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

1.0 vs 0.3 hz FRIESTAD INT. 1.9115 X 39.8 $\frac{\Delta V}{I}$

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE ______

LINE ______, HALF ______, SP. ______, a = ______, BEARING ______

HEINRICHS GEOEX

SENDER STA. ______ = ELECTRODE NO. ______, DATE 7/22/76

		#1	#2								
SEND		QTZ VEIN	GALENA	CAL							
RECEIVE		w/ Fe_3O_4?	in QTZ								
MULTIPLIER		100	100								
PFE		7.8	6.5	-0.3							
CUR. (AMPS)		3 μa	9 μa								
POINT NO.											
SEP. (n)											
H. F. MV		75.1	59.3								
DRIFT											
1.0 PFE	K_n/1000	8.1	6.8								
0.3 PFE	ρ_{CAL}			1,000							
0.1 PFE	PFE_C	15.5	13.0		PFE / Decade						
3.0 MV	$\rho/2\pi$	1700	600		ρ in ohm-meters						
DRIFT	MCF	9	22								
S. P.	L	1.2" X 3	1.1 X 3								
NOISE	A	2.4 X 1.3"	~4 in²								
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. ________, AREA ______________________________ PAGE ________

LINE ________, HALF ________, SP. ________, a = ________, BEARING ______________________________

SENDER STA. ________ = ELECTRODE NO. ________, DATE ______________________________

HEINRICHS GEOEX

SEND											
RECEIVE											
MULTIPLIER											
PFE											
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											

B-120-67, Ariz

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

compilation

MINERAL MTN. QUADRANGLE
ARIZONA–PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

33°07'30" 111°15' 710 000 FEET 12'30" (NORTH BUTTE) 3750 II SW R. 11 E. 10' R. 12 E. 487000m E. 33°07'30" 111°07'30"

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1965

(GRAYBACK) 3750 II SE

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

GN MN 0°06' 2 MILS 14° 249 MILS

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ARIZONA

QUADRANGLE LOCATION

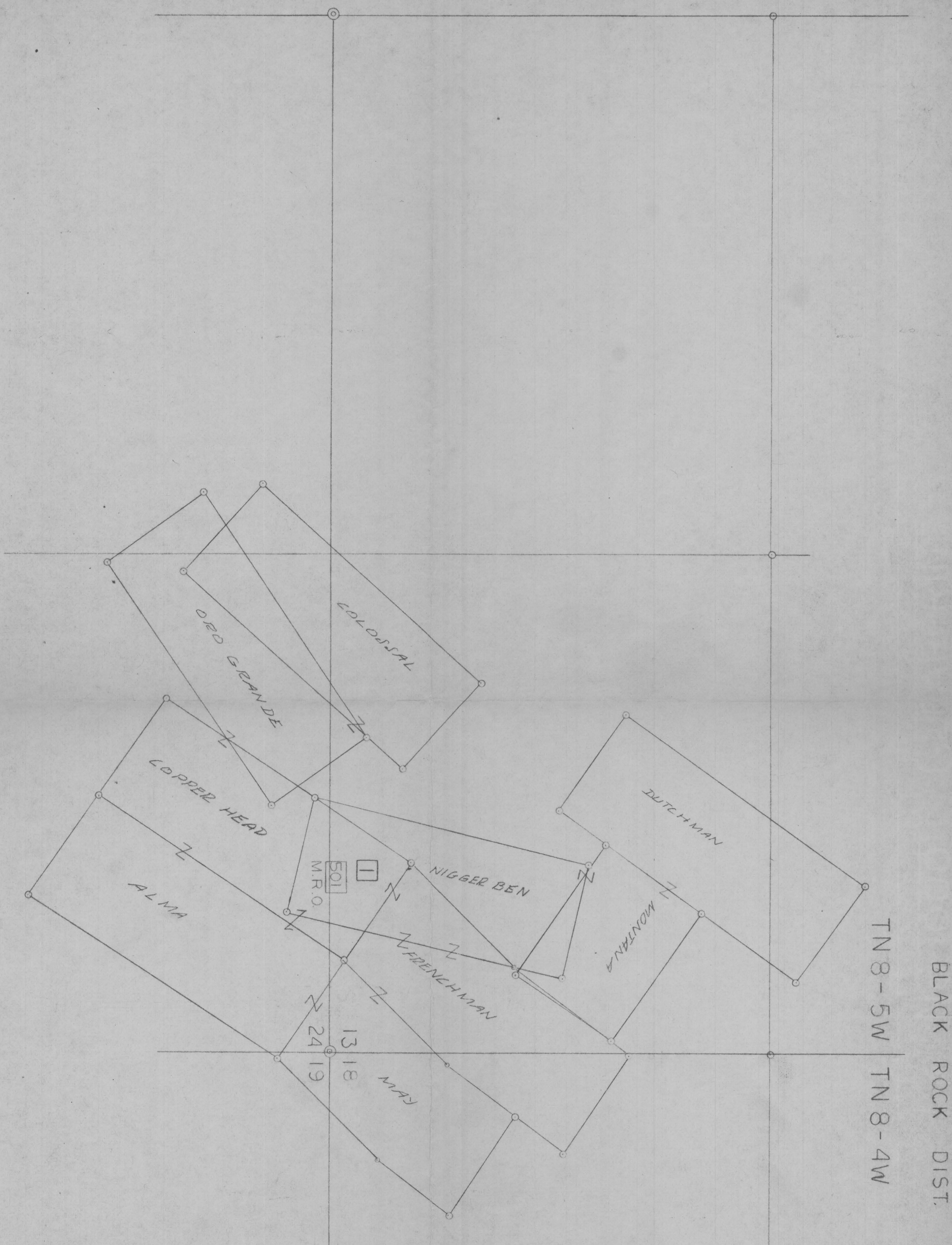
ROAD CLASSIFICATION

Unimproved dirt

MINERAL MTN., ARIZ.
N3307.5—W11107.5/7.5

1964

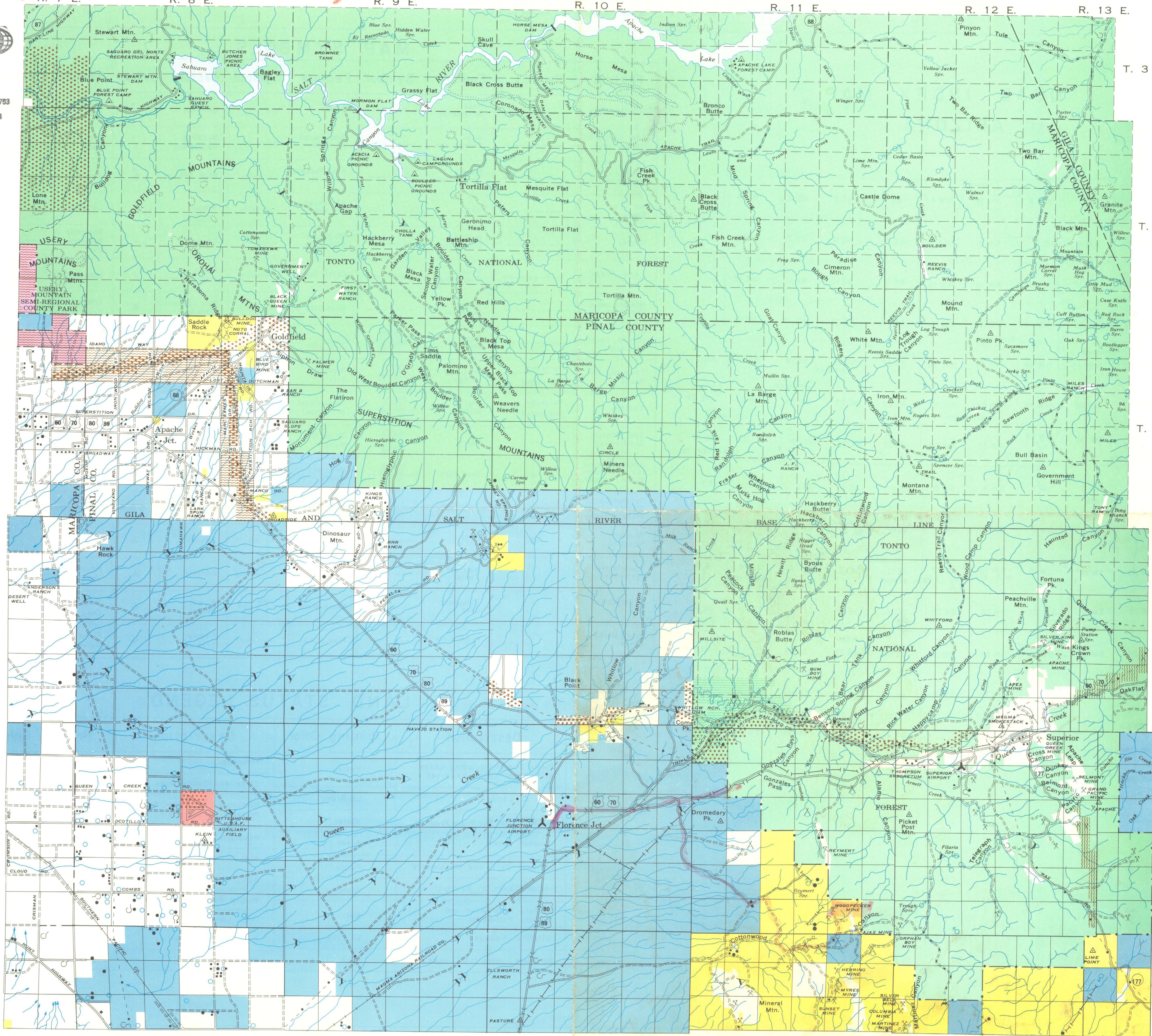
AMS 3750 II NW–SERIES V898



ASSESSOR'S RECORD MAP Sec. 13/24 Twp. 8 R 5W

BUREAU OF LAND MANAGEMENT

ARIZONA



SCALE ½" = 1 MILE

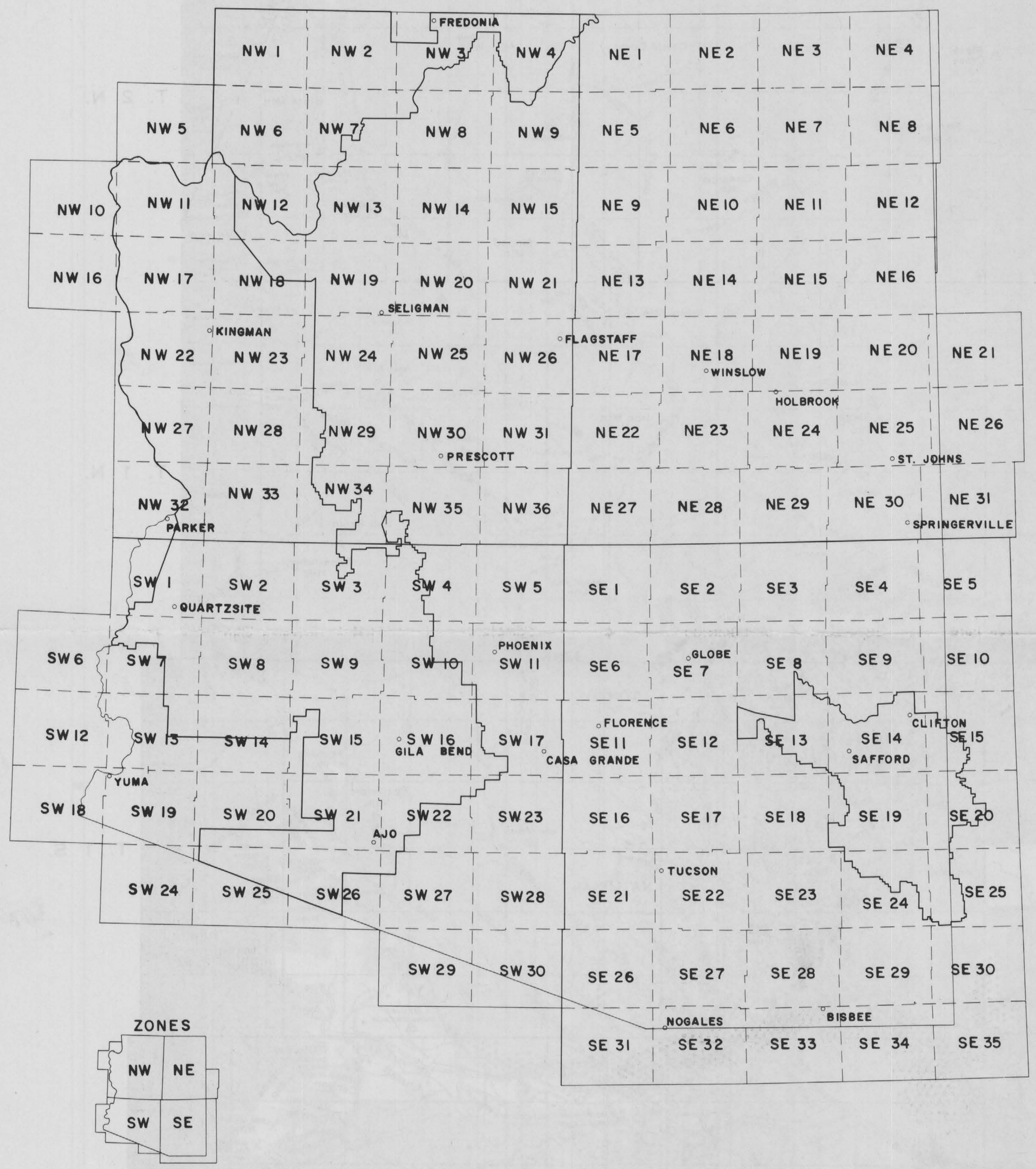
1964

SE 6

GPO 847-099

COLOR QUAD LEGEND

QUAD INDEX MAP
ARIZONA



MAP SYMBOLS

Feature	Symbol	Feature	Symbol	Feature	Symbol	Feature	Symbol	Feature	Symbol
District Bdy		Road All Weather		Fence		Buildings		Towns and Cities	
Adm Unit O&C Master Unit		Road Seasonal Use		Road Fenced one side		Buildings (Abandoned)		River or Large Stream	
Lands, Master Unit		Road "Jeep" Type		Road Fenced both sides		BLM Office		Stream	
Nat'l or State		Trail		RR Fenced one side		School		Large Dam	
County		Railroad Double Track		RR Fenced both sides		Church		Reservoir or Retention Dam	
Land Grant		Railroad Single Track		Cattle Guard		Radio Installation		Lake or Pond	
Miscellaneous (Res., etc.)		Railroad Abandoned		Road Gate		Fire Lookout (Primary)		Intermittant Lake or Pond	
Park (State, County or Local)		Road Bridge		Corral		Fire Lookout (Secondary)		Dry Lake or Pond	
Township and Range	Surveyed Protracted	Railroad Bridge		Recreation Site		Fire Tool Cache		Marsh	
Section	Surveyed Protracted	Foot Bridge		Tanks-(label as to type)	Small Large	Shelter		Spring	
Sec., Status Subdivision		Ferry		Oil or Gas Wells	Inactive Active	Cliff Dwelling		Improved Spring	
Section Corner (Existent, found, photo ID positive)		Road Ford		Mine or Quarry		Ruins Small Large	Ruins Ruins	Well	
Section Corner (Recognized, found, photo ID positive)		Trail Ford		US Mineral or Location Monument		Cemetery	CEM	Artesian Well	
Boundary Monument		Road Tunnel		Aerial Photo Center (position & ID)	1-3	Sawmill		Windmill	
Route Marker Interstate		Railroad Tunnel		Triangulation Station	Dog	Airfield		Aqueduct Tunnel	
Route Marker U.S.		Telephone Line		Bench Mark	BM × 134	Airway Beacon		Ditch or Canal	
Route Marker State		Power Line		Pipe Line		Gaging Station		Flume or Aqueduct	

LAND STATUS LEGEND

Description	Printing Color	Description	Printing Color
Public Domain (Including Lands of National Land Reserve)	Yellow	Patented	Blank
O & C Lands	Lt. Green	State and Subdivisions	Dk. Blue
CBWR Coos Bay Wagon Road	Violet	Reclamation and Water Power Projects Withdrawal	Brown Dots
National Forest	Green	Powersite Withdrawal	Brown
National Parks and Monuments	Purple	BLM Withdrawal	Brown
Indian Lands or Reservation	Orange	AEC Withdrawal	Brown
Military Reservation and Military Withdrawal	Red	Public Water Reserve	Brown
Wildlife Refuge	Lt. Blue	O & C Lands Adm. by U. S. F. S.	Green
Bankhead - Jones L.U. Lands	Pink	Radio & Air Facilities	Green
		Miscellaneous	Green

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SAM POWELL PEAK QUADRANGLE
ARIZONA—YAVAPAI CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1968. Field checked 1969

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather

ARIZONA
QUADRANGLE LOCATION

SAM POWELL PEAK, ARIZ.
N3400—W11237.5/7.5

1969

AMS 3452 II SW—SERIES V898

HEINRICHS GEOEXPLORATION COMPANY

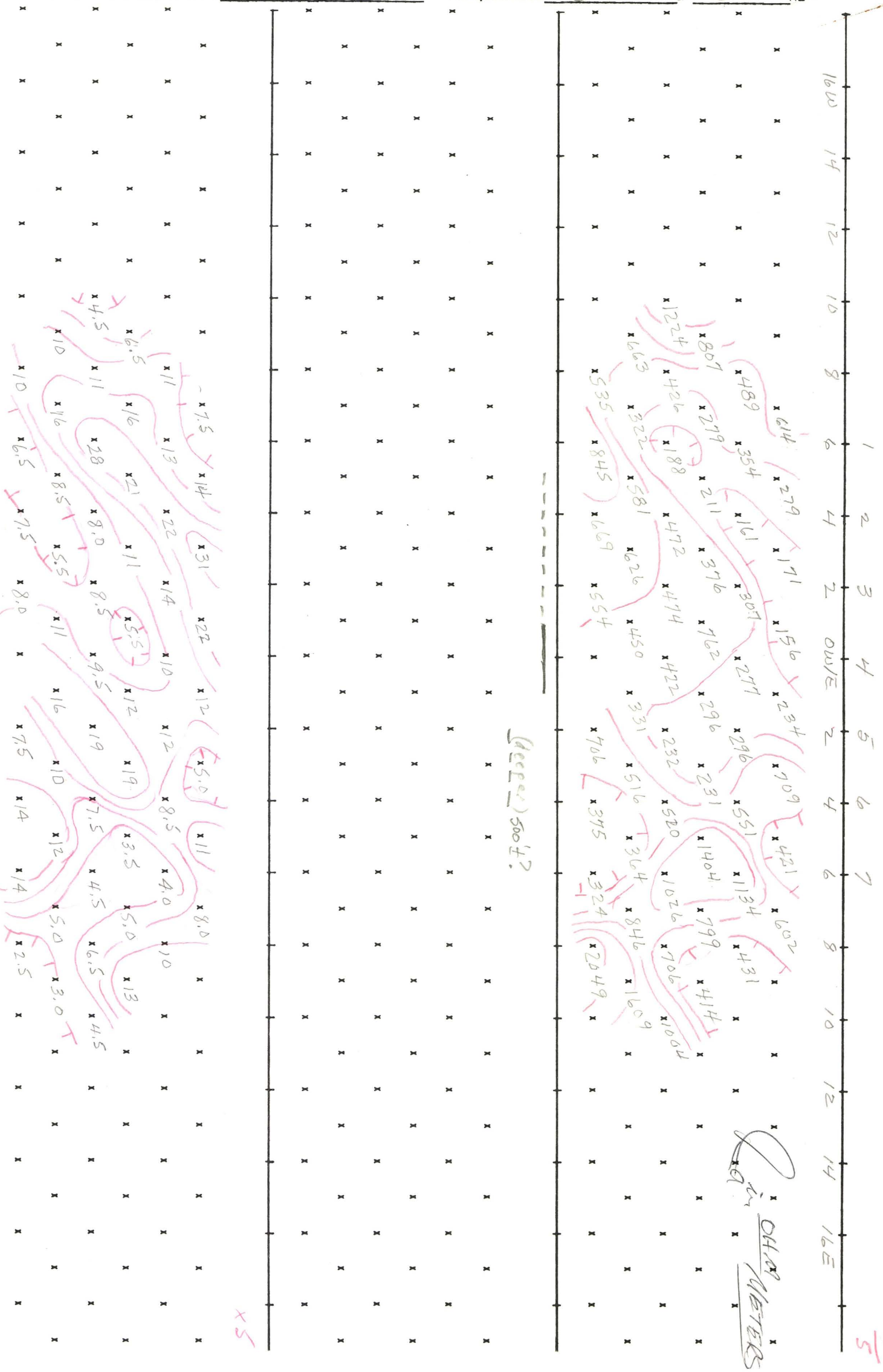
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT Friestad Enterprises

DATE 20 JUN 76 AREA WOODPECKER MINE

LINE# 2 SP 1 a= 200' BEARING N 75 E

RESISTIVITY FREQUENCIES 3.0 FREQUENCIES 0.3 & 3.0 Hz



HEINRICHS GEOEXPLORATION COMPANY

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

JOB # 1102 CLIENT

DATE 6-20-76 AREA Woodpecker Mine

LINE# 2 SP 1 a= 200' BEARING N75°E

RESISTIVITY FREQUENCIES FREQUENCIES 3.0 & 0.3 Hz

HEINRICHS GEOEXPLORATION COMPANY

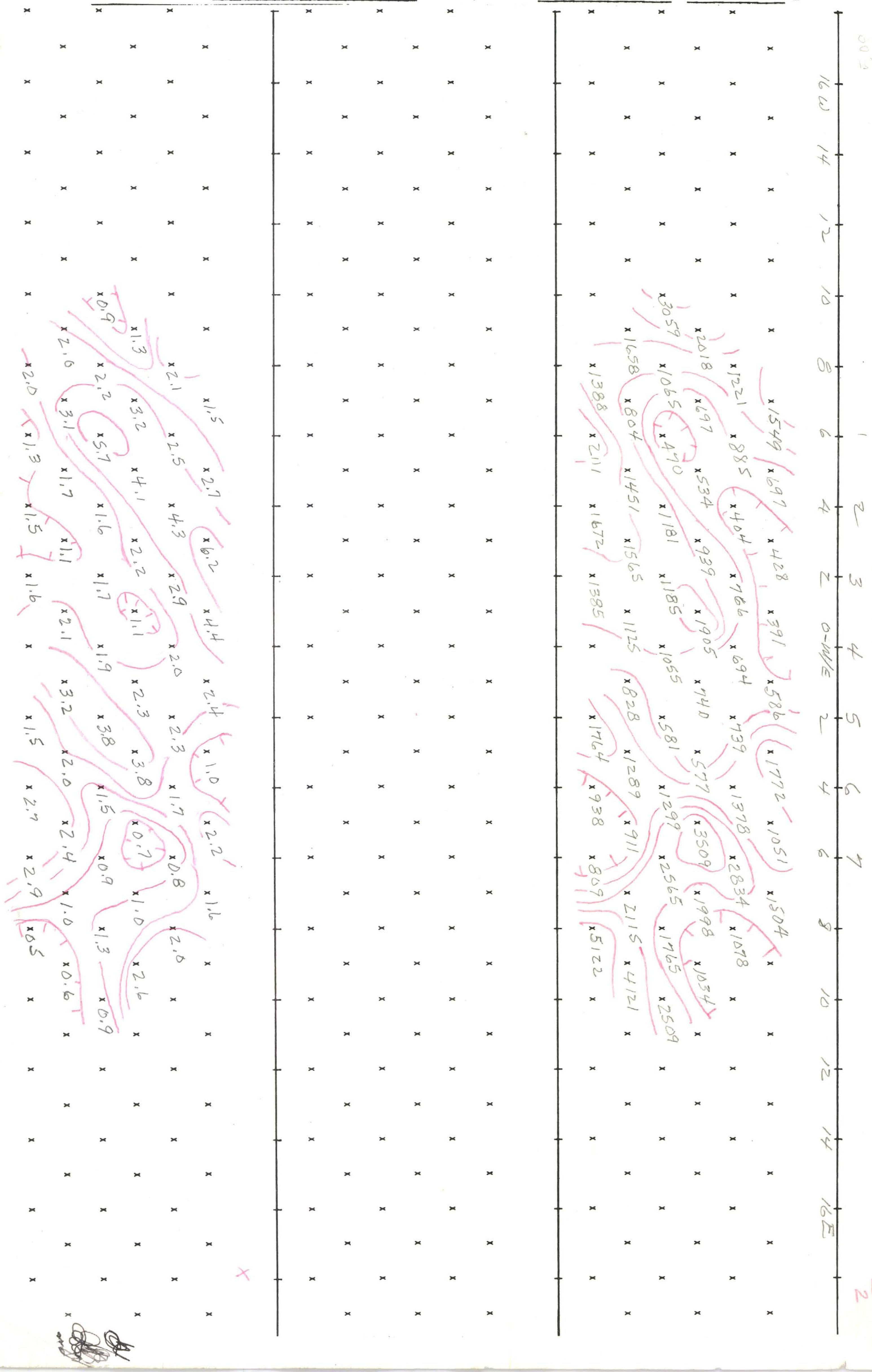
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT ____

