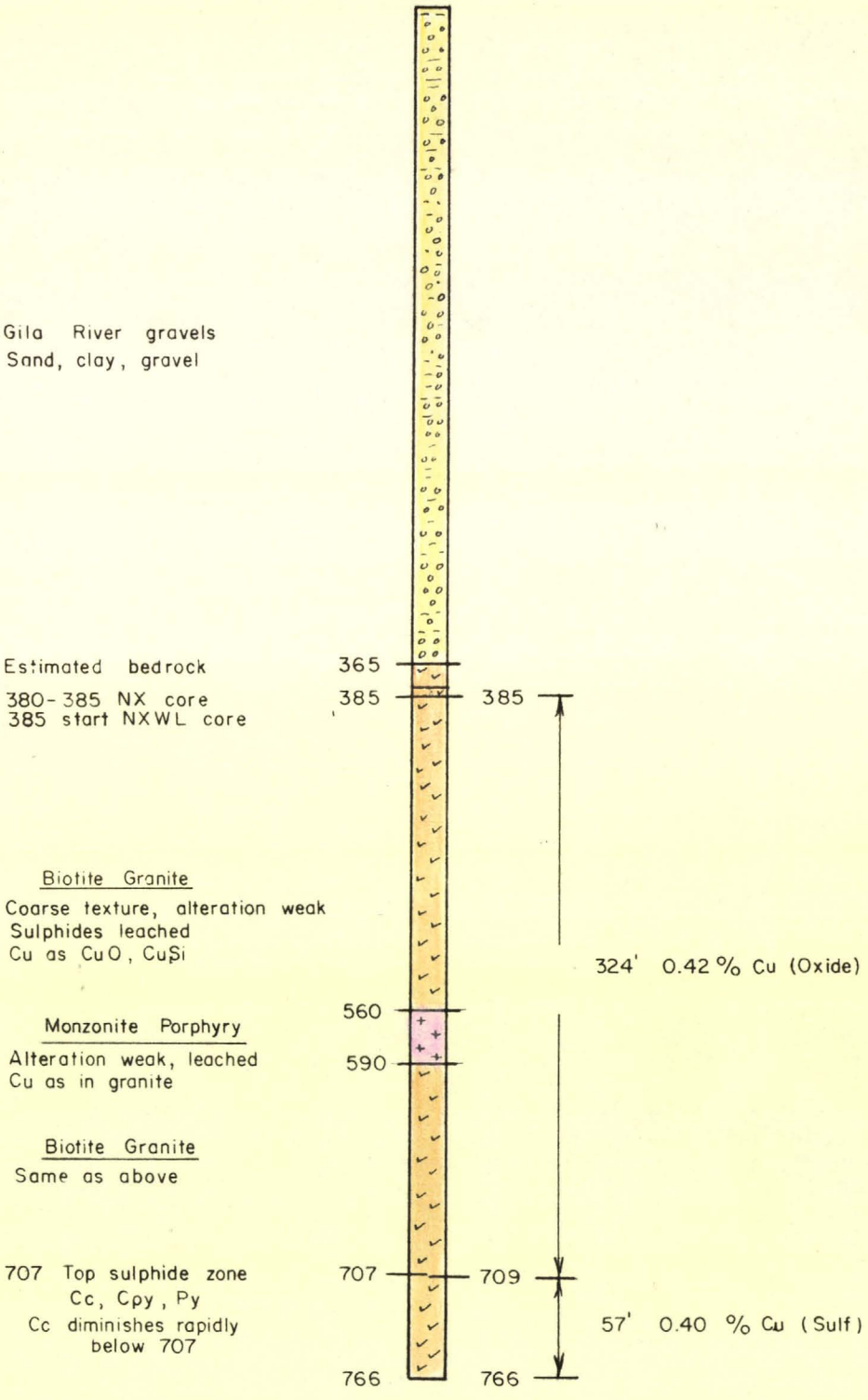
Completed: Aug. 18, 1962

GRAPHIC LOGS

POSTEN BUTTE AREA

Hole No. 9

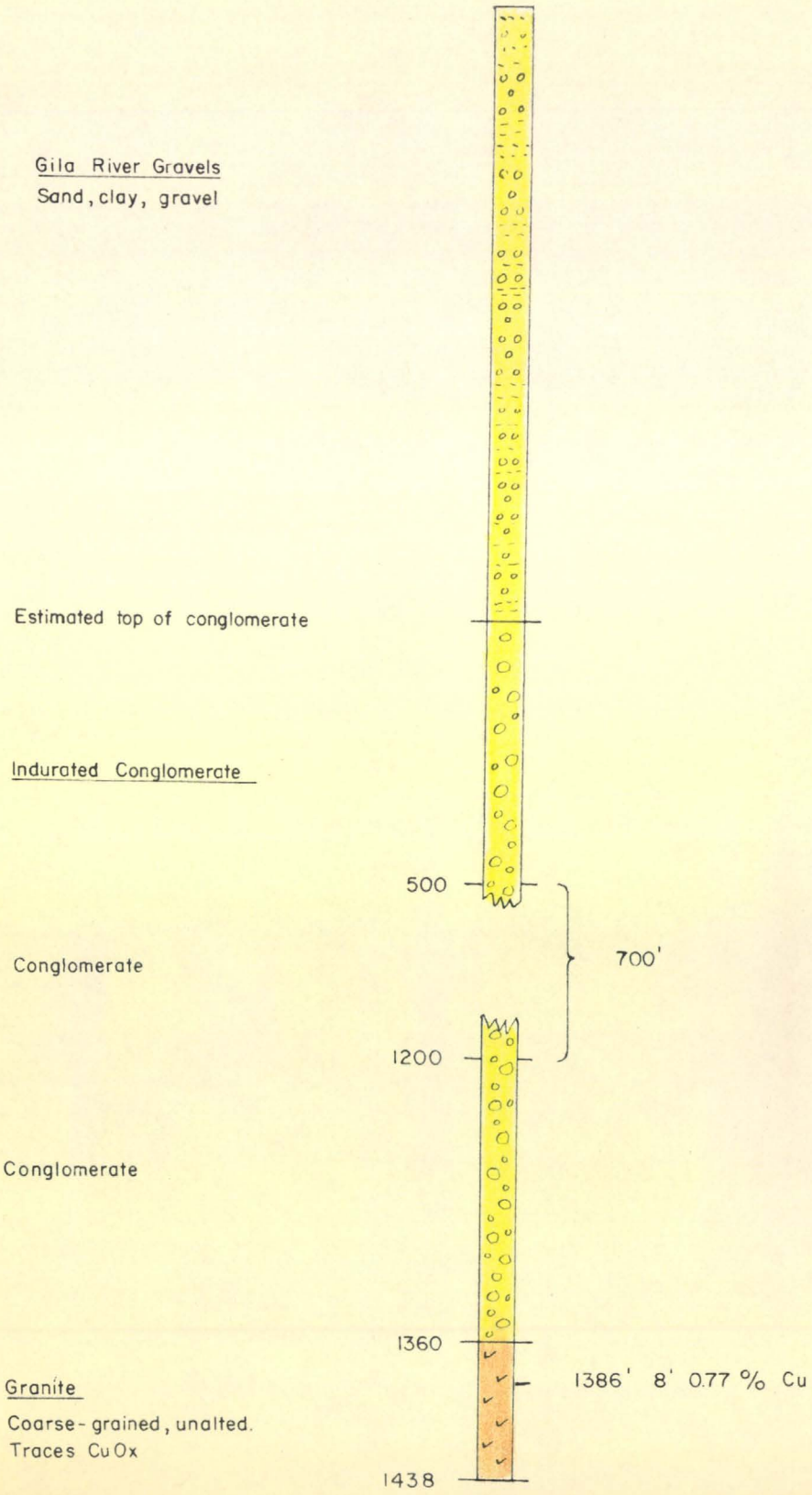
Generalized Log



POSTEN BUTTE AREA

Hole No. 10

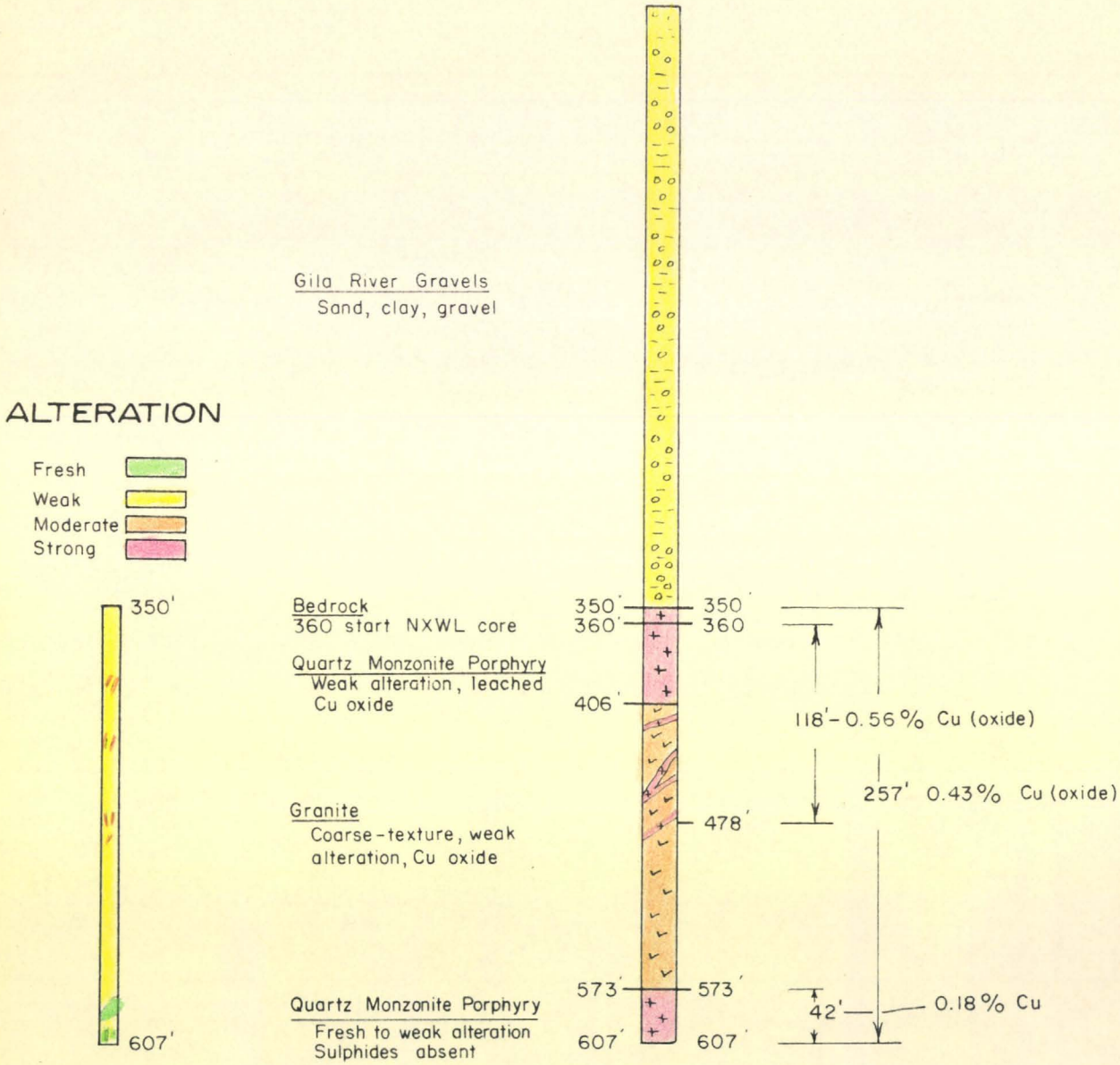
Generalized Log



POSTEN BUTTE AREA

Hole No. 11

Generalized Log

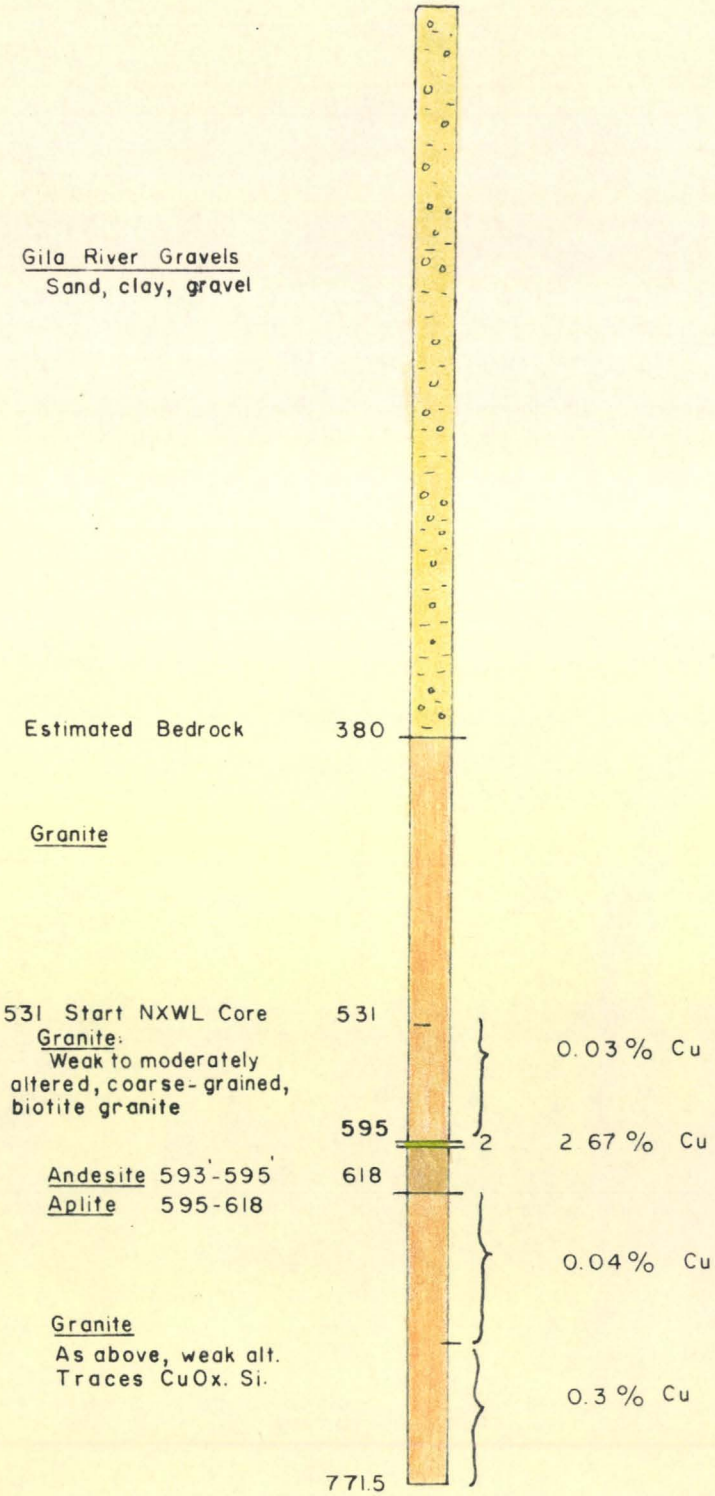


Scale 1" = 100'
Completed Sept. 4, 1962

POSTEN BUTTE AREA

Hole No. 12

Generalized Log



Scale: 1" = 100
Completed: Sept. 12, 1962

POSTEN BUTTE AREA

Hole No. 13

Generalized Log

Gila River Gravels
Sand, silt, clay

Estimated bedrock 320

Quartz porphyry
Weak alt., darkcolor.
Leached.
390 start NX core
410 start NXWL.

417

410 4.2' 0.02% Cu
417 2.9' Tr Cu

Scale 1"= 100'
Completed: Sept. 10, 1962

POSTEN BUTTE AREA

Hole No. 14

Generalized Log

Gila River Gravels

Bedrock 328

328

Start NX Core

345

Quartz Monzonite Porphyry

Weak alteration, leached

350

5' at 0.18 % Cu

Scale 1" = 100'

