

7/15/63

TRI MK. REG. U.S. PAT. OFF.

Agnes Group

Loc. Pit for 11 & 12  
is OKAY but NOTICES  
are 900' Approx from  
Loc pits on 9 & 10

Pits for 14 & 13  
NOT DUG

15 & 16 <sup>Alluv.</sup> OKAY but  
NOTICES at CORNER  
post of NE 15

No pits on 17 & 18  
NOTICES at <sup>NE</sup> CORNER  
17

Agnes 1 & 2 No pit  
maybe a pit at the  
SE cor A-2 intended to be  
NE or A-1 " " "  
Loc. pit for both  
Notice missing on A-2

A-3 & 4 OKAY in Alluv.

A tier of old 4x4 not  
identified are located along  
this E line from A-1 & 2

7/16/63  
TRI MK. REG. U.S. PAT. OFF.

# Agnes Group

A-1A & 2A No Pit  
A-5 & 6 OKAY IN ALLUV.

A 7 & 8 Pit is located  
at CORNER SW 8 & NW 7  
miss located pit.

A 9 & 10 No Pit  
A 11 & 12 " "  
Pit located at SW-12 &  
Alluv. NW-11

A-14 & 13 No Pit & no  
pit @ corner

A-15 & 16 No Pit  
Pit located at NW 15 &  
Alluv. SW 16

A-18 & 17 No Pit  
No CORNER post found  
for A-18 & A-17

ORIGINAL COPR. 1910 BY J. O. PARKER

LEFAX, PHILADELPHIA 7, PA., MADE IN U.S.A.

Copper King  
may be ON MARY IS

Loc. June 8, 1962

by R. Andrade &  
Morris Flax

Mentions joining west side

line of Santa Rosa Group?

Mineral looks a  
little more lively here.

A placer  
claim was discovered  
@ 1/4 CORNER 21/22

Beady Eye No. 22  
Located by Bruno & Delilah  
Valazza; Herb & MARY  
Sherman; Clarence  
& EROS EK; HARLEY  
& Moya Kelley.

DATE July 12, 1961  
160 acres

Claim NE 4 Sec. 21  
other notices missing  
but apparently claimed  
2 other 160 acre plots.

SAND BOX 1

Al Wilson & J.C. Ballum  
Loc. MAY 14, 1963  
A.B. WALKER witness

MARK 1

Jim Sullivan

17 June 1963

joins MARY 36 on West  
& MATHEW 1 on North

MATHEW 1

17 June 1963

joins MARY 35 on West

SALVATION Proj.  
MARY Group

7/16/63  
TM. MK. REG. U.S. PAT. OFF.

M-17 & 18 Alluv. OKAY

M-15 & 16 No Pit  
Pit located @ EAST  
Corners of claims Alluv.

M-13 & 14 No Pits & along  
main wash

M-12 & 13 No Pits Pits  
located @ E. corners

M-9 & 10 No Pits  
E. center post down

M-7 & 8 No Pits

Alluv. Pits located @ EAST  
Corners

M-5 & 6 No Pits & No  
Notices posts OKAY.

M-4 & 3 No Pits  
Granite outcrop pits located  
@ EAST CORNERS

M-1 & 2 No Pits

Sacaton

2/16/1

TM, MK, REG. U.S. PAT. OFF.

J.R. 501(?) No posts &  
no notices pit 3' deep  
in outcrop granite

Kevin #4 2' deep  
granite. outcrop

J.R. 500 pit 4' deep  
granite outcrop

Kevin 1  
ANUV. pit OKAY

Sacaton

7/16/63

MARY GROUP

TRIMK. REG. U.S. PAT. OFF.

M-23 & 24 No pits  
Alluv. pit located  
@ W. corners.

M-25 & 26 No pits

M 27 & 28 No pits  
Alluv. Pits @ W. corners

M 29 & 30 No pits

M 31 & 32 Pits located  
1/2 way between  
EAST side line & loc.

M 33 & 34  
Red fe stained rock in  
pit on 33 cut in side  
of hill only 2' deep.  
No pit on 34

M-35 & 36 No pits  
pits located @ E.  
corners and only  
4' deep.

Sacaton

7/16/63

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J.R. 1 & 4

Washed in were probably okay Alluv.

J.R. 2 & 3 4' deep

in granite outcrop.

MARY 37 pit is actually on S end of claim. This does not conform to notice

No notice @ MARY 37<sup>a</sup> or post in Alluv.

MARY 38 No notice or I.D. pit legal in Alluv.

MARY 39 actually pit on S. end Legal in alluv. no notice or I.D. Surveying looks off.

MARY 40 OKAY

MARY 41 & 41A

pits & notices okay Surveying looks out from topo.

MARY 42A & 44

pits & notices okay Surveying looks out from topo.



Sacaton

7/16/63

MARY 43 & 43A

pits not deep enough

43 is 3' deep Alluv.

43A 2' deep outcrop

Surveying appears

off with topo.

Also 43A is shown  
as MARY 45 on map

Flo 19 & 20 OKAY Alluv.

except for survey

compare with topo.

Flo 21 & 22 OKAY Alluv.

except for survey

Flo 23 & 24 OKAY

except for survey

Flo 25 & 26 No pits

pits are @ E corners

Flo 27 & 28 No pits

Flo 29 & 30 No pits

Survey location

does not agree with Topo.

pits @ EAST Corners

pits 2' deep

Flo 31 & 32 No pits

pits @ EAST Corners

# Sacaton

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Flo 33 & 34

Appear to be okay  
survey wise but  
a big survey (?)  
bust exists between  
Loc 33 & 34 & common  
corner on East of  
Flo 32 & 31 distance  
is 700'  $\pm$

Pits 34 outcrop  
3' deep

Flo 33 is alluv. clay

---

J.R. 14 copy described  
as E-W claim  
on Ground is described  
as N-S claim.  
Pit is 4' deep alluv.

---

Flo 35 & 36 Outcrop  
Pits 2' deep both in  
Location is off to Topo.

Flo 37 & 38  
Pits 3' deep hit outcrop

Sacaton

TRI MK. REG. U.S. PAT. OFF.

Flo 39 & 40 No pits  
pits located in  
outcrop & 3' deep  
@ W corner

Flo 41 & 42 No pits

Flo 43 & 44  
pits hit bedrock granite  
only 4' deep  
No posts, no notices.

Notices for 43 & 44  
Located approx 300'  
NW of pits see map

J. N. J. B does not  
exist as shown on  
map

SACATON

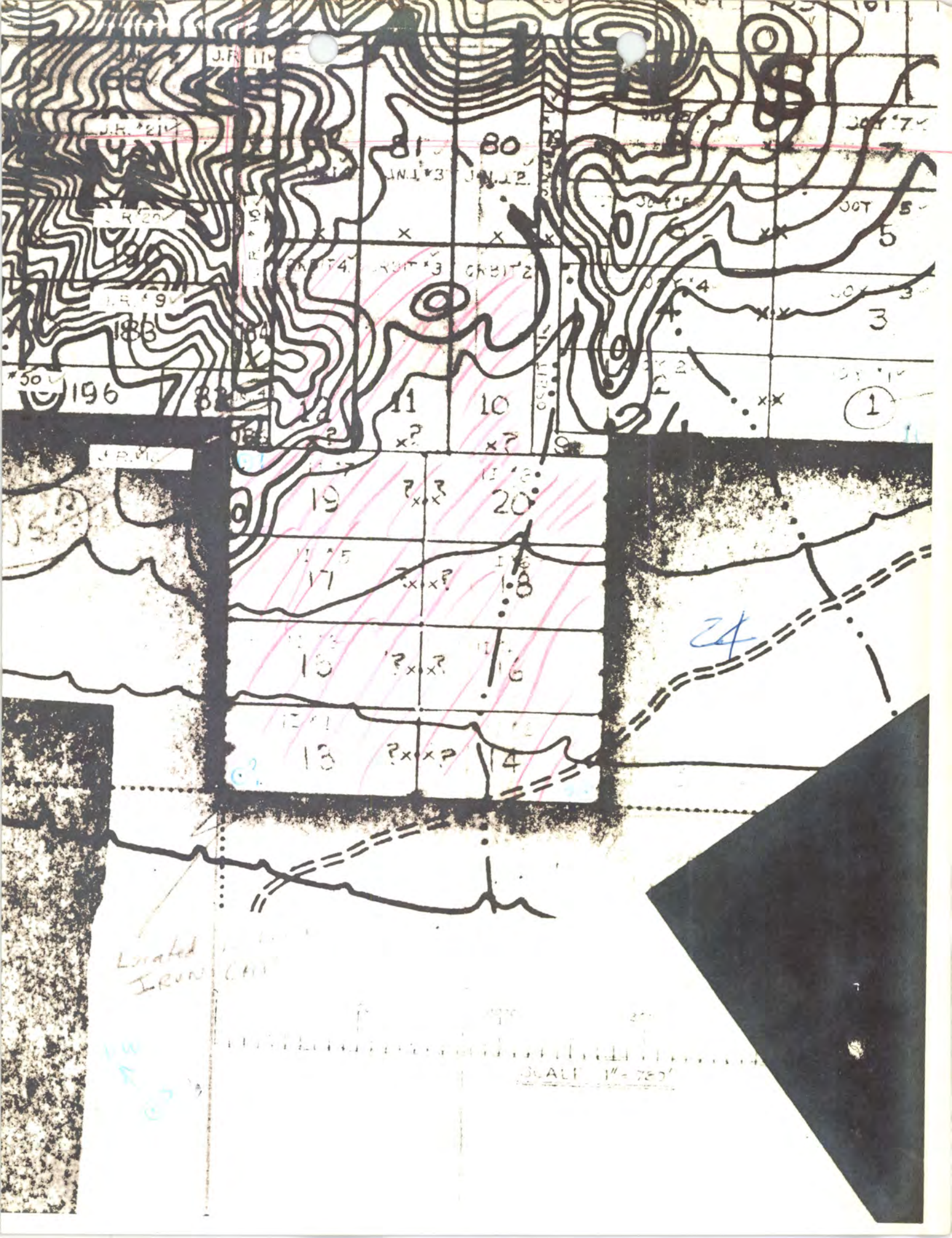
1/1/00  
TM. MK. REG. U.S. PAT. OFF.

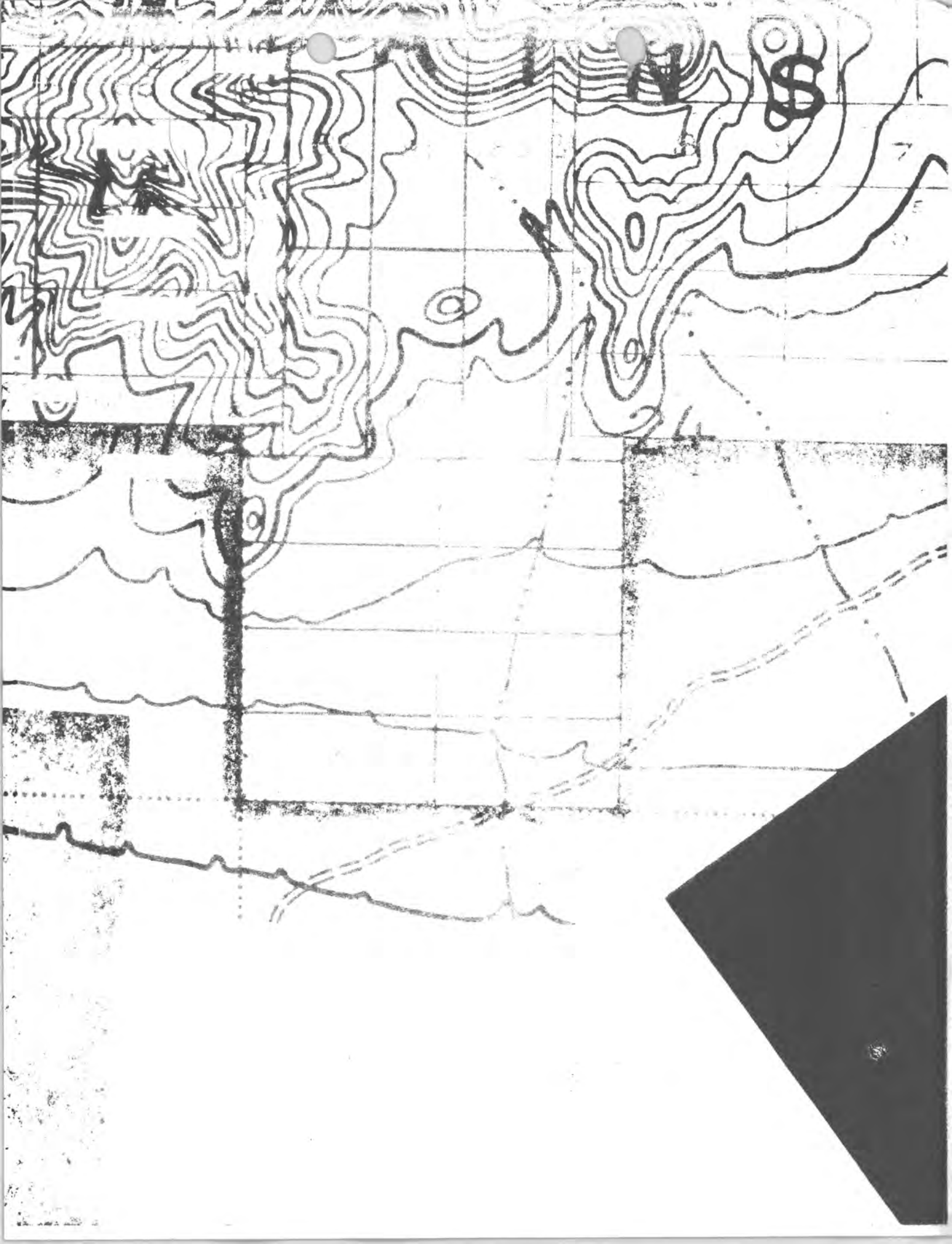
Joy 7 & 8 Alluv. OKAY

Joy 5 & 6 Alluv. OKAY

Joy 4 & 3 Alluv. OKAY

Joy 1 & 2 Alluv. OKAY





Open

1. - Map
2. - Lease to 4/10
3. - Notices
4. Escrow agreement  
Woodsy et al & Mayo
5. Assignment of profit  
interests.

Gayton F  
1/13/63

Re: V. V. & Leo's calls;  
1. Exhibit "A" see below ↓

attached to our copy of  
Proposed lease between "Hessow"  
in Mexico dated 10 May 63  
lists 205 claims & appear with  
out benefit of a careful check to be same  
as Exhibit "A" attached to Esrow agent.

We (Gorex) have no other documents, so  
cannot help re Wood to Woolley etc.

2. Also we (Gorex) do not have <sup>any copies of</sup> original notices  
of <sup>the</sup> Winnies which are later amended.

W.



Leo Smith (called) Re: Mexico  
Jacaton

7/12/63

16 - Winnie's notices prior to  
amendment - other than below.

7/13/63  
Sel.

We do not have  
original notices  
prior to amendment  
(other than # 12, 14, 16,  
& 17) either  
way.

Winnie they  
origos 12-14, 16, 17, none.

Exhibits on the just claims.

"A" May 25, 1962 -  
153 claims listed

Woodsey Sutherland  
Fenton Sellers  
& Wood Buyer.

of these only 70 are  
listed - in exhibit  
"A" to proposed base

83 on 6/2 account  
Missing?

Top Staked??

W.

Mexico



7/11/63

Vic. Verity called  
re: Sarcodon Area.

Specific re: exact exhibit "A"  
which " "

VICTOR H. VERITY  
ATTORNEY AT LAW  
SUITE 902 PHOENIX TITLE BUILDING  
CHURCH AT ALAMEDA  
TUCSON, ARIZONA

AREA CODE 602  
TELEPHONE 622-7446

*Glove Field*  
JUL 18 1963  
GEOEX  
1234567891011121314151617181920212223242526272829303132

July 13, 1963

Mr. George Hall  
Land Co-ordinator  
Union Oil Company of California  
P. O. Box 7600  
Los Angeles, California

Dear Mr. Hall: Re: Sacaton Project

In examining the documents which you delivered to this office on July 10, it became apparent that additional documents must be examined before an opinion can be rendered. The original location notices for the following claims must be examined before an opinion as to the record status of such claims can be given. The claims and book and page of recording of the original notices in the office of the County Recorder, Pinal County, Arizona:

C  
O  
P  
Y

Claim	Pinal County Recorder	
	Docket	Page
Winnie #1	320	282
Winnie #2	320	283
Winnie #3	320	284
Winnie #4	320	285
Winnie #5	320	286
Winnie #6	320	287
Winnie #7	320	288
Winnie #8	320	289
Winnie #9	320	290
Winnie #10	320	291
Winnie #11	320	292
Winnie #13	320	294
Winnie #15	320	296
Winnie #18	320	299
Winnie #19	320	300
Winnie #20	320	301

The foregoing claims have been amended and we have copies of the amended location notices, but since such

amendments relate to the original location, the record status of an amended location cannot be ascertained from only the amended location notice. If an original location notice is defective, an amendment may or may not be effective to cure the defect.

The six Quitclaim Deeds and the Mining Deeds listed below all refer to an attached Exhibit A, but in all cases no Exhibit A was attached to the copy of the deed. Before an opinion of the sufficiency of the deeds can be given, we must know the contents of the applicable Exhibit A. The deeds are as follows:

<u>Grantor</u>	<u>Grantee</u>	<u>Date</u>
Mary Twenstrup	Norman Twenstrup	May 17, 1963
Beauchamp, et al.	Sullivan & Twenstrup	June 17, 1963
Carmack, et ux. & Lilenquist et ux.	Sullivan, Woolsey & Twenstrup	June 21, 1963
Pearce et ux.	Sullivan, Woolsey & Twenstrup	June 24, 1963
McMillen et ux.	Sullivan, Woolsey & Twenstrup	June 25, 1963
Clearman	Sullivan, Woolsey & Twenstrup	June 23, 1963

Assuming that the Exhibit A in each of the above quitclaim deeds is identical to the Exhibit A attached to the proposed lease, a question arises as to what interest, if any, did the quitclaim grantors retain in the ground covered by the claims listed in Exhibit A of the proposed lease by virtue of the fact that such grantors have not quitclaimed their interests to all of the claims listed in Exhibit A of the May 25, 1962 agreement. The latter group of claims are the claims in which the grantors were later given fractional interests, by reference to Exhibit A of the May 25, 1962 agreement.

Upon the suggestion of Walter Heinrichs, we called Herbert S. Harry yesterday afternoon, and Victor Verity and I discussed the problem with Mr. Harry. He confirmed our conjecture that the "Exhibit A" to each of the above quitclaim deeds is identical to the Exhibit A to the proposed lease. As

explained to Mr. Harry, the title problem arises from the strong inference that many of the claims listed in the May 25, 1962 agreement were abandoned and subsequently relocated as claims listed in Exhibit A to the proposed lease. This inference arises from the fact that of the 153 claims listed in the May 25, 1962 agreement, only 70 claims are listed in the proposed lease.

Exhibit A to the Mining Deed dated July 2, 1963 from Sullivan, Woolsey & Twenstrup to McKimney Mines, Inc. is also missing from the documents submitted. Although this fact does not present the same problems as in the case of the quitclaim deeds, I would like a confirmation as to the contents of the Exhibit.

I shall welcome the opportunity to discuss the matter further, and it is my understanding that you or others from your organization will be phoning the first part of next week.

Very truly yours,

Leo N. Smith

VICTOR H. VERITY  
ATTORNEY AT LAW  
SUITE 902 PHOENIX TITLE BUILDING  
CHURCH AT ALAMEDA  
TUCSON, ARIZONA

AREA CODE 602  
TELEPHONE 622-7446



July 13, 1963

Mr. George Hall  
Land Co-ordinator  
Union Oil Company of California  
P. O. Box 7600  
Los Angeles, California

Dear Mr. Hall:

Re: Sacaton Project

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Winnie #9	320	290
Winnie #10	320	291
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Winnie #18	320	299
Winnie #19	320	300
Winnie #20	320	301

The foregoing claims have been amended and we have copies of the amended location notices, but since such

COPY

amendments relate to the original location, the record status of an amended location cannot be ascertained from only the amended location notice. If an original location notice is defective, an amendment may or may not be effective to cure the defect.

The six Quitclaim Deeds and the Mining Deeds listed below all refer to an attached Exhibit A, but in all cases no Exhibit A was attached to the copy of the deed. Before an opinion of the sufficiency of the deeds can be given, we must know the contents of the applicable Exhibit A. The deeds are as follows:

<u>Grantor</u>	<u>Grantee</u>	<u>Date</u>
Mary Twenstrup	Norman Twenstrup	May 17, 1963
Beauchamp, et al.	Sullivan & Twenstrup	June 17, 1963
Carmack, et ux. & Lilenquist et ux.	Sullivan, Woolsey & Twenstrup	June 21, 1963
Pearce et ux.	Sullivan, Woolsey & Twenstrup	June 24, 1963
McMillen et ux.	Sullivan, Woolsey & Twenstrup	June 25, 1963
Clearman	Sullivan, Woolsey & Twenstrup	June 23, 1963

Assuming that the Exhibit A in each of the above quitclaim deeds is identical to the Exhibit A attached to the proposed lease, a question arises as to what interest, if any, did the quitclaim grantors retain in the ground covered by the claims listed in Exhibit A of the proposed lease by virtue of the fact that such grantors have not quitclaimed their interests to all of the claims listed in Exhibit A of the May 25, 1962 agreement. The latter group of claims are the claims in which the grantors were later given fractional interests, by reference to Exhibit A of the May 25, 1962 agreement.

Upon the suggestion of Walter Heinrichs, we called Herbert S. Harry yesterday afternoon, and Victor Verity and I discussed the problem with Mr. Harry. He confirmed our conjecture that the "Exhibit A" to each of the above quitclaim deeds is identical to the Exhibit A to the proposed lease. As

explained to Mr. Harry, the title problem arises from the strong inference that many of the claims listed in the May 25, 1962 agreement were abandoned and subsequently relocated as claims listed in Exhibit A to the proposed lease. This inference arises from the fact that of the 153 claims listed in the May 25, 1962 agreement, only 70 claims are listed in the proposed lease.

Exhibit A to the Mining Deed dated July 2, 1963 from Sullivan, Woolsey & Twenstrup to McKinney Mines, Inc. is also missing from the documents submitted. Although this fact does not present the same problems as in the case of the quitclaim deeds, I would like a confirmation as to the contents of the Exhibit.

I shall welcome the opportunity to discuss the matter further, and it is my understanding that you or others from your organization will be phoning the first part of next week.

Very truly yours,

Leo N. Smith



**UNION OIL COMPANY OF CALIFORNIA**

UNION OIL CENTER

**LOS ANGELES 17, CALIFORNIA**

HAROLD H. STREAM  
MANAGER OF LANDS

July 2, 1963



Mr. Walter E. Heinrichs, Jr.  
Heinrichs Geoexploration Company  
Post Office Box 5671  
Tucson, Arizona

Re: SACATON AREA  
Pinal County, Arizona

Dear Walt:

In accordance with our recent telephone conversation, we are enclosing the following:

1. Map of the area showing the purported location of the various claims.
2. Mining Lease under which Union is acquiring their interest in said claims.
3. Copies of the Location Notices of the mining claims.
4. Copy of escrow agreement by and between James A. Woolsey et al and Minerals Exploration Company.
5. Assignment of Prospecting Permits.

Very truly yours,

G. B. HALL  
Land Coordinator

GBH/lfe  
Enclosures

# Arizona Title Insurance and Trust Company

135 n. 2nd Ave.  
P.O. Box 3915

Tel: 252-5941

Identify Your Deal With

Escrow No. 219514

## ESCROW INSTRUCTIONS

Escrow Officer E. S. FAIRCROFT/er Phoenix 3, Arizona May 21, 1963  
RODAN TWENSTRUP, husband of Mary Twenstrup, dealing with his sole and separate property;  
JAMES L. SULLIVAN & FLORICE SULLIVAN, husband and wife;  
JAMES A. WOOLSEY & AGNES WOOLSEY, husband and wife; McKINNEY MINES INC., a Nevada Corp.  
 whose address is 3222 Scottsdale, Ariz. (2); P.O. Box 3222, Scottsdale, Ariz. (3); Box 4054, Tucson, Ariz. (4) Phone No. 400 Security Bldg. Phx.  
 herein called Seller (whether one or more) and

MINERALS EXPLORATION COMPANY, a California corporation  
 whose address is 461 S. Poylston, Los Angeles 17, Calif. Phone No. \_\_\_\_\_

herein called Buyer (whether one or more) hereby employ Arizona Title Insurance and Trust Company, to act as Escrow Agent in connection with a sale by Seller to Buyer upon the following terms and conditions which shall be complied with by said parties on or before June 21, 1963, except as otherwise specified herein.

The property herein referred to is situated in PINAL County, Arizona, and is described as follows, to-wit:

UNPATENTED MINING CLAIMS PER EXHIBIT "A" ATTACHED.

Escrow Agent is instructed that all items checked thus (✓) under the columns headed Seller and Buyer are the obligations which each will pay:

		SELLER	BUYER
Total amount to be paid by Buyer	\$ <u>6000.00</u>		
Which is represented by:			
Check or cash handed Escrow Agent herewith as earnest money, and to be applied on the purchase price	\$ <u>6000.00</u>		
Balance cash payment to be paid by Buyer on or before _____	\$ <u>None</u>		
Mortgage of Record, due _____	\$ <u>None</u>		
with a principal sum remaining unpaid of which Buyer agrees to assume and pay beginning with installment due _____	\$ <u>None</u>		
Refund impoundments to Seller, if any.			
Agreement held under Escrow Agent's Escrow No. _____ with a principal sum remaining unpaid of _____	\$ <u>None</u>		
Buyer to assume and pay installment beginning _____			
Balance of _____	\$ <u>None</u>		
Payable as follows:			
			Escrow Fee
			Title Fee
			Mortgage Policy Fee
			Recording Fees:
		✓	Deed
			Mortgage
			Contract
			Release of Mortgage
			Revenue Stamps
			Licensed Broker's commission in the amt. of \$ <u>None</u> to _____
			Taxes:
			<u>None</u>
			Paving Liens and other special assessments:
			<u>None</u>
			Irrigation project assessments and charges.
			<u>None</u>
			Fire insurance to be provided in the amount of _____
			<u>None</u>
			Interest to be adjusted to:
			<u>None</u>
			Rents to be adjusted to:
			<u>None</u>
			Annual service fee
			<u>None</u>
			IF PERSONAL PROPERTY is to be transferred as a part of this transaction, a Bill of Sale will be handed to Escrow Agent for delivery to Buyer.
			<u>None</u>
			Escrow Agent is to assume no liability as to the sufficiency of said Bill of Sale or as to said personal property.

The following documents to be deposited into escrow by the Lessor:

1. Deeds from assignees of lessors ( approx. 8)
2. Deed from Mary Twenstrup to Norman Twenstrup
3. Assignment of interest from J. E. R. WOOD to McKinney Mines, Inc.
- \* 4. Assignment from McKinney Mines, Inc., to lessors ( If Assignment from McKinney Mines Inc. then no longer one of lessors)
5. Instrument terminating agreement dated May 25, 1962 (McKinney Mines Inc., to Sullivan, Woolsey & Twenstrup)
6. Exhibit "B" to Mining Lease.

It is further agreed that escrow will close within 30 days after date last instrument is deposited into escrow, but in no event later than July 21, 1963. In the event instruments as provided are not deposited then the escrow shall be terminated without any expenses involved therein to be borne by Mineral Exploration Company and the mining lease assignment of prospecting permits and funds deposited to be returned to Mineral Exploration Company. Any instruments deposited by lessor to be returned to them.

As an additional condition toward closing, lessee shall satisfy himself that conditions of title is good and shall instruct Escrow Agent in writing that said condition has been met, authorizing Escrow Agent to record instruments on deposit and disburse funds held.

If escrow terminates by cancellation, signatures pages on mining lease and assignment of prospecting permit shall be destroyed before returning to Mineral Exploration Company.

Completion of Paragraph 22 on Mining lease to be furnished by letter of instructions to follow by lessor.

Escrow Agent is hereby relieved of any and liability and/or responsibility regarding legality or sufficiency of any instruments deposited herein.

It is understood by and between the parties herein that there will be no policy of title insurance issued. It is understood however that Lessee may require a search of the records in Pinal County and that any report issued in connection with said search will be on the basis of a limited liability not exceeding the amount of fees paid for said search.

*Norman Twenstrup*  
*Florence Sullivan*  
*John A. Sullivan*  
*James A. Woolsey*  
*Agnes Woolsey*

McKinney Mines Inc., a Nevada corp.

By: \_\_\_\_\_

MINERALS EXPLORATION COMPANY  
 By: *Herbert Harry*

*Union Oil Co.*  
*HU 2-7600 (L.A.)*  
*GEORGE HALL - HERB HARRY*

EXHIBIT A

Those certain unpatented mining claims located in the Blackwater Mining District, Pinal County, Arizona, the location notices of which are of record in the Office of the County Recorder of Pinal County, Arizona.

(205 Total Listed)

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Joy No. 1	March 30, 1962	319	586
Joy No. 2	March 30, 1962	319	587
Joy No. 3	March 30, 1962	319	588
Joy No. 4	March 30, 1962	319	589
Joy No. 5	March 30, 1962	319	590
Joy No. 6	March 30, 1962	319	591
Joy No. 7	March 30, 1962	319	592
Joy No. 8	March 30, 1962	319	593
Orbit No. 1	March 30, 1962	319	594
Orbit No. 2	March 30, 1962	319	595
Orbit No. 3	March 30, 1962	319	596
Orbit No. 4	July 16, 1962	329	88
It No. 1	March 14, 1962	318	407
It No. 2	March 14, 1962	318	408
It No. 3	March 14, 1962	318	409
It No. 4	March 14, 1962	318	410
It No. 5	March 14, 1962	318	411
It No. 6	March 14, 1962	318	412
It No. 7	March 14, 1962	318	413
It No. 8	March 14, 1962	318	414
Agnes No. 1	July 16, 1962	329	89
Agnes No. 1-A	January 7, 1963	340	598
Agnes No. 2	July 16, 1962	329	90
Agnes No. 2-A	January 7, 1963	340	599
Agnes No. 3	July 16, 1962	329	91
Agnes No. 4	July 16, 1962	329	92
Agnes No. 5	July 16, 1962	329	93
Agnes No. 6	July 16, 1962	329	94
Agnes No. 7	July 16, 1962	329	95
Agnes No. 8	July 16, 1962	329	96
Agnes No. 9	July 16, 1962	329	97
Agnes No. 10	July 16, 1962	329	98
Agnes No. 11	July 16, 1962	329	99
Agnes No. 12	July 16, 1962	329	100
Agnes No. 13	July 16, 1962	329	101
Agnes No. 14	July 16, 1962	329	102
Agnes No. 15	July 16, 1962	329	103
Agnes No. 16	July 16, 1962	329	104
Agnes No. 17	July 16, 1962	329	105
Agnes No. 18	July 16, 1962	329	106
Agnes No. 19	July 16, 1962	329	107
Agnes No. 20	July 16, 1962	329	108
Agnes No. 21	July 16, 1962	329	109

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8

4

8

23

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<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Agnes No. 22	July 16, 1962	329	110
Agnes No. 23	July 16, 1962	329	111
Agnes No. 24	July 16, 1962	329	112
Agnes No. 25	July 16, 1962	329	113
Agnes No. 26	July 16, 1962	329	114
Agnes No. 27	July 16, 1962	329	115
Agnes No. 28	July 16, 1962	329	116
Agnes No. 29	July 16, 1962	329	117
Agnes No. 30	July 16, 1962	329	118
Agnes No. 31	July 16, 1962	329	119
Agnes No. 32	July 16, 1962	329	120
Agnes No. 33	July 16, 1962	329	121
Agnes No. 34	July 16, 1962	329	122
Agnes No. 35	July 16, 1962	329	123
Agnes No. 36	July 16, 1962	329	124
Winnie No. 1	July 16, 1962	329	67
Winnie No. 2	July 16, 1962	329	68
Winnie No. 3	July 16, 1962	329	69
Winnie No. 4	July 16, 1962	329	70
Winnie No. 5	July 16, 1962	329	71
Winnie No. 6	July 16, 1962	329	72
Winnie No. 7	July 16, 1962	329	73
Winnie No. 8	July 16, 1962	329	74
Winnie No. 9	July 16, 1962	329	75
Winnie No. 10	July 16, 1962	329	76
Winnie No. 11	July 16, 1962	329	77
Winnie No. 12	April 4, 1962	320	293
Winnie No. 13	July 16, 1962	329	78
Winnie No. 14	April 4, 1962	320	295
Winnie No. 15	July 16, 1962	329	79
Winnie No. 16	April 4, 1962	320	297
Winnie No. 17	April 4, 1962	320	298
Winnie No. 18	July 16, 1962	329	80
Winnie No. 19	July 16, 1962	329	81
Winnie No. 20	July 16, 1962	329	82
J.N.J. #1	July 16, 1962	329	83
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(205 - Total listed)

ASSIGNMENT OF PROSPECTING PERMITS

KNOW ALL MEN BY THESE PRESENTS:

THAT the undersigned, as Assignors, for and in consideration of Ten Dollars (\$10.00) to them in hand paid, receipt and adequacy of which are hereby acknowledged, do hereby assign, transfer and convey to MINERALS EXPLORATION COMPANY, a California corporation, as Assignee, (a wholly owned subsidiary of Union Oil Company of California) all of the right, title and interest of Assignors under and pursuant to those certain Prospecting Permits described as follows:

1. P.P. No. 565, dated December 26, 1962, covering NW 1/4 NE 1/4 NW 1/4 Section 32, Township 5 South, Range 5 East, Pinal County, Arizona.
2. P.O. No. \_\_\_\_\_ dated \_\_\_\_\_ covering S 1/2 Section 32, Township 5 South, Range 6 East, Pinal County, Arizona.

reserving unto Assignors a 1/2 of 1% overriding royalty interest of all minerals mined, sold and removed therefrom, which shall be payable only in money, computed in the same manner, payable at the same time and subject to the same obligations, charges and deductions as the royalty payable to the State of Arizona under leases which may be subsequently acquired pursuant to said permits.

And the parties hereto do hereby agree that:

1. Assignors shall pay the proportion (equal to said royalty) of any and all taxes levied or imposed against the mineral rights in said lands and against the estates created by said prospecting permits or leases acquired pursuant thereto, whether or not separately levied or assessed, and of any and all severance, production, license or other taxes levied or assessed with respect to the operations on said lands by the permittee under said permit or on



minerals mined, sold and removed therefrom. Assignee is hereby authorized to pay all such taxes and to deduct the amount so paid from the royalty payable to Assignors hereunder.

2. Assignee shall give Assignors written notice of Assignee's intention to release or terminate said permits or leases acquired pursuant thereto at least 60 days in advance of the termination date or the next ensuing rental obligation.
3. After ten (10) years and before twenty-one (21) years from the date of this agreement said 1/2 of 1% overriding royalty herein reserved by Assignors may be terminated by Assignee paying to Assignors \$500.00 per acre of land then held under said leases acquired pursuant to said permits and Assignors hereby agree to execute whatever documents are necessary to terminate said overriding royalty.
4. Assignee may at any time, or from time to time, without the consent of Assignors, modify, surrender, assign or otherwise change said permits or leases subsequently acquired, in whole or in part, provided that should said permits or leases be modified or assigned or otherwise changed they shall remain subject to the terms hereof and the overriding royalty hereby reserved. If said permits or leases shall be surrendered the overriding royalty hereby reserved shall ipso facto terminate. The conducting of operations on said land under and pursuant to said permits or leases shall be wholly within the sole discretion of Assignee, and Assignors shall have no right to enter upon or into said land or develop the same for minerals.

5. By acceptance hereof Assignee assumes and agrees to be bound by and perform all the terms and obligations of said permits or leases and agrees to indemnify Assignors against and hold them harmless from any and all loss or damage or claims or demands for loss or damage or cost or expense arising out of Assignee's failure so to perform from and after the date hereof and Assignors agree to indemnify and hold Assignee harmless from all such claims or demands arising out of Assignors' failure so to perform prior to the date hereof.
6. Assignors hereby warrant and represent that the interest hereby conveyed is free and clear of all liens, charges or encumbrances created or suffered by them, that no default now exists under said permits and that the same are in good standing.

IN WITNESS WHEREOF, the parties hereto have executed these presents this 10<sup>th</sup> day of May, 1963.

NORMAN TWENSTRAUP and JAMES L. SULLIVAN, a Partnership

By \_\_\_\_\_

By \_\_\_\_\_

ASSIGNORS

MINERALS EXPLORATION COMPANY

By Qualey Tower  
Title: President

Attest:

By Stearns  
Assistant Secretary

STATE OF California )  
COUNTY OF Los Angeles ) SS.

On this 10th day of May, 1963, before me,  
Audrey A. Burke, a Notary Public in and for  
said County and State, personally appeared Dudley Tower,  
known to me to be the \_\_\_\_\_ President, and E. W. Cairns,  
known to me to be the Asst. Secretary of \_\_\_\_\_  
Minerals Exploration Company, the corporation that  
executed the within instrument, known to me to be the persons who  
executed the within instrument, on behalf of the corporation here-  
in named, and acknowledged to me that such corporation executed  
the within instrument pursuant to its by-laws or a resolution of  
its board of directors.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed  
my official seal the day and year in this certificate first above  
written.

Audrey A. Burke  
Notary Public in and for said  
County and State

AUDREY A. BURKE

My Commission Expires:

NOTARY PUBLIC

For the County of Los Angeles, and State of California

My Commission Expires September 19, 1966

MINING LEASE

THIS MINING LEASE, made as of this 10<sup>th</sup> day of May, 1953, between the undersigned, hereinafter called "Lessor", and MINERALS EXPLORATION COMPANY, a California corporation, hereinafter called "Lessee" (a wholly owned subsidiary of Union Oil Company of California);

W I T N E S S E T H :

WHEREAS, Lessee wishes to acquire from Lessor and Lessor wishes to lease to Lessee the Mineral Property (hereinafter defined) on the terms and conditions hereinafter set forth; and

WHEREAS, Lessee also wishes to acquire from Lessor and Lessor wishes to grant to Lessee an option to purchase said Mineral Property on the terms and conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) paid by Lessee to Lessor (the receipt of which is hereby acknowledged) and in consideration of the mutual covenants contained herein, Lessor hereby leases the Mineral Property (hereinafter defined) to Lessee and Lessor hereby grants to Lessee the option to acquire from Lessor by purchase said Mineral Property, on the following terms and conditions:

1. Mineral Property - The term "Mineral Property" shall mean and include all of those certain unpatented mining claims situated in Blackwater Mining District, Pinal County, Arizona, more particularly described in Exhibit A attached hereto and incorporated by reference herein, together with:
  - (1) All and singular the mines, minerals, lodes and veins within the lines of said claims and the dips, spurs and angles, and all rights, privileges and appurtenances therein in any wise belonging, including extra-

lateral rights, easements, rights of way, water and water rights pertaining to or connected with any of said mining claims; and which rights Lessor now has, or at any time during the term of this lease, may acquire; and

(11) The exclusive use of all camp sites or other property usable for any other purpose in connection with such claims, and also the exclusive use of any buildings, machinery and equipment located on such claims, camp sites or other property, and which rights Lessor now has, or at any time during the term of this lease, may acquire.

