CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the Walter E. Heinrichs, Jr. Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

MINERALS TRUST CORPORATION

Mineral Rights Map

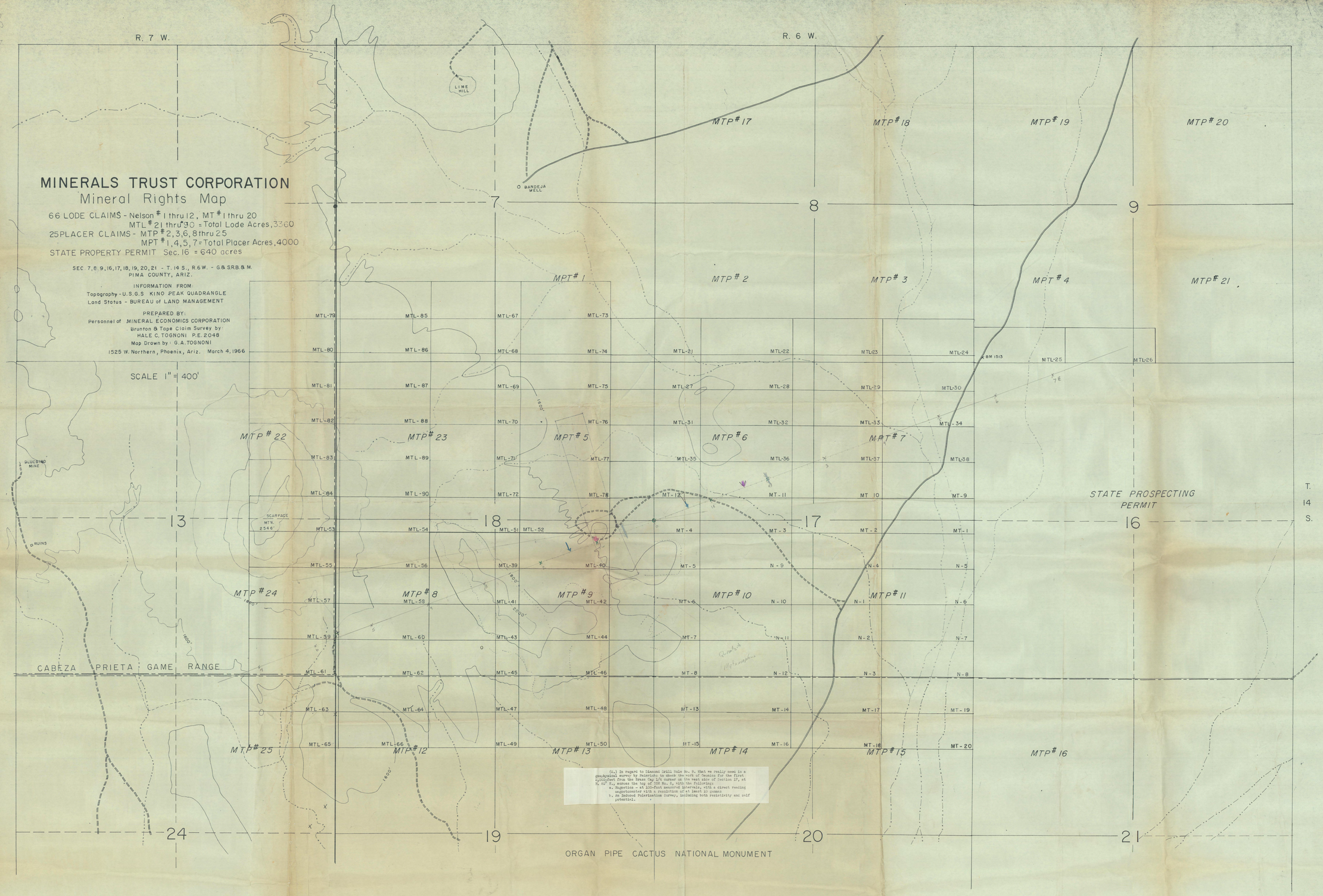
66 LODE CLAIMS - Nelson # 1 thru 12, MT # 1 thru 20
MTL # 21 thru 90 = Total Lode Acres, 3360
25 PLACER CLAIMS - MTP # 2,3,6,8 thru 25
MPT # 1,4,5,7 = Total Placer Acres, 4000
STATE PROPERTY PERMIT Sec. 16 = 640 acres

SEC 7,8,9,16,17,18,19,20,21 - T. 14 S., R. 6 W. - G & S R B & M.
PIMA COUNTY, ARIZ.

INFORMATION FROM:
Topography - U.S.G.S KINO PEAK QUADRANGLE
Land Status - BUREAU of LAND MANAGEMENT

PREPARED BY:
Personnel of MINERAL ECONOMICS CORPORATION
Brunton & Tape Claim Survey by:
HALE C. TOGNONI P.E. 2048
Map Drawn by: G.A. TOGNONI
1525 W. Northern, Phoenix, Ariz. March 4, 1966

SCALE 1" = 400'



(a.) In regard to Diamond Drill Hole No. 9. What we really need is a geophysical survey by Patterson to check the work of Geonics for the first 4,000-feet from the Brass Cap 1/4 corner on the west side of Section 17, at N. 60° E., across the top of DH No. 9, with the following:

a. Magnetics - at 100-foot measured intervals, with a direct reading magnetometer with a resolution of at least 10 gammas
b. An Induced Polarization survey, including both resistivity and self potential.

I. P. RECEIVER NOTES, JOB No. 1463, AREA Ajo

LINE 1, HALF E, SR. 1, a = 1000, BEARING N 80° W

SENDER STA. 0 = ELECTRODE No. 3, DATE 9-3-80

PAGE 1

HEINRICHS GEOEX

SEND	CAL	1-2	1-2	2-3	1-2	2-3	3-4	1-2	2-3	3-4
RECEIVE	~~0-1~~	0-1E	1-2E	—	2-3E	—	—	3-4E	—	—
MULTIPLIER	1.0	1.0	0.1	0.1	0.01	0.1	1.0	0.01	0.01	1.0
PFE	-0.2	+1.2 | +1.1	+2.1 | +1.8	+1.2	+1.8	+1.3	+0.8	+2.0	+1.4	+0.6
CUR. (AMPS)	1.0	1.0	1.0	0.3	0.3	—	2.0	1.0	0.3	2.0
POINT NO.										
SEP. (n)		1	2	1	3	2	1	4	3	7
H. F. MV	98.8	43.8 | 44.1	85.1 | 84.8	7.6	0.57	1.24	47.2	0.81	0.46	12.8
DRIFT	0.0	-0.1	0 | 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0 PFE / K_n/1000										
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$		132	104	76	57	50	71	49	46	77
DRIFT / MCF		8	77	16	32	26	18	41	30	8
S. P.		0	-4.2		+22.8			-2.1		
NOISE										
POT RES.		1.0	3		24			1.0		
CULT & CMTS										

3,1 3,1

I. P. RECEIVER NOTES, JOB No. 1463, AREA Ajo

LINE 1, HALF E, SR 1, a = 1000, BEARING N 80 W

SENDER STA. 0 = ELECTRODE No. 3, DATE 8-3-80

PAGE 2

HEINRICHS GEOEX

SEND		4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL
RECEIVE		3-4E	4-5E	—	—	—	5-6E	—	—	—	
MULTIPLIER		1.0	0.01	0.01	0.1	1.0	0.01	0.01	0.1	1.0	1.0
PFE		+0.4	+2.0	+1.4	+1.3	+1.0	+2.0	+1.8	+1.2	+1.0	-0.2
CUR. (AMPS)		3	1.0	0.3	2.0	3.0	1.0	0.3	2.0	3.0	1.0
POINT No.											
SEP. (n)		1	5	4	3	2	6	5	4	3	
H. F. MV		73.2	0.54	0.26	5.41	24.9	0.37	0.19	2.87	10.6	98.2
DRIFT		0.0	0.0	—	0.0	0.0			0.0	0.0	0.0
1.0 PFE	$K_n/1000$										
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	73	57	52	81	100	62	67	86	106	
DRIFT	MCF	5.0	35	27	16	10	32	27	14	9	
S. P.			-0.4				+4.1				
NOISE			BAD				VERY	BAD			
POT RES.			1.5				50				
CULT & CMTS							ROAD	75 FT			

1— A.C 0.1 dc

I. P. RECEIVER NOTES, JOB No. 1463, AREA Ajo

LINE 1, HALF w, SP. 1, a = 1000, BEARING N 80 E

SENDER STA. 0 = ELECTRODE No. 3, DATE 19-4-80

PAGE 3

HEINRICHS GEOEX

SEND	CB1	4-5	4-5	3-4	4-5	3-4	2-3	4-5	3-4	2-3
RECEIVE		0-1w	1-2w	—	2-3w	—	—	3-4w	—	—
MULTIPLIER	1.0			1.0	0.1	1.0	1.0	0.1	0.1	1.0
PFE	-0.2			+1.2	+1.9	+1.8	+1.4	+2.0	+1.8	+1.3
CUR. (AMPS)	1.0			2.0	3.0	2.0	1.0	3.0	2.0	2.0
POINT NO.										
SEP. (n)		1	2	1	3	2	1	4	3	2
H. F. MV	99.0			87.9	10.0	17.2	26.7	6.14	8.52	15.9
DRIFT					0.0	0.0		0.0	0.0	+0.2
1.0 PFE K_n/1000			REP.							
0.3 PFE ρ_{CAL}		REP.								
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$				132	100	103	80	123	128	95
DRIFT MCF				9	19	17	17	16	14	14
S. P.		-20.1	+39.8		+2.1			+12.6		
NOISE										
POT RES.		16.0	40		15			22		
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1463, AREA Ajo

LINE 1, HALF W, SR 1, a = 1000, BEARING N 80W

SENDER STA. 0 = ELECTRODE NO. 3, DATE 9-4-80

PAGE 4

HEINRICHS GEOEX

SEND	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL
RECEIVE	3-4W	4-5W	—	—	—	5-6W	—	—	—	
MULTIPLIER	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
PFE	+0.8	+2.0	+1.8	+1.4	+1.0	+2.1	+2.0	+1.8	+1.6	-0.2
CUR. (AMPS)	1.0	3.0	2.0	2.0	1.0	3.0	2.0	2.0	1.5	1.0
POINT NO.										
SEP. (n)	1	5	4	3	2	6	5	4	3	
H. F. MV	30.5	2.49	3.13	4.86	5.82	1.5	1.77	2.43	3.23	98.9
DRIFT	0.0	0.0	0.0	+0.2	0.0	0.0	+0.2	+0.0	0.0	0.0
1.0 PFE $K_n/1000$										
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	92	87	94	73	70	84	93	73	65	
DRIFT MCF	9	23	19	19	14	25	22	25	25	
S. P.		+22.4				-6.4				
NOISE										
POT RES.		22				3				
CULT & CMTS										

I. P. SENDER NOTES

JOB No. 1463 AREA Ajo

LINE 1, HALF E, SP. 1, DATE SEP 3 1980

PAGE 1

HEINRICHS GEOEX

SEND	1-2	1-2	2-3	1-2	2-3	3-4	1-2	2-3	34	4-5
RECEIVE	0-1 E	1-2 →		2-3	→		3-4	→		
RANGE	*	*	180V				660V			
VOLTAGE	690	640	~~570~~	200V	180V	955	~~200V~~	180V	955V	565
CURRENT	1 AMP	1 AMP	3 AMP	.3 A	.3 A	2 AMP	1.0 AMP	.3 AMP	2.0 AMP	3 AMPS
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
RECEIVE	4-5 →				5-6	→				
RANGE						175				
VOLTAGE	620	175	950	560	640	~~570~~	930	545		
CURRENT	1 AMP	.3 AMP	2 AMP	3 AMP	1 AMP	3 AMP	2 AMP	3 AMP		

FREQUENCIES 1.0 0.1 HZ

SENDER No. 6644 POWER UNIT ID

OPERATOR SWANSON

RECEIVER No. 206931R HOURS RUN

OPERATOR ANDERS

COMMENTS: 4-5 1 AMP CAL 3.0 HZ .3 HZ

195 V

V 3.0 0.3 HZ

* .3 3.0 .1 1.0 HZ

4-5 1 AMP CAL 1.0 - 0.1 HZ

175 V

I. P. SENDER NOTES

JOB No. 1463 AREA Ajo

LINE 1, HALF W, SP. 1, DATE SEP 4 1980

PAGE 2

HEINRICHS GEOEX

SEND	4-5	4-5	3-4	4-5	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE	0-1 W	1-2 →	→	2-3	→	→	3-4	→	→	→
RANGE										
VOLTAGE	N/A	N/A	760	525	755	510	520	750	1000	610
CURRENT			2 AMP	3 AMP	2 AMP	1 AMP	3 AMPS	2 AMPS	2 AMPS	1 AMP
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	4-5	→	→	→	5-6	→	→	→		
RANGE										
VOLTAGE	515	735	1000	610	515	725	1000	935		
CURRENT	3 AMPS	2 AMPS	2 AMPS	1 AMP	3 AMPS	2 AMPS	2 AMPS	1.5 AMPS		

