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James Doyle Sell Mining Collection

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J.H.C.

AUG 23 1968

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 9, 1968

MR. WES
READ AND RETURN
PREPARE ANSWERS ____ HANDLE ____
FILE ✓ INITIALS

TO: J.H. Courtright

FROM: R.H. Luning

W.E.S.
SEP 12 1968

Exploration Drilling
Picacho Project
Pinal County, Arizona

Following the discovery of two zones of anomalous I.P. response along the eastern side of the Picacho Mountains (Farley, April 10, 1968), three drill holes were recently put down to test these anomalous zones, (Attachment A). Two holes were drilled on the Southern anomaly. For reasons outlined below, one of these holes was stopped before reaching bedrock. The other was bottomed in a fresh biotite gneiss which showed no evidence of mineralization. One hole was drilled on the Northern anomaly and was bottomed in a well consolidated conglomerate consisting of granitoid gneiss fragments.

Drilling was contracted to Whatley Drilling Company of Tucson, Arizona. The drill used was a truck-mounted Mayhew 1,000.

Geologic logs for the three holes are appended (Attachments B,C, and D) and brief descriptions of the drilling for each hole follow.

The initial hole, designated PM-1, was started on April 24 and bottomed at 302' on April 25. Drilling was done using a 5 5/8" rolling-cutter bit with air circulation. At 286' water was encountered and became excessive at 300'. Difficult drilling conditions caused abandonment of this hole.

The second hole, designated PM-2 was started on April 25 and drilled by 5 5/8" rockbit using air circulation to 56'. Conversion to hammerbit of 5 1/2" size was then decided upon. Drilling continued to 286' where water was first encountered. Excessive amounts caused a temporary abandonment of this hole at 307' on April 27. On May 20, the hole was re-occupied. Because of continued groundwater flow and difficult drilling conditions, mud circulation and buttonbits of 5 1/8" size were used. The hole was bottomed on May 30 in fresh, unaltered Precambrian biotite gneiss at a depth of 560'.

The third hole, designated PM-3, was started on April 27 using a hammerbit of 5 1/2" size and air circulation. At 346' water was intercepted and at 365' circulation was once again established with mud. The hole was bottomed at 597' in a well consolidated conglomerate consisting of granitoid gneiss fragments on May 2.

A brief summary of costs is presented below:

Direct drilling	$ 9,958.00
Prospecting Permits	2,551.80
Sampling and Supervision	1,943.05
Miscellaneous Expenses (office supplies, auto, insurance, etc.)	563.86
TOTAL	$15,016.71