2. Locations and Title. Lessor represents that they have used their best efforts to properly locate and keep valid the mining claims set forth on Exhibit A. Lessor makes no representation in the nature of a warranty of title to or of validity of said claims. Lessor represents that they have not heretofore transferred any of the Mineral Property or any interest therein to the detriment of Lessee and warrants that there are no mortgages or liens as of the date of the execution of this lease upon the Mineral Property.

It is understood that the Lessee shall acquire from Lessor no greater rights than Lessor's present or after-acquired interest in and to the Mineral Property, and that the terms of this lease will not require Lessor to secure a greater interest in and to the Mineral Property.

In the event Lessee obtains any information disclosing a defect in Lessor's interest in the Mineral Property Lessee shall advise Lessor of said information. Lessee shall have the right, but shall in no way be obligated, to take such action as may be necessary to quiet or otherwise establish, protect or defend the right, title or interest of Lessor in the Mineral Property. Lessee shall also have the right, but shall in no way be obligated, to make locations, amended locations or relocations as it determines to be reasonably

appropriate to the establishment or protection of any of the claims set forth on Exhibit A. This right extends to any open fractions or fractional claims within the perimeter of the claims set forth on Exhibit A. Lessee shall not be responsible to Lessor for the validity of such locations, amended locations or relocations. such locations, amended locations, or relocations within the red line shown on Exhibit B shall be for the benefit and protection of Lessor but subject to all of the rights of Lessee under this lease. One half the cost (including reasonable attorney's fees of counsel selected by Lessee) of all proceedings which Lessee determines to be reasonably necessary to quiet or otherwise establish, protect and defend the right, title or interest of Lessor shall be credited against any sums due or which may thereafter become due under this lease from Lessee to Lessor.

3. Policy of Title Insurance. Lessee may within six (6) months of the execution of this instrument obtain a preliminary title report, take the necessary steps to cure any defects therein, including the filing of applications for State Mining Leases, and secure a leasehold policy of title insurance. In the event it becomes necessary to cure any defects in the title to said mineral property Lessee may charge one-half of the cost of the preliminary title report, title insurance, and attorneys' fees to accomplish the above as a credit against any sums due, or which may thereafter become due, under this lease from Lessee to Lessor.

4. Term of Lease. Unless sooner terminated as hereinafter provided, the term of this lease and option shall be for a term of "ten (10) years" from the date hereof and so long thereafter as ores, minerals, materials, concentrates or precipitates are mined or marketed in commercial quantities subject to termination by Lessee as hereafter provided in paragraph 12.

5. Option. Said option to purchase may be exercised at any time during the term hereof, but in any event no later than May 8, 1984, by Lessee furnishing to Lessor notice in writing of Lessee's desire to acquire all or any part of said Mineral Property being not less than 400 acres thereof, accompanying said notice with a grant deed from Lessor

to Lessee of said Mineral Property in its entirety or that portion so desired to be purchased. Lessor agrees to execute, acknowledge and return said grant deed to Lessee promptly upon receipt thereof, whereupon Lessee shall immediately forward to Lessor a check in the amount of \$500.00 per acre of said Mineral Property so purchased. No claim so purchased shall be divided but shall be purchased in its entirety.

6. Possession and Right to Work. From and after the date hereof and thereafter during the term of this lease, Lessee shall, to the extent permitted by law, have the sole and exclusive possession of the Mineral Property, and shall have the sole and exclusive right to explore, develop, mine and work the Mineral Property for the purposes of prospecting for, mining and producing ores, minerals, materials, concentrates, or precipitates of all kinds. Hereinafter in this lease, the term "minerals" shall be used to refer to ores, minerals, materials, concentrates or precipitates of all kinds.

All work done on the Mineral Property shall be done in a prudent and miner-like manner; however, all such work shall be under the exclusive control of, and in accordance with the exercise of the discretion and judgment of the management of Lessee as to the time, place, method and manner of operation. To the extent permitted by law, Lessee shall have the right to use open pit or any other legitimate mining methods and may mine the minerals and use the surface of the Mineral Property, subject to the provisions of Section 2, Paragraph 2 of this lease, for milling, processing, storing and removing of minerals and for the storage of waste materials. Upon the removal of any minerals, title thereto shall vest in Lessee. Any minerals so removed shall remain subject to the terms of this Lease.

7. Commingling. Lessee shall have the right to process or treat any minerals produced from the Mineral Property at any mill or processing plant owned or operated by Lessee and located on the Mineral Property or elsewhere. Lessee shall also have the right to commingle or mix any minerals produced from the Mineral Property with

minerals produced from any other property. Minerals shall not be so commingled until after proper weighing and sampling according to recognized engineering practices, so that the correct "Net Smelter Returns" or "Net Sales" price may be calculated for the minerals produced from the Mineral Property.

8. ROYALTIES. In the event Lessee mines and markets minerals from the Mineral Property, Lessee shall pay over to Owners a royalty, which shall be in the amount of five per cent (5%) of the Net Smelter Returns, or Net Sales (where shipped to points other than smelters or other reduction works) on all minerals mined and shipped from the Mineral Property. After ten (10) years <sup>of actual mineral production</sup> from the date of ~~this~~ <sup>FIRST</sup> ~~agreement~~ <sup>PRODUCTION</sup> said 5% royalty shall terminate in the event Lessee elects to exercise said option to purchase provided in paragraph 5 of this agreement. By "Net Smelter Returns" is meant total returns from the smelter or other reduction works, LESS all charges by the smelter or other reduction works, including, but not limited to, smelting or other reduction charges, refining charges, selling charges and charges for railroad or other transportation from the point of loading in railroad cars, to the smelter or other reduction works (but excluding any charges for hauling to or loading into railroad cars). If minerals are processed in a smelter or other reduction works owned or operated by Lessee, then in determining Net Smelter returns, Lessee shall make customary deductions for smelting or other reduction charges, refining charges and selling charges. By "Net Sales" is meant the net price received by Lessee for a sale, LESS all selling charges and railroad transportation charges from the point of rail loading to the point of sale (but excluding any charges for hauling to the point of loading.) Lessee shall not charge the cost of building a smelter or other reduction works against Lessors share of royalty. Payment of such royalty shall be made monthly on or before the twentieth (20th) day of each calendar month, based on minerals shipped during the preceding calendar month, and each such payment shall be accompanied by a complete copy of settlement schedules or other liquidation sales accounting from the smelter or reduction works. The term, reduction works, as used herein shall mean any works used in lieu of a smelter in which



concentrated, upgraded or beneficiated minerals are refined.

The term, railroad transportation, as used herein, includes any direct (without transshipment) means of transport (truck or otherwise) from the mill to the smelter or other reduction works.

"Net Smelter Returns" or "Net Sales" shall be increased by, except where prohibited by law or governmental regulations, all additional payments, premiums or bonuses of every kind or character from whomsoever received which Lessee may receive as a result of operating or holding the Mineral Property.

Notwithstanding the earned royalty provision above set forth, Lessee shall pay to Lessor service charge payments at the rate of One Thousand Two Hundred Fifty Dollars (\$1250.00) per month commencing on the execution of this lease and continuing thereafter for each and every month during the first 12 months of the term of this lease. Commencing on the 13th month of the term of this lease and continuing thereafter for each and every month during the term of this lease, Lessee shall pay to Lessor minimum royalty payments at the rate of \$1250.00 per month; provided, however, that Lessee shall be required to pay such minimum royalty payment for any calendar month only to the extent that earned royalties accruing to Lessees shall be less than the minimum royalty attributable to such calendar month. Such service charge payments and minimum royalty payments shall be payable monthly on or before the 20th day of the next succeeding calendar month. Lessee shall have credit for all amounts paid to Lessor as minimum royalty hereunder, and all such amounts shall be recovered by Lessee as hereinafter set forth. Whenever and so long as any such credit shall remain unrecovered by Lessee, Lessee shall have the right during any calendar month or months to retain 50% of all earned royalties accruing to Owners hereunder in excess of the minimum royalty payment applicable to said month or months

and to apply said retained sums to the liquidation of such credit.

~~(In respect to recovery of credits under Paragraphs 2, 3 and 16 hereof, Lessee may deduct from the five per cent (5%) royalty prior to any payment to Lessor any such out-of-pocket expenses over the minimum royalty.)~~

9. Records. Lessee shall keep an accurate record of the out-put from the Mineral Property and furnish Lessor with monthly reports thereof at the time the royalty payments are to be made, or if there shall be no out-put, Lessor shall be so advised by the 15th day of each succeeding month. Copies of all settlement schedules, smelter charges, reduction charges, refining charges, selling charges, transportation charges, net smelter returns and tonnages, mined, milled or shipped, will also be made available to Lessor upon request.

10. Data. Upon termination of this Lease Agreement Lessor shall within a reasonable time thereafter receive from Lessee copies of all drill logs, portions of drill cores not used for testing, maps, all other technical data and information and evaluation data and information which Lessee has prepared, had prepared for it, been given, or obtained from its operations on the said Mineral Property.

11. Inspection by Owners. Lessor or their agent authorized in writing shall have the right, at all reasonable times, accompanied by a representative of Lessee, to enter, at the risk of the said Lessor and agents, upon and into the Mineral Property and workings thereon, for the purposes of examination and inspection of the

Mineral Property. Lessor, or their agent authorized in writing, shall have access, at all reasonable times, to the records of production and such other records as will show compliance on the part of Lessee with the provisions of this lease.

12. Termination by Lessee. At any time after the first year of the term of this lease, Lessee may terminate this lease by giving written notice to Lessor not less than thirty (30) days prior to the date of termination specified in said written notice. In the event that such notice of termination shall be given, this lease shall, as to both parties, terminate on the effective date of termination specified in said written notice. However, a termination while in default of this lease or while in arrears to Lessor shall not extinguish Lessor's rights under this lease in respect to such default or arrearage notwithstanding such termination. Upon the effective date of termination, Lessee shall deliver to Lessor a quitclaim mining deed of all the Mineral Property set forth on Exhibit A attached hereto.

13. Taxes. During the continuance of this lease, Lessee shall pay, prior to delinquency, all taxes, if any, that may be levied or imposed upon the Mineral Property or upon machinery, equipment, or improvements subsequently placed upon the Mineral Property by Lessee, provided that, with reference to the Mineral Property, Lessee shall be obligated to pay only a prorata portion of such taxes for the tax years in which this lease commences and terminates, respectively.

14. Liens. Lessee agrees to furnish and pay for all labor, power, tools, materials and all other materials and supplies that may be used by it in the prosecution of work on the Mineral Property. Lessee agrees that it will not permit nor suffer any liens to attach to or against the Mineral Property or any part thereof for work, labor, materials and supplies that may be furnished to or by Lessee during the continuance of the lease hereunder. Lessee shall hold Lessor harmless from any and all damages, claims, costs and expenses arising from or growing out of any or all injuries to persons or property in connection with

Lessee's operations on the said claims during the life of this instrument.

15. Assessment Work. Notwithstanding anything to the contrary contained herein Lessee shall perform at its own expense all assessment work presently due before September 1, 1963 and thereafter such annual assessment work as may be required and not excused by any applicable Moratorium Laws, now or subsequently enacted, on the Mineral Property. If Lessee continues this lease past March 1 of any assessment year then Lessee shall perform the assessment work required to be done before September 1 of such year and continuing thereafter during each succeeding mining assessment year during the life of this lease. If, however, Lessee terminates this lease prior to March 1st of any assessment year, then Lessee shall have no obligation to perform assessment work for that particular assessment year. Lessee shall, when doing assessment work, prepare and record appropriate affidavits of assessment work and shall furnish copies thereof to the agent of Owners. Further, any work done by Lessee in the year of withdrawal shall be accounted for and substantiated by affidavit and may be used by Lessor in computing the assessment work required for said year.

16. Buildings, Machinery and Equipment. Lessee at its own expense shall have the right (subject to Section 2, Paragraph 2 above) to erect or install upon the Mineral Property such structures, machinery, equipment and other property as, in the opinion of the management of Lessee, may be necessary, desirable or appropriate in connection with its use and occupancy of the Mineral Property or any adjacent or nearby property. Lessee shall have the right to remove from the Mineral Property at any time during the continuance of this lease, or within ninety (90) days after the expiration or sooner termination thereof, any and all structures, machinery, equipment and other property that it may have installed, erected or placed thereon, if any.

17. Water Wells. Lessee may (subject to Section 2, Paragraph 2 above) at its own expense, drill, equip, and take water

from water wells on the Mineral Property and agrees that all wells will be left intact at the termination of this lease by expiration of its term or otherwise. Lessee shall have the right to remove all mechanical pumping equipment installed by it at any well.

18. Patent Proceedings. During the term of this lease, Lessee may initiate and prosecute in the name of Lessor, proceedings to patent any of the mining claims comprising the Mineral Property, and Lessor shall, at Lessee's request, execute any and all documents required in connection with such proceedings. If, during the term of this lease, a patent is issued to Lessor with respect to any of the mining claims comprising the Mineral Property, Lessor's title thereto shall remain subject to all the rights of Lessee under this lease.

19. Rights of Shut-Down. If at any time or times Lessee, after commencing production, wants to shut-down for any reason it shall have the right to do so.

20. Default. Should Lessee fail in any respect to comply fully with the terms and provisions of this instrument, Lessor may notify Lessee in writing of the matters in regard to which default is asserted, and if Lessee does not then (a) cure such default within sixty (60) days after the giving of such notice, or (b) commence within thirty (30) days to rectify such default and continue thereafter with due diligence to rectify such default and cure such default within ninety (90) days from the date of the notice, Lessor may terminate the lease at any time thereafter during the continuance of such default by giving written notice to Lessee of such election to terminate.

21. Force Majeure. If Lessee is delayed or interrupted in or prevented from performing its obligations, as herein provided,

by Acts of God, wars, fires, floods, strikes or labor troubles, insurrection or mob violence, inability to obtain labor or supplies, injunction, regulations, orders or requirements of Government or other disabling cause beyond its reasonable control, or if prevailing levels of costs in relation to prevailing levels of prices make it economically impractical to operate the Mineral Property, then and in all such cases Lessee shall be excused, without liability, from performance of its obligations hereunder during the period of each such delay, prevention, disability or condition, but all of the provisions hereof shall again come into full force and effect upon the termination of the period of delay, prevention, disability or condition, and the term of the lease hereunder shall be extended for a period equal to the total number of days during which performance shall have been excused.

If Lessee claims the rights under this paragraph it shall nevertheless make the minimum royalty payments but may recover such payments by credit as set forth in the next to last paragraph of Section 7 of this lease.

22. Payments to Owners. All royalty and other payments required to be made by Lessee to Lessor shall be ~~in the percentages hereinafter set forth:~~

*attorney*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Said payments may be paid in currency or by draft or Lessee's check, at the option of the Lessee, and said payments may be made either to Lessor at the addresses set forth above or to a depository, for the credit of Lessor, which depository and its successors shall continue

as depository for said royalties and other payments, regardless of changes in the ownership of the Mineral Property. Upon making any payment to the designated depository, Lessee shall be relieved of any responsibility for the distribution of such payment to the respective owners.

23. Notices. Any notice or communication required or permitted hereunder shall be effective when personally delivered, or shall be effective when addressed:

If to Lessee:

451 S. Boylston  
Rm 17,

If to Lessor:

22 32 E 17<sup>th</sup> St  
— Tucson, Ariz

and deposited, postage prepaid and registered, in the United States mail. Either party may, by notice to the other given as aforesaid change its mailing address for future notices hereunder.

23. Binding on Successors and Assigns. This lease shall inure to the benefit of and be binding upon the parties hereto, their heirs, executors, administrators, successors and assigns. Both Lessee and Lessor may during the life of this lease when not in default convey, transfer, assign, encumber, mortgage, or hypothecate their respective rights and duties in this lease. Notice of any change or encumbrance of interest shall be given to the other party within 30 days thereafter.

24. Interpretation. All matters pertaining to the validity, interpretation and performance and enforcement of this agreement shall be controlled by the laws of the State in which this land lies.

IN WITNESS WHEREOF, the parties hereto have executed

this instrument and have caused this instrument to be executed the day and year hereinabove first written.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LESSOR

MINERALS EXPLORATION COMPANY

By Dudley Tower  
President

Attest: H. H. Harns  
Assistant Secretary

LESSEE



EXHIBIT A

These certain unpatented mining claims located in the Blackwater Mining District, Pinal County, Arizona, the location notices of which are of record in the Office of the County Recorder of Pinal County, Arizona.

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Winnie No. 19	July 16, 1962	329	81
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STATE OF CALIFORNIA )  
COUNTY OF LOS ANGELES ) SS.

On this 10th day of May, 1963, before me,  
Audrey A. Burke, a Notary Public in and for  
said County and State, personally appeared Dudley Tower,  
known to me to be the        President, and E. N. Coimo,  
known to me to be the Asst. Secretary of         
Minerals Exploration Company, the corporation that  
executed the within instrument, known to me to be the persons who  
executed the within instrument, on behalf of the corporation here-  
in named, and acknowledged to me that such corporation executed  
the within instrument pursuant to its by-laws or a resolution of  
its board of directors.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed  
my official seal the day and year in this certificate first above  
written.

Audrey A. Burke  
Notary Public in and for said  
County and State  
AUDREY A. BURKE  
My Commission Expires:  
NOTARY PUBLIC  
For the County of Los Angeles, and State of California  
My Commission Expires September 19, 1966



MINING LEASE

THIS MINING LEASE, made as of this 16<sup>th</sup> day of May, 1963, between the undersigned, hereinafter called "Lessor", and MINERALS EXPLORATION COMPANY, a California corporation, hereinafter called "Lessee" (a wholly owned subsidiary of Union Oil Company of California);

W I T N E S S E T H :

WHEREAS, Lessee wishes to acquire from Lessor and Lessor wishes to lease to Lessee the Mineral Property (hereinafter defined) on the terms and conditions hereinafter set forth; and

WHEREAS, Lessee also wishes to acquire from Lessor and Lessor wishes to grant to Lessee an option to purchase said Mineral Property on the terms and conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) paid by Lessee to Lessor (the receipt of which is hereby acknowledged) and in consideration of the mutual covenants contained herein, Lessor hereby leases the Mineral Property (hereinafter defined) to Lessee and Lessor hereby grants to Lessee the option to acquire from Lessor by purchase said Mineral Property, on the following terms and conditions:

1. Mineral Property - The term "Mineral Property" shall mean and include all of those certain unpatented mining claims situated in Blackwater Mining District, Pinal County, Arizona, more particularly described in Exhibit A attached hereto and incorporated by reference herein, together with:

(i) All and singular the mines, minerals, lodes and veins within the lines of said claims and the dips, spurs and angles, and all rights, privileges and appurtenances therein in any wise belonging, including extra-

lateral rights, easements, rights of way, water and water rights pertaining to or connected with any of said mining claims; and which rights Lessor now has, or at any time during the term of this lease, may acquire; and

(ii) The exclusive use of all camp sites or other property usable for any other purpose in connection with such claims, and also the exclusive use of any buildings, machinery and equipment located on such claims, camp sites or other property, and which rights Lessor now has, or at any time during the term of this lease, may acquire.

2. Locations and Title. Lessor represents that they have used their best efforts to properly locate and keep valid the mining claims set forth on Exhibit A. Lessor makes no representation in the nature of a warranty of title to or of validity of said claims. Lessor represents that they have not heretofore transferred any of the Mineral Property or any interest therein to the detriment of Lessee and warrants that there are no mortgages or liens as of the date of the execution of this lease upon the Mineral Property.

It is understood that the Lessee shall acquire from Lessor no greater rights than Lessor's present or after-acquired interest in and to the Mineral Property, and that the terms of this lease will not require Lessor to secure a greater interest in and to the Mineral Property.

In the event Lessee obtains any information disclosing a defect in Lessor's interest in the Mineral Property Lessee shall advise Lessor of said information. Lessee shall have the right, but shall in no way be obligated, to take such action as may be necessary to quiet or otherwise establish, protect or defend the right, title or interest of Lessor in the Mineral Property. Lessee shall also have the right, but shall in no way be obligated, to make locations, amended locations or relocations as it determines to be reasonably

appropriate to the establishment or protection of any of the claims set forth on Exhibit A. This right extends to any open fractions or fractional claims within the perimeter of the claims set forth on Exhibit A. Lessee shall not be responsible to Lessor for the validity of such locations, amended locations or relocations. such locations, amended locations, or relocations within the red line shown on Exhibit B shall be for the benefit and protection of Lessor but subject to all of the rights of Lessee under this lease. One half the cost (including reasonable attorney's fees of counsel selected by Lessee) of all proceedings which Lessee determines to be reasonably necessary to quiet or otherwise establish, protect and defend the right, title or interest of Lessor shall be credited against any sums due or which may thereafter become due under this lease from Lessee to Lessor.

3. Policy of Title Insurance. Lessee may within six (6) months of the execution of this instrument obtain a preliminary title report, take the necessary steps to cure any defects therein, including the filing of applications for State Mining Leases, and secure a leasehold policy of title insurance. In the event it becomes necessary to cure any defects in the title to said mineral property Lessee may charge one-half of the cost of the preliminary title report, title insurance, and attorneys' fees to accomplish the above as a credit against any sums due, or which may thereafter become due, under this lease from Lessee to Lessor.

4. Term of Lease. Unless sooner terminated as hereinafter provided, the term of this lease and option shall be for a term of "ten (10) years" from the date hereof and so long thereafter as ores, minerals, materials, concentrates or precipitates are mined or marketed in commercial quantities subject to termination by Lessee as hereafter provided in paragraph 12.

5. Option. Said option to purchase may be exercised at any time during the term hereof, but in any event no later than May 8, 1984, by Lessee furnishing to Lessor notice in writing of Lessee's desire to acquire all or any part of said Mineral Property being not less than 400 acres thereof, accompanying said notice with a grant deed from Lessor



to Lessee of said Mineral Property in its entirety or that portion so desired to be purchased. Lessor agrees to execute, acknowledge and return said grant deed to Lessee promptly upon receipt thereof, whereupon Lessee shall immediately forward to Lessor a check in the amount of \$500.00 per acre of said Mineral Property so purchased. No claim so purchased shall be divided but shall be purchased in its entirety.

6. Possession and Right to Work. From and after the date hereof and thereafter during the term of this lease, Lessee shall, to the extent permitted by law, have the sole and exclusive possession of the Mineral Property, and shall have the sole and exclusive right to explore, develop, mine and work the Mineral Property for the purposes of prospecting for, mining and producing ores, minerals, materials, concentrates, or precipitates of all kinds. Hereinafter in this lease, the term "minerals" shall be used to refer to ores, minerals, materials, concentrates or precipitates of all kinds.

All work done on the Mineral Property shall be done in a prudent and miner-like manner; however, all such work shall be under the exclusive control of, and in accordance with the exercise of the discretion and judgment of the management of Lessee as to the time, place, method and manner of operation. To the extent permitted by law, Lessee shall have the right to use open pit or any other legitimate mining methods and may mine the minerals and use the surface of the Mineral Property, subject to the provisions of Section 2, Paragraph 2 of this lease, for milling, processing, storing and removing of minerals and for the storage of waste materials. Upon the removal of any minerals, title thereto shall vest in Lessee. Any minerals so removed shall remain subject to the terms of this Lease.

7. Commingling. Lessee shall have the right to process or treat any minerals produced from the Mineral Property at any mill or processing plant owned or operated by Lessee and located on the Mineral Property or elsewhere. Lessee shall also have the right to commingle or mix any minerals produced from the Mineral Property with

minerals produced from any other property. Minerals shall not be so commingled until after proper weighing and sampling according to recognized engineering practices, so that the correct "Net Smelter Returns" or "Net Sales" price may be calculated for the minerals produced from the Mineral Property.

8. ROYALTIES. In the event Lessee mines and markets minerals from the Mineral Property, Lessee shall pay over to Owners a royalty, which shall be in the amount of five per cent (5%) of the Net Smelter Returns, or Net Sales (where shipped to points other than smelters or other reduction works) on all minerals mined and shipped from the Mineral Property. After ten (10) years <sup>of actual mineral production</sup> from the date of <sup>FIRST</sup> this ~~agreement~~ <sup>agreement</sup> said 5% royalty shall terminate in the event Lessee elects to exercise said option to purchase provided in paragraph 5 of this agreement. By "Net Smelter Returns" is meant total returns from the smelter or other reduction works, LESS all charges by the smelter or other reduction works, including, but not limited to, smelting or other reduction charges, refining charges, selling charges and charges for railroad or other transportation from the point of loading in railroad cars, to the smelter or other reduction works (but excluding any charges for hauling to or loading into railroad cars). If minerals are processed in a smelter or other reduction works owned or operated by Lessee, then in determining Net Smelter returns, Lessee shall make customary deductions for smelting or other reduction charges, refining charges and selling charges. By "Net Sales" is meant the net price received by Lessee for a sale, LESS all selling charges and railroad transportation charges from the point of rail loading to the point of sale (but excluding any charges for hauling to the point of loading.) Lessee shall not charge the cost of building a smelter or other reduction works against Lessors share of royalty. Payment of such royalty shall be made monthly on or before the twentieth (20th) day of each calendar month, based on minerals shipped during the preceding calendar month, and each such payment shall be accompanied by a complete copy of settlement schedules or other liquidation sales accounting from the smelter or reduction works. The term, reduction works, as used herein shall mean any works used in lieu of a smelter in which

MINERAL PRODUCTION

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11/1  
2/1  
F. S.  
J. S.  
J. S.  
J. S.  
J. S.

FIRST  
J. S.  
J. S.  
J. S.  
J. S.  
J. S.

concentrated, upgraded or beneficiated minerals are refined.

The term, railroad transportation, as used herein, includes any direct (without transshipment) means of transport (truck or otherwise) from the mill to the smelter or other reduction works.

"Net Smelter Returns" or "Net Sales" shall be increased by, except where prohibited by law or governmental regulations, all additional payments, premiums or bonuses of every kind or character from whomsoever received which Lessee may receive as a result of operating or holding the Mineral Property.

Notwithstanding the earned royalty provision above set forth, Lessee shall pay to Lessor service charge payments at the rate of One Thousand Two Hundred Fifty Dollars (\$1250.00) per month commencing on ~~the execution of this lease~~ <sup>July 19, 1963</sup> and continuing thereafter for each and every month ~~during the first 12 months of the term of this lease.~~ <sup>until July 19, 1964</sup> Commencing on ~~the 13th month of the term of this lease~~ <sup>July 19, 1964</sup> and continuing thereafter for each and every month during the term of this lease, Lessee shall pay to Lessor minimum royalty payments at the rate of \$1250.00 per month; provided, however, that Lessee shall be required to pay such minimum royalty payment for any calendar month only to the extent that earned royalties accruing to Lessees shall be less than the minimum royalty attributable to such calendar month. Such service charge payments and minimum royalty payments shall be payable monthly on or before the 20th day of the next succeeding calendar month. Lessee shall have credit for all amounts paid to Lessor as minimum royalty hereunder, and all such amounts shall be recovered by Lessee as hereinafter set forth. Whenever and so long as any such credit shall remain unrecovered by Lessee, Lessee shall have the right during any calendar month or months to retain 50% of all earned royalties accruing to Owners hereunder in excess of the minimum royalty payment applicable to said month or months

and to apply said retained sums to the liquidation of such credit.

*In respect to recovery of credits under Paragraphs 12, 13 and 14 hereof, Lessee may deduct from the five per cent (5%) royalty payment to Lessor any such out of pocket expenses over the minimum royalty.*

*g Hcc  
J.S.  
S.S.  
15/1*

9. Records. Lessee shall keep an accurate record of the out-put from the Mineral Property and furnish Lessor with monthly reports thereof at the time the royalty payments are to be made, or if there shall be no out-put, Lessor shall be so advised by the 15th day of each succeeding month. Copies of all settlement schedules, smelter charges, reduction charges, refining charges, selling charges, transportation charges, net smelter returns and tonnages, mined, milled or shipped, will also be made available to Lessor upon request.

10. Data. Upon termination of this Lease Agreement Lessor shall within a reasonable time thereafter receive from Lessee copies of all drill logs, portions of drill cores not used for testing, maps, all other technical data and information and evaluation data and information which Lessee has prepared, had prepared for it, been given, or obtained from its operations on the said Mineral Property.

11. Inspection by Owners. Lessor or their agent authorized in writing shall have the right, at all reasonable times, accompanied by a representative of Lessee, to enter, at the risk of the said Lessor and agents, upon and into the Mineral Property and workings thereon, for the purposes of examination and inspection of the

Mineral Property. Lessor, or their agent authorized in writing, shall have access, at all reasonable times, to the records of production and such other records as will show compliance on the part of Lessee with the provisions of this lease.

12. Termination by Lessee. At any time after the first year of the term of this lease, Lessee may terminate this lease by giving written notice to Lessor not less than thirty (30) days prior to the date of termination specified in said written notice. In the event that such notice of termination shall be given, this lease shall, as to both parties, terminate on the effective date of termination specified in said written notice. However, a termination while in default of this lease or while in arrears to Lessor shall not extinguish Lessor's rights under this lease in respect to such default or arrearage notwithstanding such termination. Upon the effective date of termination, Lessee shall deliver to Lessor a quitclaim mining deed of all the Mineral Property set forth on Exhibit A attached hereto.

13. Taxes. During the continuance of this lease, Lessee shall pay, prior to delinquency, all taxes, if any, that may be levied or imposed upon the Mineral Property or upon machinery, equipment, or improvements subsequently placed upon the Mineral Property by Lessee, provided that, with reference to the Mineral Property, Lessee shall be obligated to pay only a prorata portion of such taxes for the tax years in which this lease commences and terminates, respectively.

14. Liens. Lessee agrees to furnish and pay for all labor, power, tools, materials and all other materials and supplies that may be used by it in the prosecution of work on the Mineral Property. Lessee agrees that it will not permit nor suffer any liens to attach to or against the Mineral Property or any part thereof for work, labor, materials and supplies that may be furnished to or by Lessee during the continuance of the lease hereunder. Lessee shall hold Lessor harmless from any and all damages, claims, costs and expenses arising from or growing out of any or all injuries to persons or property in connection with

Lessee's operations on the said claims during the life of this instrument.

15. Assessment Work. Notwithstanding anything to the contrary contained herein Lessee shall perform at its own expense all assessment work presently due before September 1, 1963 and thereafter such annual assessment work as may be required and not excused by any applicable Moratorium Laws, now or subsequently enacted, on the Mineral Property. If Lessee continues this lease past March 1 of any assessment year then Lessee shall perform the assessment work required to be done before September 1 of such year and continuing thereafter during each succeeding mining assessment year during the life of this lease. If, however, Lessee terminates this lease prior to March 1st of any assessment year, then Lessee shall have no obligation to perform assessment work for that particular assessment year. Lessee shall, when doing assessment work, prepare and record appropriate affidavits of assessment work and shall furnish copies thereof to the agent of Owners. Further, any work done by Lessee in the year of withdrawal shall be accounted for and substantiated by affidavit and may be used by Lessor in computing the assessment work required for said year.

16. Buildings, Machinery and Equipment. Lessee at its own expense shall have the right (subject to Section 2, Paragraph 2 above) to erect or install upon the Mineral Property such structures, machinery, equipment and other property as, in the opinion of the management of Lessee, may be necessary, desirable or appropriate in connection with its use and occupancy of the Mineral Property or any adjacent or nearby property. Lessee shall have the right to remove from the Mineral Property at any time during the continuance of this lease, or within ninety (90) days after the expiration or sooner termination thereof, any and all structures, machinery, equipment and other property that it may have installed, erected or placed thereon, if any.

17. Water Wells. Lessee may (subject to Section 2, Paragraph 2 above) at its own expense, drill, equip, and take water

from water wells on the Mineral Property and agrees that all wells will be left intact at the termination of this lease by expiration of its term or otherwise. Lessee shall have the right to remove all mechanical pumping equipment installed by it at any well.

18. Patent Proceedings. During the term of this lease, Lessee may initiate and prosecute in the name of Lessor, proceedings to patent any of the mining claims comprising the Mineral Property, and Lessor shall, at Lessee's request, execute any and all documents required in connection with such proceedings. If, during the term of this lease, a patent is issued to Lessor with respect to any of the mining claims comprising the Mineral Property, Lessor's title thereto shall remain subject to all the rights of Lessee under this lease.

19. Rights of Shut-Down. If at any time or times Lessee, after commencing production, wants to shut-down for any reason it shall have the right to do so.

20. Default. Should Lessee fail in any respect to comply fully with the terms and provisions of this instrument, Lessor may notify Lessee in writing of the matters in regard to which default is asserted, and if Lessee does not then (a) cure such default within sixty (60) days after the giving of such notice, or (b) commence within thirty (30) days to rectify such default and continue thereafter with due diligence to rectify such default and cure such default within ninety (90) days from the date of the notice, Lessor may terminate the lease at any time thereafter during the continuance of such default by giving written notice to Lessee of such election to terminate.

21. Force Majeure. If Lessee is delayed or interrupted in or prevented from performing its obligations, as herein provided,

by Acts of God, wars, fires, floods, strikes or labor troubles, insurrection or mob violence, inability to obtain labor or supplies, injunction, regulations, orders or requirements of Government or other disabling cause beyond its reasonable control, or if prevailing levels of costs in relation to prevailing levels of prices make it economically impractical to operate the Mineral Property, then and in all such cases Lessee shall be excused, without liability, from performance of its obligations hereunder during the period of each such delay, prevention, disability or condition, but all of the provisions hereof shall again come into full force and effect upon the termination of the period of delay, prevention, disability or condition, and the term of the lease hereunder shall be extended for a period equal to the total number of days during which performance shall have been excused.

If Lessee claims the rights under this paragraph it shall nevertheless make the minimum royalty payments but may recover such payments by credit as set forth in the next to last paragraph of Section 7 of this lease.

22. Payments to Owners. All royalty and other payments required to be made by Lessee to Lessor shall be in the percentages hereinafter set forth:

Said payments may be paid in currency or by draft or Lessee's check, at the option of the Lessee, and said payments may be made either to Lessor at the addresses set forth above or to a depository, for the credit of Lessor, which depository and its successors shall continue



as depositary for said royalties and other payments, regardless of changes in the ownership of the Mineral Property. Upon making any payment to the designated depositary, Lessee shall be relieved of any responsibility for the distribution of such payment to the respective owners.

23. Notices. Any notice or communication required or permitted hereunder shall be effective when personally delivered, or shall be effective when addressed:

If to Lessee:

461 S. Boylston  
Los Angeles 17, Calif.

If to Lessor:

~~2232 East 17th Street~~  
Tucson, Arizona

720 N. Cherry or Box 4056

and deposited, postage prepaid and registered, in the United States mail. Either party may, by notice to the other given as aforesaid change its mailing address for future notices hereunder.

23. Binding on Successors and Assigns. This lease shall inure to the benefit of and be binding upon the parties hereto, their heirs, executors, administrators, successors and assigns. Both Lessee and Lessor may during the life of this lease when not in default convey, transfer, assign, encumber, mortgage, or hypothecate their respective rights and duties in this lease. Notice of any change or encumbrance of interest shall be given to the other party within 30 days thereafter.

24. Interpretation. All matters pertaining to the validity, interpretation and performance and enforcement of this agreement shall be controlled by the laws of the State in which this land lies.

IN WITNESS WHEREOF, the parties hereto have executed

this instrument and have caused this instrument to be executed the day and year hereinabove first written.

*Norman Townsend*

*James A. Woolsey*

*James H. Sullivan*

*James H. Sullivan*

*James H. Sullivan*

LESSOR

MINERALS EXPLORATION COMPANY

BY *Sudley Tower*  
President

Attest: *[Signature]*  
Assistant Secretary

LESSEE

STATE OF CALIFORNIA )  
COUNTY OF LOS ANGELES ) SS.

On this 10th day of May, 1963, before me,  
Audrey A. Burke, a Notary Public in and for  
said County and State, personally appeared Dudley Tower,  
known to me to be the President, and E. W. Cairns,  
known to me to be the Asst. Secretary of  
Minerals Exploration Company, the corporation that  
executed the within instrument, known to me to be the persons who  
executed the within instrument, on behalf of the corporation here-  
in named, and acknowledged to me that such corporation executed  
the within instrument pursuant to its by-laws or a resolution of  
its board of directors.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed  
my official seal the day and year in this certificate first above  
written.

Audrey A. Burke  
Notary Public in and for said  
County and State  
AUDREY A. BURKE  
My Commission Expires:  
NOTARY PUBLIC  
For the County of Los Angeles, and State of California  
My Commission Expires September 19, 1966

EXHIBIT A

Those certain unpatented mining claims located in the Blackwater Mining District, Pinal County, Arizona, the location notices of which are of record in the Office of the County Recorder of Pinal County, Arizona.