FREQUENCIES 1.0 - 0.1 HZ

SENDER No. 6644 POWER UNIT ID

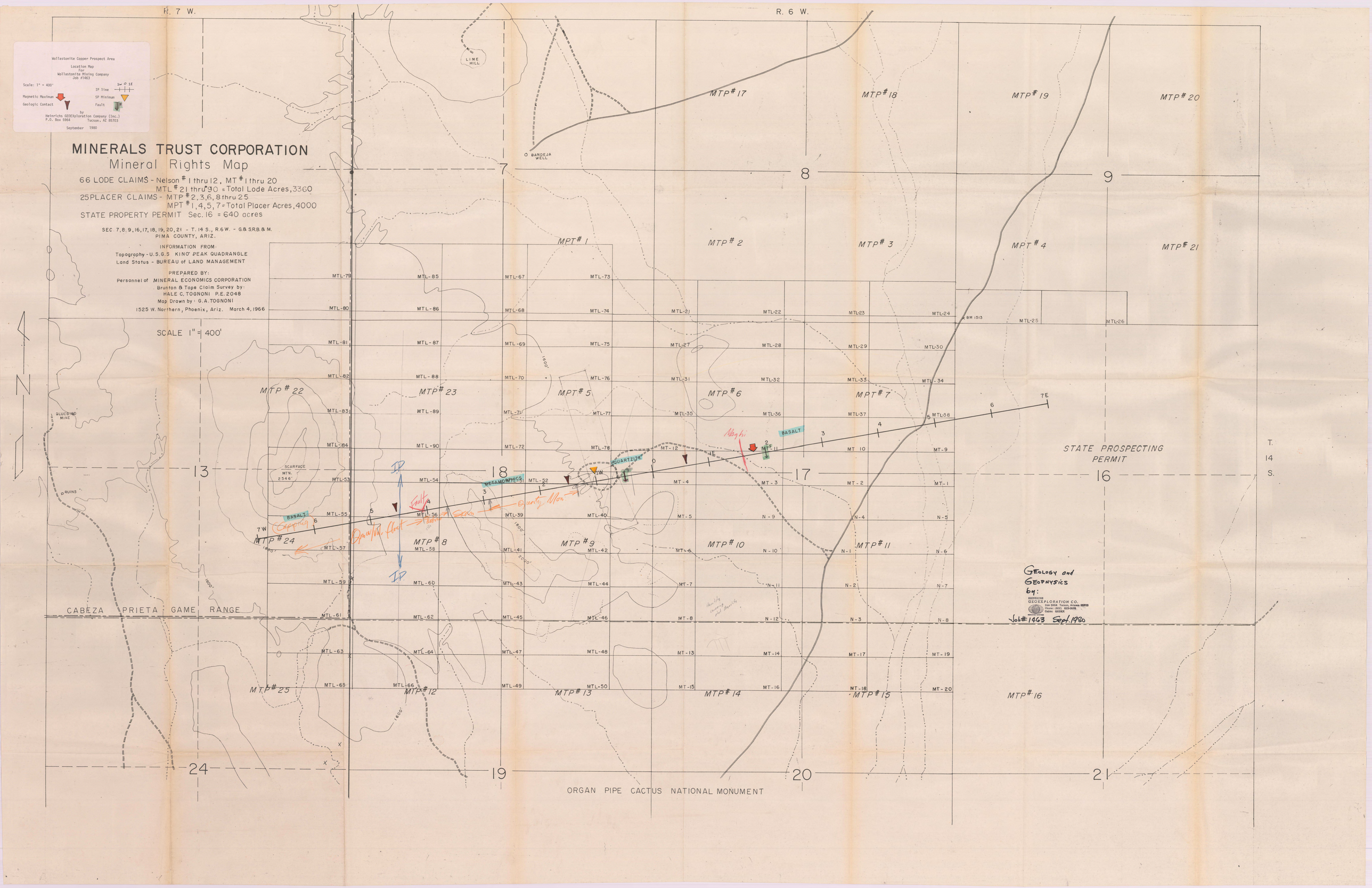
OPERATOR SWANSON

RECEIVER No. 20693R HOURS RUN

OPERATOR ANDERS

COMMENTS: CAL 4-5 1 AMP 1.0 - 0.1 HZ 170V

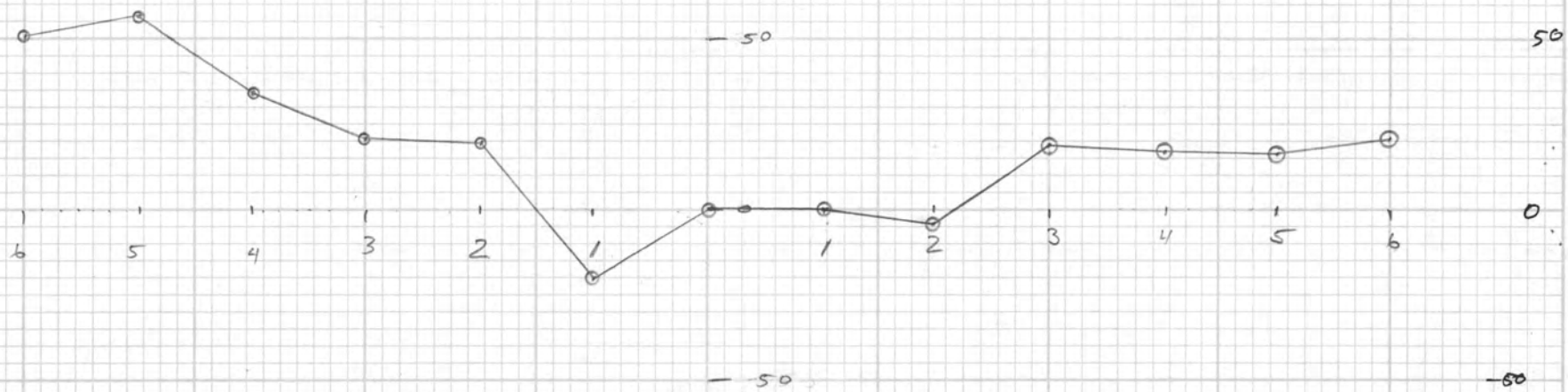
CAL 4-5 1 AMP 1.0 - 0.1 HZ 165V



Wollastonite Copper Prospect Area
Location Map
For
Wollastonite Mining Company
Job #1463
Scale: 1" = 400'
IP line
Magnetic Maximum
SP Minimum
Geologic Contact
Fault
by
Heinrichs GEOEXploration Company (Inc.)
P.O. Box 5964 Tucson, AZ 85703
September 1980
MINERALS TRUST CORPORATION
Mineral Rights Map
66 LODE CLAIMS - Nelson # 1 thru 12, MT # 1 thru 20
MTL # 21 thru 90 = Total Lode Acres, 3360
25 PLACER CLAIMS - MTP # 2, 3, 6, 8 thru 25
MPT # 1, 4, 5, 7 = Total Placer Acres, 4000
STATE PROPERTY PERMIT Sec. 16 = 640 acres
SEC. 7, 8, 9, 16, 17, 18, 19, 20, 21 - T. 14 S., R. 6 W. - G.& S.R.B.& M.
PIMA COUNTY, ARIZ.
INFORMATION FROM:
Topography - U.S.G.S KINO PEAK QUADRANGLE
Land Status - BUREAU of LAND MANAGEMENT
PREPARED BY:
Personnel of MINERAL ECONOMICS CORPORATION
Brunton & Tape Claim Survey by:
HALE C. TOGNONI P.E. 2048
Map Drawn by: G.A. TOGNONI
1525 W. Northern, Phoenix, Ariz. March 4, 1966
SCALE 1" = 400'
R. 7 W.
R. 6 W.
T. 14 S.
LIME HILL
BANDEJA WELL
BLUEBIRD MINE
RUINS
SCARFACE MTN. 2546'
BASALT
METAMORPHICS
QUARTZITE
Maghi
Fault
Quartz Mon.
Capping
CABEZA PRIETA GAME RANGE
ORGAN PIPE CACTUS NATIONAL MONUMENT
STATE PROSPECTING PERMIT
MTP # 17
MTP # 18
MTP # 19
MTP # 20
MTP # 1
MTP # 2
MTP # 3
MPT # 4
MTP # 21
MTP # 22
MTP # 23
MPT # 5
MTP # 6
MPT # 7
MTP # 24
MTP # 8
MTP # 9
MTP # 10
MTP # 11
MTP # 25
MTP # 12
MTP # 13
MTP # 14
MTP # 15
MTP # 16
7
8
9
13
18
17
16
24
19
20
21
GEOLOGY and GEOPHYSICS by:
HEINRICHS GEOEXPLORATION CO.
Job #1463 Sept. 1980

SP

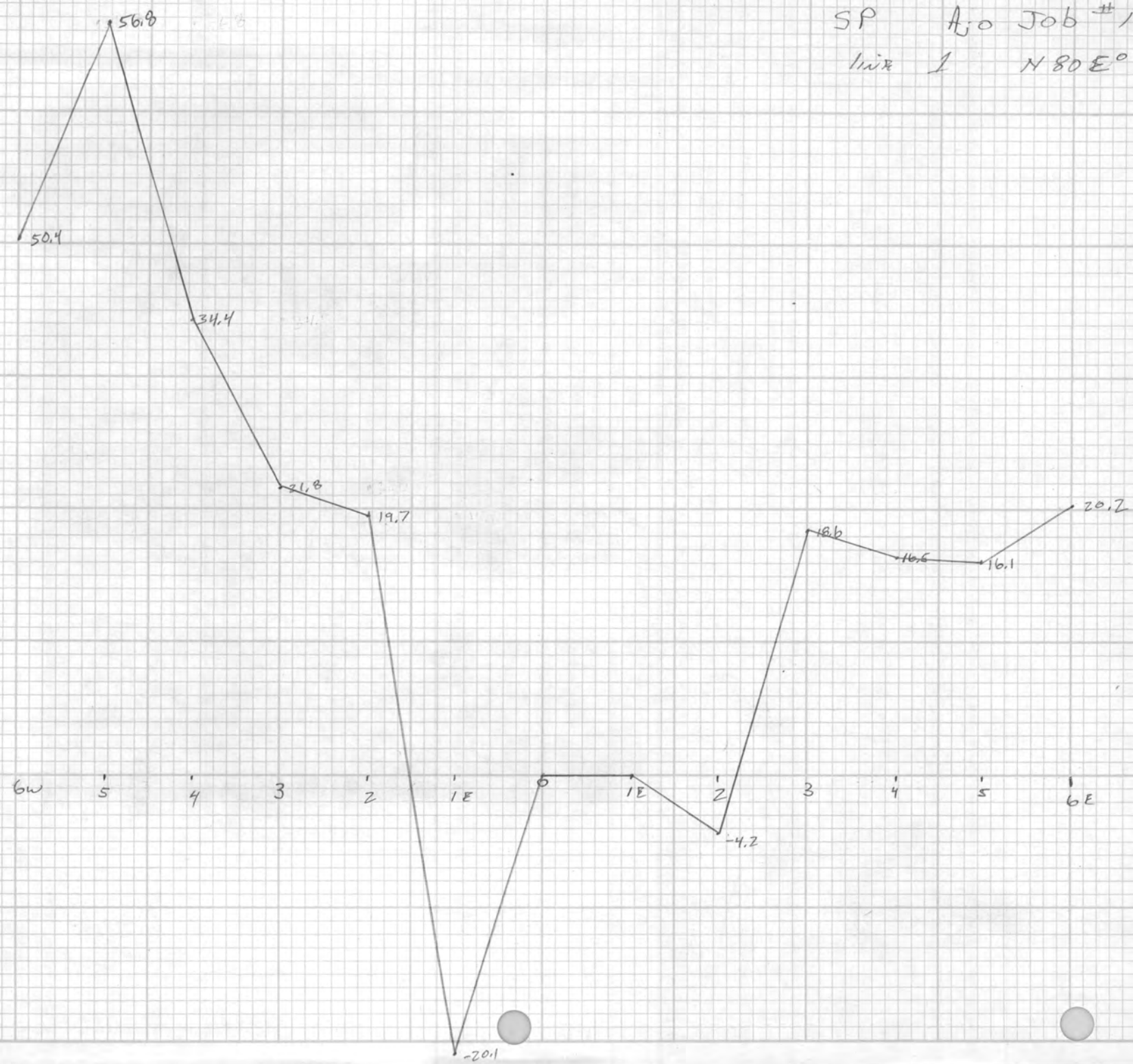
Wollastonite Prospect



CHAMPION LINE NO. B10-3
CROSS SECTION - 10 SQUARES TO INCH

SP Ajo Job # 1463

line 1 N 80 E°



CHAMPION LINE NO. B10-3
CROSS SECTION - 10 SQUARES TO INCH

74. 49757
75. 49686
76. 49685
77. 49678
78. 49618
79. 49554
Sta. 4 80. 49512
B 3 12:32 49384

	49. 49545
	50. 49658
1-2E	51. 49815
	52. 50107
	53. 50591
	54. 51182
	55. 52261
	56. 52308
	57. 51656
	58. 51346
	59. 51170
	60. 51055
2-3E	61. 50816
	62. 50609
	63. 50338
	64. 50136
	65. 50010
	66. 49960
	67. 49883
	68. 49878
	69. 49819
	70. 49822
3-4E	71. 49742
	72. 49769
	73. 49776

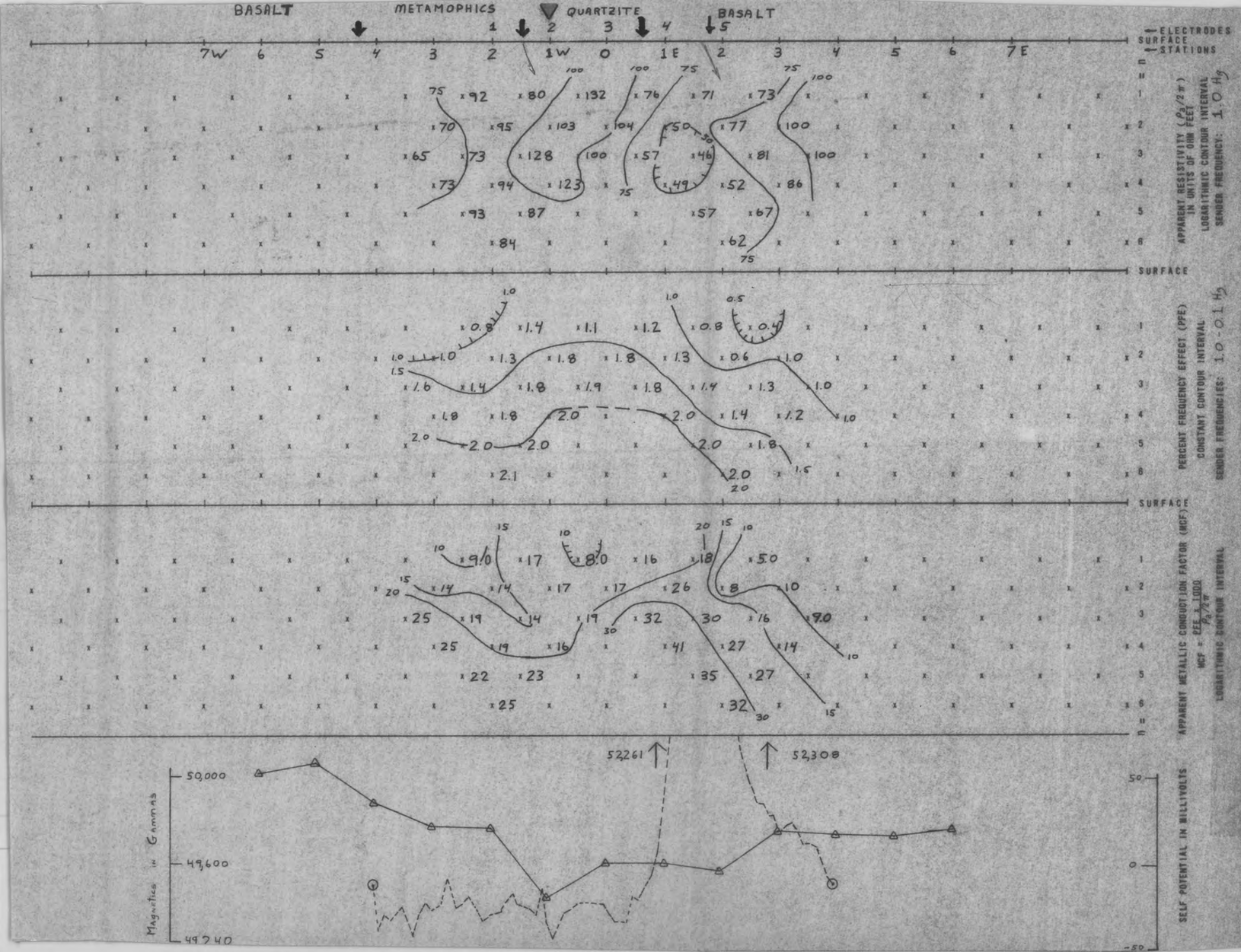
25. 49459
26. 49406
27. 49400
28. 49396
29. 49366
30. 49483
1-0 W 31. 49343
32. 49254
33. 49313
34. 49369
35. 49393
36. 49412
37. 49419
38. 49415
39. 49418
40. 49417
B 2 10:15 49389
0-1 E 41. 49404
42. 49373
43. 49330
44. 49311
45. 49325
46. 49459
47. 49434
48. 49490