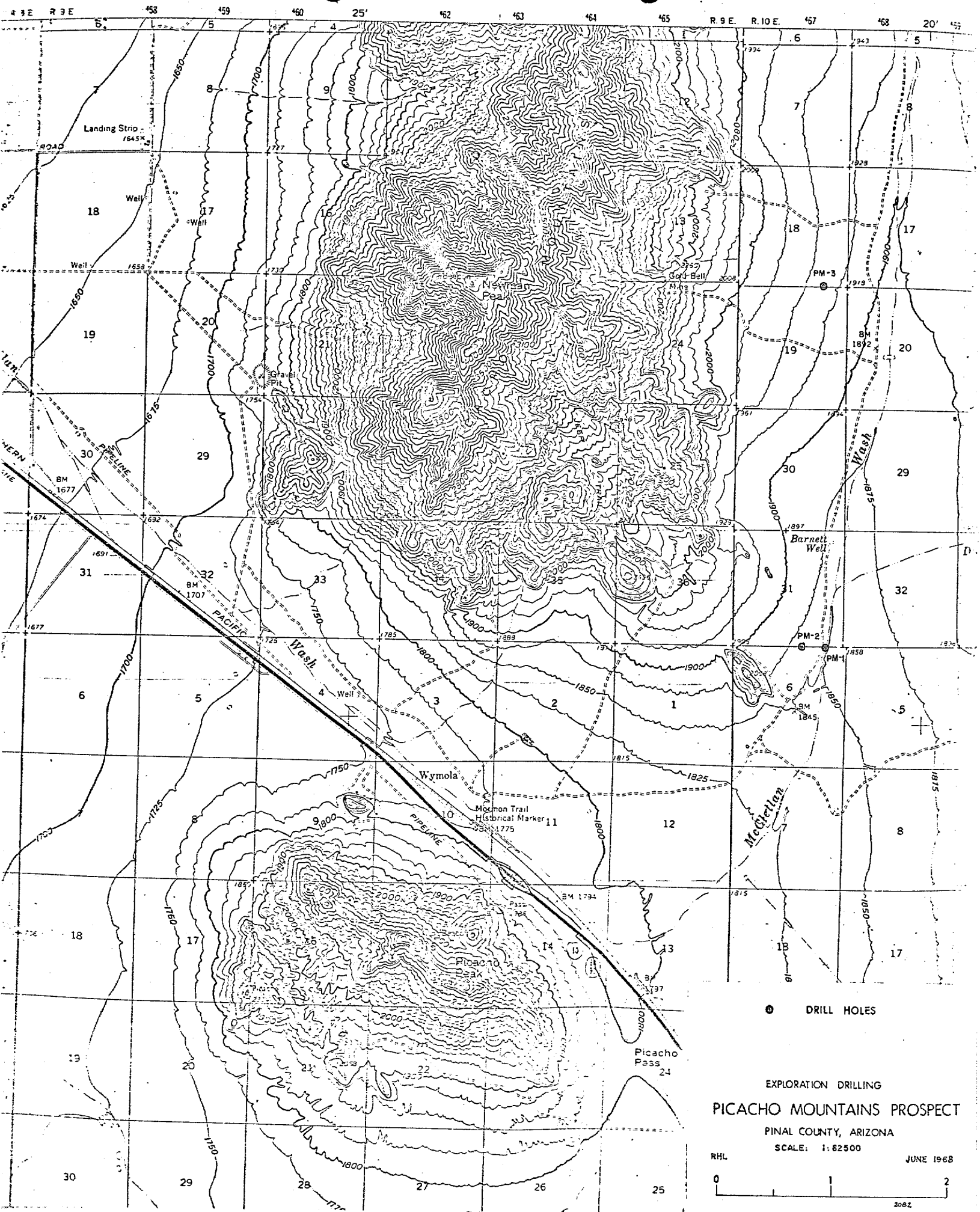
R.H. Luning

R.H. Luning

RHL:ir
cc: J.R. Wojcik w/att
W.G. Farley w/att

ERIOR

tachment A.



Attachment B

Final Depth 302'
Collar Elevation -
Coordinates -
Inclination 90°

ASARCO

GEOLOGIC – ASSAY LOG

Property ~~Picacho Mountains~~

HOLE NO. PM-1
Sheet No. 1
Date Completed 4/25/68
Logged By RHL

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				
70	70	5 5/8" Air Robit													Al	No samples collected
100	30	do													Cgl	Mainly qtz and feldspar fragments, occ. FeOx stained. Occ. granite to granitoid gneiss chips. Sp. and porph. Mod clay.
130	30	do													Cgl	Predominantly gneissic and schistose fragments. Incr. in coarse fraction from 120-130'.
175	45	do													Cgl	As above but with diminished chlorite schist content. Sp. and chips. WK clay.
205	30	do													Cgl	Mainly granite-gneiss fragments with lesser amounts of quartz-feldspar chips variously stained by iron oxides. Some schist fragments and sp. andesite
245	40	do													Cgl	As above but mostly coarse fragments, Little clay.
265	20	do													Cgl	Approx. equal. prop. of gneiss and musc/chl. schist with occ. FeOx stain. Mod. clay.
302	37	do													Cgl	Incr. in prop. of dk. minerals in fine fraction (15-25%) with yellow to brown iron oxide stain on qtz. feldspar chips coarse fraction composed of chl. schist with granite-gneiss. Sp. and No clay.
BOTTOM																

Note: Watertable @286'

Attachment D

HOLE NO. [illegible]
Sheet No. 1
Date Completed [illegible]
Logged By RHL

ASARCO
GEOLOGIC - ASSAY LOG

Property Picacho Mountains

Final Depth 302'
Collar Elevation -
Coordinates -
Inclination 90°

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu Total	Non-S	Average	Mineralization Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
70	70	5 5/8"	Air	Robit											Al	No samples collected
100	30	do													Cgl	Mainly qtz and feldspar fragments, occ. FeOx stained. Occ. granite to granitoid gneiss chips. Sp. and porph. Mod clay.
130	30	do													Cgl	Predominantly gneissic and schistose fragments. Incr. in coarse fraction from 120-130'.
175	45	do													Cgl	As above but with diminished chlorite schist content. Sp. and chips. WK clay.
205	30	do													Cgl	Mainly granite-gneiss fragments with lesser amounts of quartz-feldspar chips variously stained by iron oxides. Some schist fragments and sp. andesite
245	40	do													Cgl	As above but mostly coarse fragments. Little clay.
265	20	do													Cgl	Approx. equal. prop. of gneiss and [illegible] schist with occ. FeOx stained [illegible] clay.
302	37	do													Cgl	Incr. in prop. of [illegible] in fine fraction (12-25%) with yellow [illegible] iron oxide [illegible]