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Joy No. 1	March 30, 1962	319	586 ✓
Joy No. 2	March 30, 1962	319	587 ✓
Joy No. 3	March 30, 1962	319	588 ✓
Joy No. 4	March 30, 1962	319	589 ✓
Joy No. 5	March 30, 1962	319	590 ✓
Joy No. 6	March 30, 1962	319	591 ✓
Joy No. 7	March 30, 1962	319	592 ✓
Joy No. 8	March 30, 1962	319	593 ✓
Orbit No. 1	March 30, 1962	319	594 ✓
Orbit No. 2	March 30, 1962	319	595 ✓
Orbit No. 3	March 30, 1962	319	596 ✓
Orbit No. 4	July 16, 1962	329	88 ✓
It No. 1	March 14, 1962	318	407 ✓
It No. 2	March 14, 1962	318	408 ✓
It No. 3	March 14, 1962	318	409 ✓
It No. 4	March 14, 1962	318	410 ✓
It No. 5	March 14, 1962	318	411 ✓
It No. 6	March 14, 1962	318	412 ✓
It No. 7	March 14, 1962	318	413 ✓
It No. 8	March 14, 1962	318	414 ✓
Agnes No. 1	July 16, 1962	329	89 ✓
Agnes No. 1-A	January 7, 1963	340	598 ✓
Agnes No. 2	July 16, 1962	329	90 ✓
Agnes No. 2-A	January 7, 1963	340	599 ✓
Agnes No. 3	July 16, 1962	329	91 ✓
Agnes No. 4	July 16, 1962	329	92 ✓
Agnes No. 5	July 16, 1962	329	93 ✓
Agnes No. 6	July 16, 1962	329	94 ✓
Agnes No. 7	July 16, 1962	329	95 ✓
Agnes No. 8	July 16, 1962	329	96 ✓
Agnes No. 9	July 16, 1962	329	97 ✓
Agnes No. 10	July 16, 1962	329	98 ✓
Agnes No. 11	July 16, 1962	329	99 ✓
Agnes No. 12	July 16, 1962	329	100 ✓
Agnes No. 13	July 16, 1962	329	101 ✓
Agnes No. 14	July 16, 1962	329	102 ✓
Agnes No. 15	July 16, 1962	329	103 ✓
Agnes No. 16	July 16, 1962	329	104 ✓
Agnes No. 17	July 16, 1962	329	105 ✓
Agnes No. 18	July 16, 1962	329	106 ✓
Agnes No. 19	July 16, 1962	329	107 ✓
Agnes No. 20	July 16, 1962	329	108 ✓
Agnes No. 21	July 16, 1962	329	109 ✓

8

4

8

*1st Assessment  
7-1963-1964*

23  
43

(38 Agnes)

2

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Agnes No. 22	July 16, 1962	329	110 ✓
Agnes No. 23	July 16, 1962	329	111 ✓
Agnes No. 24	July 16, 1962	329	112 ✓
Agnes No. 25	July 16, 1962	329	113 ✓
Agnes No. 26	July 16, 1962	329	114 ✓
Agnes No. 27	July 16, 1962	329	115 ✓
Agnes No. 28	July 16, 1962	329	116 ✓
Agnes No. 29	July 16, 1962	329	117 ✓
Agnes No. 30	July 16, 1962	329	118 ✓
Agnes No. 31	July 16, 1962	329	119 ✓
Agnes No. 32	July 16, 1962	329	120 ✓
Agnes No. 33	July 16, 1962	329	121 ✓
Agnes No. 34	July 16, 1962	329	122 ✓
Agnes No. 35	July 16, 1962	329	123 ✓
15 Agnes No. 36	July 16, 1962	329	124 ✓
<i>(38 Agneses)</i>			
Winnie No. 1	July 16, 1962	329	67 ✓
Winnie No. 2	July 16, 1962	329	68 ✓
Winnie No. 3	July 16, 1962	329	69 ✓
Winnie No. 4	July 16, 1962	329	70 ✓
Winnie No. 5	July 16, 1962	329	71 ✓
Winnie No. 6	July 16, 1962	329	72 ✓
Winnie No. 7	July 16, 1962	329	73 ✓
Winnie No. 8	July 16, 1962	329	74 ✓
Winnie No. 9	July 16, 1962	329	75 ✓
Winnie No. 10	July 16, 1962	329	76 ✓
Winnie No. 11	July 16, 1962	329	77 ✓
Winnie No. 12	April 4, 1962	320	293 ✓
Winnie No. 13	July 16, 1962	329	78 ✓
Winnie No. 14	April 4, 1962	320	295 ✓
Winnie No. 15	July 16, 1962	329	79 ✓
Winnie No. 16	April 4, 1962	320	297 ✓
Winnie No. 17	April 4, 1962	320	298 ✓
Winnie No. 18	July 16, 1962	329	80 ✓
Winnie No. 19	July 16, 1962	329	81 ✓
20 Winnie No. 20	July 16, 1962	329	82 ✓
J.N.J. #1	July 16, 1962	329	83 ✓
J.N.J. #2	July 16, 1962	329	84 ✓
J.N.J. #3	July 16, 1962	329	85 ✓
J.N.J. #4	July 16, 1962	329	86 ✓
J.N.J. #5	July 16, 1962	329	87 ✓
J.N.J. #6	January 7, 1963	340	600 ✓
J.N.J. #7	January 7, 1963	341	1 ✓
8 J.N.J. #8	January 7, 1963	341	2 ✓
<i>James Sullivan signed by Swenstrup</i>			
Mary #1	July 16, 1962	329	143 ✓
Mary #2	July 16, 1962	329	144 ✓
Mary #3	July 16, 1962	329	145 ✓
Mary #4	July 16, 1962	329	146 ✓
Mary #5	July 16, 1962	329	147 ✓
Mary #6	July 16, 1962	329	148 ✓
Mary #7	July 16, 1962	329	149 ✓
Mary #8	July 16, 1962	329	150 ✓
Mary #9	July 16, 1962	329	151 ✓
Mary #10	July 16, 1962	329	152 ✓
Mary #11	July 16, 1962	329	153 ✓
12 Mary #12	July 16, 1962	329	154 ✓

3

+ 2/5

55  
43/8  
9

55

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Mary #13	July 16, 1962	329	155 ✓
Mary #14	July 16, 1962	329	156 ✓
Mary #15	July 16, 1962	329	157 ✓
Mary #16	July 16, 1962	329	158 ✓
Mary #17	July 16, 1962	329	159 ✓
Mary #18	July 16, 1962	329	160 ✓
Mary #23	July 16, 1962	329	165 ✓
Mary #24	July 16, 1962	329	166 ✓
Mary #25	July 16, 1962	329	167 ✓
Mary #26	July 16, 1962	329	168 ✓
Mary #27	July 16, 1962	329	169 ✓
Mary #28	July 16, 1962	329	170 ✓
Mary #29	July 16, 1962	329	171 ✓
Mary #30	July 16, 1962	329	172 ✓
Mary #31	July 16, 1962	329	173 ✓
Mary #32	July 16, 1962	329	174 ✓
Mary #33	July 16, 1962	329	175 ✓
Mary #34	July 16, 1962	329	176 ✓
Mary #35	July 16, 1962	329	177 ✓
Mary #36	July 16, 1962	329	178 ✓
Mary #37	July 16, 1962	329	179 ✓
Mary #38	July 16, 1962	329	180 ✓
Mary #39	July 16, 1962	329	181 ✓
Mary #40	January 7, 1963	341	3 ✓
Mary #41	January 7, 1963	341	4 ✓
Mary #41A	January 7, 1963	341	5 ✓
Mary #42	January 7, 1963	341	6 ✓
Mary #42A	January 7, 1963	341	7 ✓
Mary #43	January 7, 1963	341	8 ✓
Mary #43A	January 7, 1963	341	9 ✓
Mary #44	January 7, 1963	341	10 ✓
Mary #45	January 7, 1963	341	11 ✓
Flo #1	July 16, 1962	329	125 ✓
Flo #2	July 16, 1962	329	126 ✓
Flo #3	July 16, 1962	329	127 ✓
Flo #4	July 16, 1962	329	128 ✓
Flo #5	July 16, 1962	329	129 ✓
Flo #6	July 16, 1962	329	130 ✓
Flo #7	July 16, 1962	329	131 ✓
Flo #8	July 16, 1962	329	132 ✓
Flo #9	July 16, 1962	329	133 ✓
Flo #10	July 16, 1962	329	134 ✓
Flo #11	July 16, 1962	329	135 ✓
Flo #12	July 16, 1962	329	136 ✓
Flo #13	July 16, 1962	329	137 ✓
Flo #14	July 16, 1962	329	138 ✓
Flo #15	July 16, 1962	329	139 ✓
Flo #16	July 16, 1962	329	140 ✓
Flo #17	July 16, 1962	329	141 ✓
Flo #18	July 16, 1962	329	142 ✓
Flo #19	January 7, 1963	340	572 ✓
Flo #20	January 7, 1963	340	573 ✓
Flo #21	January 7, 1963	340	574 ✓
Flo #22	January 7, 1963	340	575 ✓

*Norman J. Ventura  
signed by  
James W. Walsh*

*1963 - 1964  
1st Assessment  
year.*

*(44 Marys)*

*22  
54*

*98  
54  
152*

*4  
13  
5  
18*

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Flo #23	January 7, 1963	340	576 ✓
Flo #24	January 7, 1963	340	577 ✓
Flo #25	January 7, 1963	340	578 ✓
Flo #26	January 7, 1963	340	579 ✓
Flo #27	January 7, 1963	340	580 ✓
Flo #28	January 7, 1963	340	581 ✓
Flo #29	January 7, 1963	340	582 ✓
Flo #30	January 7, 1963	340	583 ✓
Flo #31	January 7, 1963	340	584 ✓
Flo #32	January 7, 1963	340	585 ✓
Flo #33	January 7, 1963	340	586 ✓
Flo #34	January 7, 1963	340	587 ✓
Flo #35	January 7, 1963	340	588 ✓
Flo #36	January 7, 1963	340	589 ✓
Flo #37	January 7, 1963	340	590 ✓
Flo #38	January 7, 1963	340	591 ✓
Flo #39	January 7, 1963	340	592 ✓
Flo #40	January 7, 1963	340	593 ✓
Flo #41	January 7, 1963	340	594 ✓
Flo #42	January 7, 1963	340	595 ✓
Flo #43	January 7, 1963	340	596 ✓
Flo #44	January 7, 1963	340	597 ✓
<i>(44 Flos)</i>			
J.R. No. 1	April 2, 1962	320	105 ✓
J. R. No. 2	April 2, 1962	320	106 ✓
J. R. No. 3	April 2, 1962	320	107 ✓
J. R. No. 4	April 2, 1962	320	108 ✓
J. R. No. 5	April 2, 1962	320	109 ✓
J. R. No. 6	April 2, 1962	320	110 ✓
J. R. No. 7	April 2, 1962	320	111 ✓
J. R. No. 8	April 2, 1962	320	112 ✓
J. R. No. 9	April 2, 1962	320	113 ✓
J. R. No. 10	April 2, 1962	320	114 ✓
J. R. No. 11	April 2, 1962	320	115 ✓
J. R. No. 12	April 2, 1962	320	116 ✓
J. R. No. 14	April 17, 1962	321	428 ✓
J. R. No. 18	April 17, 1962	321	429 ✓
J. R. No. 19	April 17, 1962	321	430 ✓
J. R. No. 20	April 17, 1962	321	431 ✓
J. R. No. 21	April 17, 1962	321	432 ✓
J. R. No. 22	May 18, 1962	324	592 ✓
J. R. No. 23	May 18, 1962	324	593 ✓
J. R. No. 24	May 18, 1962	324	594 ✓
J. R. No. 25	May 18, 1962	324	595 ✓
J. R. No. 50	May 18, 1962	324	596 ✓
Smile - You're on Candid Camera No. 1	May 18, 1962	324	574 ✓
Kevin No. 1	May 18, 1962	324	580 ✓
Kevin No. 4	May 18, 1962	324	583 ✓
Kevin No. 9	May 18, 1962	324	588 ✓
Kevin No. 10	May 18, 1962	324	589 ✓
Kevin No. 11	May 18, 1962	324	590 ✓
D.L.T. No. 84	May 18, 1962	324	591 ✓
J.R. No. 500	May 18, 1962	325	7 ✓
J. R. No. 501	May 18, 1962	325	8 ✓

22

22

22

53

152  
53  
203

22  
+ 1.8  
40

205  
40  
165 - 1962-1963 yr. Assessment





**AFFIDAVIT OF LABOR PERFORMED AND IMPROVEMENTS MADE**

STATE OF ARIZONA )  
 ) ss  
 COUNTY OF PIMA )

WALTER E. HEINRICHS, JR., being duly sworn, deposes and says that he is a citizen of the United States and more than twenty-one years of age, and resides at Tucson in Pima County, Arizona, and is personally acquainted with the following mining claims situated in the Blackwater Mining District, Pinal County, Arizona, Section 1, T 6 S, R 5 E, the location notices of which are of record in the office of the County Recorder, Pinal County as follows:

NAME	RECORDING DATE	DOCKET	PAGE
Winnie No. 1	July 16, 1962	329	67
Winnie No. 2	July 16, 1962	329	68
Winnie No. 3	July 16, 1962	329	69
Winnie No. 4	July 16, 1962	329	70
Winnie No. 5	July 16, 1962	329	71
Winnie No. 6	July 16, 1962	329	72
Winnie No. 7	July 16, 1962	329	73
Winnie No. 8	July 16, 1962	329	74
Winnie No. 9	July 16, 1962	329	75
Winnie No. 10	July 16, 1962	329	76
Winnie No. 11	July 16, 1962	329	77
Winnie No. 12	April 4, 1962	320	293
Winnie No. 13	July 16, 1962	329	78
Winnie No. 14	April 4, 1962	320	295
Winnie No. 15	July 16, 1962	329	79
Winnie No. 16	April 4, 1962	320	297
Winnie No. 17	April 4, 1962	320	298
Winnie No. 18	July 16, 1962	329	80
Winnie No. 19	July 16, 1962	329	81
Winnie No. 20	July 16, 1962	329	82

That between August 20 and September 6, 1963, at least \$2,000 worth of work and improvements were done and performed upon said claims, not including location work. The work and improvements were made by Metler Brothers Drilling Co., Tommy Pearce, contractor and Heinrichs Geosimploration Company at the expense of Minerals Exploration Company, a California corporation for the owners of the above described mining claims, Norman Twenstrup, Florence Sullivan, James L. Sullivan, Agnes Woolsey and James A. Woolsey, for the purpose of complying with the laws of the United States pertaining to annual assessment work, and Frank C. Metler, Augie Greenwood, Hugh Hewell, Tommy Pearce, E. Grover Heinrichs and J. W. Marlatt performed said work which consisted of site preparation and drilling of an Nx size diamond drill hole at the common corner of Winnie #13, #14, #15 and #16, done for the benefit of the 20 mining claims above described, as a single contiguous group.

*Walter E. Heinrichs, Jr.*  
 Walter E. Heinrichs, Jr.

Subscribed and sworn to before me this 8<sup>th</sup> day of October 1963.

*M. Jean Heinrichs*  
 Notary Public  
 My commission expires: July 21, 1965

Confirmed Copy

**AFFIDAVIT OF LABOR PERFORMED AND IMPROVEMENTS MADE**

STATE OF ARIZONA )  
 ) ss  
 COUNTY OF PINAL )

WALTER E. HEINRICHS, JR., being duly sworn, deposes and says that he is a citizen of the United States and more than twenty-one years of age, and resides at Tucson in Pinal County, Arizona, and is personally acquainted with the following mining claims situated in the Blackwater Mining District, Pinal County, Arizona, Section 1, T 6 S, R 5 E, the location notices of which are of record in the office of the County Recorder, Pinal County as follows:

CLAIM	RECORDING DATE	BOOK	PAGE
Winnie No. 1	July 16, 1962	329	67
Winnie No. 2	July 16, 1962	329	68
Winnie No. 3	July 16, 1962	329	69
Winnie No. 4	July 16, 1962	329	70
Winnie No. 5	July 16, 1962	329	71
Winnie No. 6	July 16, 1962	329	72
Winnie No. 7	July 16, 1962	329	73
Winnie No. 8	July 16, 1962	329	74
Winnie No. 9	July 16, 1962	329	75
Winnie No. 10	July 16, 1962	329	76
Winnie No. 11	July 16, 1962	329	77
Winnie No. 12	April 4, 1962	329	293
Winnie No. 13	July 16, 1962	329	78
Winnie No. 14	April 4, 1962	329	295
Winnie No. 15	July 16, 1962	329	79
Winnie No. 16	April 4, 1962	329	297
Winnie No. 17	April 4, 1962	329	298
Winnie No. 18	July 16, 1962	329	80
Winnie No. 19	July 16, 1962	329	81
Winnie No. 20	July 16, 1962	329	82

That between August 20 and September 6, 1963, at least \$2,000 worth of work and improvements were done and performed upon said claims, not including location work. The work and improvements were made by Motler Brothers Drilling Co., Tony Pearce, contractor and Minerals Exploration Company at the expense of Minerals Exploration Company, a California corporation for the owners of the above described mining claims, Herman Trustrup, Florence Sullivan, James L. Sullivan, Agnes Woolsey and James A. Woolsey, for the purpose of complying with the laws of the United States pertaining to annual assessment work, and Frank C. Motler, Augie Greenwood, Hugh Howell, Tony Pearce, E. Grover Heinrichs and J. W. Harlett performed said work which consisted of site preparation and drilling of an 8x size diamond drill hole at the common corner of Winnie #13, #14, #15 and #16, done for the benefit of the 20 mining claims above described, as a single contiguous group.

*Walter E. Heinrichs, Jr.*  
 Walter E. Heinrichs, Jr.

Subscribed and sworn to before me this 8<sup>th</sup> day of October 1963.

My commission expires: July 11, 1965

Copied copy

*Staten.*  
INVOICE DATE

Sept. 12, 1963

CHECK DATE

9-18-63

VENDOR

Heinrichs Geoporation Co.

INV. NO.

P.O. NO.

PER PHONE CONVERSATION WITH YOUR

ORIGINAL AMOUNT OF INVOICE

\$ 3,469.36

CORRECTED AMOUNT

\$ 3,569.36

The above mentioned invoice has been corrected for one of the following reasons;

Portion of this bill previously paid

Old balance eliminated

Error in quantity shipped

Tax eliminated

Price error

Arithmetical error, Item # \_\_\_\_\_

Discount error

Other (see below)

Error in addition

PREPARED BY

D. Prandzioch

~~PURCHASING DEPARTMENT~~

Accounts Payable

Union Oil Company of California

P.O. Box 7600

Los Angeles 54, California

SEP 18 1963 ARL

SPEED LETTER

*perco* *Saratov*

TO Pinal County Recorder

FROM Heinrichs Geoexploration

Courthouse

P. O. Box 5671

Florence, Arizona

Tucson, Arizona 85703

SUBJECT Record & Return

MESSAGE

DATE October 11 1963

FOLD

Please record and return the enclosed "Affidavit of Labor  
Performed and Improvements Made" to the above address.

Enclosed find our check in the amount of \$1.75.

SIGNED *M. Jean Heinrichs*  
M. Jean Heinrichs

REPLY

DATE \_\_\_\_\_ 19\_\_\_\_

*Received &  
mailed on  
10/12/63*



SIGNED \_\_\_\_\_

Mexco - Stanton F

9/25/63

Stanton called  
364' - Hole #1

Assessment affidavit Winnie  
Ok do by us.

Sept. 17, 1963

## Mexco-Sacaton

Freeman and/or associates have claims on about all of Sec. 16 & part of Sec. 17. They apparently predate Woolsey's by much time. He will furnish us with a copy of map of them in next day or so. The only claims he knows of in Sec. 15, other than Woolsey-Sullivan, are the three belonging to Andrade - Copper King and Santa Rosa 1 & 2. He has lease on them. Expects to survey their exact location soon. Very co-operative.

Drill Hole #2 was at 396' and expected to pass 400 before end of shift. Had made 55' on the 13<sup>th</sup>, 60' on the 14<sup>th</sup> and 70' on the 16<sup>th</sup>. Still rockbitting and same formation. May core a short interval later this week if no change, other wise, will core at any change.

Ran 4 hand mag lines over west portion of "It" claims. There is outcrop near Woolsey's anomaly and it is most probably a buried granite outcrop. Will plot it up and contour later to-day.

There are 22 Ranch claims, 25 Rosco B&B,

8							
7		9					
6		10					
5		11	12				
4		12	3	4			
3		19	5	6			
2		13	7	8			
1		14	9	10			

Rosco B&B  
 Woolsey's  
 Ranch claim  
 Group

Sec. 16  
T5S, R5E

Showing  
~~Some~~  
 of Rosco B&B  
 Claims



1" = 1500'

~~Some~~ of  
 Woolsey's  
 Ranch claim  
 Group



Dear Mr. Heinrichs:

In accordance with your recent request we enclose herewith copy of Mining Lease between Minerals Exploration Company and James A. Woolsey, et al, in the Sacatan Area, Pinal County, Arizona.

K. J. Robertson  
Land Dept.



SOPHIE M. SMITH, County Recorder,  
By *[Signature]*, Deputy.

DOCKET 357 PAGE 540

*When Recorded Mail to  
Minerals Exploration Co  
461 St. Bowdoin  
Los Angeles 17, Calif.*

MINING LEASE

THIS MINING LEASE, made as of this 10<sup>th</sup> day of May, 1963, between the undersigned, hereinafter called "Lessor", and MINERALS EXPLORATION COMPANY, a California corporation, hereinafter called "Lessee" (a wholly owned subsidiary of Union Oil Company of California);

W I T N E S S E T H :

WHEREAS, Lessee wishes to acquire from Lessor and Lessor wishes to lease to Lessee the Mineral Property (hereinafter defined) on the terms and conditions hereinafter set forth; and

WHEREAS, Lessee also wishes to acquire from Lessor and Lessor wishes to grant to Lessee an option to purchase said Mineral Property on the terms and conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) paid by Lessee to Lessor (the receipt of which is hereby acknowledged) and in consideration of the mutual covenants contained herein, Lessor hereby leases the Mineral Property (hereinafter defined) to Lessee and Lessor hereby grants to Lessee the option to acquire from Lessor by purchase said Mineral Property, on the following terms and conditions:

1. Mineral Property - The term "Mineral Property" shall mean and include all of those certain unpatented mining claims situated in Blackwater Mining District, Pinal County, Arizona, more particularly described in Exhibit A attached hereto and incorporated by reference herein, together with:
  - (i) All and singular the mines, minerals, lodes and veins within the lines of said claims and the dips, spurs and angles, and all rights, privileges and appurtenances therein in any wise belonging, including extra-

lateral rights, easements, rights of way, water and water rights pertaining to or connected with any of said mining claims; and which rights Lessor now has, or at any time during the term of this lease, may acquire; and

(ii) The exclusive use of all camp sites or other property usable for any other purpose in connection with such claims, and also the exclusive use of any buildings, machinery and equipment located on such claims, camp sites or other property, and which rights Lessor now has, or at any time during the term of this lease, may acquire.

2. Locations and Title. Lessor represents that they have used their best efforts to properly locate and keep valid the mining claims set forth on Exhibit A. Lessor makes no representation in the nature of a warranty of title to or of validity of said claims. Lessor represents that they have not heretofore transferred any of the Mineral Property or any interest therein to the detriment of Lessee and warrants that there are no mortgages or liens as of the date of the execution of this lease upon the Mineral Property.

It is understood that the Lessee shall acquire from Lessor no greater rights than Lessor's present or after-acquired interest in and to the Mineral Property, and that the terms of this lease will not require Lessor to secure a greater interest in and to the Mineral Property.

In the event Lessee obtains any information disclosing a defect in Lessor's interest in the Mineral Property Lessee shall advise Lessor of said information. Lessee shall have the right, but shall in no way be obligated, to take such action as may be necessary to quiet or otherwise establish, protect or defend the right, title or interest of Lessor in the Mineral Property. Lessee shall also have the right, but shall in no way be obligated, to make locations, amended locations or relocations as it determines to be reasonably

appropriate to the establishment or protection of any of the claims set forth on Exhibit A. This right extends to any open fractions or fractional claims within the perimeter of the claims set forth on Exhibit A. Lessee shall not be responsible to Lessor for the validity of such locations, amended locations or relocations. such locations, amended locations, or relocations within the red line shown on Exhibit B shall be for the benefit and protection of Lessor but subject to all of the rights of Lessee under this lease. One half the cost (including reasonable attorney's fees of counsel selected by Lessee) of all proceedings which Lessee determines to be reasonably necessary to quiet or otherwise establish, protect and defend the right, title or interest of Lessor shall be credited against any sums due or which may thereafter become due under this lease from Lessee to Lessor.

3. Policy of Title Insurance. Lessee may within six (6) months of the execution of this instrument obtain a preliminary title report, take the necessary steps to cure any defects therein, including the filing of applications for State Mining Leases, and secure a leasehold policy of title insurance. In the event it becomes necessary to cure any defects in the title to said mineral property Lessee may charge one-half of the cost of the preliminary title report, title insurance, and attorneys' fees to accomplish the above as a credit against any sums due, or which may thereafter become due, under this lease from Lessee to Lessor.

4. Term of Lease. Unless sooner terminated as hereinafter provided, the term of this lease and option shall be for a term of "ten (10) years" from the date hereof and so long thereafter as ores, minerals, materials, concentrates or precipitates are mined or marketed in commercial quantities subject to termination by Lessee as hereafter provided in paragraph 12.

5. Option. Said option to purchase may be exercised at any time during the term hereof, but in any event no later than May 8, 1984, by Lessee furnishing to Lessor notice in writing of Lessee's desire to acquire all or any part of said Mineral Property being not less than 400 acres thereof, accompanying said notice with a grant deed from Lessor

to Lessee of said Mineral Property in its entirety or that portion so desired to be purchased. Lessor agrees to execute, acknowledge and return said grant deed to Lessee promptly upon receipt thereof, whereupon Lessee shall immediately forward to Lessor a check in the amount of \$500.00 per acre of said Mineral Property so purchased. No claim so purchased shall be divided but shall be purchased in its entirety.

6. Possession and Right to Work. From and after the date hereof and thereafter during the term of this lease, Lessee shall, to the extent permitted by law, have the sole and exclusive possession of the Mineral Property, and shall have the sole and exclusive right to explore, develop, mine and work the Mineral Property for the purposes of prospecting for, mining and producing ores, minerals, materials, concentrates, or precipitates of all kinds. Hereinafter in this lease, the term "minerals" shall be used to refer to ores, minerals, materials, concentrates or precipitates of all kinds.

All work done on the Mineral Property shall be done in a prudent and miner-like manner; however, all such work shall be under the exclusive control of, and in accordance with the exercise of the discretion and judgment of the management of Lessee as to the time, place, method and manner of operation. To the extent permitted by law, Lessee shall have the right to use open pit or any other legitimate mining methods and may mine the minerals and use the surface of the Mineral Property, subject to the provisions of Section 2, Paragraph 2 of this lease, for milling, processing, storing and removing of minerals and for the storage of waste materials. Upon the removal of any minerals, title thereto shall vest in Lessee. Any minerals so removed shall remain subject to the terms of this Lease.

7. Commingling. Lessee shall have the right to process or treat any minerals produced from the Mineral Property at any mill or processing plant owned or operated by Lessee and located on the Mineral Property or elsewhere. Lessee shall also have the right to commingle or mix any minerals produced from the Mineral Property with

minerals produced from any other property. Minerals shall not be so commingled until after proper weighing and sampling according to recognized engineering practices, so that the correct "Net Smelter Returns" or "Net Sales" price may be calculated for the minerals produced from the Mineral Property.

8. ROYALTIES. In the event Lessee mines and markets minerals from the Mineral Property, Lessee shall pay over to Owners a royalty, which shall be in the amount of five per cent (5%) of the Net Smelter Returns, or Net Sales (where shipped to points other than smelters or other reduction works) on all minerals mined and shipped from the Mineral Property. After ten (10) years/ <sup>of actual mineral production</sup> from the date of <sup>FIRST</sup> ~~this~~ <sup>agreement</sup> said 5% royalty shall terminate in the event Lessee elects to exercise said option to purchase provided in paragraph 5 of this agreement. By "Net Smelter Returns" is meant total returns from the smelter or other reduction works, LESS all charges by the smelter or other reduction works, including, but not limited to, smelting or other reduction charges, refining charges, selling charges and charges for railroad or other transportation from the point of loading in railroad cars, to the smelter or other reduction works (but excluding any charges for hauling to or loading into railroad cars). If minerals are processed in a smelter or other reduction works owned or operated by Lessee, then in determining Net Smelter returns, Lessee shall make customary deductions for smelting or other reduction charges, refining charges and selling charges. By "Net Sales" is meant the net price received by Lessee for a sale, LESS all selling charges and railroad transportation charges from the point of rail loading to the point of sale (but excluding any charges for hauling to the point of loading.) Lessee shall not charge the cost of building a smelter or other reduction works against Lessors share of royalty. Payment of such royalty shall be made monthly on or before the twentieth (20th) day of each calendar month, based on minerals shipped during the preceding calendar month, and each such payment shall be accompanied by a complete copy of settlement schedules or other liquidation sales accounting from the smelter or reduction works. The term, reduction works, as used herein shall mean any works used in lieu of a smelter in which

MINERAL PRODUCTION agreement

*gaw*  
*11/1*  
*22.1*  
*J.S.*  
*W*  
*15/1*  
*15/1*  
*15/1*

*gaw*  
*11/1*  
*J.S.*  
*J.S.*  
*W*  
*15/1*  
*15/1*  
*15/1*

concentrated, upgraded or beneficiated minerals are refined.

The term, railroad transportation, as used herein, includes any direct (without transshipment) means of transport (truck or otherwise) from the mill to the smelter or other reduction works.

"Net Smelter Returns" or "Net Sales" shall be increased by, except where prohibited by law or governmental regulations, all additional payments, premiums or bonuses of every kind or character from whomsoever received which Lessee may receive as a result of operating or holding the Mineral Property.

Notwithstanding the earned royalty provision above set forth, Lessee shall pay to Lessor service charge payments at the rate of One Thousand Two Hundred Fifty Dollars (\$1250.00) per month commencing on ~~the execution of this lease~~ <sup>July 19, 1963 JAW - A.W. By JAW</sup> and continuing thereafter for each and every month ~~during the term of this lease~~ <sup>until July 19, 1964. JAW - J.H. J. A.W. By JAW</sup>. Commencing on ~~the first month of the term of this lease~~ <sup>July 19, 1964. JAW - A.W. By JAW</sup> and continuing thereafter for each and every month during the term of this lease, Lessee shall pay to Lessor minimum royalty payments at the rate of \$1250.00 per month; provided, however, that Lessee shall be required to pay such minimum royalty payment for any calendar month only to the extent that earned royalties accruing to Lessees shall be less than the minimum royalty attributable to such calendar month. Such service charge payments and minimum royalty payments shall be payable monthly on or before the 20th day of the next succeeding calendar month. Lessee shall have credit for all amounts paid to Lessor as minimum royalty hereunder, and all such amounts shall be recovered by Lessee as hereinafter set forth. Whenever and so long as any such credit shall remain unrecovered by Lessee, Lessee shall have the right during any calendar month or months to retain 50% of all earned royalties accruing to Owners hereunder in excess of the minimum royalty payment applicable to said month or months

and to apply said retained sums to the liquidation of such credit.

In respect to recovery of credits under Paragraphs 12, 13 and 18 hereof, Lessee may deduct from the five per cent (5%) royalty prior to any payment to Lessor any such out of pocket expenses over the minimum royalty.

g#20  
275  
S.S.  
151  
275

9. Records. Lessee shall keep an accurate record of the out-put from the Mineral Property and furnish Lessor with monthly reports thereof at the time the royalty payments are to be made, or if there shall be no out-put, Lessor shall be so advised by the 15th day of each succeeding month. Copies of all settlement schedules, smelter charges, reduction charges, refining charges, selling charges, transportation charges, net smelter returns and tonnages, mined, milled or shipped, will also be made available to Lessor upon request.

10. Data. Upon termination of this Lease Agreement Lessor shall within a reasonable time thereafter receive from Lessee copies of all drill logs, portions of drill cores not used for testing, maps, all other technical data and information and evaluation data and information which Lessee has prepared, had prepared for it, been given, or obtained from its operations on the said Mineral Property.

11. Inspection by Owners. Lessor or their agent authorized in writing shall have the right, at all reasonable times, accompanied by a representative of Lessee, to enter, at the risk of the said Lessor and agents, upon and into the Mineral Property and workings thereon, for the purposes of examination and inspection of the

Mineral Property. Lessor, or their agent authorized in writing, shall have access, at all reasonable times, to the records of production and such other records as will show compliance on the part of Lessee with the provisions of this lease.

12. Termination by Lessee. At any time after the first year of the term of this lease, Lessee may terminate this lease by giving written notice to Lessor not less than thirty (30) days prior to the date of termination specified in said written notice. In the event that such notice of termination shall be given, this lease shall, as to both parties, terminate on the effective date of termination specified in said written notice. However, a termination while in default of this lease or while in arrears to Lessor shall not extinguish Lessor's rights under this lease in respect to such default or arrearage notwithstanding such termination. Upon the effective date of termination, Lessee shall deliver to Lessor a quitclaim mining deed of all the Mineral Property set forth on Exhibit A attached hereto.

13. Taxes. During the continuance of this lease, Lessee shall pay, prior to delinquency, all taxes, if any, that may be levied or imposed upon the Mineral Property or upon machinery, equipment, or improvements subsequently placed upon the Mineral Property by Lessee, provided that, with reference to the Mineral Property, Lessee shall be obligated to pay only a prorata portion of such taxes for the tax years in which this lease commences and terminates, respectively.

14. Liens. Lessee agrees to furnish and pay for all labor, power, tools, materials and all other materials and supplies that may be used by it in the prosecution of work on the Mineral Property. Lessee agrees that it will not permit nor suffer any liens to attach to or against the Mineral Property or any part thereof for work, labor, materials and supplies that may be furnished to or by Lessee during the continuance of the lease hereunder. Lessee shall hold Lessor harmless from any and all damages, claims, costs and expenses arising from or growing out of any or all injuries to persons or property in connection with



Lessee's operations on the said claims during the life of this instrument.

15. Assessment Work. Notwithstanding anything to the contrary contained herein Lessee shall perform at its own expense all assessment work presently due before September 1, 1963 and thereafter such annual assessment work as may be required and not excused by any applicable Moratorium Laws, now or subsequently enacted, on the Mineral Property. If Lessee continues this lease past March 1 of any assessment year then Lessee shall perform the assessment work required to be done before September 1 of such year and continuing thereafter during each succeeding mining assessment year during the life of this lease. If, however, Lessee terminates this lease prior to March 1st of any assessment year, then Lessee shall have no obligation to perform assessment work for that particular assessment year. Lessee shall, when doing assessment work, prepare and record appropriate affidavits of assessment work and shall furnish copies thereof to the agent of Owners. Further, any work done by Lessee in the year of withdrawal shall be accounted for and substantiated by affidavit and may be used by Lessor in computing the assessment work required for said year.

16. Buildings, Machinery and Equipment. Lessee at its own expense shall have the right (subject to Section 2, Paragraph 2 above) to erect or install upon the Mineral Property such structures, machinery, equipment and other property as, in the opinion of the management of Lessee, may be necessary, desirable or appropriate in connection with its use and occupancy of the Mineral Property or any adjacent or nearby property. Lessee shall have the right to remove from the Mineral Property at any time during the continuance of this lease, or within ninety (90) days after the expiration or sooner termination thereof, any and all structures, machinery, equipment and other property that it may have installed, erected or placed thereon, if any.

17. Water Wells. Lessee may (subject to Section 2, Paragraph 2 above) at its own expense, drill, equip, and take water

from water wells on the Mineral Property and agrees that all wells will be left intact at the termination of this lease by expiration of its term or otherwise. Lessee shall have the right to remove all mechanical pumping equipment installed by it at any well.

18. Patent Proceedings. During the term of this lease, Lessee may initiate and prosecute in the name of Lessor, proceedings to patent any of the mining claims comprising the Mineral Property, and Lessor shall, at Lessee's request, execute any and all documents required in connection with such proceedings. If, during the term of this lease, a patent is issued to Lessor with respect to any of the mining claims comprising the Mineral Property, Lessor's title thereto shall remain subject to all the rights of Lessee under this lease.

19. Rights of Shut-Down. If at any time or times Lessee, after commencing production, wants to shut-down for any reason it shall have the right to do so.

20. Default. Should Lessee fail in any respect to comply fully with the terms and provisions of this instrument, Lessor may notify Lessee in writing of the matters in regard to which default is asserted, and if Lessee does not then (a) cure such default within sixty (60) days after the giving of such notice, or (b) commence within thirty (30) days to rectify such default and continue thereafter with due diligence to rectify such default and cure such default within ninety (90) days from the date of the notice, Lessor may terminate the lease at any time thereafter during the continuance of such default by giving written notice to Lessee of such election to terminate.

21. Force Majeure. If Lessee is delayed or interrupted in or prevented from performing its obligations, as herein provided,

by Acts of God, wars, fires, floods, strikes or labor troubles, insurrection or mob violence, inability to obtain labor or supplies, injunction, regulations, orders or requirements of Government or other disabling cause beyond its reasonable control, or if prevailing levels of costs in relation to prevailing levels of prices make it economically impractical to operate the Mineral Property, then and in all such cases Lessee shall be excused, without liability, from performance of its obligations hereunder during the period of each such delay, prevention, disability or condition, but all of the provisions hereof shall again come into full force and effect upon the termination of the period of delay, prevention, disability or condition, and the term of the lease hereunder shall be extended for a period equal to the total number of days during which performance shall have been excused.

If Lessee claims the rights under this paragraph it shall nevertheless make the minimum royalty payments but may recover such payments by credit as set forth in the next to last paragraph of Section 7 of this lease.

22. Payments to Owners. All royalty and other payments required to be made by Lessee to Lessor shall be in the percentages hereinafter set forth:

	James A. Woolsey and Agnes Woolsey - - -	46.250%
	Box 4054, Tucson, Arizona.	
	Norman Twenstrup - - - - -	23.125%
P.O. Box	3222 Scottsdale, Arizona.	
	James L. Sullivan & Florence Sullivan - -	23.125%
	P.O. Box 3222, Scottsdale, Arizona.	
	McKinney Mines, Inc., a Nevada Corp. - -	7.5%
	% Burr Sutter, 400 Security Bldg., Phoenix, Arizona.	

Said payments may be paid in currency or by draft or Lessee's check, at the option of the Lessee, and said payments may be made either to Lessor at the addresses set forth above or to a depository, for the credit of Lessor, which depository and its successors shall continue

as depositary for said royalties and other payments, regardless of changes in the ownership of the Mineral Property. Upon making any payment to the designated depositary, Lessee shall be relieved of any responsibility for the distribution of such payment to the respective owners.

23. Notices. Any notice or communication required or permitted hereunder shall be effective when personally delivered, or shall be effective when addressed:

If to Lessee:

461 S. Boylston  
Los Angeles 17, Calif.

If to Lessor:

2232 East 17th Street  
Tucson, Arizona

and deposited, postage prepaid and registered, in the United States mail. Either party may, by notice to the other given as aforesaid change its mailing address for future notices hereunder.

23. Binding on Successors and Assigns. This lease shall inure to the benefit of and be binding upon the parties hereto, their heirs, executors, administrators, successors and assigns. Both Lessee and Lessor may during the life of this lease when not in default convey, transfer, assign, encumber, mortgage, or hypothecate their respective rights and duties in this lease. Notice of any change or encumbrance of interest shall be given to the other party within 30 days thereafter.

24. Interpretation. All matters pertaining to the validity, interpretation and performance and enforcement of this agreement shall be controlled by the laws of the State in which this land lies.

IN WITNESS WHEREOF, the parties hereto have executed

this instrument and have caused this instrument to be executed the day and year hereinabove first written.

Norman Twenstrop

James A. Woolsey

James H. Sullivan

James H. Sullivan

James H. Sullivan

McKINNEY MINES INC., a Nevada Corp.

By: Frank H. Sisk

By: Frank H. Sisk

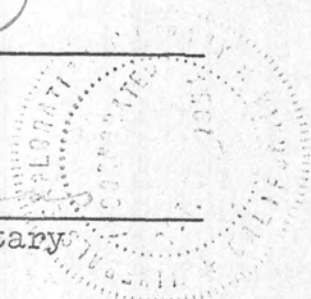
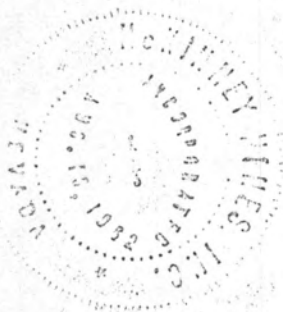
LESSOR

MINERALS EXPLORATION COMPANY

By: Dudley Tower  
President

Attest: [Signature]  
Assistant Secretary

LESSEE



COUNTY OF MARICOPA

SS.

