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Arizona Geological Survey
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Adams - West Property

Steins Pass

Hidalgo County

New Mexico

Data File 1957-1977

AMEX

EXHIBIT I

AMEX

The following is a preliminary geologic log of the core from the diamond drill hole drilled by the American Exploration Company on the Leslie West property. The core was examined recently at the home of Mr. Guy Anderson in Safford.

All of the core was split and assayed by American Exploration, however, only the assay slips are available. Therefore, the interval in the hole from which the sample came cannot be definitely established. The hole was drilled with a Bx bit and the core examined represented 1036 feet of drilling.

Windmill Hole - SW Potash
(American Metals Co.)

DEPTH	DESCRIPTION
0' to 80'	Andesite or dacite, grayish green, fine-grained, moderately altered to chlorite, moderate to heavy pyrite disseminated and on fractures; 15' to 25' - sparse chalcopyrite and sooty chalcocite, qtz. veinlets.
80' to 250'	Andesite or dacite, generally well altered to chlorite, sericite, quartz, and kaolin; pyritized as above, sparse chalcopyrite 220' - 235'.
250' to 450'	Andesite or dacite, moderately bleached, 250' to 268' and 320' to 350' rock dark, heavy chlorite; pyritization as above, 418' to 420' very sparse chalcopyrite.
450' to 616'	Andesite or dacite, generally darker than above, light gray to gray to dark gray, moderate chlorite; moderate to weakly pyritized, generally less altered than above.
616' to 713'	Andesite or dacite, dark gray, pyritized as above.
713' to 735'	Contact zone between andesite and quartz monzonite, fine-grained siliceous rock, sparsely pyritized, inclusions of altered andesite or dacite.
735' to 820'	Quartz monzonite or granite porphyry, generally well altered to sericite and kaolin, few pink orthoclase (?) phenocrysts appear unaltered; medium to coarse grained; weakly pyritized, very sparse chalcopyrite, very sparse to sparse molybdenite.
820' to 1036' Bottom	Quartz monzonite or granite porphyry, pinkish gray, medium to coarse grained; biotite phenos. altered to chlorite, less intense alteration than above, moderate to weak sericite and kaolin; weakly pyritized, 3" heavy pyrite at 832, sparse molybdenite 960 to 970.

P.D.

7-18-79

Edythe:

Enclosed is the S.F. copy of the data file supplied by Mr. Don C. Adams involving his property submittal which I am in the process of examining.

Placer had this property in 1957 as Venture-39, and the data book might as well be added to it.

Chris

EMPIRE 4-8741

[illegible] & HAWLEY
ASSAYERS AND CHEMISTS, INC.
537 TWELFTH STREET
DOUGLAS, ARIZONA

EXHIBIT NO 1
64372

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	NICKEL %	IRON %	BOX DOU BOX EL P
4311	Trace	Trace		0.02				
4312	Trace	Trace		0.02				
4313	Trace	None		0.02				
4314	Trace	Trace		0.03				
4315	Trace	Trace		0.02				
4316	Trace	Trace		0.04				
4317	Trace	Trace		0.04				
4318	Trace	Trace		0.02				
4319	Trace	Trace		None				
4340	Trace	None		0.02	450			
4341	Trace	Trace		0.02				
4342	Trace	None		0.02				
4343	Trace	Trace		0.02				
4344	Trace	Trace		None				

Mr. Paul Childress
American Exploration & Mining
Town House Motel
Safford, Arizona

REMARKS:

ANALYSIS CERT. BY [illegible]

3.72 c.o.d.
7.00 Prep.
70.00 Assaying

AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/2/57

DATE COMP. [illegible]

HAWLEY, PRES.
TELE: EMPIRE 4-2741

ASSAYERS AND CHEMISTS
837 TWELFTH STREET
DOUGLAS, ARIZONA

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	%	INSOL. %	IRON %.
						64373	
4345	Trace	Trace		0.06			
4346	Trace	Trace		0.04			
4347	Trace	Trace		0.07			
4348	0.01	Trace		0.09			
4349	Trace	Trace		0.09			
4350	Trace	None		0.05	500		
4351	0.16	Trace		0.06			
4352	Trace	Trace		0.07			
4353	Trace	None		0.06			
4354	Trace	Trace		0.07			
4355	Trace	Trace		0.07			
4356	Trace	Trace		0.08			
4357	Trace	Trace		0.07			
4358	Trace	Trace		0.09			
4359	Trace	Trace		0.07			
4360	Trace	Trace		0.08	500		
4361	Trace	None		0.07			
4362	Trace	Trace		0.05			
4363	Trace	None		0.05			
4364	Trace	Trace		0.08			

REMARKS:

ANALYSIS CERT. BY

CO: Mr. Paul Childress
ADD: Town House Motel
CITY: Safford, Arizona
ADD:
CITY:

4.68
10.00
100.00
114.68

ACC: AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/6/57

DATE COMPL. 8/8/57

DOUGLAS, ARIZONA

24-2741

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	IRON %
						64374
4363	Trace	None		0.04		
4366	Trace	None		0.02		
4367	Trace	None		0.02		
4368	Trace	Trace		0.02		
4369	Trace	Trace		0.02		
4370	Trace	None		0.02		
4371	Trace	Trace		0.01		
4372	Trace	Trace		0.04		
4373	Trace	Trace		0.02		
4374	Trace	Trace		0.02		
4375	Trace	Trace		0.02		
4376	Trace	Trace		0.02		
4377	Trace	Trace		0.03		
4378	Trace	Trace		0.03		
4379	Trace	Trace		0.02		

REMARKS:

ANALYSIS CERT. BY

ADD: Mr. Paul Childress
CITY: American Exploration & Mining
ADD: Town House Hotel
CITY: Safford, Ariz.

3.14 c.c.d.
7.50 Prep.
75.00 Assaying
85.64 29

ACC: AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/7/57

DATE COMPL. 8/9/57

ASSAYERS AND CHEMISTS, INC.
837 TWELFTH STREET
DOUGLAS, ARIZONA
PHONE 4-2741

BOX 4
EL PASO, TEXAS

64375

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %		
4380	Trace	None		0.04	650				
4381	Trace	Trace		0.03					
4382	Trace	None		0.03					
4383	Trace	None		0.03					
4384	Trace	Trace		0.04					
4385	Trace	None		0.04					
4386	Trace	None		0.06					
4387	Trace	Trace		0.03					
4388	Trace	None		0.03					
4389	Trace	Trace		0.03					
4390	Trace	None		0.03	700				
4391	Trace	None		0.04					
4392	Trace	Trace		0.03					
4393	Trace	None		0.03					
4394	Trace	None		0.03					
4395	Trace	Trace		0.02					
4396	Trace	None		0.02					

Mr. Paul Childress
American Exploration & Mining Co.
Town House Hotel
Safford, Ariz.

REMARKS:

ANALYSIS CERT. BY

3.14 c.c.d.
8.30 Prep.
85.00 Assaying
96.54 | 29899

AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/9/37 | DATE COMPL. 8/12/37

FORM 4-2741

DOUGLAS, ARIZONA

EL PASO, TEXAS

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %		
						64376			
4397				0.02					
4398				0.06					
4399				0.04					
4400	Trace	Trace		0.06	750				
4401				0.04					
4402				0.07					
4403				0.03					
4404				0.06					
4405	Trace	Trace		0.06					
4406				0.11					
4407				0.05					

Mr. Paul A. Childress
Gem House Motel

Safford, Arizona

REMARKS:

ANALYSIS CERT. BY Reichard

5.50 Prep.
28.00 Assay

AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/19/57 DATE COMPL. 8/21/57 $ 33.50 299011

...WLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
537 TWELFTH STREET
DOUGLAS, ARIZONA

...NE 4-2741

BOX 1060
DOUGLAS, ARIZ
BOX 4
EL PASO, TEXA

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %	
Sample 4408				0.02				C 1377
" 4409				0.02				
" 4410	Trace	Trace		0.01	800			
" 4411				0.01				
" 4412				0.02				
" 4413				0.01				
" 4414				0.01				
" 4415	Trace	Trace		0.02				
" 4416				0.01				
" 4417				0.02				
" 4418				0.01				
" 4419				0.01				

...r. Paul Childress
...y House Hotel
...a, Ariz., Arizona

REMARKS:

ANALYSIS CERT. BY [illegible]

(omitted from our #299011) 1.65 c.o.d.
2.47 c.o.d.
6.00 Prop.
~~10.00 Assays~~
40.12

...EXICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/21/57 | DATE COMPL. 8/23/57 | 299042

TELEPHONE 6-6741

ASSAYERS AND CHEMISTS, INC.
837 TWELFTH STREET
DOUGLAS, ARIZONA

BOX 106
DOUGLAS
BOX 4
EL PASO

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %
						64378	
Sample 4420	Trace	Trace		0.03	550		
4421				0.03			
4422				0.04			
4423				0.03			
4424				0.03			
4425	Trace	Trace		0.03			
4426				0.04			
4427				0.03			
4428				0.04			
4429				0.03			
4430	Trace	Trace		0.03	900		

Mr. Paul Childress
Town House Hotel
Bisbee, Arizona

REMARKS:

ANALYSIS CERT. BY [illegible]

1.95 C.O.D.
5.50 Prep.
31.00 Assaying
38.45

AMERICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/24/57 DATE COMPL. 8/26/57

299096

EMPIRE 4-2741

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.
837 TWELFTH STREET
DOUGLAS, ARIZONA

BOX 1060
DOUGLAS, ARIZONA
BOX 4
EL PASO, TEXAS

64379

IDENTIFICATION	GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	INSOL. %	IRON %		
Sample 4431				Trace					
4432				0.02					
4433				0.02					
4434				Trace					
4435	Trace	Trace		Trace					
4436				Trace					
4437				None					
4438				0.02					
4439				Trace					
4440	Trace	Trace		Trace	950				
4441				0.02					
4442				0.02					
4443				0.02					
4444				0.02					
4445	Trace	Trace		None					
4446				Trace					
4447				Trace					
Sample 4448				0.02					
4449				0.02					
4450	Trace	Trace		0.01	1000				
4451				0.02					
4452				0.02					
4453				0.01					
4454				0.02					
4455	Trace	Trace		0.01					
4456				0.01	1030				

Paul Childress
House Hotel
ford, Ariz.

REMARKS:

ANALYSIS CERT BY

2.21 c.c.d.
4.50 Prep.
24.00 Assaying

EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/2/57 | DATE COMPL 8/3/57 | $ 30.71 | 299280

House Hotel
fford, Ariz.

38.90 c.c.

PREPARATION $

ANALYSIS $ 43.00

RICAN EXPLORATION & MINING CO.

DATE SPL. RECEIVED 8/27/57 | DATE COMPL 8/28/57 | 299152 | $ 54.89

Windmill

EXHIBIT No 1

64368

30 So. Main St.
P. O. Box 1889

JACOBS ASSAY OFFICE

REGISTERED ASSAYERS

Phone 2-0313

DUPLICATE

Certificate No. 53194

Tucson, Arizona, July 10th, 195

Sample Submitted by Mr. American Exploration & Mining

SERIAL	SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore * $	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Per cent Wet Assay
153671	4251	Trace				Tr?	
72	52			02	033		
73	53	001	035	04	027		
74	54	Trace		02	008		
75	55	005	017	01	017		
76	56	Trace		01	006		
77	57	005	017	02	013		
78	58	001	035	02	022		
79	59	Trace		01	010		
80	60	Trace		01	011		
81	61	005	017	02	010	50	
82	62	005	017	01	014		
83	63	001	035	02	006		
		Trace		01	005		
						39	

* Gold Figured $35.00 per oz. Troy

Charges $ 3.90

Very respectfully,

Chas. P. Jacobs

These samples are arranged in increasing numerical order and presumably represent increasing depth in the hole.

REPORT OF ASSAY

64369

ABBOT A. HANKS, INC.

ASSAYERS, CHEMISTS, ENGINEERS
624 SACRAMENTO STREET
SAN FRANCISCO

July 19, 1957

SAMPLE OF ORE

DEPOSITED BY American Exploration & Mining Company
505 East Grant Road
Tucson, Arizona

Labty. No.	Mark	GOLD, per ton of 2,000 lbs. Troy Ounces	Value @ $35.00 oz.	SILVER, per ton of 2,000 lbs. Troy Ounces	Value @	Percentages
				Difference	Ounces	
17650	4251			0.01	0.33	COPPER
51	4252			0.02	0.27	0.34 %
52	4253					0.29
53	4254			0.01	0.08	0.07
54	4255			----	0.17	0.17
55	4256			0.01	0.08	0.07
56	4257			0.02	0.13	0.15
57	4258			----	0.22	0.22
58	4259			----	0.16	0.10
59	4260			0.04	0.11	0.07
60	4261			----	0.16	0.10
61	4262			0.02	0.14	0.16
17702	4263			0.02	0.06	0.04
				0.03	0.05	0.02

bob

Original Signed
ABBOT A. HANKS, INC.
MARTIN P. QUIST

LICATE REGISTERED ASSAYERS

Certificate No. 53220

Tucson, Arizona, July 29th, 196

Sample Submitted by Mr. American Exploration & Mining Co.