B Time 8:08 49429

4-3 w 1. 49498
2. 49289
3. 49361
4. 49346
5. 49370
6. 49403
7. 49321
8. 49270
9. 49382
10. 49414

3-2 w 11. 49390
12. 49397
13. 49420
14. 49527
15. 49451
16. 49403
17. 49417
18. 49345
19. 49400
20. 49338

2-1 w 21. 49361
22. 49365
23. 49383
24. 49427



LINE NO.
1
SPREAD(S)
1
BEARING
N80E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of

Wollastonite Copper Prospect

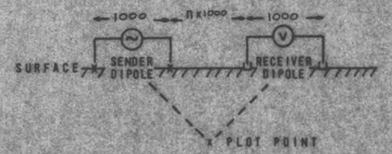
For

Wollastonite Mining Company

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



Contact

Total Magnetic Intensity

Self-potential

DATE

September 1980

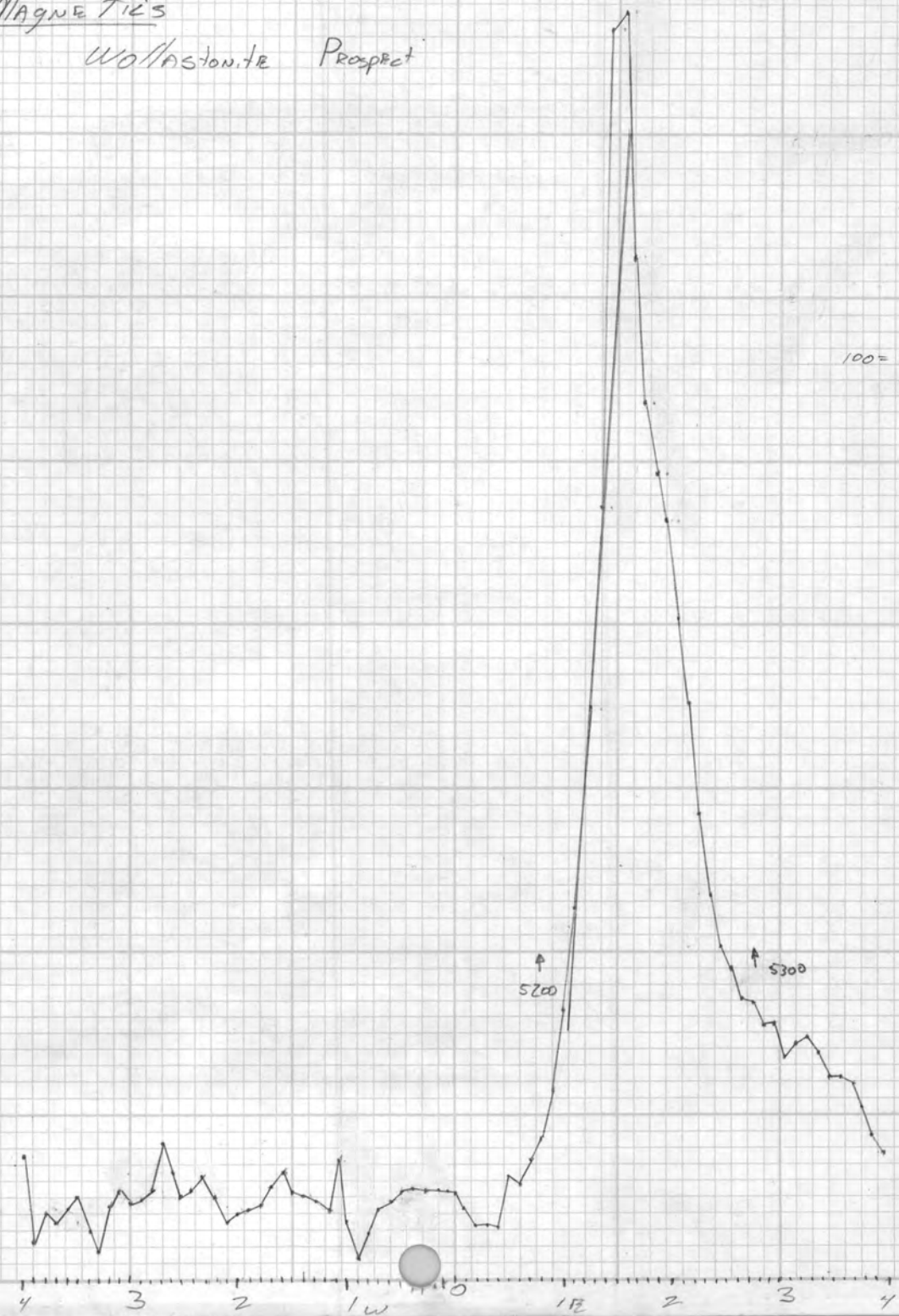
HEINRICHS GEOEXPLORATION COMPANY
Job # 1463
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

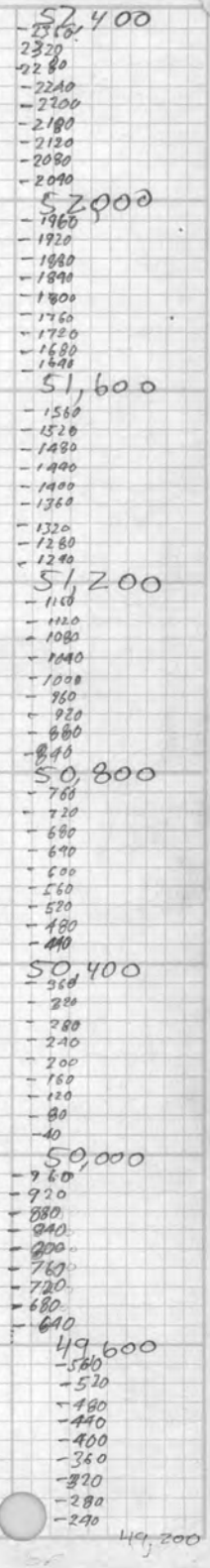
MAGNETICS

Wollastonite Prospect

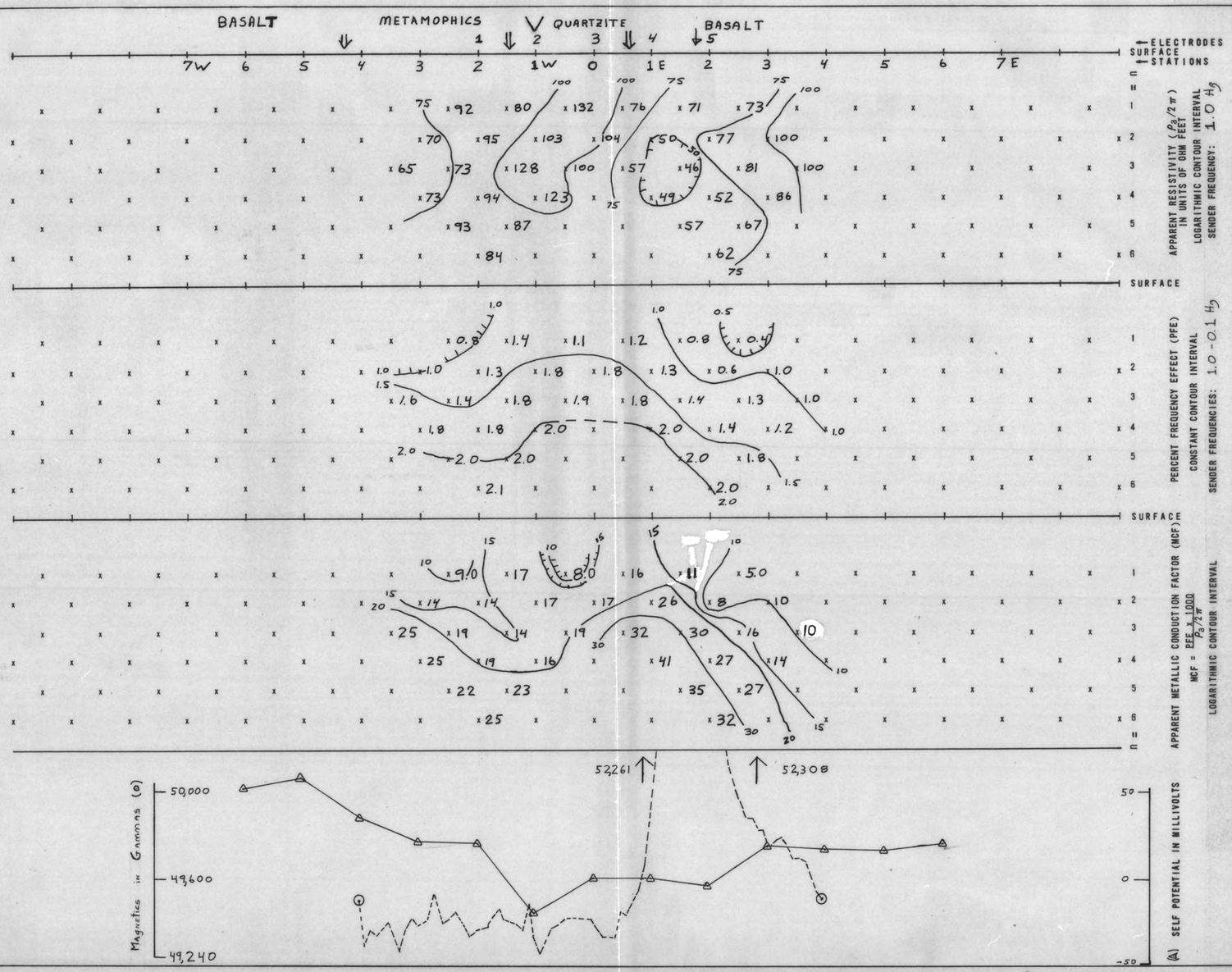
3.

100 = 1.6 γ





CHAMPION LINE NO. 810-3
CROSS SECTION - 10 SQUARES TO INCH



LINE NO.
1
SPREAD(S)
1
BEARING
N80E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of

Wollastonite Copper Prospect

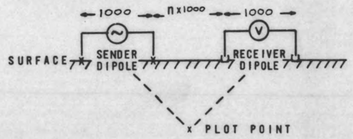
For

Wollastonite Mining Company

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



Contact

Total Magnetic Intensity

Self-potential

DATE

September 1980

HEINRICHS GEOEXPLORATION COMPANY

Job # 1463

806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

INDUCED POLARIZATION TRAVERSE
SECTIONAL DATA SHEET
of

Wollastonite Copper Prospect

For

Wollastonite Mining Company

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY

Contact

Total Magnetic Intensity

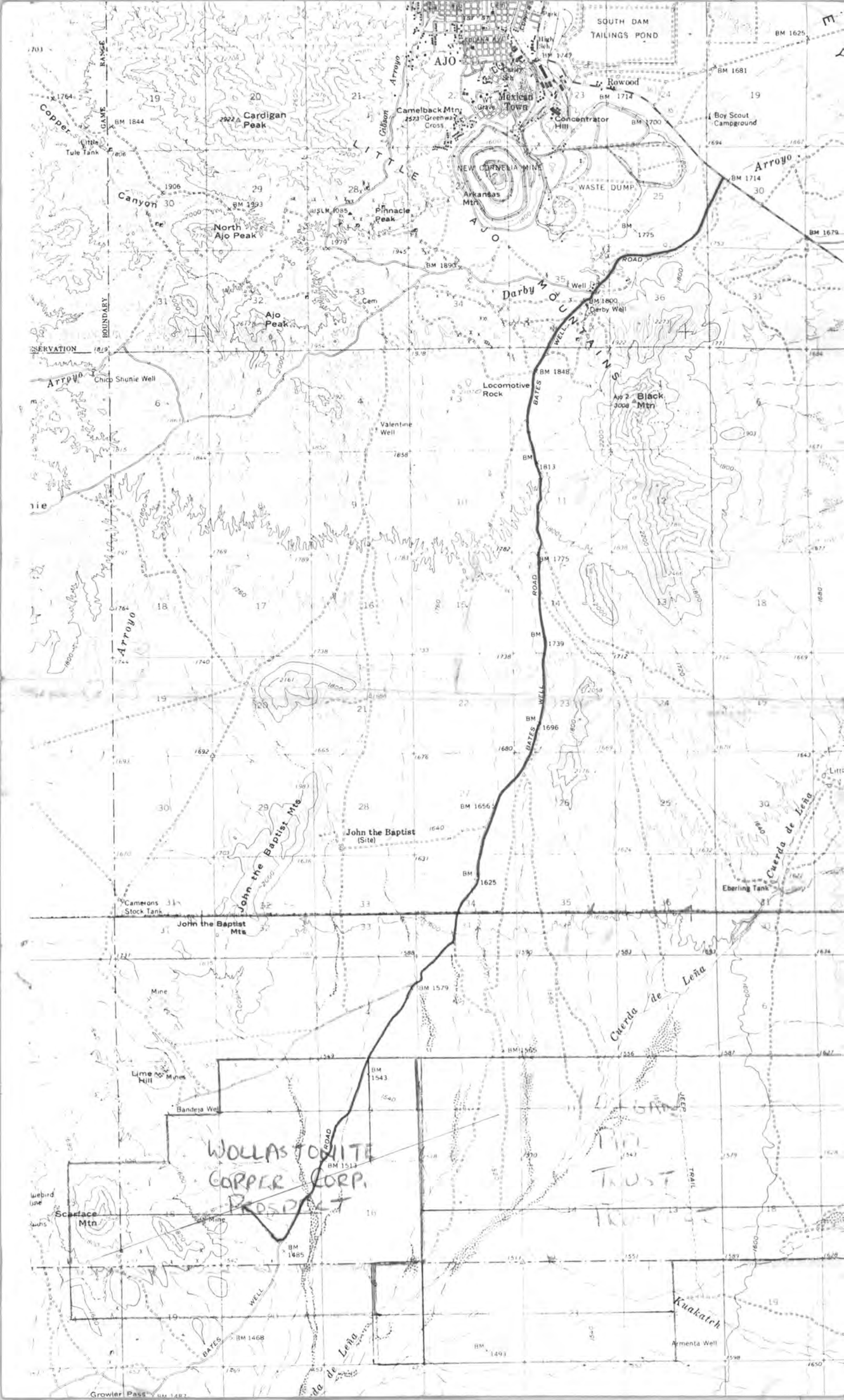
Self-potential

DATE

September 1980

LINE NO.
1
SPREAD(S)
1
BEARING
N80E

808 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0518
Job # 1963
GEOEXPLORATION COMPANY
HEINRICHS