On this 21st day of May 1963, before me, KEITH S. MANCHESTER, a Notary Public in and for said County and State, personally appeared Norman Twenstrup; James A. Woolsey and Agnes Woolsey, his wife known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Keith S. Manchester
Notary Public in and for said County and State

My Commission Expires:

May 9, 1964



STATE OF ARIZONA

COUNTY OF Maricopa

SS.

On this 21st day of May 1963 before me, KEITH S. MANCHESTER, a Notary Public in and for said County and State, personally appeared James L. Sullivan and Florence Sullivan, his wife known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Keith S. Manchester
Notary Public in and for said County and State

My Commission Expires:

May 9, 1964



State of Arizona Province of British Columbia, County of: ss.

On this the 29th day of May 1963, before me, Allan H. [Name], the undersigned, a Notary Public, personally appeared John Edward Rogers Wood, who acknowledged himself to be the Vice-President of McKinney Mines, Inc., a corporation, and that he, as such Vice-President being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation by himself as Vice-President.

In witness whereof I hereunto set my hand and official seal.

(My Commission Expires: )

Thomas G. Kendall
Notary Public



STATE OF CALIFORNIA )  
COUNTY OF LOS ANGELES ) SS.

On this 10th day of May, 1963, before me, Audrey A. Burke, a Notary Public in and for said County and State, personally appeared Dudley Tower, known to me to be the President, and E. W. Cairns, known to me to be the Asst. Secretary of Minerals Exploration Company, the corporation that executed the within instrument, known to me to be the persons who executed the within instrument, on behalf of the corporation herein named, and acknowledged to me that such corporation executed the within instrument pursuant to its by-laws or a resolution of its board of directors.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

*Audrey A. Burke*  
Notary Public in and for said  
County and State  
AUDREY A. BURKE  
My Commission Expires:  
NOTARY PUBLIC  
For the County of Los Angeles, and State of California  
My Commission Expires September 19, 1966

200 claims

EXHIBIT A

Those certain unpatented mining claims located in the Blackwater Mining District, Pinal County, Arizona, the location notices of which are of record in the Office of the County Recorder of Pinal County, Arizona.

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J.N.J. #7	January 7, 1963	341	1
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Mary #11	July 16, 1962	329	153
Mary #12	July 16, 1962	329	154

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Mary #13	July 16, 1962	329	155
Mary #14	July 16, 1962	329	156
Mary #15	July 16, 1962	329	157
Mary #16	July 16, 1962	329	158
Mary #17	July 16, 1962	329	159
Mary #18	July 16, 1962	329	160
Mary #23	July 16, 1962	329	165
Mary #24	July 16, 1962	329	166
Mary #25	July 16, 1962	329	167
Mary #26	July 16, 1962	329	168
Mary #27	July 16, 1962	329	169
Mary #28	July 16, 1962	329	170
Mary #29	July 16, 1962	329	171
Mary #30	July 16, 1962	329	172
Mary #31	July 16, 1962	329	173
Mary #32	July 16, 1962	329	174
Mary #33	July 16, 1962	329	175
Mary #34	July 16, 1962	329	176
Mary #35	July 16, 1962	329	177
Mary #36	July 16, 1962	329	178
Mary #37	July 16, 1962	329	179
Mary #38	July 16, 1962	329	180
Mary #39	July 16, 1962	329	181
Mary #40	January 7, 1963	341	3
Mary #41	January 7, 1963	341	4
Mary #41A	January 7, 1963	341	5
Mary #42	January 7, 1963	341	6
Mary #42A	January 7, 1963	341	7
Mary #43	January 7, 1963	341	8
Mary #43A	January 7, 1963	341	9
Mary #44	January 7, 1963	341	10
Mary #45	January 7, 1963	341	11
Flo #1	July 16, 1962	329	125
Flo #2	July 16, 1962	329	126
Flo #3	July 16, 1962	329	127
Flo #4	July 16, 1962	329	128
Flo #5	July 16, 1962	329	129
Flo #6	July 16, 1962	329	130
Flo #7	July 16, 1962	329	131
Flo #8	July 16, 1962	329	132
Flo #9	July 16, 1962	329	133
Flo #10	July 16, 1962	329	134
Flo #11	July 16, 1962	329	135
Flo #12	July 16, 1962	329	136
Flo #13	July 16, 1962	329	137
Flo #14	July 16, 1962	329	138
Flo #15	July 16, 1962	329	139
Flo #16	July 16, 1962	329	140
Flo #17	July 16, 1962	329	141
Flo #18	July 16, 1962	329	142
Flo #19	January 7, 1963	340	572
Flo #20	January 7, 1963	340	573
Flo #21	January 7, 1963	340	574
Flo #22	January 7, 1963	340	575

<u>Name</u>	<u>Recording Date</u>	<u>Docket</u>	<u>Page No.</u>
Flo #23	January 7, 1963	340	576
Flo #24	January 7, 1963	340	577
Flo #25	January 7, 1963	340	578
Flo #26	January 7, 1963	340	579
Flo #27	January 7, 1963	340	580
Flo #28	January 7, 1963	340	581
Flo #29	January 7, 1963	340	582
Flo #30	January 7, 1963	340	583
Flo #31	January 7, 1963	340	584
Flo #32	January 7, 1963	340	585
Flo #33	January 7, 1963	340	586
Flo #34	January 7, 1963	340	587
Flo #35	January 7, 1963	340	588
Flo #36	January 7, 1963	340	589
Flo #37	January 7, 1963	340	590
Flo #38	January 7, 1963	340	591
Flo #39	January 7, 1963	340	592
Flo #40	January 7, 1963	340	593
Flo #41	January 7, 1963	340	594
Flo #42	January 7, 1963	340	595
Flo #43	January 7, 1963	340	596
Flo #44 ✓	January 7, 1963	340	597
J.R. No. 1	April 2, 1962	320	105
J. R. No. 2	April 2, 1962	320	106
J. R. No. 3	April 2, 1962	320	107
J. R. No. 4	April 2, 1962	320	108
J. R. No. 5	April 2, 1962	320	109
J. R. No. 6	April 2, 1962	320	110
J. R. No. 7	April 2, 1962	320	111
J. R. No. 8	April 2, 1962	320	112
J. R. No. 9	April 2, 1962	320	113
J. R. No. 10	April 2, 1962	320	114
J. R. No. 11	April 2, 1962	320	115
J. R. No. 12	April 2, 1962 <i>JUNE 19, 1963</i>	320 <i>355</i>	116 <i>390</i>
J. R. No. 14	<del>April 17, 1962</del> <i>JUNE 19, 1963</i>	321 <i>355</i>	428 <i>371</i>
J. R. No. 18	April 17, 1962	321	429
J. R. No. 19	April 17, 1962	321	430
J. R. No. 20	April 17, 1962	321	431
J. R. No. 21	April 17, 1962	321	432
J. R. No. 22	May 18, 1962	324	592
J. R. No. 23	May 18, 1962	324	593
J. R. No. 24	May 18, 1962	324	594
J. R. No. 25	May 18, 1962	324	595
J. R. No. 50 ✓	May 18, 1962	324	596
Smile - You're on Candid Camera No. 1 ✓	May 18, 1962	324	574
Kevin No. 1	May 18, 1962	324	580
Kevin No. 4	May 18, 1962	324	583
Kevin No. 9	May 18, 1962	324	588
Kevin No. 10	May 18, 1962	324	589
Kevin No. 11 ✓	May 18, 1962	324	590
D.L.T. No. 84 ✓	May 18, 1962	324	591
J.R. No. 500	May 18, 1962	325	7
J. R. No. 501 ✓	May 18, 1962	325	8

HEINRICHS GEOEXPLORATION COMPANY  
MINERAL ENGINEERING CONSULTANTS AND CONTRACTORS  
GEOPHYSICAL, GEOLOGICAL AND ECONOMIC APPRAISALS  
TUCSON, ARIZONA. 85703

WALTER E. HEINRICHS, JR.  
E. GROVER HEINRICHS

February 18, 1964

AREA CODE 602  
PHONES: 622-4202, 623-6541  
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Re- Sacaton Area  
Pinal County, Arizona  
Twenstrup, et al, Lease  
PF 748  
and  
Minerals Exploration Co.  
Union Oil Center  
Los Angeles 17, California

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3. Drilling of It Claims 1, 2, 3, 4 (common corner)  
\$4,563.08

All of said claims being located in Sec. 24, T5S, R5E, G & S.R.B. & M. Pinal County, Arizona and all of said work being done between 13 November 1963 and 12 February 1964 at the total

James A. Woolsey, et al.

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Very truly yours,

HEINRICHS GEOEXPLORATION CO.



Walter E. Heinrichs, Jr.  
President & General Manager

WEH:jh

Encl: 2

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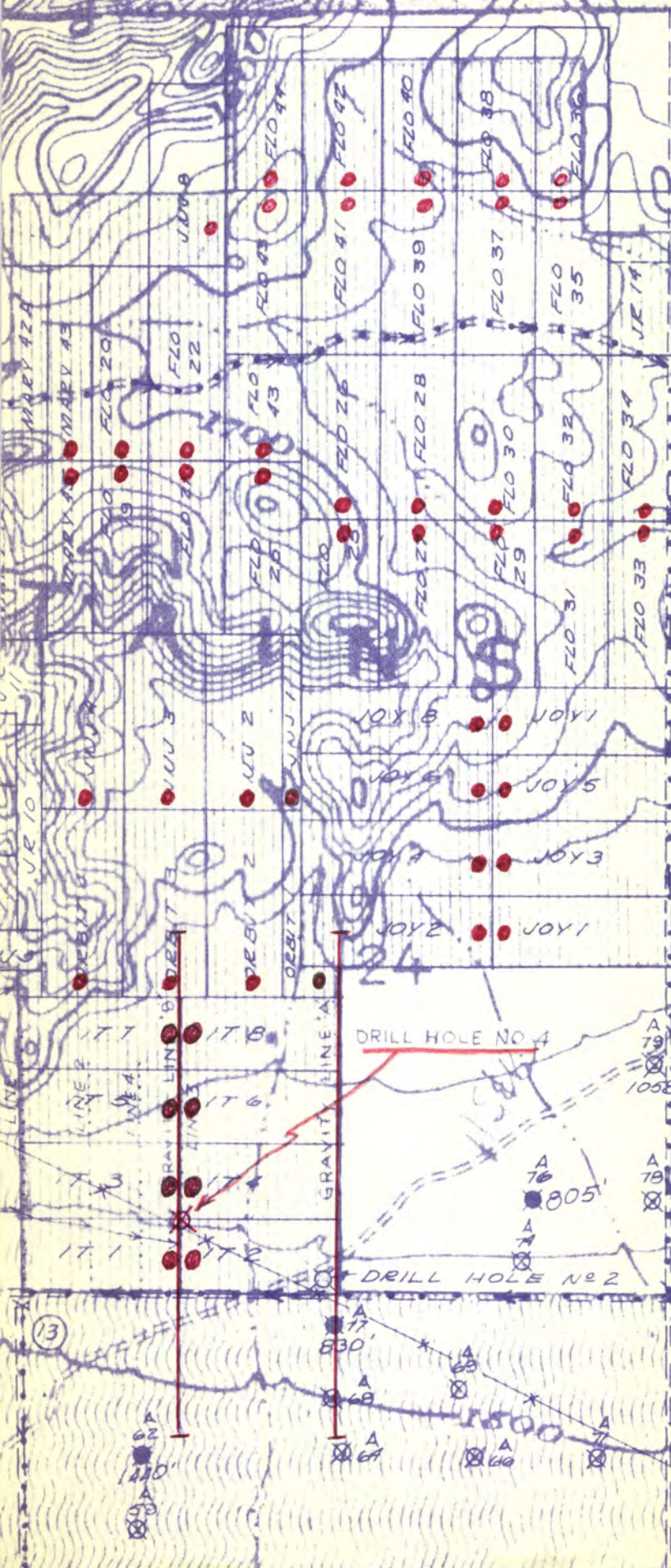
Elevation control was held to +/- .02 ft. A Worden gravity meter was used for obtaining the readings. Data computations involved latitude, free air and Bouguer corrections, with reduction to sea level elevation. Terrain corrections were not made. Computations and plots of the results were made several times using different density factors for the earth material, and at different elevations to see the effects of regional gradient. The final plot, submitted with this letter, is at a median density of 2.2 gm/cc rather than 1.8 for alluvium, or 2.6 for granite, and for sea level elevation.

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# RESERVATION



18

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SKETCH MAP  
for  
AFFIDAVIT OF LABOR

755

SHOWING LOCATION OF DRILL HOLE # 4  
CLAIM NAMES AND BOUNDARIES  
● LOCATION PITS

MINERALS EXPLORATION COMPANY  
Prepared by  
HEINRICHS GEOEXPLORATION CO.  
February 1968 Scale: 4" = 1 mile  
T 5 S R 5 E, Pinal County, Arizona  
GRAVITY LINE LOCATION

DRILL HOLE NO 4

DRILL HOLE NO 2

MEXCO

1520

1500

1480

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1440

1420

1400

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1240

1220

1200

1180

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1140

1120

1100

1080

1060

1040

1020

1000

980

960

940

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880

860

840

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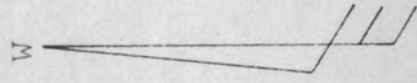
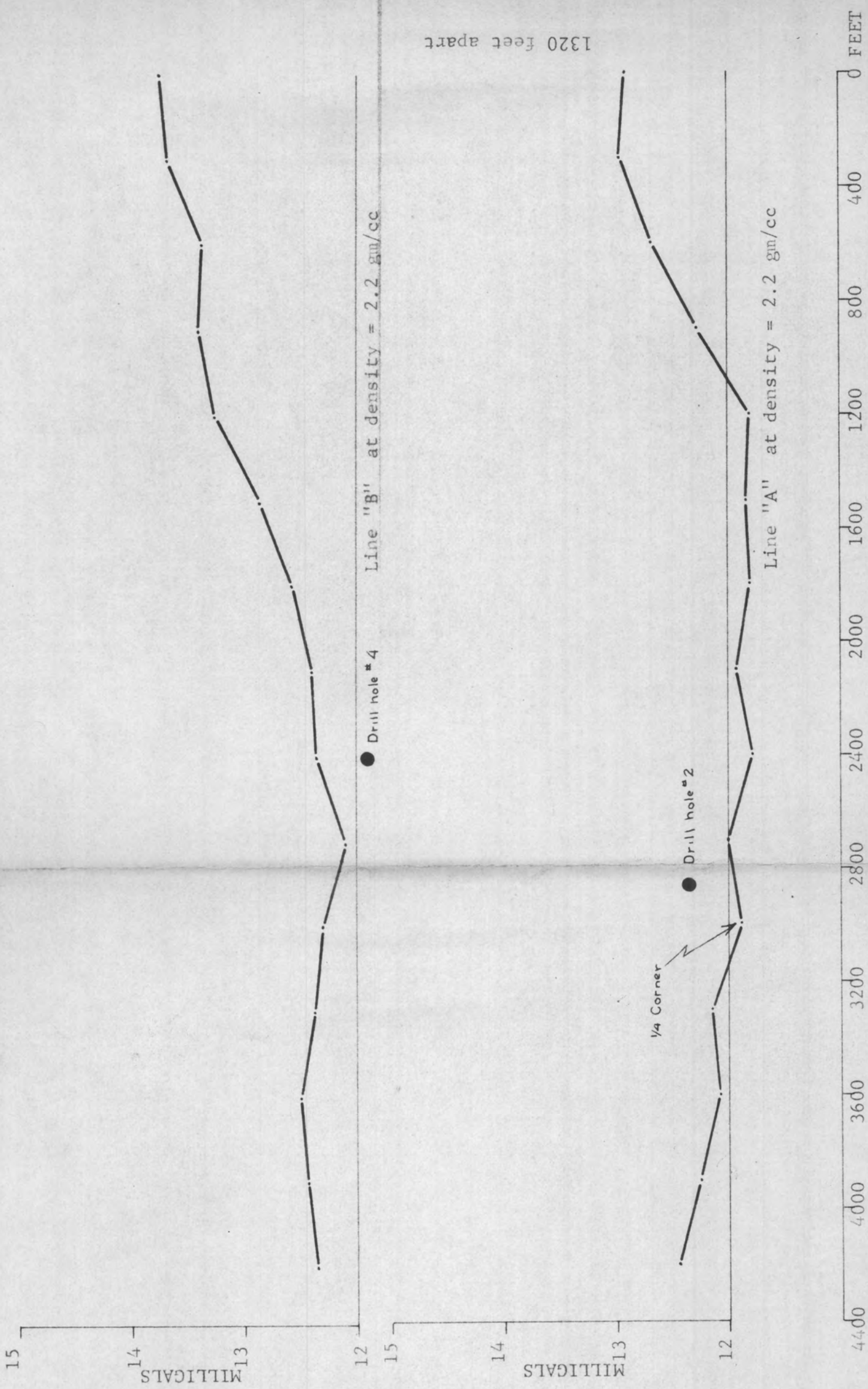
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GRAVITY PROFILE  
 SACATON PROJECT  
 for  
 MINERALS EXPLORATION COMPANY  
 Sec. 24, T 5 S, R 5 E  
 Pinal County, Arizona



November 1963  
 HEINRICHS GEOEXPLORATION COMPANY



HEINRICHS GEOEXPLORATION COMPANY  
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If more drill holes are planned, consideration should be given to the southeast corner of It No. 6 and the east end center of It No. 4 as possible sites. Depending on what is found in the present hole (no. 4) it may become advisable to consider a detailed gravity survey on the It claim ground and its environs.



↖ 1/4 corner (approx.)

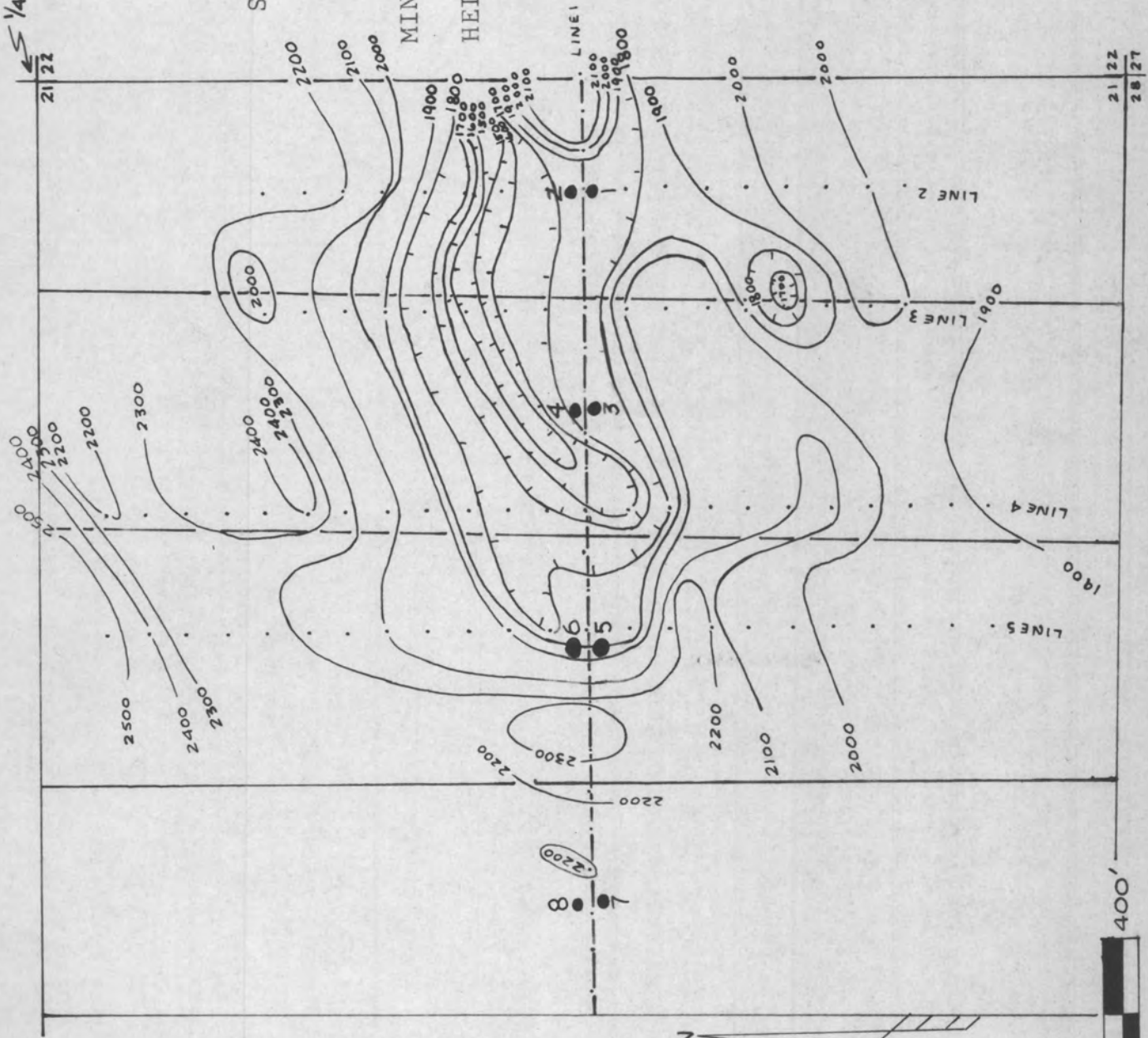
MAGNETIC SURVEY  
(Vertical Intensity)  
AGNES CLAIM GROUP

Sec. 21, T 5 S, R 5 E  
Pinal County, Arizona

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY  
by  
HEINRICHS GEOEXPLORATION CO.

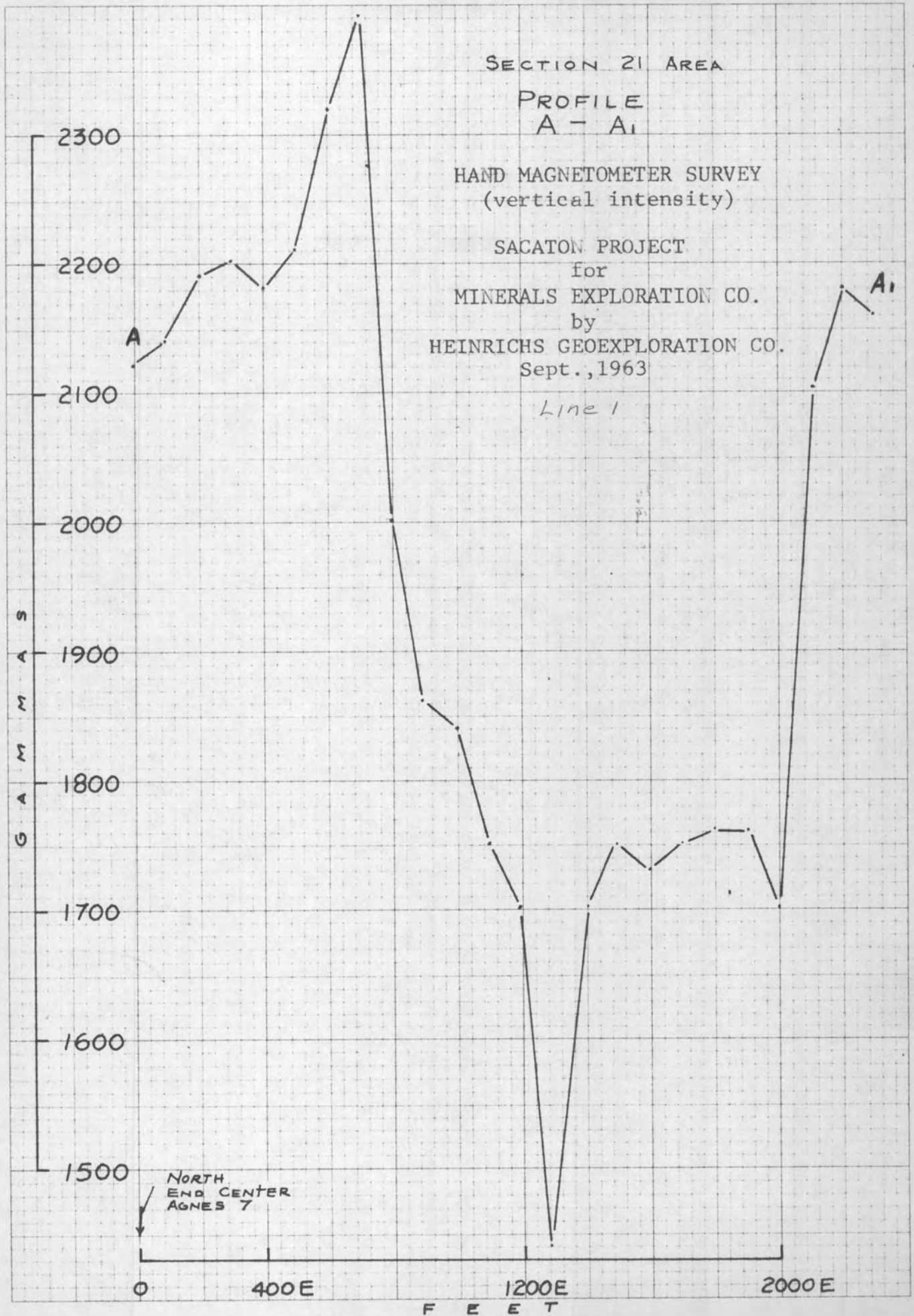
September 1963

Contour Interval = 100 ♂

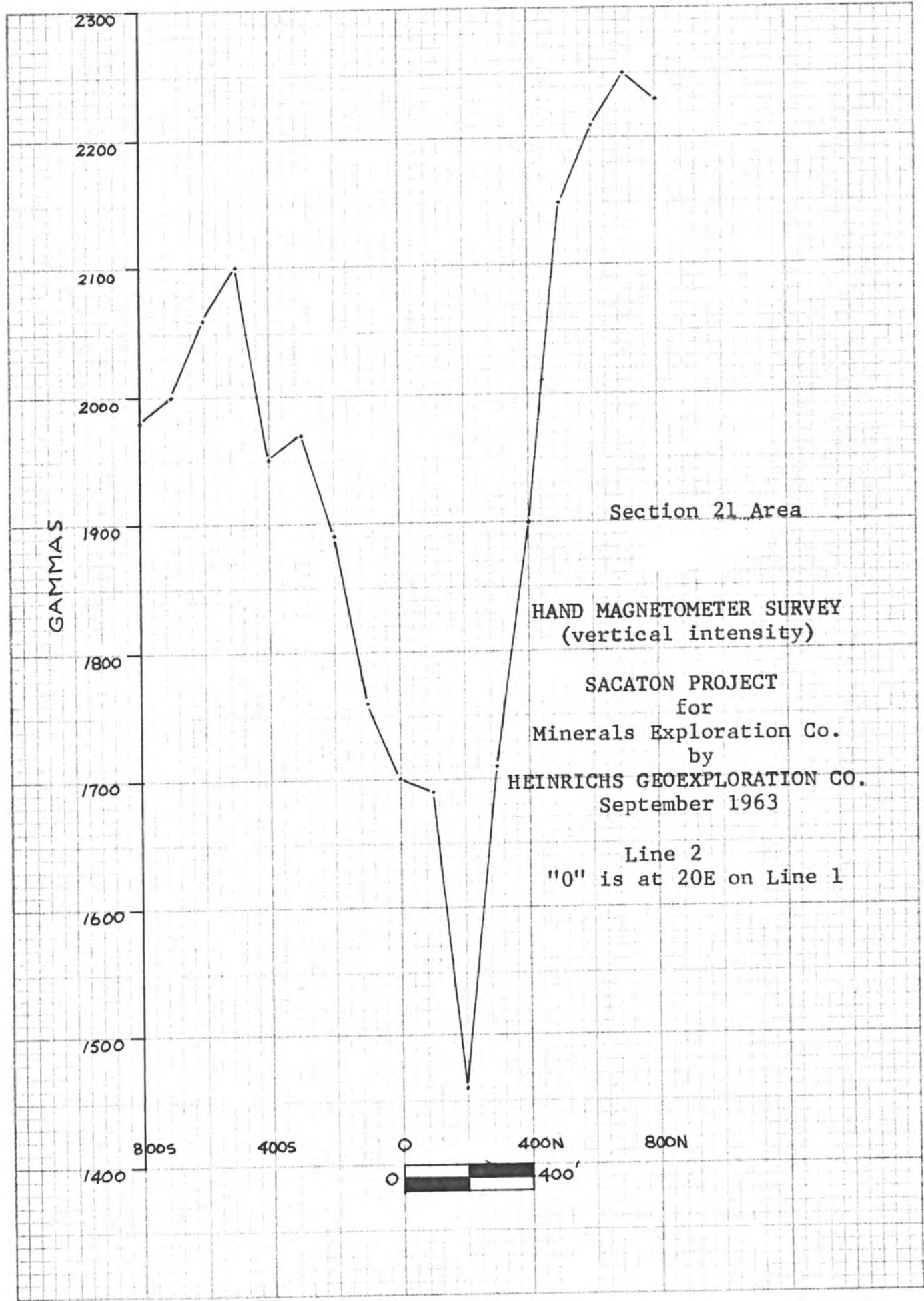


EUGENE DIETZGEN CO.  
MADE IN U. S. A.

NO. 340R-10 DIETZGEN GRAPH PAPER  
10 X 10 PER INCH



K<sub>2</sub> 10 X 10 TO THE INCH 359-5DG  
KEUFFEL & ESSER CO. MADE IN U.S.A.

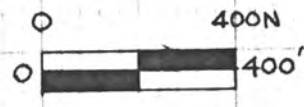


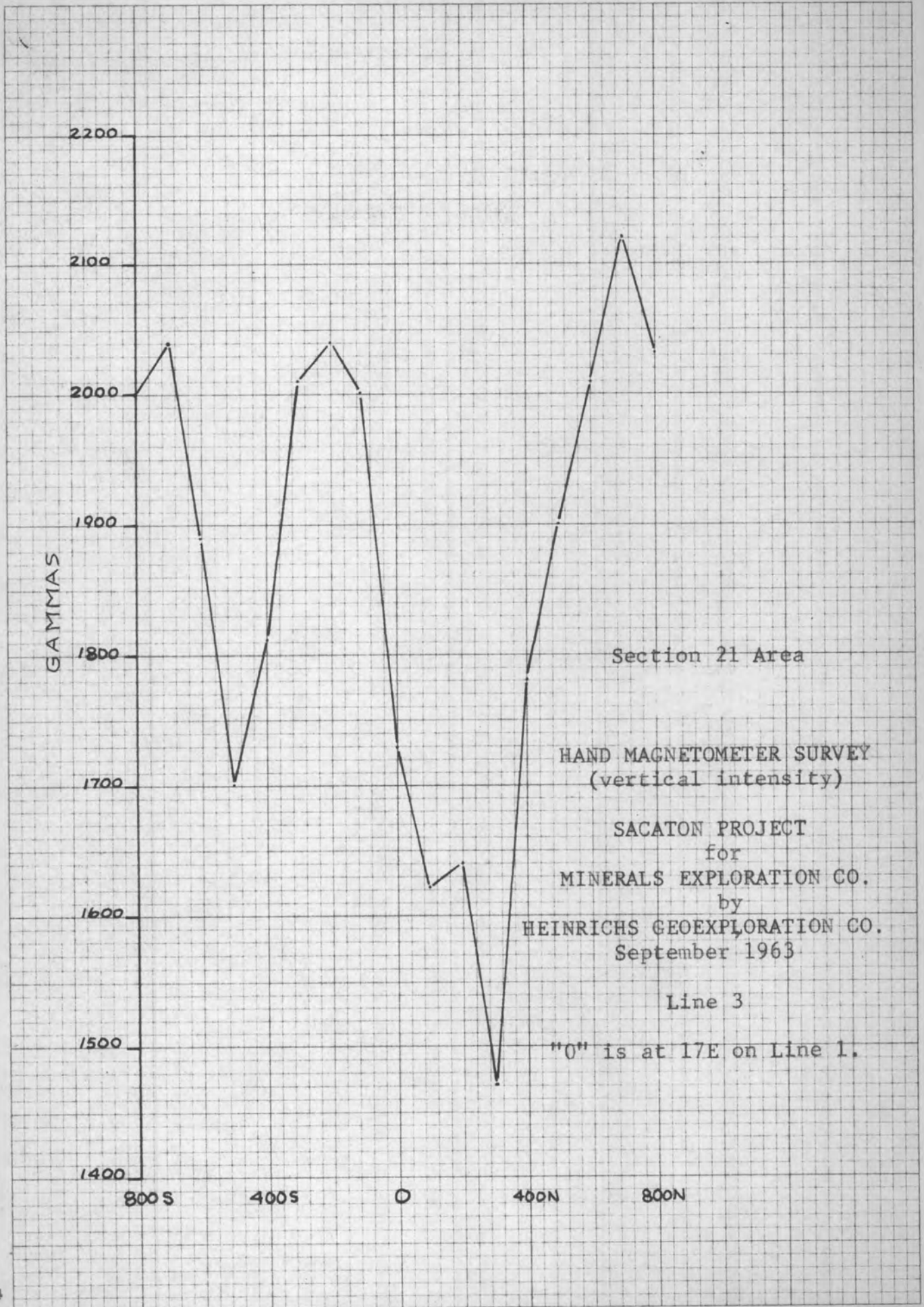
Section 21 Area

HAND MAGNETOMETER SURVEY  
(vertical intensity)

SACATON PROJECT  
for  
Minerals Exploration Co.  
by  
HEINRICHS GEOEXPLORATION CO.  
September 1963

Line 2  
"0" is at 20E on Line 1





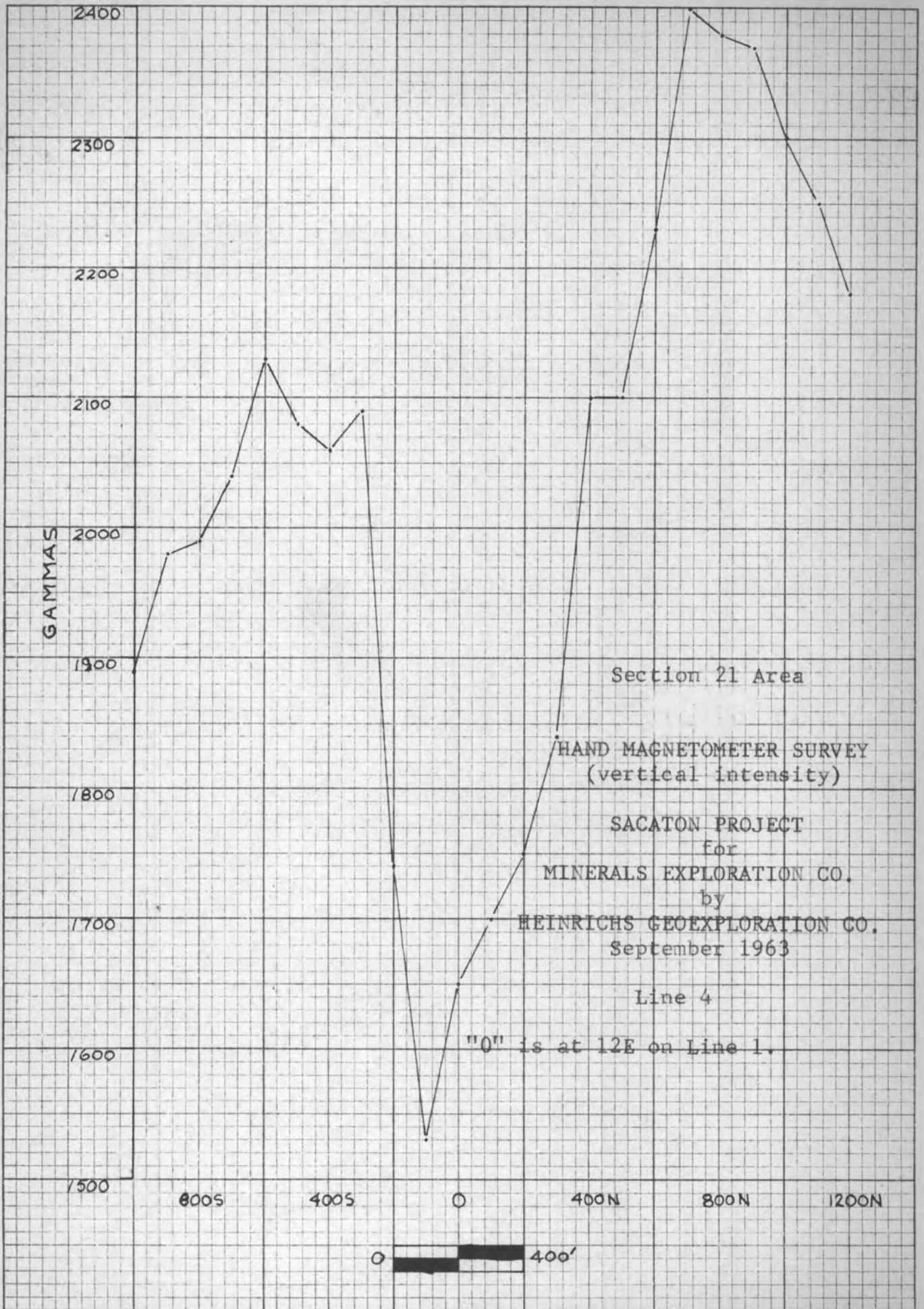
Section 21 Area

HAND MAGNETOMETER SURVEY  
(vertical intensity)