SERIAL	SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore $	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Per cent Wet Assay
153862	4292						
63	93				012		
64	94				007		
65	95				010		
66	96	005	017	02	006		
67	97				005		
68	98				005		
69	99				004		
70	4300				003		
71	1	Trace		0.1	005		
72	2				003		
73	3				002		
74	4				003		
75	5				004		
76	6	Trace		0.1	003		
77	7				007		
78	8				006		
79	9				006		
80	4310				005		
81	11	005	017	03	004		
82	12				006		
83	13				006		
84	14				004		
85	15				005		
86	16	005	017	02	003		
87	17				006		
88	18				003		
89	19				005		
90	20				004		
91	21	Trace		02	004		
92	22				005		
93	23				006		
94	24				006		
95	25				004		
96	26	005	017	02	004		
97	27				003		
98	28				004		
99	29				004		
153900	30	005	017	0.3	005		
					003		
153901	3891	001	035	03	—		
902	92	002	070	05	—		

P. O. Box 1888

JACOBS ASSAY OFFICE

REGISTERED ASSAYERS

PHONE Main 2-0813

DUPLICATE

Certificate No. 53201

Tucson, Arizona, July 18th, 195

Sample Submitted by Mr. American Exploration & Mining Co.

SERIAL	SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore $	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	~~LEAD Per cent Wet Assay~~	~~Per cent Wet Assay~~
133774	#42	001	035	06	024		
75	65	001	035	04	009		
76	66	Trace		02	009		
77	67	005	017	03	007		
78	68	Trace		02	005		
79	69	Trace		02	005		
80	70	001	035	03	003		
81	71	Trace		02	006		
82	72	005	017	02	004		
83	73	Trace		01	006		
84	74	Trace		02	005		
85	75	005	017	02	010		
86	76	001	035	02	004		
87	77	Trace		01	004		
88	78	Trace		01	012		
89	79	Trace		02	009		
90	80	005	017	02	012		
91	81	005	017	02	010		
92	82	Trace		01	009		
93	83	Trace		01	006		
94	84	005	017	02	006		
95	85	Trace		02	006		
96	86	005	017	02	009		
97	87	Trace		03	009		
98	88	Trace		02	006		
99	89	005	017	02	011		
153800	90	Trace		02	012		
1	91	Trace		01	010		

SOUTHWEST POTASH

EXHIBIT 2

AMAX

SOUTHWEST POTASH CORP.