Attachment C

Final Depth 560'
Collar Elevation
Coordinates
Inclination 90°

ASARCO

GEOLOGIC – ASSAY LOG

Property Picacho Mountains

HOLE NO. PM-2
Sheet No. 1 of 2
Date Completed 5/30/68
Logged By RHL

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay – % Cu Total	Non-S	Average	Mineralization Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
40	40	5 5/8"	Air	Robit											Al	Sand, silt, mod. clay. Coarse fraction mainly qtz and feldspar fragments.
75	35	5 1/2"	Air	Hammer											Al	As above. Coarse fraction now includes schistose and gneissic fragments with yellow-brown to reddish FeOx stained qtz. Sp. and WK-mod. clay
155	80	do													Cgl	Mainly granite-gneiss chips varying in grain size and texture. Occ. some hem/lim along fract. Sp. and WK. clay.
349	194	5 1/2"	Air	Hammer to 307'											Cgl	Granite-gneiss with occ. FeOx stain along fract. and in ground mass. Minor chl.schist and sp. volc. fragments.
		5 1/8"	Mud	Robit												
355	7'	NX	-	6											Cgl	Mixed fragments of granitoid-gneiss varying in grain size and texture, but generally light colored. The only mafic mineral is biotite.
405	50	5 1/5"	Robit												Cgl	As noted above.
435	30	do													Cgl	No change in mineral components but little coarse fraction. Mod-st. clay.
495	60	do													Cgl	Little coarse. Mixed granite-gneiss, occ. FeOx. stained. Sp. volc. chips. BEDROCK PLACED AT 490'.
513	18'	do													gr-gn	95% of sample consists of qtz. feldspar (occ. FeOx stained) with biotite as mafic mineral.
515	2	NX	-	90											gr-gn	Med. gr. light col. bi. granite-gneiss Sp. mag. grains in ground mass. No evidence of any alteration.

Attachment C

HOLE NO. PN-[illegible]
Sheet No. 1 of 2
Date Completed 5/30/68
Logged By [illegible]

ASARCO
GEOLOGIC - ASSAY LOG

Property Picacho Mountains

Final Depth [illegible]
Collar Elevation
Coordinates
Inclination 90°

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu Total	Non-S	Average	Mineralization Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
40	40	S	5/8"Air	Robit											Al	Sand, silt, mod. clay. Coarse fraction mainly qtz and feldspar fragments.
75	35	S	1/2"Air	Hammer											Al	As above. Coarse fraction now includes schistose and gneissic fragments with yellow-brown to reddish FeOx stained qtz. Sp. and WK-mod. clay
155	80	do													Cgl	Mainly granite-gneiss chips varying in grain size and texture. Occ. some hem/lim along fract; Sp. and WK. clay.
349	194	S	1/2"Air 5 1/8"Mud	Hammer to 307' Robit											Cgl	Granite-gneiss with occ. FeOx stain along fract. and in ground mass. Minor chl. schist and sp. volc. fragments.
355	7'	NX	-	[illegible]											Cgl	Mixed fragments of granitoid-gneiss varying in grain size and texture, but generally light colored. The only mafic mineral is biotite.
405	50	S	1/5" Robit												Cgl	As noted above.
[illegible]	[illegible]	do													Cgl	No change in mineral components but little coarse fraction. Med-st. clay.
[illegible]	[illegible]	do													Cgl	Little coarse. Mixed granite-gneiss, occ. FeOx. stained. Sp. [illegible] PLACED [illegible]
[illegible]	[illegible]	do													[illegible]	[illegible]
[illegible]	[illegible]	[illegible]													[illegible]	[illegible]

Final Depth 560'
Collar Elevation
Coordinates
Inclination 90°

ASARCO

GEOLOGIC – ASSAY LOG

Property Picacho Mountains

HOLE NO. PM-2
Sheet No. 2 of 2
Date Completed 5/30/68
Logged By RHL

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				
555	40	5 1/8" Robit													gr-gn	As before but 525-535' interval consists essentially of qtz. feldspar fragm. spi. biotite w/ epidote along fractures.
560	5	NX		90											gr-gn	Fine to medium grained biotite granite-gneiss. Biotite comprises about 70% of mass of rock.
BOTTOM																

Note: Watertable @ 286'

HOLE NO. RM-2
Sheet No. 2 of 2
Date Completed 5/30/68
Logged By RHL

ASARCO

GEOLOGIC - ASSAY LOG

Property Picacho Mountains

Final Depth 560'
Collar Elevation
Coordinates 90°
Inclination

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu: Total	Non-S	Average	Mineralization: Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
555	40	5 1/8" Rock													gr-gn	As before but 525-535' interval consists essentially of qtz, feldspar fragm. sp. biotite w/ epidote along fractures.
560	5	NX		90											gr-gn	Fine to medium grained biotite granite-gneiss. Biotite comprises about 70% of mass of rock.
BOTTOM																

Note: Watertable @ 286'

Attachment D

Final Depth 597'
Collar Elevation
Coordinates
Inclination 90°

ASARCO
GEOLOGIC – ASSAY LOG

Property Picacho Mountains

HOLE NO. PM-3
Sheet No. 1
Date Completed 5/2/68
Logged By RHL

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu Total	Non-S	Average	Mineralization Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
105	105	5 1/2" Air Hammer													Al	Mainly sand and silt consisting mostly of quartz grains and feldspar fragments; occ. stained by iron oxides. Mod-St. clay.
175	70	do													Al	As above, but gneissic fragments in coarse fraction now appear. Mod. clay.
255	80	do													Al	As above, WK-mod clay.
325	70	do													Cgl.	Gneissic fragments constitute about 40-60% of samples-remainder qtz. feldspar. Greater prop. of dk min. in fine portions. Sp. Chl. schist WK clay.
588	263	5 1/2" Air Hammer to 365'													Cgl	Granitic to gneissic fragments varying in grain size and texture with 20-40% qtz and feldspar chips. Sp. Chl. schist and clay.
597	9'	NX		20											Cgl	Fresh granitoid gneiss fragments varying in grain size and texture with biotite as the principal mafic mineral. Occ. flakes of muscorite and magnetite grains in groundmass WK iron stain along fract. One fragment shows hematite after pyrite and a muscovite schist inclusion.
BOTTOM					Note: Watertable @346'											