DATE ____ AREA ____

LINE# 2 SP 1 a= ____ BEARING ____

RESISTIVITY FREQUENCIES ____ FREQUENCIES ____ & ____ Hz



2

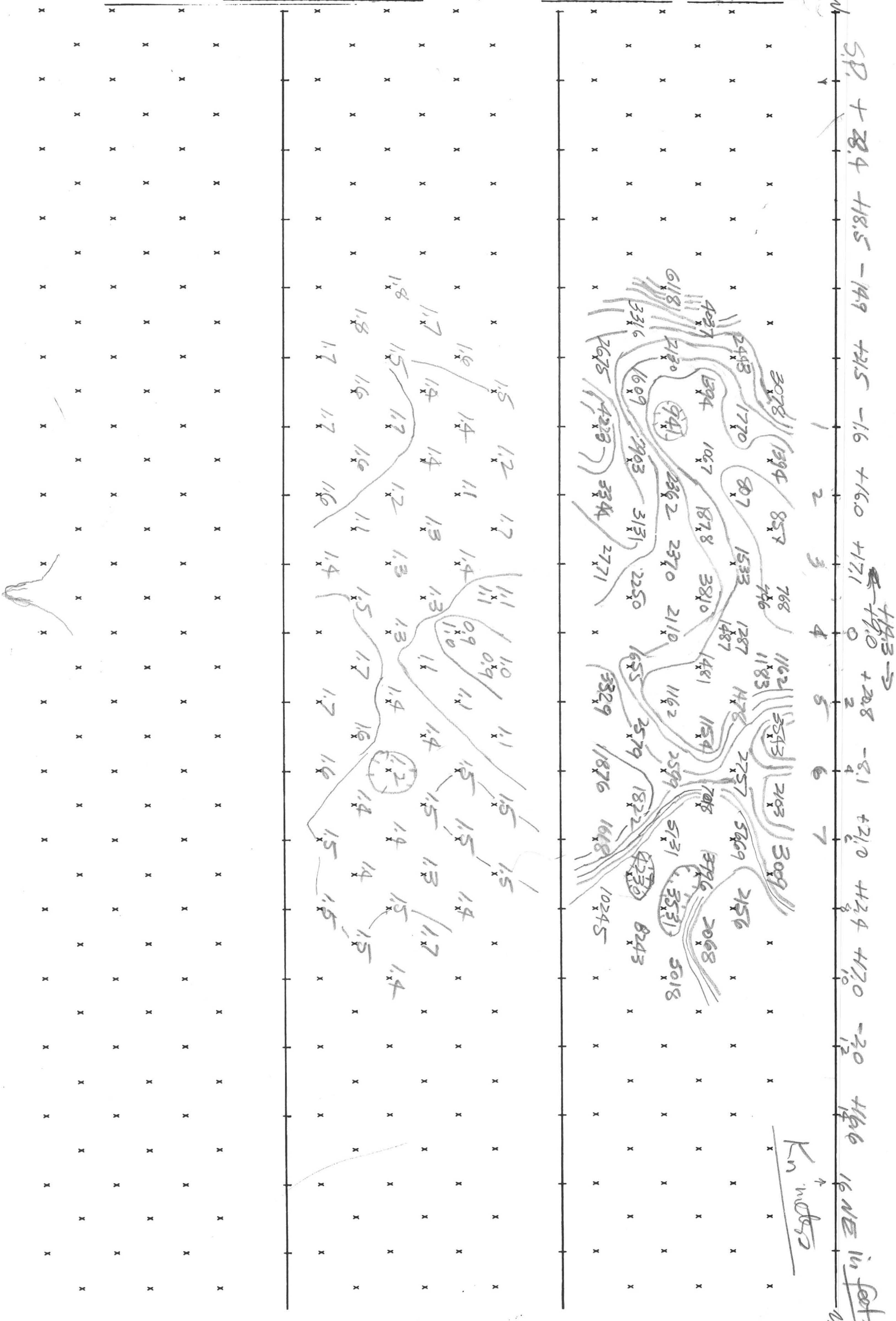
HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT

DATE 6/20/76 AREA

LINE# 2 SP 1 a= 200' BEARING

RESISTIVITY FREQUENCIES 3.0 Hz FREQUENCIES 0.3 & 3.0 Hz



HEINRICHS GEOEXPLORATION COMPANY

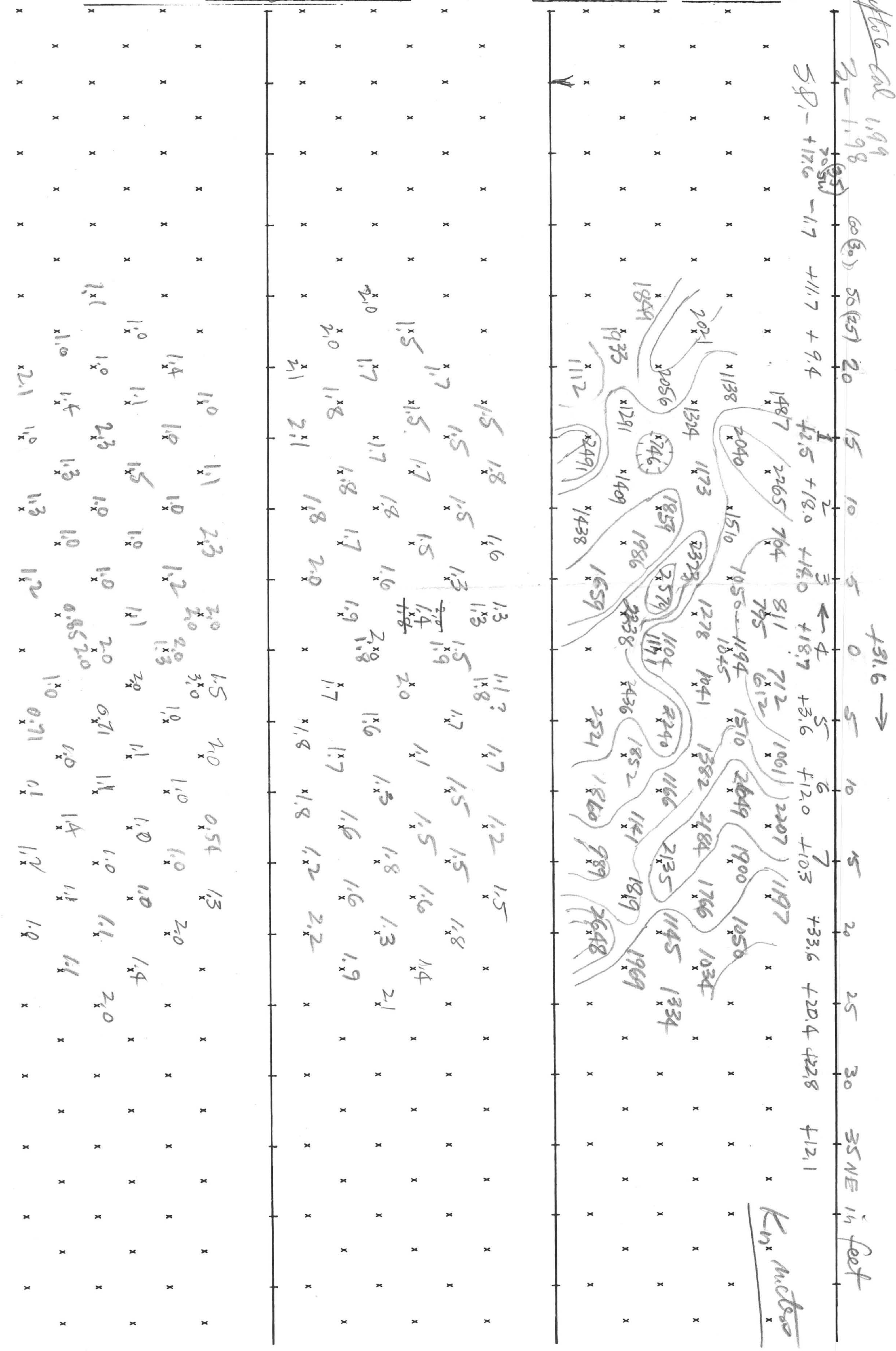
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT

DATE 8/18/19/76 AREA

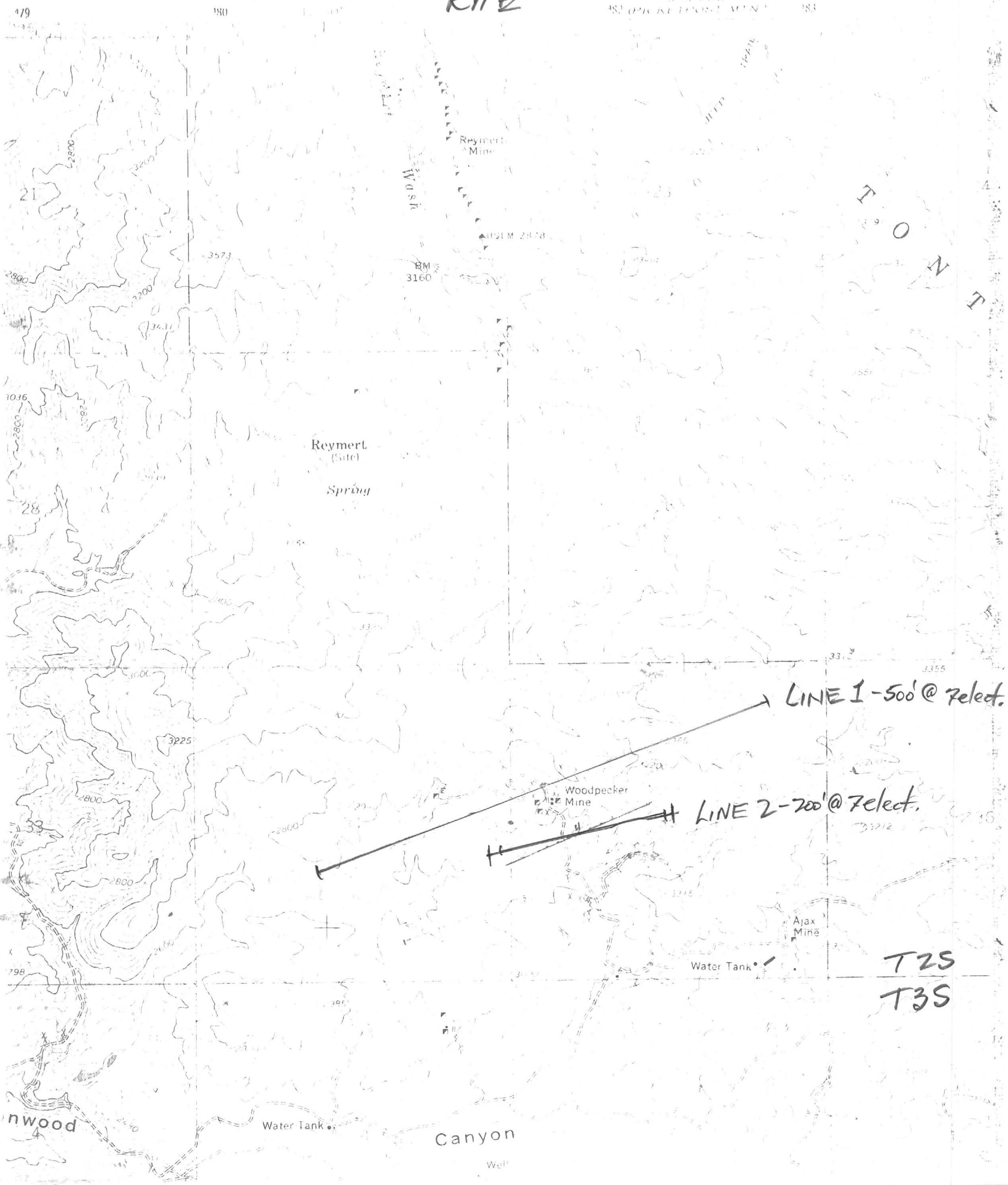
LINE# 1 SP 1 a= 500 feet BEARING N70°E

RESISTIVITY FREQUENCIES 3.0 FREQUENCIES 0.3 & 3.0 Hz



Mineral Mtn Quad Pinal Co.

R11E



HEINRICHS GEOEXPLORATION COMPANY

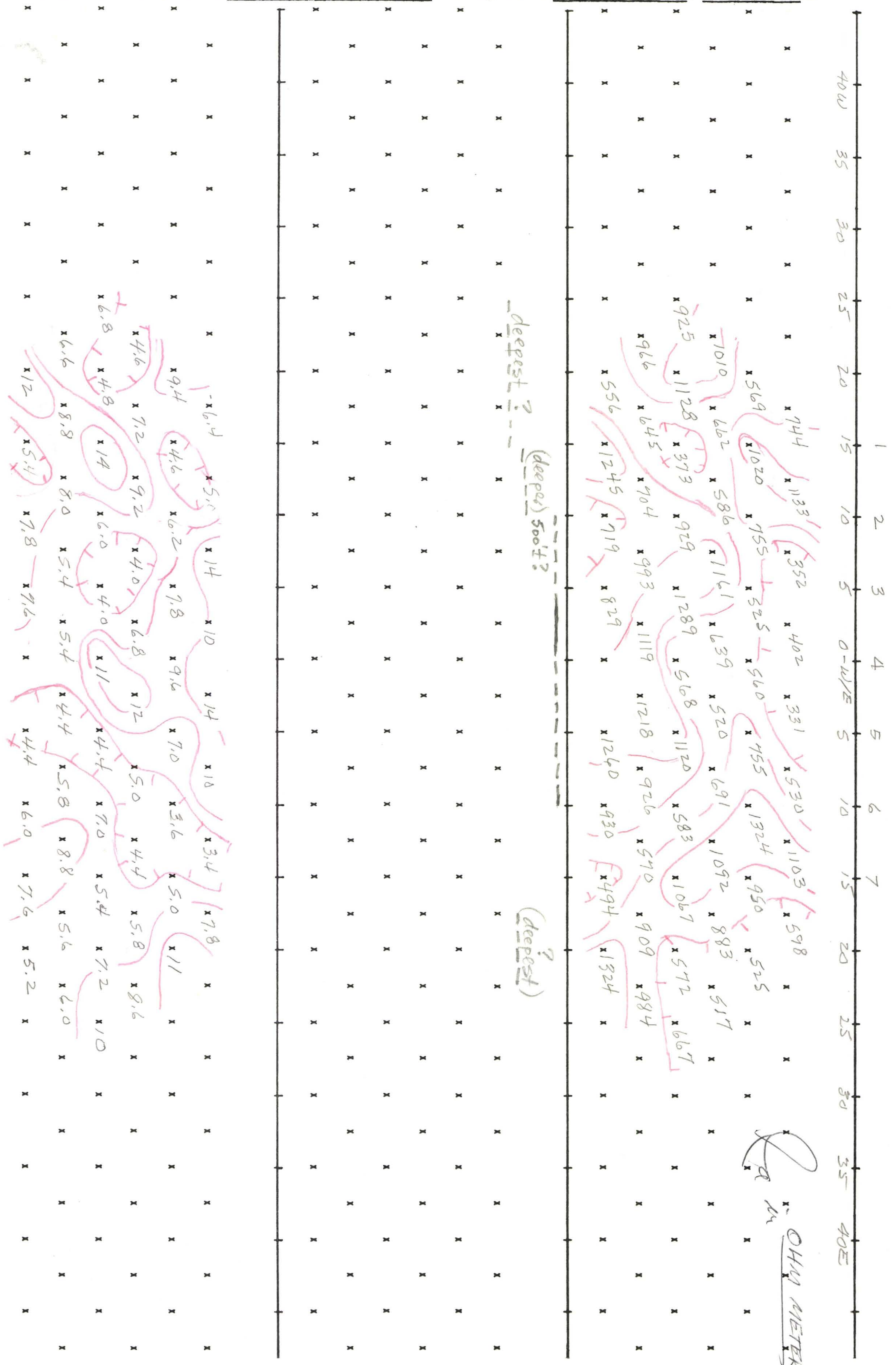
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT Friestad Enterprises

DATE 6/18-19/76 AREA Woodpecker Mine

LINE# 1 SP 1 a= 500 feet BEARING N 70 E

RESISTIVITY FREQUENCIES 3.0 FREQUENCIES 0.3 & 3.0 Hz



HEINRICHS GEOEXPLORATION COMPANY

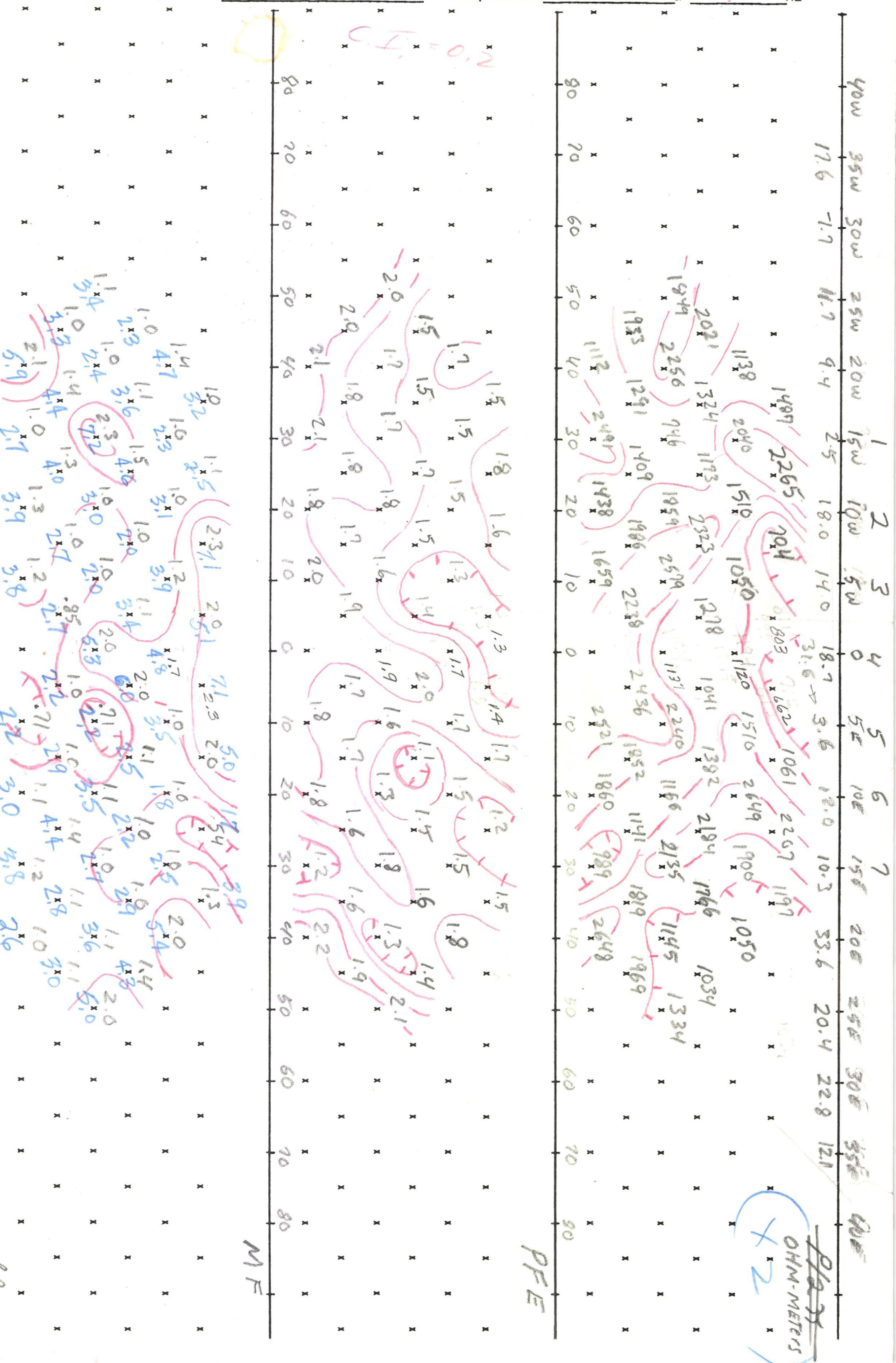
806 W. GRANT RD., P.O. BOX 5964 TUCSON, ARIZ. 85703. PH: (602) 623-0578

JOB # 1102 CLIENT FRED Friestad

DATE 6-19-76 AREA Woodpecker Mine

LINE# 1 SP 1 a= 500' BEARING N 70°E

RESISTIVITY FREQUENCIES 3.0 FREQUENCIES 0.3 & 3.0 Hz



I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 1

HEINRICHS GEOEX

LINE 2, HALF W, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND	5-6	4-5	5-6	3-4	4-5	5-6	2-3	3-4	4-5	4-5
RECEIVE	0-.2W	.2-.4W	→	.4-.6W	→	→	.6-.8W	→	→	CAL
MULTIPLIER	100	10	10	100	10	10	100	10	10	10
PFE	1.0	1.1	0.9	1.7	1.4	1.3	1.2	1.1	1.3	-0.1
CUR. (AMPS)	5	6	5	8	6	5	6	8	6	2
POINT NO.										
SEP. (n)	1	1	2	1	2	3	1	2	3	
H. F. MV	1000	793	277	1180	396	328	1440	278	194	199
DRIFT	0.1	0.0	0.0	0.0	0.6	0.1	0.0	0.1	0.0	0.1
1.0 PFE Kn/1000	5.75	5.75	23.0	5.75	23.0	57.5	5.75	23.0	57.5	
0.3 PFE ρCAL										
0.1 PFE PFEc										
3.0 MV ρ/2π	1162	768	1287	857	1533	3810	1394	807	1878	
DRIFT MCF	1.1	1.4	1.1	2.0	1.0	.34	1.0	1.4	1.1	
S. P.	9.0	17.1		16.0			-1.6			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 2

HEINRICHS GEOEX

LINE 2, HALF W, SP. 1, a = 200', BEARING N.75°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2	1-2
RECEIVE	→	→	.8-1.0W	→	→	→	→	→	1.0-1.2W	CAL
MULTIPLIER	10	1.0	100	10	10	10	1.0	1.0	10	
PFE	1.3	1.5	1.5	1.4	1.4	1.2	1.1	1.4	1.6	-0.1
CUR. (AMPS)	5	5	6	6	8	6	5	5	6	2
POINT NO.										
SEP. (n)	4	5	1	2	3	4	5	6	2	
H. F. MV	102	55.4	3180	457	147	122	77.1	42.6	631	198
DRIFT	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1
1.0 PFE Kn/1000	115	201	5.75	23.0	57.5	115	201	322	23.0	
0.3 PFE ρCAL										
0.1 PFE PFEc										
3.0 MV ρ/2π	2370	2250	3078	1770	1067	2362	3131	2771	2443	
DRIFT MCF	1.0	1.0	.51	1.1	1.3	1.0	.35	1.0	1.0	
S. P.			21.5						-14.9	Fluct
NOISE										0-.01
POT RES.										PFE
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 1102, AREA Wood Pecker Mine

LINE 2, HALF W, SP. 1, a = 200', BEARING N75°E

SENDER STA. 0 = ELECTRODE No. 4, DATE 6-20-76

PAGE 3

HEINRICHS GEOEX

SEND		2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE		→				1.2-1.4W	→			1.4-1.6W	—
MULTIPLIER		10	1.0	1.0	1.0	10	10	1.0	1.0	10	1.0
PFE		1.4	1.7	1.6	1.6	1.7	1.5	1.6	1.7	1.8	1.8
CUR. (AMPS)		6	8	6	5	6	6	8	6	6	6
POINT No.											
SEP. (n)		3	4	5	6	3	4	5	6	4	5
H. F. Mv		144	64.8	85.8	51.4	417	110	63.4	77.9	316	98.0
DRIFT		0.1	0.1	0.0	0.1	0.2	0.2	0.0	0.0	0.4	0.1
1.0 PFE	$K_n/1000$	57.5	115	201	322	57.5	115	201	322	115	201
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	1344	941	2903	3344	4037	2130	1609	4223	6118	3316
DRIFT	MCF	1.0	2.0	1.0	1.0	.42	1.0	1.0	.40	.30	1.0
S. P.						18.5				28.4	
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 1102, AREA Woodpecker Mine