Completed September, 1962

POSTEN BUTTE AREA

Hole No. 15

Generalized Log

Gila River Gravels
Sand, silt, clay, and gravel

Bedrock 398 — 400 10' NX Core

Granite,
Weak to moderate alt.
Sparse leached, sulf. — 451 8' NX Core
459

Scale 1" = 100'
Completed: Oct. 13, 1962

POSTEN BUTTE AREA

Hole No. 16
Generalized Log

Gila River Gravels
Sand, silt, clay, and gravel

Estimated Bedrock 400

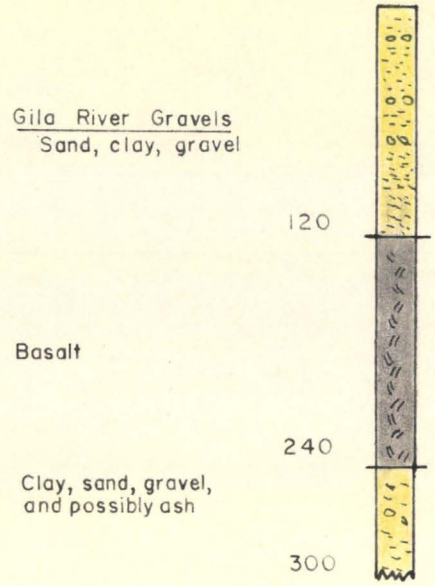
Felsite
Dense, lightgreen, fresh

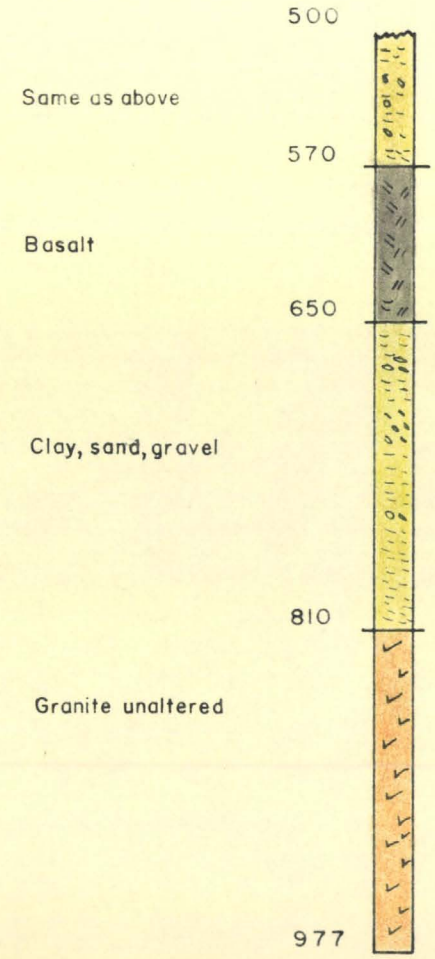
560

Scale 1" = 100'
Completed: Sept. 5, 1962

POSTEN BUTTE AREA

Hole No. 17
Generalied Log





Scale 1" = 100'
Completed Sept. 30, 1962

POSTEN BUTTE AREA

Hole No. 18

Generalized Log

Gila River Gravels
Sand, silt, clay, and gravel

432

5' NX core

Felsite
Green-gray to pink color
Small quartz phenocrysts

553

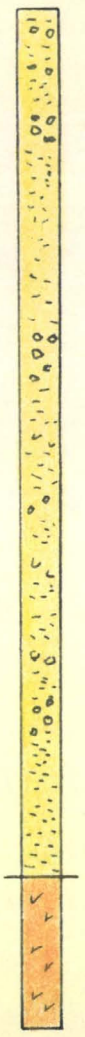
2' NX core

Scale 1" = 100'
Completed: Oct. 25, 1962

POSTEN BUTTE AREA

Hole No. 19

Generalized Log



Gila River Gravels

Biotite Granite
Unaltered

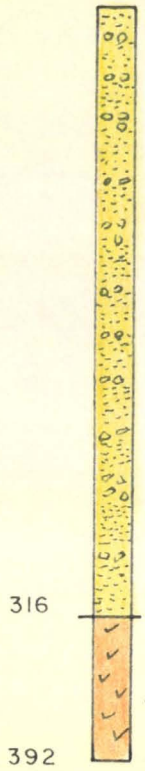
456

533

POSTEN BUTTE AREA

Hole No. 20

Generalized Log



Gila River Gravels

316

Granite
Very weakly altered

369 5' NX core

392

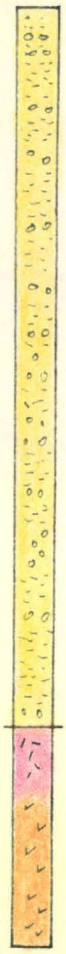
392 3' NX core

Scale 1" = 100'
Completed Nov. 10, 1962

POSTEN BUTTE AREA

Hole No. 21

Generalized Log



Gila River Gravels
Sand, silt, clay, and gravel

374

Porphyry or felsite
Shear zone
Strong alteration

— 410 4' NX core

Granite
Weakly altered,
pyritized

491

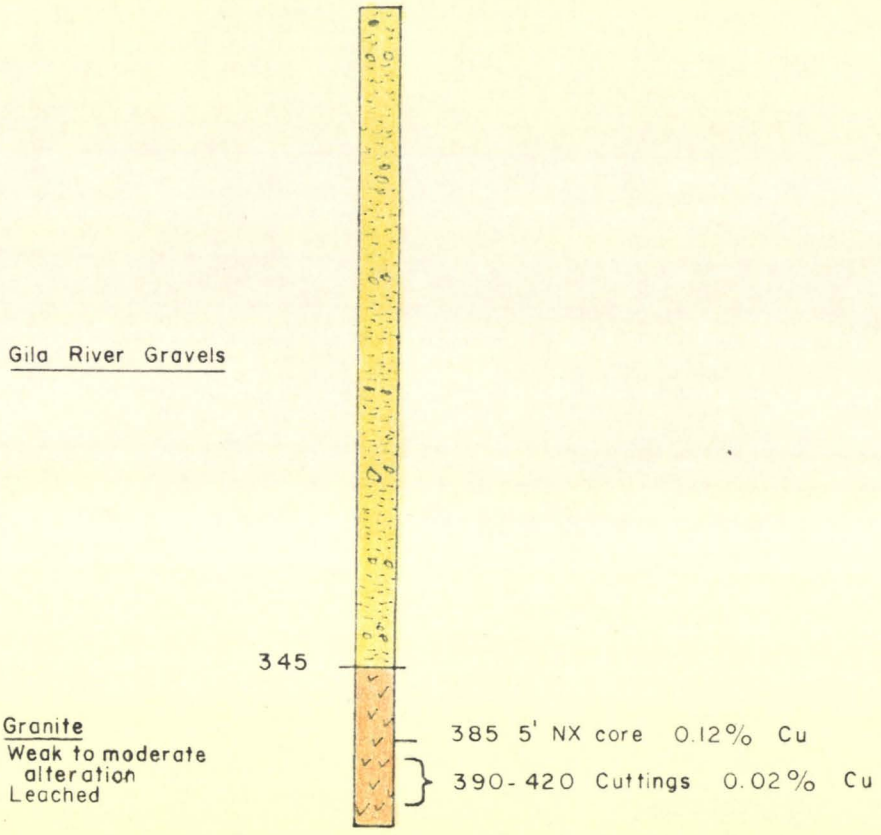
— 491 9' NX core 0.02% Cu

Scale 1" = 100'
Completed: Nov. 17, 1962

POSTEN BUTTE AREA

Hole No. 22

Generalized Log



Scale 1" = 100'
Completed: Nov. 20, 1962

Final Depth 496'
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property Poston Butte

HOLE NO. PB 8
Sheet No. 1 of 2
Date Completed 8-18-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
344	344	4 1/2	Rock	bit											Al	Gila gravels; sand, clay gravels
334																Estimated top bedrock
350	6	NX											Strong		Gran	Granite, as below
354.1	4.1	NXWL		85	0.02							Lm LLm	Strong Ser	Arg	Gran	Medium texture, biotite granite. Ferro-mag. alt to ser., feldspars in varying degrees to ser. and arg. Leached. Lm and LLm after sulf. and transported very irregular in distribution. Alt. also variable.
360.0	5.9	NXWL		75	0.06							Lm LLm Mod	St - Mod Ser	Arg		Same.
366.0	6.0	"		80	0.04											Same. Wk. LLm.
375.0	9.0	"		33	0.02											Same. Wk. LLm. Lm. mod.
384.7	9.7	"		89	0.03											Same. Abundant Lm., some dark maroon that may be LLm.
394.6	9.9	"		97	0.02							Lm. LLm	Mod. Arg.	tr Ser		Same. Lm largely trans. & on fractues. Chloritized biotite.
399.6	5.0	"		100	0.02								Mod.	"		Same. Lm. transported on frac. No biot.
406.0	6.4	"		100	0.02								St- Mod Ser. Arg.			Same. Abundant slaggy lm