Attachment [illegible]

HOLE NO. [illegible]
Sheet No. [illegible]
Date Completed [illegible]
Logged By RHL

ASARCO
GEOLOGIC - ASSAY LOG

Property Picacho Mountains

Final Depth 597'
Collar Elevation
Coordinates
Inclination 90°

Depth	Interval	Core Size	Sp Grav	Core Rec %	Core Assay - % Cu Total	Non-S	Average	Mineralization Oxides	Pyrite	Cpy	Cc	Other	Alteration		Rock Type	Remarks
105	105	5 1/2"Air		Hammer											A1	Mainly sand and silt consisting mostly of quartz grains and feldspar fragments; occ. stained by iron oxides. Mod-St. clay.
175	70	do													A1	As above, but gneissic fragments in coarse fraction now appear. Mod. clay.
255	80	do													A1	As above, WK-mod clay.
325	70	do													Cg1	Gneissic fragments constitute about 40-60% of samples-remainder qtz, feldspar. Greater prop. of dk min. in fine portions. Sp. Chl. schist WK clay.
588	263	5 1/2"Air		Hammer to 365'											Cg1	Granitic to gneissic fragments varying in grain size and texture with 20-40% qtz and feldspar chips. Sp. Chl. schist and clay.
597	9'	NX		20											Cu1	Fresh granitoid gneiss fragments varying in grain size and texture with biotite as the principal mafic mineral. [illegible] flakes of muscovite and magnetite grains in [illegible] WK [illegible] fract. One fragment shows [illegible] pyrite and [illegible] schist [illegible].

Note: [illegible]

Aa-16a.16.16

File

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

J.H.C.

June 7, 1968

JUN 7 1968

To: J. H. Courtright

From: S. I. Bowditch

Picacho Prospect

Now that we have finished Picacho, we might as well cancel our State Prospecting Permits and eventually the bonds. Do we need to get approval from New York? Are the holes on State ground, because if so I must so advise the State.

I never bothered to have document copies made of the permits, because the whole thing looked so nebulous.

S. I. Bowditch

S. I. Bowditch

SIB:kc
cc: KvdSteinen

Mr. S. I. Bowditch:

Please arrange to cancel the State Prospecting Permits and bonds on the State held ground at the Picacho prospect.

The holes were drilled on State ground and I do not as yet have the details as to footage and location but I presume Robert Luning can provide you with this data.

JHC:lmi
cc: KvdSteinen

J.H.C.
6-14-68

WES

J.H.C

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

APR 12 1968

April 10, 1968

W.E.S.

MAY 14 1968

TO: J. H. Courtright

FROM: W. G. Farley

Total Intensity Magnetics
over
Picacho I.P. Anomalies
Pinal County, Arizona

This report is a supplement to my preliminary report on the Picacho I.P. anomalies dated March 18, 1968. It contains the airborne and ground magnetic data obtained by Asarco over the Picacho I.P. anomalies.

Fig. 1 shows the total intensity, airborne magnetic response superimposed on a geologic sketch map by J. E. Kinnison. The airborne magnetic survey was flown along north-south lines one half mile apart at 3000 feet M.S.L. Over both I.P. anomalies the airborne magnetic survey was shown NW-SE trending weak (10-20 gamma) magnetic highs. The area between the I.P. anomalies is occupied by a 10 gamma magnetic low. Also on this map (shown by a dashed line) is the approximate edge of the bedrock pediment as indicated by gravity and resistivity. Both I.P. anomalies are on the pediment.

Fig. 2 shows the magnetic picture obtained over the south Picacho I.P. anomaly with a detailed ground magnetic survey. Stations were read on a 200 foot grid. Smoothing was performed on the magnetic data by averaging the response from a station with the response from the stations 200 feet north, south, east and west. The contoured data shows a NW-SE 150 gamma high on the west side of the I.P. anomaly and a N-S 150 gamma high on the east side of the anomaly. A N-S relative magnetic low cuts through the center of the I.P. anomaly. In my preliminary report I recommended two drill holes within the 6 m.v./v I.P. contour; one to be on a magnetic high and the other on the central N-S magnetic low. This placement should provide adequate testing of the I.P. polarizer. On Fig. 2 I have indicated the recommended locations for these holes. Hole #1 should be 1000 feet west of section corner 32/615, R10E, T8S and T9S. This will place it on the relative magnetic low at the junction of suggested NW-SE and N-S structures. The #2 hole should be 1000 feet west of the #1 hole on the axis of the NW-SE magnetic high. Both drill holes will be within the 7 m.v./v I.P. contour.