LINE 2, HALF E, SP. 1, a = 200', BEARING N75°E

SENDER STA. 0 = ELECTRODE No. 4, DATE 6-20-76

PAGE 4

HEINRICHS GEOEX

SEND		3-4		2-4	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE		→		CAL	0-.2E	.2-.4E	→	.4-.6E	→		
MULTIPLIER		1.0		10	10	100	10	100	10	10	10
PFE		1.7		-0.1	1.1	0.9	1.0	1.1	1.1	1.1	1.3
CUR. (AMPS)		8		2	6	8	6	6	8	6	6
POINT No.											
SEP. (n)		6			1	1	2	1	2	3	4
H. F. Mv		65.8		198	822	1630	384	3660	509	153	109
DRIFT		0.2		0.0	0.6	0.1	0.0	-0.2	0.0	-0.1	0.0
1.0 PFE	$K_n/1000$	322			5.75	5.75	23.0	5.75	230	57.5	115
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	2675			796	1183	1487	3543	1478	1481	2110
DRIFT	MCF	1.0			1.4	1.0	1.0	.31	1.0	1.0	1.0
S. P.					14.3	20.8		-8.1			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 1102, AREA Woodpecker Mine

PAGE 5

LINE 2, HALF E, SP. 1, a = 200', BEARING N 75°E

SENDER STA. 1 = ELECTRODE No. 4, DATE 6-20-76

HEINRICHS GEOEX

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE	6-8E	—————	—————	—————	————→	8-10E	—————	—————	—————	CAL
MULTIPLIER	100	10	10	1.0	1.0	100	100	10	10	10
PFE	1.6	1.5	1.4	1.4	1.7	1.5	1.5	1.5	1.2	0.0
CUR. (AMPS)	5	6	8	6	6	5	5	6	8	2
POINT No.										
SEP. (n)	1	2	3	4	5	1	2	3	4	
H. F. Mv	1800	712	159	60.0	48.9	2590	1220	725	179	198
DRIFT	0.1	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.1	0.0
1.0 PFE / K_n/1000	5.75	23.0	57.5	115	201	5.75	23.0	57.5	115	
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$	2103	2757	1154	1162	1655	3009	5669	7018	2599	
DRIFT / MCF	1.0	1.0	1.2	1.2	1.0	1.0	.26	.21	.46	
S. P.	21.0					12.4				
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 1102, AREA Woodpecker Mine

PAGE 6

LINE 2, HALF E, SP. 1, a = 200', BEARING N-75°-E

SENDER STA. 0 = ELECTRODE No. 4, DATE 6-20-76

HEINRICHS GEOEX

SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	—————	————→	1.0-1.2E	—————	—————	—————	————→	1.2-1.4E	—————	—————
MULTIPLIER	1.0	1.0	10	10	10	1.0	1.0	10	10	10
PFE	1.6	1.7	1.4	1.3	1.4	1.4	1.6	1.7	1.5	1.4
CUR. (AMPS)	6	6	5	5	6	8	6	5	5	6
POINT No.										
SEP. (n)	5	6	2	3	4	5	6	3	4	5
H. F. Mv	76.2	65.1	464	344	265	71.8	34.6	178	152	125
DRIFT	0.0	0.0	0.0	0.0	0.2	-0.1	0.1	0.2	0.2	0.0
1.0 PFE / K_n/1000	201	322	23.0	57.5	115	201	322	57.5	115	201
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$	2579	3529	2156	3996	5131	1822	1876	2068	3531	4230
DRIFT / MCF	1.0	1.0	1.0	.32	.30	1.0	1.0	1.0	.42	.33
S. P.			17.0					-2.0		
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 2, HALF E, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 7

HEINRICHS GEOEX

SEND	3-4	6-7	5-6	4-5						
RECEIVE	→	1.4-1.6E	→	→						
MULTIPLIER	1.0	10	10	10						
PFE	1.5	1.4	1.5	1.5						
CUR. (AMPS)	8	5	5	6						
POINT NO.										
SEP. (n)	6	4	5	6						
H. F. MV	39.8	216	203	189						
DRIFT	0.1	0.0	0.2	0.0						
1.0 PFE K_n/1000	322	115	201	322.						
0.3 PFE ρ_{CAL}										
0.1 PFE PFE$_c$										
3.0 MV $\rho/2\pi$	1618	5018	8243	10,245						
DRIFT MCF	1.0	.27	.18	.15						
S. P.		16.6								
NOISE										
POT RES.										
CULT & CMTS										

I. P. SENDER NOTES

JOB No. 1102 AREA Woodpecker Mine

LINE 2, HALF W, SP. 1, DATE 6-20-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	2-3	3-4	4-5	4-5
RECEIVE	0-.2W	.2-.4W	→	.4-.6W	—	→	.6-.8W	—	—	CAL
RANGE	20X250	20X300	20X250	20X400	20X300	20X250	20X300	20X400	20X300	10X200
VOLTAGE	600	430	600	380	430	600	430	380	430	200
CURRENT	5	6	5	8	6	5	6	8	6	2
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2	1-2
RECEIVE	—	→	.8-1.0W	—	—	—	—	→	1.0-1.2W	CAL
RANGE	20X250	20X250	20X300	20X300	20X400	20X300	20X250	20X250	20X300	10X200
VOLTAGE	590	600	480	430	380	430	580	590	480	190
CURRENT	5	5	6	6	8	6	5	5	6	2

FREQUENCIES 3.0 - 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR LANG	
RECEIVER No. 25705K	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOOD PECKER MINE

LINE 2, HALF W, SP. 1, DATE 6-20-76

PAGE 2

HEINRICHS GEOEX

SEND	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	—	—	—	→	1.2-1.4W	—	—	→	1.4-1.6W	—
RANGE	20X300	20X400	20X300	20X250	20X300	20X300	20X400	20X300	20X300	20X300
VOLTAGE	420	380	430	590	480	420	380	430	480	420
CURRENT	6	8	6	5	6	6	8	6	6	6
SEND	3-4		3-4	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE	→		CAL	0-.2E	.2-.4E	→	.4-.6E	—	—	→
RANGE	20X400		10X200	20X300	20X400	20X300	20X300	20X400	20X300	20X300
VOLTAGE	380		170	420	370	420	430	370	430	480
CURRENT	8		2	6	8	6	6	8	6	6

FREQUENCIES 3.0 - 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR V.S	
RECEIVER No. 25705-R	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

PAGE 3

HEINRICHS GEOEX

JOB NO. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE	6-.8E	→				.8-1.0E	→			CAL
RANGE	20X250	20X300	20X400	20X300	20X300	20X250	20X350	20X300	20X400	20X100
VOLTAGE	570	430	470	420	470	570	570	420	370	470
CURRENT	5	6	8	6	6	5	5	6	8	2
SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	→		1.0-1.2E	→				1.2-1.4E	→	
RANGE	20X300	20X300	20X250	20X250	20X300	20X400	20X300	20X250	20X250	20X300
VOLTAGE	420	470	570	570	420	450	420	570	570	420
CURRENT	6	6	5	5	6	8	6	5	6	6

FREQUENCIES	3.0, 0.3	
SENDER No. 267215	POWER UNIT ID	
OPERATOR V.S		
RECEIVER No. 25705-R	HOURS RUN	
OPERATOR R.R		

COMMENTS:

I. P. SENDER NOTES

PAGE 4

HEINRICHS GEOEX

JOB NO. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

SEND	3-4	6-7	5-6	4-5						
RECEIVE	→	1.4-1.6E	→							
RANGE	20X400	20X250	20X250	20X300						
VOLTAGE	370	570	570	420						
CURRENT	8	5	5	6						
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	3.0 0.3	
SENDER No. 267215	POWER UNIT ID	
OPERATOR V.S		
RECEIVER No. 25705-R	HOURS RUN	
OPERATOR R.R		

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 1

LINE 1, HALF W, SP. 1, a = 500, BEARING ~~N 70° E~~ S 70° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	6-7	2-3	3-4	3-4
RECEIVE	0-10W	10-20W	→	20-30W	→	→	→	30-40W	→	CAL
MULTIPLIER	10	10	10	10	10	10	1.0	100	10	10
PFE	1.1	1.3	1.5	1.6	1.3	1.4	1.8	1.8	1.5	0.0
CUR. (AMPS)	5	5	5	5	5	5	5	5	5	2
POINT NO.										
SEP. (n)	1	1	2	1	2	3	4	1	2	
H. F. Mv	613	698	257	606	226	110	47.3	1950	325	199
DRIFT	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.0
1.0 PFE $K_n/1000$	5.75	5.75	23.0	5.75	23.0	57.5	115	5.75	23.0	0-M
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										0-F
3.0 MV $\rho/2\pi$	712	811	1194	704	1050	1278	1104	2265	1510	
DRIFT MCF	1.5	2.0	1.3	2.3	1.2	1.1	2.0	1.0	1.0	
S. P.	-18.7	14.0	[illegible]	18.0				2.5		
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 2

LINE 1, HALF W, SP. 1, a = 500', BEARING S-70°W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

HEINRICHS GEOEX

SEND	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	→	→	→	40-50W	→	→	→	→	→	CAL
MULTIPLIER	10	10	1.0	100	10	1.0	1.0	1.0	1.0	10
PFE	1.5	1.6	1.9	1.5	1.5	1.7	1.8	1.7	2.0	0.0
CUR. (AMPS)	5	5	4	5	5	5	5	5	4	
POINT NO.										
SEP. (n)	3	4	5	1	2	3	4	5	6	
H. F. Mv	200	111	44.1	1280	439	101.0	80	48.9	20.4	197
DRIFT	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
1.0 PFE $K_n/1000$	57.5	115	201	5.75	23.0	57.5	115	201	322	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	2323	2579	2238	1487	2040	1173	1859	1986	1659	
DRIFT MCF	1.0	1.0	.85	1.0	1.0	1.5	1.0	1.0	1.2	
S. P.				9.4						
NOISE										
POT RES.										
CULT & CMTS										

PAGE 3

HEINRICHS GEOEX

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood pecker Mine

LINE 1, HALF W, SP. 1, a = 500', BEARING S-70°-W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

						1-2	2-3	3-4	4-5	1-2
SEND	1-2	2-3	3-4	4-5	5-6	60-70W →				70-80W
RECEIVE	50-60W →					10	1.0	1.0	1.0	1.0
MULTIPLIER	1.0	1.0	1.0	1.0	1.0	1.5	1.7	1.9	2.1	2.0
PFE	1.7	1.5	1.7	1.8	1.8	5	5	5	5	5
CUR. (AMPS)	5	5	5	5	5					
POINT NO.						3	4	5	6	4
SEP. (n)	2	3	4	5	6	174	97.1	31.8	38.3	79.6
H. F. MV	245	114	32.1	34.7	221	0.0	-0.1	0.0	0.1	0.2
DRIFT	0.2	0.1	0.1	0.0	0.0	57.5	115	201	322	115
1.0 PFE | K_n/1000	23.6	57.5	115	201	322					
0.3 PFE | P_{CAL}										
0.1 PFE | PFE_c										
3.0 MV | $P/2\pi$	1138	1324	746	1409	1438	2021	2256	1291	2491	1449
DRIFT | MCF	1.4	1.1	2.3	1.3	1.3	1.0	1.0	1.4	1.0	1.1
S. P.	11.7					-1.7				17.6
NOISE										
POT RES.										
CULT & CMTS										

PAGE 4

HEINRICHS GEOEX

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°-E

SENDER STA. 4 = ELECTRODE NO. 0, DATE 6-18-76

						2-3	3-4	2-3	4-5	3-4
SEND	2-3	3-4		4-5		0-10E	10-20E	→	20-30E	—
RECEIVE	→			CAL		10	10	10	10	10
MULTIPLIER	1.0	1.0		10		1.3	1.8	1.9	1.7	1.7
PFE	2.0	2.1		-0.1		5	5	5	5	5
CUR. (AMPS)	5	5								
POINT NO.						1	1	2	1	2
SEP. (n)	5	6		198		684	527	225	913	325
H. F. MV	47.6	17.1		0.0		0.0	0.4	0.6	0.2	0.4
DRIFT	0.1	0.2				5.75	5.75	23.0	5.75	23.0
1.0 PFE | K_n/1000	201	322								
0.3 PFE | P_{CAL}							1.6	1.6		1.5
0.1 PFE | PFE_c						795	612	1045	1061	1510
3.0 MV | $P/2\pi$	1933	1112				2.0	3.0	2.0	2.0	1.0
DRIFT | MCF	1.0	2.1				31.6	3.6		12.0	
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

HEINRICHS GEOEX

PAGE 5

SEND	2-3	1-2	5-6	4-5	3-4	2-3	1-2	6-7	5-6	6-7
RECEIVE	→	→	30-40E	→	→	→	→	40-50E	—	CAL
MULTIPLIER	1.0	1.0	100	10	10	1.0	1.0	100	10	10
PFE	2.0	2.0	1.2	1.5	1.1	1.6	1.7	1.5	1.5	-0.1
CUR. (AMPS)	5	5	5	5	5	5	5	5	5	
POINT NO.										
SEP. (n)	3	4	1	2	3	4	5	1	2	
H. F. MV	89.6	50.4	1900	590	119	96.4	60.0	1030	409	198
DRIFT	0.2	0.4	-0.1	0.1	0.0	0.0	0.0	-0.1	0.0	0.1
1.0 PFE $K_n/1000$	57.5	115	5.75	23.0	57.5	115	201	5.75	23.0	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c		1.8								
3.0 MV $\rho/2\pi$	1041	1171	2207	2649	1382	2240	2436	1197	1900	
DRIFT MCF	2.0	2.0	.54	1.0	1.1	.71	1.0	1.3	1.0	
S. P.			10.3					33.6		
NOISE										Final Drift 0-0.2
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 4 = ELECTRODE NO. 6, DATE 6-18-76

HEINRICHS GEOEX

PAGE 6

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7
RECEIVE	→	→	→	→	50-60E	→	→	→	→	60-70E
MULTIPLIER	10	1.0	1.0	1.0	10	10	1.0	1.0	1.0	
PFE	1.5	1.3	1.7	1.8	1.8	1.6	1.8	1.6	1.8	1.4
CUR. (AMPS)	5	5	5	4	5	5	5	5	5	5
POINT NO.										
SEP. (n)	3	4	5	6	2	3	4	5	6	3
H. F. MV	189	50.2	45.6	31.0	226	152	91.9	28.1	28.6	89.0
DRIFT	-0.1	0.0	0.0	0.0	0.4	0.2	0.1	0.2	0.2	-0.1
1.0 PFE $K_n/1000$	57.5	115	201	322	23.0	57.5	115	201	322	57.5
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c					1.6					
3.0 MV $\rho/2\pi$	2184	1166	1852	2521	1050	1766	2135	1141	1860	1034
DRIFT MCF	1.0	1.1	1.0	.71	2.0	1.0	1.0	1.4	1.1	1.4
S. P.					20.4					22.8
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 7

LINE 1, HALF E, SP. 1, a = 500', BEARING N 70°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-19-76

HEINRICHS GEOEX

SEND		5-6	4-5	3-4	6-7	5-6	4-5				
RECEIVE		→			70-80E	→					
MULTIPLIER		1.0	1.0	1.0	1.0	1.0					
PFE		1.3	1.6	1.2	2.1	1.9	2.2				
CUR. (AMPS)		5	5	5	5	5	5				
POINT NO.											
SEP. (n)		4	5	6	4	5	6				
H. F. Mv		62.2	44.8	15.2	57.4	49.5	40.7				
DRIFT		-0.1	0.0	0.0	0.2	0.2	0.2				
1.0 PFE	K_n/1000	115	201	322	115	201	322				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	1145	1819	989	1334	1969	2648				
DRIFT	MCF	1.1	1.1	1.2	2.0	1.1	1.0				
S. P.					12.1						
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. 1102 AREA Wood Pecker Mine
LINE 1, HALF W, SP. 1, DATE 6-18-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	6-7	2-3	3-4	3-4
RECEIVE	0-10-w	10-20w	→	20-30w	—	—	→	30-40w	→	CAL
RANGE	20X250	—	—	—	—	—	—	—	20X250	20X100
VOLTAGE	660	390	660	330	390	650	690	450	330	210
CURRENT	5	5	—	—	—	—	—	—	5	2
SEND	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	—	—	→	40-50w	—	—	—	—	→	CAL
RANGE	20X250	20X250	20X200	20X250	—	—	—	20X250	20X200	20X100
VOLTAGE	390	650	560	590	450	330	390	650	560	620
CURRENT	5	5	4	5	5	5	5	5	4	2

FREQUENCIES 3.0 6.3		COMMENTS:
SENDER No. 267215	POWER UNIT ID	
OPERATOR V.S		
RECEIVER No. 25705-R	HOURS RUN	
OPERATOR RR		

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE
LINE 1, HALF W, SP. 1, DATE 6-18-76

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2
RECEIVE	50-60w	—	—	—	→	60-70w	—	—	→	70-80w
RANGE	20X250	—	—	—	20X250	—	—	—	20X250	20X250
VOLTAGE	570	450	330	390	640	570	450	330	390	570
CURRENT	5	—	—	—	5	—	—	—	5	5
SEND	~~2-3~~	~~3-4~~								
RECEIVE										
RANGE	~~20X250~~	~~20X250~~								
VOLTAGE	~~490~~	~~330~~								
CURRENT	~~5~~	~~5~~								

FREQUENCIES		COMMENTS:
SENDER No. 267215	POWER UNIT ID	
OPERATOR ~~RR~~ V.S		
RECEIVER No.	HOURS RUN	
OPERATOR R.R		

I. P. SENDER NOTES

JOB No. 1102 AREA Wood Pecker Mine

LINE 1, HALF W, SP. 1, DATE 6/19/76

PAGE 3

HEINRICHS GEOEX

SEND	2-3	3-4		~~4-5~~	3-4	2-3	3-4	2-3	4-5	3-4
RECEIVE	—	→		~~CAL~~	CAL	0-10E	10-20E	→	20-30E	—
RANGE	20X250	20X250			20X100	20X250	—	—	—	20X250
VOLTAGE	450	330			190	480	330	460	340	330
CURRENT	5	5			2	5	5	—	—	5
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 0.3

SENDER No. 267215 | POWER UNIT ID

OPERATOR V.S

RECEIVER No. | HOURS RUN

OPERATOR R.R

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE

LINE 1, HALF ____, SP. ____, DATE 6/18/76

PAGE 4

HEINRICHS GEOEX

SEND	2-3	1-2	5-6	4-5	3-4	2-3	1-2	6-7	5-6	6-7
RECEIVE	—	→	30-40E	—	—	—	→	40-50E	—	CAL
RANGE	20X250	—	20X250	—	—	—	20X250	—	20X250	20X200
VOLTAGE	460	570	630	380	330	450	560	680	630	480
CURRENT	5	—	5	—	—	—	5	5	5	2
SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7
RECEIVE	—	—	—	→	50-60E	—	—	—	→	60-70E
RANGE	20X250	—	—	20X250	20X200	20X250	—	—	20X250	20X250
VOLTAGE	380	330	450	560	560	650	390	330	460	700
CURRENT	5	5	5	5	4	5	5	5	5	5

FREQUENCIES 3.0 0.3

SENDER No. 267215 | POWER UNIT ID

OPERATOR V.S

RECEIVER No. 25705R | HOURS RUN

OPERATOR R.R

COMMENTS:

I. P. SENDER NOTES

PAGE 5

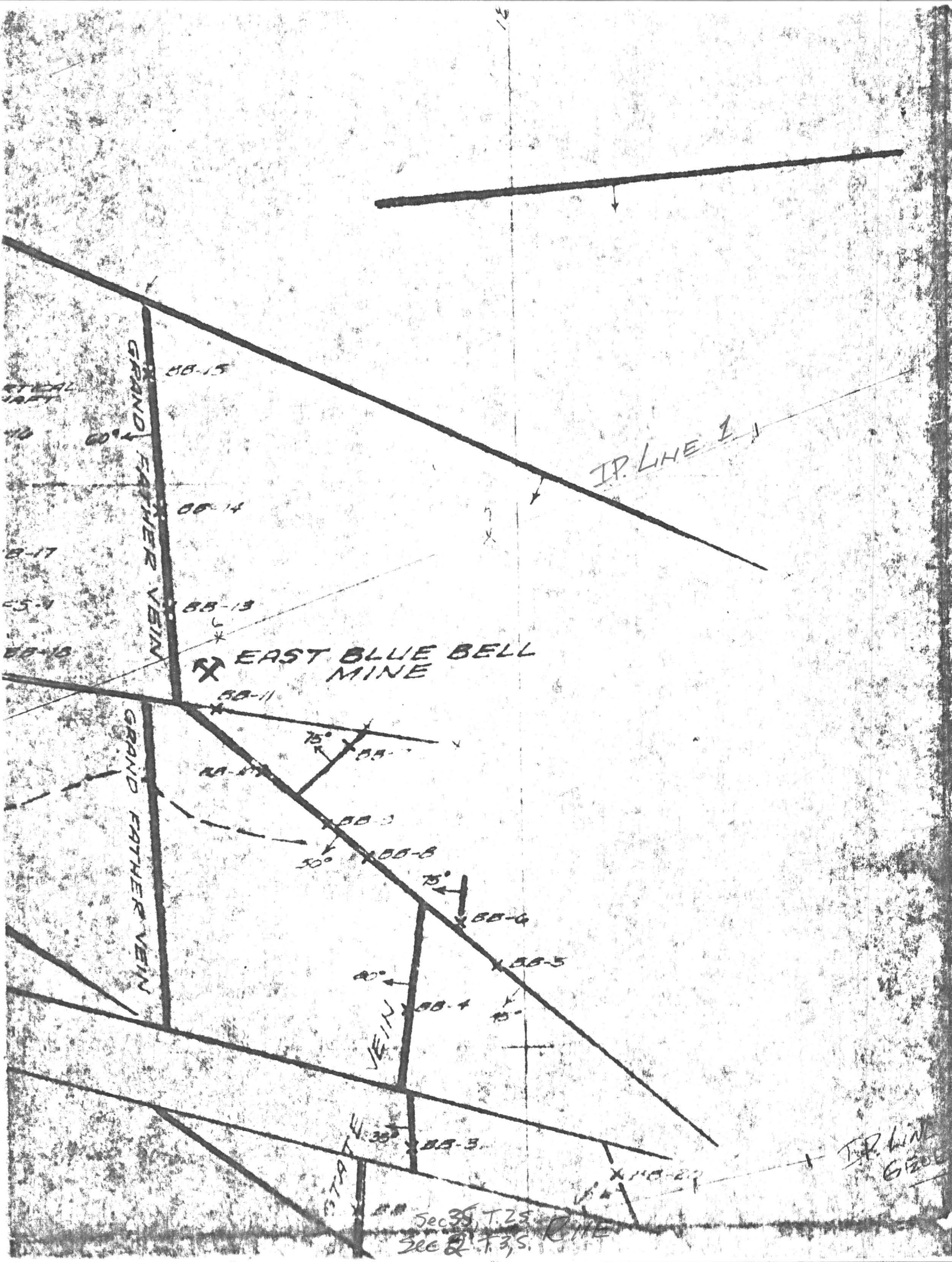
HEINRICHS GEOEX

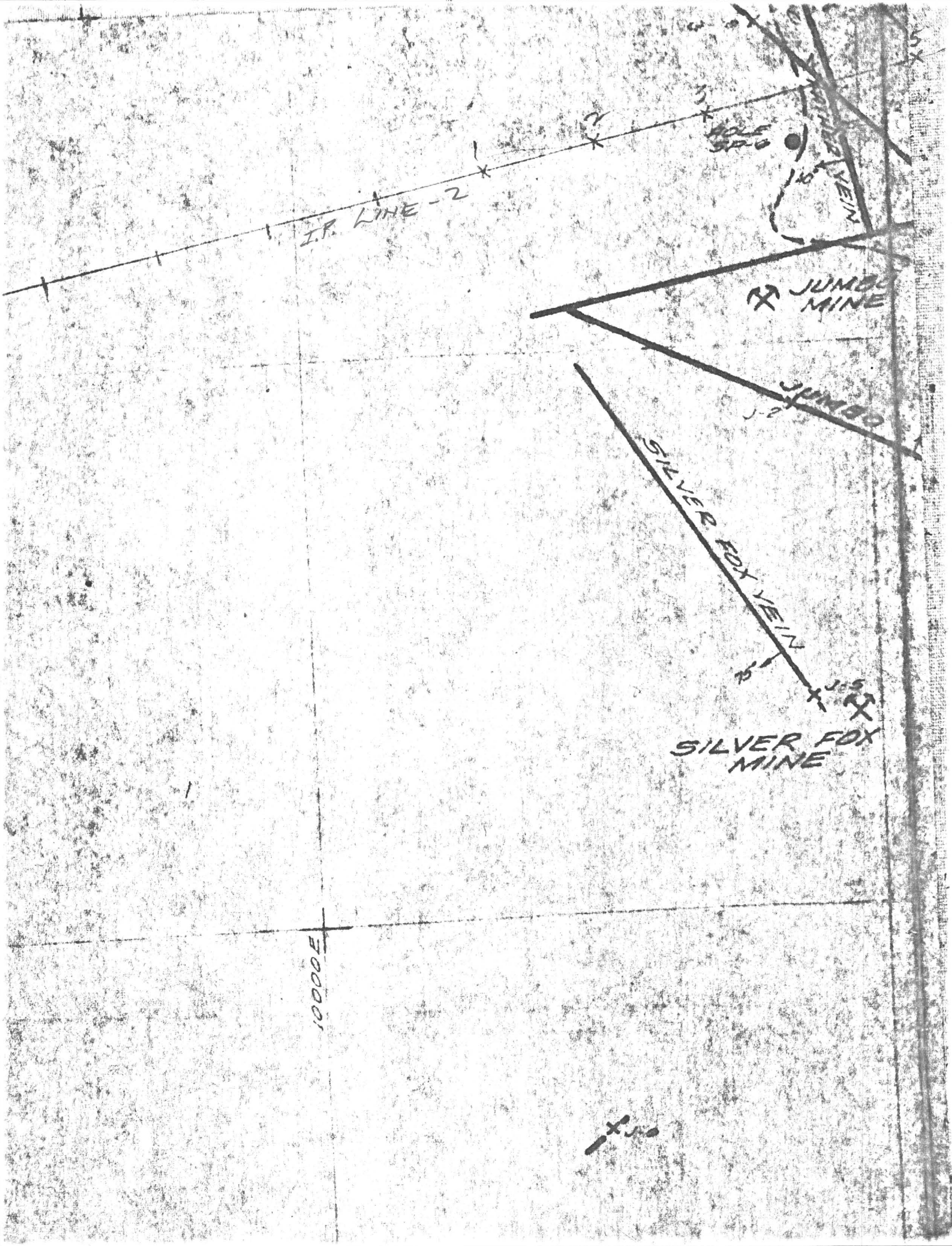
JOB No. 1102 AREA WOODPECKER MINE

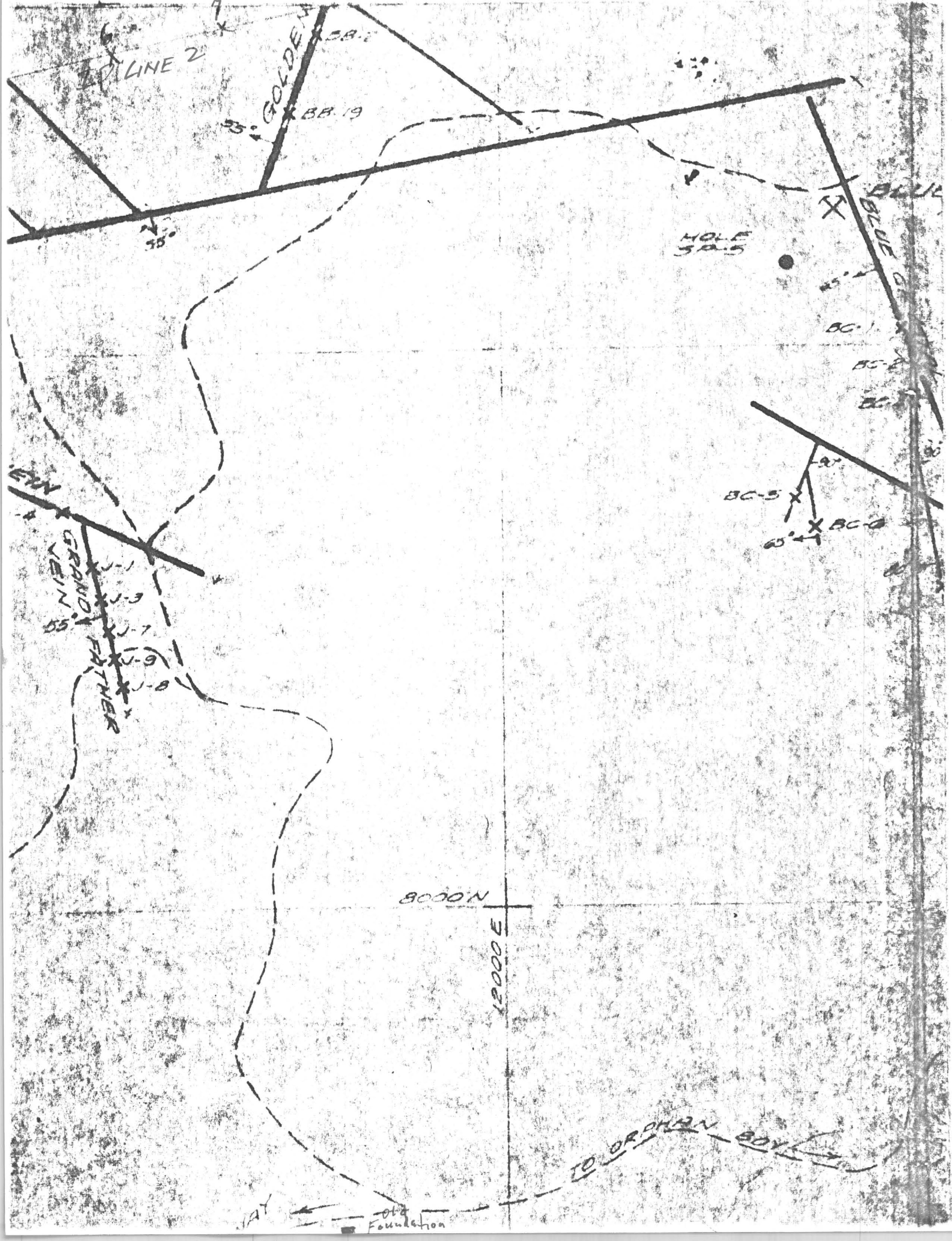
LINE 1, HALF ___, SP. ___, DATE 6-19-76

SEND	5-6	4-5	3-4	6-7	5-6	4-5				
RECEIVE	———	———	——→	70-80E	———	——→				
RANGE	20X250	———	———	———	———	20X250				
VOLTAGE	650	390	330	700	650	390				
CURRENT	5	———	———	———	———	5				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

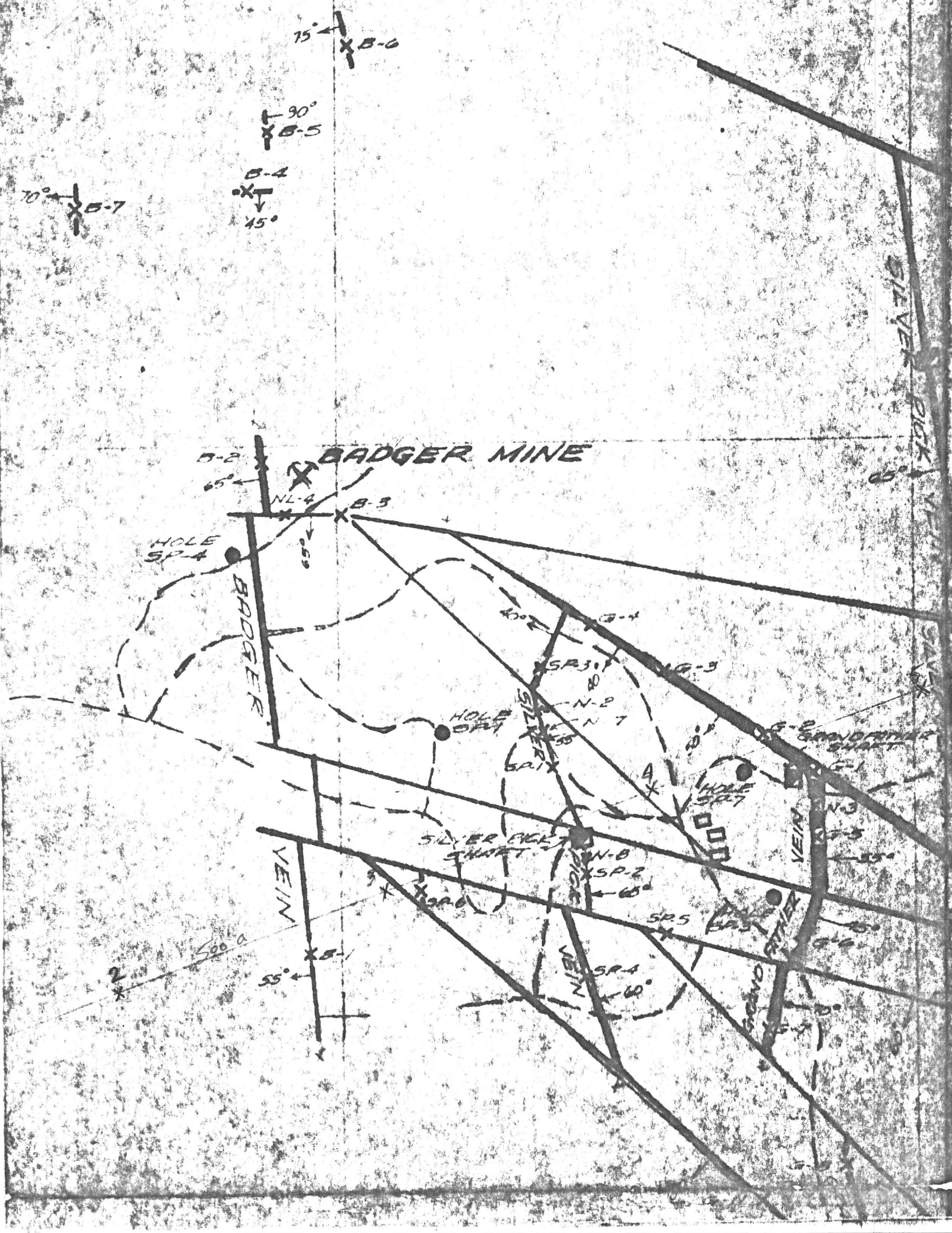
FREQUENCIES 3.0 0.3		COMMENTS:
SENDER No. 267215	POWER UNIT ID	
OPERATOR V.S		
RECEIVER No.	HOURS RUN	
OPERATOR R.R		

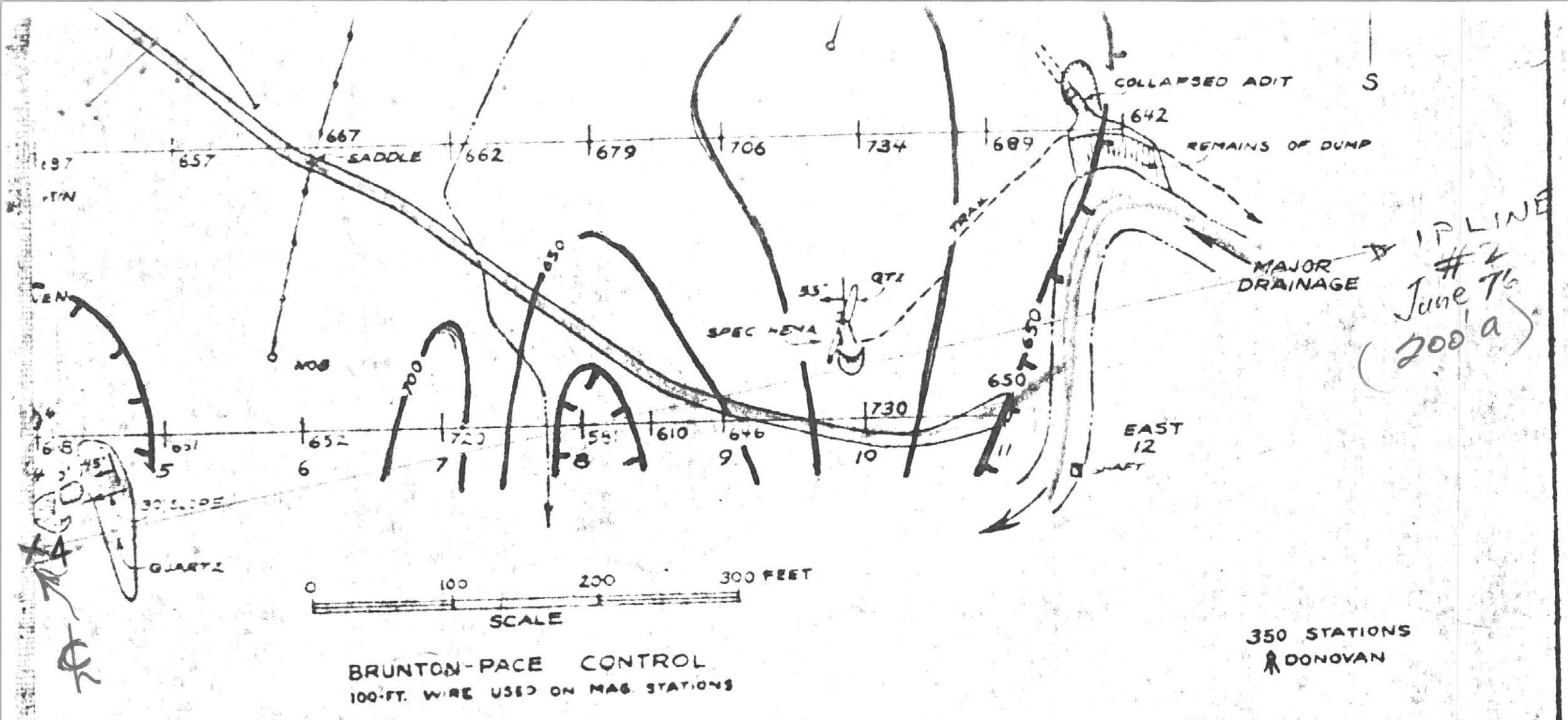

GRAND FATHER VEIN
BB-15
60°
BB-14
BB-13
EAST BLUE BELL
MINE
BB-11
GRAND FATHER VEIN
75°
50°
BB-8
75°
BB-6
BB-5
80°
BB-4
VEIN
BB-3
I.P. LINE 1
Sec 35, T.2S.
Sec 2, T.3S.


I.P. LINE-2
HOLE
VEIN
JUMBO MINE
JUMBO
SILVER FOX VEIN
SILVER FOX MINE
10000E



LINE 2
GOLDEN
BB.19
HOLE SP-5
BLUE
BC-1
BC-5
BC-6
GRAND FATHER VEIN
J-1
J-3
J-7
J-9
8000'N
12000'E
TO ORPHAN BOY
Old Foundation


BADGER MINE
BADGER
VEIN
SILVER PICK
SILVER PICK SHAFT
GRANDFATHER SHAFT
GRANDFATHER
HOLE SP-4
HOLE SP-7
B-1
B-2
B-3
B-4
B-5
B-6
B-7
NL-4
SP-1
SP-2
SP-3
SP-5
N-2
N-3
N-6
75°
90°
70°
45°
65°
55°
60°
500 ft



GEOLOGY, CULTURE AND DRAINAGE RELATIVE TO MAGNETOMETER STATIONS

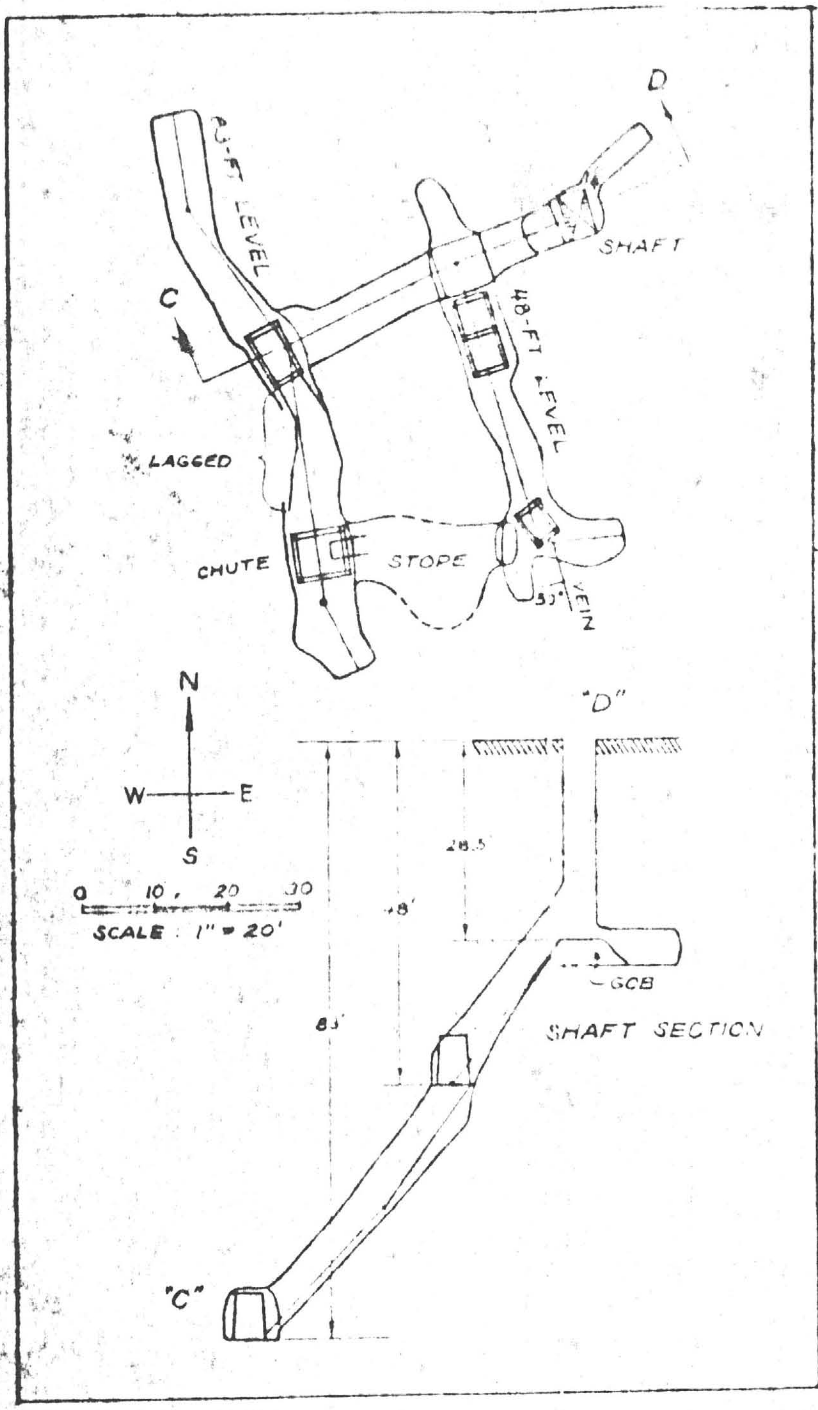
REFERENCES / TITLE	APPROVED BY	WOODPECKER MAGNETOMETER SURVEY RELATIVE VERTICAL INTENSITY	POTASH COMPANY OF AMERICA CARLSBAD, NEW MEXICO	
			DRAWN BY SCHAEFFER	DRAWING NO.
			CHECKED BY	1
		SCALE- 1" = 100' (133') DATE: NOV. 17, 1958	DIRECTED BY CUMMINGS	