414.0	8.0	"		70	0.03								Mod. Arg.			Same. Sulf. casts sparse
419.7	5.7	"		95	0.03											Same. Streak ser. Lm. in specks & strea
425.0	5.3	"		99	0.02											Same. Lm sparse; some jarosite.
429.2	4.2	"		100	0.02											Same. Lm-LLm abundant in last part of interval.
434.8	5.6	"		95	0.03								Mod- St.			Same. Some hm. flooding.

Final Depth 496'
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property

HOLE NO PB 8
Sheet No. 2 of 2
Date Completed 8-18-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
442.8	8.0	NXWL		100	0.03							Lm	Mod Arg-	Str Ser	Gran	Same as above. Locally abun. Lim & LLm. Hem. flooding.
451.0	8.7	"		95	0.02							Lm				Same. Some jarosite
458.0	7.0	"		76	0.02				Mod			Lm				Same. Sil. last part run. Last 1" recovered gray ser. gouge.
462.0	4.0	"		60	0.27				Mod		Sp.		St.	Ser	Gouge Gran	458-458.5 gray ser. gouge. Fn. diss. py. coated with cc. 458.5-462. Lt. gr. soft gougy granite. St. ser; py. coated w. cc. - Some streaks py. cc. coated.
464.1	2.1	"		33	0.18				Mod		Sp.		St.	Ser	Gran Gouge	Same as above but more crushed granite, less gouge
475.0	10.9	"		0	-										-	No recovery from 5 runs. 458-475 (17') is probably a fault zone of substantial displacement.
481.5	6.5	"		83	0.02				Mod	R.	Tr		Weak Arg		Gran	Same granite as above but very weakly alt. Feld. Sl. Arg. biotite fresh to chl. Diss. and on frac.
489.5	8.0	"		100	Tr											Same
496.0	6.5	"		100	Tr											Same

Final Depth 766'
Collar Elevation
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ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B. 9
Sheet No. 1 of 4
Date Completed 8-13-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
365'	365'	4 1/2		R.B.												Bedrock estimated at 365' ± 0-365'. Gila River gravels. Relatively unconsolidated sand, gravel and clay. Gravel boulders in first 40' gave trouble in drilling.
380-85	5'	NX											Weak		Gran.	Cored with rotary. Same as below.
389	4'	NXWL		92	0.24			+				Lim. W.LLm CuSi.	Weak Arg.	Chl.	Gran.	Coarse-textured, pink, biotite granite. Orthoclase feld. to 1"; smaller plagioclase to 1/4"; irregular quartz and biot. Plagioclase weakly arg., biotite chloritiz. a rex. to small flakes. Chief feature is weak alt. & blue-green color of some feld. (from adsorbed Cu?) Steep shears.
397.5	8.5	NXWL		22	0.36											
403	5.5	NXWL		93	0.51											Same Some CuSi.
409	6.0	NXWL		90	0.51											Same More CuSi.
412	3.0	NXWL		66	0.39											Same
421	9.0	NXWL		100	0.42											Same Vert. fractures
431	10.0	NXWL		98	0.28											Same Vert. Frac. Tex. Variable, some medium.
435	4.0	NXWL		80	0.25											Same
439	4.0	NXWL		100	0.21											Same More abundant CuSi., Steep Frac.
446	7.0	NXWL		100	0.51											Same
449	3.0	NXWL		92	0.60											Same
455	6.0	NXWL		13	0.61											Same Cu Ox.
457	2.0	NXWL		15	0.28											Same