SOUTH DAM
TAILINGS POND
AJO
Rowood
Mexican Town
Concentrator Hill
Boy Scout Campground
Camelback Mtn
Greenway Cross
Cardigan Peak
Copper
Little Tule Tank
Canyon
North Ajo Peak
Pinnacle Peak
LITTLE AJO MOUNTAINS
NEW CORNELIA MINE
WASTE DUMP
Arkansas Mtn
Darby
Darby Well
Ajo Peak
Cem
Chico Shunie Well
Locomotive Rock
Black Mtn
Valentine Well
BATES WELL ROAD
John the Baptist Mts
John the Baptist (Site)
Camerons Stock Tank
Eberling Tank
Cuerda de Leña
Mine
Lime Hill
Mines
Bandeja Well
WOLLASTONITE
COPPER CORP.
PROSPECT
Scarface Mtn
Kuakatch
Armenta Well
Growler Pass
JEEP TRAIL
BOUNDARY
GAME RANGE
Arroyo
Gibson Arroyo

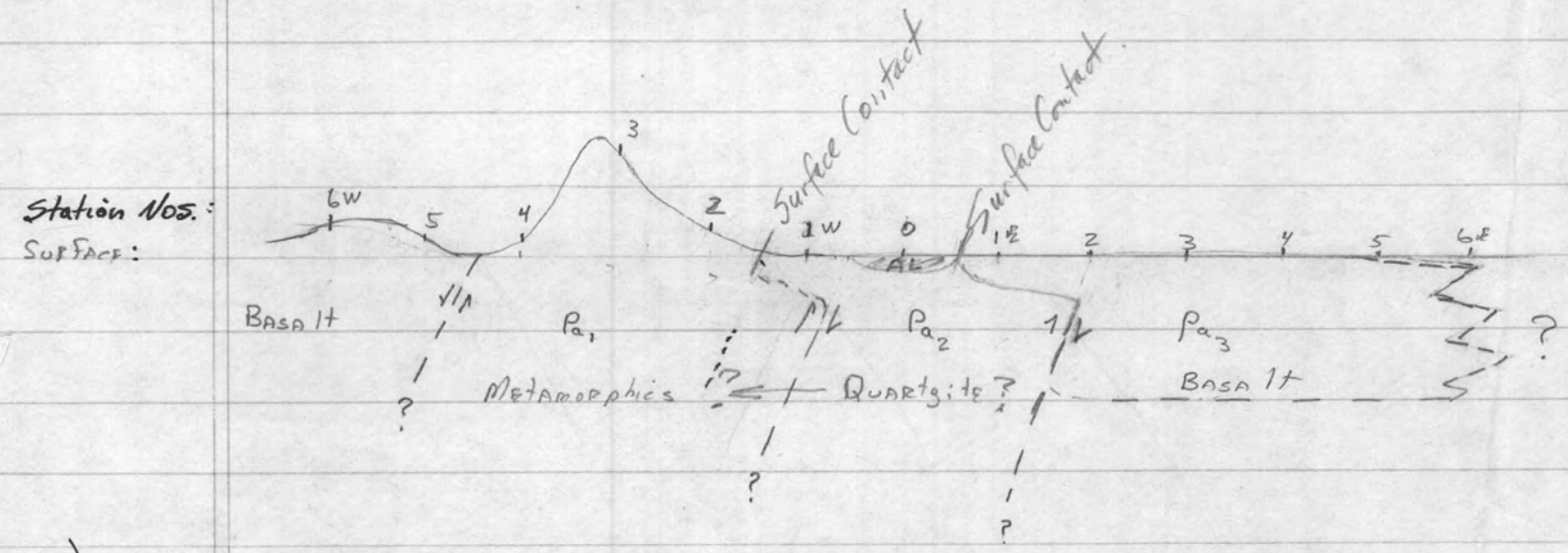
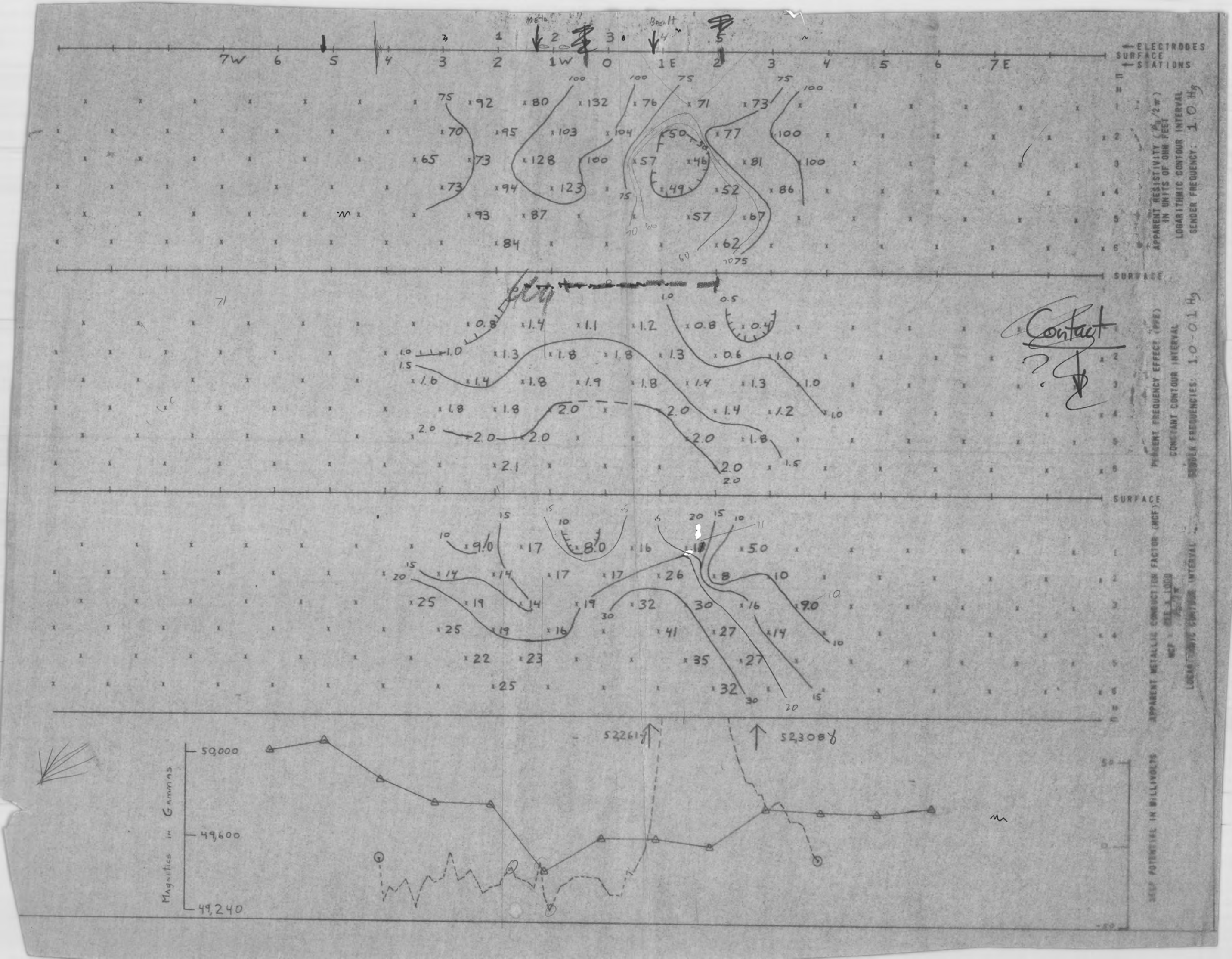
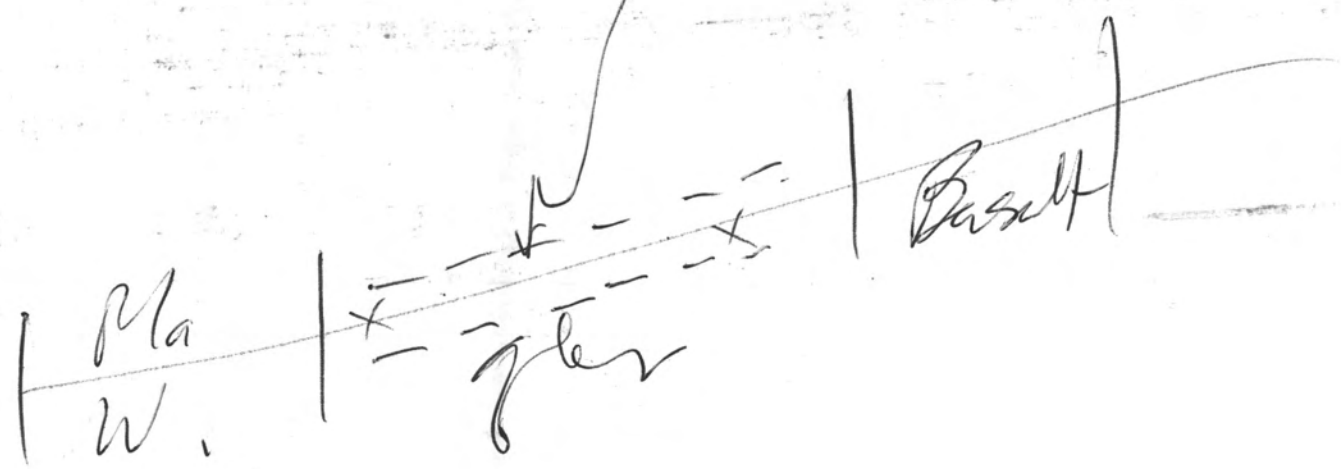


Figure 1

(Not to Scale)


ELECTRODES
SURFACE
STATIONS
7W 6 5 4 3 2 1W 0 1E 2 3 4 5 6 7E
APPARENT RESISTIVITY (ρa/2π)
IN UNITS OF OHM FEET
LOGARITHMIC CONTOUR INTERVAL
SENDER FREQUENCY: 1.0 Hz
SURFACE
PERCENT FREQUENCY EFFECT (PFE)
CONSTANT CONTOUR INTERVAL
SENDER FREQUENCIES: 1.0-0.1 Hz
SURFACE
APPARENT METALLIC CONDUCTION FACTOR (MCF)
LOGARITHMIC CONTOUR INTERVAL
SELF POTENTIAL IN MILLIVOLTS
Contact
52261γ
52308γ
Magnetics in Gammas
50,000
49,600
49,240


Basalt
Ma
W.
gler

HARRY E. NELSON
201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

Mr. Mark E. Anders

Heinrichs GEOXploration Company

P. O. Box 5064

Tucson, Arizona 85703

CERTIFIED MAIL

P13 8956355

CLAIM CHECK NO.
946775

☐ HOLD

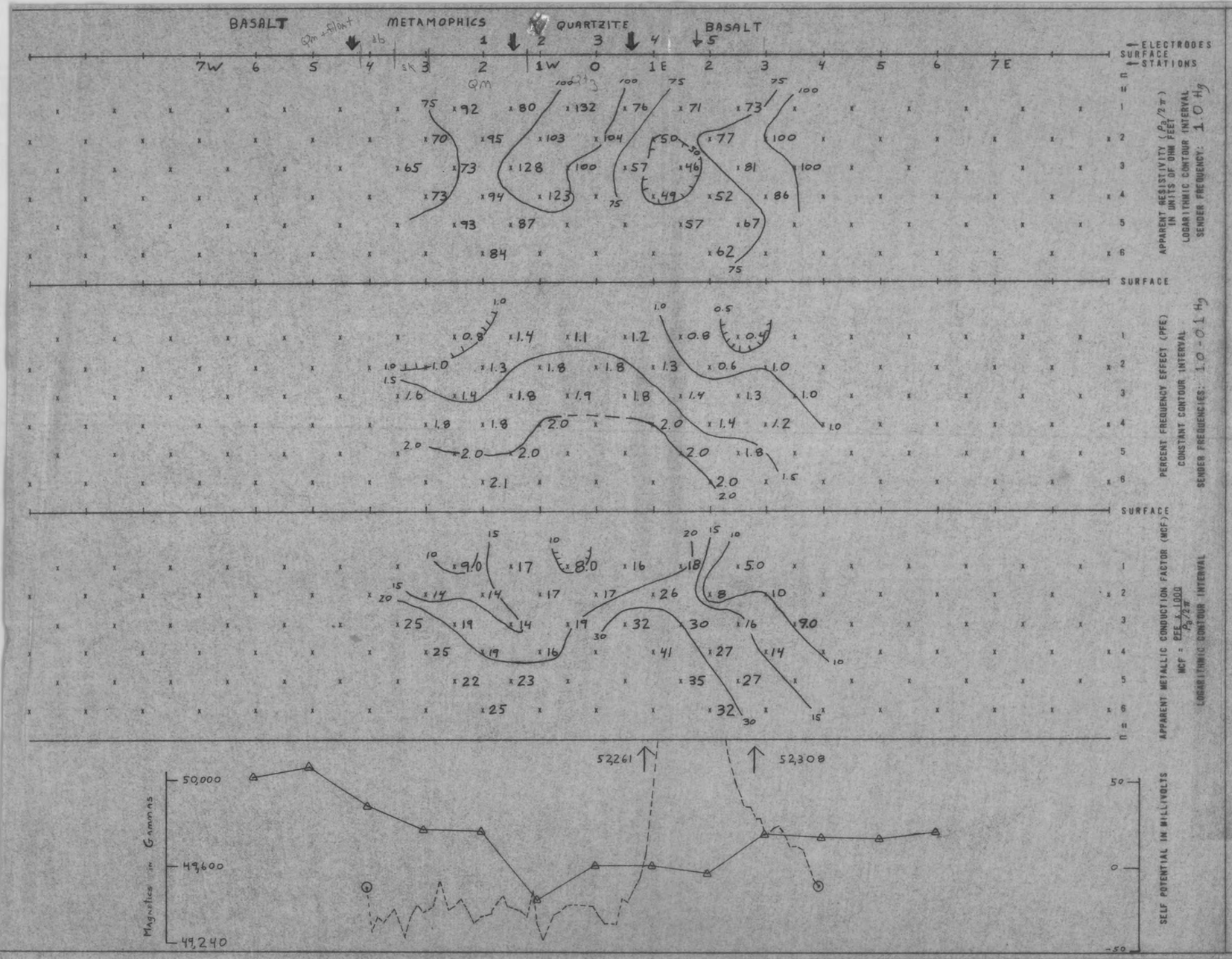
DATE
11-6

1ST NOTICE

2ND NOTICE

RETURN

Detached from PS Form 3849-A May 1979



LINE NO.
1
SPREAD(S)
1
BEARING
N80E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET
of