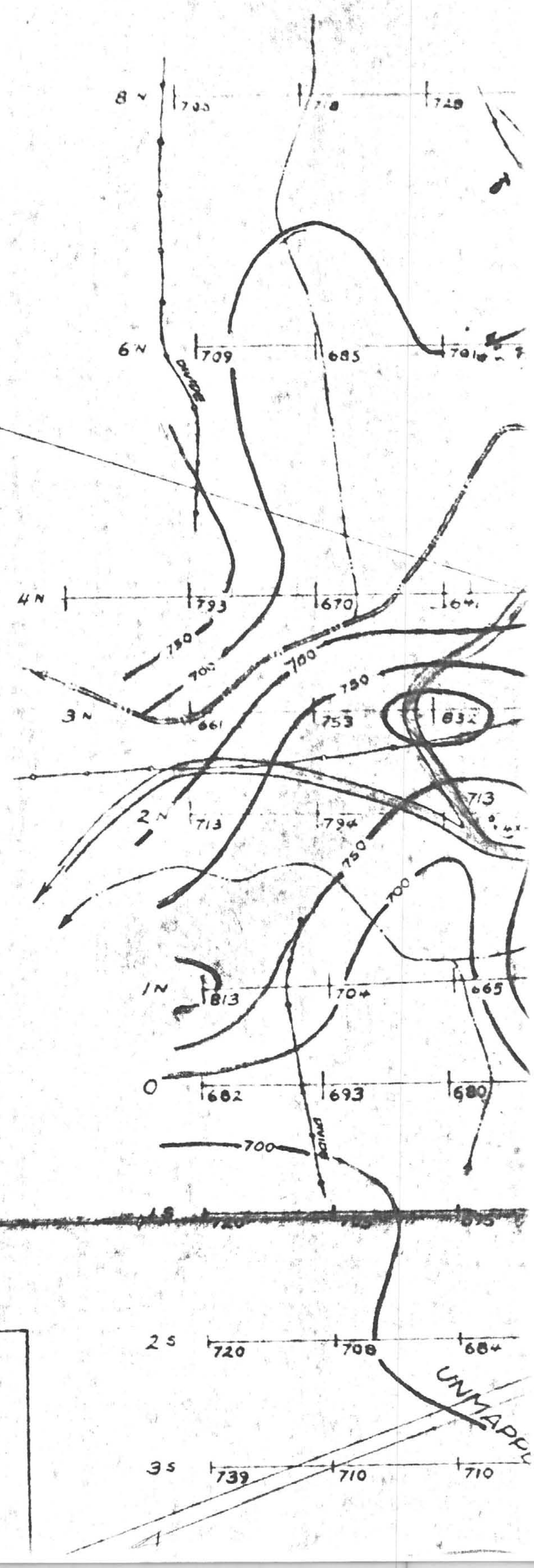
℄ I.P. Line Location June 1976

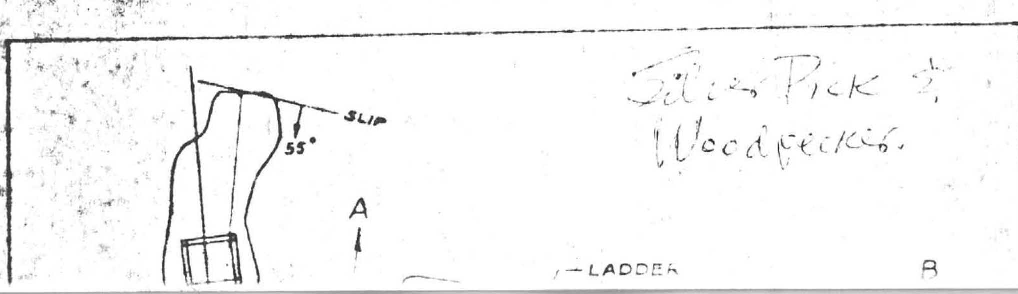
Job # 1102

#710

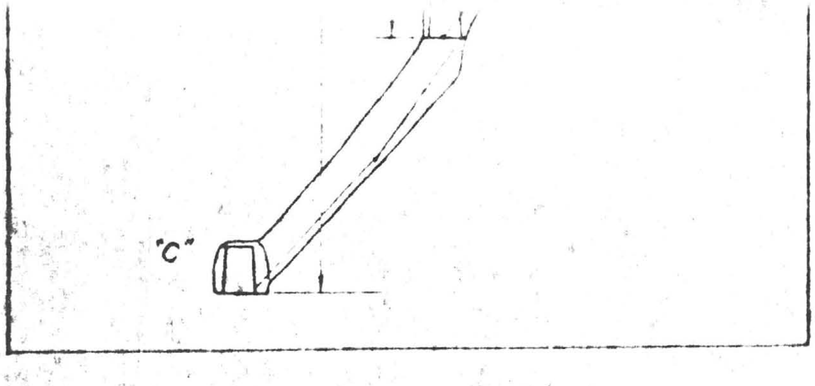
A B

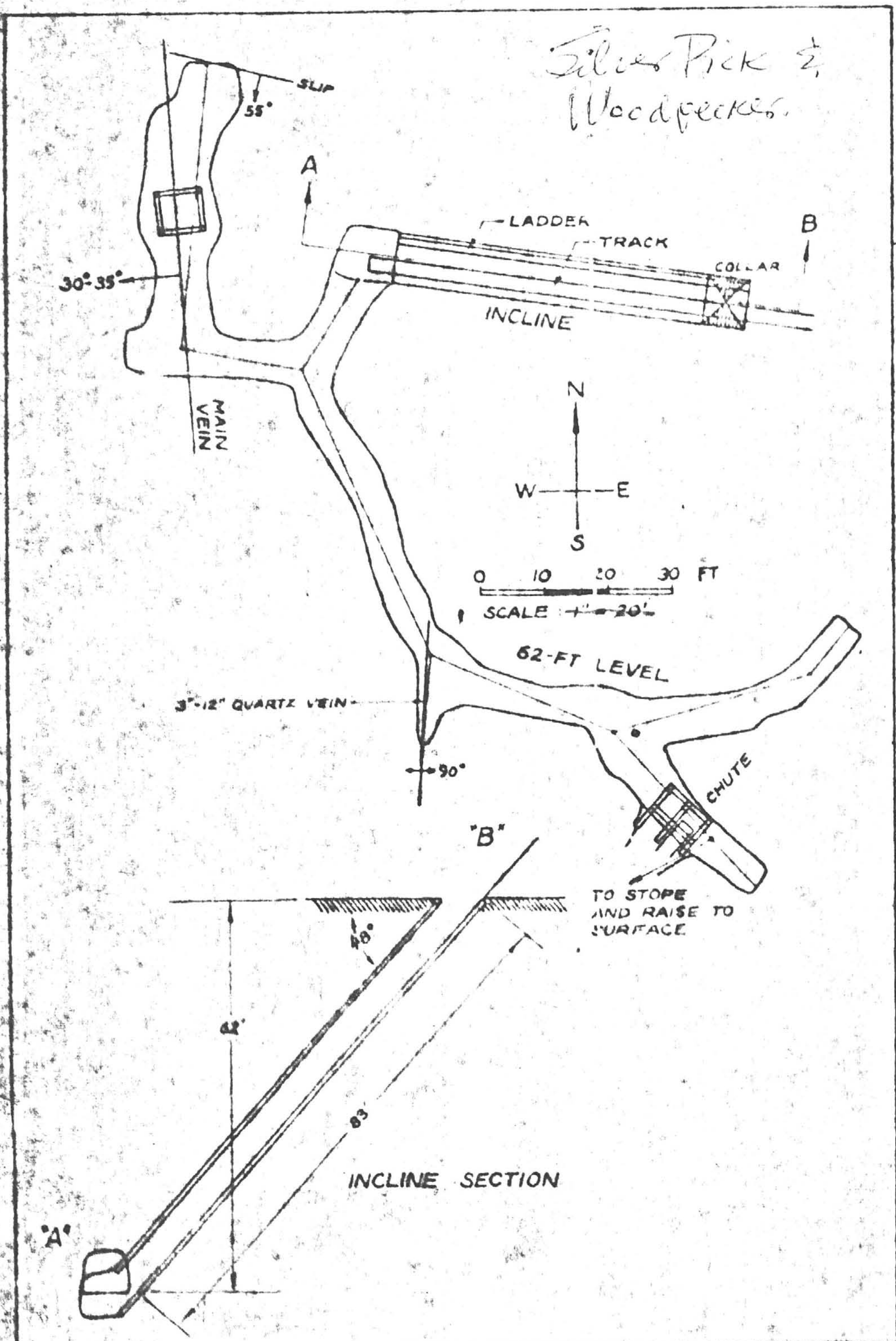


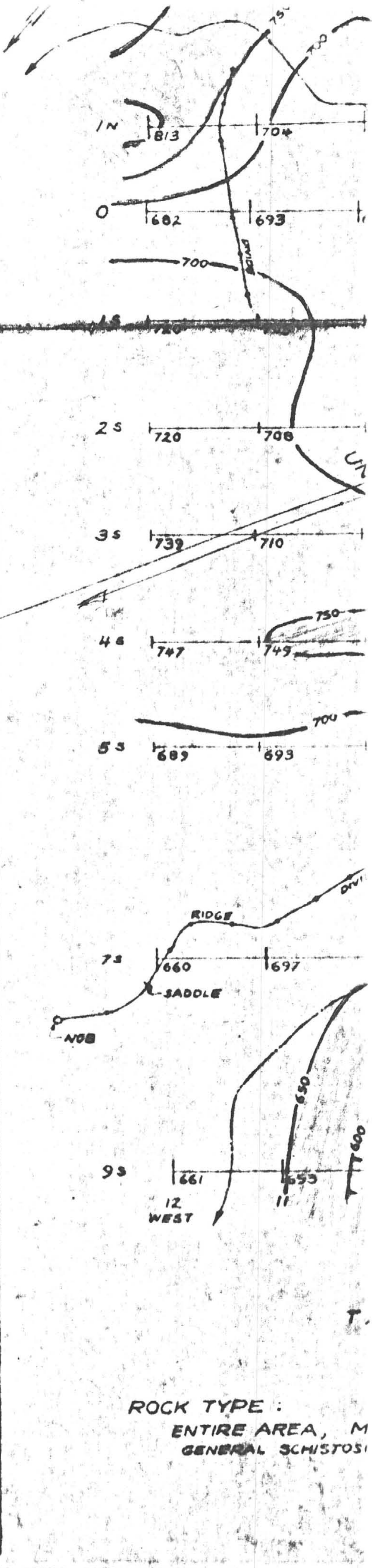


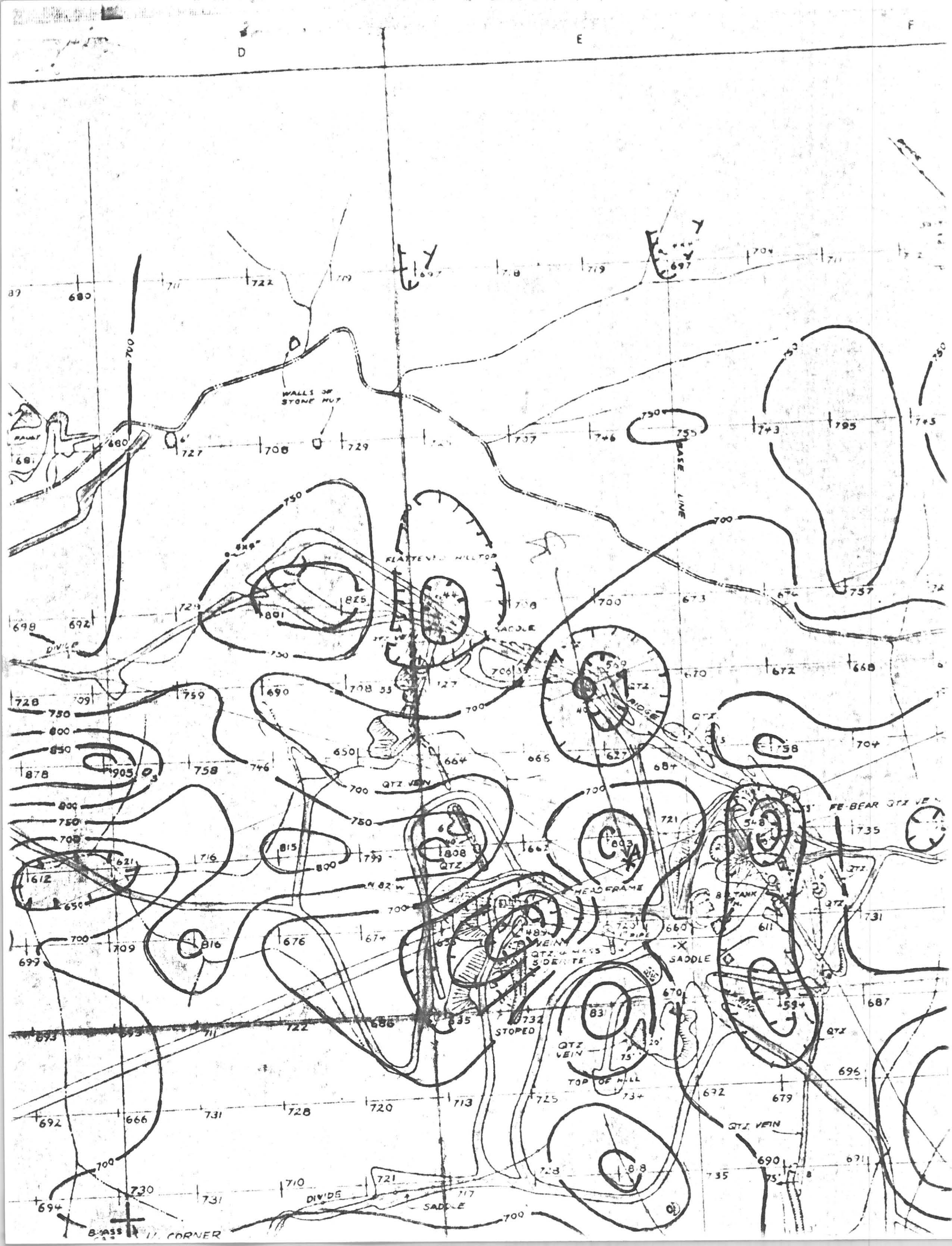


Silver Pick & Woodpecker.

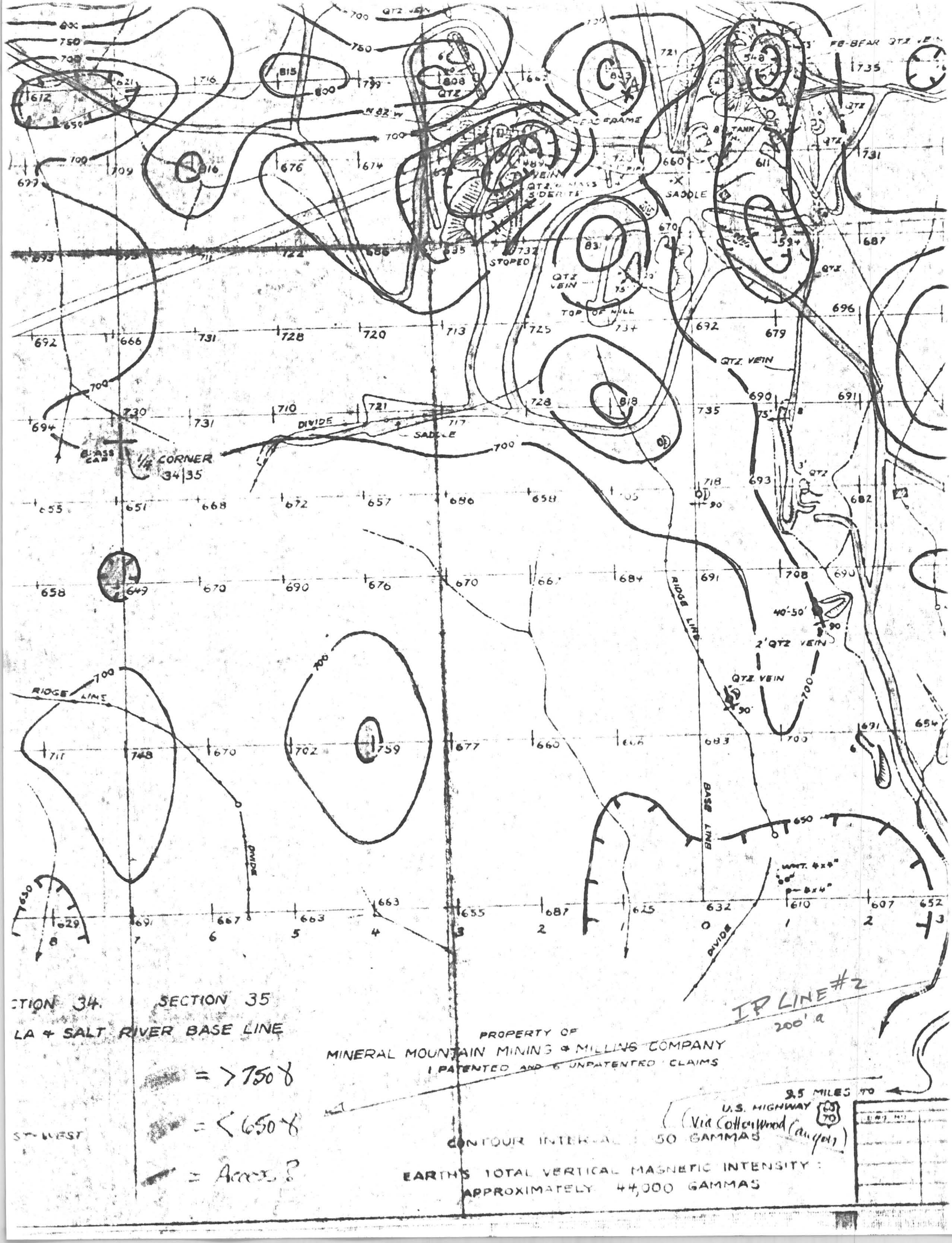

"C"

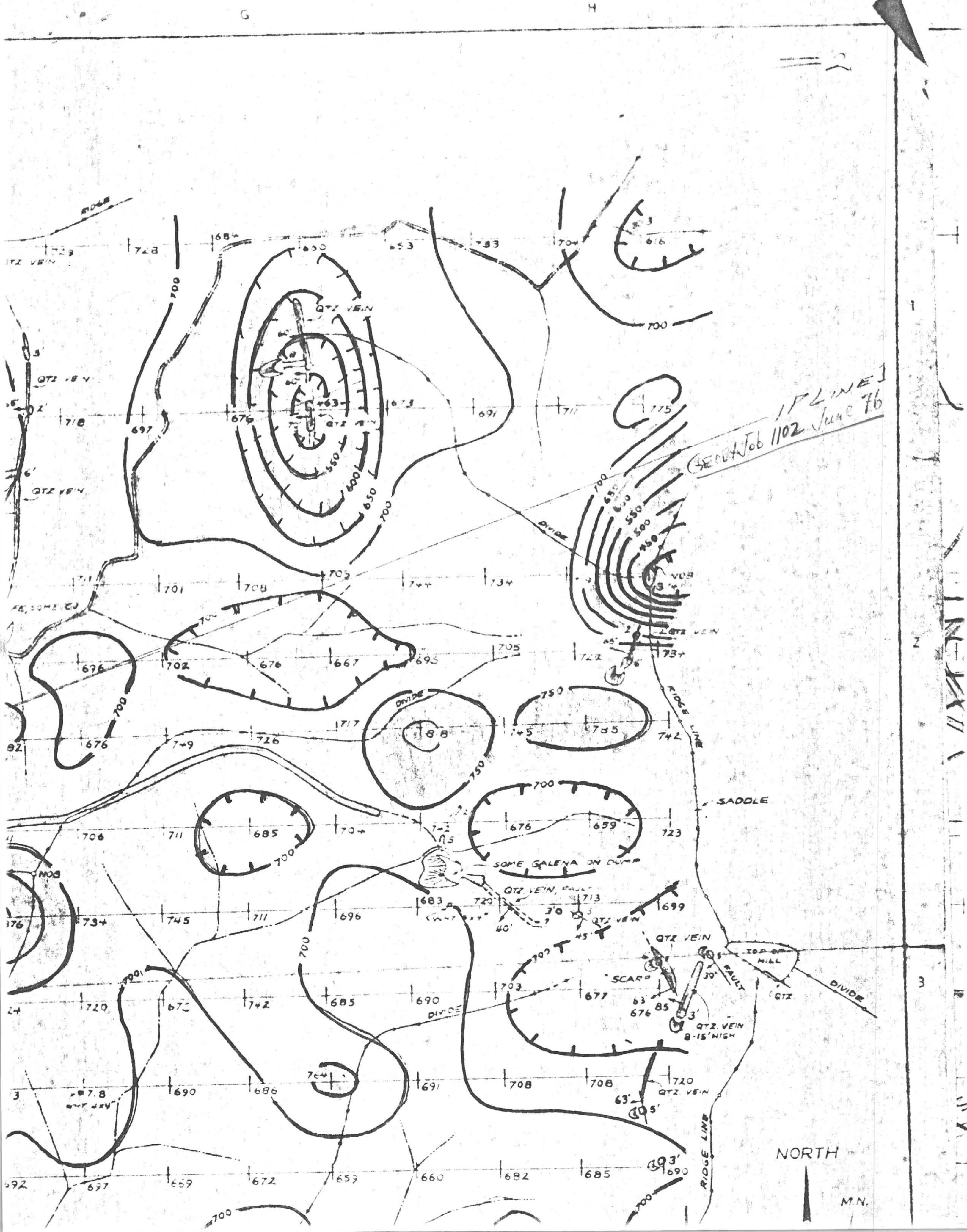

Silver Pick & Woodpecker
SLIP
55°
A
B
LADDER
TRACK
COLLAR
30°-35°
INCLINE
MAIN VEIN
N
W
E
S
0 10 20 30 FT
SCALE 1" = 20'
62-FT LEVEL
3"-12" QUARTZ VEIN
90°
CHUTE
"B"
TO STOPE AND RAISE TO SURFACE
48°
62'
83'
INCLINE SECTION
"A"

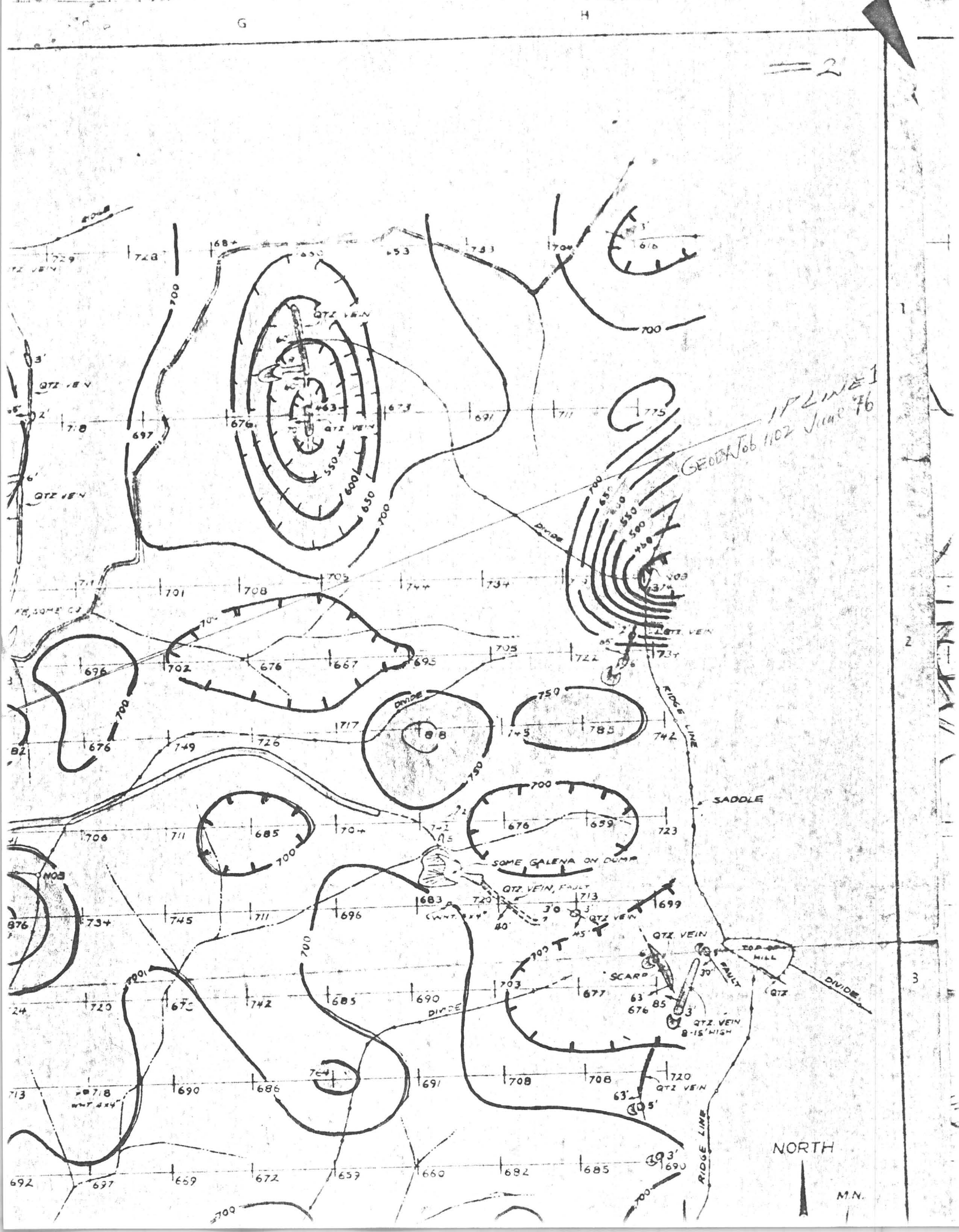

1N
813
704
0
682
693
700
2S
720
708
3S
739
710
4S
747
749
750
5S
689
693
700
RIDGE
7S
660
697
SADDLE
NOB
9S
661
693
12
WEST
650
600
ROCK TYPE :
ENTIRE AREA, M
GENERAL SCHISTOS



D
E
F
WALLS OF STONE HUT
BASE LINE
FLATTENED HILLTOP
SADDLE
DIVIDE
QTZ VEIN
RIDGE
QTZ
FE-BEAR QTZ VEIN
HEADFRAME
N 82 W
VEIN
QTZ & MASS SIDERITE
SADDLE
STOPED
QTZ VEIN
TOP OF HILL
TANK
PIPE
QTZ. VEIN
DIVIDE
SADDLE
B-MASS
W. CORNER


QTZ VEIN
FE-BEAR QTZ VEIN
HEADFRAME
N 82 W
VEIN
QTZ. & MASS SIDERITE
STOPED
SADDLE
QTZ VEIN
TOP OF HILL
DIVIDE
SADDLE
1/4 CORNER 34|35
BRASS CAP
RIDGE LINE
2' QTZ VEIN
BASE LINE
WHT. 4x4"
DIVIDE
CONTOUR INTERVAL 50 GAMMAS
SECTION 34
SECTION 35
LA & SALT RIVER BASE LINE
IP LINE #2
200' a
PROPERTY OF
MINERAL MOUNTAIN MINING & MILLING COMPANY
1 PATENTED AND 6 UNPATENTED CLAIMS
= > 750 γ
= < 650 γ
= Access?
9.5 MILES TO
U.S. HIGHWAY 60 70
(Via Cottonwood Canyon)
EARTH'S TOTAL VERTICAL MAGNETIC INTENSITY = APPROXIMATELY 44,000 GAMMAS


G
H
IP LINE 1
Geo Job 1102 June 76
RIDGE
QTZ VEIN
DIVIDE
RIDGE LINE
SADDLE
SOME GALENA ON DUMP
QTZ VEIN, FAULT
SCARP
TOP OF HILL
FAULT
QTZ. VEIN 8-15' HIGH
NORTH
M.N.


G
H
=2
QTZ VEIN
SADDLE
SOME GALENA ON DUMP
QTZ. VEIN, FAULT
RIDGE LINE
DIVIDE
TOP OF HILL
SCARP
FAULT
QTZ. VEIN 8-15' HIGH
NORTH
M.N.
IP LINE 1
GEOTX Job 1102 June '76

Please mail to me w Heinrich

Cable: GEOEX

REC'D JUL 12 1976 REC'D

BOX 5964 TUCSON, ARIZONA 85703

Phone: (AREA 602) 623-0578

ORO GRANDE MINE YAVAPAI

Mr. Chester Millar of C.F. Millar Limited, 1758 West 8th Avenue, Vancouver 9, B.C., has plans to move his drilling rig onto the Oro Grande property near Wickenburg and then to the dry placers in the Quartzsite area. KAP Reported dated 8/13/73

Bill Flowers, General Delivery, Wickenburg, reported that Mrs. Orphier Baker now owns the Oro Grande Mine in the Black Rock District and that the property contains 650,000 tons of blocked out 1/3 oz. gold ore. KAP WR 7/29/75
Ken Phillips Weekly report

As per office visit on September 4, 1975, Francis Friestad, 1016 Lexington Way, Rockford, Illinois, 61108, (815) 399-7845, has an option to buy this property.

Mr. Friestad said he had bought the Oro Grande Au mine. He has a lab operated by Wm. Flowers in Wickenburg. GW WR 3/22/76
G Walker

Went to Wickenburg and accompanied Mr. Wm. Flowers to the old Oro Grande mine about 4½ miles NE. There has been no recent work except trail dozing, therefore, there is no geologic information other than that in the office file. A few selected surface samples mainly from dumps have been analyzed which indicate Au values ranging from 0.10 oz. to .28 oz/ton. There appears to be an extensive brecciated zone beginning near the deep shaft and trending north and east for several hundred feet. Mr. Friestad heads an organization that purportedly has purchased the patented claims and will commence a mining operation, Mr. Flowers is his local representative. They have also taken over the sink-float mill on the site of the old manganese mill 3 miles up the Hassayampa River from Wickenburg where there is some controversy over the use of a well drilled several years ago in the river bottom. It was suggested that at least two lines of test holes be drilled in the hanging wall of the deposit to determine its extent and value. GW WR 3/25/76

Went on to the Oro Grande Au mine about 4½ miles NE of Wickenburg where there was no activity, however, there had been considerable recent dozing done throughout the outcrop area but no drilling. GW WR 4/29/76

Bill Flowers called to give an invitation to visit the Oro Grande where he claims he has drilled 20 holes ranging from 30 to 128 feet in depth. He said the best assay from hole samples was 0.09 oz. Au/ton. GW WR 5/6/76

Heavy media mill originally at Cyprus Zinc mine at Bagdad. in 1974 (?) moved to Pearce area for Spar-Silica seperation then moved to present site - not erected yet.