Final Depth 766'
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GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.9
Sheet No. 2 of 4
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Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
458.5	1.5	NXWL		100	0.25			+				Lim. W.Llm. CuSi.	Weak Chl	Arg. Chloritic.	Gran.	Same as above. Some jarosite, ± 1' aplite.
462.2	3.7	NXWL		100	0.60											Same. CuSi on vert. fracture.
465.7	3.0	NXWL		37	0.85											Same. CuSi a CuOx.
469.0	3.8	NXWL		87	0.23											Same.
475.0	6.0	NXWL		100	0.44											Same. Run contains 1-2' aplite.
480-0	5.0	NXWL		100	0.48											Same. CuOx on fracture.
489.2	9.2	NXWL		100	0.63											Same. Jarosite on 70° dip. frac.
497.5	8.3	NXWL		100	0.58								Wk-Arg.	Mod. Chl.		Same.
505.0	7.5	NXWL		95	0.60											Same. Lim. on frac. Vert. frac. & shearing in last 3'.
510.0	5.0	NXWL		52	0.56											Same. Vert. shearing continues.
514.0	4.0	NXWL		89	0.63											Same. Lim. on vert. & 45° fractures.
522.0	8.0	NXWL		100	0.80											Same. " " "
525.7	3.7	NXWL		96	0.58											Same. Steep Frac. with CuOx.
535.7	10.0	NXWL		100	0.51											Same. Vert. clay-coated frac.
545.6	9.9	NXWL		100	0.65											Same. Vert. Frac. with Lim., CuSi, CuOx.
549.0	3.4	NXWL		100	0.68											Same. CuOx.
558.5	9.5	NXWL		96	0.69											Same.
563.5	5.0	NXWL		87	0.51			+				Lim.	Weak		Gouge Mon.Por.	558.5-560.0 Breccia and gouge at dip of ± 30° 560.5 Monzonite por. as below.

Final Depth 766'
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ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B. 9
Sheet No. 3 of 4
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Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
570.0	6.5	NXWL		87	0.26			+				Lim.	Weak	Arg.	1/2 Mon. Por.	Monzonite porphyry. Gray-green color, leached. Groundmass fine-texture, feld. pheno. 1-5 mm. (over ± 2mm); biotite ± 1mm and fresh, feld. slightly argillized and blue-green with cu. (adsorbed?) Sparse lim. casts. Some fine lim. on frac.
576.5	6.5	NXWL		80	0.17			+				Lim.				Same.
589.5	13.0	NXWL		59	0.30							↓	↓		↓	Same. Some granite in por. 577-589.
599.0	9.5	NXWL		79	0.58			+				Lim.			Gran.	Granite is same as above mon. por. dike.
								↓			Sp.	LLm.	Weak			CuOx and green-blue stained feld. continue.
													Arg.	Chl.		
601.0	2.0	NXWL		100	0.25			↓				↓				Same.
606.0	5.0	NXWL		100	0.82			+	+	+	+					Same. Some sulf. including cc. in run. Sulf. partly leached. Leaching increases.
609.0	3.0	NXWL		100	0.39			+				Lim.	Weak			
											Sp.	LLm.	Arg.	Chl.		Same granite. Practically no sulf. Leached. Blue-green feld. Light color with lim. on steep shear zone.
618.5	9.5	NXWL		74	0.18											Same. Cont. of bleaching. Abundant lim. on steep and 45° shear planes.
621.3	2.8	NXWL		43	0.44											Same. More normal gran. Cu. stained.
628.0	6.7	NXWL		81	0.18											Same.
633.5	5.5	NXWL		60	0.32				+	+	+					Same. A few sulf., but largely leached.
641.5	8.0	NXWL		80	0.47											Same. Leached
646.2	4.7	NXWL		90	0.41											Same.
651.0	4.8	NXWL		100	0.42			↓				↓	↓		↓	Same. 649-651 Cr. tex. aplite.

Final Depth 766'
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GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P. B. 9
Sheet No. 4 of 4
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Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
656.3	5.3	NXWL		100	0.19			+				Lim. Sp.Llm.	Weak	Arg. Chl.	Gran.	Same granite as above. 651-54 aplite.
664.5	8.2	NXWL		84	0.30											Same.
668.0	3.5	NXWL		61	0.14											Aplite.
675.6	7.6	NXWL		100	0.30											Same granite as above.
679.6	4.0	NXWL		100	0.21											Same.
682.8	3.2	NXWL		100	0.26											Same. Vertical shearing.
693.0	10.2	NXWL		86	0.26											Same.
701.7	8.7	NXWL		88	0.29											Same. Aplite 693-695'
709.4	7.7	NXWL		95	0.34				wk.	wk.	wk.					Same. Sulfides start to appear to 707± Same leaching.
715.3	5.9	NXWL		95	0.58				wk.	wk.	Mod.					Same. CC. rims cpy. Diminishing leaching, and diminishing cc. with depth
723.0	7.7	NXWL		52	0.36			+	wk.	wk.	wk.					Same. Alt. very weak and granite has almost fresh appearance.
732.3	9.3	NXWL		59	0.31				wk.	wk.	tr.					Same.
739.2	6.9	NXWL		87	0.38				wk.	wk.	tr.					Same.
746.6	7.4	NXWL		82	0.60				wk.	wk.	tr.					Same. Strong shearing at 60° (dip)
750.7	4.1	NXWL		92	0.43				wk.	wk.	-					Same. Strong shearing and crushing at 90 to 60° dip.
756.5	5.8	NXWL		100	0.44				wk.	wk.	-					Same. Shearing & crushing continues.
760.7	4.2	NXWL		52	0.34				wk.	wk.	-					Same. " "
766.0	5.3	NXWL		36	0.23				wk.	wk.	-					Same. Less crushing & shearing.
																Note: Zone 746-760 may be a fault zone of minor movem.

Final Depth 1438'
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ASARCO

GEOLOGIC – ASSAY LOG

Property Poston Butte

HOLE NO. PB 10
Sheet No. 1 of 1
Date Completed 9-26-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
350	350	4½"	Rock	Bit											Al	Alluvium: sand, clay, and gravel.
1360	1010	4½	R.	B.											Cgl.	Indurated conglomerate. Most boulders are granite, but volcanic and other types present. Top and bottom of cgl. estimated from rock bit cuttings.
1468	108	4¼	R.	B.				Cu				CuSi	W.	Arg	Gran	Coarse-grained, pink, biotite granite. Very weak argillic alt. Traces of Cu oxide and silicate.
NX core runs made with rotary drill.																
257.6	7.6	NX		8											Gravel	(?) Mixed rock pieces, no matrix.
383.0	7.0	"		18											Cgl.	Conglomerate, indurated. Granite and volcanic pebbles & boulders.
416.0	6.0	"		17												
480.0	5.0	"		14												
503.0	4.0	"		25												
573.0	10.0	"		4												Only granite recovered.
818.0	10.0	"		16												
066.0	8.0	"		6												Only granite recovered.
133.0	3.0	"		20												" " "
247.0	5.0	"		40												Conglomerate
386.0	1.0	"		80									W.	F	Gran	Coarse-gr. biotite granite.
394.0	8.0	"		75	0.77			Cu				CuSi	W.	F		Sparse Cu stain, principally on frac.
438	6.0	"		8									F	W		