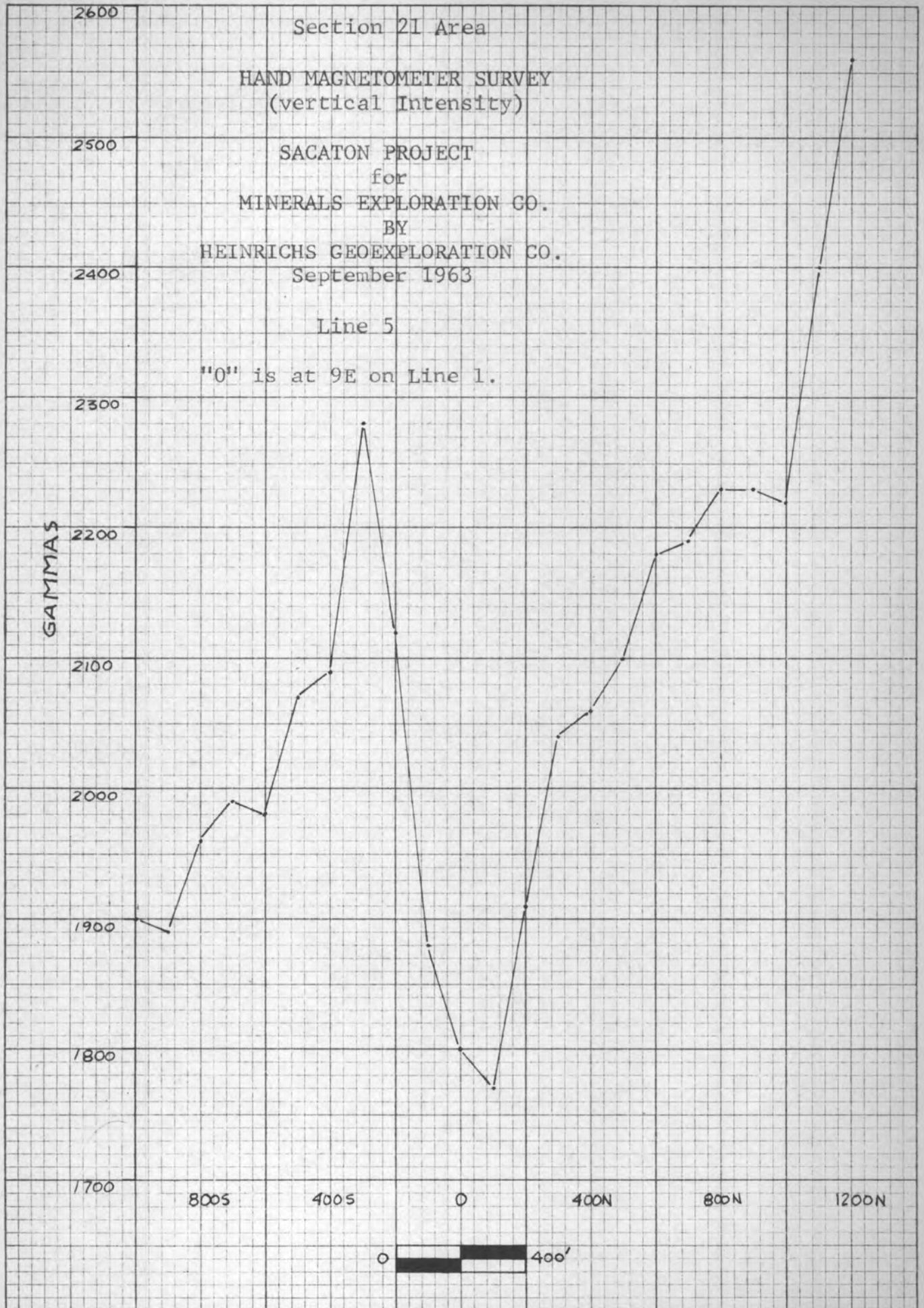
SACATON PROJECT  
for  
MINERALS EXPLORATION CO.  
by  
HEINRICHS GEOEXPLORATION CO.  
September 1963

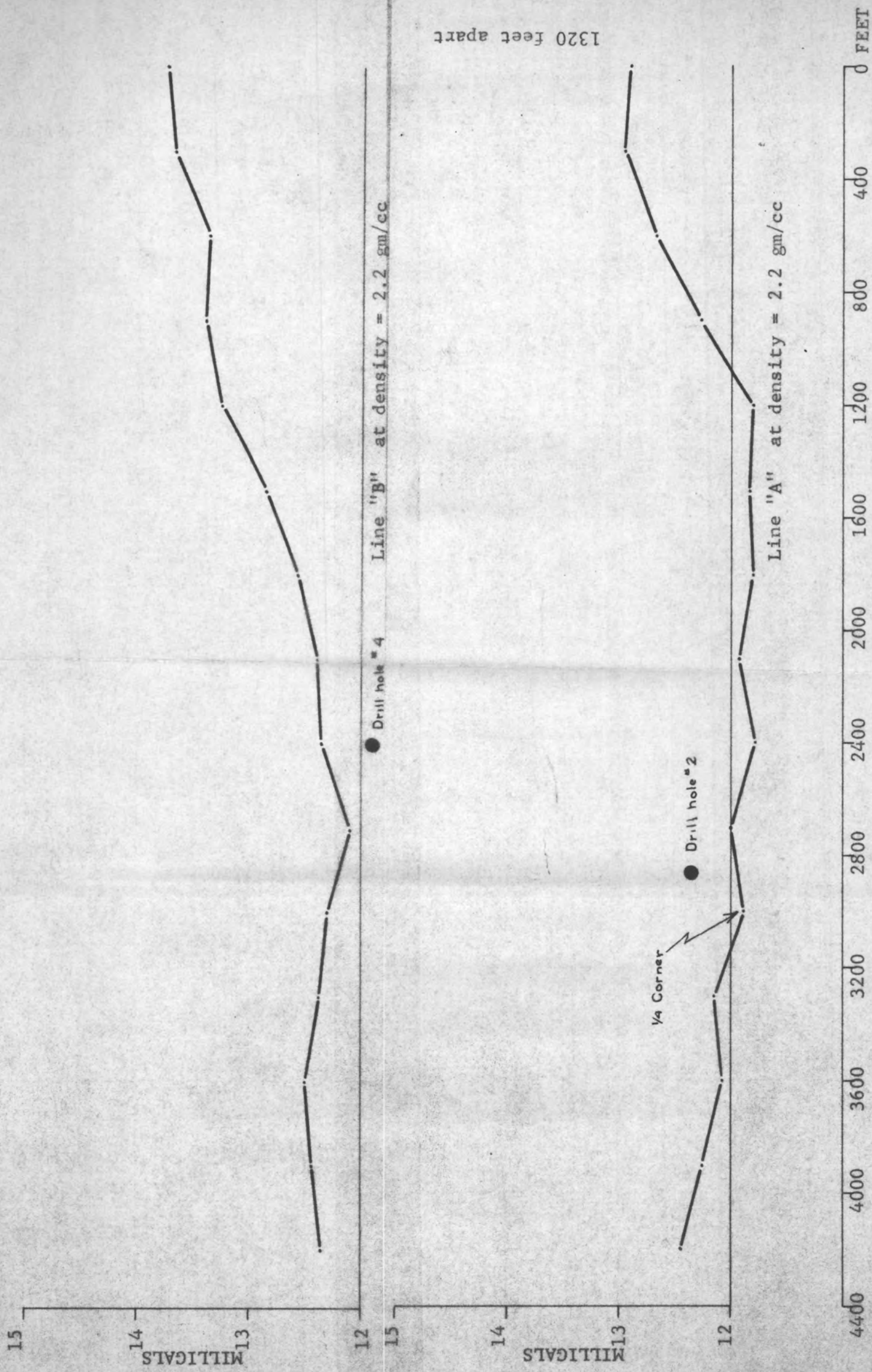
Line 3

"0" is at 17E on Line 1.









1320 feet apart

GRAVITY PROFILE

SACATON PROJECT

for

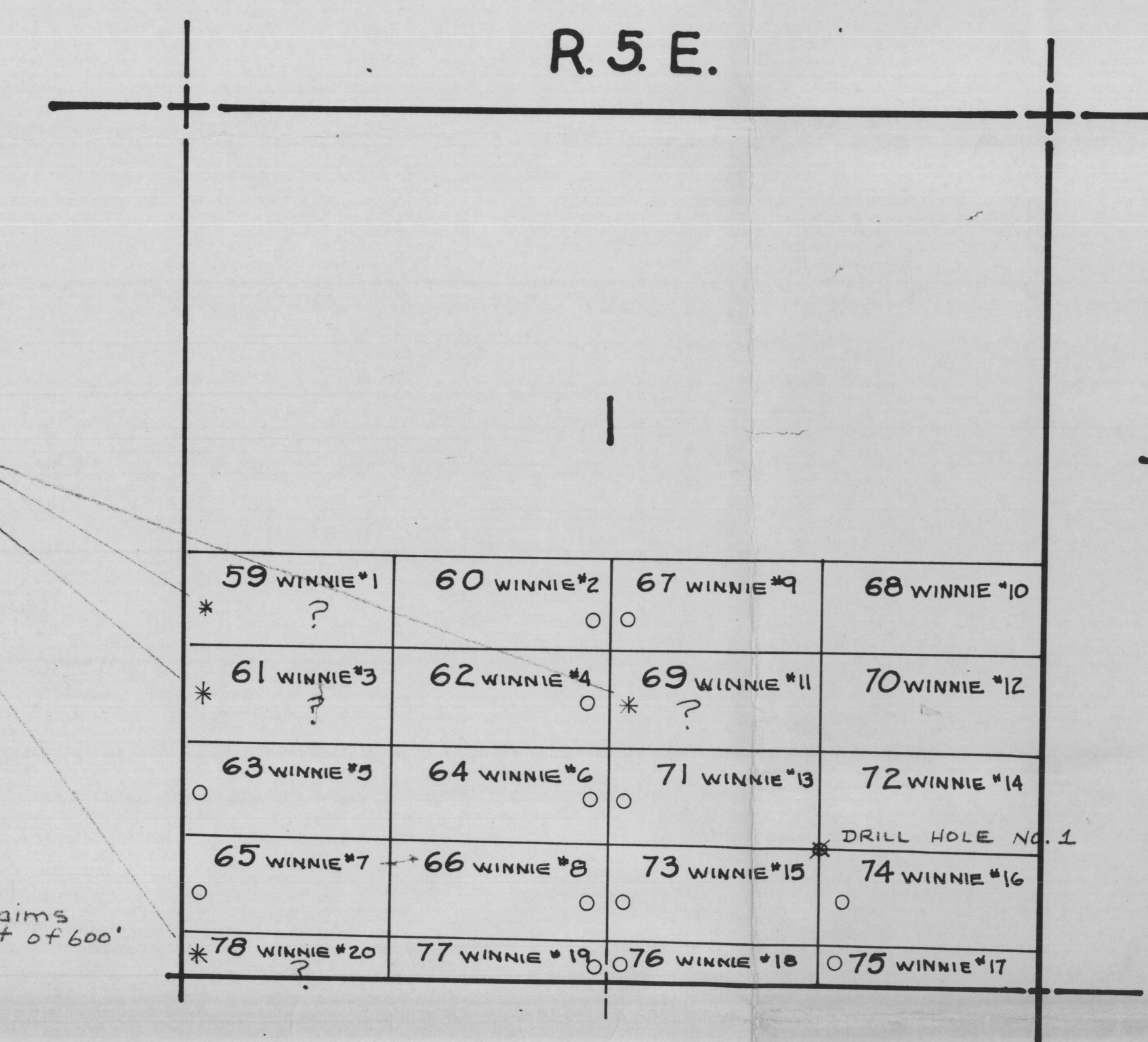
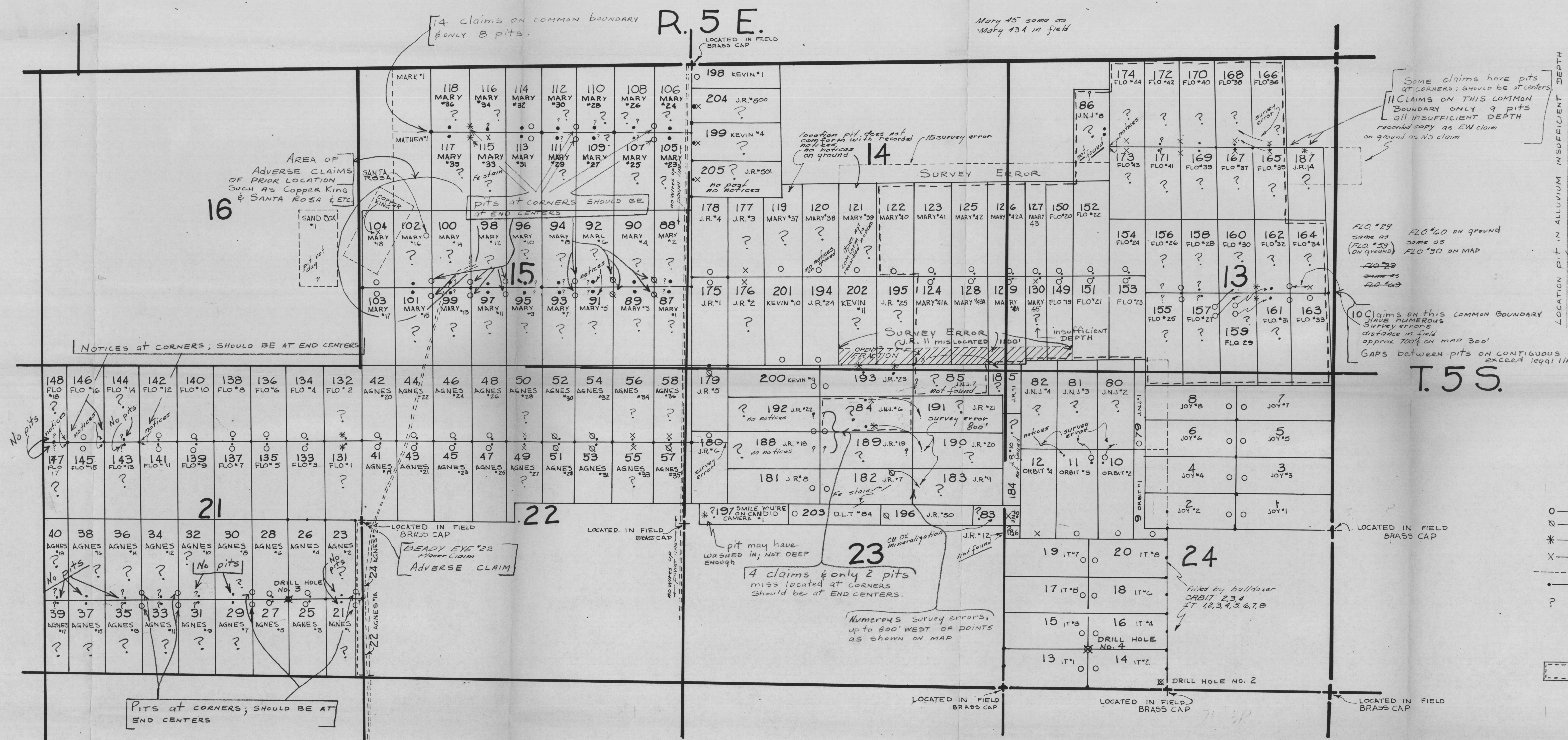
MINERALS EXPLORATION COMPANY

Sec. 24, T 5 S, R 5 E

Pinal County, Arizona

November 1963

HEINRICHS GEOEXPLORATION COMPANY



- EXPLANATION**
- — PIT LOCATED LEGAL DIMENSION
  - ⊗ — PIT LOCATED IN BEDROCK LEGAL DIMENSION
  - \* — PIT LOCATED IN ALLUVIUM INSUFFICIENT DEPTH
  - X — PIT LOCATED IN BEDROCK INSUFFICIENT DEPTH
  - BOUNDARY APPROXIMATE
  - POST RECOVERED IN FIELD
  - ? INDICATES CLAIM DEFECT AS SHOWN
- CLAIMS WITH NO ? APPARENTLY HAVE NO DEFECTS.
- CLAIMS LOCATED AFTER SEPT. 1, 1962

HEINRICH'S GEOEXPLORATION COMPANY P.O. Box 5671 Tucson, Arizona		
CLAIM VALIDITY FOR MINERALS EXPLORATION COMPANY		
SACATON PROJECT PINAL COUNTY, ARIZONA		
SCALE: 1" = 780	CONTOUR INTERVAL: DATA BY: E.G.H.	REVISIONS 1-17-64
DATE: JULY 1963	SHEET OF	FILE:
DRAWN BY: G.D.P.	DRAWING NO.:	

Copy sent Moran  
Revised 1-17-64

# LIA RIVER INDIAN RESERVE

Note  
Line  
Appears  
ok by topography

Iron cap  
Located in field  
Parcel #205 (Total 16)  
(of parcels 105)



Notices  
for 11 & 12  
at corner  
Miss Located  
13 & 14  
15 & 16  
17 & 18

148	146	144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110	108	106	104	102	100	98	96	94	92	90	88	86	84	82	80	78	76	74	72	70	68	66	64	62	60	58	56	54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---



WINNIE *1	WINNIE *2	WINNIE *3	WINNIE *4	WINNIE *5	WINNIE *6	WINNIE *7	WINNIE *8	WINNIE *9	WINNIE *10	WINNIE *11	WINNIE *12	WINNIE *13	WINNIE *14	WINNIE *15	WINNIE *16	WINNIE *17	WINNIE *18	WINNIE *19	WINNIE *20
-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------	------------

J.R. 20 Too Shallow  
miss located in bedrock

J.R. 11 miss located  
in SW cor. MARY 4th  
Too shallow in bedrock

J.R. 7 Not found  
J.R. 21 found  
about 300'

J.N.S. 1 Too shallow in alluv.  
J.N.S. 4 No pits

J.N.S. 2 & 3 pits miss located  
at 100 SH  
NW corner  
NE "

Missing  
J.R. 14 parcel 137  
by J.R. #11. See 13. 3-11

- inspected & checked OKAY
- seen from a distance
- ⊙ Pit Located

1/4 corner  
1600 cap

SCALE 1" = 750'

120 parcel No.  
J.N.S. 6



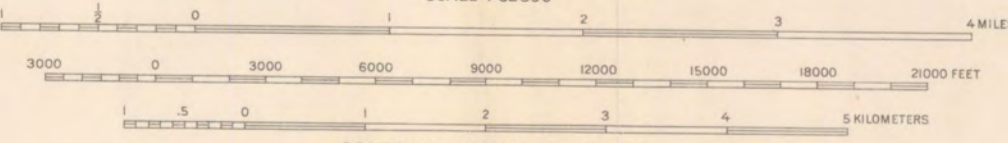
Topography by A.B. Searle and C.W.H. Nessler  
Surveyed in 1921-1922

**ROAD CLASSIFICATION**

Heavy-duty ——— Light-duty ———  
Medium-duty - - - - - Unimproved dirt - - - - -

○ State Route

APPROXIMATE MEAN  
DECLINATION, 1922



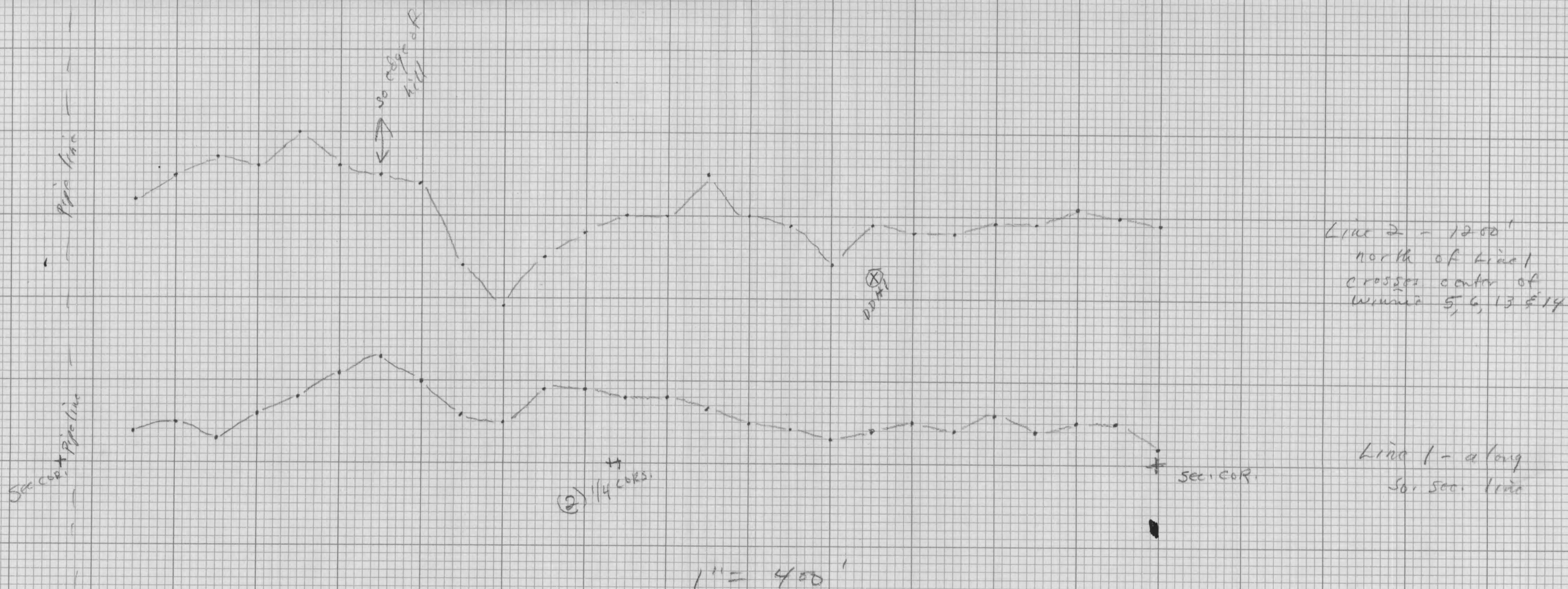
Polyconic projection. To place on 1927 North American datum  
move projection lines 100 feet west  
10,000-foot grid based on Arizona (Central)  
rectangular coordinate system  
1000-meter Universal Transverse Mercator grid ticks,  
zone 12, shown in blue

QUIJOTOA (JUNC. ARIZ. 80 50 MI.)  
CASA GRANDE, ARIZ.  
N3245 - W1145/15  
1922

Sacaton  
 Winnie claims  
 Sec. 1, T6S, R5E

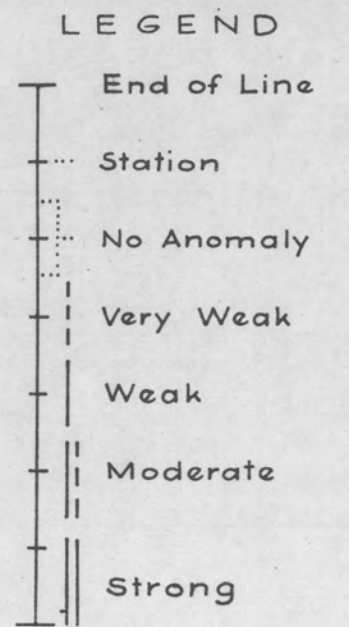
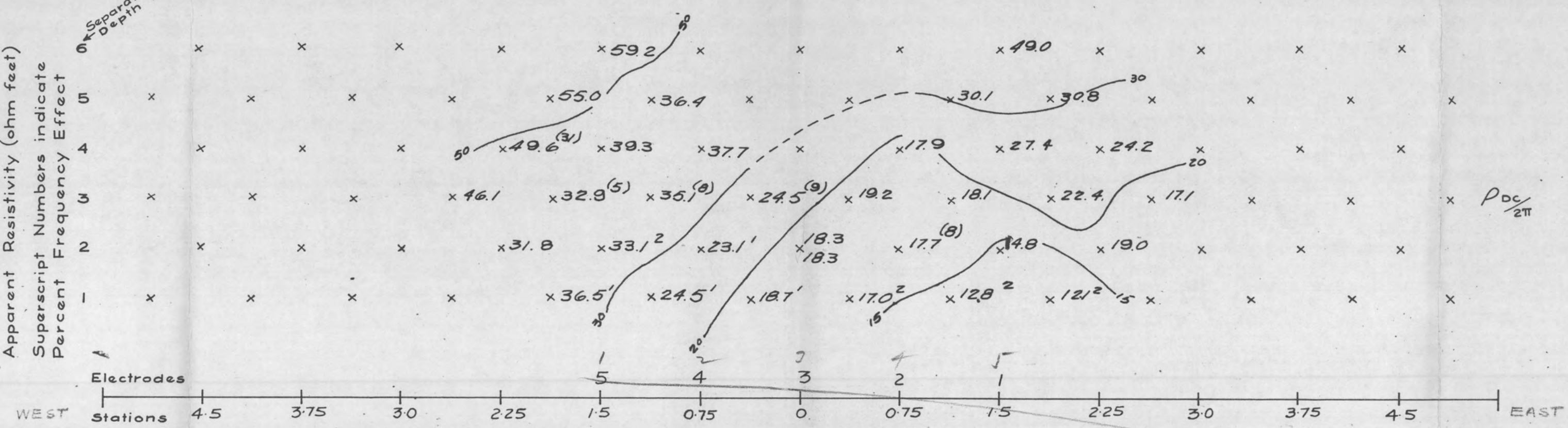
Jalander Mag. Survey  
 Sept. 3, 1963

J.W.M.



Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

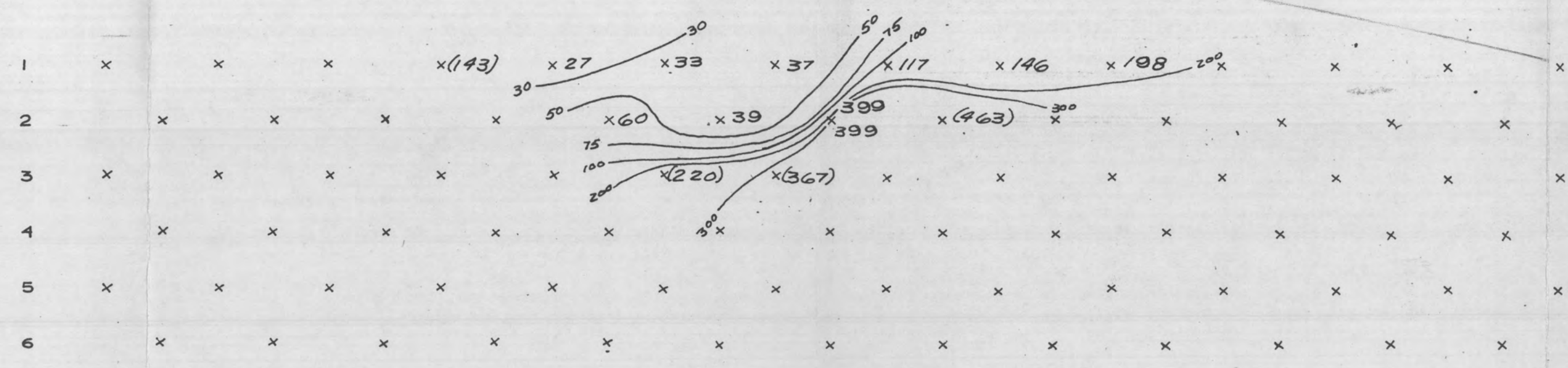
Separation or  
Depth Level



$\rho_{DC} / 2\pi$

Contour interval: Logarithmic  
( ) indicates questionable data

"Metallic Conduction Factor"  
(Apparent)

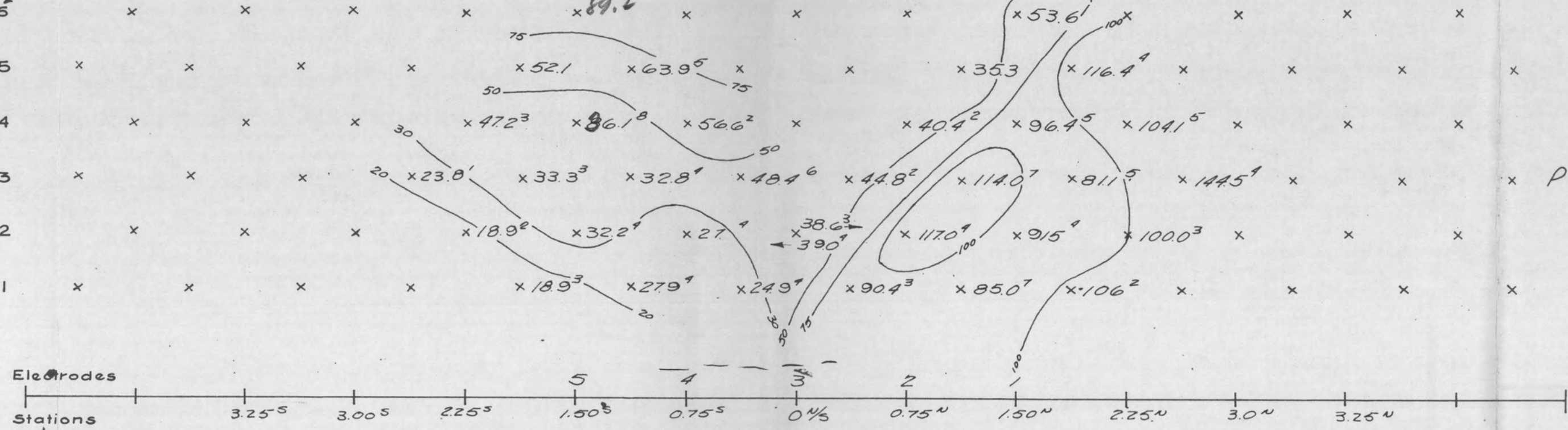


SECTIONAL DATA SHEET  
LINE No. 1  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 1000 DATE: 9-63

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation or  
Depth Level

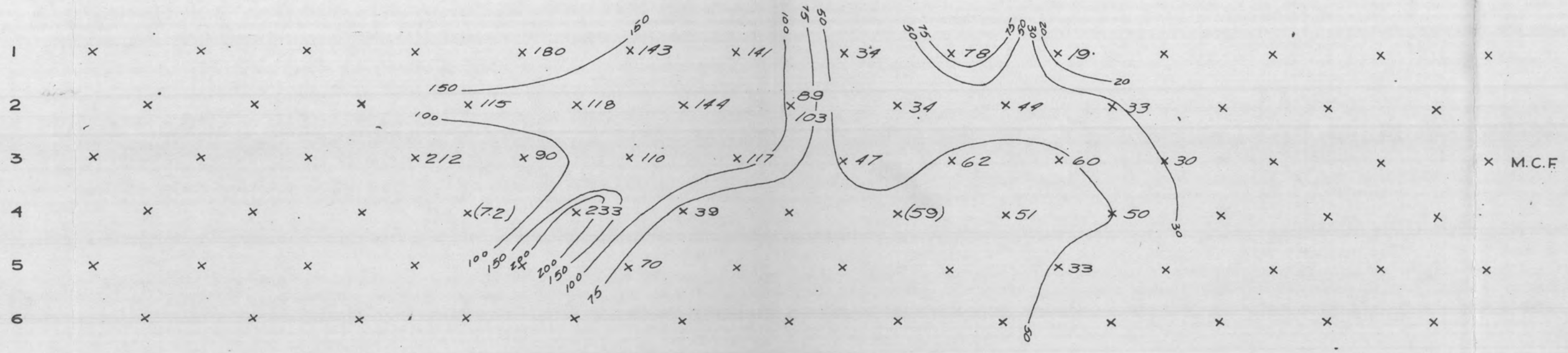


LEGEND

- End of Line
- Station
- - - No Anomaly
- - - Very Weak
- - - Weak
- - - Moderate
- - - Strong

Contour interval: Logarithmic  
( ) indicates questionable data

" Metallic Conduction Factor "  
(Apparent)



SECTIONAL DATA SHEET  
LINE No. 2 SPREAD 1  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 750 DATE: SEPT 1963

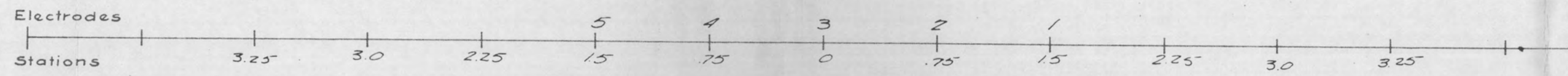
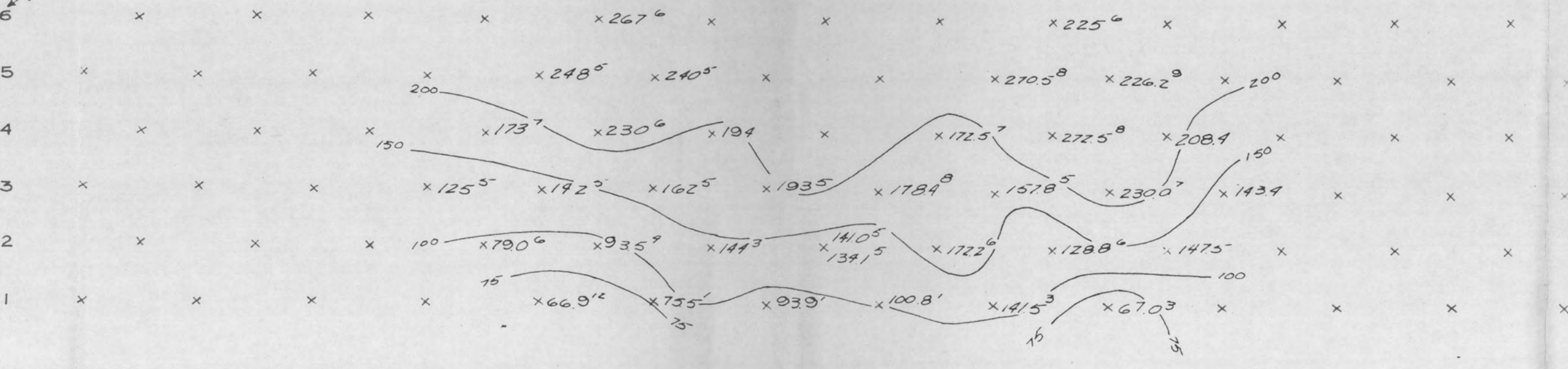
SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY



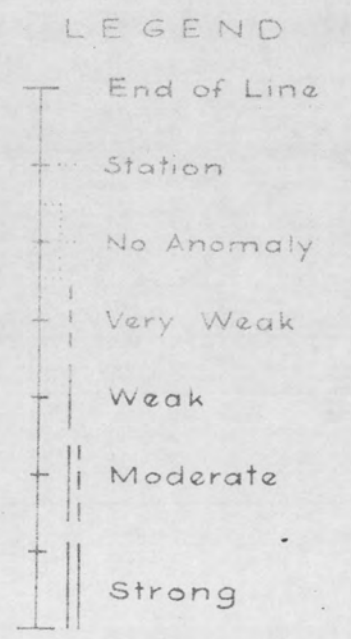
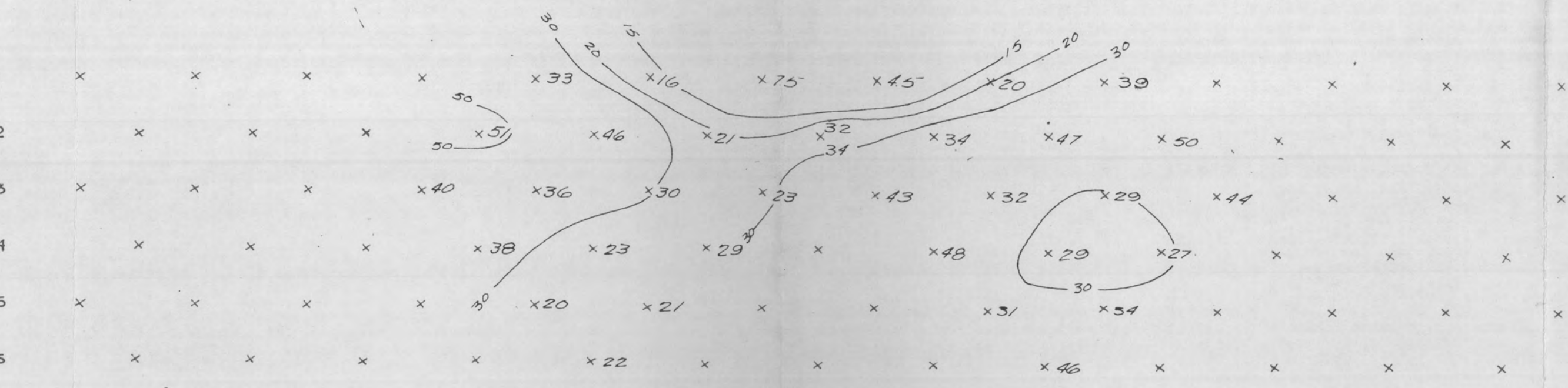


Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation of  
Depth  
Level



"Metallic Conduction Factor"  
(Apparent)



Contour interval: Logarithmic  
( ) indicates questionable data

SECTIONAL DATA SHEET  
LINE No. 3  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 750' DATE: SEPT. 1963

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

*Poc/2π*

x M.C.F



Mo Mag

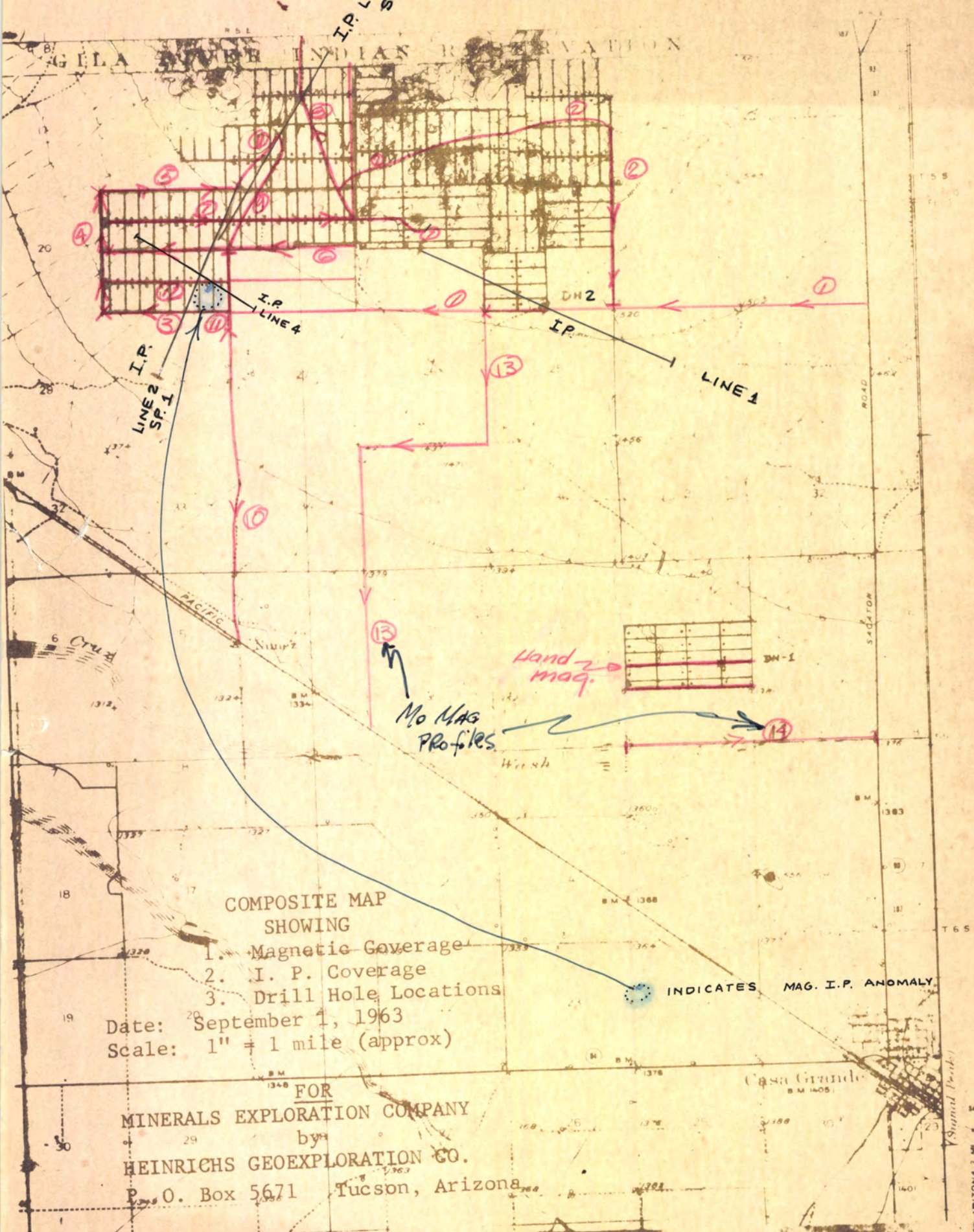
Minerals Exploration - Aug. 1963

Sacaton Mts.