Wollastonite Copper Prospect

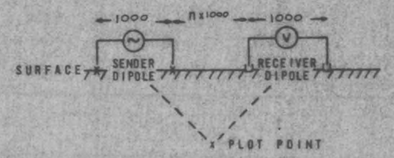
For

Wollastonite Mining Company

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



Contact

Total Magnetic Intensity

Self-potential

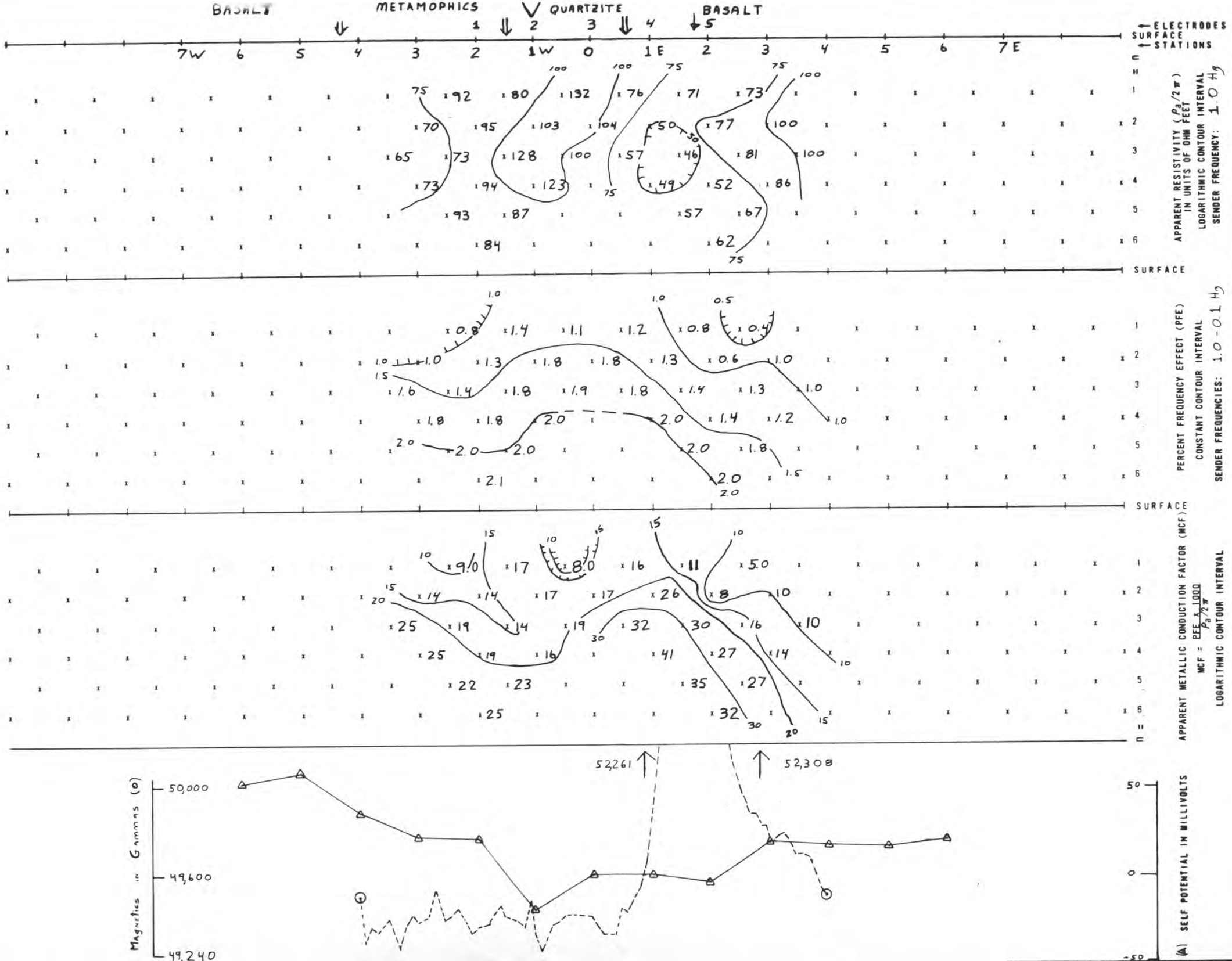
DATE

September 1980

HEINRICHS GEOEXPLORATION COMPANY

Job # 1463

806 W. GRANT ROAD, POST OFFICE BOX 5984, TUCSON, ARIZ., 85703, PHONE: (602)623-0578


BASALT
METAMOPHICS
QUARTZITE
BASALT
1 2 3 4 5
7W 6 5 4 3 2 1W 0 1E 2 3 4 5 6 7E
ELECTRODES
SURFACE
STATIONS
n = 1 2 3 4 5 6
SURFACE
APPARENT RESISTIVITY ($\rho_a/2\pi$)
IN UNITS OF OHM FEET
LOGARITHMIC CONTOUR INTERVAL
SENDER FREQUENCY: 1.0 Hz
PERCENT FREQUENCY EFFECT (PFE)
CONSTANT CONTOUR INTERVAL
SENDER FREQUENCIES: 1.0 - 0.1 Hz
APPARENT METALLIC CONDUCTION FACTOR (MCF)
MCF = PFE x 1000 / $\rho_a/2\pi$
LOGARITHMIC CONTOUR INTERVAL
52,261
52,308
Magnetics in Gammas (o)
50,000
49,600
49,240
(A) SELF POTENTIAL IN MILLIVOLTS
50
0
-50

TELEPHONE 713-756-0160

HEINRICHS GEOEX
EXPLORATION, ENGINEERING
TUCSON, ARIZONA

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

BOX 5964 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0576

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

REC'D NOV 7 1980

Ref: IP Survey
Wollastonite Mining Company
GEOX # 1463

Mr. Mark E. Anders
Heinrichs GEOXploration Company
P. O. Box 5064
Tucson, Arizona 85703

October 28, 1980

Dear Mr. Anders,

This letter is in reply to your letter of October 9, 1980, in regard to our telephone conversations of October 6, 1980 and of October 15, 1980. Thank you for sending me and Hale C. Tognoni, prints of the log of the magnetic survey you ran.

In my telephone conversation of October 9, 1980 I asked you to check your data, apparently you didn't, for the following reasons:

(1). The log of the total intensity magnetic survey you sent me, of <u>your work, indicates the maximum at 1600-feet N. 80° E. of the Brass Cap 1/4 corner</u>; but with a 1050 gamma higher reading than ours, when the two profiles are compared by placing one over the other on a light well.

<u>You indicate on your maps the maximum is at 1800-feet</u>.

In fact from the Brass Cap 1/4 corner the profiles are the same out to 1200-feet; but at 1300-feet you are 180 gammas higher
at 1400-feet you are 400 gammas higher
at 1500-feet you are 1100 gammas higher
the drill hole collar is at 1525-feet
at 1600-feet you are 1050 gammas higher
at 1700-feet you are 500 gammas higher
at 1800-feet you are 400 gammas higher
at 1900-feet you are 400 gammas higher
at 2000-feet you are 400 gammas higher
at 2100-feet you are 270 gammas higher

Beyond 2100-feet the profiles are parallel, with your survey being about 150 gammas higher out to 2900-feet where the profiles are practically the same again.

Thus I think the collar of the drill hole casing did affect your magnetic readings in the vicinity of the magnetic high at 1600-feet.

TELEPHONE 713-756-0160

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

Ref: IP Survey
Wollastonite Mining Company
GEOXploration # 1463

(Letter to Mark E. Anders of October 28, 1980)

(2). a. The 20 MCF contour on the east side is wrong. ok
b. The 15 MCF contour on the east side is wrong. no
c. MCF 18 on the east side should be 11.
d. MCF 9 on the east side should be 10.
e. The 15 MCF contour is missing under the quartzite.

I suggest too, that you add the 60 and 70 apparent resistivity contours to the low resistivity area on the east side.

When these changes have been made, the thing I find most interesting is that there is a PFE "Dome", a MCF "Dome", and a developing low resistivity "Dome"; and that all of these are in the broad low self potential zone from 2000-feet west to 3000-feet east.

(3).Concerning the geology of the line you ran:

a. 1350-feet S. 80° W. from 1/4 Cor. Brass Cap .. to west edge of quartzite
b. 1350-feet to 2900-feet " " " " " .. quartz monzonite
c. 2900-feet to 3650-feet " " " " " .. skarn
d. 3650-feet to 4150-feet " " " " " .. debris
e. 4150-feet to 4500-feet plus " " " .. quartz monzonite, with volcanic float.

We have a 4000-foot north-south IP line at 4500-feet S. 80° W. of the 1/4 Cor. Brass Cap, centered on a vein I found in mapping the quartz monzonite in the area west of the saddle. The IP indicates quartz monzonite. The fault I mapped at 4040-feet S. 80° W. of the 1/4 Cor. Brass Cap can be seen on the aerial photograph. That this fault is a normal fault and dips to the east is most probable, for skarn and sediments are found east of the fault but I have found nothing but quartz monzonite west of the fault.

Thus you should change your figure 1, page 3 of your report, for the western section.

That all of these faults are normal and dip to the east is most probable too, for each block going to the east has been down dropped and shows a greater sequence of skarn and sediments. This fact is also indicated by the IP lines of McPhar and Geonics.

TELEPHONE 713-756-0160

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

Ref: IP Survey
Wollastonite Mining Company
GEOX # 1463

(Letter to Mark E. Anders of October 28, 1980)

(4). In your discussion of the magnetic anomaly at 1600-feet N. 80° E. of the Brass Cap 1/4 Corner in your report .. Page 4, you state:

Line 4 .. "This can be tied directly to surface of exposures of basalt in the area."

Line 25 .. "Magnetic data show a large high to the east and this corresponds to surface outcropping of basalt."

The fact is there no surface croppings of volcanics on the line that runs N. 80° E. from the Brass Cap 1/4 Corner. Another fact is that at 1525-feet N. 80° E. from the Brass Cap 1/4 Corner there is 119-feet of alluvium.

I consider this large anomaly as the result of a large magnetization contrast, i. e., change in lithology where one rock type is in juxtaposition with another rock type of much lower susceptibility.

We have run in excess of 12,000-feet of magnetics in this area over over volcanic flows on the surface and over alluvium where we knew there were volcanic flows because of drill holes. All of these magnetic lines showed variations of several hundred gamma that take place in a few hundred feet. Changes are sharp and of considerable magnitude. I see none of this on the line running N. 80° E. from the Brass Cap 1/4 Corner.

Another significant characteristic of a magnetic anomaly is its variation with the depth between the magnetometer and source. The deeper the source, the broader the anomaly .

The width of this magnetic anomaly (with the magnetic high at 1600-feet N. 80° E. from the Brass Cap 1/4 Corner), according to our data is 950-feet long; with boundaries going to depth a little inside the maximum 1/2, at 1300-feet and 2100-feet N. 80° E. of the Brass Cap 1/4 Corner; with a 1/2 width of 600-feet.

TELEPHONE 713-756-0160

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

Ref: IP Survey
Wollastonite Mining Company
GEOX # 1463

(Letter to Mark E. Anders of October 28, 1980)

(4). (continued)

Thus my conclusion is that the magnetic anomaly with the maximum at 1600-feet N. 80° E. of the Brass Cap 1/4 Corner is caused by the fault at 1600-feet separating high susceptibility rock west of the fault, from low susceptibility rock east of the fault; and, that the fault dips east at a steep angle.

This data check quite well with the high susceptibility rock correlating with the low resistivity "Dome", and your Self Potential low on the east side.

(5). Concerning the Self-Potential I think you will be interested in the following:

Breccia Pipe

At 720-feet S. 80° W. from the Brass Cap 1/4 corner, an IP, Self Potential line of Chris Ludwig (Heinrichs GEOX) crosses your line and runs S. 25° W. At a distance of 1250-feet to 2000-feet (750-feet) S. 25° W. from your line, Chris found a Self-Potential low that is 75 millivolts below his reading where your two lines intersect.

His line continues to the northeast (N. 25° E.) for another 1000-feet, with an increase of 80 millivolts over his reading where your two lines intersect.

That makes a total of 155 millivolts, interesting isn't it? Could be more, for the Self Potential curve was still going higher on the northeast end.

Again I say to you Mark E. Anders, check your work, and let me know your results and considered opinion.

check SP

Sincerely,

Harry E. Nelson

Harry E. Nelson

cc. Hale C. Tognoni

plane SP

February 5, 1981

Mr. Harry E. Nelson
201 Ridgeway Drive
Conroe, Texas 77301

Re: Wollastonite Mining Company
GEOEX #1463

Dear Mr. Nelson:

In regard to your letter of December 19, 1980. In that letter you requested an estimate of cost for Heinrichs GEOEXploration Company to pick up the six data points not covered our first time out, plus two self potential lines of 6,000 feet length.each.

Below is an itemization of approximate costs.

0.35 per mile (700 miles)
$25.00 per vehicle, per day (2 vehicles)
$35.00 per diem, per day, per person (3 days)
$25.00 per hour on report, this depends on how detailed a report you would like (24 hrs)
$55.00 per crew hour in field (24 hrs)
$35.00 per crew hour for travel (6 hours)

When these costs are added up the cost would be around $3,100. This estimate would go up or down depending on our state of mobilization and is assuming three days of field work.