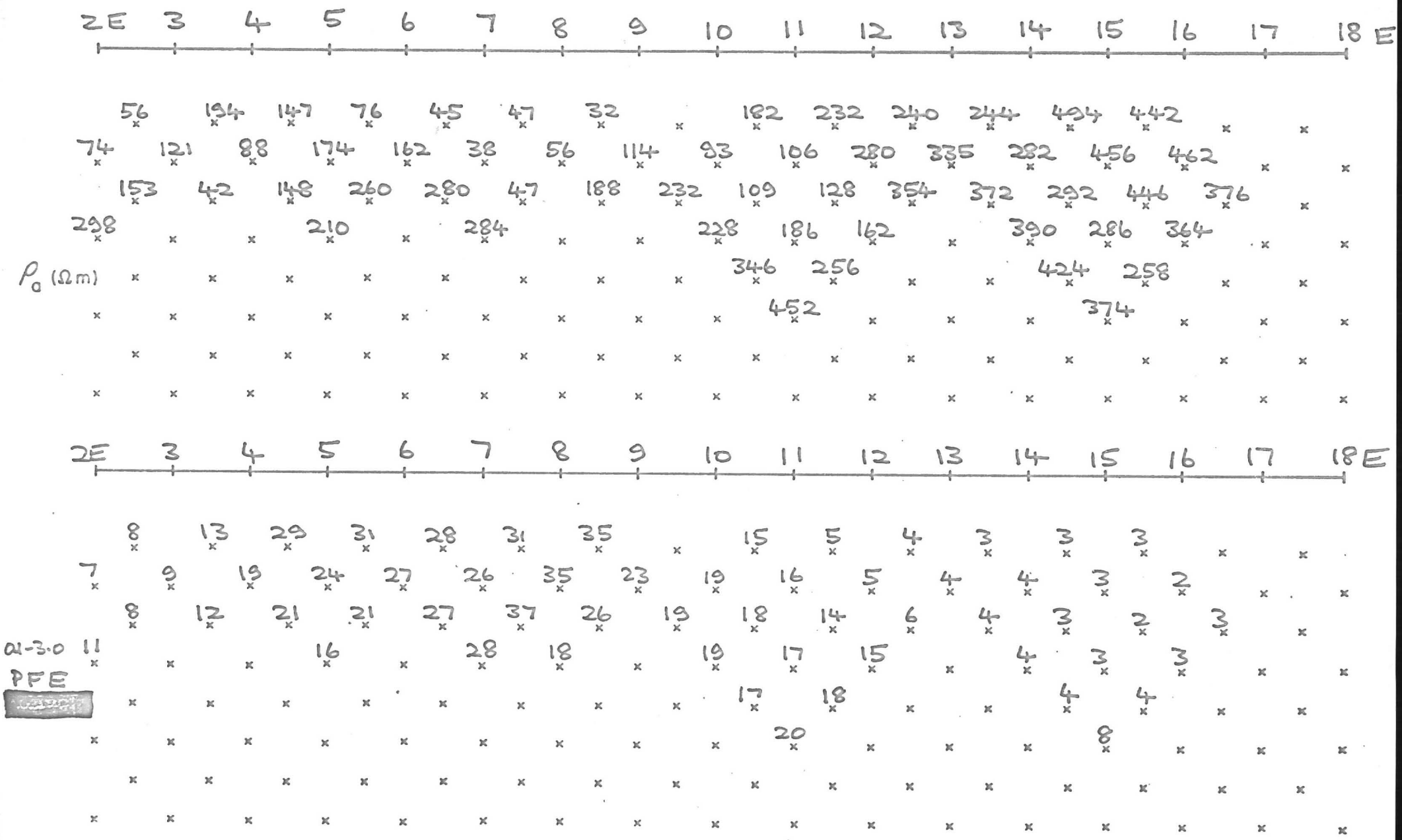
BEAR CREEK

EXHIBIT III

BEAR CREEK

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

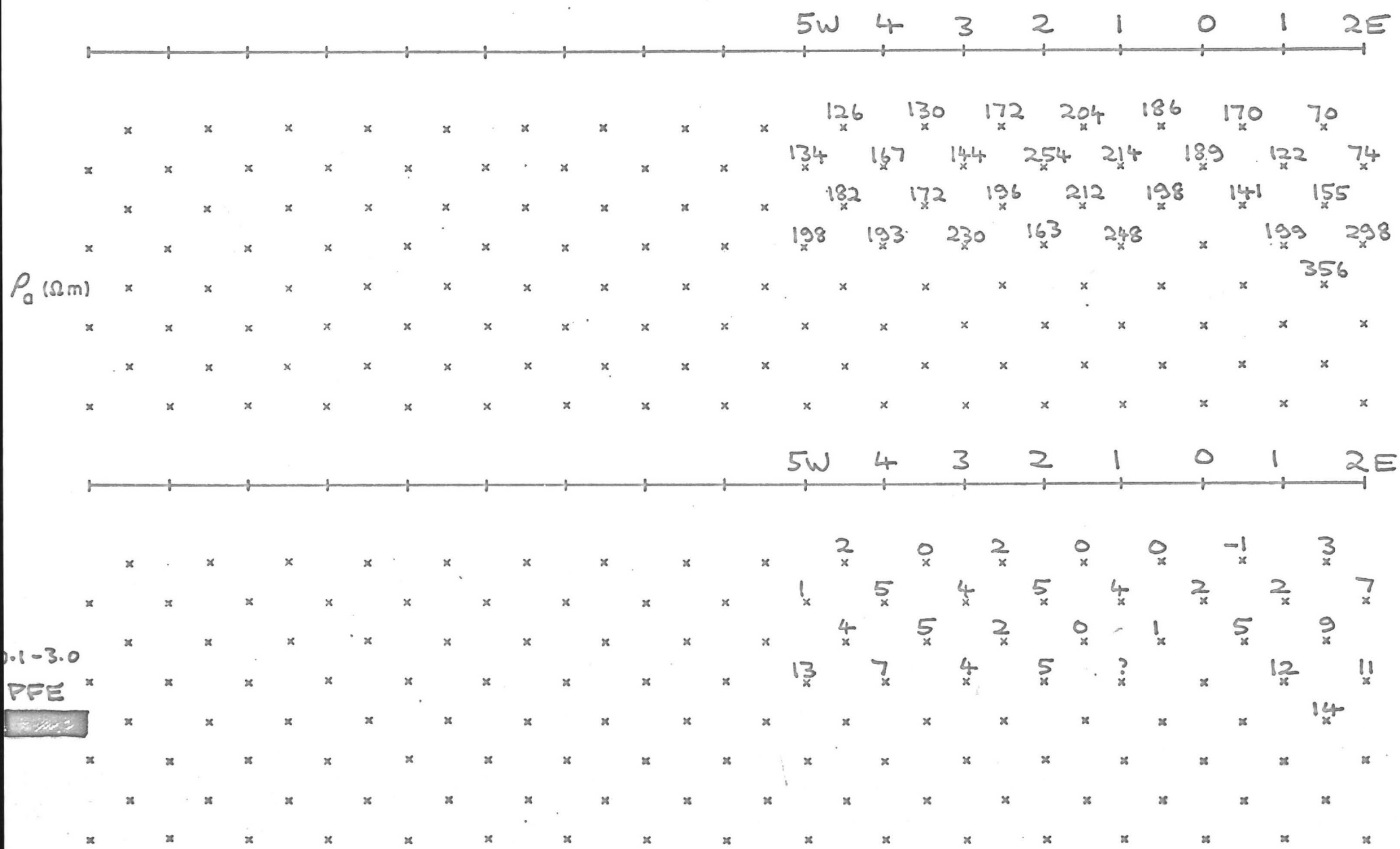
[redacted] IP PROFILE WORKSHEET



AREA STEINS STATE N. MEX LINE NO. I (EAST) DATA BY _____ DATE 1964

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

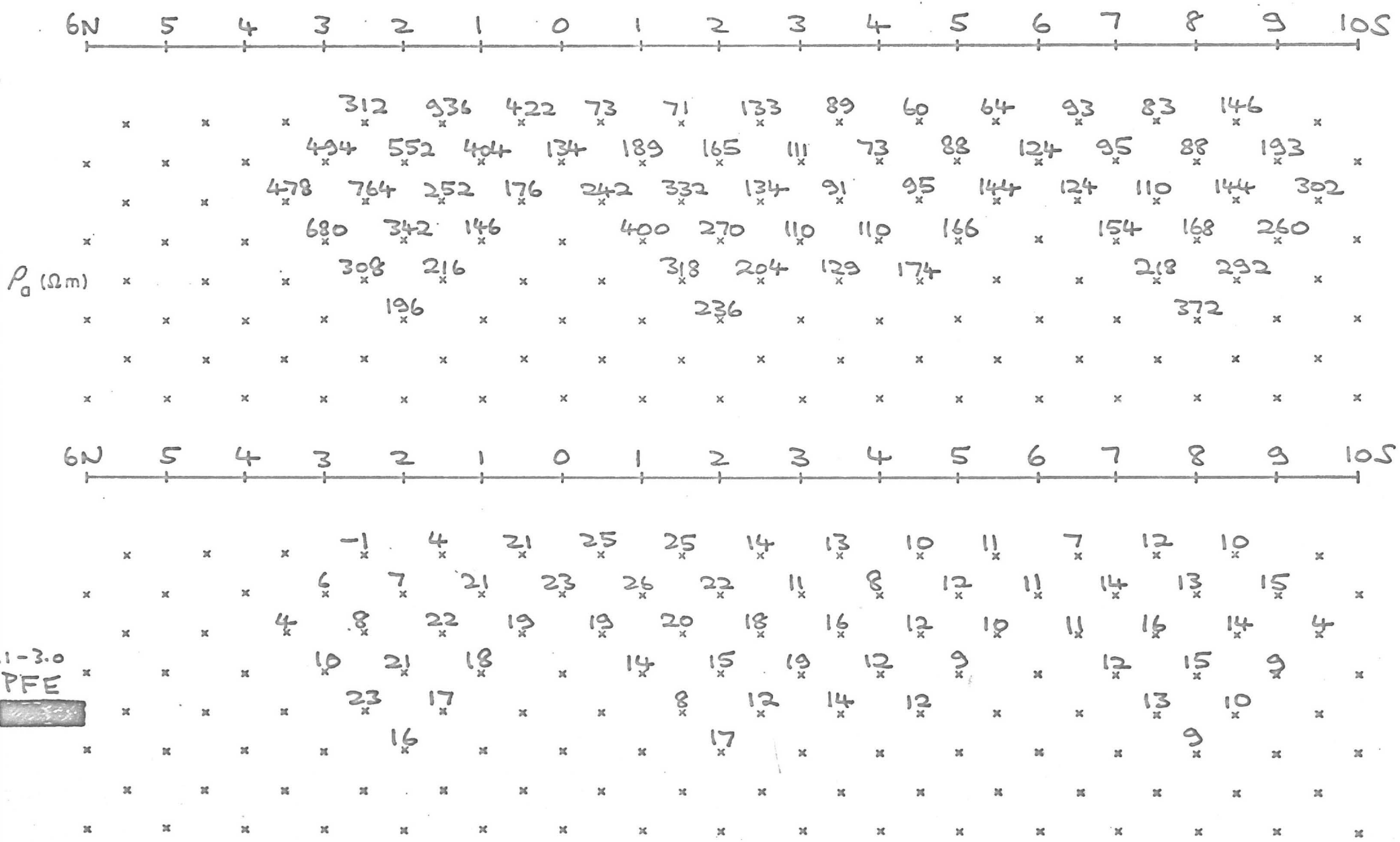
[redacted] IP PROFILE WORKSHEET



AREA STEINS STATE N. MEX LINE NO. I (WEST) DATA BY _____ DATE 1964

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

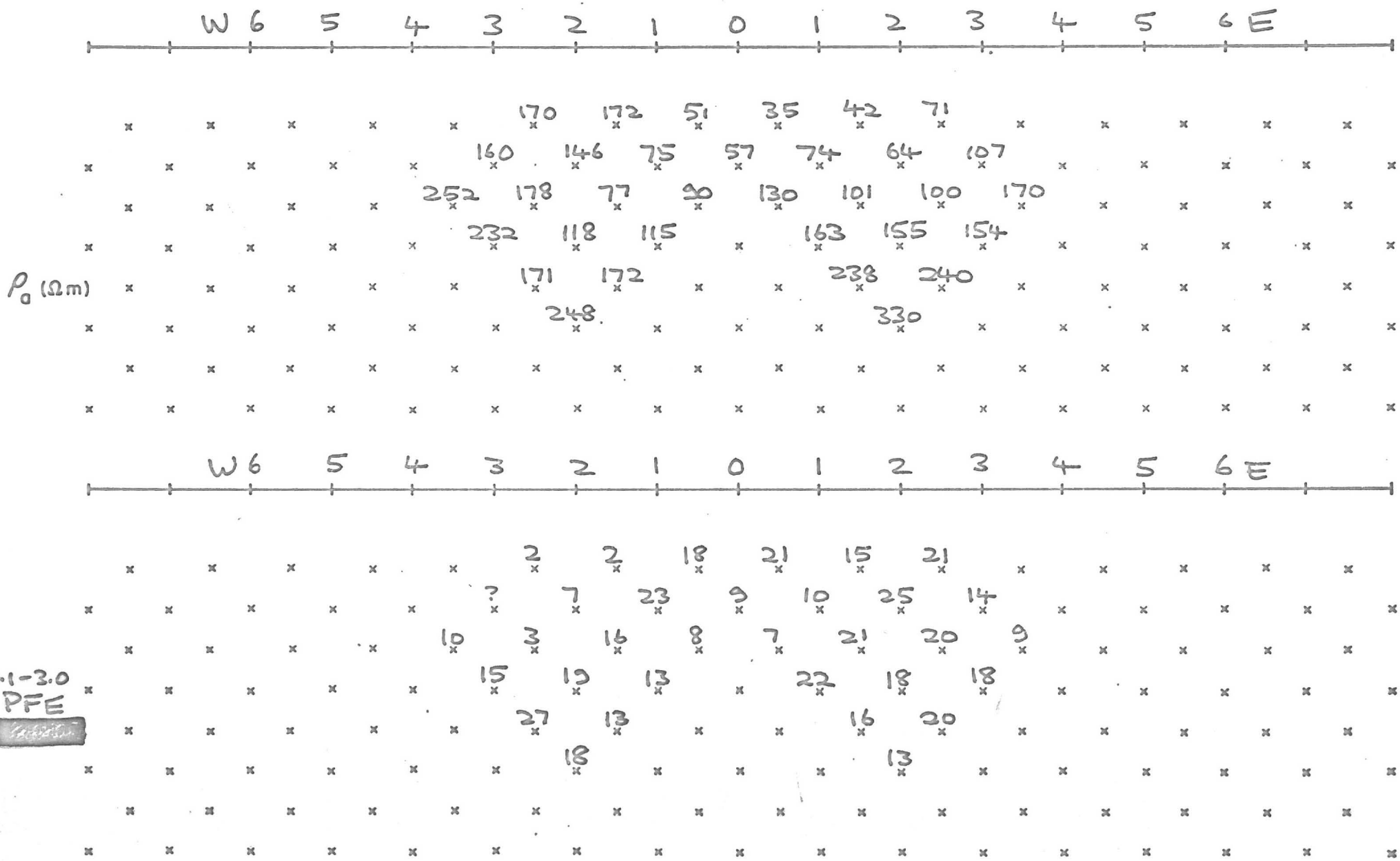
[redacted] IP PROFILE WORKSHEET



AREA STEINS STATE N.MEX LINE NO. II DATA BY _____ DATE 1964

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

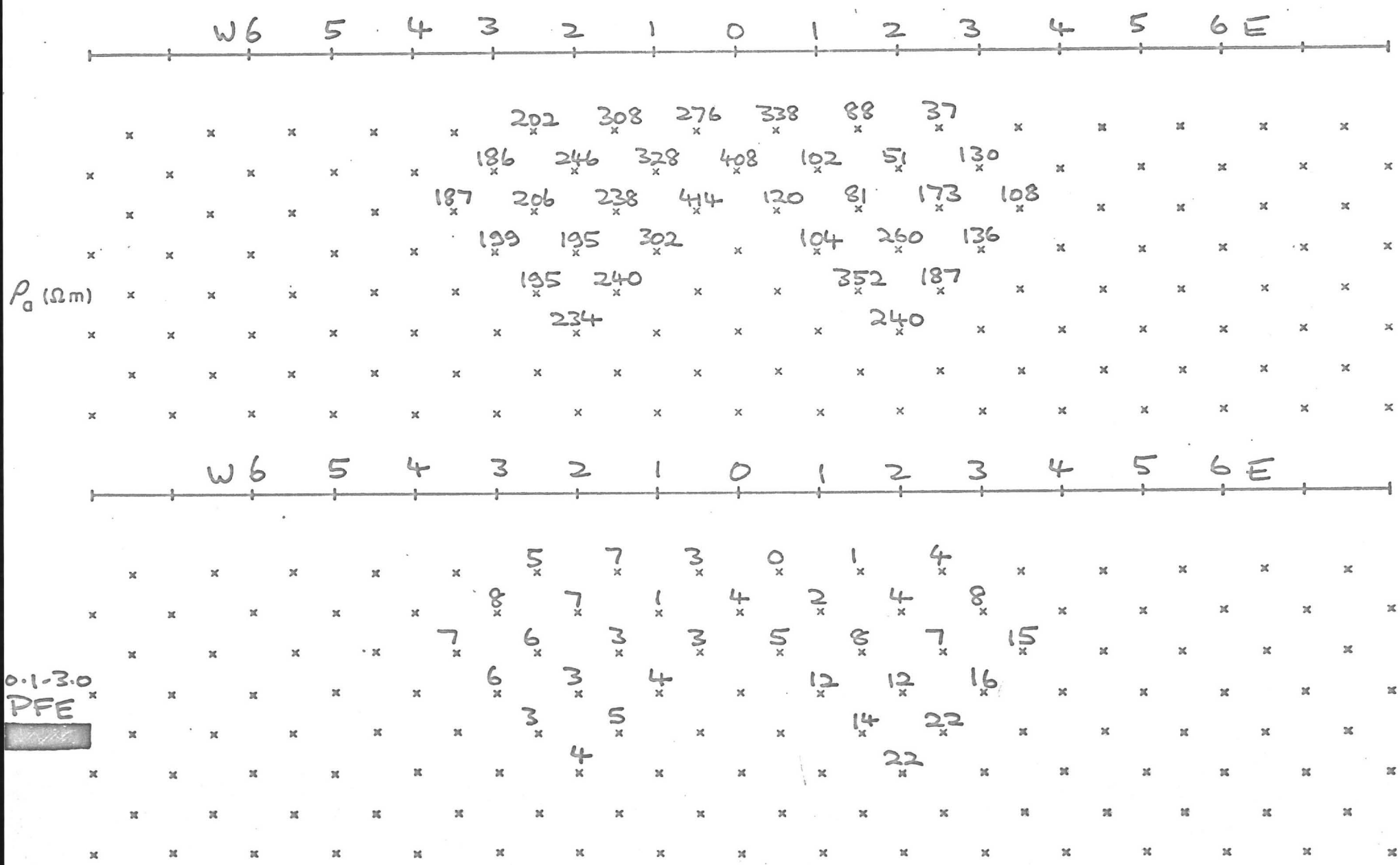
[redacted] IP PROFILE WORKSHEET



AREA STEINS STATE N. MEX LINE NO. III DATA BY _____ DATE 1964

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

[redacted] IP PROFILE WORKSHEET



AREA STEINS STATE N. MEX LINE NO. IV DATA BY _____ DATE 1964

KENNECOTT EXPLORATION INC. – GEOPHYSICS DIVISION OPERATIONS

[redacted] IP PROFILE WORKSHEET

3N 2 1 0 1 2 3 4 5 6 7 8 9 10 11S

118	98		214	183	330	327	341	312	426	329	253	195	349	
116	129	115	200	237	270	230	337	434	316	384	387	255	379	222
143	153	164	199	282	189	282	403	414	275	404	379	500	255	
216	179	205	184	230	176	220	331	364	349	314	377	721	331	194
256	243	252	222	165	218	260	290	309	436	324	710	453	219	
365	300		165	300	264	329	252	409	502		438	291	275	

ρ_a (Ωm)

3N 2 1 0 1 2 3 4 5 6 7 8 9 10 11S

0	0	0	1	4	7	6	6	2	2	0	0	1	1	
1	1	0	1	4	7	5	8	7	3	2	0	1	0	1
2	1	1	3	5	5	4	9	7	4	2	1	1	2	
2	1	2	6	9	5	5	5	9	8	4	3	2	3	2
2	3	7	8	7	5	5	5	9	8	4	3	3	3	
3	8		5	6	6	6	4	6	7		4	3	3	

·1-3.0)
PFE
[redacted]

AREA STEINS STATE N. MEX LINE NO. 5 DATA BY _____ DATE 1973

MINEX CORP.

EXHIBIT 4

MINEX CORPORATION

C O N F I D E N T I A L

Peloncillo Project

Hidalgo County, New Mexico

Minex Company
Pasadena, California

1963

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ABSTRACT

An area of approximately 6 square miles has been discovered in southwestern New Mexico, which shows intense sulfide mineralization and strong indications of containing one or more deposits of low-grade copper (molybdenum, gold) ore.

Regional geology outside the area indicates that alteration and mineralization, and related intrusive igneous activity, were controlled primarily by two structures or structural trends--a northwest-striking arch of regional proportions and northeast-striking faults, fault zones, and fractures, which transect the arch. The area of interest, called the Peloncillo area, is located on the northeast flank of the arch and contains the most intense northeast faults, fault zones, and fractures.

Rocks in the Peloncillo area consist wholly of andesite and intruding quartz monzonite porphyry. The andesite is altered by three stages of alteration--epidotization, propylitization, and high-temperature, hydrothermal alteration. The quartz monzonite porphyry is affected only by the high-temperature, hydrothermal stage of alteration.

Both rock types contain high concentrations of sulfide minerals. The andesite contains abundant pyrite, which is widely disseminated, and abundant copper minerals, which are found only in fractures. The quartz monzonite porphyry contains disseminated sulfides with an apparently high copper to iron ratio. The leached outcrop of the quartz monzonite porphyry contains 0.08 to 0.12 percent copper.