Fig. 3 shows the magnetic picture obtained over the north Picacho I.P. anomaly with a detailed ground magnetic survey. Traverse lines were run east-west 400 feet apart with station intervals of 200 feet. Smoothing was performed by averaging readings from groups of four stations. The contoured data shows a NW-SE 60 gamma magnetic high cutting through the north-south trending I.P. anomaly. The highest magnetic readings were obtained NW of the I.P. anomaly. The #3 drill hole is recommended on the axis of the magnetic high at the center of

the I.P. anomaly. This location is 1000 feet west of section corner 18|17 / 19|20 R10E, T8S. The #4 hole should be 1000 feet south of #3 on a relative magnetic low. These holes will both be within the 7 m.v./v I.P. contour.

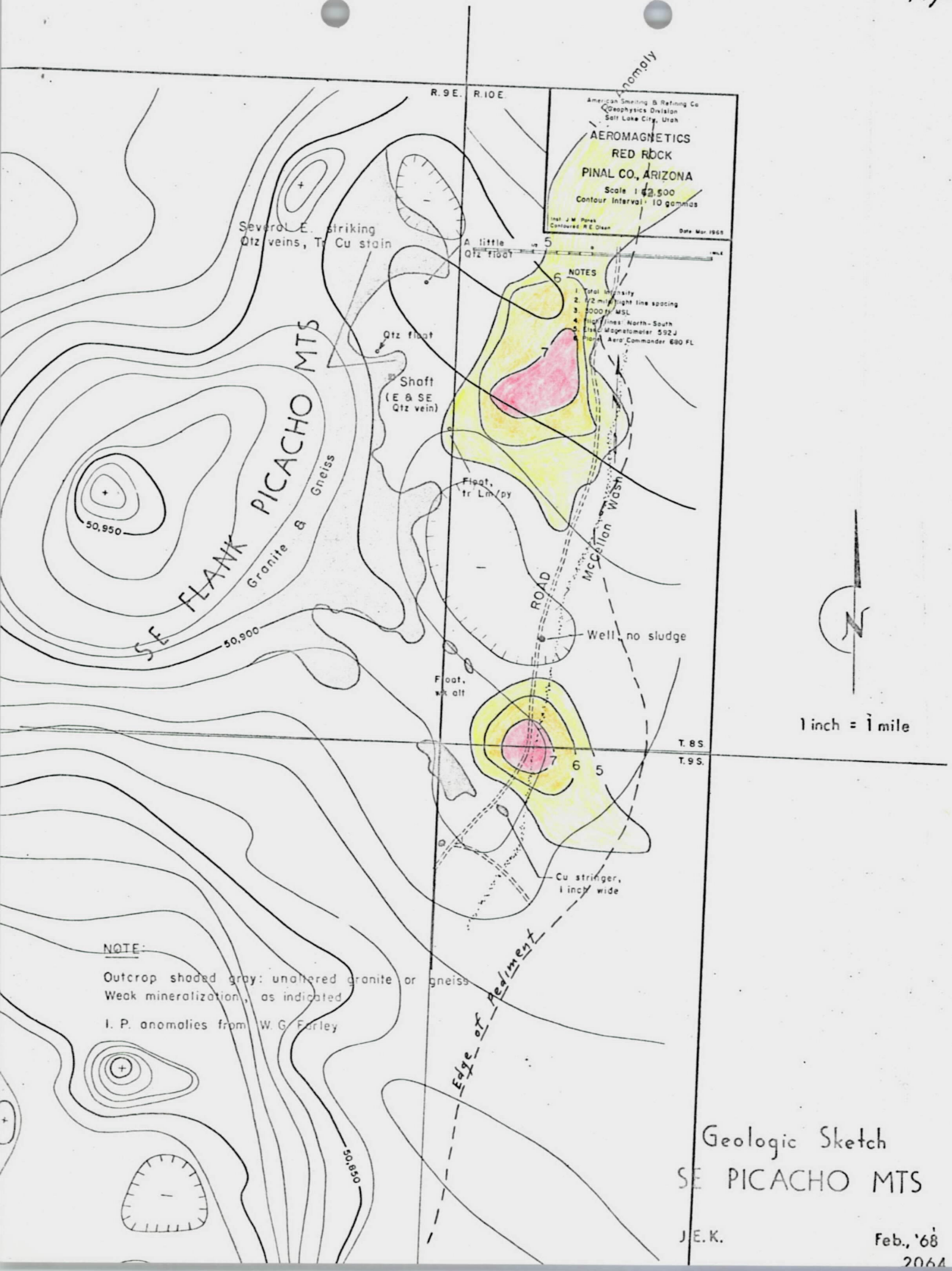
Additional drilling recommendation, if any, will depend on the information obtained from the first four drill holes.