As stated in our phone conversation of February 4, 1981, Heinrichs GEOEX will have a crew mobilized around the middle of this month.

If this sounds good to you and Mr. Tognoni, please let us know right away.

It has been a pleasure serving you, and if there is anything we can do for you please contact us.

Sincerely,

Heinrichs GEOEXploration Co.

MEAZmt
cc: Mr. Hale C. Tognoni

Mark E. Anders
Geophysicist - Geologist

December 10, 1980

Mr. Harry E. Nelson
201 Ridgeway Drive
Conroe, Texas 77301

Re: Wollastonite Mining Company
GEOEX #1463

Dear Mr. Nelson:

This letter is in reply to your letter of October 28, 1980, and in regard to our phone conversations of December 3, 1980 and of December 8, 1980.

From your letter and our later phone conversations it is obvious that you have have an intimate familiarity with the property. Of necessity our report of course gave an interpretation based primarily on the geophysical data alone, except for that simple geology observed while on the line. Your understanding of the property is way beyond ours which was limited to no prior exposure before and then spending only approximately 30 hours in the area while doing the geophysics.

1. In reply to specific items in your letter, it appears that we may well have a higher magnetic anomaly because of drill hole, casing and collar effects even though none such were actually noted by us during the survey.

2. A sectional data sheet with the corrections you mention is included with this letter. Your suggestion to put in 60 and 70 apparent resistivity contours is a good one, but in keeping with the standard contouring procedure of using a logarithmic scale so as to present a uniform plot, we will leave it up to you as for putting in the two aforementioned contours.

3. Thank you for the geology information, it matches with our general observed geology fairly well. The main exception to this is on the western end of the line. You also state that the fault at 4040 feet S.80°W. of the 1/4 corner brass cap is presumed to dip east. On our figure 1 we show a westward dipping fault with question marks. Stated in our report:

> "The fault zone appears fairly steep and most likely dipping west; technically, however, the data do not absolutely refute the possibility of east dip and that possibility should not be ignored"

Included with this letter is a revision of our Figure One. In practicality IP

data often does not give conclusive results on direction of dip and especially not angle of dip except, occasionally, the evidence may indicate steep versus shallow or vice versa.

4. You state in your letter "no surface croppings of volcanics on the line". But there is volcanic float all over, and without benefit of your drilling results, geologic mapping and magnetic results I came to the conclusion that the magnetic anomaly was caused laterally by the presumed basalt outcrop nearby and/or the volcanic float material. With more careful and leisurely retrospect, the whole anomaly was not covered and our coverage is incomplete on the northerly end. However, there is enough coverage to suggest that the maximum depth of the top of the causative feature of the anomaly is on the order of 600' ± 300'. Thus, your idea of faulting is not out of the question at all.

"All of these magnetic lines showed variations of several hundred gamma that take place in a few hundred feet. Changes are sharp and of considerable magnitude. I see none of this on the line". I am confused by this statement because our magnetics does show variations of several hundred gammas in a few hundred feet except for the main anomaly.

5. Your self potential data is very interesting and more SP work in the area might give you some valuable additional information.

Your ideas about the magnetic anomaly are interesting and certainly are quite possible, but without more time on the property I do believe that the magnetic anomaly is most likely caused by the volcanic float.

Self potential data could give some interesting results, and if you decide to do it, GEOEX would be glad to do it.

After you have read this letter, if you have any questions please don't hesitate to call or write. We hope you have happy holidays.

Sincerely,

Heinrichs GEOEXploration Co.

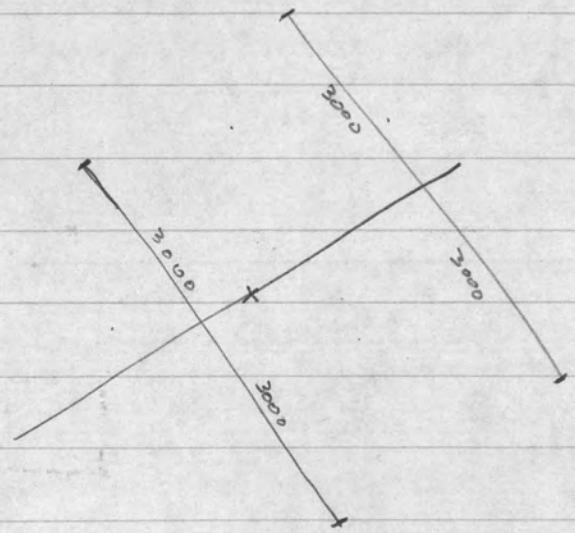
Mark E. Anders
Geophysicist - Geologist

MEA:mt
Enclosures: 1 IP Sectional Data Sheet
1 Geologic Cross Section

cc: Mr. Hale Tognoni

N ↑

Brass Caps
at Ends



2 SP lines

N 20° E

1. 370' W B.C.

2. 1000' E B.C

a = 250'

250	1250	2250
500	1500	2500
750	1750	2750
1000	2000	3000

24 Reading
per line.

TELEPHONE 713-756-0160

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

RECEIVED
DEC 29 1980
BOX 5964
TUCSON, AZ. 85703

Ref: Wollastonite Mining Company
GEOX # 1463

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

Mr. Mark E. Anders
Heinrichs GEOXploration Company
P. O. Box 5964
Tucson, Arizona 85703

December 19, 1980

Dear Mr. Anders,

Thank you for your letter of December 10, 1980.

In regard to you Item No. 2, of your letter of December 10, 1980. I have contoured everything (Apparent Resistivity, PFE, and MCF) in the normal constant contour interval; rather than contouring the Apparent Resistivity, and the MCF logarithmically.

To get back to basics, the reason why the Apparent Resistivity and the MCF are contoured logarithmically is because of the usual large variations in magnitude of the numbers involved.

In this line GEOX # 1463, that you ran for us ... no large variation in magnitude of numbers is involved ineither the Apparent Resistivity or the Metallic Conduction Factors. Thus by contouring logarithmically a distorted cross-section is presented.

As I stated to you in my letter of October 28, 1980, the thing I find most interesting is that there is a PFE "Dome", a MCF "Dome", and a low Apparent Resistivity "Dome". None of which has been completely outlined because of the lack of data in the center of your profiles. To bad you didn't offset the sender setup 1000-feet on either side of the 0-1/4 Brass Cap to partially fill in the gap; for the base of the dome appears to be at least 4000-feet wide.

TELEPHONE 713-756-0160

HARRY E. NELSON
REGISTERED GEOLOGICAL ENGINEER

Ref: Wollastonite Mining Company
GEOX # 1463

201 RIDGEWAY DRIVE
CONROE, TEXAS 77301

(Letter to Mark E. Anders of December 19, 1980)

What I would like to have you do is to give me an estimate of what Heinrichs GEOXploration would charge to have you go back out into the field and fill in those six data points in the center of your profile.

Sincerely,

Harry E. Nelson

Harry E. Nelson

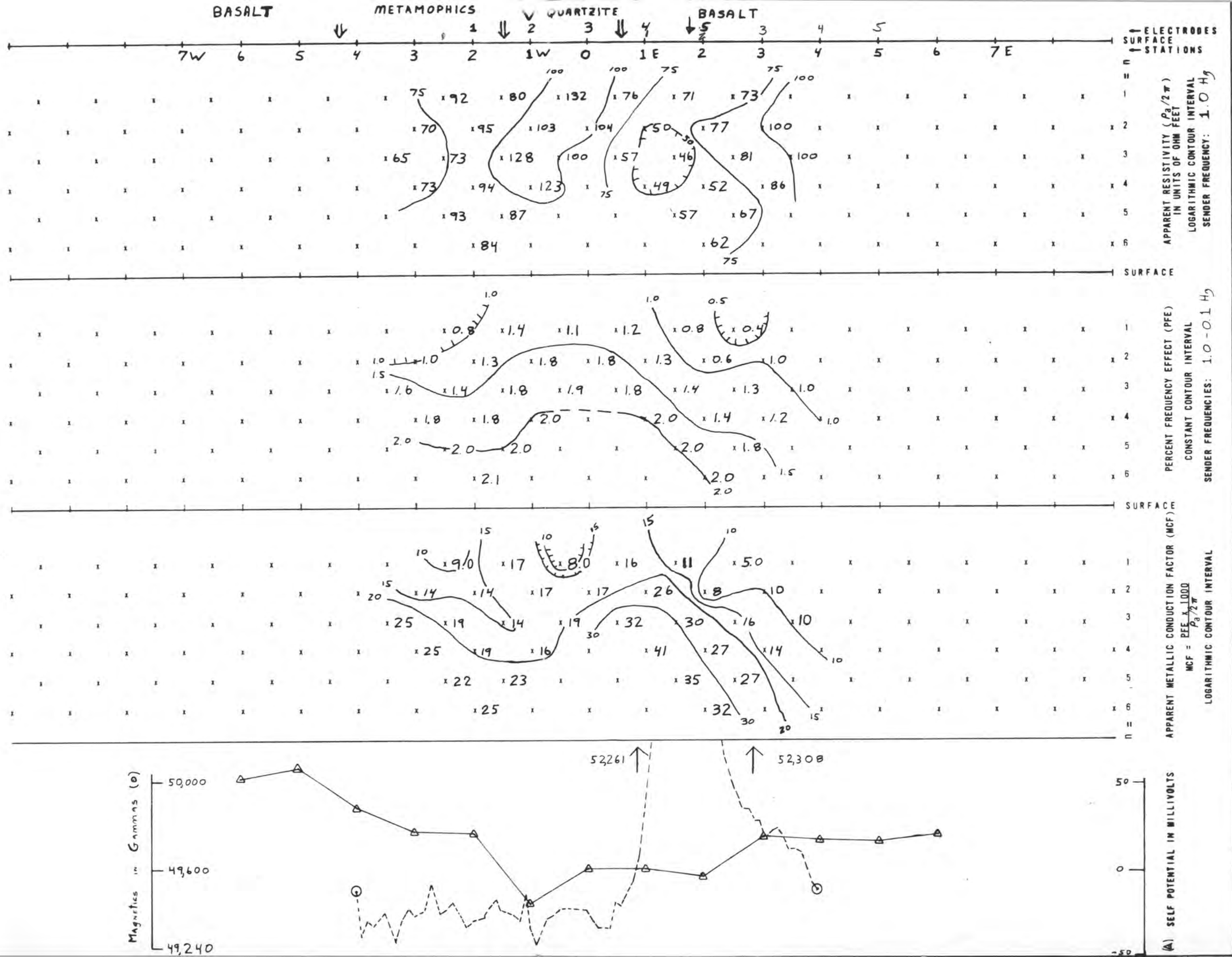
cc. Hale C. Tognoni

EXAMINATIONS • EVALUATIONS

2 days → 4 man crew

0.35 ¢	per mile (700 mi)	$245.00
$25.00	per day (2 vehicals)	100.00
$35.00	per diem (2 days)	$280.00
$25.00	per hour on report depends	$400.00 (2 days)
$50.00	per crew hour in field (≈ 16 hrs)	$800.00
$35.00	per crew hour travel (≈ 6 hrs)	$210.00

About $2,000.00 to redo


BASALT
METAMOPHICS
QUARTZITE
BASALT
ELECTRODES
SURFACE
STATIONS
7W 6 5 4 3 2 1W 0 1E 2 3 4 5 6 7E
APPARENT RESISTIVITY ($\rho_a/2\pi$)
IN UNITS OF OHM FEET
LOGARITHMIC CONTOUR INTERVAL
SENDER FREQUENCY: 1.0 Hz
PERCENT FREQUENCY EFFECT (PFE)
CONSTANT CONTOUR INTERVAL
SENDER FREQUENCIES: 1.0 - 0.1 Hz
APPARENT METALLIC CONDUCTION FACTOR (MCF)
MCF = PFE x 1000 / $\rho_a/2\pi$
LOGARITHMIC CONTOUR INTERVAL
(A) SELF POTENTIAL IN MILLIVOLTS
Magnetics in Gammas (o)
50,000
49,600
49,240
52,261
52,308

IP, Resistivity, Self Potential

and

Magnetic Geophysical Survey

of

Wollastonite Copper Prospect

Sec. 13, 18, 17, 16 T.14S., R.6W.

U.S.G.S. Ajo 15' Quadrangle

Pima County, Arizona

September 1980

For

Wollastonite Mining Company, (Inc.)

Suite No. 1260 Del Webb TowneHouse

100 West Clarendon Avenue

Phoenix, Arizona 85013

By

Heinrichs GEOEXploration Company, (Inc.)