The history of intrusive igneous activity and alteration and mineralization has been:

1. epidotization of andesite, by H_2O-SiO_2-CO_2 metasomatism,
2. propylitization (and consequent pyritization) of andesite by Na(?)-H_2O-SiO_2-H_2S metasomatism,
3. development of northeast-striking faults, fault zones, and fractures,
4. intrusion of quartz monzonite porphyry,
5. high-temperature, hydrothermal alteration of andesite (along fractures) and of quartz monzonite (throughout) by K-H_2O-SiO_2-S(in unknown combination)-Me(Fe,Cu,Mo,Bi,Au,Pb,Zn),
6. intense leaching of both rock types.

Reconnaissance surveys, including geochemical and geophysical surveys (magnetics and induced polarization), conducted over part of the area indicate two sub-areas of particularly intense mineralization--called the Alpha and Beta areas. The Alpha area contains a recently discovered, leached, and strongly mineralized quartz monzonite porphyry, which has been explored only to the extent that grab-samples have been collected. The Beta area shows strong indications of containing a mineralized, but unexposed, intrusive igneous mass at a depth of from 500 to 1,000 feet. Exploration of the Beta area has been limited to ground surveys and shallow drilling.

INTRODUCTION

PURPOSE

In the Fall of 1962, the Minex Company, as a consequence of an exploration program for metallic ore deposits in southwestern New Mexico, discovered an area, called the Peloncillo

area, which showed indications of containing a major deposit of low-grade copper ore. A limited program of exploration in the area, conducted intermittently from November, 1962, through November, 1963, confirmed and enhanced the original indications and delineated sub-areas and targets which warrant advanced exploration.

This report is a summary of the geology of the area which relates to mineral deposits, a resume of exploration conducted in the area, and an evaluation of the area with respect to its potential of containing significant mineral deposits.

OBJECTIVES

The objectives of the report are to:

1. state the important facts known about the area which relate to mineralization,
2. show that the area has the potential of containing a significant ore deposit,
3. indicate the sub-areas and targets which warrant advanced exploration, and
4. suggest a program of exploration, which will thoroughly test the sub-areas and targets indicated and possibly discover additional targets.

PREVIOUS WORK

The first work of any consequence performed in the area was done in conjunction with the geologic mapping of the central Peloncillo Mountains by Elliot Gillerman in 1957-58, under the auspices of the New Mexico Bureau of Mines and Mineral Resources ("Geology of the Central Peloncillo

Mountains, Hidalgo County, New Mexico, and Cochise County, Arizona", New Mexico Bureau of Mines and Mineral Resources, Bulletin 57, 1958). Gillerman's mapping was done on a regional scale and, therefore, shows few details of the Peloncillo area. His map, however, provides important clues of the regional structural controls responsible for the mineralization in the area. Part of his map has been reproduced and incorporated in this report (figure 4).

During the time Gillerman was mapping the central Peloncillo Mountains, American Exploration and Mining Company drilled a 1,000 foot hole in the western part of the Alpha area.

Probably as a result of the publication of Gillerman's report, the Southwest Potash Corporation (subsidiary of the American Metals Climax Corporation) investigated the area during the winter of 1960-61. Their work consisted of the following, in chronological order:

1. reconnaissance examination,
2. land surveying,
3. reconnaissance mapping of joints, veins, and veinlets of mineralization, and areas of limonite staining,
4. magnetometer survey of part of the area,
5. drilling of five shallow holes (less than 100 feet)
6. reconnaissance induced polarization survey.

Geophysical data indicate that none of the drill holes was located over a prime target.

The geologic mapping, the magnetometer survey, and the induced polarization survey, though they are of reconnaissance

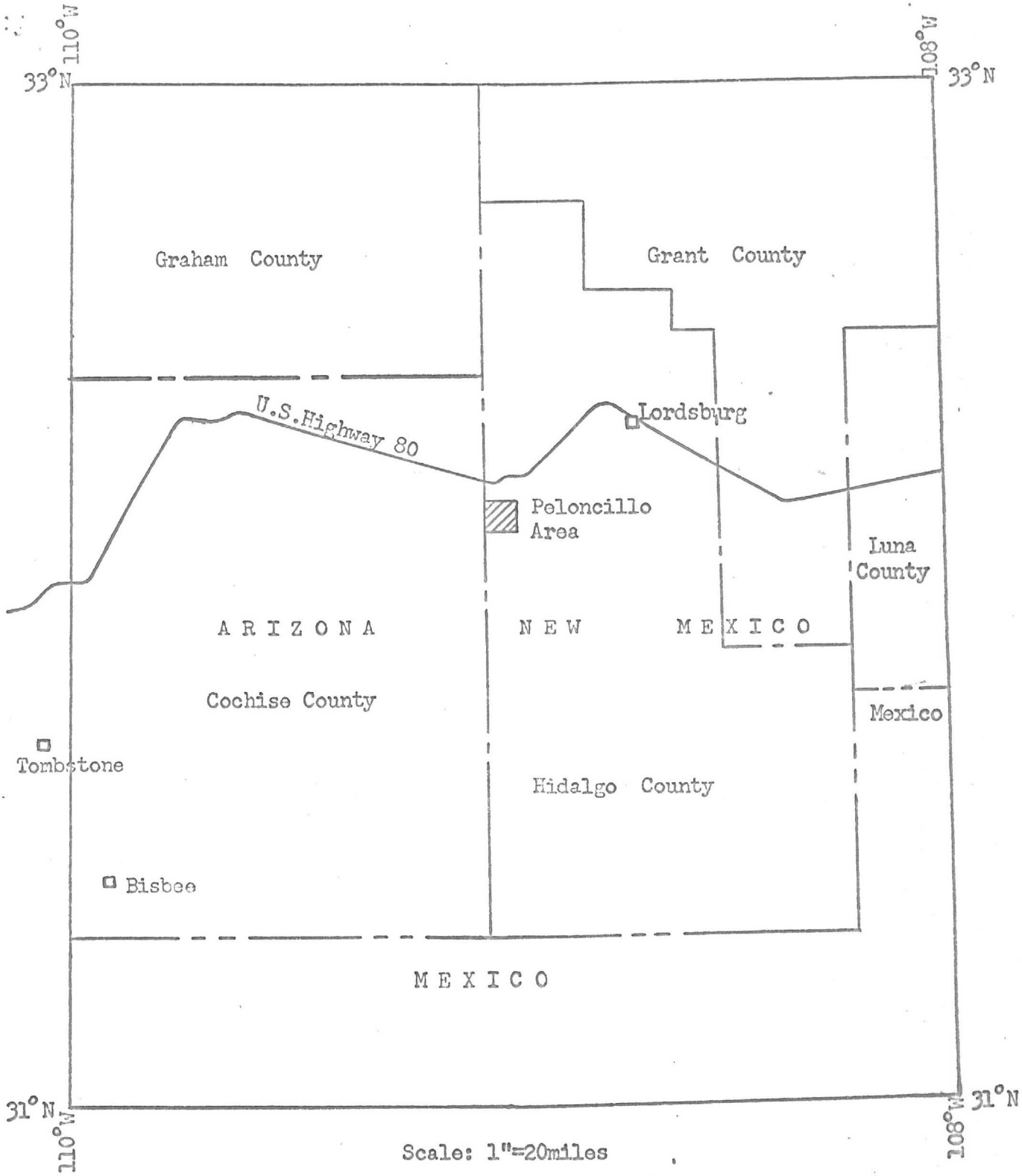


Figure 1 Index Map showing location of Peloncillo Area

nature, provide valuable information. Consequently, they have been reproduced and made a part of this report (figures 5, 6, and 7, respectively).

The principle owner of the Peloncillo area has reported that the Bear Creek Mining Company (subsidiary of Kennecott Copper Corporation) conducted a reconnaissance induced polarization survey over much of the area during June, July, and August, 1963. The results of their survey and their conclusions have not been made known to the owner.

LOCATION OF AREA

The Peloncillo area is located in western Hidalgo County, southwestern New Mexico, less than one mile east of the New Mexico-Arizona border (see figures 1 and 2).

The area is strategically located with respect to power and transportation facilities and water supplies. It is less than three miles from a pipeline of the El Paso Natural Gas Company, two miles from electric power transmission lines, and two miles from U. S. Highway 80. The San Simon Valley, which borders the area, contains ample and accessible ground water.

PHYSIOGRAPHY

Gillerman states (page 3 and 4, op. cit.) that the region "...is divisible into three distrinct units: the Animas Valley on the east, the Peloncillo Mountains, and the San Simon Valley on the west...

"The Animas Valley is a broad, flat, northward sloping interior basin, with no definite drainage lines...

"The San Simon Valley is also a broad, flat valley, through which San Simon Creek flows northwestward to the Gila

River. The valley is lower than Animas Valley...

"The Peloncillo Mountains are a narrow range of relatively low hills which rise 1,000 to 1,500 feet above the Animas and San Simon Valleys."

The Peloncillo area itself is on the western flank of the central Peloncillo Mountains. It is divisible into two distinct units: an eastern unit characterized by moderate relief and rugged terrain, and a western unit characterized by low relief and rolling terrain.

The western unit is largely covered by alluvium.

GEOLOGY

STRUCTURE

The dominant structural feature of the central Peloncillo Mountains is a broken arch, whose axial plane strikes northwest and crosses the range about 2.5 miles north of Granite Gap (figure 4). The arch is asymmetric, in that its northeast flank is somewhat steeper than its southwest flank.

A system of high-angle faults occupies the axial part of the arch and is parallel to sub-parallel to the axial plane. Numerous faults and fractures sympathetic with this system occur within the Peloncillo area (figure 5). Where they can be seen, they invariably dip vertically or steeply to the northeast, a fact which suggests that they are normal faults formed in response to the uplifting of the arch. According to Gillerman, both the arch and the related fault system antedate late Tertiary or early Quaternary faulting.

A second system of faults best can be seen in the Granite Gap area. Here, two high-angle faults strike east-northeast

across the trend of the arch. They bound a horst, which is the Pre-Cambrian complex of Granite Gap. The same system is evident in the Peloncillo area. Figure 5 shows numerous fractures striking east-northeast, and the general trend of the most intense area of sulfide mineralization, as indicated by induced polarization (figure 7), is east-northeast. The east-northeast system of faults and fractures post-dates the arching and the fault system related to the arching.

A third major fault system best can be seen at Robinson Mountain, within the Peloncillo area. Here, a high-angle fault strikes north-northeast to northeast across Robinson Mountain through the Charles Mine. The age of this fault and the system to which it belongs is middle Tertiary.

All the significant mines in the central Peloncillo Mountains, with the single exception of the Ward Mine, on the north edge of Granite Gap, are located on the northeast flank of the structural arch. Furthermore, all these mines occur where significant northeast fault zones intersect the northeast flank of the arch. Within the Peloncillo area, two strongly mineralized sub-areas, which will be called the Alpha and Beta areas (see figure 3), are both located on the projection of the northeast fault striking across Robinson Mountain.

ROCKS

Breaching of the structural arch by erosion has exposed rocks ranging in age from Pre-Cambrian to middle Tertiary, and including sedimentary, metamorphic, and igneous rocks. Detailed descriptions of these rocks can be obtained from Gillerman's report (op. cit.).

The Peloncillo area contains relatively few rock types. Almost all the exposed rocks are andesite and associated

dacite and basalt of late Cretaceous or early Tertiary age. The andesite has been profoundly altered by several stages of alteration, so that its original nature is indeterminate in the Peloncillo area. However, outside the area, where it is less altered, it is typically a "...holocrystalline or hypocrystalline aphanitic-porphyritic gray to grayish red-purple andesite with a hyalopilitic groundmass" (Gillerman, page 59, op. cit.). Phenocrysts constitute 10.30 percent of the rock and are 75 percent andesine, 20-25 percent biotite, and less than 1 percent euhedral quartz. The matrix constitutes 70-90 percent of the rock and is a microcrystalline mixture of feldspar laths, magnetite grains, and volcanic glass.

The only other rock type exposed is a plug of quartz monzonite porphyry in the Alpha area. It is altered and mineralized, and its original nature can only be inferred from the nature of relatively fresh quartz monzonites found outside the Peloncillo area. Gillerman states that such "quartz monzonite porphyry is a holocrystalline porphyritic light-pink to gray rock, with abundant phenocrysts of quartz and feldspar set in an aphanitic groundmass" (page 14, op. cit.). Phenocrysts comprise 50-60 percent of the rock and consist of 30-35 percent quartz, 65-70 percent feldspar (70 percent orthoclase and 30 percent andesine), 1 percent biotite, and less than 1 percent magnetite and sphene. The matrix consists of microgranular quartz and kaolinized feldspar.

ALTERATION--METASOMATISM

The andesite and quartz monzonite in the Alpha and Beta areas are profoundly leached by sulfate solutions, so that evidence of the nature of alteration has been destroyed or greatly obscured. However, evidence from the relatively

unleached fringes of the areas and from drill core obtained in the Beta area show that three stages of alteration occurred in the Peloncillo area:

1. epidotization,
2. propylitization, and
3. high-temperature, hydrothermal alteration and metasomatism.