Final Depth 607'
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GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. 11
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Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
350	350	4 1/2	R.B.												Alluv.	0-350 Gila River gravels. Sand, clay, gravels.
																Bedrock estimated at 350 from rock bit cuttings.
360	10	4 1/2	R.B.		0.28			CuOx CuSi				Lim			Mon.	Rock bit cutting show stain of Cu Ox.
364.5	4.5	NXWL		44	0.72			CuOx CuSi				Lim	Weak Arg.		Mon.Por	Quartz monzonite porphyry. Very weakly altered, leached. Groundmass fn-tex., pheno. of feld. 1-4 mm. and biotite & hornblende 1-2 mm. Weak argillization. Gerro-mags. sl. chl. Diss. sulf. casts alt to Lm. w. center CuSi(?) Feld. Blue-green w. adsorbed Cu
369.5	5.0	NXWL		50	0.38											Same - core broken.
374.1	4.6	NXWL		100	0.72								wk	mod		Same. Alt. locally mod. Sh. at 45° 1/4" qtz. vn. Last part of run dk gr dense.
379.2	5.1	NXWL		97	1.85								wk	Arg.		Same. Abundant CuOx & CuSi on St.Sh. 45° sh. and gauge near end of run.
384.1	4.9	NXWL		100	1.90								Mod.	Arg.		Same. Abundant CuOx-CuSi. Sh. at V. & 45° Sott.
389.7	5.6	NXWL		55	0.52								Wk	Arg.		Same. Less CuOx-CuSi.
394.4	4.7	NXWL		84	0.34											Same. Hm. on frac. Lighter color Mz.
402.0	7.6	NXWL		96	0.26											Same.
409.0	7.0	NXWL		100	0.26											Same to 406' Locally mod. alt. poss LLm.
															Gran.	Jarosite. At 406' Gran. as below.
415.0	6.0	NXWL		100	0.15								Mod.	Arg. Ser.	Gran.	Same as desc. next page No visible cu this run.

Final Depth 607'
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ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. 11
Sheet No. 2 or 3
Date Completed 9-4-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
419.9	4.9	NXWL		75	0.84			CuOx CuSi				Lim.	Wk.	Arg.	Mz.	Quartz monzonite porphym with granite inclusions. Brecciated. Hm. stain. Feld Cu stained.
425.6	5.7	NXWL		98	0.31			CuSi Cuux				Lim.	Wk.	Mod. Arg.	Gran. (Mz.)	Coarse textured granite. Pink feld. to 1"-generally smaller. Color light to pink tones. Biotite fresh to rexf. or Chloritized. Same feld. cu stained. Some Mz at 421'. Leached. diss. sulf.
432.5	6.9	NXWL		100	0.19											Same gran. as above. Lim-LLm? Hm stain; 70° sh at 429. V. sh. end run.
440.0	7.5	NXWL		94	0.28											Same 1' Mz at 435'; 1' Mz. at 437'
448.0	8.0	NXWL		100	0.75								Mod.	Arg. Ser.		Same; 441-445' st. sh. at 70° dip. w Mz. in sh. zone. Cu stain strong.
454.9	6.9	NXWL		100	0.76											Same; 2' Mz. at 450-52. Cu st. feld.
460.9	6.0	NXWL		97	0.35											Same; Cu Si on 70° frac. Gran. soft-frac.
467.3	6.4	NXWL		95	0.34								Wk	Arg.		Same; Cu Si on 70° frac. Gran. soft-frac.
474.1	6.8	NXWL		100	0.48											Same
478.5	4.4	NXWL		100	0.84								Wk	Mod. Arg.	Gran. Mz.	Same granite as above. - 475'-477' Mz. por. at 30° ± Mz. strongly cu. stained in feld.
498.9	20.4	NXWL		46	0.28								Wk	Arg.	Gran.	Same cs. tex gran. as above. Diss leached sulf. Cu stain of feld. weak.
505.7	6.8	NXWL		68	0.31											Same. Biot. fresh to rext. or chl.
512.8	7.1	NXWL		73	0.36											Same. Biot. fresh to rext. or chl.
519.0	6.2	NXWL		96	0.35											Same. Biot. fresh V. sh 512-19'
528.5	9.5	NXWL		100	0.34											Same.

Final Depth 607'
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Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. 11
Sheet No. 3 of 3
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Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
534.4	5.9	NXWL		91	0.29			CuSi CuOx				Lim	Wk	Arg. Chl.	Gran.	Same. CuSi abun. at 533'
540.4	6.0	NXWL		95	0.24											Same.
545.9	5.5	NXWL		85	0.28											
550.9	5.0	NXWL		68	0.44								Mod.	Arg. Ser.		Same. Some brecciation.
558.0	7.0	NXWL		35	0.44								Wk	Arg.		Same.
565.1	7.1	NXWL		100	0.16											Same. Much of core broken-brecciated.
573.0	7.9	NXWL		69	0.31											Same. Much of core broken-brecciated.
579.9	6.9	NXWL		85	0.11								Wk	Arg.	Mz	Quartz monzonite porphyry. Same por. as above but dk-gr. and much fresher. 1' at contact has cu st. feld. Biotite & Horn. fresh to chl. Diss leach sulf. Leach. sulf on frac.
586.4	6.5	NXWL		72	0.15											Same. Cu Si on frac. but generally no visible cu thru mass at rock as in most of hole above.
594.8	8.4	NXWL		62	0.14											Same. Nearly fresh. Leached sulf. cast on frac. & diss.
601.1	6.3	NXWL		73	0.17											Same. " " " " " "
607.0	5.9	NXWL		66	0.26											Same. " " " " " "

Final Depth 771.5
Collar Elevation
Coordinates
Inclination Vertical

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P. B. 12
Sheet No. 1 of 2
Date Completed 10-12-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
380	380	4 1/2"	Rock	Bit											Alluv.	Sand, clay, and gravel. Most of inteval is a silty clay with erratically dist. pebbles and boulders.
380																Estimated top of bedrock.
530	150'		Rock	Bit.											Gran.	Decomposed, alt., leached granite.
531																Start of core.
538.5	7.5	NXWL		80	0.03							Lim	Wk	Arg	Gran.	Cs-gr, light pink, biotite granite. Alt. generally wk. with feld. partly arg. & biot. chloritized. Sp. diss. & streaked sulf. now leached Lim. on fractures & as diss casts. Locally alt to st.
542.3	3.8	NXWL		42	0.02											Same
547.5	5.2	NXWL		50	0.03											Same. Hem. on frac.
557.3	9.8	NXWL		16	0.03								Wk	Mod		Same. Feld. hem. flooded. Sp. LLm.
564.2	6.9	NXWL		36	0.02											Same.
572.0	7.8	NXWL		42	Tr								Mod	St.		Same. Locally st. alt. ser. Hem. abun. Sp. jarosite. Core shattered.
576.0	4.0	NXWL		75	0.03											Same.
581.7	5.7	NXWL		74	0.02											Same.
586.3	4.6	NXWL		48	0.02											Same.
589.3	3.0	NXWL		73	0.04											Same.
593.1	3.8	NXWL		66	0.14											Same.
595.1	2.0	NXWL		75	2.57			CuOx CuSi					Fr.		Andesite	DK. gr. andesite dike. CuSi. and Black Cu Ox