Wayne G. Farley

Wayne G. Farley

WGF:lab
cc: RJLacy
WESaegart
JRWojcik

Fig. 1



Geologic Sketch
SE PICACHO MTS

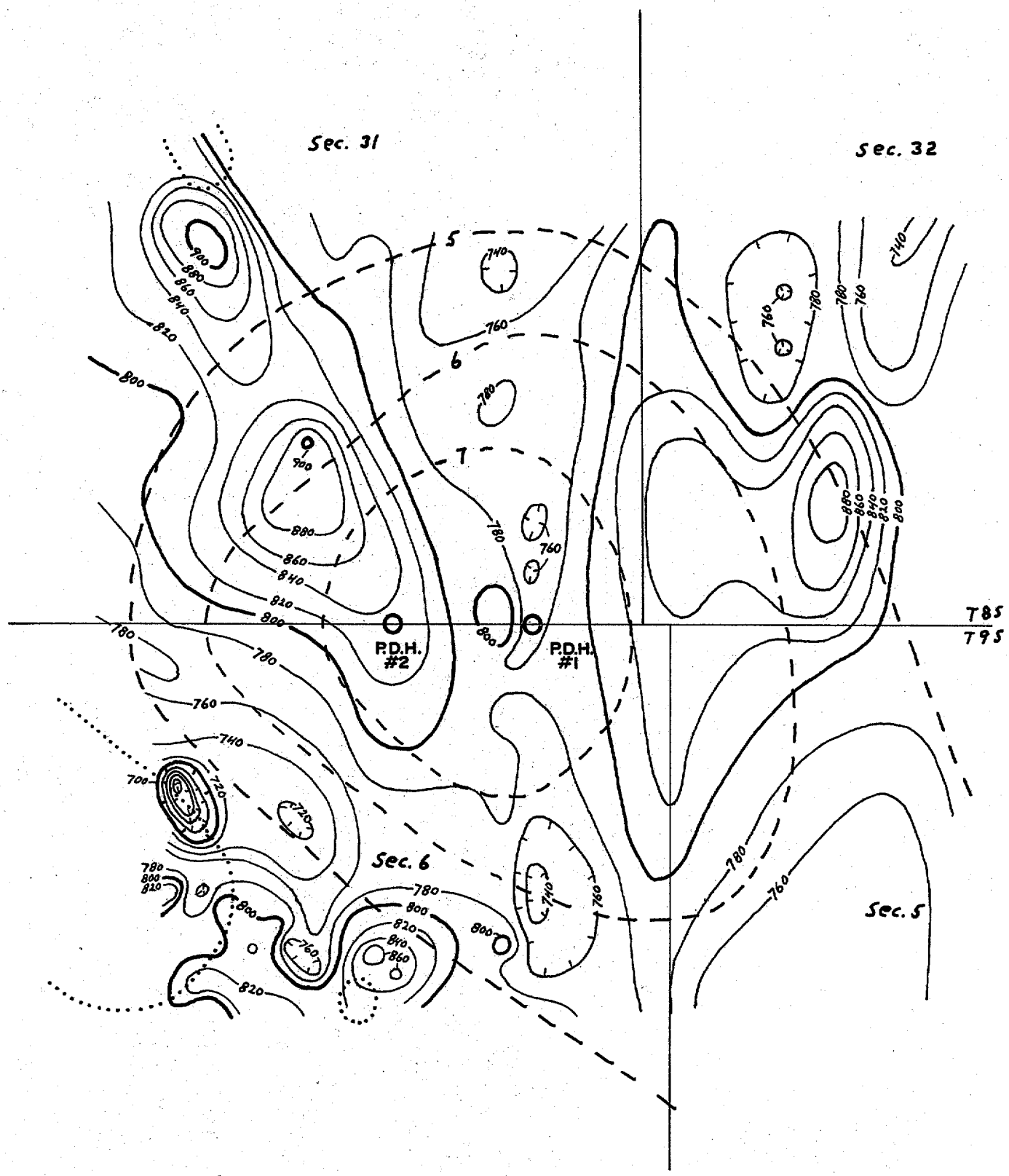
J.E.K.

Feb., '68

2064

R 10 E

FIGURE 2



EXPLANATION

-----I.P./ΔV CONTOURS (MILLIVOLTS / VOLT)