Epidotization has affected all the andesite in the Peloncillo area. In addition to the unaltered constituents of the rock, the epidotized andesite contains epidote, chlorite, and calcite. The epidotization probably was produced by dynamothermal metamorphism and H_2O-SiO_2(?)-CO_2 metasomatism.

Propylitization has affected much of the andesite, particularly in the Alpha and Beta areas. The phenocrysts of the andesite in and around these areas consist of epidote, chlorite, albite, quartz, and disseminated pyrite. Though some of these minerals are common to the epidotized andesite and could be the result of metasomatism associated with that stage of alteration, the albite, quartz, and disseminated pyrite indicate that sodium, sulfur, and silica were the major additives during the propylite stage of alteration and metasomatism.

High-temperature, hydrothermal alteration and metasomatism have affected both the andesite and the quartz monzonite in the Alpha and Beta areas. The andesite is affected only along fractures, though parts of each area are so intensely fractured that all the andesite is hydrothermally altered. The quartz monzonite is affected throughout.

The megascopic mineralogy of fractured but unleached andesite obtained from drill holes in the Beta area is as follows:

1. epidote,
2. intensely kaolinized and sericitized feldspars,
3. secondary orthoclase,
4. secondary euhedral quartz,
5. light-green to honey-brown chlorite,
6. chalcopyrite and pyrite, and
7. realgar.

In addition, assays and spectrographic analyses of the core from the Minex DDH #1 show abnormally high concentrations of K, Cu, Mo, Au, Ag, Pb, Zn, Bi.

The megascopic mineralogy of the leached quartz monzonite porphyry in the Alpha area is:

1. intensely kaolinized and sericitized feldspars,
2. secondary orthoclase,
3. secondary euhedral quartz,
4. light-brown to yellowish-white chlorite, and
5. "sugary" quartz.

The quartz monzonite porphyry has been assayed only for copper. It contains from 0.08 to 0.12 percent copper.

The mineral and element assemblages given above indicate that the third stage of alteration was high-temperature and that metasomatism during this stage added large quantities of K-SiO_2-S(unknown combination)--H_2O-Me(Cu,Mo,Au,Ag,Pb,Zn,Bi,X). This kind of metasomatism is characteristic of porphyry copper metasomatism.

METALLIZATION

Sulfide mineralization is widespread throughout the Peloncillo area, as indicated above. A reconnaissance induced polarization survey by Southwest Potash Corporation (figure 7) indicates that the areas of intense sulfide mineralization are very large. Reconnaissance mapping of limonite occurrence (figure 5) generally confirms the induced polarization survey.

PYRITE

To the casual observer, most of the sulfides in the area appear to be pyrite. This impression can be very damaging to an evaluation of the area, unless the relationship of pyrite to ore metallization is fully understood. This relationship is evident from the paragenesis of metallization, which is given below:

1. development of northwest-striking arch and sympathetic northwest faults,
2. possible intrusion of monzonite dikes, sills, and small plugs,
3. epidotization of much of the central Peloncillo Mountains,
4. development of east-northeast faults and fractures,
5. propylitization, pyritization, and some silicification of the Peloncillo area, particularly along northwest and east-northeast fault and fracture zones and their intersections,
6. development of north-south and northeast faults and fractures,

7. intrusion of quartz monzonite plugs, particularly at intersections between northeast faults and previously existing structures, and
8. high-temperature, hydrothermal alteration, metasomatism, and ore metallization of andesite at intersections of all major fault and fracture systems and of intrusive igneous rocks at these intersections.

Thus, pyrite metallization is a distinct and separate phase of metallization. That no ore-metal deposition occurred with the pyrite metallization is proven by the fact that assays of sulfide concentrates obtained from propylitized andesite show "nil" copper. The pyrite probably was formed by simple sulfur metasomatism. Even the iron in the pyrite could have been, and probably was, derived from the andesite itself.

Therefore, the distribution of pyrite and the structures controlling this distribution are not guides to the distribution of copper and other ore metals. Rather, the pyrite serves to mask the ore-metal geology by:

1. providing unusually strong leaching solutions, which leach the rocks almost beyond recognition and disperse the copper from its original loci of deposition,
2. creating high backgrounds on induced polarization surveys, and
3. creating the impression of a single, but strong phase of metallization.

Because of these masking effects, a geologist or prospector, who does not fully realize the role of the pyrite metallization, might evaluate the area as follows:

1. the area is intensely mineralized with sulfides (visual observation, substantiated by induced polarization surveys),
2. copper is present in the area (grab-sample survey),
3. copper appears to be disseminated, since sulfides are disseminated and all grab-samples show copper (actually copper is dispersed),
4. further surface exploration, as well as shallow drilling, finds abundant disseminated pyrite but few, if any, disseminated copper sulfides,
5. therefore, while copper exists in the area, it occurs in only minor concentrations; iron was the major constituent of the metallizing solutions, and
6. the area is an interesting "pyrite area".

Such an evaluation appears to have been made by American Exploration and Mining Company, Southwest Potash Corporation, and Bear Creek Mining Company. In the early stages of its exploration, Minex Company also made a similar evaluation. But certain facts, brought to light as a result of drilling, revealed the more complicated history of the area and showed that copper metallization was intense and that copper was a major constituent of ore-bearing solutions.

COPPER AND OTHER ORE METALS

Original grab-sample surveys by Minex indicated higher levels of copper in the Beta area than in the Alpha area (probably because of more thorough leaching in the Alpha area). Later reconnaissance of the Alpha area, following a realization of the history of metallization, revealed equally intense copper metallization and resulted in the discovery of the altered and mineralized quartz monzonite porphyry. (This discovery was made just prior to the writing of this report, and no exploration of the porphyry, other than grab-sampling, has been performed.) The location of the quartz monzonite porphyry is shown on figure 3. Figure 14 is a cross-section through the hole drilled by American Exploration and the outcrop of the quartz monzonite porphyry. It shows the possible sub-alluvial and sub-andesite dimensions of the quartz monzonite and indicates that the quartz monzonite may be part of the cupola of the intruding igneous mass.

Nevertheless, as a consequence of the grab-sample survey, Minex confined its exploration efforts to the Beta area. A geochemical survey of the Beta area (figure 9) was confined to a few leached outcrops projecting through the alluvial cover. However, the survey showed that copper is widely distributed in the area and occurs in rather high concentrations. The impression obtained was that the copper must be disseminated, at least to some extent.

Induced polarization-resistivity surveys of one of the most leached parts of the area (which also showed high copper concentrations) (figures 10, 11, 12, and 13) showed very high total sulfide concentrations (induced polarization) as well as intense leaching and/or fracturing (resistivity), with some

of the latter striking northeast, which was considered to be an important structural trend.

Since it did not appear that previous drilling in the area by Southwest Potash (which was very shallow, the deepest hole being 117 feet) had tested the most promising parts of the area, Minex decided to test these parts by drilling. Holes were drilled at the locations shown on figure 10.

The basic objective of the drilling was to determine whether or not the area contained a shallow, low-grade deposit of disseminated copper. Results of the drilling indicate that it does not, and probably cannot, contain shallow disseminations of copper, though it does contain appreciable amounts of copper. Rather, assays, spectrographic analyses, and mineralogic logs of the core indicate the following:

1. 50 percent of the core from each hole was lost. The core that was lost was physically hard material to the drill bit, so it was not gouge or clay. It was probably highly fractured material which was pulverized by the action of the drill bit and was lost to sludge or along the permeable fracture zones themselves (drilling fluid circulation was difficult to maintain; an entire truckload of water was lost to one zone in a matter of minutes). The tenor of the material lost could not be determined by sludge assays, inasmuch as constant caving, around the casing, of alluvium and strongly kaolinized portions of the leached zone greatly diluted the sludge.

Some indication of the tenor of the zones was obtained, however, from very small rock fragments recovered in the core barrel and presumably derived from the lost fracture zones. These fragments assayed as follows:

Sample	Depth(feet)	Cu(%)	Au(oz./ton)	Ag(oz./ton)
P-1	81- 84	0.93	0.15	0.5
P-2	84- 88	0.59	0.10	0.3
P-3	88- 92	0.59	0.11	0.3
P-4	92- 98	0.50	0.09	0.4
P-5	98-103	0.35	0.07	0.5
P-6	103-107	0.27	0.05	0.3
P-7	107-114	0.44	0.10	0.5
P-8	114-118	0.30	0.08	0.5
P-9	118-122	0.64	0.14	0.6
P-10	122-127	0.57	0.20	0.4
P-11	127-138	0.27	0.07	0.3

2. the andesite between the fractures, though it contains 8-10 percent pyrite by volume, contains "nil" copper and gold (the same andesite contains as much as 1.5 percent copper in the zone of enrichment due to replacement of the pyrite by secondary chalcocite),
3. the unfractured andesite shows evidence (already given) of epidotization, propylitization and high-temperature, hydrothermal alteration.

Thus, while Minex' exploration of the Beta area failed to discover a disseminated copper deposit, it revealed the

true nature of the metallization and forced a re-evaluation of the entire Peloncillo area--an evaluation which shows the area to have great potential of containing one or more large deposits of low-grade copper ore.

EVALUATION OF THE PELONCILLO AREA

A thorough evaluation of an area with respect to its potential of containing an ore deposit is an evaluation of the following components of an ore cycle:

1. source of ore metals,
2. fluids to transport metals,
3. "plumbing" through which metalizing fluids can move, and
4. environment, including host rock, in which the fluids can deposit the metal.

The widespread, but "contiguous", distribution of copper suggests that strong sources of copper existed in both the Alpha and Beta areas. The assemblage of late magmatic elements found in the areas indicate that the sources were probably cooling acid magmas, perhaps similar in composition to that which produced the quartz monzonite porphyry found in the Alpha area.

The fluids which transported the copper were high-temperature, hydrothermal solutions, which are commonly associated with "porphyry" copper deposits.

In both the Alpha and Beta areas, ascending solutions have followed open fractures. However, in the Alpha area the solutions appear to have permeated the rock as well--at least, the quartz monzonite porphyry.

The only potential host rock that has been found in the Beta area is andesite. This is a relatively impermeable and unreactive rock, and unless the temperature and pressure of the mineralizing solutions was high, it is not likely that copper could have penetrated the rock deeply and become disseminated. Therefore, it is not likely that a disseminated copper deposit exists in the andesite near the surface, where indications are that the mineralizing solutions were relatively low temperature and pressure and were confined to fractures. It is quite possible, however, that at greater depths in the Beta area, where the temperature and pressure of the mineralizing solutions must have been higher, the solutions penetrated the andesite and enabled copper to replace the pyrite probably already present in the andesite.

The magnetometer survey (figure6) strongly suggests that an igneous mass underlies the Beta area. If it exists, it could be mineralized in one of two ways:

1. by dissemination of copper throughout the mass after it had solidified and then been fractured and altered by the same forces and solutions which affected the andesite, or
2. by syngenetic deposition of copper during the cooling and solidification of the mass.

In the Alpha area, potential hosts found at the surface are andesite and quartz monzonite. The andesite is considerably more silicified than that in the Beta area. If the silicification preceded metallization, it is not likely, even at high temperatures and pressures, that dissemination of copper has occurred in the dense and impermeable rock. It is possible, however, that vein deposits occur.

The quartz monzonite present in the Alpha area has been fractured after its solidification and strongly altered and mineralized. This rock is itself a potential ore deposit.

POSSIBLE LOCATIONS OF ORE DEPOSITS

The most likely locations of ore deposition are:

1. Alpha area
   a. the area within the intense magnetic low, or along the steep gradient at the south edge of the magnetic low,
   b. the intersections of the structure represented by the magnetic low and northeast fault or fracture zones.

The mineralized quartz monzonite occurs at one such intersection. Figure 14 is a cross-section through the outcrop of this quartz monzonite and Amex DDH #1, showing a hypothetical ore deposit below the outcrop.

2. Beta area
   a. the intrusive mass indicated by the magnetic survey,
   b. the fault or fracture zone, also indicated by magnetics, striking northwest and located immediately northeast of the intrusive mass,
   c. directly below the most intense faulting or fracturing in the area, as indicated by resistivity, particularly where northwest and northeast fractures intersect.

Figure 15 is a cross-section showing these hypothetical ore zones.

SUGGESTED PROGRAM OF EXPLORATION

The specific objectives of an exploration program in the Peloncillo area should be as follows:

1. to determine the most likely loci of major sources of mineralization,
2. to determine which paths copper-bearing solutions followed, where these paths are, and which paths are the strongest, and
3. to locate favorable host environments for ore deposition.