Final Depth 771.5
Collar Elevation
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ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.12
Sheet No. 2 of 2
Date Completed 10-12-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
604.6	9.5	NXWL		44	0.02							Lim	Mod.		Aplite	Pink fn-text. Sp. diss lim. same hem. Leached
610-2	7.6	NXWL		55	Tr								↓		Aplite Gran.	Same as above to 606', then mixed aplite and granite. Hem. flooding.
618.6	8.4	NXWL		44	0.02								Wk.		Aplite	Same. Hem. Flooding
631.2	12.6	NXWL		40	0.06								Wk.	Arg.	Gran.	Same as above. Locally fresh.
640.9	9.7	NXWL		67	0.02								Wk.			Same. Biot. rextl. to chl. Some fresh feld Hem. on frac.
650.8	9.9	NXWL		88	0.03											Same. Some fresh biotite.
660.3	9.5	NXWL		70	0.05			CuOx CuSi								Same. Tr. CuOx CuSi
671.0	10.7	NXWL		33	0.14								Mod.	Alt.		Same. Shearing Steep to 60°
680.7	9.7	NXWL		17	0.02								Wk	Mod.		Same. Very broken, crushed.
691.6	10.9	NXWL		27	0.03											Same. Crushed, broken, gauge at 687'
697.0	5.4	NXWL		26	0.07											Same.
707.7	10.7	NXWL		72	0.19			CuOx CuSi					Wk	Arg.		Same. Biotite fresh to sl. rextl. Feld. sl. cu stained. Tr. Cu Si.
715.1	7.4	NXWL		69	0.35											Same.
722.8	7.7	NXWL		80	0.14											Same.
731.1	8.3	NXWL		100	0.22											Same.
741.5	10.4	NXWL		32	0.87											Same.
759.7	18.2	NXWL		12	0.24											Same. Less Cu stain. in feld. Leached sulf. sparse.
771.5	11.8	NXWL		43	0.15											Same.

Final Depth 417.3
Collar Elevation
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GEOLOGIC – ASSAY LOG

Property Poston Butte

HOLE NO. PB 13
Sheet No. 1 of 1
Date Completed 9-10-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
320	320	4½	Rock	Bit											Al	Sand, clay, gravel.
320																Estimated top of bedrock from rock bit cuttings, but contact is not distinct.
394	4	NX										Lim.	Weak		Mz Por	Quartz monzonite porphyry, as below
410	16	4½	Rock	Bit											"	Same.
414.4	4.4	NXWL		97	0.02							Lim.	Weak		Mz Por	Quartz, monzonite porphyry. Dark gray color. Abundant ferro-mag. minerals, mostly biotite . Por. texture not prominent. Weak alt. part of core almost fresh. Leached. Fractures and seams 1/16 - 1/8" of qtz. and limonite. Sp diss. lim.
417.3	2.9	"		88	Tr.										↓	

Final Depth 350
Collar Elevation
Coordinates
Inclination Vertical.

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.14
Sheet No. 1 of 1
Date Completed 10-25-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
328	328	4 1/2	Rock	Bit											Alluv.	Sand, clay and gravel.
345	17	4 1/2	Rock	Bit									Weak		Mz.Por	Quartz monzonite porphyry as below.
350	5	NX		30	0.18							Lim.	Weak	Arg.	Mz.Por	Quartz monzonite porphyry, weakly alt. Leached. sp. diss. sulf. Biotite chlor. & in part alt. to lim. Pheno. not prominent.

Final Depth 459
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.15
Sheet No. 1
Date Completed 10-13-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
398	398	4 1/2 Rock Bit.													Alluv.	Alluvium consisting of sand clay and gravel.
400	2	4 1/2 Rock Bit.													Gran.	Same as below.
410	10	NX										Lim.	W.	Mod.	↓	Weak to mod. alt. granite. Arg. alt. of feld. Ferro-mag minerals change to sericite etc. Leached. Sulf. casts very sparse.
451	41	4 1/2 Rock Bit										↓	↓	↓	↓	
459	8	NX										↓	↓	↓	↓	Same.

Final Depth 560
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.16
Sheet No. 1
Date Completed 10-5-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
400	400	4 1/2	Rock	Bit.											Alluv.	Alluvium of gravel, sand silt and clay. Top of bedrock estimated at 400' from rock bit cuttings.
560	160	4 1/2	Rock	Bit.									F.		Felsite	Light green-gray dense aphanitic rock- given field name of felsite. Very small phenocrysts of quartz and chlorite-like mineral. Fresh. From fresh appearance and texture this rock is believed to be post mineral. At 524-526 some of cutting are darker green probably representing an inclusion or segregation.
	Core runs with rotary drill.															
456	4	NX		0												
536	3	NX		0												

Final Depth 977.5
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.17
Sheet No. 1
Date Completed 10-30-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
120	120	4 3/4	Rock	Bit											Alluv.	Gravel, sand, and clay, grading into basalt at base.
240	120	"	"	"											Basalt.	Black basalt with red clay and basalt near base.
570	330	"	"	"											Alluv.	Gray ash(?), clay, sand, and gravel.
650	80	"	"	"											Basalt	
810	160	"	"	"											Alluv.	Gravel, clay, ash (?) silt, and sand.
810																Estimate top of granite bedrock.
954	144	4 1/2	"	"									F		Gran.	Coarse-gr, light colored, biotite granite Fresh.
956.	2	NX		50									F			Same.
973	1	NX		100									F			Same.
977.5	4.5	NX		33									F			Same.

Final Depth 553
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.18
Sheet No. 1
Date Completed 10-25-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
432	432	4 1/2	Rock	Bit											Alluv.	Sand, silt, clay, & gravel.
480	48	4 1/2	"	"									F		Felsite	Light green, dense, aphanitic felsite (field name). Small phen. of quartz and chlorite. Fresh. Probably a post-mineral rock.
553	73'	4 1/2	"	"									F		Felsite	Same as above but color light pink.
	Core runs with rotary drill															
463	3	NX		20											Felsite	Light green-gray.
465	2	NX		0												
553	2	NX		10											Felsite	Same as above.

Final Depth 533'
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO P.B.19
Sheet No. 1
Date Completed 11-1-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
75	75	4 1/2"	Rock	Bit.											Alluv.	Sand, silt, boulders. Unconsolidated gravel from surface to 75' gave trouble in drilling.
456	381	4 1/2"	Rock	Bit.											Alluv.	Clay, silt, sand, gravel, small boulders.
456																Estimated top of bedrock, from rock bit cuttings.
516	6.0	4 1/2	Rock	Bit.											Gran.	Decomposed granite, as below.
517.5	1.5	NX		100									Nil.			Granite, decomposed and weathered.
529.0	11.5	4 1/4	Rock	Bit.									Nil.			
533.0	4.0	NX		90									Nil.	V.W.		Granite. Coarse-Grained, biotite. Color gray-pink. Some large pink-colored feldspar crystals. Very slight alteration or change may be due to weathering.

Final Depth 392'
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTEN BUTTE

HOLE NO. P.B.20
Sheet No. 1
Date Completed 11-10-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
20	20	4 1/2		R.B.											Alluv.	Gravel, sand, clay.
42	22	4 1/2		R.B.											Alluv.	Gravel
140	98	4 1/2		R.B.											Alluv.	Clay, sand, silt, gravel.
278	138	4 1/2		R.B.											Basalt	Black basalt.
316	38	4 1/2		R.B.											Alluv.	Sand, clay, and gravel, reddish color.
364	48	4 1/2		R.B.									V.W.	Ser.	Gran.	Rock bit cutting indicate brown decomposed granite as below.
369	5	NX		100								Lim.	V.W.	Ser.	Gran.	Med. gr., biotite granite. Alt. very weak with biotite changed to Sericite, Feld. essentially fresh. Sl. lim. staining due to weathering of ferromag. & magnetite. No evidence at diss. sulf.
389	20	4 1/2		R.B.											Gran.	Cuttings indicate same.
392	3	NX		100								↓	↓	↓	Gran.	Same.