P.O. Box 5964

Tucson, AZ 85703

GEOEX #1463

C O N T E N T S

	Page No.
Index Map	
Introduction	1
Procedures	1
Interpretation	2
Conclusions and Recommendations	4
Acknowledgements	5

IP Sectional Data Sheet

Three Appended Items: Basis of IP Method

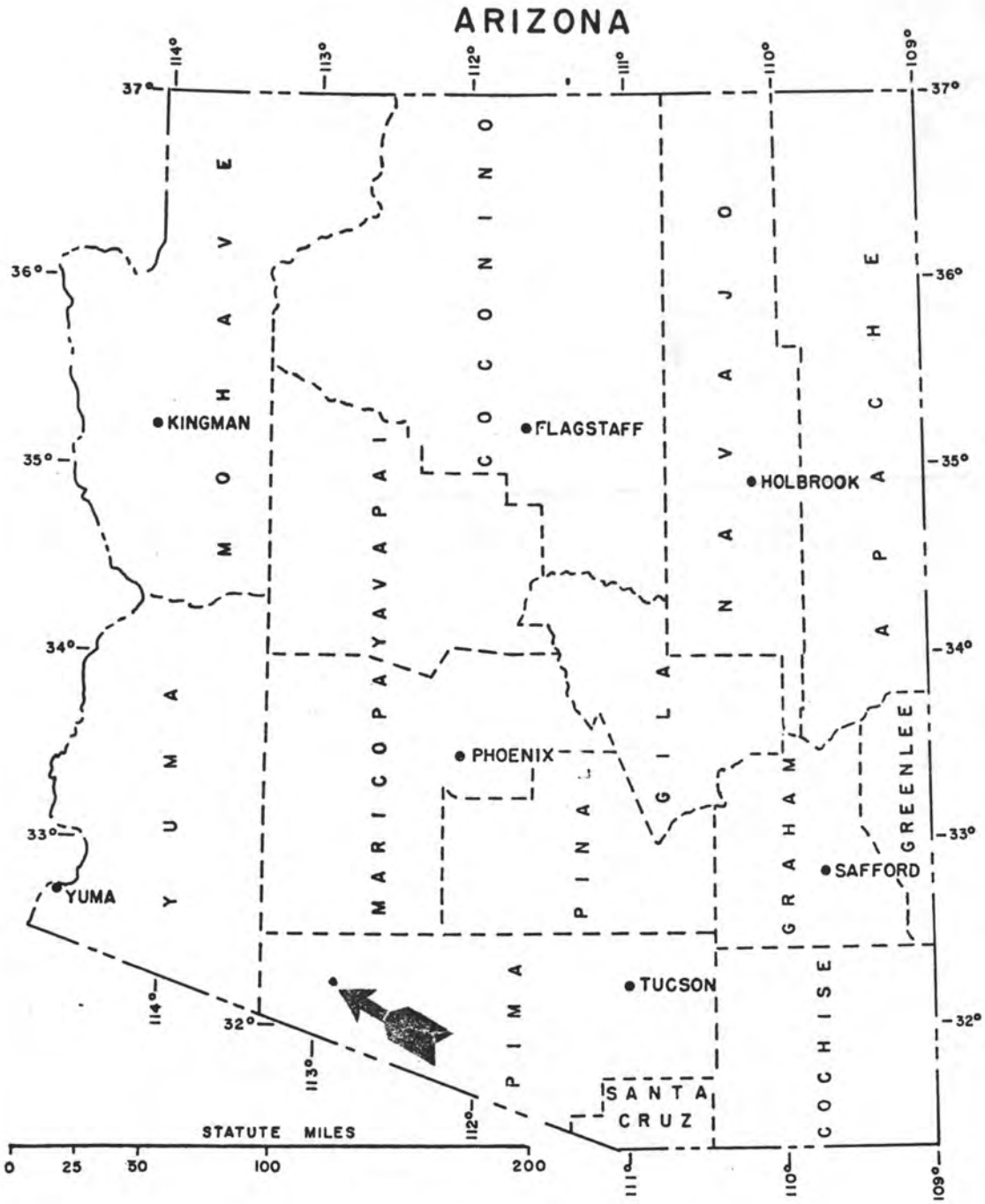
Comments on Drilling IP Targets

GEOEX Professional Staff

In Map Pocket: Interpretation and Location Plan Map

GENERAL LOCATION OF

SURVEY AREA



HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

Introduction

At the request of Mr. Hale C. Tognoni, Esquire, of Wollastonite Mining Company, Phoenix, Arizona, Heinrichs GEOEXploration Company conducted a one line induced polarization (IP), resistivity, self-potential (SP) and magnetic survey of a portion of Sections 13, 16, 17, 18 in T.14S., R.6W., Pima County, Arizona, as indicated on accompanying plan map, about 10-15 miles south of Ajo, Arizona. Area is approximately at 1700 feet elevation and, for the most part, is flat except for the large hill on the southwestern end of the geophysical spread. Soil development is quite sparse and conditions were very dry. Floral cover is of the typical Sonoran desert variety. Four wheel drive access is generally good.

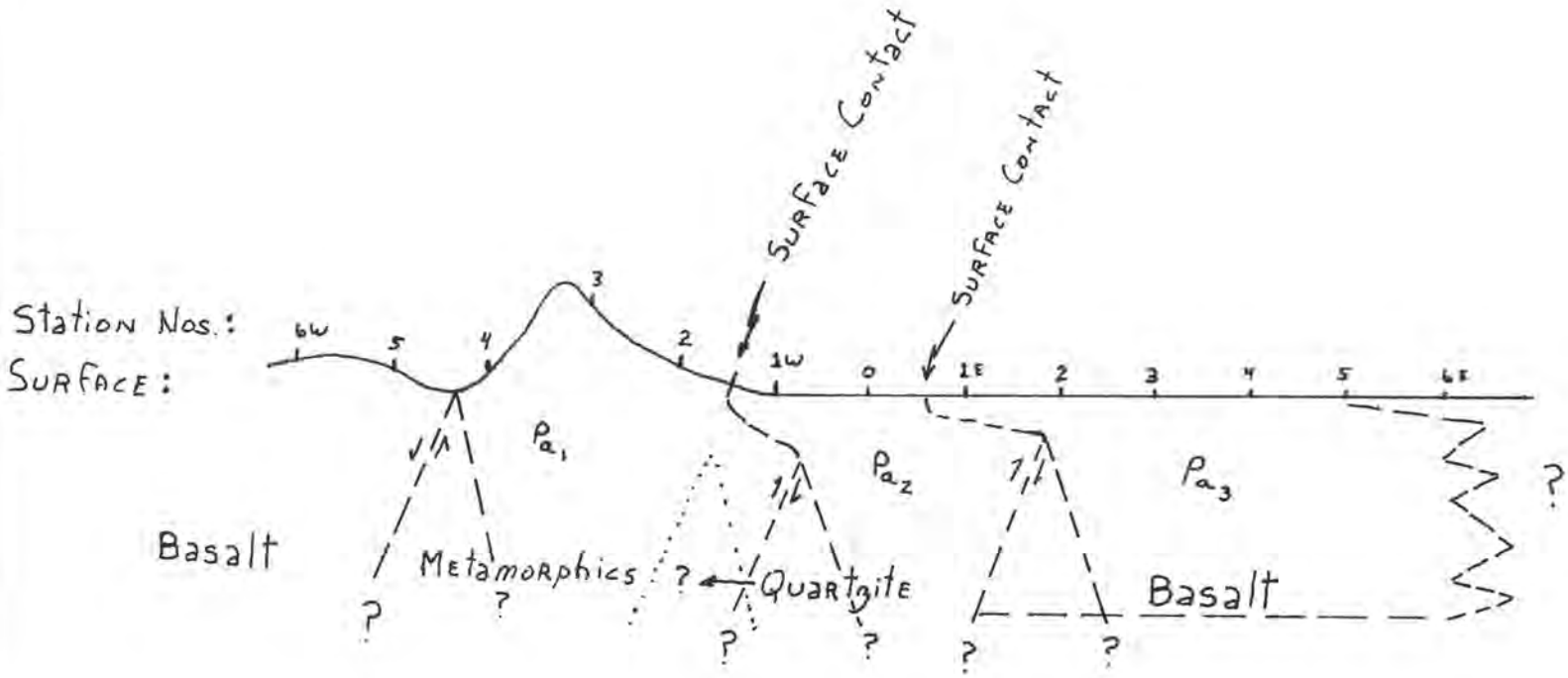
Field work was done during the interim September 2 through September 5, 1980, with Mark E. Anders, Geophysicist-Geologist as party leader, assisted by David Swanson, Electronics Technician, and David Nelson, Field Technician, and under the general supervision of Walter E. Heinrichs, Jr., Professional Geological Engineer-Geophysicist. See appended leaflet titled Professional Staff for background of personnel of Heinrichs GEOEXploration Company, 810 W. Grant Road, Tucson, Arizona, 85705. Total labor expended, was at least $4,000.00.

Purpose of this work was to delineate subsurface geology, with particular emphasis on evaluation at depth, to identify existence, strength, character and distribution of any possible sulfides and relationships or associations with magnetic effects as expressed along the same profile.

A plan map at a scale of 1" = 400' was made available to us by Wollastonite Mining Company. We understand that prior IP work has been done in the area, but we have not seen these data.

Procedures

GEOEX multiple frequency IP equipment involving a 10 ampere Mark 4 transmitter S/N 6644 and Mark 4-C Receiver S/N 2693-4 was employed. Transmitter was powered by a 18 HP Onan gasoline engine, driving a 400 Hz-125v, 6 KW Bendix aircraft alternator. A transmitting frequency pair of 1.0 and 0.1 Hz was employed. Spectral frequency tests (utilizing additional frequencies, i.e.: 3 and 0.3) were done at the beginning of the survey and these indicated sufficient possibility of encountering adverse spurious and/or system contributed coupling effects, that the lower frequency pair was deemed preferable for routine coverage. The collinear dipole-dipole electrode array was used with a spread of five transmitting electrodes and dipole lengths of 1000 feet each.



(Not to Scale)

Figure 1

As stated, the results gave little PFE contrast, what is seen is a very weak increase of PFE with depth in westerly tilted and/or thickening formation. Because of the low absolute value of maximum PFE noted (2.1 PFE) and relatively small PFE contrast 0.8 vs 2.1 PFE, this PFE increase with depth could equally be due to artificial or spurious coupling effects caused by the system and technique used as it could be due to actual increasing sulfide with depth. PFE versus resistivity correlation appears to be good in the sense of comparable geometric responses.

Whatever the cause, the main PFE sub-outcrop effect seems to be more centered or located from 0.5W to 2.0E, while the actual outcropping of the formations appear at 1.5W and 0.6E for the quartzite and basalt respectively (See Fig. 1). The indicated westerly or southwesterly dip factor, the strike of the contacts relative to the bearing of the line and the fact that the interpretational resolution of collinear dipole-dipole array work utilizing 1000 foot dipoles, is $\pm$ 500 feet at best, all combine to account for this. Interpretation of the resistivities and PFEs indicate a high angle fault or contact at 0.5W. This fault separates two rock units of different resistivities. The other fault and/or contact at 2.0E involves the quartzite on the west and basalt on the east (see Fig. 1).

Self potential data show a small, broad low centered near station 1W. SP lows can relate to actively oxidizing sulfides which have established a weak potential or "battery" effect in the subsurface - usually across a conducting and interconnected zone of oxide and sulfide lying respectively both

The line was laid out and flagged in advance by Mr. Jeff Tognoni to a distance of 3000 feet on either side of the center point and was oriented N80°E. Additional measurements in both directions from center, were made with a piece of wire of known length out to 7000 feet from center.

Data results are presented on a "sectional" data sheet, showing successively from top to bottom: the apparent resistivity ($\rho\alpha$) in units of ohm-feet, the percent frequency effect (PFE) (dimensionless) and the metal conduction factor (MCF) - all contoured in "sectional" form. It should be stated that these sectional presentations are conventional diagramatic representations of the electrical parameter distributions and must not be considered geologic cross sections as such. For this reason, they are sometimes called pseudo-sections. Indirectly, of course, they do relate to the subsurface geometry and geology, but the relationships are complex and not always intuitive, (See Basis of IP Method appended to this report).

Self Potential (SP) readings, taken in conjunction with the IP work are presented at the bottom of the sheet in profile form along with the magnetometer results. A "Location and Interpretation Plan" at a scale of 1" = 400' is included and shows the plan projected interpretation. The base for this plan was furnished by Wollastonite Mining Company.

Magnetic data was collected with a Geometrics G-816 portable proton precession, total intensity magnetometer S/N 446. Data were collected on the same line as the IP data, but out to only 4000 feet on either side of the center point (see plan map).

Interpretation

Resistivities observed along this line, while not showing a large contrast, do reflect changes in geology. These changes indicate a higher resistive quartzite, with a lower resistive basalt to the northeast and a somewhat lower resistive series of metamorphic rocks (wollastonite) to the southwest on the main ridge.

The PFEs also show a rather small contrast. Moreover, the general PFE background level is quite low which indicates probable sparsity of sulfide mineralization, at least down to a depth of 1000 feet or so. However, the SW block PFEs are slightly higher than the NE block, a further indication of the geologic formational differences.

Below is a table of the indicated average background $\rho\alpha/2\pi$, PFE and MCF of three different members or rock types delineated in the study area as shown by a simplified geologic cross section in Figure 1, also following below:

P1	P2	P3	PFE1	PFE2	PFE3	MCF1	MCF2	MCF3
70	120	80	1.4	1.9	1.3	25	16	11

(in units of ohm feet/two π)

above and below the water table. This low is probably due to some very weak oxidation phenomenon of this sort, but may have little or no economic significance.

Magnetic data shows an extreme high on the eastern end of the line beginning at 0.5E and extending approximately to the end of coverage to the NE. This can be directly tied to the surface exposures of basalt in the area. Contact between the quartzite and metamorphic rocks is represented by a small drop of 180 gammas across stations 1.6W to 0.9W. Magnetic effects observed on the far western portion of the line appear to be due to additional geologic "noise" and otherwise bear no particular interpretable significance at this point, other than typical inter and/or intra-formational magnetic inhomogenieties.

Conclusions and Recommendations

The strongest response noted was that of a definite contrast in resistivities of basaltic rocks to the east and metamorphic rocks to the west. The effects to the west most likely coincide with high angle faults, faulting and or a fault zone with higher resistive quartzite on the east side and metamorphic rocks of lower resistivity on the west side of the fault zone. The fault zone appears fairly steep and most likely dipping west; technically, however, the data do not absolutely refute the possibility of east dip and that possibility should not be ignored.

PFE response is weak and therefore definite sulfide caused contrast is uncertain at least down to 1000 feet deep and probably down to 1500 feet deep or deeper. Very weak or minor IP effects may be due to a hidden shear zone, dike or series of dikes related or unrelated to the faulting.

Magnetic data show a large high to the east and this corresponds to surface outcropping of basalt. The western end of the line exhibits lower magnetic gradients, with a small drop in the magnetic field corresponding to the contact between the quartzite to the east and metamorphic rocks to the west.

SP results appear to reflect a weak oxidized zone, these results correspond in position with a small magnetic anomaly between the metamorphic rocks and the quartzite on the west side, the eastern end does not exactly fit the model put forth in figure 1. This could be due to materials oxidizing above the shallowest resolvable zone of IP observation effects usually obtainable with 1000 foot dipoles, which are as a rule, at least 200 feet deep or deeper.

Resistivity, PFE, and SP results show only weak or minor anomalism, while the magnetics does show strong anomalism but only over known basalt and that effect was to be anticipated.

If results from this survey correlate with the GEONICS IP survey, and reported drilling, we do not recommend any further geophysics at this time.

If such additional information were made available, along with any other existing geologic data such as surface mapping, photo geology, etc., other conclusions and recommendations might be reached regarding the significance of the results from this work, as well as from an over all point of view.

Acknowledgements

We wish to thank Mr. Hale Tognoni, Esquire, for his expeditious cooperation in providing us with the necessary base maps and prints and also Mr. Jeff Tognoni for field flagging of our base positions. All of this helped to maximize the efficiency of our efforts.

Respectfully submitted,

Heinrichs GEOEXploration Co., (Inc.)

Mark E. Anders

Mark E. Anders, Geophysicist, Geologist

Walter E. Heinrichs, Jr.

Walter E. Heinrichs, Jr.,
Geological Engineer - Geophysicist
P.E. & C.P.G.