- 1 Record No 1
- 2 " " " rerun except for first portion
- 3 " " 2
- 4 " " 3
- 5 " " 4
- 6 " " 5
- 7 " " 6
- 8 " " 7
- 9 " " 8
- 10 " " 9
- 11 " " 10
- 12 " " 11
- 13 " " 12
- 14 " " 13
- 15 " " 14

29  
1  
4

I.P. LINE 2  
SP. 2



COMPOSITE MAP  
SHOWING  
1. Magnetic Coverage  
2. I. P. Coverage  
3. Drill Hole Locations

Date: 20 September 1, 1963  
Scale: 1" = 1 mile (approx)

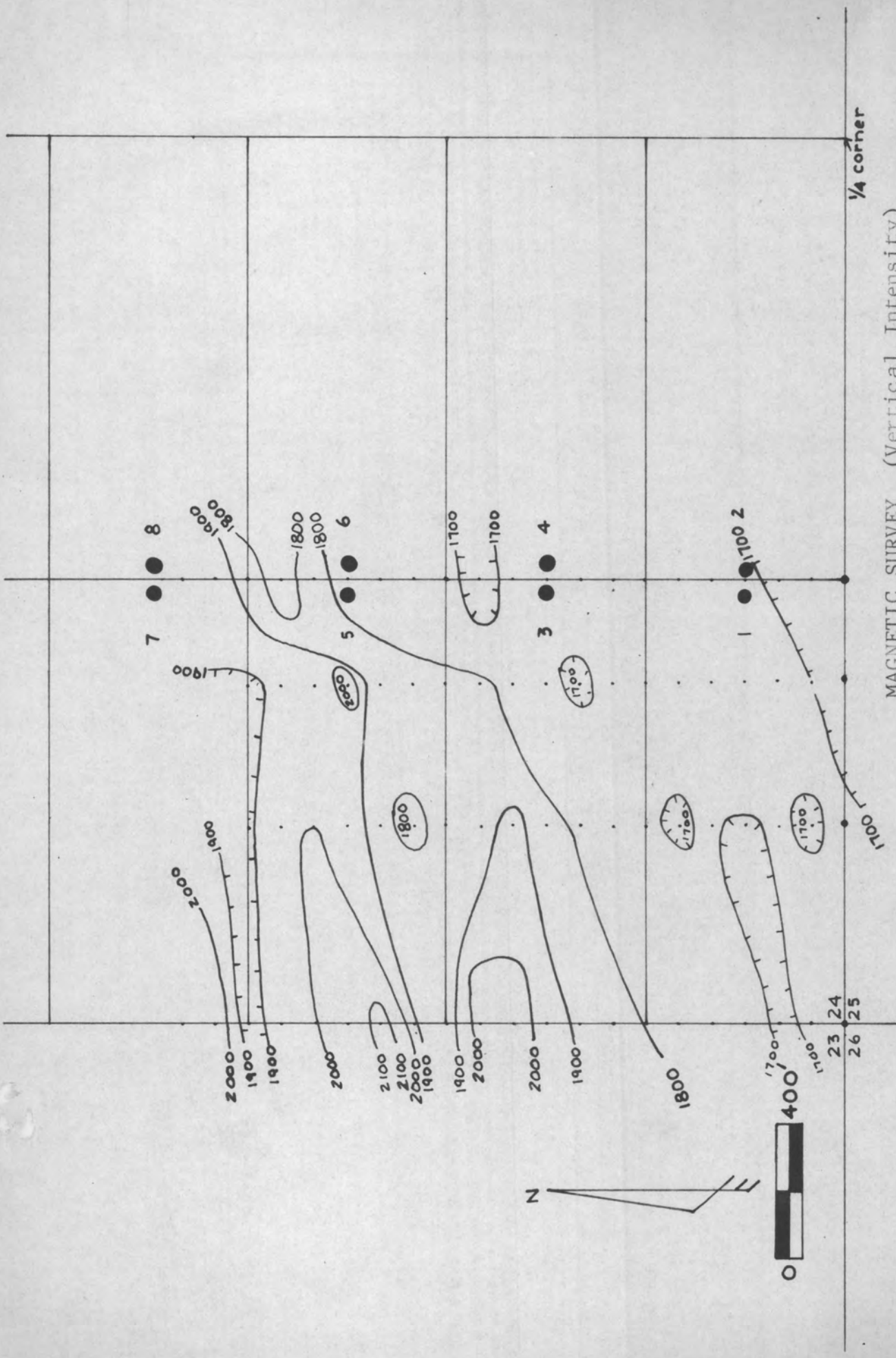
FOR  
MINERALS EXPLORATION COMPANY  
by  
HEINRICHS GEOEXPLORATION CO.  
P.O. Box 5671 Tucson, Arizona

INDICATES MAG. I.P. ANOMALY

ARIZONA 3 N 7 E  
TUCSON 67 W

*Coat*





MAGNETIC SURVEY (Vertical Intensity)  
 IT Claim Group  
 Sec. 24, T 5 S, R 5 E, Pinal County, Arizona  
 SAGATON PROJECT

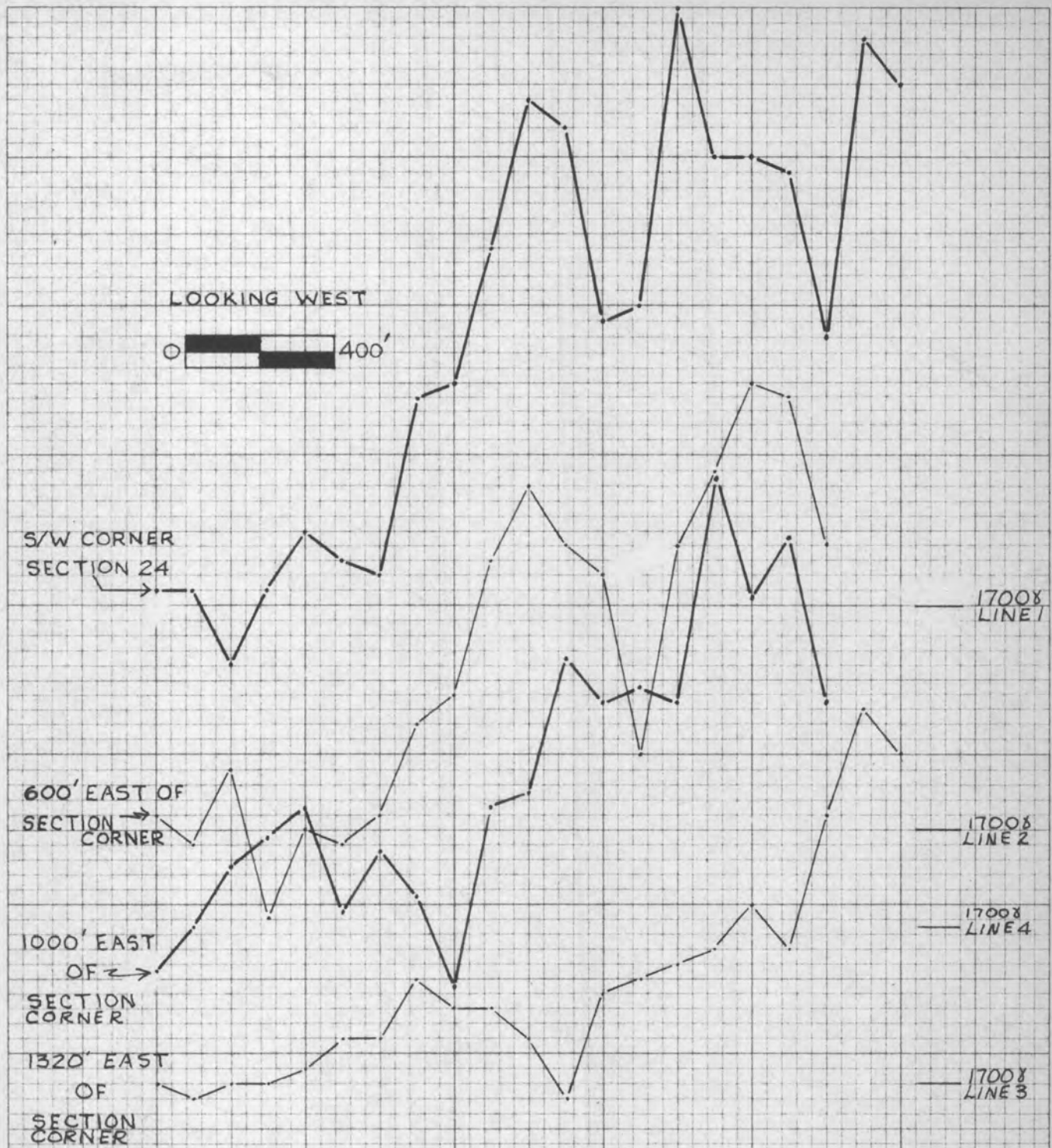
for  
 MINERALS EXPLORATION COMPANY  
 by  
 HEINRICHS GEOEXPLORATION COMPANY

Contour Interval = 100  $\delta$

SEPTEMBER 1963

EUGENE DIETZGEN CO.  
MADE IN U. S. A.

NO. 3408-10 DIETZGEN GRAPH PAPER  
10 X 10 PER INCH



Vertical Scale = 1" = 100 gammas

MAGNETIC PROFILES

IT Claim Group

Sec. 24, T 5 S, R 5 E, Pinal County, Arizona

SAGATON PROJECT

for

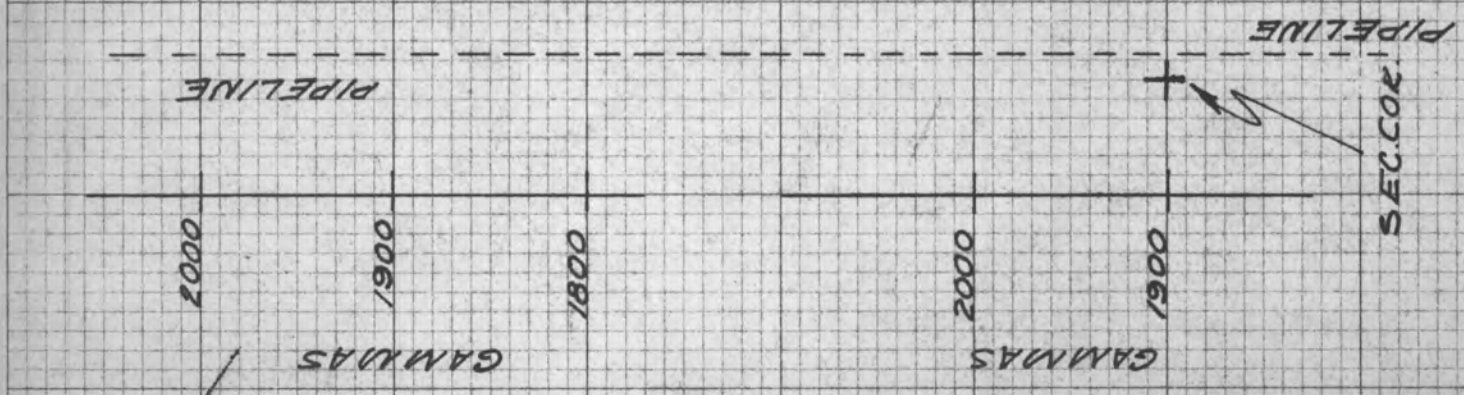
MINERALS EXPLORATION COMPANY

by

HEINRICHS GEOEXPLORATION COMPANY

September 1963





SOUTH EDGE  
OF HILL

LINE 2

DRILL HOLE #1  
(Projected)

LINE 2  
1250'  
NORTH OF LINE 1  
CROSSES CENTER OF  
WINNIE 5, 6, 13, and 14

LINE 1

LINE 1  
ALONG SOUTH  
LINE OF SECTION 1

||  
(2) 1/4 COR.

SEC. COR.

LOOKING NORTH

H. SCALE 1" = 400'  
V. SCALE 1" = 100γ

T.D. - 364' Cpl.

HAND MAGNETIC PROFILES

SACATON PROJECT  
WINNIE CLAIMS  
SEC. 1 E. 6 S. R. 5 E.  
PINAL COUNTY, ARIZONA

SEPTEMBER 1963

SACATON PROJECT - MINERALS EXPLORATION COMPANY.

January 17, 1964

OBLIGATIONS: PAST, PRESENT AND FUTURE

Groups of  
Contiguous  
Claims

ASSESSMENT PERIODS

1962 - 1963 Assessment Year

All claims (185 total) are contiguous  
except 20 Winnies for 1963 - 1964  
Assessment Year

Totals to Date  
January 1964

	1962 - 1963 Assessment Year			Totals to Date January 1964		
	Required	Expended	Due	Required	Expended	Due
<u>Group #1:</u> 144	\$14,400.00	\$14,400.00	None	\$28,800.00		
<u>Group #2:</u> JR 14	100.00	100.00	"	200.00		
<u>Group #3:</u> 37	NONE	NONE	NONE	3,700.00	\$19,650.48	13,349.52
<u>Group #4</u> Agnes 1A Agnes 2A	NONE	NONE	NONE	200.00		
<u>Group #5</u> ---JNJ 6	NONE	NONE	NONE	100.00		
<u>Groups #1</u> thru 5 -- <u>GROUP #6</u> 185 Claims TOTAL	\$14,500.00	\$14,500.00	"	\$33,000.00	\$19,650.48	13,349.52
<u>Group #7:</u> 20 Winnies	2,000.00	2,002.00	"	4,000.00	2,002.00	2,000.
TOTALS OF ITEMS #6 and #7 ONLY	\$16,500.00	\$16,502.00	"	\$37,000.00	\$21,652.48	15,349.52

Mexico

E. ZISMAN Expense account  
Casa Grande Tacaton

9/10/63

Lunch	—	1.50
Supper	—	2.59
TIPS	—	.75
cohes	—	.40
TOT.		<u>5.24</u>

2.61

9/11/63

Breakfast	—	1.30
Lunch	—	1.35
Supper	—	2.49
Tips	—	.75
cohes	—	.50
aviation gas for gen.	—	<u>1.70</u>
		<u>8.09</u>

~~20.00~~

9/12/63

Breakfast	—	1.80
Lunch	—	1.60
TIPS	—	.25
cohes	—	.40
		<u>4.05</u>

20.00  
17.39  
 Bal due Co 2.61 ←

to	5.25
	8.09
	<u>4.05</u>

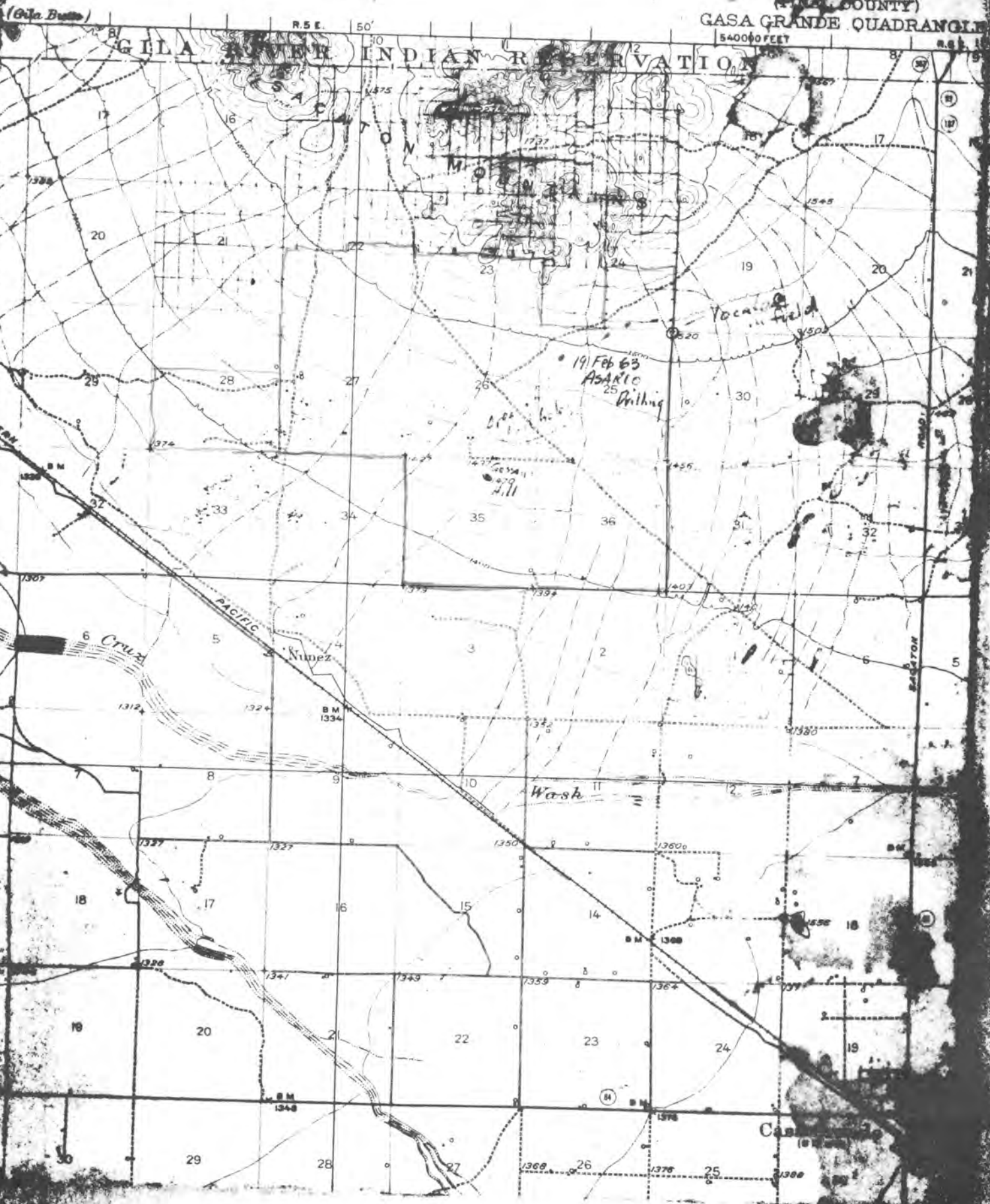
Total for 3 days 17.39

205  
1772 claims?

NEBA 32 MI.  
TO ARIZ BY  
FLOR 6 MI.

ARIZONA  
PINAL COUNTY

GASA GRANDE QUADRANGLE  
54000 FEET

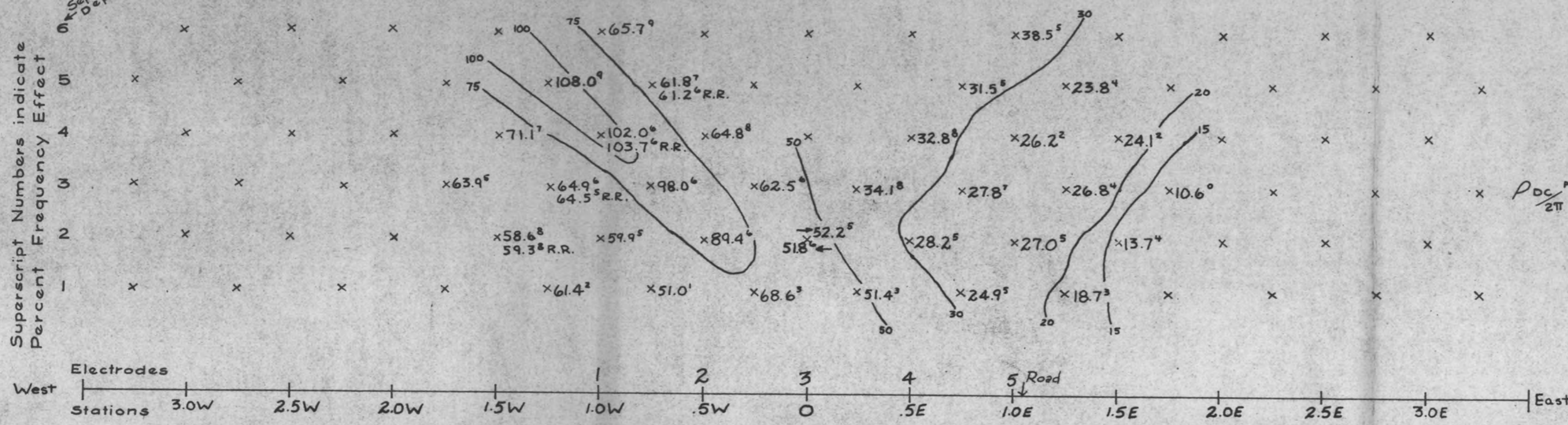


U.S. GEOLOGICAL SURVEY  
WASHINGTON, D.C.

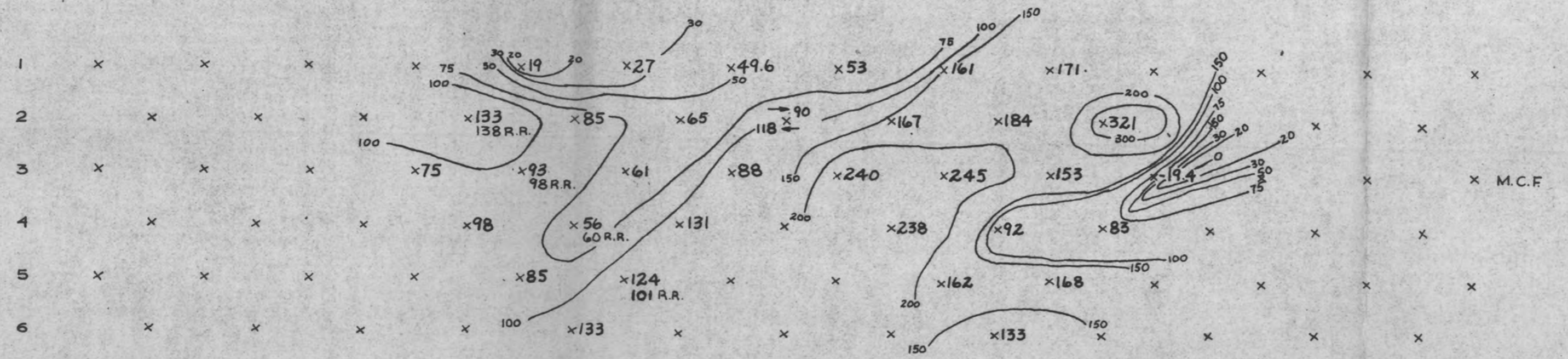


Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation or  
Depth Level



"Metallic Conduction Factor" (Apparent)



LEGEND

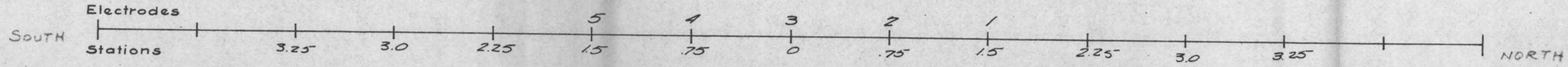
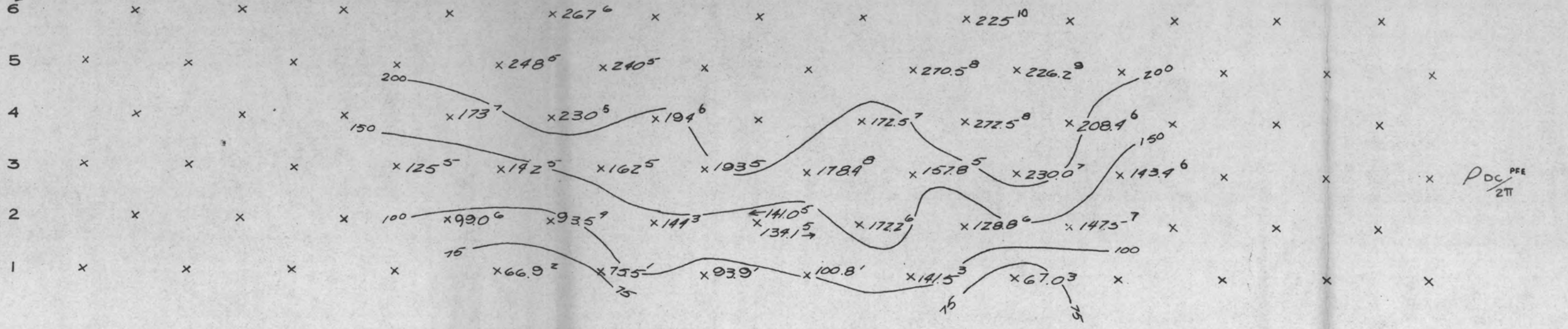
- End of Line
- Station
- - - No Anomaly
- - - Very Weak
- - - Weak
- || Moderate
- || Strong
- R.R. Re-read

Contour interval: Logarithmic  
( ) indicates questionable data

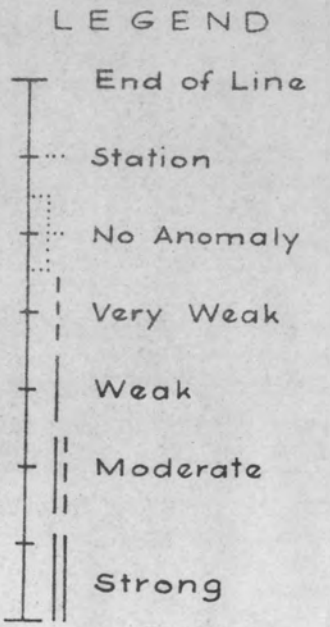
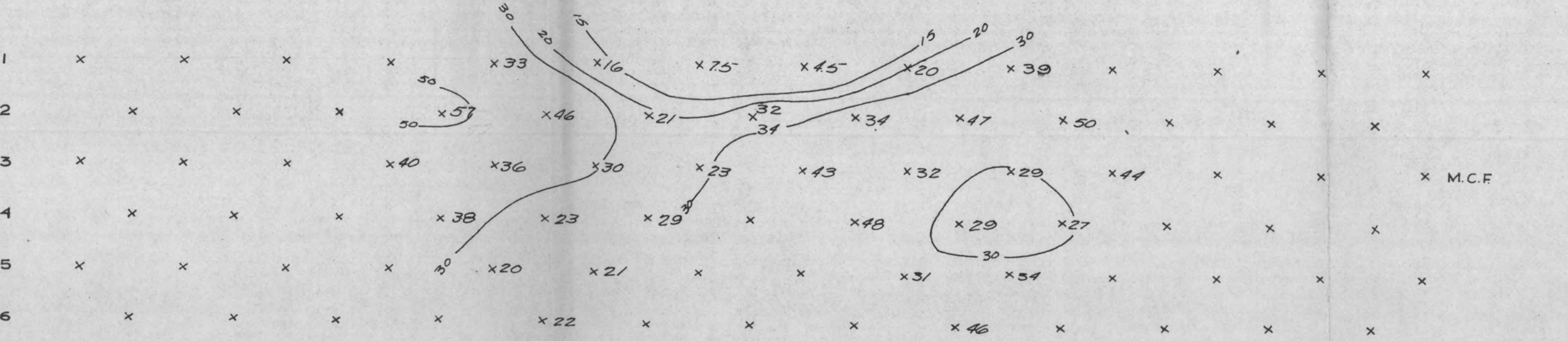
SECTIONAL DATA SHEET  
LINE No. 4 SPREAD 1  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 500' DATE: Sept. 12, 1963

Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation or  
Depth Level



"Metallic Conduction Factor" (Apparent)



$\rho_{DC} / 2\pi$

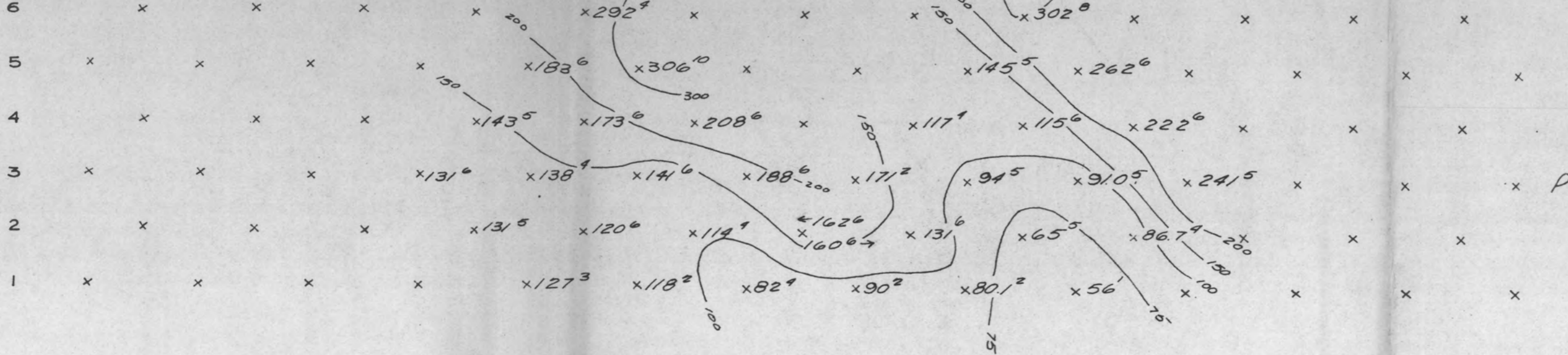
Contour interval: Logarithmic  
( ) indicates questionable data

SECTIONAL DATA SHEET  
LINE No. 3  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 750' DATE: SEPT. 1963

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation or  
Depth Level

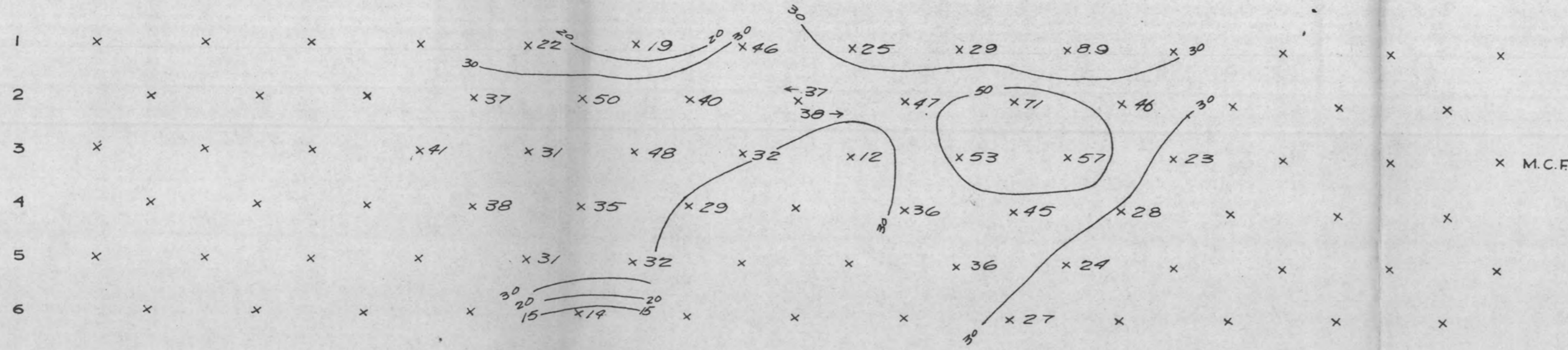


LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic  
( ) indicates questionable data

" Metallic Conduction Factor "  
(Apparent)



SECTIONAL DATA SHEET  
LINE No. 2 SPREAD 2  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1"=750' DATE: SEPT 1963

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

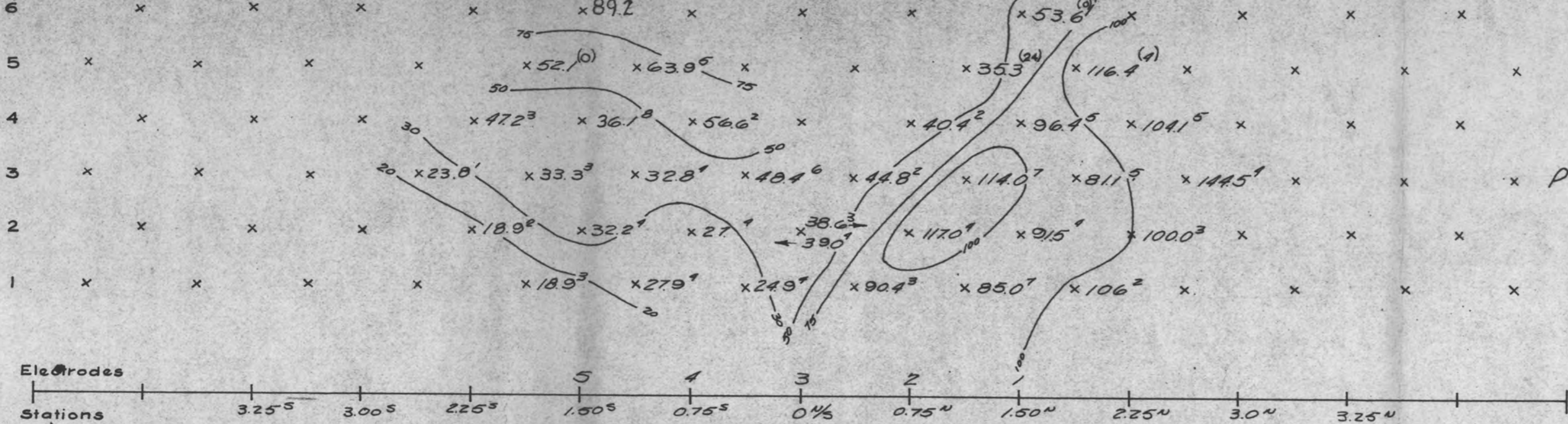
$$P_{DC} \frac{PFE}{2\pi}$$

x M.C.F



Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation or  
Depth Level

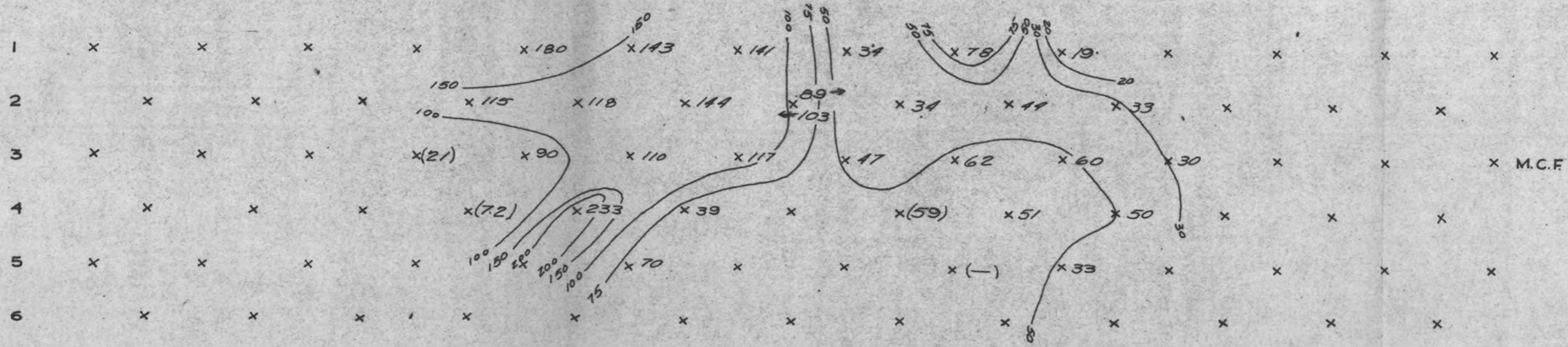


LEGEND

- End of Line
- Station
- - - No Anomaly
- Very Weak
- - - Weak
- Moderate
- Strong

Contour interval: Logarithmic  
( ) indicates questionable data

"Metallic Conduction Factor"  
(Apparent)

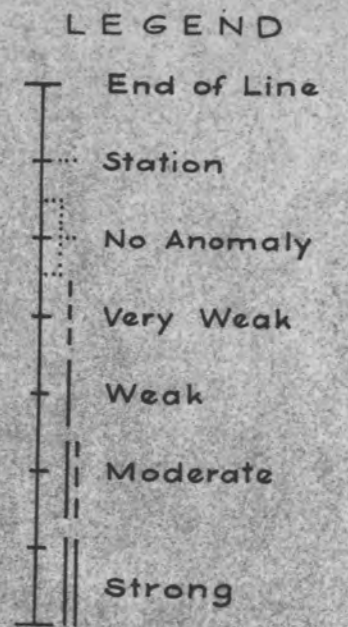
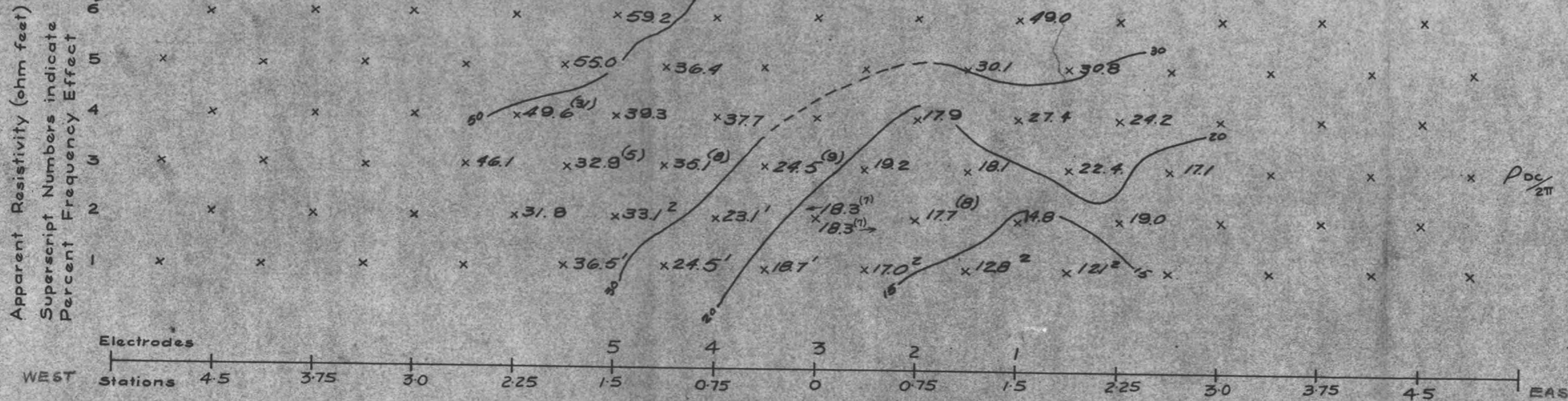


SECTIONAL DATA SHEET  
LINE No. 2 SPREAD 1  
INDUCED POLARIZATION SURVEY  
HEINRICH'S GEOEXPLORATION COMPANY  
SCALE: 1" = 750' DATE: SEPT. 1963