800 MAGNETIC CONTOURS (ADD 50,000 FOR TOTAL) CONTOUR INTERVAL IS 20 GAMMAS

·····OUTLINE OF GRANITE GNEISS OUTCROPS

P.D.H. PROPOSED DRILL HOLE

SCALE 1 IN = 1000 FT

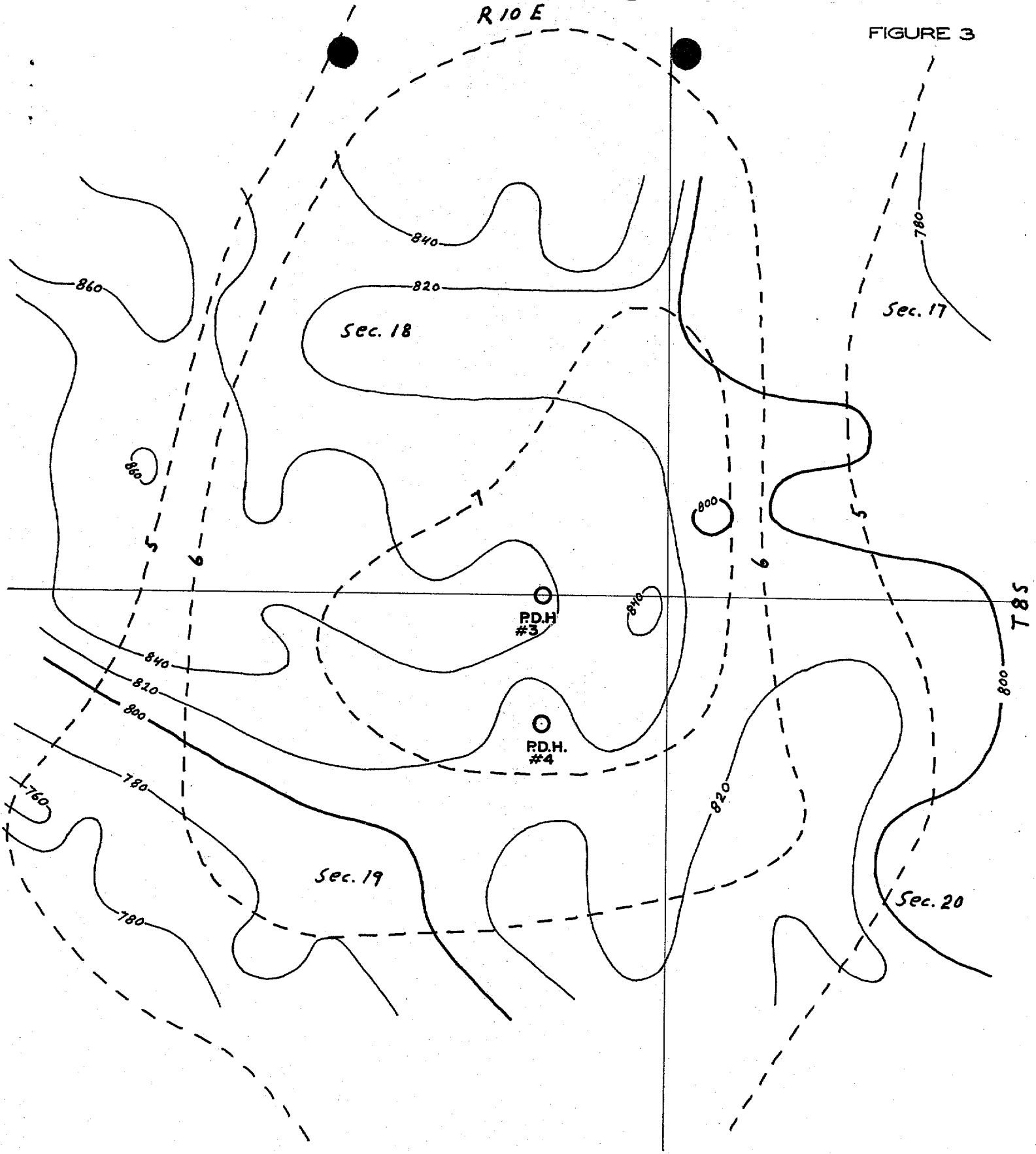
TOTAL INTENSITY GROUND MAGNETICS

SOUTH PICACHO I.P. ANOMALY

PINAL COUNTY, ARIZONA

APRIL 8, 1968

FIGURE 3



EXPLANATION

----I.P./ΔV CONTOURS (MILLIVOLTS/VOLT)

—800— MAGNETIC CONTOURS (ADD 50,000 FOR TOTAL) CONTOUR INTERVAL IS 20 GAMMAS

P.D.H. PROPOSED DRILL HOLE

SCALE 1 IN = 1000 FT

TOTAL INTENSITY GROUND MAGNETICS

NORTH PICACHO I.P. ANOMALY

PINAL COUNTY, ARIZONA

APRIL 8, 1968

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

Aa 16A.16.16

March 22, 1968

Mr. C. P. Pollock, Vice President
ASARCO - New York Office

Picacho Project
Pinal County, Arizona

Dear Sir:

Attached is Mr. Farley's report on the results of geophysical surveys over the alluvial covered flank of the Picacho Mountains, situated 45 miles northwest of Tucson, near the main highway to Phoenix.

Two zones of anomalous I.P. response have been defined along the east side of the mountains (see attached map). Mr. Farley considers the response in both cases to be derived from sulphide mineralization in bedrock lying beneath 150 to 250 feet of alluvium and gravel.

Mr. Kinnison reports that minor copper mineralization occurs in widely separated fissures in the nearby granitoid gneiss outcrops but evidence of alteration is lacking and there are no Laramide intrusives present in the outcrops.