If the location of the sources of mineralization can be detected at the surface, they will most likely be detected by a magnetic survey. A magnetic survey can best reveal large, or deep-seated, structural discontinuities, which, on a philosophical basis, might be expected to be related to major mineralization.

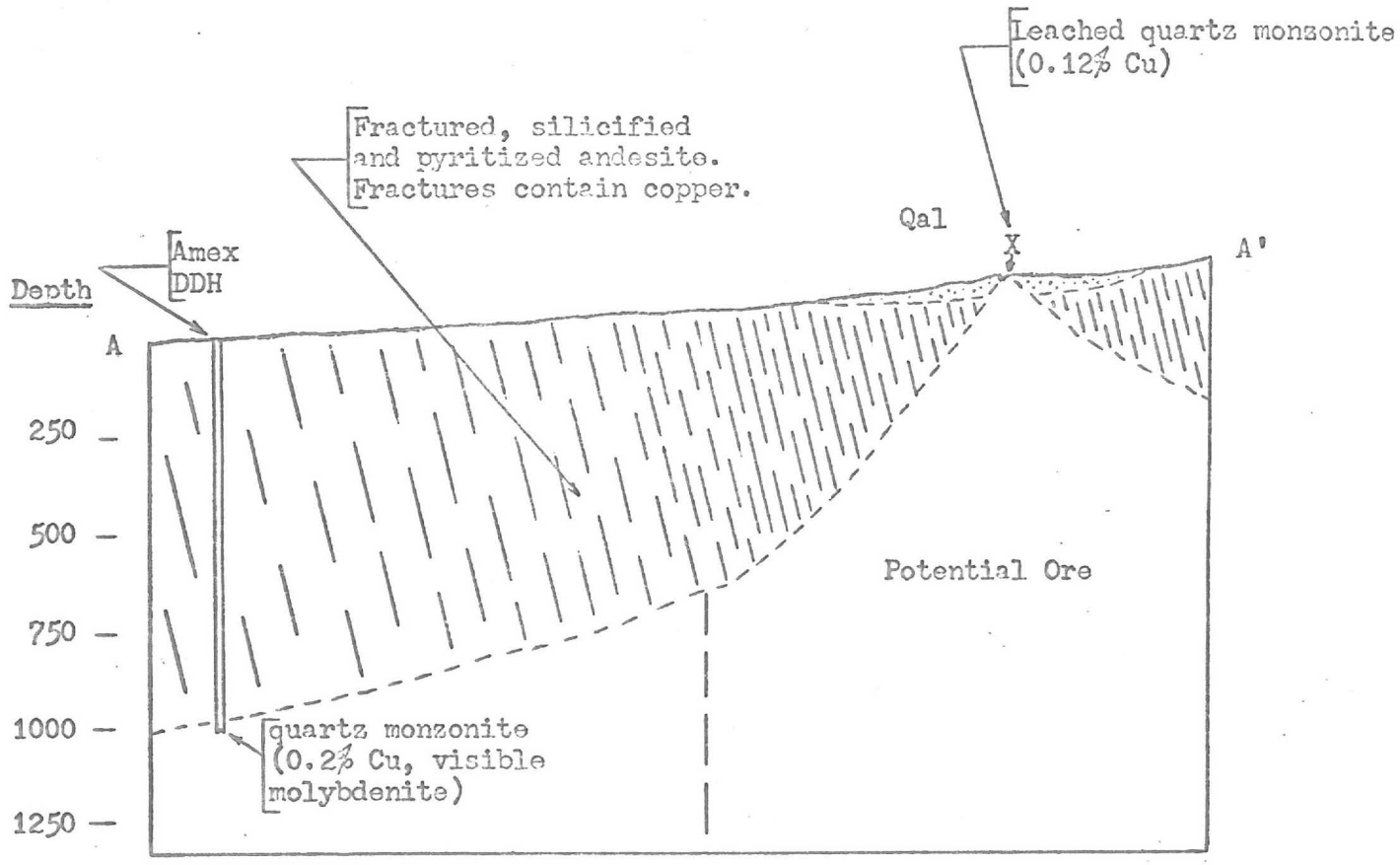
The only way to determine which paths copper-bearing solutions followed and where these paths are is to map the fractures in the area and systematically sample the fracture-filling material. An induced polarization-resistivity survey will indicate the strength of these paths.

Part of the task of locating favorable hosts for ore deposits will have been performed by the mapping of fault and fracture zones, since these are potential hosts. The remainder of the task will be accomplished by mapping the distribution of major rock types and the type, intensity, and distribution of alteration of the major rock types.

Minex suggests, therefore:

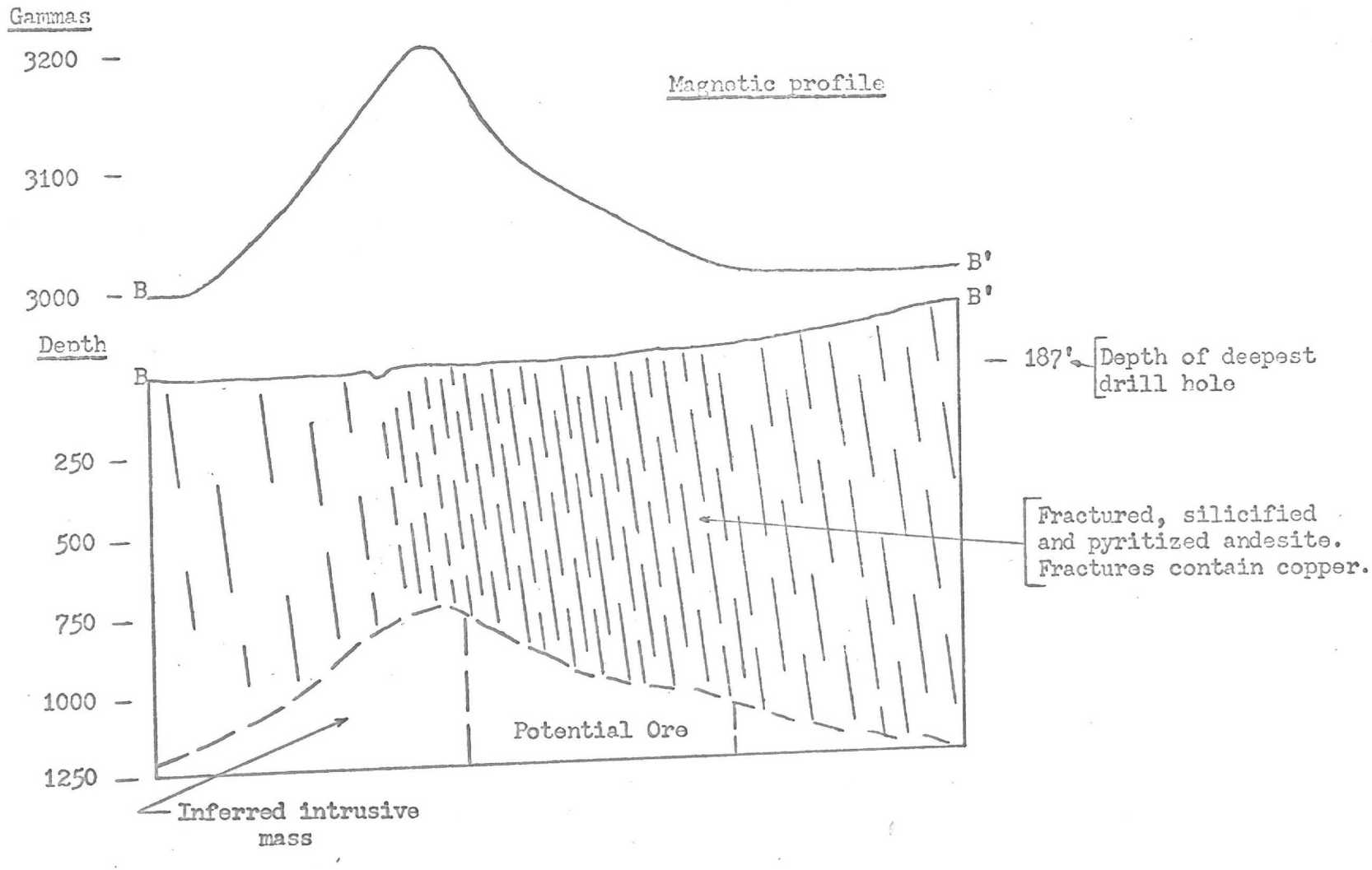
1. a semi-detailed magnetic survey of the entire Peloncillo area,
2. detailed mapping in the Alpha and Beta areas of fault and fracture zones, major rock types, and alteration,
3. sampling and assaying of fracture-filling material in both areas,
4. detailed induced polarization-resistivity surveys of both areas,
5. a reconnaissance induced polarization-resistivity survey of the entire Peloncillo area, and
6. drilling of indicated targets.

Of course, a particularly favorable target already exists in the altered and mineralized quartz monzonite porphyry found in the Alpha area. However, the sub-alluvial contacts of this rock should be mapped by geophysics before drilling commences.



Vertical and horizontal scales 1" = 500'

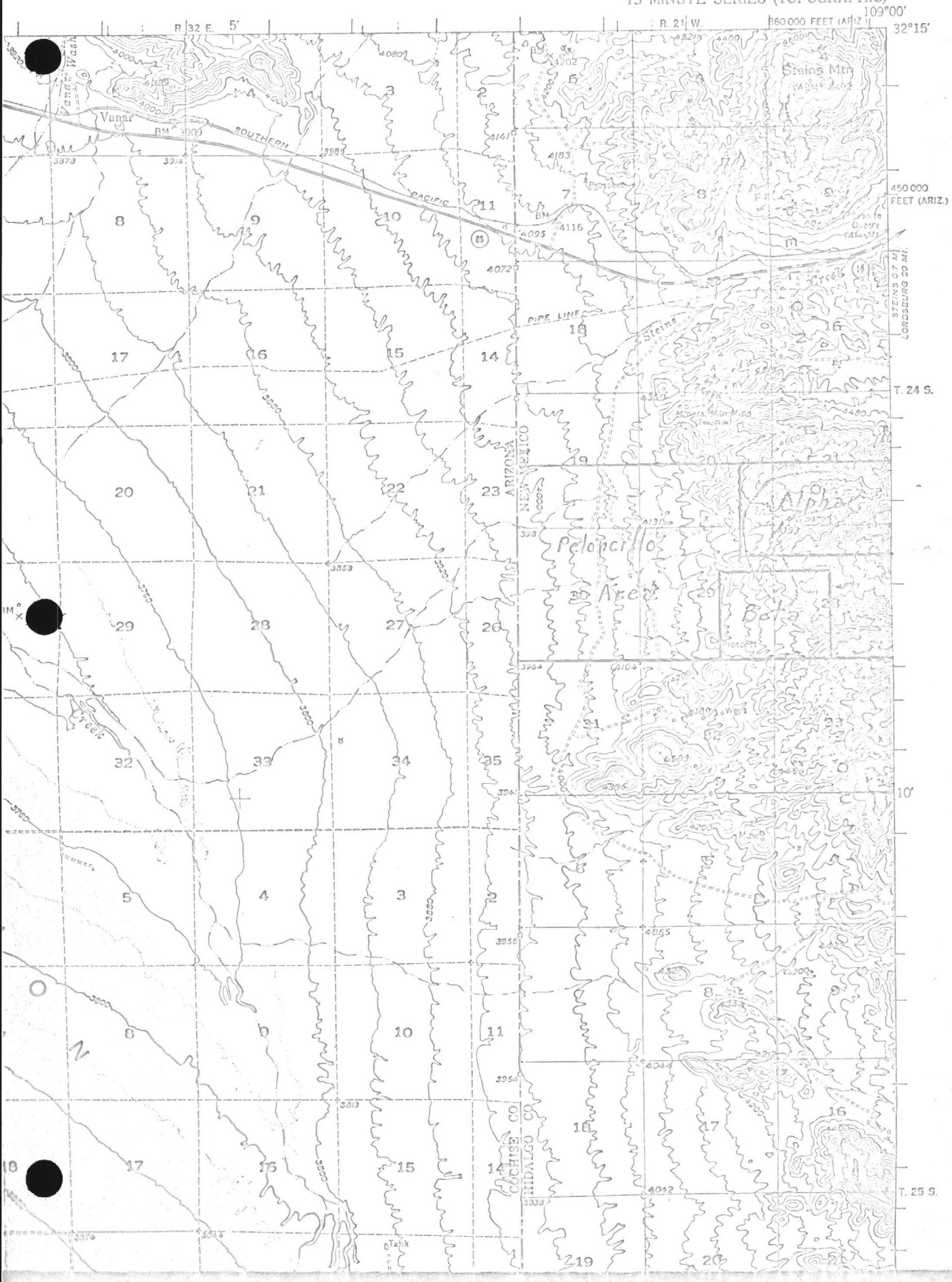
Figure 14 - Hypothetical ore deposit in Alpha area



Vertical and horizontal scales 1" = 500'

Figure 15 - Hypothetical ore deposit in Beta area

VANAR QUADRANGLE
ARIZONA-NEW MEXICO
15 MINUTE SERIES (TOPOGRAPHIC)



SUPERIOR OIL

EXHIBIT V

SUPERIOR OIL

GRAPHIC DRILL LOG

SCALE 1" = 50' approx.