April 1975

ORO GRANDE MINE
Wickenburg, ARIZ.

For sale -

150 acres patented land.
$600.00 per acre.

by Jim Alessi
Red Carpet Realtors
Wickenburg, Ariz

ph. 602, 684-5575

Info. from -
M. H Jones
Box 406
Wickenburg Az
85358

REPORT OF THE ORO GRANDE CONSOLIDATED MINE

LOCATION:- The Oro Grande lies 4½ miles north of the town of Wickenburg, Arizona. It consists of 9 patented and 5 unpatented claims and 3 mill sites on the Hassayampa River, 1½ miles NW of the mine, all in the Black Rock Mining District, Yavapai County, Arizona. The mine is reached by a fair road from Wickenburg. No power line is close to the mine, but a diesel plant can be installed at Wickenburg.

DEVELOPMENT:- The development consists of a vertical shaft 340 feet deep and an inclined air shaft 100 feet and three levels. The 100 foot level connects the 2 shafts and consists of 900 feet of drifts and 300 feet of cross-cuts, of which 600 feet are in good ore.

The 300 foot level consists of 220 feet of drifts and 370 feet cross-cuts, 400 feet of which are in ore. At the bottom of the shaft (340') a drift 35 feet penetrates a fault that shows up in the ore body. The 200 foot level consists of 900 feet of drifts and cross-cuts, 700 feet of which are in ore.

The workings prove the ore shoots in the Copperhead claim to be 435 feet long and from 90 to 190 feet in width to the 300 foot level. The ore shoot on the Frenchman Claim is over 300 feet long on the surface, but only developed by a short drift and winze.

GEOLOGY:- The country rock is diorite on the west wall of the main vein and hornblende and other schists and diorites on the east wall, All these rocks are metamorphosed and are probably of the Pre-Cambrian in age. The diorite seems to be intrusive and consists of hornblende and soda lime feldspar, probably labradorite. It varies from as much as 90% hornblende to as low as 40%. The accessory original minerals, such as Pyroxens are scarce, but secondary minerals, such as epidote are common, due to the metamorphism. The diorite carries inclusions of schists which may have been sedimentary rocks originally, or may have been developed by shearing and metamorphism of the diorite.

DYKES:- The diorite is intruded by a series of aplite and permatite dykes which have a general east and west strike and consist of quartz, ortheclase and black tourmaline and are extremely irregular in shape and composition. There are also small intrusions of basic pegmatite, consisting of plagioclase, feldspar, pyroxene, and hornblende. A series of small nearly vertical dykes of hard, fine-grained, dark rock locally called synite has an east and west trend, dipping north. These rocks may be anddsite, trachylite or disbase, but require a microscope for determination. They are evidently associated with the ore deposition and are much younger than the diorites. The diorite was metamorphosed at the time of the aplite intrusion forming epidote, chloride, and other minerals along joint planes; but the most important result was the changing of the diorite to schists along shearing planes having a NE and SW trend.

VEINS:- The veins are zones of shearing in the schist and diorite. The Oro Grande vein is from 100 feet to 200 feet wide and traceable on the surface for more than 3,000 feet, being terminated on the south by a fault and covered on the north by Tertiary andesite flows. The strike is north 30 degrees east and dips approximately vertically or nearly parallel to the schist. Two other similar veins outcrop on the property.

Ascending solutions in the shear zones decomposed the broken schists and diorites, forming sericite and kaolin and depositing quartz, calcite, pyrite, chalcopyrite _________? _________? forming the ore bodies. These bodies elliptical in shape on any level and dips south about 40 degrees. There followed a long period of oxidization by surface waters which completely removed the sulphides and copper, leaving oxidized iron and native gold with a few small bunches of rich oxidized copper ores and a small amount of silver chlorides to indicate what the original sulphides were. This oxidization is known to exist at the 625 feet vertical depth, or more than 300 feet below the present development on the Hassayampa River, one mile to the west. After the oxidization the veins were broken down and displaced by Pose-Miocene AND quartz.

ORE BODIES:- Two such ore bodies are known, one on the Copperhead Claim and one on the Frenchman's Claim. The Copperhead is developed to a depth of 340 feet by the Oro Grande shaft and its 3 levels. It is from 90 feet wide on the 200 foot level to 150 feet wide on the 300 foot level. Its greatest length is 435 feet on the 100 foot level, where it is terminated on both ends by faults, but there is every reason to believe that it does continue both north and south. The 300 foot level has not been driven far enough to the south to determine the length of the ore shoot at this depth. The body contains "Horses" and small bunches of country rock, forming as much as 1/3 of the mass on the 200 foot level and less in proportion as depth is attained, being less than 20% on the 200 foot level. This shoot contains at least 635,000 tons of proven ore above the 300 foot level of an average value of $5.27 per ton in gold. This value was determined by milling 8,861 tons of ore which yielded $45,709.81 in bullion, the tailings contained only 20 cents per ton.

The west wall is solid diorite, but the east wall contains stringers, bunches and fair sized bodies of rich ore for at least 500 feet beyond the wall of the ore shoot proper. It is probable that part of this great mass can be profitably mined. It contains more than 2,000,000 tons and may average from $1.50 to $2.00 per ton. It can be caved and removed at a small cost.

The Copperhead shoot is known to continue below the 300 foot level. It is shown in the drift at 340 foot depth, the drill core to the depth of 325 feet below the 300 foot level is still oxidized and the gold in a free state. It contains at least 900,000 tons probable ore to the depth. The values are as yet unknown, but there is no reason to believe that they will decrease to any extent.

OTHER ORE SOURCES:- Pay ore is now exposed north of the fault on the 200 foot level and the surface. It is probable that nearly as much ore lies to the north of this fault. It can be easily picked up by cross-cutting on the 100 foot level. The same condition exists to the south end of the Copperhead shoot on all levels. The ore shoot on the Frenchman Claim lies 1,100 feet to the north of the Copperhead shoot. It outcrops for more than 300 feet on the surface. A short tunnel and shallow winze shows 6 feet of excellent ore. This may be equally as important as the Copperhead shoot when developed.

These shoots are known to extend to great depths and hold their values. The Congress Mine to the NW was mined to 4200 feet in depth.

EQUIPMENT:- Equipment consists of a pumping plant, 8000 feet of 4 inch water line, 100,000 gal. Steel water tank, 25 HP gasoline engine, 25hp gasoline hoist, cage and buckets, blacksmith shop and tools, 50-ton capacity 10-stamp mill, 4-drill Sullivan air compressor ore cars, track and mining tools, bunkhouses, camp, etc.

<u>CONCLUSION</u>:- The Oro Grande Consolidated Mine is probably the most valuable semi-developed free milling gold mine in the Western United States. It has proven ore reserves of 635,000 tons of gross value of $3,175,000.00 above the 300 feet level. By sinking the Oro Grande shaft 100 feet, extending the 400 feet level more than 340,000 tons of the same ore will be added to this figure, or a gross value of $1,700,000.00 for each 100 feet of this ore shoot alone. By continuous development ore reserves can be easily kept ahead of a 1,000 ton mill on the Copperhead shoot alone, The certainty of developing ore beyond the north and south faults and in the Frenchman Claim makes this mine as valuable as the Vulture Mine to the south or the Congress Mine to the NW. The Vulture produced $16,000,000.00 and the Congress Mine produced $14,000,000.00.

<u>COSTS</u>:- Careful records of the costs of mining and milling of 5,645 tons of ore was kept by the former owner, Geo. B. Upton. These records show an average of $1.04 for mining and $1.16 for milling, with an extraction of 98%. One test run of 660 tons show a cost of $ .83 for milling and $ .85 for mining. These results were obtained without the use of air drills.

The old fashioned stamp mill treated 50 tons per day. Gasoline was used for power. It is reasonably certain that these costs can be greatly reduced with cheap power and a modern mill of large capacity, together with a caving system of mining the ore. The writer predicts a total cost not to exceed $1.75 per ton can be obtained on a 1,000 ton per day basis.

<u>RECOMMENDATIONS</u>:-The writer recommends the purchase of the mine and the expenditure of at least $400,000.00 for a new power plant, new working shaft and new equipment for the mine together with a mill af at least 500 fons capacity, initial, to be increased to 1,000 tons at a later date.

(Signed) International Engineering Company

By J. Carlton Bray, E. M.

COPY

El Paso, Texas
September 15, 1932.

Department of Mineral Resources
State of Arizona
Mineral Building, Fairgrounds
Phoenix, Arizona 85007

HOENIX, AZ
PM
7 JU
197

U.S.

POSTAGE DUE 11 4

JUL 9 197

1976

Mr. Walter E. Heinrichs, Jr.
P. O. Box 5964
Tucson, Arizona
85703

STRIKE 12° EAST AT END OF
DIP 55° SOUTH NORTH ORE BODY

180' LADDER — 0'–120' FAULT
124' END OF ORE
55' BEGIN ORE
0' END OF ORE

STRIKE N 67° W
DIP 73° S

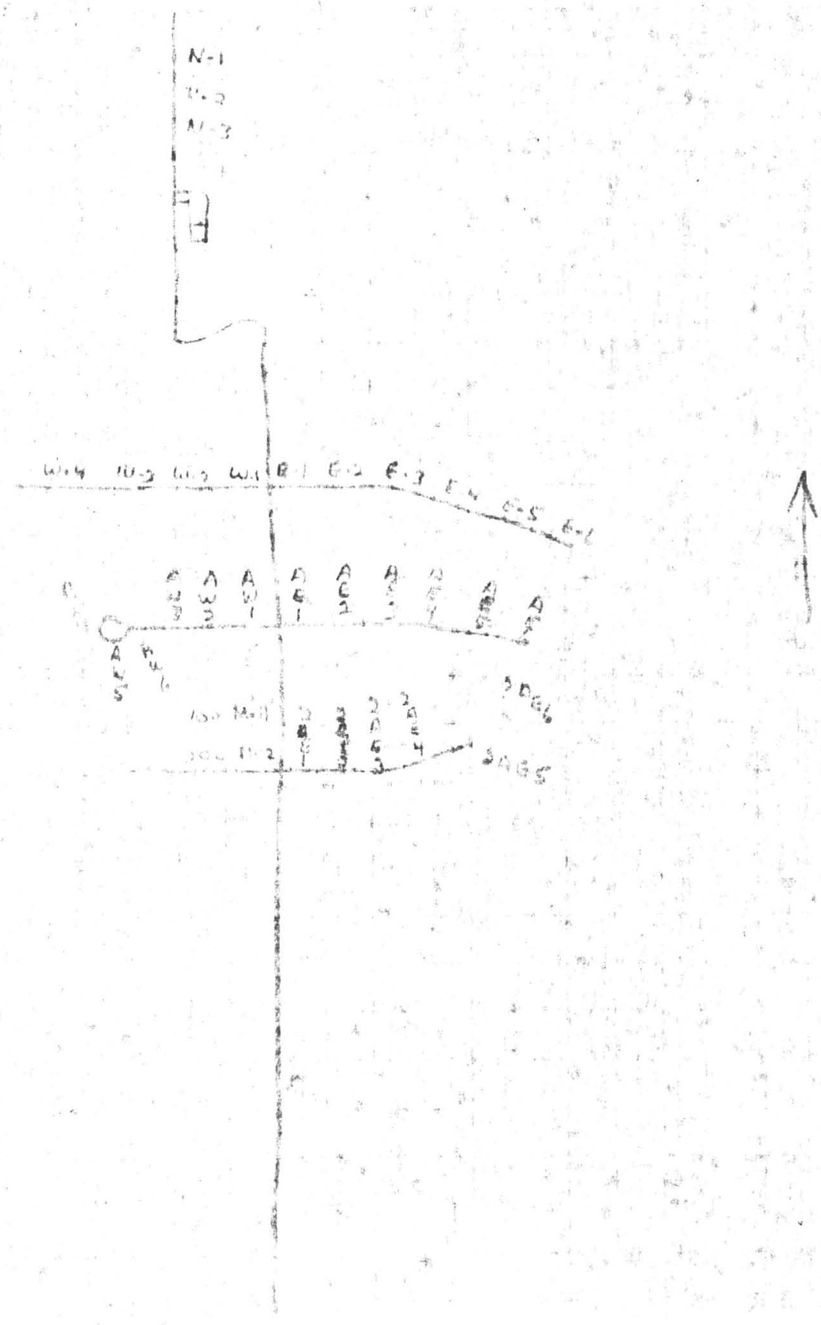
INCLINE SHAFT AT 400' ON SURFACE

N-S - STRIKE
180' IN SECTION DIP 45° W

30' NORTH N-S STRIKE
E 43° DIP

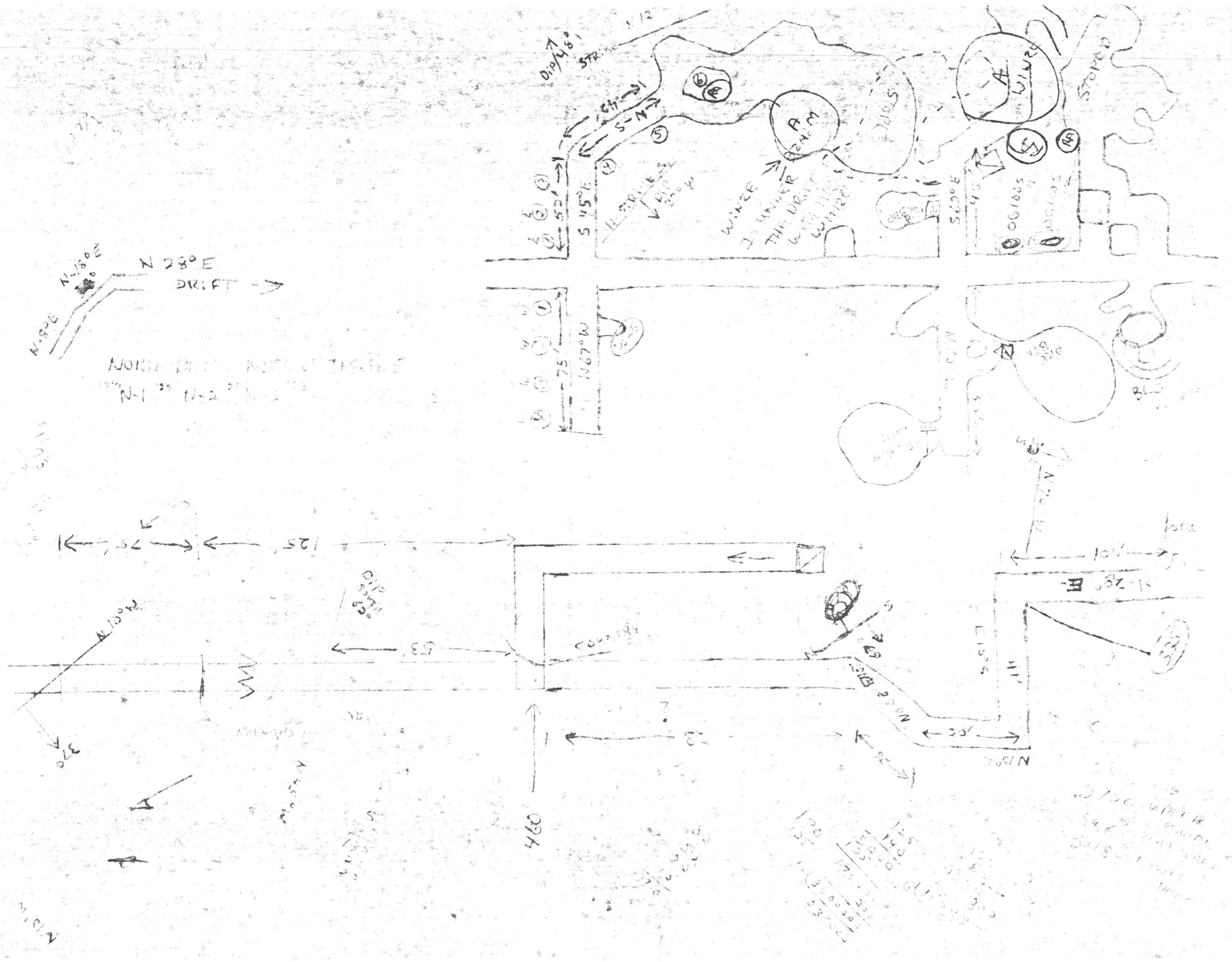
180' AREA CROSS CUT EAST
STRIKE E 15°
D 49°

80' DRIFT EAST
76' ORE 57' TO RAIS



1466
1488
700
2,654

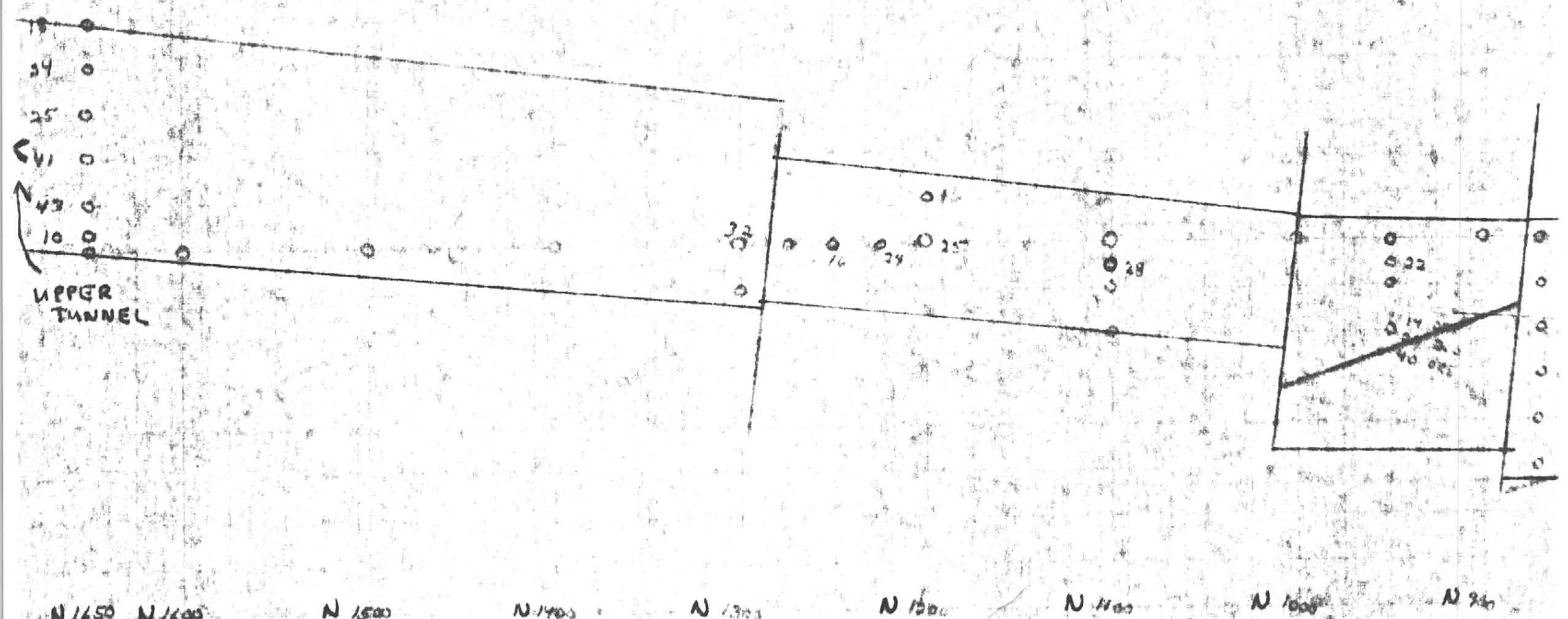
660
180
840
400
300
1,540


N 28°E
DRIFT
N-16°E
N-8°E
N 67°W
75'
S 45°E
52'
DIP 48°
STRIKE
N 12
S-N
WINZE IS UNDER THE DRIFT WITH THE WINZE
STOPE
WINZE
STOPED
S 60°E
45'
125'
75'
53'
460
N 10°W
37°
N 28°E
N 13°E
N 29°E
100'

ORO GR

HOLE NO.					
N 1650 E 10	0'-32'	N 1300 E 10	0'-32'	N 1100 W 10 0'-45'	N 950 W 10 0'-56'
N 1650 E 25	0'-48'	N 1300	0'-40'		N 950 W 50 0'-30'
N 1650 E 50	0'-46'	N 1250	0'-24'		
N 1650 E 75	0'-32'	N 1225	0'-48'		
N 1650 E 100	0'-96'	N 1200	0'-32'		
N 1650 E 125	0'-24'	N 1200 E 25	0'-28'		

N 87[illegible] | N 87[illegible] | 0'[illegible] | 0'-[illegible]