Although no geologic evidence was found suggesting the probability of a zone of alteration-mineralization occurring beneath the alluvial cover, the I.P. anomalies are of substantial size (4000' to 6000' in diameter) and the land situation is uncomplicated. It is concluded that the prospect merits a modest expenditure to sample bedrock beneath the cover.

Both anomalies lie on state-owned surface and mineral rights, but adjacent land is open to mineral location. Costs are estimated as follows:

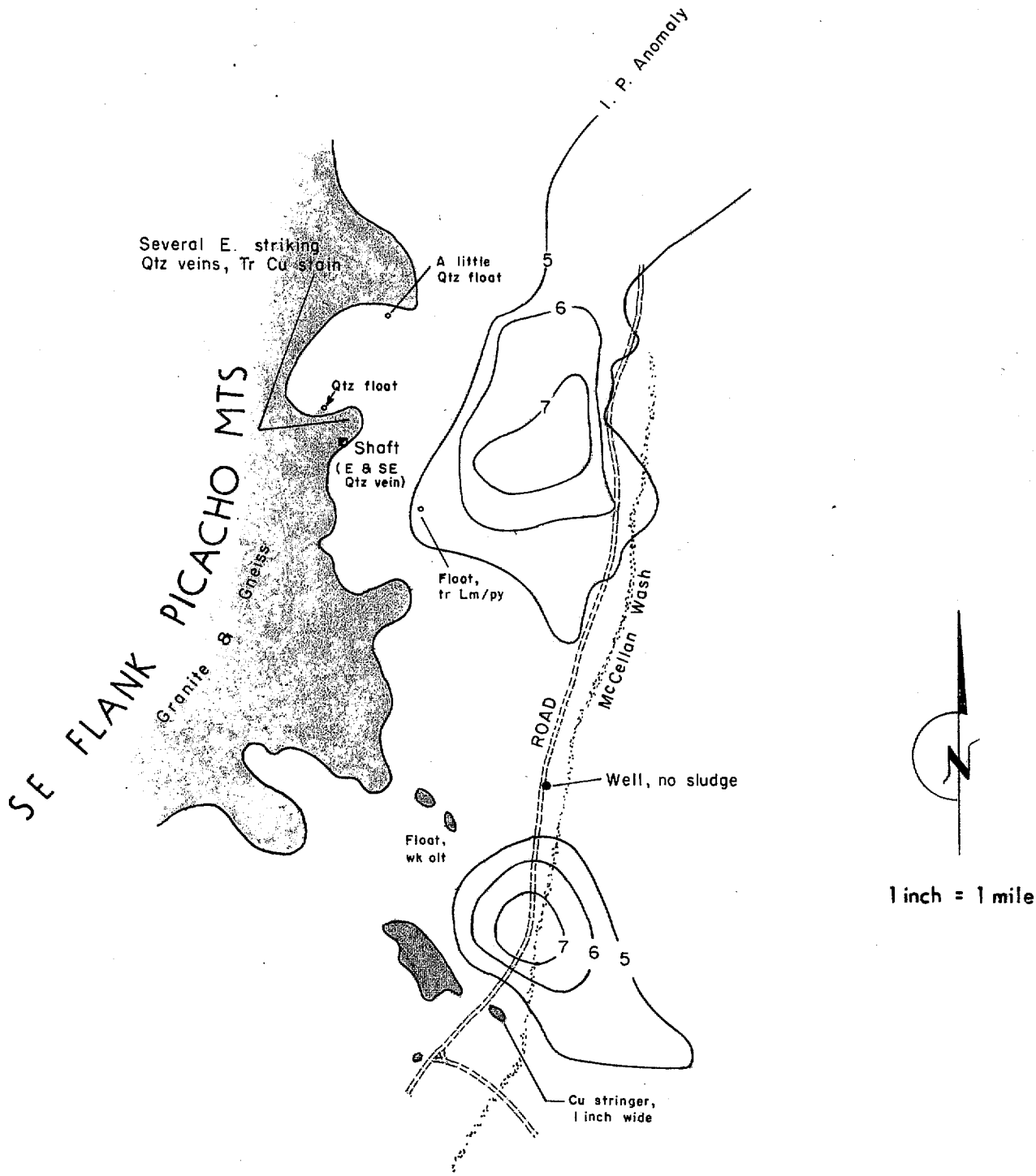
Acquisition of prospecting permits on 7 State sections; $2.00 per acre rental for 2 years	$ 9,000.00
Staking of Federal claims on 3 sections	1,000.00
Four rotary holes @ 600' each, @ $5.00/ft.	12,000.00
Sampling, assaying and supervision	5,000.00
Total	$27,000.00

It is recommended that a mining authorization in the amount of $27,000 be requested.

Yours very truly,

J. H. Courtright

JHC:lml
enclosure
cc: RJLacy, w/encl.
WESaegart
JRWojcik
WGFarley
JEKinnison



NOTE:

Outcrop shaded gray: unaltered granite or gneiss
Weak mineralization, as indicated

I. P. anomalies from W. G. Farley

Geologic Sketch
SE PICACHO MTS

J.E.K. Feb., '68
2064