HOLE NO. P-1

SHEET 1 OF

GEOLOGIST W. H. Kirk

PROJECT Peloncillo, N.M.

NOTE: 1 = Weak
2 = Moderate
3 = Strong
4 = Intense

(Superior Oil Drill Log)

COMMENTS: WELL PIRITIZED HOLE IN ANDESITIC ROCK WITH MINOR TRACES CHALCOPYRITE.

COLLAR: 4270'

DEPTH	DATE	HOLE SIZE	CORE RECOVERY	LITHOLOGY	ALTERATION: SILICIC	SERICITIC	ARGILLIC	CHLORITIC	EPIDOTE	FELDSPATHIC	MINERALIZATION: CHALCOPYRITE	PYRITE	MOLYBDENITE	Cu ppm	Mo ppm	Au	Ag
50	4/7	12"	1	Soil; Weathered Volc.; Tuffaceous and Andesitic and Latitic Volcs.										450	15		
		8½"												300	15		
100	4/12		75%	Soil; Volc.; Tuffaceous and Andesitic and Latitic Volcs.	2			2						300	20		
					1									400	5		
														300	10		
														450	5		
150	4/13		80%	Fault					Very Minor		Minor Traces Throughout			150	5		
														300	5		
														300	10		
														220	5	1	
													40	400	20		
200	4/15			Fault; Andesitic Volcs.					Very Minor		Minor Traces Throughout; Avg. Minor. 3%			600	20		
														600	20		
														600	20		
														600	10	78/.07	Cu 313/9 = 5.7
														900	10		Mo 170/9 = 19
														1300	20		
250	4/16			Andesitic Volcs. Fault							Minor Traces Throughout; Avg. Minor. 3%			450	20		
														900	30		
														300	30		
														300	20		
														220	20		
														300	20		
300	4/17		95-100%								Trace: 1-10% Avg. Minor. 3%		✓	220	30		
														220	20		
														450	20		
														600	20		
														600	30		
350	4/19										In Veinlets			600	30		
														450	30		
														450	30	96/.05	
														150	15		
														900	20		
														600	20		
														600	20		
														150	15		
														80	20		
400	4/20			Latitic Volcs.	2						Limited and			220			

Depth	Date	Bx	Fault	Lithology	Pyrite	Hardness	Drill Time
400	4/20			Tuffaceous to Agglomeratic Andesitic Rocks	Pyrite Disseminated Throughout Both	2	150 / 15 80 / 20 220 / 20
450	4/21					3 / 3	60 / 20 120 / 20 80 / 20 150 / 20 150 / 20
500	4/22	Bx		Tuffaceous to Agglomeratic Andesitic Rocks		2	450 / 20 150 / 15 300 / 40 450 / 15 220 / 15
550	4/23 4/24 4/25	Bx Bx	65% Fault	Fault			450 / 15 300 / 15 220 / 20 300 / 20
600	4/29 4/30						300 / 60 450 / 20 300 / 20 220 / 20 450 / 20
650	5/1		95%	Agglomeratic Tuffaceous Andesitic Rocks			150 / 40 220 / 40 220 / 15 300 / 30 220 / 30
700	5/3					2 1	300 / 20 450 / 10 220 / 120 220 / 5 100 / 20
750	5/4 5/5			Tuffaceous to Agglomeratic Andesitic Rocks			220 / 20 100 / 30 400 / 30 300 / 40 220 / 20
800	5/6 5/7		87%	Tuffaceous to Agglomeratic Andesitic Rocks			300 / 15 220 / 40 150 / 5 300 / 20 60 / 5
850	5/8 5/10 5/11 5/12 T.D.		95% Fault	Fault Fissible Andesitic Flow		1	2	75 / 20 150 / 20 100 / 20 220 / 10
	837.3' 5/12/65						

GRAPHIC DRILL LOG

SCALE 50' approx.

HOLE NO. P-2

SHEET 1 OF

GEOLOGIST JAMES A. KNOX

PROJECT PELONCILLO, N.M.

NOTE: 1 = Weak
2 = Moderate
3 = Strong
4 = Intense

COLLAR ELEV. 4080'

VERY POORLY MINERALIZED HOLE IN LATITIC FLOW.

DEPTH	DATE	HOLE SIZE	CORE RECOVERY	LITHOLOGY		ALTERATION: SILICIC	SERICITIC	ARGILLIC	CHLORITIC	FELDSPATHIC	MINERALIZATION: CHALCOPYRITE	PYRITE	MOLYBDENITE	MALACHITE	ASSAY DATA: Cu ppm	Mo ppm	Au	Ag
1965'		PLUG	NONE	Qal														
	5/13				PARTIALLY OXIDIZED TO RED										40	5		
50	5/14														220	10		
100	5/15				OXIDIZED OLIVINE VOLCANIC													
	5/17	NX			FAULT GOUGE				1	2		1			60	5		
150									1	2								
200					FLOW BANDING OR TURBULENT FLOW				2	1								
250	5/18		+98%		LATITIC FLOW OR TURBULENT FLOW W/ FAULT GOUGE VEINS	VERY MINOR			2		V	2			40	5		
															-10	5		
300									2		V	2	V	V	10	5		
															10	5		
															10	5		
															40	10		
															60	20		
350	5/19				FAULT GOUGE ZONE				2	1		2			150	10		
												4			300	10		
															10	10		
400		BX							1	2	V	2			220	10		
									1	2	V	2			220	5		
450	5/20								1	2	V	1			15	5		
									1	3		1			75	10		
500	5/21 T.D.								1	3		2			10	10		
	491.0' 5/21/65																	

SCALE 1" = 50' HOLE NO. P-5 SHEET 1 OF

GEOLOGIST M. Nelson PROJECT Peloncill

NOTE
1 = Weak
2 = Moderate
3 = Strong
4 = Intense

DEPTH	DATE	HOLE SIZE	CORE RECOVERY	LITHOLOGY	ALTERATION: SILICIC	SERICITIC	ARGILLIC	CHLORITIC	MINERALIZATION: CHALCOPYRITE	PYRITE	MOLYBDENITE	Galena	ASSAY DATA: Cu ppm	Mo ppm	Pb ppm	Zn ppm
	10/8									Overall throughout <5%						
50	10/8												100	5		
													60	5		
													40	5		
													30	5		
													30	5		
													30	5		
	10/9												20	5		
	10/11		15%										100	5		
													20	5		
													20	5		
													75	10		
50	10/12												60	5		
													75	10		
													75	10		
													75	10		
													75	15		
200	10/13												40	10		
													75	10		
													40	5		
													40	5		
													40	5		
250													30	5		
	10/14												40	5		
													40	5		
													75	10		
													100	15		
300													220	20		
	10/15												150	20		
													300	15		
													100	15		
													300	30		
350													220	15		
	10/16												220	10		
													150	5		
													400	30		

400	30	-25	30	510
300	30	750	1200	
450	10	1100	200	
150	5	50	-25	410
220	10			
300	15			
220	5			
300	10			
400	30			
300	10			
300	10			
300	5			
150	5			
300	5			
450	10			
300	5			
600	15			
400	10			
150	10			
300	10			
600	10			
600	15			
450	10			
600	10			
600	20			
600	10			
600	40			
600	20			
600	20			
300	15			
400	15			
400	10			
500	40			
600	15			
500	125			
500	20	-25	100	
400	40	-25	75	
300	75			
300	15			
400	40			
300	10			
300	30			
220	20			
450	15			
400	20			
400	40			
300	20			
300	20			
300	10			
450	125			
400	75			

400 10/18

450 10/19

10/20

500

10/21

95-98 %

10/22

10/23

10/25

10/26

10/27

10/28

10/29

10/30

90-

T.D. 874.5'

100

EXAMINATION Superior (STEINS)

D.H. NO. P-1

Near Humble 1,A3-3

Cu ppm
0-200
200-500
500-800
800-1000
>1000

DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING

SHEET NO. 1 OF 3 SHEETS

LOGGED BY W. ARENDT w/ notes from J.A. Knox (Superior)

FOOTAGE ELEV	FROM	TO	GRAPHIC LOG	ASSAY LOG	GEOLOGY	ABSTRACT	ALTERATION	STRUCTURE FRACTURE-VEINING
	0				ALLUVIUM 0-35'			
		35			Andesite? @37' NO STAIN test on fldsp	37	~~Nearly all of fldsp~~ STRONG BLEACHING, much Klay, some	some qtz-pyrite veining (mostly
	35					42		
						44	sericite;	oxidized)
						50		
						59		
						67	oxidation to 78 ft.	
		78			74' No STAIN test on fldsp	70		
	78					79		
						82		
						87	some chlorite	
						99		82-132' broken and sheared
						104		
						108		
					118' minor STAIN, possibly 2nd Biotite, also	118 TS	very strong 2nd Biotite, minor (chlorite) penninite, Qtz	
					K-fldsp veinlet <1mm			
							very strong 2nd biotite,	
		132			Andesite (LATITE?) 132' STAINED very fine	132 TS	bleached, some chlorite	30, 55, 70° to Core Axis - pyrite
	132					136		
						140		veins, all directions
						147		
						152		
					152 minor stain 2nd Biotite?	156		
						157	157 increasing chlorite	
						163		pyrite veins 0° to C.A., 2mm
		173				170		
						174	moderate chlorite, some epidote clots	
	173				Andesite conglomerate	177		
						182 TS	strong penninite (chlorite), moderate 2nd biotite	
						187	sericite envelopes around sulfide veins	
					pebbles (10-20mm) imbedded in matrix @ 182'	193		
						197		
					positive K-fldsp stain; probably latite	202		
						208	moderate chlorite	
						210		
						214		
						217		
					~~201' no stain~~	225		
						226		
		231			231-236 fault	230		
	236				Andesite	240		
						245		
						249	moderate 2nd biotite	
		259				256		
							strong 2nd biotite very finely dissem, moderate penninite	
					261 NO STAIN	261 TS		
						264	moderate bleaching, decreasing 2nd biotite,	pyrite veins 1-2mm wide,
						267		
						274		
						276	sericite envelopes around pyrite veins	0°-15° to C.A.
						282		
						285		
		300				292		
						294		

EXAMINATION Superior (STEINS)

D.H. NO. P-1

DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING

SHEET NO. 2 OF 3 SHEETS

LOGGED BY W. ARENDT

FOOTAGE ELEV	FROM	TO	GRAPHIC LOG	ASSAY LOG	GEOLOGY	ABSTRACT	ALTERATION	STRUCTURE FRACTURE–VEINING
	300				Andesite (as above)	300 306		
						310 314 317		
						322 329		
						332 334 339		
						344 347		
						359 358		
		365				362 365	365' No Biotite, moderately strong chlorite	
	365				Andesite, Black (Porphyritic ~~Granodiorite?~~) mostly coarse grained rock, although some very fine grained.	372 375	calcite veins, some bleaching around	pyrite veins 0°, 15°, 30° to CA, 1-2 ft apart.
						382 386	pyrite veins, much 2nd biotite	
						392 394		
						401 405		
						410 413		
						420 421 428		
					436' No K-fldsp stain	430 436		
						440 448		
						450 455 456		
						462 468 469	462TS. Very strong 2nd Biotite finely dissem	
					479' slight stain 2nd biotite?	475 479		
						483		
					Andesite? - ~~Granodiorite?~~ Porphyritic	492 496	moderate chlorite, some 2nd Biotite	Broken 497-516
						~~519~~		
						519		
						522 525		
		529				535 539		
	529	535			fault 529-535			
	535				Andesite?- ~~Granodiorite~~ porphyritic	543 548	moderate chlorite, some 2nd Biotite @553 ~~555~~	
						550 557 559	increasing slightly to 637	Pyrite veins 0-15°, 45° to CA.
						569 567		
						573 577		
					585' slight stain over surface probably 2nd biotite	581 585TS 589	very strong 2nd Biotite, minor Penninite	
						594		

EXAMINATION Superior (STEINS)