Final Depth 491'
Collar Elevation
Coordinates
Inclination

ASARCO

GEOLOGIC – ASSAY LOG

Property POSTON BUTTE

HOLE NO. P.B.21
Sheet No. 1
Date Completed 11-17-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
5	5	4 1/2"		R.B.											Alluv.	Clay, soil.
20	5'	4 1/2"		R.B.												Gravel, boulders
38	18	4 1/2"		R.B.												Sand, boulders, gravel.
46	8	4 1/2"		R.B.												Same.
374	328	4 1/2"		R.B.												Sand, clay, and gravel.
374																Top of bedrock.
406	32	4 1/2"		R.B.								hem.	Mod.		Por?	Rock bit cuttings, not definitely identified, are small, hem. soaked, and largely aphanitic. Resemble felsite at 16 & 18.
410	4'	NX										Lim.	St.	Ser.	Por?	Soft, white, st. alt. ser. rock, possibly a mon. por. Sp. lim after sulf. in streaks and diss. Possible fault zone. or fissure.
442	32	4 1/2"		R.B.											Por-Gr.	Cutting probably in part granite and part porphyry.
445	3	NX		100								Lim.	W.	Arg.	Gran.	Cr-gr., biotite granite. Alt. weak Leached.
482	37	4 1/2"		R.B.												
487	5.0	NX		100	0.02				Mod.	Tr.			W.	Arg.		Same granite as above. Py. diss and in streaks. Biotite fresh to sl. chlor.
491	4.0	NX		100	0.03				Mod.	Tr.						Same.

Final Depth 430'
Collar Elevation
Coordinates
Inclination

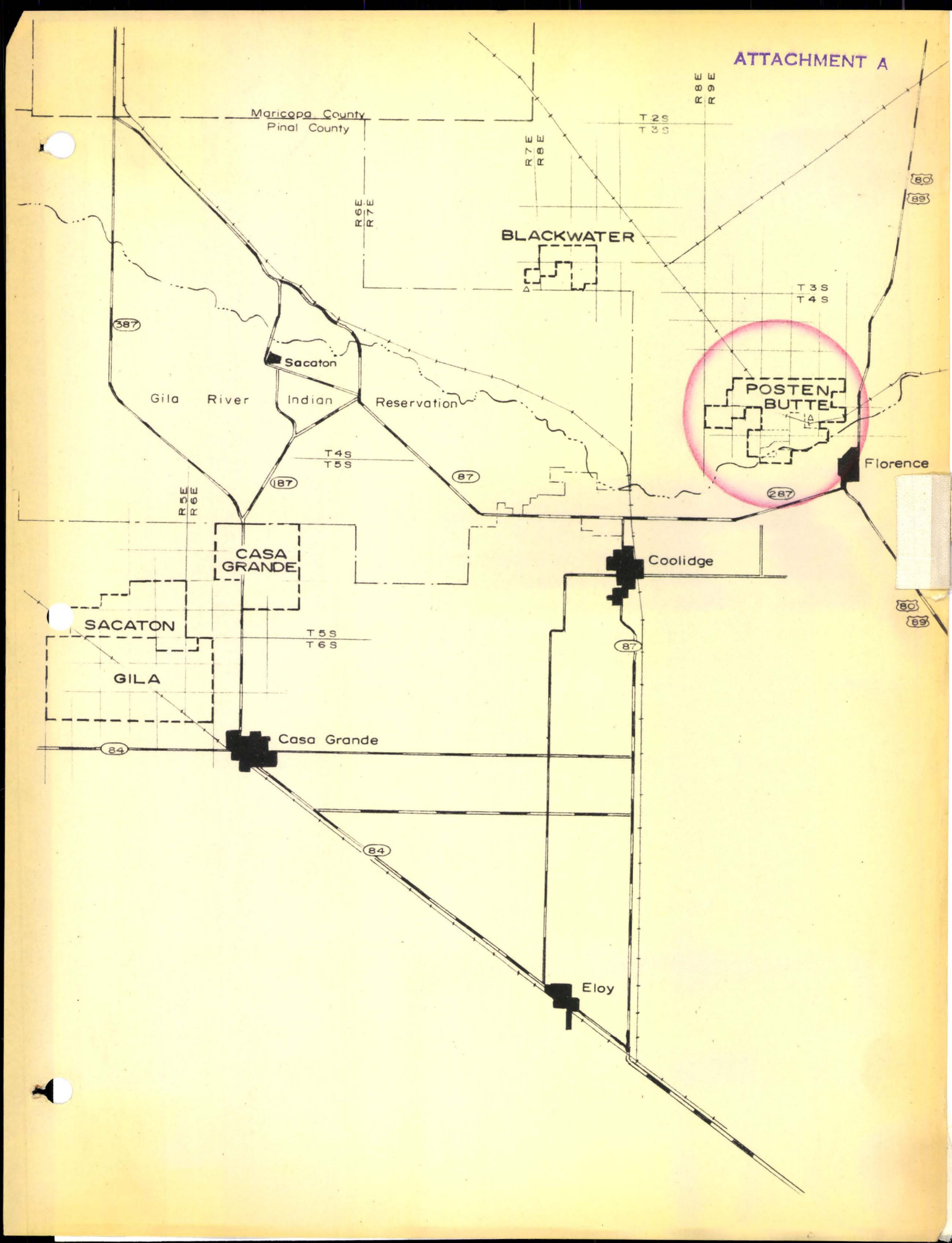
ASARCO

GEOLOGIC – ASSAY LOG

Property POSTON BUTTE

HOLE NO. P.B.22
Sheet No. 1
Date Completed 11-20-62
Logged By RKK

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu			Mineralization					Alteration		Rock Type	Remarks
					Total	Non-S	Average	Oxides	Pyrite	Cpy	Cc	Other				
5'	5'	4 1/2"		R.B.											Alluv.	Silt, sand, clay of soil.
36'	31'	4 1/2"		R.B.											Alluv.	Gravel and boulders.
345'	309'	4 1/2"		R.B.											Alluv.	Sand, silt, clay, and gravel.
345																Estimated top of bedrock.
380	35'	4 1/2"		R.B.								Jar. Lim.	Mod.	Arg.	Gran.	Moderately altered, decomposed granite as below.
385	5	NX		100	0.12			Cu				Lim.	Mod.	W.		Coarse-grained, pink colored, moderately to weakly alt. granite. Arg. alt. Lim. sp., abundant jarosite. Leached. Sulfides originally sparse.
430	45	4 1/2"		R.B.	0.02	Sample Fr. (390-420)										Rock bit cutting indicate same granite.


ATTACHMENT A
Maricopa County
Pinal County
R8E
R9E
T2S
T3S
R7E
R8E
R6E
R7E
BLACKWATER
T3S
T4S
80
89
387
Sacaton
Gila River Indian Reservation
POSTEN BUTTE
Florence
T4S
T5S
187
87
287
R5E
R6E
CASA GRANDE
Coolidge
SACATON
GILA
T5S
T6S
87
80
89
Casa Grande
84
84
Eloy
A

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