BLUE : SURFACE EXTENT OF ORE

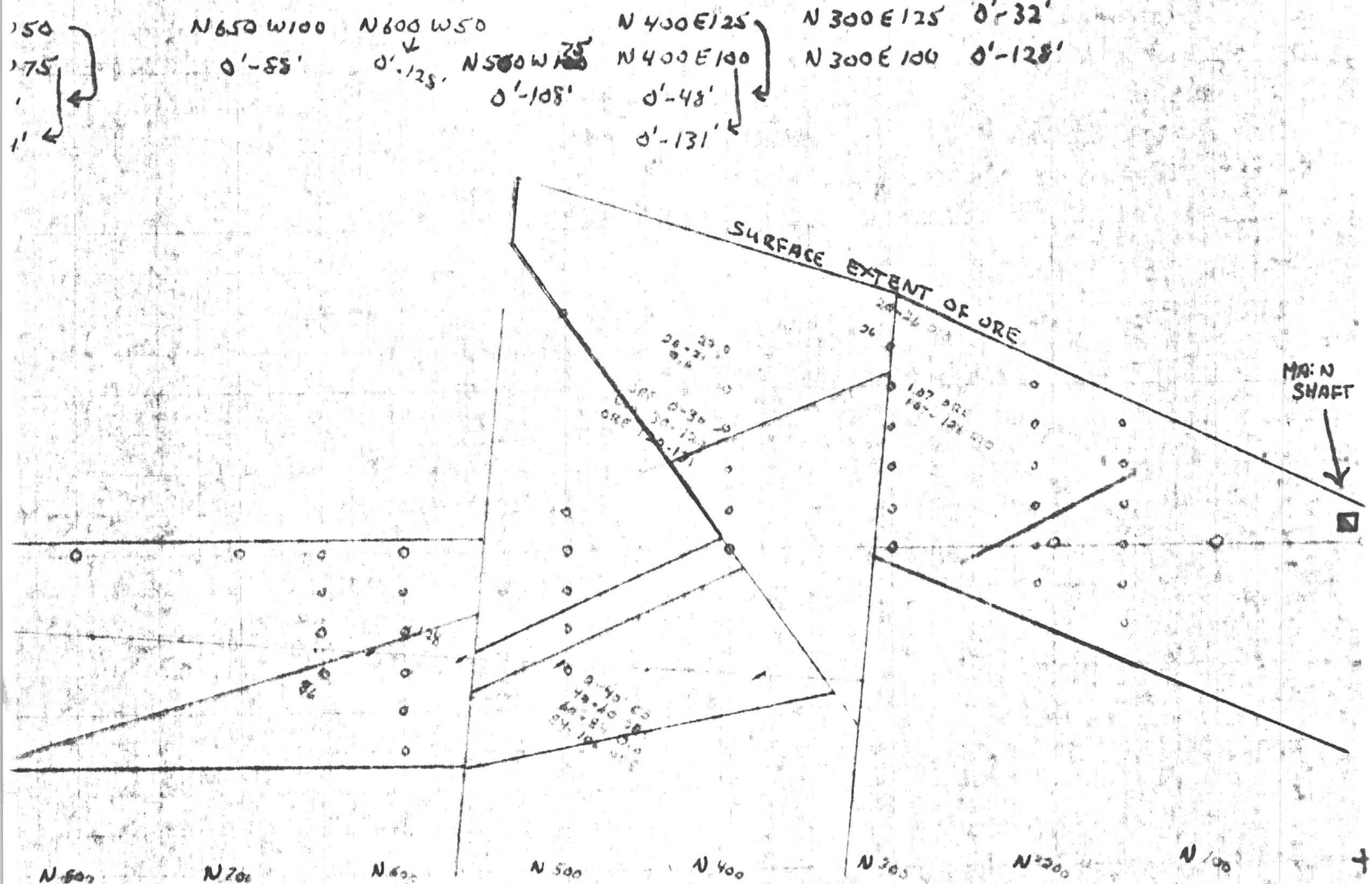
GREEN : DIORITE INTRUSION

RED : CROSS FAULTING

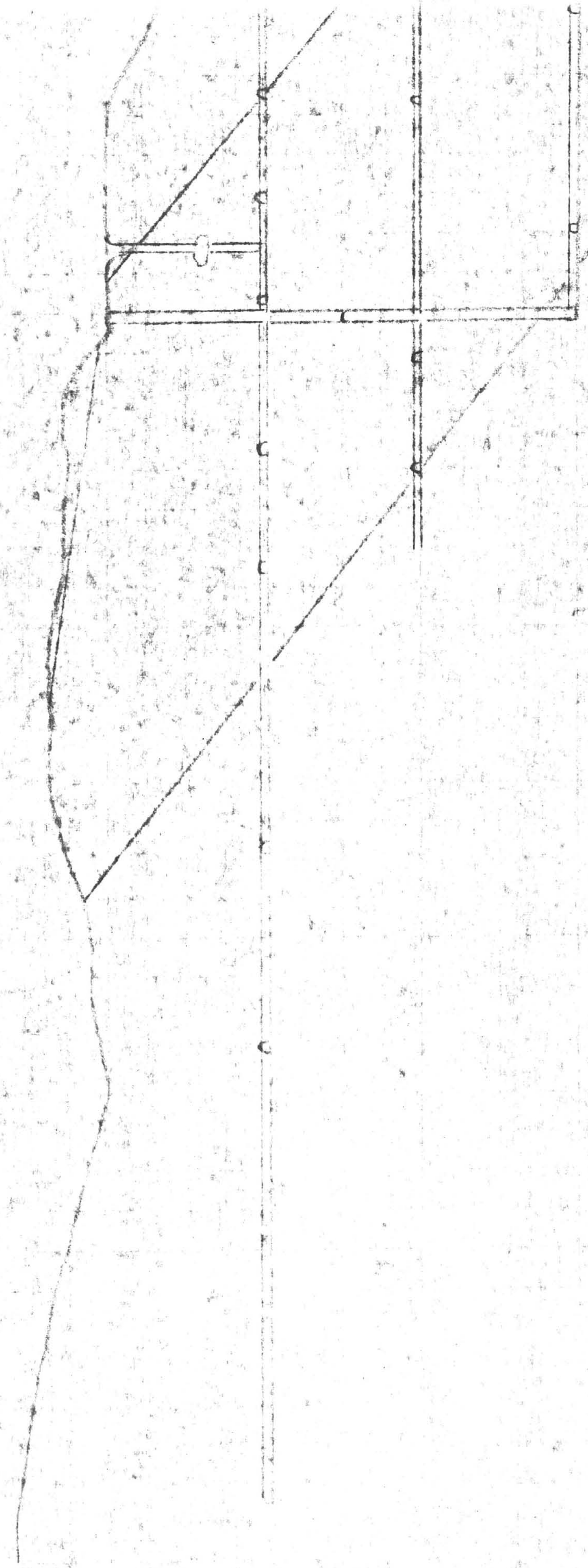
O : DRILL HOLE LOCATIONS

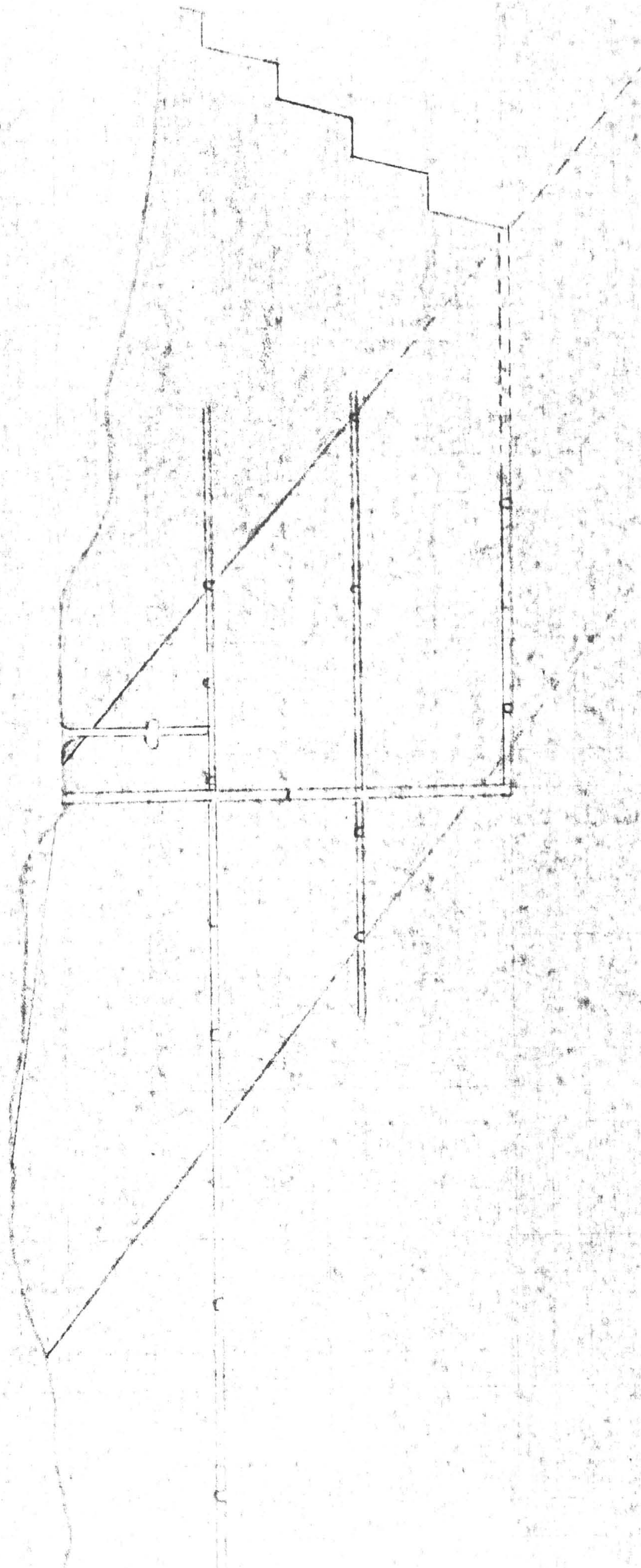
SCALE : 100' - 1"

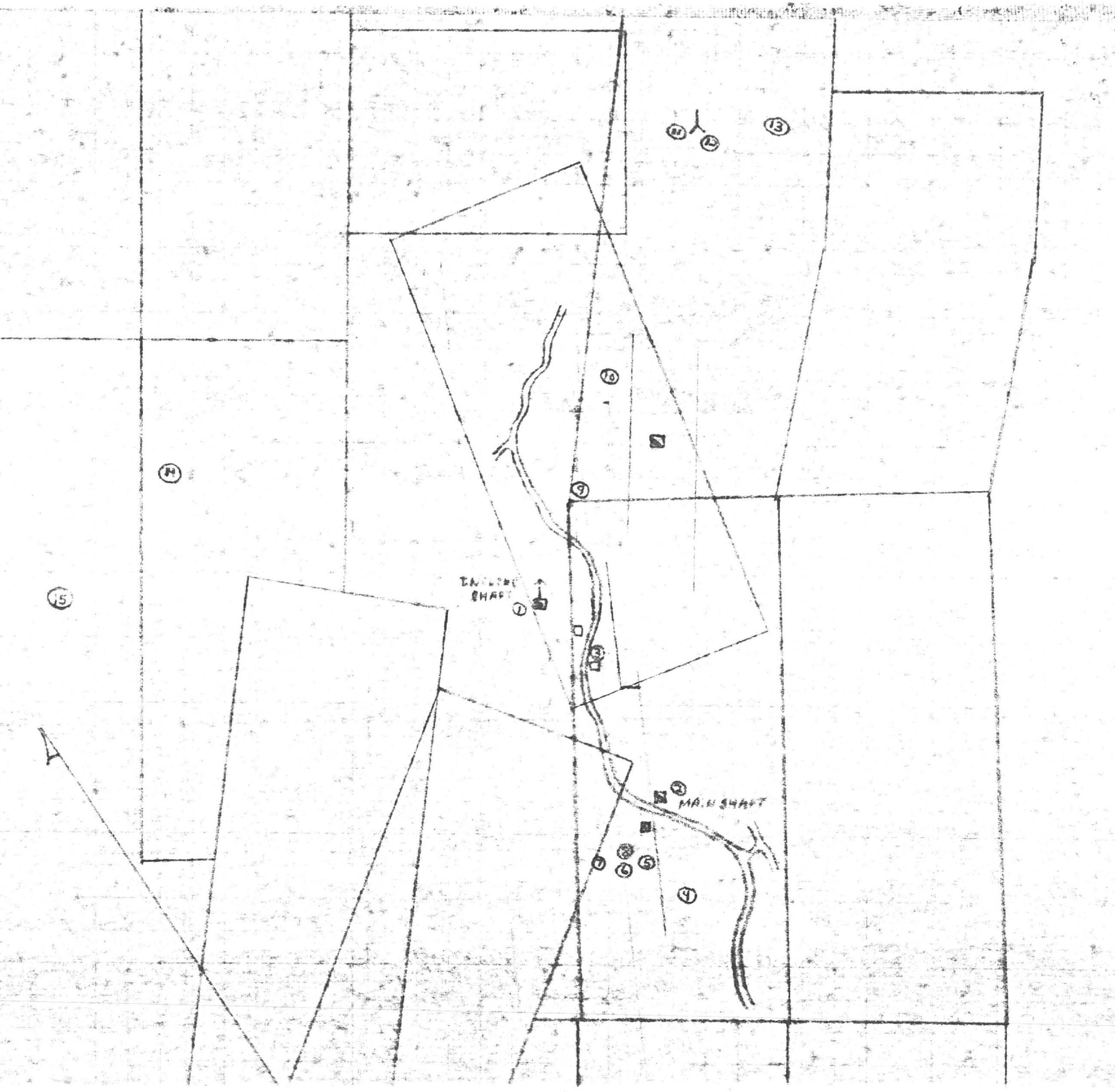
VDE



N650 W100
0'-88'
N600 W50
0'-125'
N500 W125
0'-108'
N400 E125
N400 E100
0'-48'
0'-131'
N300 E125 0'-32'
N300 E100 0'-128'
SURFACE EXTENT OF ORE
MAIN SHAFT
N 500
N 400
N 100







RESULTS

	NO.	AG	AU
V	S-1	.114	.006
D	S-2	.058	.132
V	S-3	.348	.022
D	S-4	.191	.035
D	S-5	.342	.038
D	S-6	.064	.046
D	S-7	.259	.051
V	S-8	.078	.002
V	S-9	.844	.176
V	S-10	.522	.008
D	S-11	.538	.043
D	S-12	.665	.009
V	S-13	N.L	5.900
V	S-14	.638	.532
D	S-15	.530	.206

1.0 vs 0.3 hz   FRIESTAD INT.   1.915 X 39.8 AV

I. P. RECEIVER NOTES, JOB No. 1102, AREA Woodpecker Mine

LINE ______, HALF ______, SP. ______, a = ______, BEARING ______

SENDER STA. #1 = ELECTRODE No. #2, DATE 7/22/76

PAGE ______

HEINRICHS GEOEX

SEND		QTZ VEIN	GALENA	CAL							
RECEIVE		W/ Fe_2O_3?	in QTZ								
MULTIPLIER		10.0	100								
PFE		7.8	6.5	-0.3							
CUR. (AMPS)		3μa	9μa								
POINT No.											
SEP. (n)											
H. F. Mv		75.1	59.3								
DRIFT											
1.0 PFE	K_n/1000	8.1	6.8								
0.3 PFE	ρCAL			1.000							
0.1 PFE	PFE_C	15.5	13.0		PFE / Decade						
3.0 MV	ρ/2π	1700	600		ρ in ohm-meters						
DRIFT	MCF	9	22								
S. P.	L	1.2"x3	1.1"x3								
NOISE	A	2.4x1.3"	~4 in²								
POT RES.											
CULT & CMTS											

Keep as MASTER FOR MACHINE COPY

HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5964, TUCSON, ARIZONA 85703, 806 WEST GRANT ROAD, PHONE: (602) 623-0578

July 1, 1976

Mr. Fran Friestad
Friestad Enterprises
1016 Lexington Way
Rockford, Illinois 61108

Re: GEOEX Job #1102
Woodpecker Mine and
Claims Area
Pioneer District
Pinal County, Arizona

Dear Mr. Friestad:

This letter report is written at your request. As recommended, a one day literature search and reference review of the area geology was done by W. E. Heinrichs, Jr., followed by two preliminary wild-cat geophysical reconnaissance lines across the apparent main mineralized zone. Subsequent to the geophysical work, W. E. Heinrichs, Jr. spent one day in the field reconnoitering the property. The work was done during the interim June 9, 1976 and June 30, 1976, and this report summarizes the results, together with preliminary recommendations and conclusions.

RECOMMENDATIONS

Depending on capital availability and assuming that type of mineral rights, title, control and committments are reasonably favorable, a next stage exploration budget of $5,000.00 is recommended.

The high risk nature of mineral exploration investing generally dictates that relative evaluation and risk sharing approaches are preferable to more absolute and unilateral approaches. This prospect fits this corollary and therefore, the pros and cons of a $5000.00 committment here should ideally be weighed simultaneously with other similar exploration investment opportunities, as available, and efforts primarily concentrated or apportioned on the best ones first.

As explained further below, nothing in exploration tends to acquire certainty until quantitative sampling results, usually including a minimum amount of drilling data, are obtained so as to provide direct subsurface information in addition to surface data. In other words, three dimensional facts with a minimum of conjecture.

CONCLUSIONS

Universal host rock of the area is easterly westerly foliated Pinal (?) quartz muscovite schist. There is a fair amount of soil development and thin but constant floral cover. Both of these factors somewhat inhibit easy surface mapping, especially in a first time examination of a few hours.

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Assuming that the stronger observed zones may represent material of a potentially minable grade over a minable width, then the matter of available tonnage and continuity becomes the most important question in relation to potential economics. Surface geologic mapping, perhaps together with careful geochemical sampling traverses, may help better establish the continuity factor, at least at the surface. That type of work should only be considered in conjunction with other types of truly representative surface sampling and with an ultimate minimum subsurface drilling program in mind. The reason for this is that only after considerable drilling can ore begin to be proven and blocked out. And, only then can reasonable ore reserve estimates and the required feasible studies for possible production be made or considered.

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Water supply development will be a critical factor and certainly it must be included in any ultimate economic considerations. However, it is premature to other than mention it at this stage as a very important factor to keep in mind.

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Geophysical Line 1 utilized 500 foot dipoles and a single spread, seven sending electrode, collinear array. Line 2 was the same except dipoles were 200 feet long. GEOEX Mark 4 model, combination induced polarization - resistivity - self potential equipment was used employing an I.P. frequency pair of 0.3 and 3.0 Hz. Good results were obtained and these are presented in conventional "pseudo"-sectional form, one for each line. Resolvable penetration depth and lateral effects are estimated roughly between 100 to 1000 feet on Line 1 and about 40 to 400 feet on Line 2. GEOEX prepared references titled: "Basis of I.P. Method" and "Comments on Drilling I.P. Data" are appended herewith for further information.

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Respectfully submitted,

Heinrichs GEOExploration Co.

Walter E. Heinrichs, Jr.
P.E. & C.P.G.S. #688

Attachments: Index Map
Sectional Data Sheet Line 1
Sectional Data Sheet Line 2
Plan Sketch
Basis of I.P.
Comments on Drilling I.P. Targets

GEOEX Job #1102
P.O. Box 5964
Tucson, AZ 85703
1 July 1976

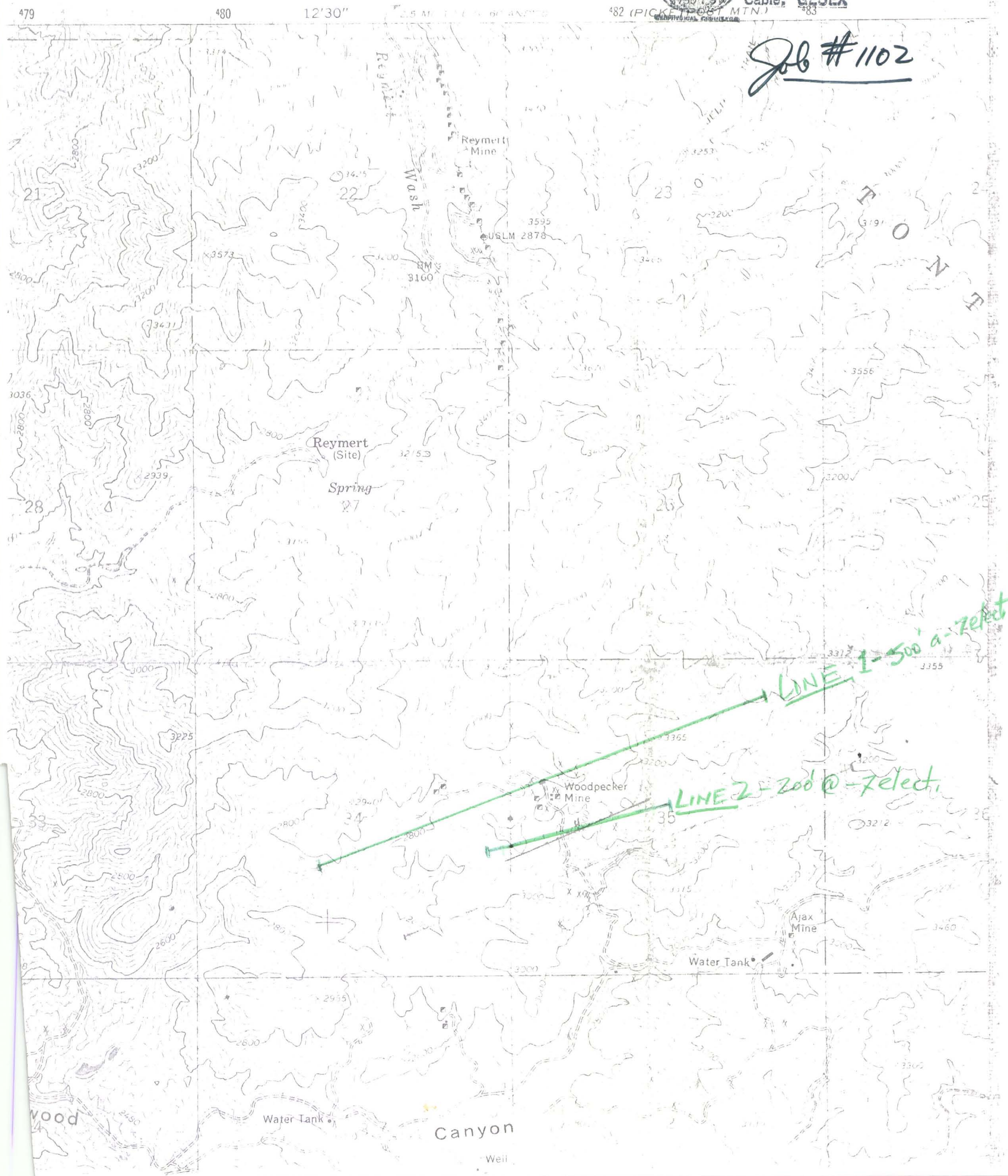
HEINRICHS GEOEXPLORATION CO. JUN 20 1976

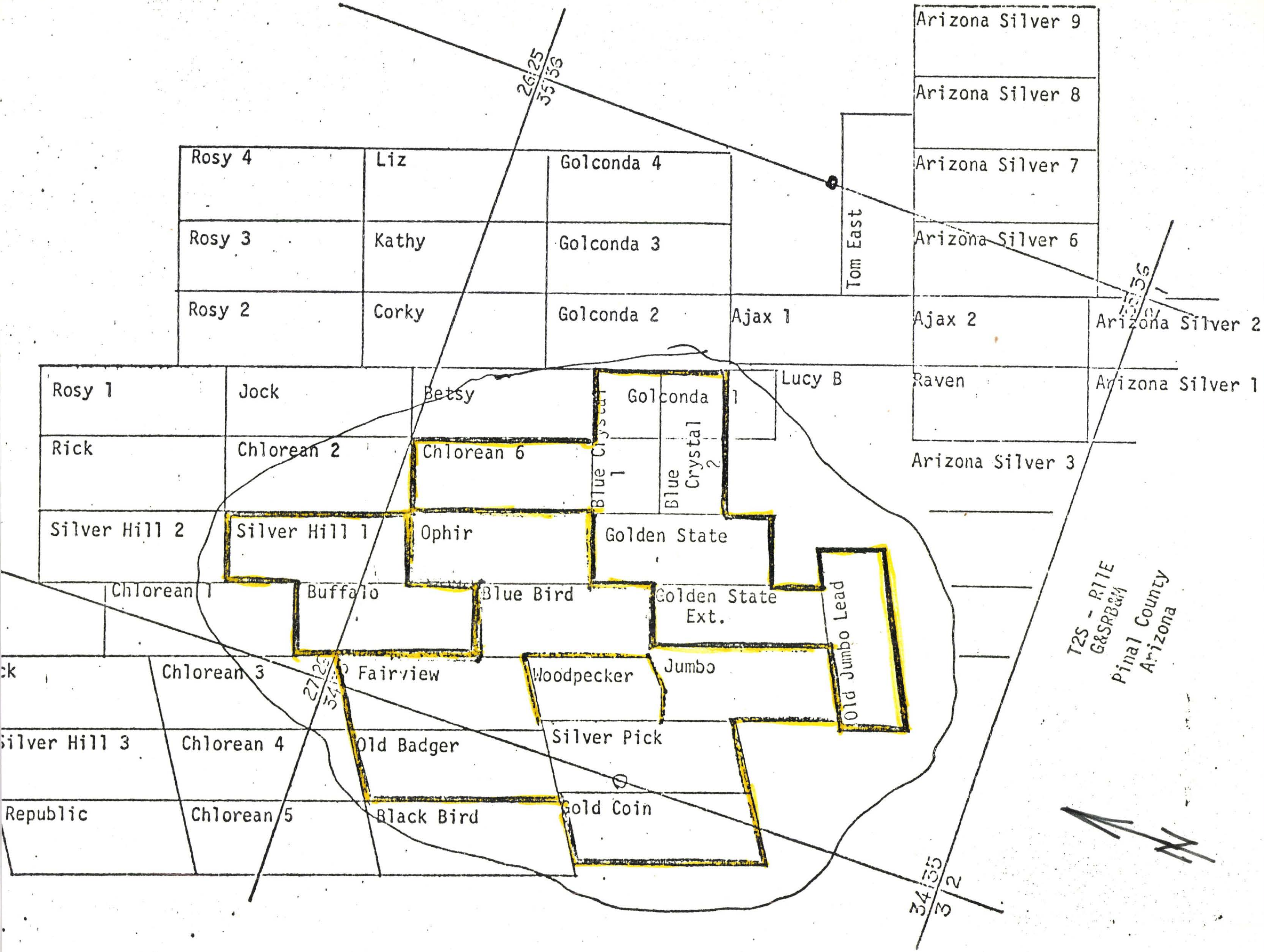
Box 5964 Tucson, Arizona 85703

Phone: (602) 623-0578

Cable: GEOEX

Job #1102





Arizona Silver 9
Arizona Silver 8
Arizona Silver 7
Arizona Silver 6
Arizona Silver 2
Arizona Silver 1
Arizona Silver 3
Tom East
Rosy 4
Liz
Golconda 4
Rosy 3
Kathy
Golconda 3
Rosy 2
Corky
Golconda 2
Ajax 1
Ajax 2
Rosy 1
Jock
Betsy
Golconda 1
Lucy B
Raven
Rick
Chlorean 2
Chlorean 6
Blue Crystal 1
Blue Crystal 2
Silver Hill 2
Silver Hill 1
Ophir
Golden State
Chlorean 1
Buffalo
Blue Bird
Golden State Ext.
Old Jumbo Lead
Chlorean 3
Fairview
Woodpecker
Jumbo
Silver Hill 3
Chlorean 4
Old Badger
Silver Pick
Republic
Chlorean 5
Black Bird
Gold Coin
26 25
35 36
27 26
34 35
34 35
3 2
T2S - R11E
G&SRB&M
Pinal County
Arizona
N

HEINRICHS GEOEXPLORATION COMPANY

P.O. BOX 5964. TUCSON, ARIZONA 85703. 806 WEST GRANT ROAD. PHONE: (602) 623-0578

July 1, 1976

Mr. Fran Friestad
Friestad Enterprises
1016 Lexington Way
Rockford, Illinois 61108

Re: GEOEX Job #1102
Woodpecker Mine and
Claims Area
Pioneer District
Pinal County, Arizona

Dear Mr. Friestad:

This letter report is written at your request. As recommended, a one day literature search and reference review of the area geology was done by W. E. Heinrichs, Jr., followed by two preliminary wild-cat geophysical reconnaissance lines across the apparent main mineralized zone. Subsequent to the geophysical work, W. E. Heinrichs, Jr. spent one day in the field reconnoitering the property. The work was done during the interim June 9, 1976 and June 30, 1976, and this report summarizes the results, together with preliminary recommendations and conclusions.