D.H. NO. P-1

DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING

SHEET NO. 3 OF 3 SHEETS

LOGGED BY W. ARENDT

FOOTAGE ELEV	FOOTAGE FROM	FOOTAGE TO	GRAPHIC LOG	ASSAY LOG	GEOLOGY	ABSTRACT	ALTERATION	STRUCTURE FRACTURE-VEINING
	600				Andesite? ~~Granodiorite~~ porphyritic? (as above)	602 TS 604	very strong 2nd Biotite w/some minor veins of Biotite	
						610 612 618		
						620 627		
						631 636 638		
						640 697		
						652 657		
						662 664		Broken 650-672
						674 676 TS	moderate pennine, minor 2nd biotite	
			0.080.00	mo	Andesite conglomerate 675-680 & 76' strong stain	675	some chlorite K-flds, ? possible flooding	
					on frags - probably rhyolite pebbles (5-20mm)	685 688		
					Andesite, Black	690 698	strong 2nd Biotite, some calcite along	
						703 707	old fractures, some bleaching along	
					719 slight stain probably due to 2nd biotite	713 719 TS	very strong 2nd Biotite, minor pennine veins.	Pyrite & qtz veins, @ 0, 30, 45° to C.A. 4 ft apart in all directions
						725 727		
						733		
						740 747		
						750		
						760 762		
						775 775-2		
		778			778-813 strong fault - possibly	786	some chlorite	
					post mineral due to little sulfides	797		
		813			Andesite? or ~~granodiorite~~ porphyritic? coarse gr.	817 822 827	much 2nd biotite	
					839 slight stain?	832-TS 834	very strong 2nd Biotite - rock completely flooded	
					T.D. 837.3			

COMPANY Superior Oil Company
EXAMINATION Peloncillo (STEINS)
D.H. NO. P-1
STATE N.M.
COUNTY Hidalgo

MINING DISTRICT San Simon
SEC. ___ TWP. ___ RGE. ___
COORDINATES ___

COLLAR ELEV. 4270
DATE STARTED April 7, 1965
DATE COMPLETED May 12, 1965
DRILLING COMPANY ___
FINAL DEPTH 837.3
CORE SIZE Plug 0-36, Nx 40-450; Bx 450-530 (reamed to Nx); Nx 530-837.3

TOTAL DRIFT FROM COLLAR AT FINAL DEPTH ___
DIRECTION FROM COLLAR AT FINAL DEPTH ___
CORRECTED TOTAL DEPTH ___
CASING LEFT IN HOLE ___
WATER LEVEL ___

FOOTAGE FROM	FOOTAGE TO	ACTUAL LENGTH	SAMPLE NO.	ASSAYS TOT-Cu	~~Ox-Cu~~	Mo S_2			COMPOSITE ANALYSIS COMPOSITE NO.	Cu		Mo S_2							MINERALIZATION
35	45			450		15													
45	55			300		15													100% geothite & 5% original pyrite
55	70			300		20													
70	80			400		5													minor hematite @ 58'
80	90			300		10													
90	100			450		5													70' first pyrite
100	110			150		5													
110	120			300		5													
120	130			300		10													
130	140			220		5													2-3% disseminated and veinal pyrite
140	150			400		20													
150	156			600		20													
156	164			600		20													
164	172			600		20													
172	181			600		10													
181	188			900		10													
188	200			1300		20													
200	208			450		20													
208	216			900		30													
216	225			300		30													
225	235			300		20													
235	244			220		20													197' first disseminated chalcopyrite
244	253			300		20													decreasing w/ depth
253	262			220		30													
262	270			220		20													
270	280			450		20													
280	287			600		20													
287	301			600		30													1% pyrite 236-254
																			increasing pyrite to 4%
																			some magnetite 285
																			293' some chalcopyrite

COMPANY Superior
EXAMINATION Peloncillo (STEINS)
D.H. NO. P-1
STATE
COUNTY

MINING DISTRICT
SEC. TWP. RGE.
COORDINATES

COLLAR ELEV.
DATE STARTED
DATE COMPLETED
DRILLING COMPANY
FINAL DEPTH
CORE SIZE

TOTAL DRIFT FROM COLLAR AT FINAL DEPTH
DIRECTION FROM COLLAR AT FINAL DEPTH
CORRECTED TOTAL DEPTH
CASING LEFT IN HOLE
WATER LEVEL

FOOTAGE FROM	FOOTAGE TO	ACTUAL LENGTH	SAMPLE NO.	ASSAYS ppm TOT-Cu	~~Ox-Cu~~	Mo S_2			COMPOSITE ANALYSIS COMPOSITE NO.	Cu		Mo S_2							MINERALIZATION
301	310			600		30													
310	320			450		30													
320	330			450		30													
330	340			150		15													
340	350			900		20													
350	360			600		20													
360	370			600		20													
370	380			150		15													
380	390			80		20													
390	400			220		20													½-1% pyrite
400	410			60		20													
410	420			120		20													
420	430			80		20													
430	440			150		20													
440	450			150		20													
450	460			450		20													
460	470			150		15													
470	480			300		40													
480	490			450		15													
490	500			220		15													
500	520			450		15													
520	530			300		15													1-2% pyrite
530	540			220		20													
540	550			300		20													
550	560			300		60													
560	570			450		20													
570	580			300		20													
580	590			220		20													
590	600			450		20													some magnetite sp
																			1-2% pyrite

COMPANY Superior
EXAMINATION Polonaillo (STEINS
D.H. NO. P-1
STATE
COUNTY

MINING DISTRICT
SEC. TWP. RGE.
COORDINATES

COLLAR ELEV.
DATE STARTED
DATE COMPLETED
DRILLING COMPANY
FINAL DEPTH
CORE SIZE

TOTAL DRIFT FROM COLLAR AT FINAL DEPTH
DIRECTION FROM COLLAR AT FINAL DEPTH
CORRECTED TOTAL DEPTH
CASING LEFT IN HOLE
WATER LEVEL

FOOTAGE FROM	FOOTAGE TO	ACTUAL LENGTH	SAMPLE NO.	ASSAYS ppm TOT-Cu	~~Ox-Cu~~	Mo S_2			COMPOSITE ANALYSIS COMPOSITE NO.	Cu		Mo S_2							MINERALIZATION
600	610			150		40													
610	620			220		40													
620	630			220		15													
630	640			300		30													
640	650			220		30													
650	660			300		20													
660	670			450		10													
670	680			220		120													
680	690			220		5													1-2% Pyrite dissem + veined
690	700			100		20													
700	710			220		20													
710	720			100		30													674 some magnetite in Andesite
720	730			400		30													
730	740			300		40													680-778 ½% pyrite dissem + en veins
740	750			220		20													
750	760			300		15													
760	770			220		40													
770	780			150		5													
780	790			300		20													
790	800			60		5													
800	810			75		20													719-750 disseminated magnetite
810	820			150		20													
820	830			100		20													
830	837.3			220		10													778-813 very little pyrite
																			½% Pyrite dissem + en veins

EXAMINATION STEINS

D.H. NO. P-2

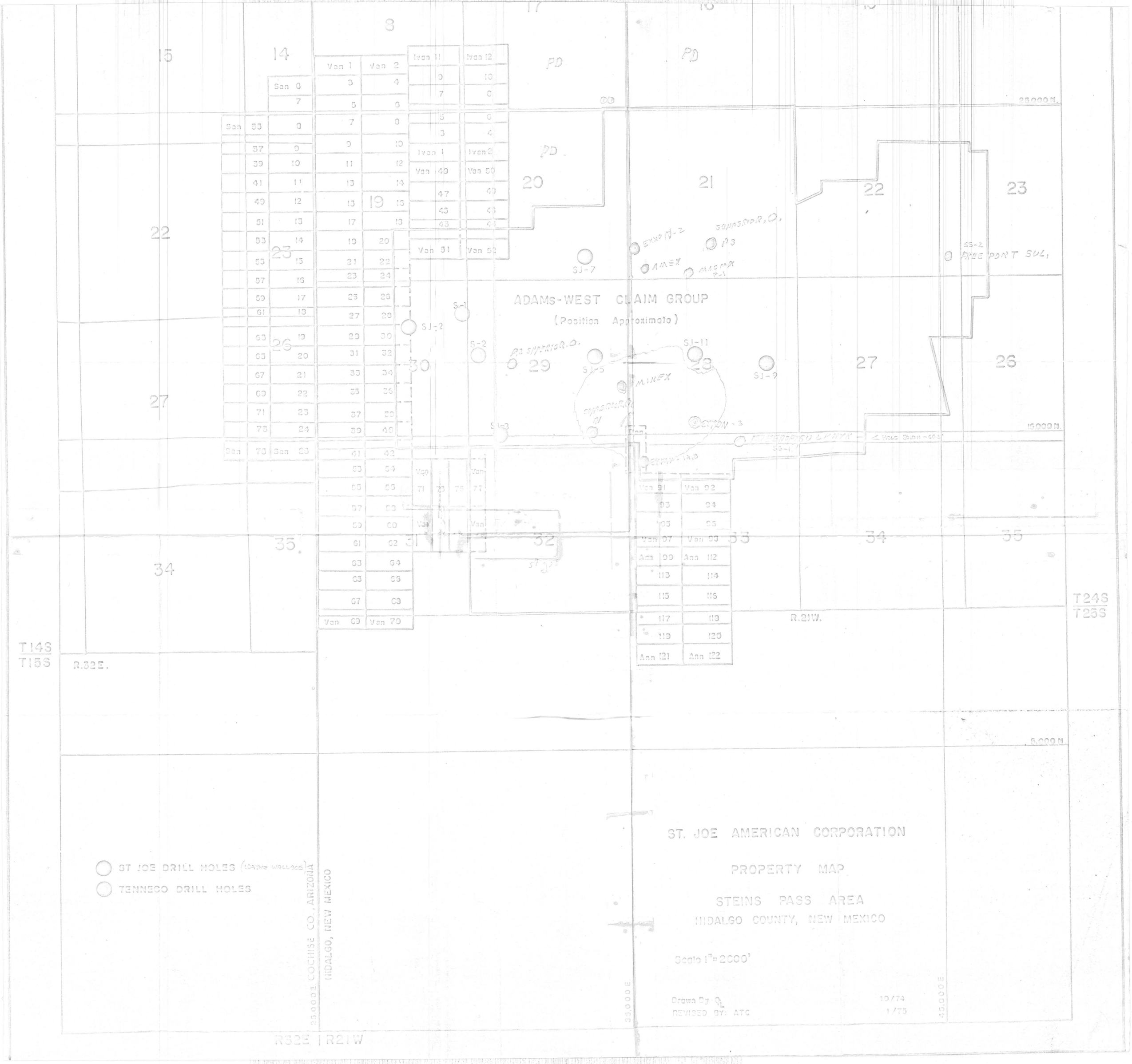
DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING	DEPTH	INCLINATION	BEARING

Cu ppm
0-100
100-500

OF 2 SHEETS

LOGGED BY N. ARENDT

FOOTAGE ELEV.	FOOTAGE FROM	FOOTAGE TO	GRAPHIC LOG	ASSAY LOG	GEOLOGY	ABSTRACT	ALTERATION	STRUCTURE FRACTURE-VEINING
								15° 25, 40, 1-5mm w/limonite
	0	23.5			ALLUVIUM		STRONG bleaching, chloritization	1/8" 1"
	23.5				Andesite, light gray-green	26	fldsp complete chlorite, some epidote, sericite	
						40		
						52	Increasing epidote	
						78		
								0°, 40°, 2-5mm calcite veins 6" apart
		99			Bottom of oxidation (99')	107	calcite veining	
							STRONG sericite	
					136 qtz eye	125		
						135		
							Increasing chlorite especially around	
						151	veins & fractures	MANY hairline calcite veinlets w/limonite
							Bleached spots & mostly sericite w/pyrite	
						193	strong chlorite	
					some brecciation of andesite	207	some epidote clots	calcite veining associated w/pyrite also cements breccia
						240	strong sericite, some chlorite clots 2mm surrounding	some veining 15° to core axis 2mm
							sulfides, strong bleaching around clots	
							calcite veinlets	
						269	STRONG sericite	
						274	some qtz	
						285	much calcite +s. sericite	calcite vein w/some pyrite
						299	mottled w/sericite, chlorite	
		300						


ADAMs-WEST CLAIM GROUP
(Position Approximate)
ST. JOE AMERICAN CORPORATION
PROPERTY MAP
STEINS PASS AREA
HIDALGO COUNTY, NEW MEXICO
Scale 1"=2000'
Drawn By:
REVISED BY: ATC
10/74
1/75
ST JOE DRILL HOLES (LOANING WALLACE)
TENNECO DRILL HOLES
HIDALGO, NEW MEXICO
COCHISE CO., ARIZONA
R32E | R21W
R.32E.
R.21W.
T14S
T15S
T24S
T25S
25000 N.
15000 N.
5000 N.
35000 E.
45000 E.
PD
SJ-7
SJ-2
SJ-5
SJ-11
SJ-9
S-1
S-2
S-3
SS-1
SS-2
EXXON N-2
AMEX
EXXON-3
MINEX
EXEC PORT SUL.