GEOEX #1463

25 September 1980
P.O. Box 5964
Tucson, Arizona 85703
(602) 623-0578

COMMENTS ON DRILLING I.P. TARGETS

To maximize the probability that a recommended drill hole will intersect the source of an induced polarization anomaly, the following points should be considered:

1. The anomaly has been caused by some physical property, hopefully a polarizable body containing economically interesting metallic mineralization, and this property should be determined before abandoning the anomaly.

2. Location of drill holes should be made relative to the actual sending and receiving electrode positions as they exist on the ground.

3. Due to inherent limitations in the I.P. method, depth interpretations are only approximate and the determination of dip is severely limited, particularly for angles greater than 45°. Also, targets can generally be laterally resolved no finer than the station spacing (dipole length). Because of these limitations, targets less than one dipole spacing in width, particularly when steeply dipping or deeper than the dipole length, may be difficult to intersect. In these cases, several drill holes in a fence line should be considered. For the steeply dipping cases, angle drilling may also prove advantageous, mainly where the direction of dip can be geologically inferred and the drill hole oriented such that an optimum intersection of the zone of interest is obtained.

4. An observed anomaly can be the effect of a polarizable body laterally offset to the side of a line and therefore, if practical, drilling should be confined to those portions of the anomalous zones well defined by several lines. Also, it should be noted that a single line cannot define the strike direction of an elongate anomalous zone - another reason for utilizing several parallel lines.

5. Logging of the drill core must be done with special care to note the quantity of <u>all</u> possible polarizable material such as pyrite, graphite, magnetite, manganese oxides and clay minerals as well as the polarizable ore minerals. The anomalous source could conceivably be overlooked if the core is not carefully logged.

6. Typical sections of core representing the gross physical properties of material encountered in the drilling should be tested in the laboratory for their I.P. parameters, if there is some doubt about confirmation of the anomalous source.

CERTIFIED - RETURN RECEIPT REQUESTED

September 26, 1980

Wollastonite Mining Company (Inc.)
Suite 1260 Del Webb's TowneHouse
100 W. Clarendon Avenue
Phoenix, AZ 85013

Attention: Mr. Hale C. Tognoni, Esquire

Re: Wollastonite Copper
Prospect, Pima County
Arizona, GEOEX #1463

Dear Hale:

Enclosed are two copies of our report. Results were not very exciting. Naturally, we are curious to compare notes with your drilling especially if it is near enough and deep enough, etc. About the only thing left, if you're still not satisfied, would be a line using 1500 to 2000 foot dipoles. We understood that our line went right over one of your holes, but we failed to identify a hole site for sure along the line in the field and none are shown on the base map copies which we have.

If any more IP-resistivity work were to be done, we strongly recommend that extra special attention be paid to the electrode contacts with the ground, using much water, electrolite and multi-pits and/or stakes spread out over a sizeable area. We found out right away that the typical or usual small pit as often used, was inadequate because of the relatively high-resistance of the ground surface connections, i.e.: what we call "stake" resistance. Certainly the single tiny pits we noted in the field apparently used by GEONICS(?), would appear to us to be marginal or sub-marginal for good quality assured data.

Let us know right away if there are any questions or, if we can be of further assistance in any way.

We enjoyed the brief visit with Jeff the day he stopped by. Our best to him, the rest of yours and, to yourself as well.

Sincerely,

Heinrichs GEOEXploration Co. (Inc.)

WEH:mt
Enclosures: Report 2
Statement 2

Walter E. Heinrichs, Jr.
Geological Engineer-Geophysicist

P.E. & C.P.G.

I. P. RECEIVER NOTES, JOB NO._____, AREA_____

LINE_____, HALF_____, SR._____, a = _____, BEARING_____

SENDER STA._____ = ELECTRODE NO._____, DATE_____

PAGE_____

HEINRICHS GEOEX

SEND											
RECEIVE											
MULTIPLIER											
PFE			+2.1/+1.9								
CUR. (AMPS)											
POINT NO.											
SEP. (n)											
H. F. MV											
DRIFT											
1.0 PFE $K_n/1000$											
0.3 PFE ρ_{CAL}											
0.1 PFE PFE_c											
3.0 MV $\rho/2\pi$											
DRIFT MCF											
S. P.											
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1963, AREA A10

LINE _____, HALF _____, SP. _____, a = _____, BEARING N W W

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE _____

HEINRICHS GEOEX

SEND	4.5	6.3	3.3	3.3	4.5	1.3	5.3	3.4	3.3	3.3	6.6
RECEIVE	3.48	4.58	—	—	—	5.83	—	—	—	—	
MULTIPLIER	1.0	0.01	0.01	0.1	1.0	0.01	0.01	0.1	0.1	1.0	1.0
PFE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CUR. (AMPS)	3	6.0	2.3	2.0	3.0	6.0	8.3	2.0	3.0	1.0	
POINT NO.											
SEP. (n)	1	5	4	3	2	6	5	4	3		
H. F. MV	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DRIFT	0.0	1.0	—	0.3	0.6			2.0	0.3		
1.0 PFE $K_n/1000$											
0.3 PFE ρ_{CAL}											
0.1 PFE PFE_c											
3.0 MV $\rho/2\pi$	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DRIFT MCF	5.0	3.5	3.2	1.6	1.0	3.2	2.7	1.4	9		
S. P.		-0.4				4.01					
NOISE		0.3d				1.2	0.4d				
POT RES.		1.5				5.0					
CULT & CMTS						0.3d	2.3				

I. P. RECEIVER NOTES, JOB NO. 1463, AREA A10

LINE _____, HALF _____, SP. 1, a = 1000, BEARING N80E

SENDER STA. 0 = ELECTRODE NO. 3, DATE 29-4-80

PAGE 2

HEINRICHS GEOEX

SEND		1-2	1-3	4-5	2-4	4-5	3-4	2-3	4-5	3-4	2
RECEIVE			2-1	1-2		2-3			3-4		
MULTIPLIER		1.0			1.0	0.1	1.0	1.0	0.1	0.1	1.0
PFE					+1.2	+1.7	+1.2	+1.4	+2.0	+1.2	+1.3
CUR. (AMPS)		1.0			2.0	2.0	2.0	1.0	3.0	2.0	2.0
POINT NO.											
SEP. (n)		1	2	1	3	2	1		4	3	2
H. F. MV											
DRIFT											
1.0 PFE $K_n/1000$											
0.3 PFE ρ_{CAL}											
0.1 PFE PFE_c											
3.0 MV $\rho/2\pi$											
DRIFT MCF											
S. P.		-20.1	+31.8		17.1				+13.6		
NOISE											
POT RES.		160	40		15				22		
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1463, AREA Ajo

LINE 1, HALF W, SP. 1, a = 1000, BEARING N80W

SENDER STA. 0 = ELECTRODE NO. 3, DATE 9-4-80

PAGE 4

HEINRICHS GEOEX

SEND	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	[illegible]
RECEIVE	3-4W	4-5W	—	—	—	5-6W	[illegible]	—	—	
MULTIPLIER	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
PFE	+0.8	2.0	[illegible]	+1.4	+1.0	+3.1	+2.0	+1.6	+1.6	[illegible]
CUR. (AMPS)	1.0	3.0	2.0	2.0	1.0	3.0	3.3	2.0	1.5	1.0
POINT NO.										
SEP. (n)	1	5	4	3	2	6	5	4	3	
H. F. MV	[illegible]	[illegible]	[illegible]	4.80	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
DRIFT	[illegible]	[illegible]	[illegible]	+0.2	0.0	0.0	[illegible]	[illegible]	[illegible]	[illegible]
1.0 PFE $K_n/1000$										
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	92	82	94	[illegible]	[illegible]	24	23	[illegible]	[illegible]	
DRIFT MCF	9	23	19	19	14	25	22	25	25	
S. P.		+22.4				-6.4				
NOISE										
POT RES.		22				3				
CULT & CMTS										

I. P. SENDER NOTES

JOB NO. 1462 AREA Ajo

LINE 1, HALF E, SP. 1, DATE SEP 3 1980

PAGE 1

HEINRICHS GEOEX

SEND	1-2	1-2	2-3	1-2	2-3	3-4	1-2	2-3	3-4	4-5
RECEIVE	0-1E	1-2	→	2-3	→	→	3-4	→	→	→
RANGE	*	*	180V				660V			
VOLTAGE	670	640	~~570~~	2[illegible]V	180V	955	~~[illegible]~~	180V	955V	565
CURRENT	[illegible]	[illegible]	[illegible]	[illegible]	3A	20	[illegible]	[illegible]	[illegible]	[illegible]
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
RECEIVE	4-5	→	→	→	5-6	→	→	→		
RANGE						175				
VOLTAGE	620	175	950	560	640	~~570~~	930	545		
CURRENT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		

FREQUENCIES	1.0 0.1 HZ		
SENDER NO.	6644	POWER UNIT ID	
OPERATOR	[illegible]		
RECEIVER NO.	206431	HOURS RUN	
OPERATOR	[illegible]		

COMMENTS: 4-5 1 AMP CAL 3.0 HZ 1.3 HZ

195V

V 3.0 0.3 HZ

4-5 1 AMP CAL 1.0 - 0.1 HZ

125V

* 3.0 1.1 1.0 HZ

I. P. SENDER NOTES

PAGE 2

HEINRICHS GEOEX

JOB No. 1463 AREA Ajo

LINE 1, HALF W, SP. 1, DATE SEP 4 1980

SEND	4-5	4-5	3-4	4-5	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE	0-1 WA	1-2 →	→	2-3	→	→	3-4	→	→	→
RANGE										
VOLTAGE	N/A	N/A	760	525	755	510	520	750	1000	610
CURRENT			2 AMPS	3 AMPS	2 AMPS	1 AMP	3 AMPS	2 AMPS	2 AMPS	1 AMP
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	4-5	→	→	→	5-6	→	→	→		
RANGE										
VOLTAGE	515	735	1000	610	515	725	1000	935		
CURRENT	3 AMPS	2 AMPS	2 AMPS	1 AMP	3 AMPS	2 AMPS	2 AMPS	1.5 AMP		

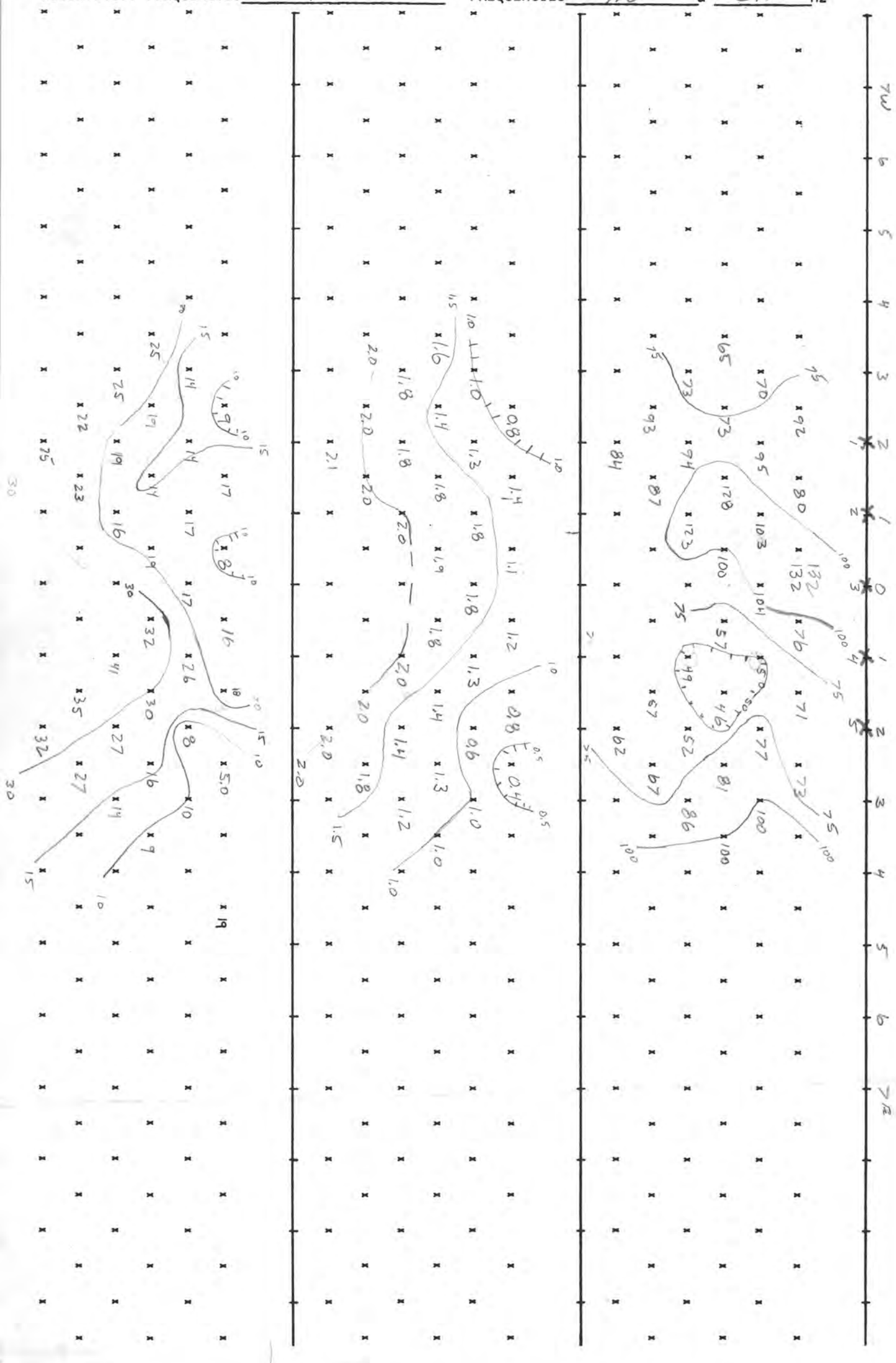
FREQUENCIES 1.0 - 0.1 HZ		COMMENTS: CAL 4-5 1 AMP 1.0 - 0.1 HZ 170V
SENDER No. 6644	POWER UNIT ID	
OPERATOR SWANSON		CAL 4-5 1 AMP 1.0 - 0.1 HZ 125V
RECEIVER No. 20693R	HOURS RUN	
OPERATOR ANDERS		

HEINRICHS GEOEXPLORATION COMPANY

806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1463 CLIENT Wollastonite Mining

DATE Sept 8 1980 AREA Ajo

LINE# 1 SP 1 a= 1000 BEARING N 80E

RESISTIVITY FREQUENCIES 1.0 FREQUENCIES 1.0 & 0.1 Hz