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

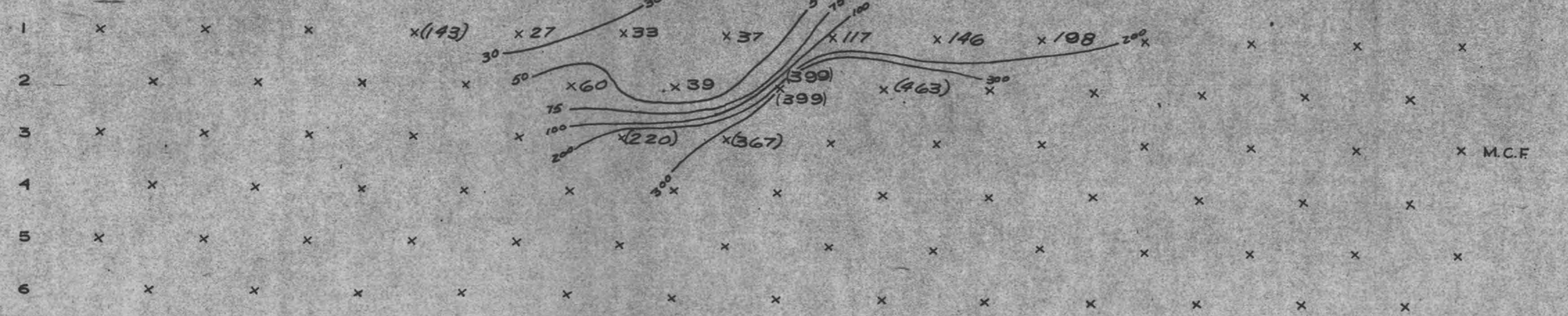
Apparent Resistivity (ohm feet)  
Superscript Numbers indicate  
Percent Frequency Effect

Separation of  
Depth Level



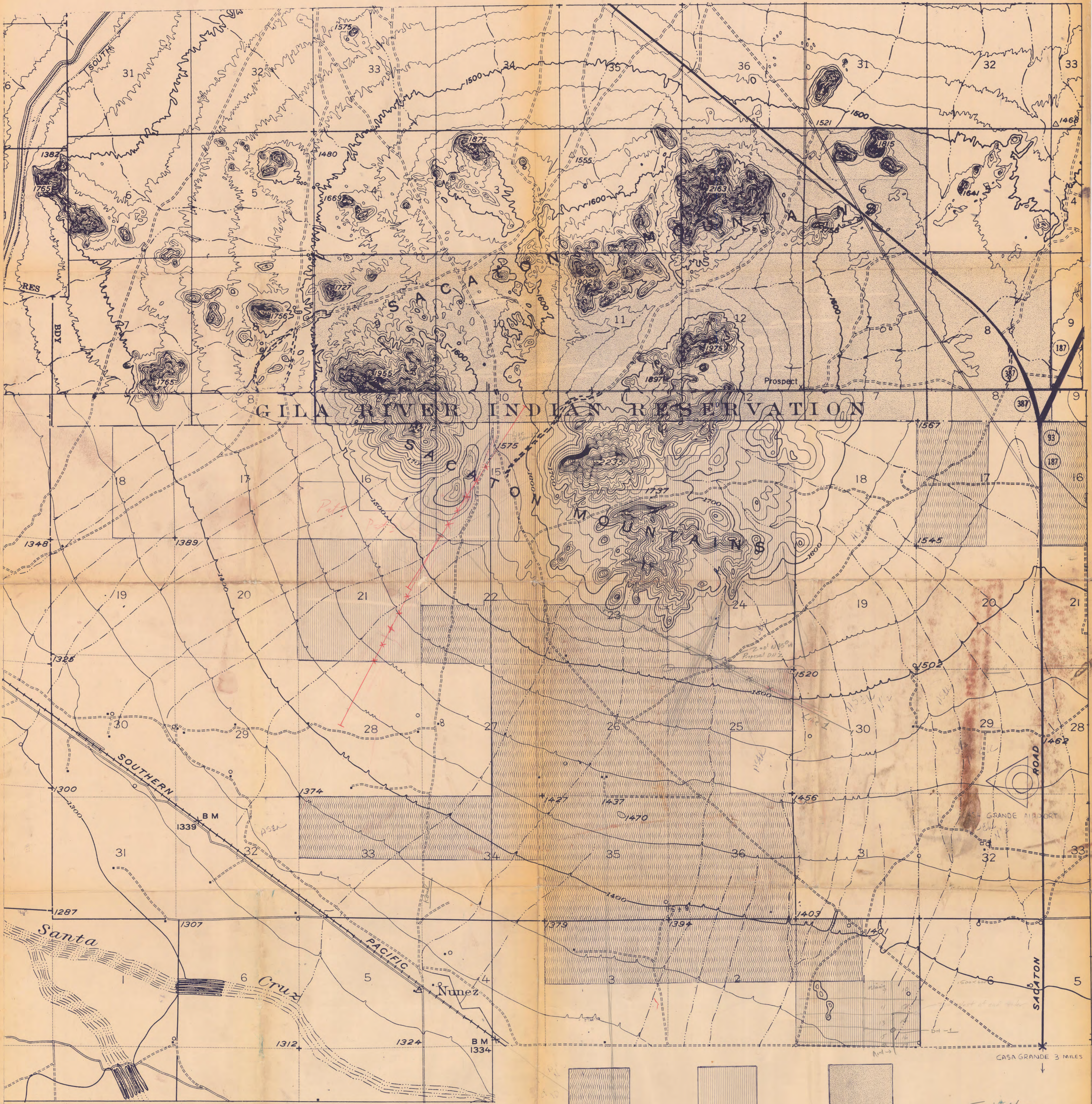
Contour interval: Logarithmic  
( ) indicates questionable data

"Metallic Conduction Factor"  
(Apparent)



SECTIONAL DATA SHEET  
LINE No. 1  
INDUCED POLARIZATION SURVEY  
HEINRICHS GEOEXPLORATION COMPANY  
SCALE: 1" = 1000 DATE: 9-63

SACATON PROJECT  
for  
MINERALS EXPLORATION COMPANY

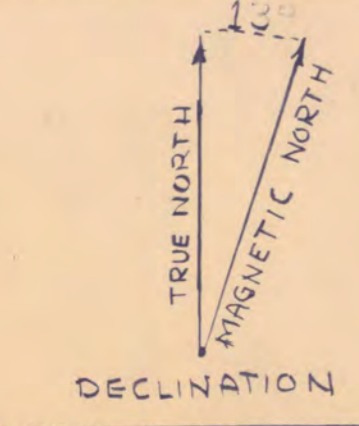


CONTOUR INTERVAL @ 25 FEET

SCALE

1/2 1/4 0 1/4 1/2 3/4 1

1 INCH TO 1/4 MILE  
4 INCH TO 1 MILE



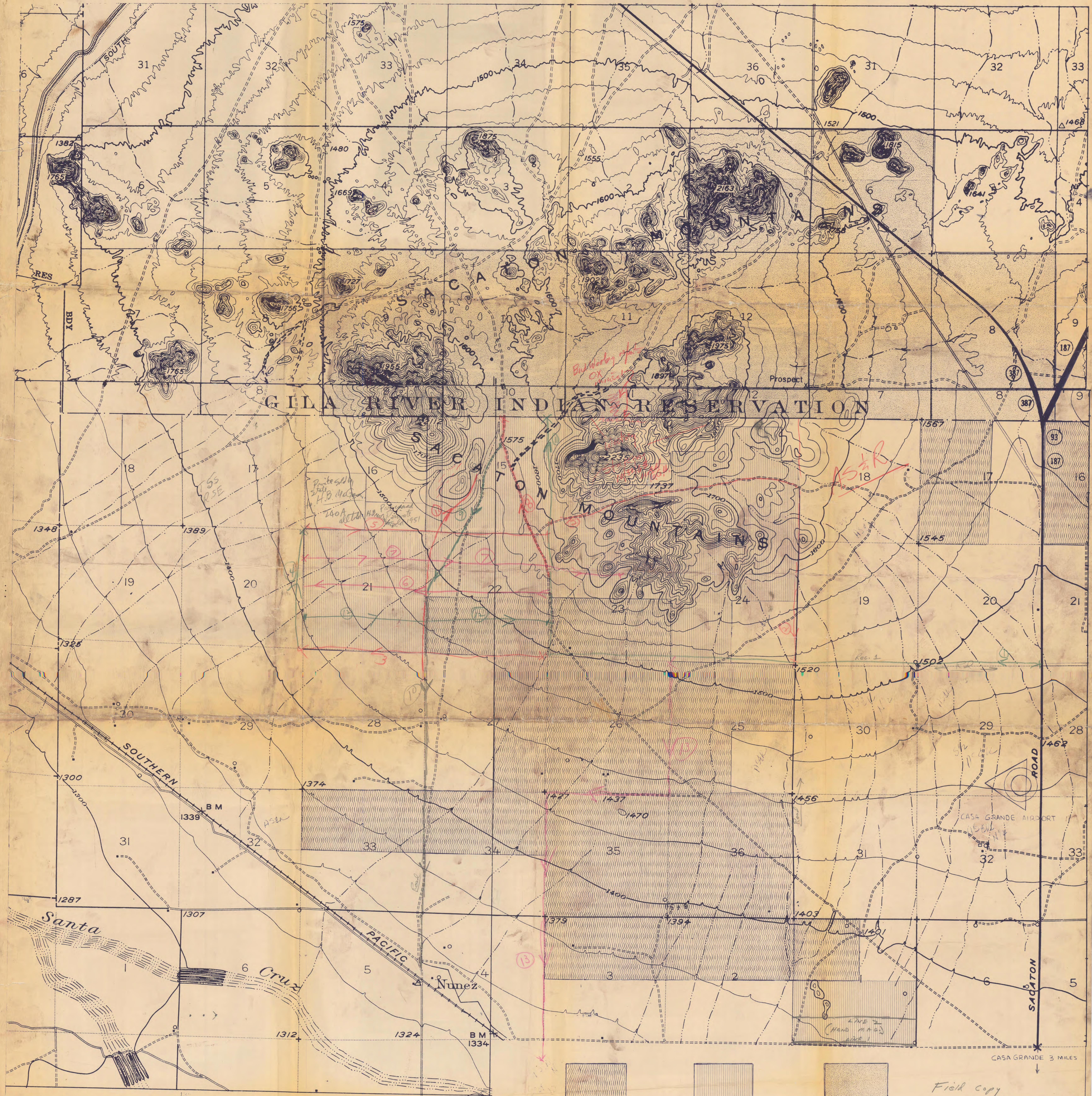
AMERICAN SMELTING AND REFINING CO.

CLAIMED AREA.

BESSUL MINING AND DEVELOPMENT CO

Field MAP





GILA RIVER INDIAN RESERVATION

CONTOUR INTERVAL @ 25 FEET

SCALE

1/4 1/8 0 1/4 1/2 3/4 1

1 INCH TO 1/4 MILE  
4 INCH TO 1 MILE

TRUE NORTH  
MAGNETIC NORTH  
DECLINATION

AMERICAN SMELTING AND REFINING CO. 

CLAIMED AREA. 

BESSON MINING AND DEVELOPMENT CO 

Field Copy  
MoMap & Hand Map Coverage

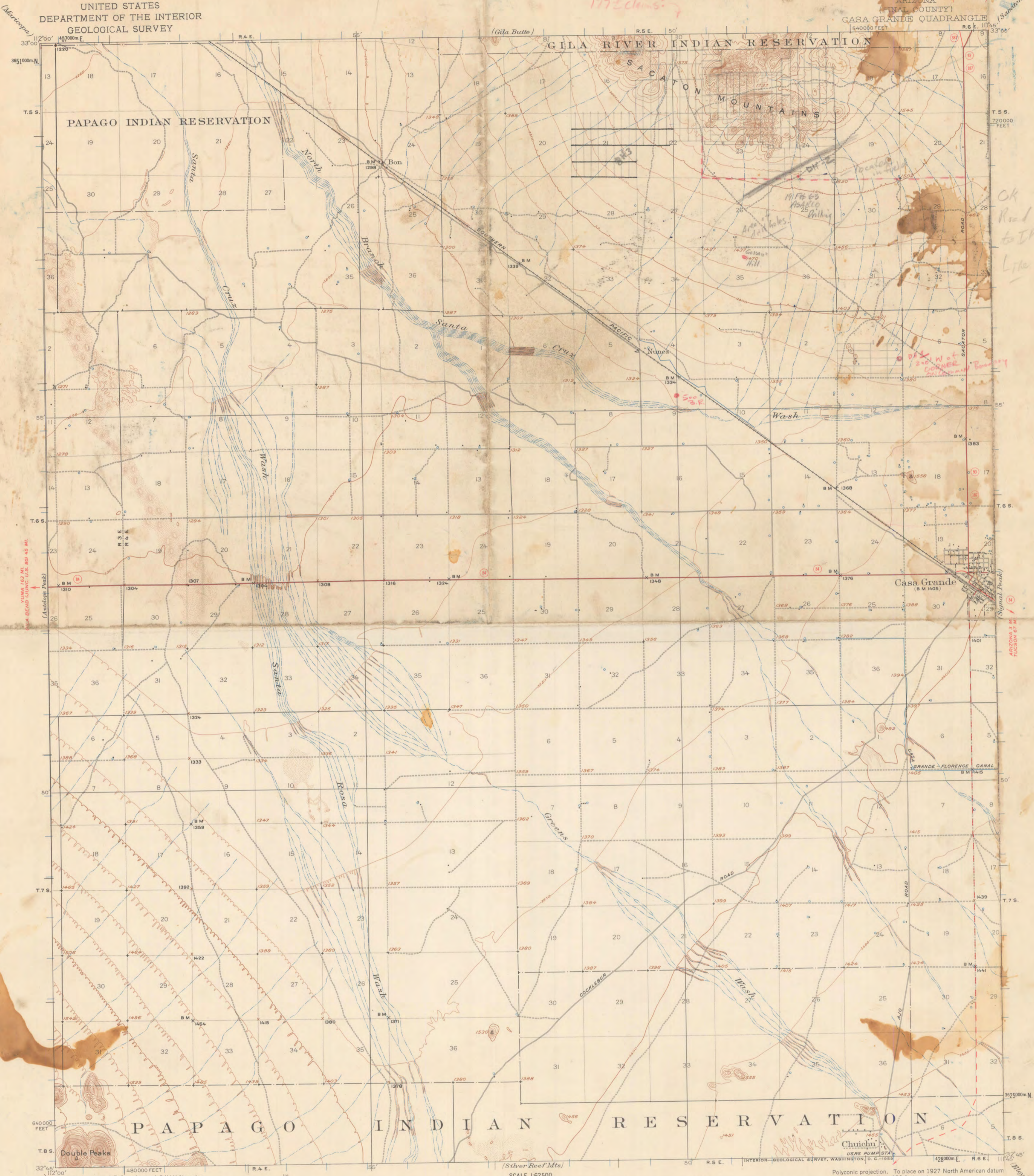
14

1970/1

177± chins?

MESA 26 MI. 17 MI. TO ARIZ. 87  
FLORENCE 26 MI. 6 MI. TO ARIZ. 87  
ARIZONA (PINAL COUNTY)  
CASA GRANDE QUADRANGLE  
540000 FEET  
R. 4 E. 112° 00' 33" W. 33' 00" N.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



PAPAGO INDIAN RESERVATION

GILA RIVER INDIAN RESERVATION

SANTA CRUZ MOUNTAINS

Casa Grande  
(B.M. 1405)

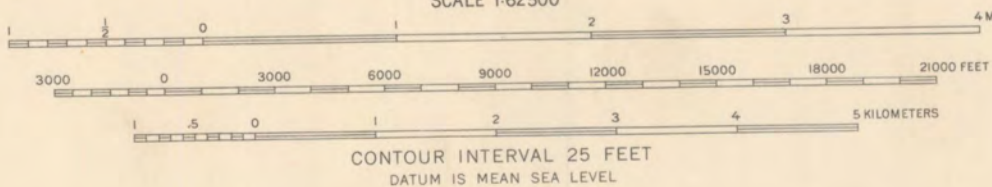
PAPAGO INDIAN RESERVATION

Topography by A.B. Searle and C.W.H. Nessler  
Surveyed in 1921-1922

ROAD CLASSIFICATION

- Heavy-duty ————
- Medium-duty - - - - -
- Light-duty ————
- Unimproved dirt - - - - -
- State Route ○

APPROXIMATE MEAN  
DECLINATION, 1922



Chihuahua  
USRS PUMP STATION  
POLYCONIC PROJECTION. To place on 1927 North American datum  
move projection lines 100 feet west  
10,000-foot grid based on Arizona (Central)  
rectangular coordinate system  
1000-meter Universal Transverse Mercator grid ticks,  
zone 12, shown in blue

QUIJOTA JUNC. ARIZ. 861 50 MI.  
CASA GRANDE, ARIZ.  
N3245 - W11145/15  
1922

FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Proposed  $\frac{1}{2}$  acre  
I.P. Coverage  
4/13/62

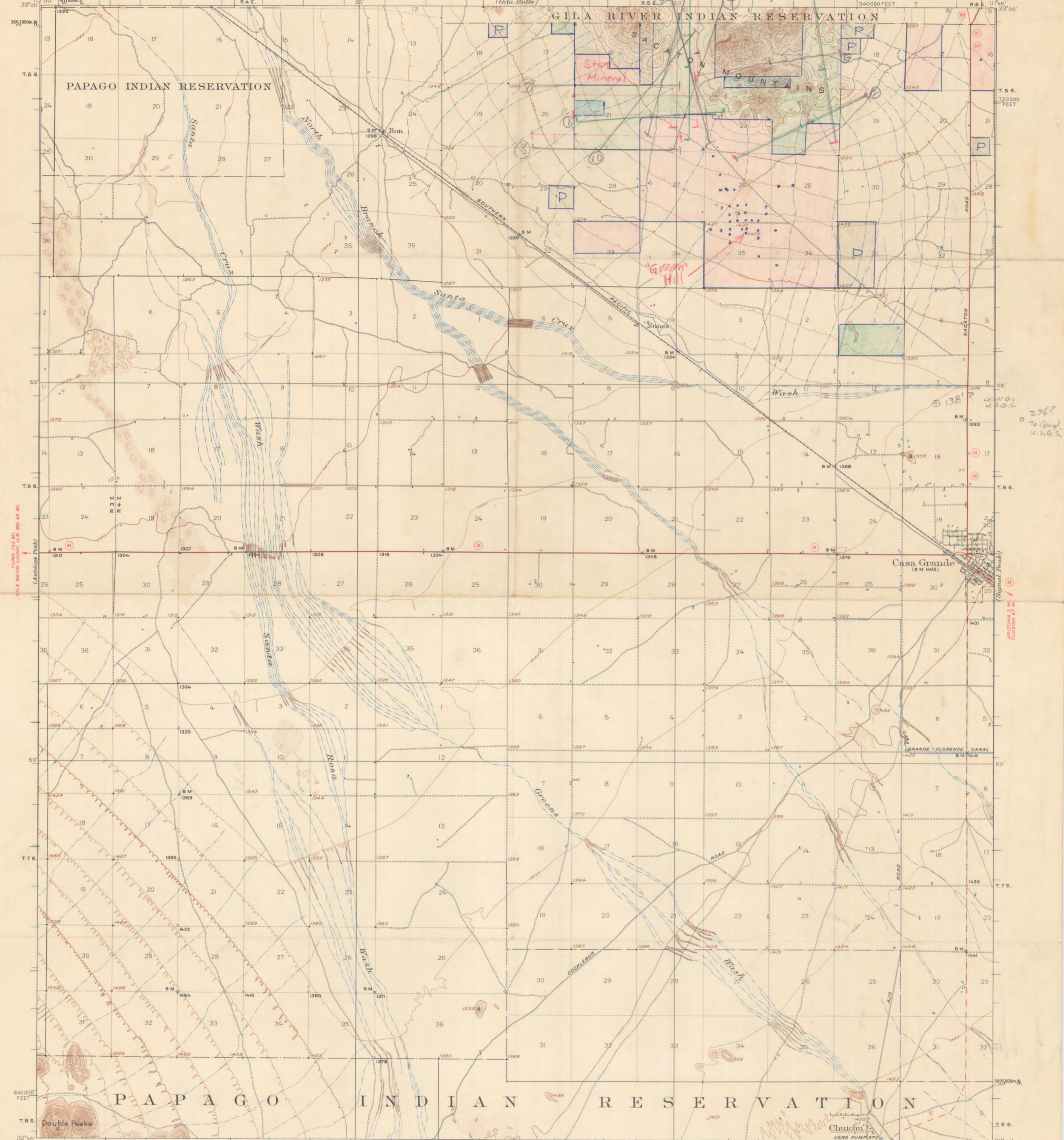
McKinney Gold Mines Ltd  
Vancouver B.C. CANADA  
Optioned by MCK. G.M. Ltd.

Federal Lode Claims  
AS & R  
Additional Property  
that may be acquired  
Private Property

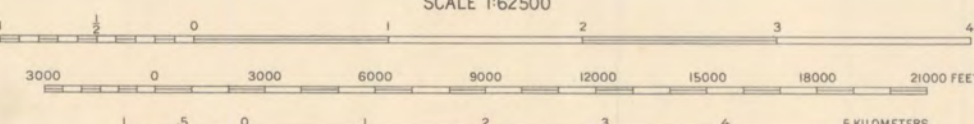
MCK. G.M. Ltd.  
11th Stage I.I.P.  
Mesa 32 MI.  
17 MI. TO ARIZ. 87  
FLORENCE 26 MI.  
6 MI. TO ARIZ. 87

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

ARIZONA  
(PINAL COUNTY)  
CASA GRANDE QUADRANGLE



ROAD CLASSIFICATION  
Heavy-duty ——— Light-duty ———  
Medium-duty ——— Unimproved dirt - - - - -  
State Route ○



CONTOUR INTERVAL 25 FEET  
DATUM IS MEAN SEA LEVEL

Polyconic projection. To place on 1927 North American datum  
move projection lines 100 feet west  
10,000-foot grid based on Arizona (Central)  
rectangular coordinate system  
1000-meter Universal Transverse Mercator grid ticks,  
zone 12, shown in blue

QUIJOTOA JUNG. ARIZ. 90 50 MI.  
CASA GRANDE, ARIZ.  
N3245 - W1145/15  
1922

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear J4

HOLE NO. Sacaton DDH #1  
 FROM Winnie 15-16-17-18 common  
 ELEVATION corner, Sec. 1, T6S, R5E  
 COORDINATES . . . . . N . . . . . E  
 DIRECTION . . . . .  
 INCLINATION Vertical DEPTH 364'  
 STARTED Aug. 27, 1963 COMPLETED Sept. 6, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
		<p>Drilled with 4 1/4" Rock Bit</p> <p>NX wireline cores were taken at 136' - 145' and 233'-300'. Recovery was 100%.</p> <p>Rock is breccia, or Casa Grande conglomerate, weakly cemented, coarse, angular fragments of granite, monzonite and schist. Sludge water reddish from cementing material (hematite and sericite) which is soft and easily eroded by the drilling water. Breccia fragments separate from each other by hand pressure.</p> <p>No visible sign of copper in any form, or any sulfide, or any minerals of interest.</p>											

HEINRICHS GEOEXPLORATION CO.  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 - TUCSON, ARIZONA 85703



MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE No. Sacaton D.D.H. #2  
 FROM: "It" claim No. 2, Sec. 24,  
 ELEVATION: T5S, R5E  
 COORDINATES: N. E.  
 DIRECTION: Vertical  
 INCLINATION: Vertical DEPTH: 1455'  
 STARTED: Sept. 9, 1963 COMPLETED: Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
	0'													
		0'-50' Alluvium and overburden												
		50'-630' Casa Grande Conglomerate loosely consolidated ferruginous ground mass with some schist but mainly angular granitic fragments	5 1/8" Rock bit											
	630													
		Soft Red clay	5 1/8" Rock bit											
	660													
		Soft Red clay small fragment of conglomerate or breccia	NX	5%										
	670													
		Clay, sand, some conglomerate/breccia	5 1/8" Rock bit											
	695													


**HEINRICHS GEOEXPLORATION CO.**  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 TUCSON, ARIZONA 85703

MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE NO. Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS			SLUDGE ASSAYS		
					SECTION	CU.		SECTION	CU.	
	695	Clay, sand, some conglomerate/ breccia	5 1/8" Rock bit							
	720	A few minor cuttings of exotic or oxide copper	5 1/8"							
	726	Sand and clay from altered breccia	NX	4%						
	732	Altered breccia with limonite, hematite and clay	NX	40%						
	737	A few fragments - rest sand and clay	NX	1%						
	762	Sand, clay and much hematite mud. Sludge ran very red. Some very altered breccia	NX	12%						
	782.5									

**HEINRICH'S GEOEXPLORATION CO.**  
 Phone: (Area 602) 823-0578  
 Cable: GEOEX  
 BOX 594 • TUCSON, ARIZONA 85703



MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE No. Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24,  
 ELEVATION T1S, R5E  
 COORDINATES ..... N ..... E  
 DIRECTION .....  
 INCLINATION Vertical DEPTH 1455'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
	782.5												
		Part of preceeding interval	NX										
	787												
		Same except sludge less red. The fragments recovered are soft and white kaolin, sericite	NX	1%									
	815												
		Highly altered breccia	NX	20%									
	825												
		Highly altered breccia, mostly decomposed granite or monzonite	NX	100%									
	830												
		Very broken and similar to preceeding intervals	NX	30%									
	838												
		Harder but still similar. Recemented breccia	NX	50%									
	846												
		Same	NX	50%									
	854												
		soft. Only small recovery	NX	3%									
	862												
		Same	NX	8%									
	870												

HEINRICH'S GEOEXPLORATION CO.  
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 (Cable: GEOEX)  
 BOX 5964 - TUCSON, ARIZONA 85703

MINERALS EXPLORATION COMPANY

Drill Contractor: Metler Bros

Driller: Augie Greenwood

HOLE N. Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N. E.  
 DIRECTION  
 INCLINATION Vertical DEPTH 1455'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
	870													
	871	Breccia and up hole cave	NX	25%										
	872	Harder, brkn, former disseminated min.	NX	55%										
		As above	NX	60%										
	877	Same	NX	50%										
		Hole reamed and cased to 886'												
	886	Broken, Altered breccia	NX	75%										
	890	No change	NX	100%										
	894	Same, but slightly harder	NX	100%										
	900	Same	NX	100%										
	903	Same but lighter color due to somewhat less hematite	NX	100%										
	910.5	Breccia. More broken, increased hematite on fractures	NX	100%										
	912.5	Same. Broken, increasingly red Soft at 919-920	NX	100%										
	922.5	Same	NX	75%										
	925.5	Very soft and red	NX	60%										
	932	Very soft and red, but getting lighter last 0.8 foot	NX	80%										
	937	Same as botton above	NX	50%										
	945	About half red hematite Sludge very red	NX	50%										
	953	Harder and a little less red	NX	60%										
	957.5													

HEINRICH'S GEOEXPLORATION CO.  
 Phone: (Area 602) 623-0573  
 (Cable: GEOEX)  
 TUCSON, ARIZONA 85703  
 BOX 5864

MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros  
 Driller: Augie Greenwood

HOLE NO. Sacaton DDH # 2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1455'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS			SLUDGE ASSAYS		
					SECTION	CU.		SECTION	CU.	
	957.5									
	959	Part of preceeding interval	NX							
	963	Very broken - small chips and mud from breccia	NX	50%						
		Some harder but still broken	NX	100%						
	967									
		Harder and lighter								
	969		NX	100%						
		Soft and red								
	972		NX	100%						
		Very red and soft								
	977									
		Very red and soft								
	979		NX	100%						
		Harder breccia, still altered								
	987									
		Altered breccia								
	993		NX	100%						
		Soft and very red								
	996									
		Altered breccia								
	997		Nx	90%						
		Soft, red, altered granite breccia								
	1002									
		Same	NX	100%						
	1012									
		Harder, less red to possible fault at 1021. Then red again	NX	100%						
	1021									
		Soft and red								
	1022									
		Granite breccia, soft and red. Visible copper oxides start with stained breccia fragments at 1033.5	NX	100%	1022					
					1034					
						0.26%				
	1034									
		Harder. Possibly a former diorite rock. Strong copper showings	NX	100%	1034					
	1038									
		Same. Slickensides at 1042 below which the rock is hard with more increase in copper oxides	NX	100%	1046					
						1.30%				
						Average 6 1/4 ft. = 0.98% Cu.				
	1045									

HEINRICHS GEOEXPLORATION CO.  
 Phone: (Area 602) 623-0578  
 (Cable: GEDEX)  
 BOX 5964 - TUCSON, ARIZONA 85703

MINERALS EXPLORATION COMPANY  
 Drill contractor: Metler Bros.

HOLE N Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24,  
 ELEVATION T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
		1045												
		1046												
		Same basic rock. Quite fractured, hard. Strong oxide copper	NX	100%	1046	1.41%								
					1056	1.41%								
		1056												
		Same												
		1059												
		a rehealed zone												
		Hard, lighter color, chloritic rock with some copper oxide and sulfide casts	NX	100%	1056	1.57%								
					1066	1.57%								
		1066												
		Vertical hematite seams in somewhat softer chloritic rock. Copper still strong.	NX	100%	1066	1.07%								
					1076	1.07%								
		1076												
		Altered granitic breccia, softer toward the bottom and getting red. Copper shows diminishing,	NX	100%	1076	0.36%								
					1086	0.36%								
		1086												
		Altered breccia, less red. Some minor, weak shows of exotic copper.	NX	100%										
		1096												
		Altered breccia looking like porphyry at bottom. No significant show of copper.	NX	80%										
		1106												
		Altered breccia. Badly broken at 1110' and 1114'. No copper.	NX	100%										
		1116												
		Fractured and altered breccia	NX	100%										
		1126												
		Same	NX	100%										
		1132.5												

**MEINRICHS GEOEXPLORATION CO.**  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 • TUCSON, ARIZONA 85703

Weighted average 6 1/4 feet = 0.98% Cu.

MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE N Sacaton DDH#2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS			SLUDGE ASSAYS			
					SECTION	CU.		SECTION	CU.		
	1132.5										
		Part of Preceeding interval	NX								
	1136	Same to 1145 where rock becomes lighter in color - quartz porphyry - with a few spots of copper oxides	NX	100%							
	1146	Same as 1145 to 1153 minor copper show.	NX	100%	1146						
	1153	More altered & brkn. Minor copper			1156	0.24%					
	1156	Hard, siliceous and light colored with good show of oxide copper	NX	100%	1156	1.23%					
	1166				1166						
	1167.5	Fault (?) zone with broken chips to 1167.5, then red altered granite breccia becoming lighter colored at bottom. Very minor copper shows.	NX	100%	1166						
	1176	Same	NX	100%	1176	0.19%					
	1186	Same. Red breccia. No copper	NX	100%							
	1196	Same	NX	100%							
	1206	Same	NX	100%							
	1216	Same	NX	100%							
	1220										

HEINRICH'S GEOEXPLORATION CO.  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 • TUCSON, ARIZONA 85703

Weighted average 30 feet = 0.55% Cu.

MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE No. Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N. E  
 DIRECTION Vertical  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
	1220	Same. Very broken last foot	NX	100%									
	1226	Lighter colored breccia. More sericite. No copper	NX	100%									
	1235	Same	NX	100%									
	1246	Same	NX	100%									
	1256	Same to 1262, then more altered and more hematite.	NX	100%									
	1062	A few specks of Copper oxides											
	1266	No recovery. Fault?	NX	0									
	1271	Altered red breccia with some black serpentine. Slickensides. Some oxide	NX	100%									
	1275	Lighter colored and harder breccia. No copper	NX	100%									
	1279	Altered breccia. Redder and softer at the bottom.	NX	100%									
	1287	Breccia, harder at top, softer and redder at bottom.	NX	100%									
	1295	Lighter phase of altered breccia. 1303-1305 shows gossan limonite vugs after former disseminated sulfide.	NX	100%									
	1305	Altered But fairly hard. Pink (con't.)	NX	100%									
	1307.5												

HEINRICH'S GEOEXPLORATION CO.  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 TUCSON, ARIZONA 85703




MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill Truck Mounted Longyear 44

HOLE # Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
		1307.5 (con'd) rather than red. Formerly had disseminated sulfides. Altered quartz monzonite?	NX	100%										
		1315 Similar to above but more broken	NX	100%										
		1326 Same at top but grades into breccia at bottom. Fault for missing six feet of core?	NX	40%										
		1336 First 4 feet are reddish breccia, last two feet soft and more altered with a black serpentinized constituent in kaolinized rock.	NX	75%										
		1344 Harder and white with reddish fractures and veining. Minor copper oxides in last foot. Most of interval could be altered quartz monzonite.	NX	100%										
		1354 Same with increasing hematite fractures and better copper shows.												
		1359 Black serpentinized replacement in breccia	NX	100%										
		1363 As above but increasingly black and softer	NX	70%										
		1368 As above, with some minor copper	NX	85%	1368									
					1377	0.38%								
		1377 As above with decreasing black												
		1381 Breccia with red hematite veining	NX	100%										
		1386 Highly altered breccia. Bottom is a fault contact.	NX	100%										
		1391 Black fault gouge	NX	100%										
		1395												

HEINRICH'S GEOEXPLORATION CO.  
 Phone (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 8964 • TUCSON, ARIZONA 85783



MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck Mounted Longyear 44

HOLE Sacaton DDH #2  
 FROM "It" Claim No. 2, Sec. 24  
 ELEVATION T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 1155'  
 STARTED Sept. 9, 1963 COMPLETED Nov. 1, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
		1395												
		1396												
		1398												
		End of black gouge zone												
		Harder altered breccia			NX	100%								
		1406												
		Same			NX	100%								
		1411												
		Very broken, almost sand. Some fragments of copper oxides.												
		1416												
		Same as above			NX	100%								
		1425												
		Same												
		1427												
		Breccia starting soft and becoming harder. Very minor Cu shows			NX	100%								
		1431												
		Becomes more siliceous with former disseminated mineral vugs.			NX	100%								
		1437												
		A piece of up-hole caved material. Rest is siliceous and broken			NX	100%								
		1439												
		Fresher, harder, more silica. Slightly altered quartz monzonite(?) with vugs from former sulfides. The red hematite alteration giving way to prominent yellow limonite			NX	100%								
		1449												
		Same as above. More broken			NX	100%								
		1455												
		Bottom of hole												
		Hole caving badly and filled at least 100 feet.												

**HEINRICHS GEOEXPLORATION CO.**  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 596 • TUCSON, ARIZONA 85703

MINERALS EXPLORATION COMPANY  
 Drill contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck mounted Longyear 44

One page only

HOLE # Sacaton DDH #3  
 FROM Agnes 3-4-5-6 common corner  
 ELEVATION Sec. 21, T5S, R5E  
 COORDINATES N E  
 DIRECTION  
 INCLINATION Vertical DEPTH 344'  
 STARTED Nov. 5, 1963 COMPLETED Nov. 13, 1963

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOV-D	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
		<p>Rock bit to 225' through alluvium and altered bedrock.</p> <p>NX wireline coring 225' - 344'. 90% core recovery.</p> <p>Granodiorite with 35% mafic minerals including 10% magnetite. Has been brecciated and re-cemented, with silica and calcite. Fractures from vertical to 45 degrees in places are slickensides with minor hematite.</p> <p>No visible sign of copper in any form, of any sulfide, or any minerals of interest.</p>											

**HEINRICH'S GEOEXPLORATION CO.**  
 Phone: (Area 602) 623-0573  
 (Call: GEOEX)  
 BOX 5964 - TUCSON, ARIZONA 85708





G. WARNOCK



RECEIVED  
FROM  
ADMINISTRATIVE SERVICES  
TUCSON, ARIZONA

NOV 25 1971

BOX 5964 TUCSON, ARIZONA 85708  
Phone: (AREA 602) 543-0578

*Return to #1-114*  
*and ask for #1-114*  
*included*  
*Return to file*

*Secretary*





MINERALS EXPLORATION COMPANY  
 Drill Contractor: Metler Bros.  
 Driller: Augie Greenwood  
 Drill: Truck mounted Longyear 44

one page only

HOLE No. Sacaton D. D. H. #4  
 FROM "It" 1-2-3-4 common corner  
 ELEVATION Sec. 24, T5S, R5E  
 COORDINATES N. E.  
 DIRECTION  
 INCLINATION Vertical DEPTH 675'  
 STARTED Nov. 15, 1963 COMPLETED Nov. 29, 1963

SECTION	COL.	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
		<p>Rock bit 675 feet through alluvium, overburden with talus, altered bedrock, and fairly fresh granite.</p> <p>NX wireline core runs made at 385' - 393' and 545' - 556' and 620' - 630'. Some small fragments recovered, all of a biotite granite except for one fragment from the 620' - 630' interval that may be schlieren.</p> <p>A small sample of sludge was taken to represent each 20 foot interval.</p> <p>No copper minerals, hematite clay zones, or breccia was encountered.</p> <p>Actual bedrock surface not exactly determined - probably near 375', but with zones of decomposition.</p>											

**HEINRICHS GEOEXPLORATION CO.**  
 Phone: (Area 602) 623-0578  
 (Cable: GEOEX)  
 BOX 5964 - TUCSON, ARIZONA 85703







September 27, 1963

PRELIMINARY LOG

D. D. H. #2 Sacaton, Arizona for Minerals Exploration Co.

Location: "It" Claim No. 2. 150' west and 100' north (approx.) from south  $\frac{1}{2}$  corner Sec. 24, T 5 S, R 5 E. Vertical Hole. Collared 5 1/8" rock bit. Drill Co. Metler Bros. Driller: Augie Greenwood. Truck mounted, mast, Longyear 44 drill.

0' - 50' -- Alluvium. Rock Bit.

50' - 630' -- Casa Grande conglomerate (loosely consolidated ferruginous ground mass with some schist but mainly granitic angular fragments). Rock bit.

630' - 830' -- Broken, soft, loose variable fault zone with clay, sand and altered conglomerate zones. Rock bit 630-660. Soft red clay.

Core 660 - 670. About 6 inches recovered. Very altered conglomerate or breccia

Rock bit 660-726. Clay, sand, some conglomerate/breccia  
A few minor cuttings of "exotic" copper oxides came up with cuttings about 720 - 726'

Core 726-830. Recovery poor to nil.

726-732 three inches from conglomerate/breccia

732-737 two foot recovery altered conglomerate/breccia and limonite and hematite fragments and clay.

737-762 three inches of fragments. Rest sand.

762-787 Very altered conglomerate and much hematite. sludge running very red. 3 ft. recovery.

787-806 ~~As above~~, 2 inches recovered. Soft, white, quartz & altered feldspar.

806-807 Same, 2 inches recovered.

807-815 Same. 3 inches recovered.

815-825 Altered conglomerate/breccia 2 ft. recovery.

825-830 Altered conglomerate/breccia possibly at bottom grading into rotten monzonite. 5 ft. recovery.

decomposed

J. W. Marlatt

Harold Conroy 9/23/63

Dusty hole re-ground  
wall abrasion & dilution etc.  
beaver pumps & pipe etc  
coarser cuttings.

W.

John Kincaid called back  
later & said will look up  
Bill in area today or tomorrow.  
(Monday or Tues)

W.

Mexco-Sutton

9/25/63

John Kennison called -  
of ASARCO

what did he say -

9/27/63

Called Kennison - not in. Left word  
he could come look at core if he  
wished, to see if he thinks bedrock  
yet (at 830' now).

J.W.M. & M.B.A.





Alluvium



Casa Grande formation



Red zone



Copper



Light bedded breccia



Softer alt darker breccia



Nonzonite?



Sandy sludge/core



black zone











HOLE NO. ....  
 FROM .....  
 ELEVATION .....  
 COORDINATES ..... N ..... E  
 DIRECTION .....  
 INCLINATION ..... DEPTH .....  
 STARTED ..... COMPLETED .....

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS					
					SECTION	CU.			SECTION	CU.				
	957.5													
	959	Part of preceeding interval	NX											
		Very broken - small chips & mud	NX	50%										
	963	from breccia.												
		Somewhat harder but still broken	NX	100%										
	967													
	969	Harder & lighter.	NX	100%										
		soft & red.												
	972													
		very red & soft.	NX	100%										
	977													
	979	Very red & soft												
		Harder breccia, still altered.	NX	100%										
	987													
		Altered breccia												
	993													
		Soft & very red	NX	100%										
	996													
	997	Altered breccia												
		Soft, red, altered granite breccia.	NX	90%										
	1002													
		SAME												
			NX	100%										
	1012													
		Harder, less red to possible												
		fault at 1021. Then red again.	NX	100%										
	1021													
	1022	Soft & red.												
		Granite breccia, soft & red.												
		visible copper oxides start												
		with stained breccia	NX	100%	1022									
		fragments at 1033.5			1034	0.26								
						%								
	1034													
		Harder. Possibly a former dioritic	NX	100%										
		rock. strong copper showings.			1034									
	1038				1036	1.30								
		Same. slickensides at 1042 below				%								
		which the rock is hard with more	NX	100%										
		increase in copper oxides.												
	1045													

Average 64 ft. = 0.98% Cu

HOLE N° .....  
 FROM .....  
 ELEVATION .....  
 COORDINATES ..... N ..... E .....  
 DIRECTION .....  
 INCLINATION ..... DEPTH .....  
 STARTED ..... COMPLETED .....

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS		SLUDGE ASSAYS	
					SECTION	CU.	SECTION	CU.
	1045							
	1046	SAME basic rock. Quite fractured, hard. Strong oxide copper.	NX	100%	1046 1056	1.41 %		
	1056	Same.						
	1059	a rehealed zone. Hard, lighter color, <del>the</del> chloritic rock with some copper oxide and sulfide casts.	NX	100%	1056 1066	1.57 %		
	1066	vertical hematite seams in somewhat softer chloritic rock. copper still strong.	NX	100%	1066 1076	1.07 %		
	1076	Altered granitic breccia, softer toward the bottom and getting red. copper shows diminishing.	NX	100%	1076 1086	0.36 %		
	1086	Altered breccia, less red. some minor, weak shows of exotic copper.	NX	100%				
	1096	Altered breccia looking like porphyry at bottom. No significant show of copper.	NX	80%				
	1106	Altered breccia. Badly broken at 1110' and 1114'. No copper.	NX	100%				
	1116	Fractured & altered breccia.	NX	100%				
	1126	same	NX	100%				
	1132.5							

weighted average 64 feet = 0.98% Cu

HOLE NO. ....  
FROM .....  
ELEVATION .....  
COORDINATES ..... N ..... E .....  
DIRECTION .....  
INCLINATION ..... DEPTH .....  
STARTED ..... COMPLETED .....

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS			SLUDGE ASSAYS		
					SECTION	CU.		SECTION	CU.	
	1132.5									
		Part of preceding interval.	NX							
	1136									
		Same to 1145 where rock becomes lighter in color - quartz porphyry - with a few spots of copper oxides.	NX	100%						
	1146									
		Same as 1145 to 1153 minor copper show.	NX	100%	1146 1156	0.24 %				
	1153									
	1156	more altered & broken. minor copper.								
		Hard, siliceous and light colored with good show of oxide copper.	NX	100%	1156 1166	1.23 %				
	1166									
	1167.5	Fault(?) zone with broken chips to 1167.5, then red altered granite breccia becoming lighter colored at bottom. Very minor copper shows.	NX	100%	1166 1176	0.19 %				
	1176									
		Same	NX	100%						
	1186									
		Same. Red breccia. No copper.	NX	100%						
	1196									
		Same.	NX	100%						
	1206									
		Same.	NX	100%						
	1216									
		Same.	NX	100%						
	1220									

Weighted average 30 feet = 0.55% Cu.

HOLE NO. ....  
 FROM .....  
 ELEVATION .....  
 COORDINATES ..... N ..... E  
 DIRECTION .....  
 INCLINATION ..... DEPTH .....  
 STARTED ..... COMPLETED .....

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS				SLUDGE ASSAYS				
					SECTION	CU.			SECTION	CU.			
	1220	Same. Very broken last foot.	NX	100%									
	1226	Lighter colored breccia. More Sericite. No copper.	NX	100%									
	1235	Same	NX	100%									
	1246	same	NX	100%									
	1256	Same to 1262, then more altered and more hematite.	NX	100%									
	1062	A few specks of Copper oxides.	NX	100%									
	1266	No recovery. Fault?	NX	0									
	1271	Altered red breccia with some black serpentine. Slickensides. Some oxide copper.	NX	100%									
	1275	Lighter colored & harder breccia. No copper.	NX	100%									
	1279	Altered breccia. Redder & softer at the bottom.	NX	100%									
	1287	Breccia, harder at top, softer and redder at bottom.	NX	100%									
	1295	Lighter phase of altered breccia.											
	1303-1305	shows gossan limonite vugs after former disseminated sulfide.	NX	100%									
	1305												
	1307.5	Altered but fairly hard. Pink (cont)	NX	100%									

??

HOLE .....  
 FROM .....  
 ELEVATION .....  
 COORDINATES ..... N ..... E .....  
 DIRECTION .....  
 INCLINATION ..... DEPTH .....  
 STARTED ..... COMPLETED .....

SECTION	COL	GEOLOGY	SURVEY	% CORE RECOVERED	CORE ASSAYS			SLUDGE ASSAYS		
					SECTION	CU.		SECTION	CU.	
	1307.5	(con.) rather than red. Formerly had disseminated sulfides. Altered quartz monzonite?	NX	100%						
	1315	similar to above but more broken.	NX	100%						
	1326	Same at top but grades into breccia at bottom. Fault for missing six feet of core?	NX	40%						
	1336	First 4 feet are reddish breccia, last two feet soft and more altered with a black serpentized constituent in kaolinized rock.	NX	75%						
	1344	Harder & white with reddish fractures & veining. Minor copper oxides in last foot. Most of interval could be altered quartz monzonite.	NX	100%						
	1354									
	1359	Same with increasing hematite fractures & better copper shows. Black serpentized replacement in breccia.	NX	100%						
	1363	As above but increasingly black & softer.	NX	70%						
	1368	As above, with some minor copper.	NX	85%	1368			1377	0.38	%
	1377	As above with decreasing black.								
	1381	Breccia with red hematite veining.	NX	100%						
	1386	Highly altered breccia. Bottom is a fault contact.	NX	100%						
	1391	Black fault gouge	NX	100%						
	1395									

??











**HAWLEY & HAWLEY**

ASSAYERS AND CHEMISTS, INC.

1800 W. GRANT RD. at AZTEC • BOX 5934, ANNEX STATION • MAIN 2-4836

TUCSON, ARIZONA 85703

BRANCHES

DOUGLAS, ARIZONA  
HAYDEN, ARIZONA  
EL PASO, TEXAS  
AMARILLO, TEXAS

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %		
#1582 1583				1.56 1.05					

CC: Heinrichs Geoexploration Co.  
 ADD: 806 West Grant Road  
 CITY: Box 5671  
 DD: Tucson, Arizona  
 CITY:

## REMARKS:

Pulps will be returned  
 Special

ANALYSIS CERT. BY

*P. Richard*  
 3.00 Analysis

ACC: HEINRICHS GEOEXPLORATION CO.

DATE SPL. RECEIVED 10-16-63

DATE COMPL 10-17-63

\$ 3.00

319777

# HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1800 W. GRANT RD. at AZTEC • BOX 5934, ANNEX STATION • MAin 2-4836

TUCSON, ARIZONA 85703

BRANCHES

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IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %		
#1582  1583				1.56  1.05					

CC: Heinrichs Geoporation Co.  
ADD: 806 West Grant Road  
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CITY:

REMARKS: Analysis Cert. BY *P. Richard*  
Pulps will be returned  
3.00 Analysis  
Special

ACC: HEINRICHS GEOEXPLORATION CO.      DATE SPL RECEIVED 10-16-63      DATE COMPL 10-17-63      \$ 3.00      319777



Company MINERALS EXPLORATION COMPANY

Location SACATON DDH #2

Date 10/14/63

Description:

OXIDE ZONE (LOW grade). INT. 1034-  
1046'

ASSAY for CW

1.30%

Sample No 1580

Company MINERALS EXPLORATION COMPANY

Location SACATON D.D.H. #2 Date 10-14-63

Description:

OXIDE ZONE, low grade

INTO 1046' - 1056'

ASSAY for Cu

1.41%

Sample N<sup>o</sup> 1581



Company

MINERALS EXPLORATION COMPANY

Location

SACATON D.D.H #2

Date

10-14-63

Description:

OXIDE ZONE INT. 1056'-1066'

ASSAY FOR CU

1.57%

Sample No 1582

**Company** MINERALS EXPLORATION COMPANY

**Location** SACATON D.D.H #2 **Date** 10-14-63

**Description:**  
OXIDE ZONE INT. 1066'-1076'

ASSAY for Cu

1.07%

**Sample No** 1583

Company MINERALS EXPLORATION COMPANY

Location SACATON D.D.H #2 Date 10-22-63

Description: OXIDE ZONE INT. 1156-1166

ASSAY for Cu  
1.23%

Sample N<sup>o</sup> 1584

Company MINERALS EXPLORATION COMPANY

Location SACATON

Date 11-6-63

Description: D.D.H #2

INT. 1022-1034

ASSAY for Cu  
0.26%

Sample N<sup>o</sup> 1585

**Company**

MINERALS EXPLORATION COMPANY

**Location**

SACATON

**Date**

11-6-63

**Description:**

D.D.H #2

INT. 1076-1086

ASSAY FOR CU

0.36%

**Sample N<sup>o</sup> 1586**

Company

MINERALS EXPLORATION COMPANY

Location

SACATON

Date

11-6-63

Description:

D.D.H. #2

INT. 1146'-1156'

Assay for Cu  
0.24%

Sample No 1587

**Company** MINERALS EXPLORATION COMPANY

**Location** SACATON

**Date** 11-6-63

**Description:** D.D.H. #2

INT. 1166' - 1176'

ASSAY for Cu  
0.19%

**Sample N<sup>o</sup> 1588**

Company

MINERALS EXPLORATION COMPANY

Location

SACATON

Date 11-6-63

Description:

D.D.M. #2

INT. 1368' - 1377'

Assay for Cu  
0.38%

Sample N<sup>o</sup> 1589



1034-1079 area of good or  
 is from a more basic rock types highly  
 altered, possibly originally diorite

	977-987	10 ft. rec.	same to 979, then harder breccia.
	987-997	10 " "	Alt. breccia, but soft & very red at 993-996
	997-1002	4 1/2 ft. recovery.	Soft granite breccia. Red
	1002-1012	11 " "	Same
	1012-1022	10 " "	Granite breccia. Harder, less red to possible fault at 1021 then red again.
	1022-1034	12 " "	Granite breccia. Soft & red visible copper oxides start with a breccia fragment at 1033.5
T	1034-1038	4 " "	Breccia. Harder, fractured with stronger exotic coppers.
	1038-1046	8 " "	Same. slickensides at 1042. Much reheating & Cu. Hard at bottom. Strong Cu from 1043.
	1046-1056	12 " "	Quite fractured. Hard. Strong exotic Cu.
	1056-1066	10 " "	Same. 1059 a reheated zone below which is a hard chloritic rock with some Cu. Some pyrite casts.
	1066-1076	10 ft. "	Vertical hematite seams, some chloritization, Cu still strong.
T	1076-1086	10 ft. "	Altered granite breccia, softer toward bottom and getting redder. Cu shows die out.
	1086-1096	10 1/2 " "	Alt. breccia, less red. Some minor, weak exotic Cu shows.
	1096-1106	8 " "	Alt breccia & porphyry toward bottom. No significant show of Cu.
	1106-1116	10 1/2 " "	Alt. breccia. Badly broken at 1110' & 1114'. No Cu shows.
	1116-1126	10 " "	Fractured & altered breccia
	1126-1136	10 " "	Same
	1136-1146	11 " "	Same to 1145 where rock becomes harder, lighter in color and with a few spots Cu oxides, Qtz, porphyry.

1146 - 1156	11ft recovered.	Starts hard and light, becomes <sup>more</sup> altered and very broken about 1153. Minor Cu shows.
1156 - 1166	10 " "	Hard & light colored with good oxide-exotic Cu showing.
1166 - 1176	11 " "	Fault zone w/broken chips to 1167.5, then red altered granite breccia becomes whiter at bottom. Very minor Cu.
1176 - 1186	11.5 " "	Same
1186 - 1196	10.5 " "	" Red breccia. No Cu
1196 - 1206	11 " "	" " "
1206 - 1216	11 " "	" " "
1216 - 1226	11 " "	" " " Broken at last foot.
1226 - 1235	10 " "	Lighter. More sericite. No Cu.
1235 - 1246	10 1/2 " "	Same
1246 - 1256	11 1/2 " "	"
1256 - 1266	10 1/2 " "	" to 1262 then more altered & more hematite. A few specks exotic Cu.
1266 - 1271	No recovery.	
1271 - 1275	4 foot recovery	Altered red breccia with some black serpentine. Slickensides. Some Cu oxides.
1275 - 1279	4 " "	Lighter & harder breccia. No Cu
1279 - 1287	9 " "	Alt. breccia. Redder & softer at bottom.
1287 - 1295	8 " "	Breccia, harder top, softer & redder bottom.
1295 - 1305	10 " "	Lighter phase of altered breccia 1303-1305 shows gossan limonite vugs after former disseminated sulfide, possibly chalcopyrite.
1305 - 1315	11 " "	Altered but fairly hard. Pink rather than red. Some former sulfidization. Alt. Monzonite?

- 1315-1326 11 foot recovery Similar to above but more broken.
- 1326-1336 4 " " Same at top but grading into breccia at bottom. Fault? for missing 6 feet?
- 1336-1344 6 " " First 4 ft are reddish breccia, last 2 feet very soft and altered with a black, ~~altered~~, serpentinized rock material in kaolinized rock.
- 1344-1354 11 " " Harder and white with reddish fractures & veining. Minor Cu oxides show in last foot. Most is possibly an altered monzonite.
- 1354-1363 9 " " first 5 feet similar to bottom of above but with increasing hematite fractures & somewhat better Cu values. At 1359 the black serpentinized replacement starts again - in breccia.
- 1363-1368 3 1/2 " " As bottom of above except black increasing & very soft.
- 1368-1377 7 1/2 " " As above, with minor Cu.
- 1377-1386 10 " " " " with decreasing black to 1381. Bottom is again breccia with red hematite veining.
- 1386-1391 5 " " Highly altered breccia, changing at bottom.
- 1391-1396 5 " " Fault zone with black gouge.
- 1396-1406 10 " " Harder altered breccia with some black first two feet.
- 1406-1416 10 " " Same as above to 1411 - below is very broken, much of it almost sand. Traces Cu oxides.
- 1416-1425 9 " " Same as bottom above.
- 1425-1431 7 1/2 " " Bottom of fault(?) above is about 1427. Then breccia again starting soft & altered, becoming harder. Very minor Cu shows.

- 1431-1437 6 foot recovery As bottom above. More silica. Signs of former metallization.
- 1437-1439 2 " " At start a piece of up hole caved material. Rest is siliceous and broken.
- 1439-1449 11 " " Fresher looking & harder - more silica. Like a slightly altered quartz monzonite with vugs from former sulfides. The red hematite alteration giving way to prominent yellow limonite.
- 1449-1455 6 " " Same as above, more broken.

830'-838'	2 1/2 ft. recovered.	Very broken & similar to preceding intervals.
838'-846'	4 1/2 ft. recovered.	Harder but still similar. Recemented breccia?
846'-854'	4 1/2 ft. Rec.	Same as above.
854'-862'	3 inches rec.	Alt. monzonite?
862'-870'	8 " "	" " " " { Sericite Kaolin Hematite
870'-871'	3 " "	& part of a boulder from up the hole.
871'-872'	8 inches rec.	Harder but very fractured & broken. Monzonite(?) w/ possibly former disseminated sulfides, but still a brecciated zone.
872'-877'	3 ft. Rec.	As above
877'-886'	4 1/2 " "	" "
Hole reamed & cased to 886'		
ALL below is NX CORING.		
886'-890'	3 ft. Rec.	No change
890'-894'	4 " "	" "
894'-900'	7 " "	Slightly harder.
900'-903'	3 " "	SAME
903'-910.5'	8 " "	" but lighter in color, less hematite.
910.5'-912.5'	2 " "	More broken & increased hematite on fractures.
912.5'-922.5'	10ft Rec.	More broken & increasingly redder with a soft zone about 919-920.
922.5'-925.5'	1 1/2 ft. rec.	Same as above.
925.5'-932'	4 ft. rec.	Very soft & very red.
932'-937'	4 " "	" " " " " "
but changing to lighter last 0.8 ft.		
937'-945'	4 ft. rec.	Similar to 936-937
945'-953'	4 " "	About 1/2 red <sup>hematite</sup> sudge runs red.

953'-959' 3.75 ft. rec. A little harder, a little less red.

959'-963' 2.25 ft. rec. Very broken - small chips & mud. Same ~~rock~~ rock type.

963'-967' 4 ft. rec. A little harder but still very broken.

967-972 5 ft. rec. First two ft. harder and lighter. Last 3 ft. soft and red again.

972'-977' 5 ft. rec. Very red and soft.

---

Jacaton - Mexico

Core from D.D.H #1

- Box 1 - 136' to 145' 8 feet of broken core recovered. Granite rocks & breccia with reddish mud.
- Box 2 - 233' to 243' 10 feet recovery. Broken core. Breccia? rather than reported conglomerate? If conglomerate, all fragments of granite & are angular.
- Box 3 - 243' to 252' 10 foot recovery. Same stuff.
- Box 4 - 252' to 262' " " " " "
- Box 5 - 262' to 272' " " " " "
- Box 6 - 272' to 282' " " " " "
- Box 7 - 282' to 292' " " " " "
- but more muddy from 284' to 290'.
- Box 8 - 292' to 300' 6 1/2 foot recovery. Some <sup>stuff</sup> In the cementing agent appears to be some ground up schist.

T.D. - 304' - Gpl.



AMERICAN SMELTING AND REFINING COMPANY  
SOUTHWESTERN EXPLORATION DEPARTMENT  
813 VALLEY NATIONAL BLDG., TUCSON, ARIZONA



J. H. COURTRIGHT  
CHIEF GEOLOGIST  
L. P. ENTWISTLE  
ASSISTANT CHIEF GEOLOGIST

August 20, 1963

Mr. E. Grover Heinrichs  
Heinrichs Geoexploration Company  
P. O. Box 5671  
Tucson, Arizona

Dear Sir:

In accordance with our recent conversation I am enclosing herewith a report on drilling and sampling at Sacaton, and data on eight drill holes, the locations of which are circled in red on the attached map.

In the drilling report you will no doubt find the drilling specifications which you need. If, however, you have any further questions please let us know.

Yours very truly,

  
J. H. COURTRIGHT

Enclosures  
JHC/1s



ASARCO  
SACATON DRILL HOLES

<u>No.</u>	
15	0- 100' Alluvium - 730' Indurated conglomerate Bedrock 730 ft. approx. Very weakly mineralized monzonite porphyry.
51	0- 51' Alluvium Bedrock @ 51 ft. Unmineralized biotite granite.
52	0- 100' Alluvium -1860' Indurated conglomerate Bedrock approx. 1860 ft. Unmineralized coarse grained granite.
57	0- 100' Alluvium - 820' Indurated conglomerate Bedrock @ 820 ft. Unmineralized biotite granite.
62	0- 100' Alluvium -1440' Indurated conglomerate Bedrock @ 1440 ft. approx. Mineralized granite and porphyry.
63	0- 100' Alluvium -1050' Indurated conglomerate Bedrock @ 1050 ft. approx. Unmineralized biotite granite.
76	0- 100' Alluvium - 805' Indurated conglomerate Bedrock @ 805 ft. Shear zone. Mineralized and barren granite.
77	0- 100' Alluvium - 830' Indurated conglomerate Bedrock @ 830 ft. Mineralized granite and monzonite porphyry.
79	0- 100' Alluvium -1058' Indurated conglomerate Bedrock @ 1058 ft. Unmineralized granite.

# ASARCO

## DRILLING AND SAMPLING AT SACATON, 1962

### INTRODUCTION

Drilling began at Sacaton on September 26, 1961, by Boyles Bros. Drilling Co. with one Winter-Weiss "Portadrill" rotary drill and one Joy 22HD diamond core drill, each operating one 8 hour shift per day, 6 days per week. From this modest beginning, drilling activity expanded to a maximum of 7 drills --- 3 rotary and 4 core --- in July. Four rotary drills and 3 core drills drilled the maximum 11,296' in September. At this time, all drills worked three 8 hour shifts per day, 6 days per week. The program slowed down in October, and hole 64 bottomed on November 1, 1962, terminating this phase of drilling.

### FORMATIONS DRILLED

A diagrammatic section through the Sacaton deposit is shown in Attachment F. The thickness of the alluvium varied from 80' to 150' of fine silts, sands and occasional boulder zones. This was everywhere a very soft unit. Beneath the alluvium is an older conglomerate except where the alluvium directly overlies hard igneous rocks near the discovery outcrop. The nature of the conglomerate varies from tightly cemented to loose and bouldery, but it is generally much harder than the alluvium. In bedrock, the igneous rocks are, in the main part, altered granite and porphyries.

### DRILLING PROCEDURES

#### Rotary:

Rotary drilling was done entirely with mud circulation. In the 4-3/4" diameter holes, circulation rates varied from 65 to 135 gallons per minute depending on the depth of the hole. Friction loss in the 2-3/8" drill pipe amounted to about 300 pounds per square inch for each 1000'. Since 300 psi was about the maximum allowable working pressure for the pumps used, circulation had to be reduced at greater depths. Mud viscosities ranged from 40 to 45 sec/qt. measured in the Marsh funnel and mud weight from 9.0 to 9.5 pounds per gallon. Water loss was checked by a Baroid Company field engineer and found to be about 10cc measured in a filter press under 100 psi for 30 minutes. Consumption of water ranged from 100 to 500 gallons per drill per shift unless circulation was lost in a permeable zone. When circulation was lost, it was regained in all instances by adding cottonseed hulls to the mud. No effort was made to maintain water loss within close limits. Penetration rate averaged about 15 feet per hour under continuous drilling conditions, although average total progress was only 6.2 feet per hour. A change for the worse in both penetration rate and in frequency of mechanical breakdowns came between 800' and 1000'. The capacity of the drills used probably was closer to 1000' than their rated 1500' for this type of drilling. The deepest rotary hole bottomed at 2050', but less than 1% of the rockbitting was over 2000'. Seventy-four per cent was at less than 1000', 18% from 1000' to 1500' and 7% from 1500' to 2000'. Average distance rockbitted was 901 feet. Bit life averaged 80'.

When, due to reduced circulation rate, cuttings were not removed from the bit area as fast as they were cut, they were reground so that the amount of minus 1/16" sample arriving at the surface frequently approached 100% at depths over 1000'. Rod-wall contact, normal and accentuated, also contributed toward diminution of cuttings'

size. Accentuated rod-wall contact resulted from weight being applied to the drill string that exceeded the weight the drill pipe could support. The drill pipe then buckled and abraded the walls of the hole. In the deeper holes especially, abrasion of the walls of the hole produced superfluous sample material in sufficient amounts to mask completely changes in the nature of the formation being drilled. Subtle changes such as a contact between granite-wash conglomerate and fresh or weakly altered granite often passed unnoticed because of the small cuttings' size, the contamination from rod-wall abrasion, and contamination from recirculating fine sand. Steps taken to overcome these problems were:

1. Mud viscosities were increased to 45 sec/qt. with bentonite and carbonylmethylcellulose (CMC). Use of about 1/2 lb. of CMC to 100 pounds bentonite to increase viscosities without increasing weight also reduced water loss.
2. Recommended pump capacities were slightly exceeded. A minimum circulation rate of 80 gpm was maintained if possible.

(Bit design and formation characteristics largely controlled the initial size of cuttings. Williams K-3 bits gave larger chips than the K-1 bits. Loosely cemented conglomerate produced larger chips than hard boulder conglomerate.)

3. Abrasion contamination was reduced somewhat by use of drill collars behind the bit for drilling weight and use of larger drill pipe. Ideally all weight for drilling should be applied with drill collars and the rods held in slight tension. Because the contractor refused to purchase the necessary weight of collars, the following compromise technique was tried with limited success: The length of drill pipe that would be self-supporting was added to the drill collars as drilling weight, and the drill brake held the remaining weight of drill pipe in tension. Line weight indicators were necessary to determine total weight of the drill string and drilling weight. Weight on the 4-3/4" bits rarely exceeded 12,000 lbs., although 20,000 lbs. would have been more desirable.
4. To reduce recirculating sand, steel launders 1' x 1' x 6' with 6" baffles were placed in the ditch adjacent to the collar of the hole. Troughs and tanks located elsewhere in the mud circuit helped settle sand. Treatment of mud with caustic soda and quebracho in weight proportions 1 caustic:2 quebracho:100 bentonite kept gelation to a minimum and allowed the sand to settle in the ditches. Whenever the sand content rose above 2 1/2% by volume a Krebs Petroleum Cyclone was placed in operation in the mud tanks.

Normal drilling operations amounted to only 67% of the contractors' total operating hours.\* The remaining time was spent in casing for core drills, intermittent coring, fishing, and re-drilling 2 lost holes. Fishing amounted to 393 of a total 9761 operating hours. Fatigue breaks in drill rods caused most of the fishing jobs. All of the fishing operations were successful except two, one on hole 52, the other on hole 49. After the twist off on hole 49, the rods became stuck and could not be retrieved. Consequently 1508 feet of hole was re-drilled. The longest fishing job was on hole 55. Dropped rods

\* A glossary of terms is included as Attachment C.

sheared all three roller cones from the bit. The cones were recovered with magnets, "junk" baskets and core barrels in 215 hours.

#### Rotary Coring:

Coring with the rotary drills required special care. Most important variables were weight on bit and rate of circulation. Rotary coring was first done with an NX wireline core barrel and weight could not exceed about 3000 lbs. Eventually an NC "M" series core barrel was used with safe weights to 5500 lbs. Impregnated diamond bits required more weight than surface set bits. Circulation had to be reduced to less than 25 gpm to prevent erosion of the core. Rotation speed varied, with driller's preference, from 10 to 40 RPM.

#### Regular Coring:

Coring with diamond drills was done exclusively with wireline equipment and mud circulation. Rotation speed varied from 50 to 450 RPM and weight on bits 500 to 2500 lbs. Rate of circulation never exceeded 20 gpm. Mud viscosities ranged from 36 to 40 sec/qt. The drills used about 200 gallons of water per drill per shift during normal coring operations.

Core recovery averaged 84% overall; however, recoveries varied directly with the hole conditions, hole size and bit design. Caving made core recovery difficult due to the tendency of loose rocks in the bottom of the hole to grind up core as it was drilled. Of the total amount of coring, 484 feet was BX size. In the BX holes core recovery averaged 74%. In the soft, gougy fault zones core recovery usually was poor. Semi-pilot face discharge bits recovered the best core in these places. Core recovery with face discharge bits averaged 79%. This is less than the 84% recovery obtained with standard bits, but the face discharge bits were not used unless standard bits could not recover suitable samples. The fact that the average recoveries with the two different bit designs are comparable indicates that the face discharge bits performed much better than the standard bits would have under the same conditions. Unlike some areas where face discharge bits wear out rapidly, life of face discharge bits (45.7 ft/bit) was not much less than that of standard bits (62.3 ft/bit).

Caving, lost circulation, and circulation outside the casing caused most of the down hole difficulties. Caving and lost circulation usually were remedied by cement or close mud control. Circulation outside the casing finally was avoided by cementing the casing in the bottom of the hole at the time it was run in by the rotary drill. Then, when the core drill moved onto the hole, the cement was drilled out. Early in the program, a great deal of time was lost when the cement would not set or would set up in the casing above the bottom of the hole. Quebracho or CMC in small quantities (.5%) can contaminate cement and prevent setting. Heavy mud in the hole outside the casing can force the cement back up the casing after pumping is stopped. A chemical additive called Mud-Kil composed of 3/5 paraformaldehyde and 2/5 sodium tetrachromate neutralizes the contaminants without accelerating the cement. Use of one pound of Mud-Kil to one sack of cement resulted in good-set cement. Placement of cement at the bottom of the hole was accomplished by a plug shown in Figure 1, Attachment G. The plug was pumped down the pipe behind the cement and a rise in pump pressure indicated when the plug reached the bottom. The check valves held pressure on the plug until the cement set up.

### BARNES' EXPERIMENTAL ROTARY DRILLING

J. O. Barnes Drilling Service of Casa Grande, drilled three 6-3/4" diameter holes with a Howard Turner Drillmaster drill rig. The H. T. Drillmaster is capable of handling 3500' of 3-1/2" drill pipe. Barnes used 240' of 5" drill collars and 3-1/2" drill pipe. Mud circulation was about 225 gpm and most effective drilling weight was between 25,000 and 30,000 lbs. To facilitate sampling, a vibrating "shale shaker" screen was installed as close as possible to the collar of the hole. Samples were collected from the shaker screen which saved about plus 1/32" sizes. Fines and panned concentrates were collected from a settling pan in front of the shaker. Performance on the first hole was not as good as expected because of breakdowns which could probably be traced to the driller's unfamiliarity with the drilling conditions at Sacaton. Performance on the second hole was considerably better and the third hole was drilled to 1400' in 7 days (100' per 12 hr. shift) without mishap. Barnes seemed particularly inclined to cooperate with Asarco representatives in eliminating difficulties encountered.

### SAMPLING AND RECORD KEEPING

Sufficient samplers were employed to allow at least one sampler to two drills. Character samples were collected from the rotary drills for the purpose of locating bedrock and the top of sulphides. Samplers collected cuttings every few feet with a 1/16" mesh kitchen strainer and placed them in a wash basin. At the same time, about a quart of drill mud was collected, diluted and set aside. To prepare a sample, the sand settled from the drill mud was panned and the concentrate placed in the vial. About 3/4" of washed (not panned) sand was placed on top of the concentrate. One inch of minus 1/16" cuttings was placed on top of the washed sand and the remaining volume of the vial filled with plus 1/16" cuttings. Samples were prepared in the vials to represent 10' intervals.

The sampler made periodic checks of the weight, viscosity and sand content of the drill mud and reported any deviation from acceptable values to the Asarco drilling engineer.

Core was emptied from the core barrel into sheet metal troughs by the sampler who then washed, measured, and boxed it. A converted house trailer on the project contained facilities for weighing the core and determining its specific gravity. Percentage recovery was calculated by means of specific gravity and also by lineal measurement. The core was marked for assay sample cutoffs and split while still in the trailer. Samples were taken each afternoon to Jacobs Assay office in Tucson. Later in the project, logging and splitting operations were moved to a rented lab building in Casa Grande. Coreboards were made in this lab, in much the same manner as at Mission, from the rejects returned from the assayer. Rejects were split to about one quart volume and saved in glass jars. Pulps were saved in metal clasp paper envelopes.

It was found that the shift report forms used at Mission were not suitable for recording all information collected by the samplers. Several experimental forms were tried, and ultimately those shown in Attachments H and I were used exclusively.

Since one of the major problems encountered at Sacaton was recognizing the contact between the conglomerate and the underlying igneous rocks in the area of the thick conglomerate, students in geology and mining engineering at the University of Arizona seeking temporary jobs were used to great advantage as samplers. After a short period

of field training, they also were used to advantage in positions of minor supervision or other responsible positions. All field samplers were taught how to correctly estimate core recovery by linear measurement, and to measure specific gravity of rock samples, calculate core recovery, and other incidental procedures.

*Joseph R. Wojcik*

JOSEPH R. WOJCIK  
Drilling Engineer

JRW/kw  
Attachments A through I

Att. B

COMPARISON OF DRILLS

<u>Number &amp; Name</u>	<u>Manufacturer</u>	<u>Powered by</u>	<u>Drawworks</u>	<u>Pull-down</u>	<u>Pump</u>	<u>Capacity</u>
(#1) Portadrill	Winter-Weiss	International R-160 gas	Double Drum with selector	Hydraulic powered chain	4" x 5" Gardner Denver	750 ft.
(#2) Failing 1500	Geo. E. Failing	GMC diesel	Double Drum	Two 5" diam.	5" x 6"	1500 ft.
(#3) Failing 1500	Geo. E. Failing	Cummins diesel	Simultaneous Double Drum	hydraulic cyls.	5" x 6 1/2"	1500 ft.
(#4) Portadrill	Winter-Weiss	International R-190 gas	Double Drum with selector	Hydraulic powered chain	5" x 6"	1500 ft.
(#5) Failing 1500	Geo. E. Failing	Cummins diesel	Double Drum	Two 5" diam.	5" x 6 1/2"	1500 ft.
(#6) Mayhew 2000	Mayhew	International and Ford gas	Double Drum with selector	Hydraulic variable Hydraulic lic. pow. chain	6" x 10"	2000 ft.
(#7) H.T. Drillmaster	Howard Turner	GMC diesel & GMC diesel	Double Drum with selector	None	Gardner Denver 6-3/4" x 14"	3500 ft. of 3 1/2" pipe
(#1) Joy 22HD	Joy Mfg. Co.	Ford gas	Single Drum	Two 3 1/2" diam. hydraulic cyls.	Bean 35	1500 ft.
(#2) Joy 22	Joy Mfg. Co.	Ford gas	Single Drum	Two 3" diam. hydraulic cyls.	2-3/4" x 2-3/4"	1000 ft.
(#3) CP-15	Chicago Pneumatic	Waukesha gas	Single Drum	Two 3" diam. hydraulic cyls.	Bean 35	1000 ft.
(#4) BBS2	Boyles Bros. Ltd.	Perkins diesel	Single Drum	Two 5" diam. hydraulic cyls.	Bean 35	2500 ft.
(#5) Joy 22HD	Joy Mfg. Co.	Ford gas	Single Drum	Two 3 1/2" diam. hydraulic cyls.	Bean 35	1500 ft.
(#6) BBS2	Boyles Bros. Ltd.	Perkins diesel	Single Drum	Two 4" diam. hydraulic cyls.	Bean 35	2500 ft.

All drills were truck mounted except H. T. Drillmaster which was trailer mounted.

GLOSSARY OF TERMS

Casing	Setting and removing casing, also fuel oil and reaming for csg.
Cementing	Includes time required to place cement and a reasonable length of time to allow the cement to set.
Deflection	In hole 58, the contact at the base of the conglomerate was missed. Consequently, the hole was cemented back to above the probable contact, deflected $1\frac{1}{2}^{\circ}$ and cored through the contact.
Feet Drilled	Lineal feet of hole for which the contractor is compensated.
Fishing	The process of attempting to remove foreign objects from a drill hole so that drilling may be resumed.
Idle Diamond Drills	A daily rate was paid for two diamond drills at the time when there were no holes prepared for diamond coring.
Locations	Preparation of drill sites and mud pits.
Mud	A clay in water dispersion circulated in the hole to remove cuttings.
Repairs	Includes all time spent working on drills to keep them in operating condition.
Roads	Road maintainence with sprinkler truck and grader.
Rotary Coring	Intermittent taking of cores with a rotary drill.
Water	Includes transportation charges.
8 hr. Drilling	Excludes all time other than that actually spent on work incidental to drilling. (Cementing, casing, rotary coring, repairs, etc.)
8 hr. Operating	All time when the crews were working on the drills.
8 hr. Day	All time scheduled to be worked -- includes idle time.



DISPOSITION OF TIME AND MATERIALS

	Rotary		Core	
	Units	Hours	Units	Hours
Feet Drilled	60,208 9 ft.	6,521.28	13,399.7 ft.	5,354.88
Rotary Coring	627.6 ft.	748.5	(31 holes, 320 feet) (382 feet)	
Mud	127,600 lbs.	564.0	109,000 lbs.	482.0
Casing (incl casing left in holes)		202.5	25,426 ft.	525.0
Cement	3,300 lbs.	39.0	12,200 lbs.	417.0
Standby		153.3		131.2
Deflection		71.5		
Idle Diamond Drills				440.0
Total for Asarco Account		1,778.9		1,995.2

Fishing		393.5		345.0
Repairs		744.75		538.0
Idle waiting for Parts		325.5		
Water Delay		105.5		109.0
Redrilling Holes 49 & 52		217.5		
Total for Contractor Account		(16.5%) 1,786.75		(12%) 992.0
<b>Total Hours</b>		<b>10,086.96</b>		<b>8,342.08</b>
	<u>8 hr. Drilling</u>	<u>8 hr. Operating</u>	<u>8 hr. Day</u>	
Rotary	73.8 ft.	49.3 ft.	47.7 ft.	
Core	20.0 ft.	12.8 ft.	12.8 ft.	

SUMMARY OF DRILLING COSTS

	Contracted Cost		Overhead Cost	
	Rotary	Core	Rotary	Core
Feet drilled	\$181,070.42	\$ 99,031.67		
Rotary Coring (feet drilled & hrs. worked)	14,046.85			
Mud				
Materials & Preparation	11,538.69	9,866.09		
Water				
Gallage & Haulage	3,783.24	3,220.89		
Casing*				
Hours Worked		9,195.88		
Cement, Materials & Hours Worked		6,027.86		
Locations				
Hours Worked	1,662.28	1,421.72		
Roads				
Hours Worked	2,277.38	1,947.81		
Drill Collar Rent				
3 Rotary Core Bits	2,695.21			
Idle Diamond Drills				
Shifts Idle		1,841.66		
Total Cost of Contract(s)	\$218,607.92	\$132,553.58		
Cost per Foot Contract	3.63	9.89		
Sampling and Lab Expense			\$68,143.01	\$58,281.87
Assaying				5,697.50
Total Cost Overhead			\$68,143.01	\$63,979.37
Cost per Foot Overhead			1.13	4.77
Total Cost Total	\$286,750.93	\$196,532.95		
Cost per Foot	4.76	14.67		
*25,426 feet of casing left in holes		\$ 34,895.95		
Total - Cost per Foot	4.76	17.27	Combined overall Cost per Foot	7.04