RECOMMENDATIONS

Depending on capital availability and assuming that type of mineral rights, title, control and committments are reasonably favorable, a next stage exploration budget of $5,000.00 is recommended.

The high risk nature of mineral exploration investing generally dictates that relative evaluation and risk sharing approaches are preferable to more absolute and unilateral approaches. This prospect fits this corollary and therefore, the pros and cons of a $5000.00 committment here should ideally be weighed simultaneously with other similar exploration investment opportunities, as available, and efforts primarily concentrated or apportioned on the best ones first.

As explained further below, nothing in exploration tends to acquire certainty until quantitative sampling results, usually including a minimum amount of drilling data, are obtained so as to provide direct subsurface information in addition to surface data. In other words, three dimensional facts with a minimum of conjecture.

CONCLUSIONS

Universal host rock of the area is easterly westerly foliated Pinal (?) quartz muscovite schist. There is a fair amount of soil development and thin but constant floral cover. Both of these factors somewhat inhibit easy surface mapping, especially in a first time examination of a few hours.

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Sectional Data Sheet Line 1
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Plan Sketch
Basis of I.P.
Comments on Drilling I.P. Targets

GEOEX Job #1102
P.O. Box 5964
Tucson, AZ 85703
1 July 1976

GENERAL LOCATION
of
WOODPECKER MINE AREA
PINAL COUNTY, ARIZONA
for
FRIESTAD ENTERPRISES

HEINRICHS GEOEXPLORATION COMPANY

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

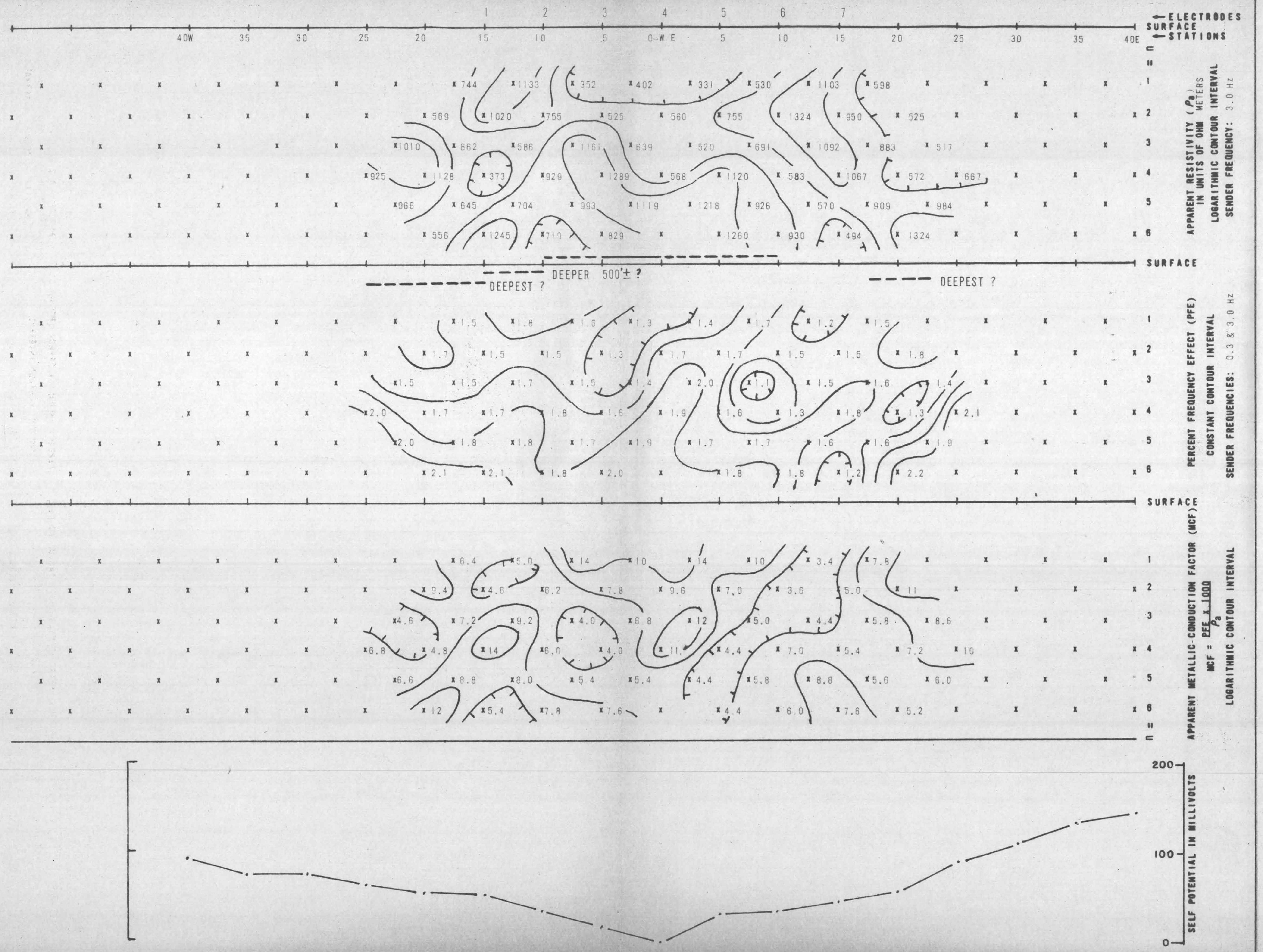
1102-76

LINE NO.
1
SPREAD(S)
1
BEARING
N 70° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET

of

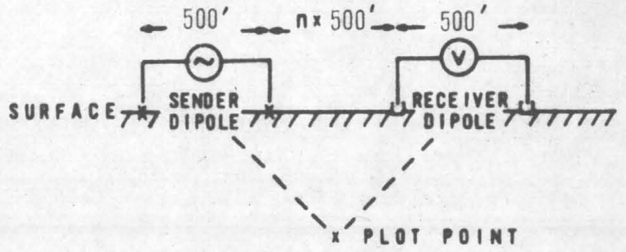
WOODPECKER MINE AREA
PINAL COUNTY, ARIZONA
for
FRIESTAD ENTERPRISES



RELATIVE ANOMALY STRENGTH

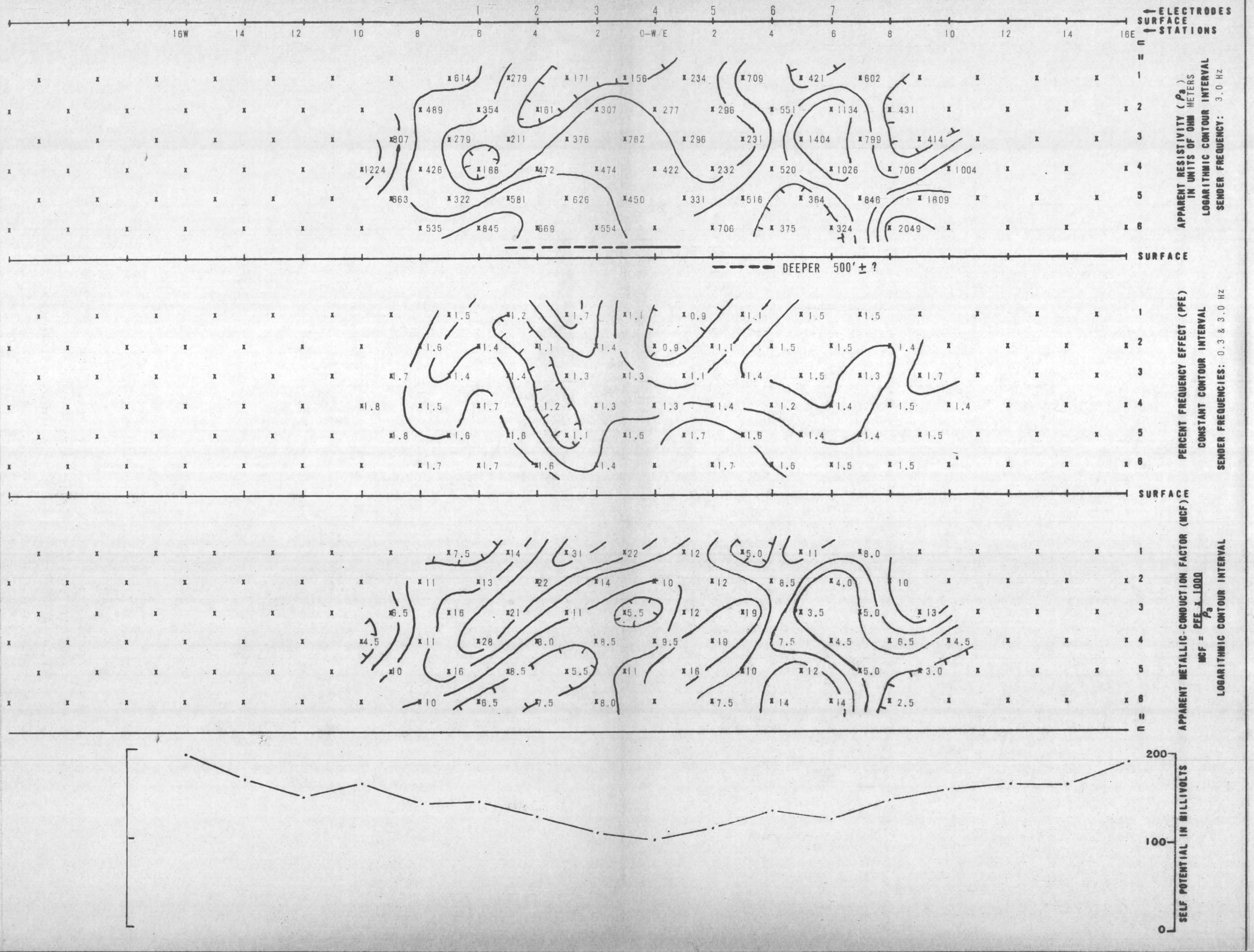
VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



DATE
JUNE 1976

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



1102-76

LINE NO.
2
SPREAD(S)
1
BEARING
N 75° E

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET

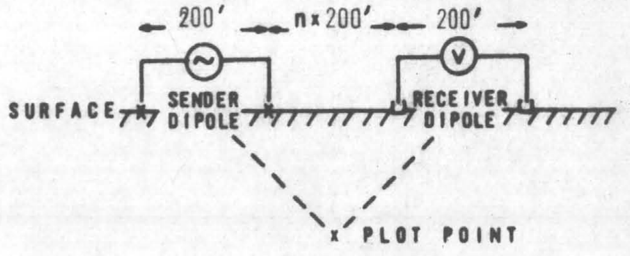
of

WOODPECKER MINE AREA
PINAL COUNTY, ARIZONA
for
FRIESTAD ENTERPRISES

RELATIVE ANOMALY STRENGTH

VERY WEAK WEAK MODERATE STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



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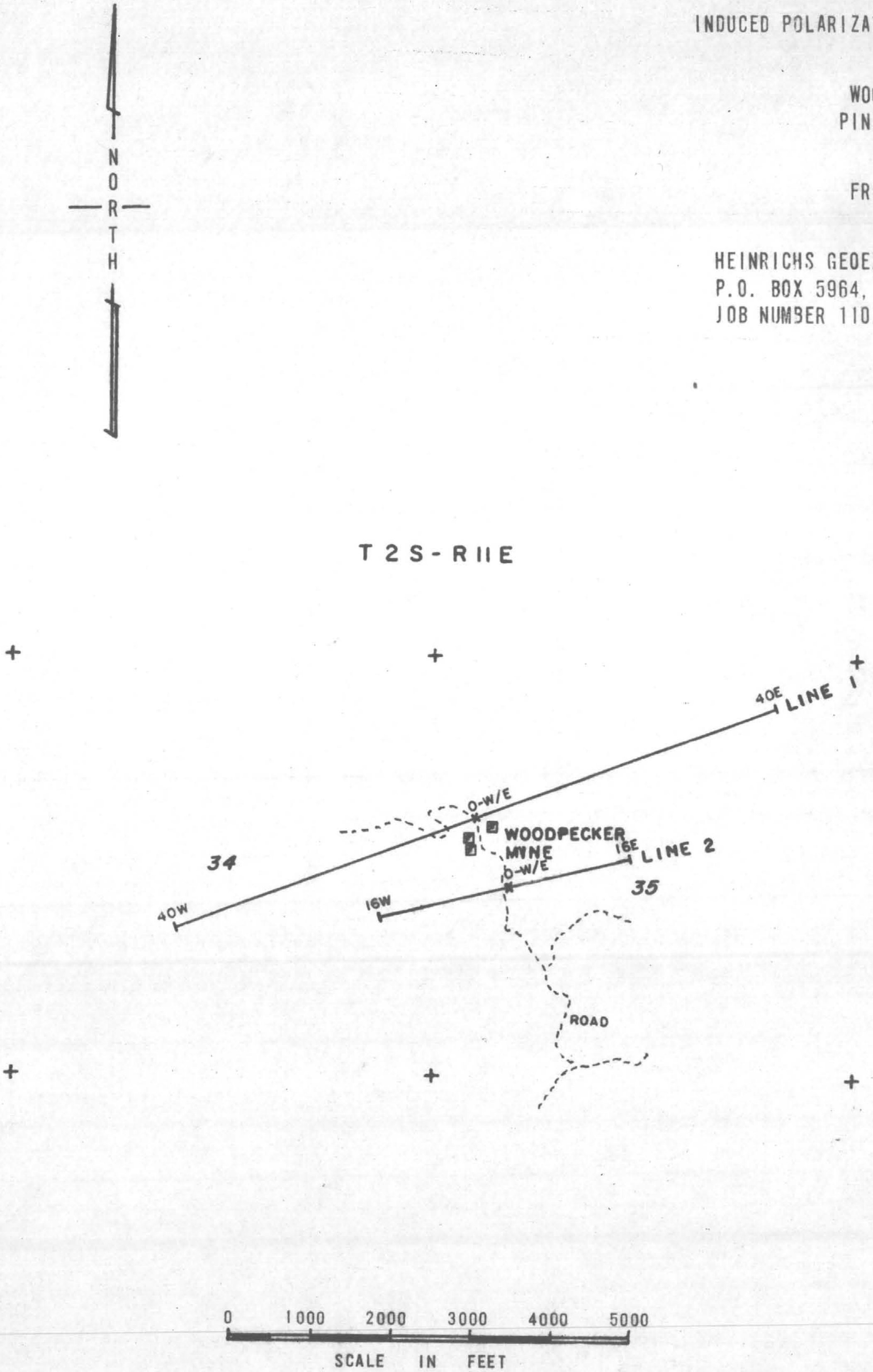
HEINRICHS GEOEXPLORATION COMPANY
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

INDUCED POLARIZATION LOCATION PLAN
of
WOODPECKER MINE AREA
PINAL COUNTY, ARIZONA
for
FRIESTAD ENTERPRISES
by
HEINRICHS GEOEXPLORATION COMPANY
P.O. BOX 5964, TUCSON, AZ. 85703
JOB NUMBER 1102 JUNE 1976



NOTE: THIS SHEET OVERLAYS U.S.G.S. MINERAL MOUNTAIN 7.5 MINUTE QUADRANGLE

HEINRICHS
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~~vancouver~~
~~sydney~~
geophysical engineers

BASIS OF THE INDUCED POLARIZATION METHOD

The induced polarization method is based on the electrical properties exhibited by electronic or metallic conductors embedded in an ionic or electrolytic conducting matrix. These properties are noticed in that the potential across a block of this dual conduction mode material will increase with time, approaching a constant value, when a constant current is made to flow through the block. This phenomenon occurs because at the boundaries between the two conductor types, electrolytic ions have to give up or take on electrons thereby requiring an additional force (overvoltage) over that which would be needed with only one mode of conduction; showing up as a building of potential across the block with time as more ions are backed up. This potential approaches a constant value when an equilibrium is established between the ions backed up at the boundaries and those flowing across the boundaries. Therefore, from the preceeding discussion, it is seen that the gross effect is quite similar to the charging of a leaky capacitor and for most applications, it is proper to use this model as a guide. These capacitive-like properties are normally measured by one of three different field techniques.

In the time domain (pulse) method, a steady direct current is imposed in the ground for a few seconds and abruptly terminated so that the resulting capacitive-like voltage decay (discharge) curve can be measured or recorded. Usually, the voltage decay curve is integrated with respect to time to give the area under the decay curve in units of volt-seconds. This value is then normalized by the primary voltage measured while the steady current is on. The more area determined, the more capacitance or polarization the ground exhibits.

In the frequency domain (dual frequency) method, the percentage difference between the impedance (AC resistance) offered to a lower and higher frequency is measured. A capacitor offers a lower impedance to a higher frequency than it does to a lower frequency, therefore, the percentage difference between the impedances will increase with increased polarization.

A third technique is to measure the phase angle or delay between an introduced current wave-form and the received voltage wave. This phase delay also increases as polarization increases.

Almost all metallic lustered minerals, including most sulfides, for example: pyrite, chalcopyrite, chalcocite, bornite, and molybdenite are electrical conductors. The rocks and groundwater, with which they permeate or are permeated, are also ionic conductors; therefore, if an electrical current is made to flow through a sulfide deposit, it will polarize and often can be detected by the three methods described above.

The induced polarization property is not entirely unique with sulfides since magnetite, graphite (which are both metallic lustered) and some clays will exhibit it; however, with sufficient geological and geophysical data, effects due to sulfides can generally be interpreted apart from non-sulfide anomalism. The type of sulfide however, say pyrite, as distinct from chalcopyrite, cannot yet be distinguished with present induced polarization techniques since all types give quite similar response.

The I.P. technique was developed primarily for porphyry type deposits and is perhaps the only reliable means of detecting hidden disseminated sulfides. However, the I.P. method works just as well or perhaps better on semi-massive to massive sulfides, contrary to some of the earlier thinking, for it generally gives increased response with increased volume percentage of sulfide.

FIELD TECHNIQUES AND INTERPRETATION

For routine exploration, we prefer and use the dual frequency system because of its greater simplicity of instrumentation, operation, and greater accuracy as well as simplicity of interpretation. However, all three methods give basically the same results and the choice is either a matter of opinion or highly technical reasons and therefore should be left to the particular application and the geophysicist's discretion.

The two frequencies we most commonly use are 0.05 and 3.0 cycles per second, or so called "D.C." and "A.C." modes respectively. Other frequencies are available with our equipment and are occasionally used when desired. The usual frequency range used is from about 0.01 cps to 10 cps. The lower frequency limit is due to naturally existing, time-varying, telluric (natural earth) currents, and electrode polarization. The upper limit is determined by electromagnetic coupling effects which increase rapidly with increasing frequency.

In our standard reconnaissance field practice, five equally spaced collinear current electrodes are placed in the ground by burying aluminum foil in pits wetted with brine to insure good electrical contact. Observations are made using a symmetrical dipole-dipole electrode configuration where the distance (a) between adjacent receiver (potential) electrode pairs (or dipoles) is kept equal to the distance between adjacent sender (or current) electrode pairs. Generally the receiving dipole is separated by one to six dipole units ("n" separation) from the sending dipole. Figures 1 and 2 indicate this configuration and resulting data plotting positions. A precisely controlled square wave current is sent through a sending dipole at 0.05 and 3.0 cycles per second from which, at the receiving dipole, a "D.C." and an "A.C." voltage is measured respectively. By knowing the geometry involved (the dipole length or spacing and the separation distance between the two receiving-sending dipole pairs), along with the two voltages, an apparent "D.C." and an "A.C." resistivity can be calculated. From these apparent resistivities, their percentage difference is determined, thus giving the Percent Frequency Effect (PFE). A third quantity porportional to PFE and inversely porportional to "D.C." resistivity, called Metallic Conduction Factor (MCF) is computed in order to somewhat normalize PFE for variations in ground conductivity purely as a technical interpretational aid. Formulas for these various quantities are given on page 5.

Selection of electrode spacings [(a) in Fig. 1] is determined by the objectives to be reached in a given survey. This spacing will range from very small (50 ft. or less) for very detailed and shallow surveys, up to 1,000 ft., or occasionally more, for broad, deep reconnaissance work. Other factors involved in the selection of spacing are concerned with the anticipated physical geometry of any possibly existing mineral occurrence. This includes consideration of expected depth of burial to the top of the deposit, the dimensions of the deposit itself, its orientation, strike and dip, etc., as well as its expected electrical properties.

In general, the greater the dipole spacing and "n" separation, the greater the depth penetration and the less the resolution. An average rule of thumb, with a good contrast of electrical properties, using the symmetrical co-linear dipole-dipole system, and having data from 1 through 4 in "n" separations, is that two times the dipole length is the maximum depth of detectable penetration for a body having two or three of its dimensions large in relation to the dipole spacing. However, a body having two or three of its dimensions less than the dipole spacing, and buried more than one spacing probably will not be detectable. A zone, regardless of orientation, having a dimension less than 0.1 the dipole spacing likely will not be detected. Also, zones differing by less than about 30% in electrical conductivity will not be very easily resolved by resistivity measurements, but may still be detected if a polarization contrast exists.

To illustrate the above in more concrete terms, consider a dipole spacing of 1,000 ft. for the following: An overburden of more than 2,000 ft. would likely not allow enough current penetration into bedrock to detect even a large and highly mineralized zone in the bedrock. Also, a sulfide zone lying completely within 200 ft. of the surface generally would not be detected. A spherical or elongated cylindrical body whose diameter is much less than 1,000 ft. would be just out of the range of detectability. A dike-like or sill-like zone whose width is less than

100 ft. probably would not be detected regardless of how it lies relative to the spread.

So far, only the maximum and minimum limits of detection and resolution relative to the various geological and geometrical configurations have been discussed, thus omitting optimum conditions. Generally, we attempt to make the dipole spacing one or two times the expected depth to the target in order to obtain a good electrical response. Of course, where it is suspected that the zone has a good depth extent, say two or three dipole spacings, as is typical of most porphyry type copper deposits, a spacing considerably more than two times the expected depth to sub-outcrop can be used to obtain broader and more rapid coverage, as long as we do not exceed the width. Because of these factors, we usually use 500 to 1,000 ft. dipole spacings in prospecting for porphyry-type deposits.

The field data are interpreted after plotting the PFE, MCF and resistivity as in Figures 1 and 2. These values are then contoured in sections, the resistivity and metallic conduction factor logarithmically (because of the usual large variations in magnitude) and the percent frequency effect on a constant interval. This two dimensional method of plotting gives an additional advantage over the standard profile methods in that easily recognizable patterns are associated with various subsurface geometrical configurations and that lateral variations can be separated from vertical effects. See the four appended examples of plotted field and theoretical sectional data sheets.

It should be realized that there is no definite relation between the vertical scale on these plots and actual subsurface depth. The data point values are a complexly weighted average of the electrical contrast distribution in the vicinity of the sending-receiving dipole pair and contain depth as well as lateral information. About all that can be said is that by increasing the dipole length and the dipole separation ("n" separation) more volume of ground is being affected and therefore more depth penetration.

There are cases where the depth to a subsurface feature can be determined fairly precisely as in the two horizontal layer situation. The field data is compared with theoretical type curves for various resistivity contrasts between the top and bottom layer and various thickness of the top layer until a close match is found. This enables the depth to the bottom layer in the field to be determined as well as the true resistivity of both layers. A major limitation of this interpretational technique is that only a few simple geometric cases related to a relatively few numbers of layers have been theorectically developed. However, extremely valuable information can still be derived in alluvial and lake bed applications for depth to bedrock and groundwater purposes, etc.

In interpreting PFE's, values of 0 to 4% are usually considered background, 4 to 8% marginally anomalous, and 8 to 40% plus definitely anomalous, but they must be considered in light of the associated resistivity. Very low resistivities give an increased background frequency effect due to an electromagnetic inductive coupling interference phenomenon that must be corrected for. The MCF tends to correct any high resistivity increased background effects, but tends to amplify the electromagnetic frequency effects making a correction imperative.

<u>FORMULAS</u>: PFE = $[\rho_{dc}/\rho_{ac}-1]\ 100$

Where PFE is Percent Frequency Effect, ρ_{dc} is the apparent resistivity at the lower frequency and ρ_{ac} is the higher frequency apparent resistivity.

$$\rho = 2\pi VK_n/I$$

Where ρ is either ρ_{dc} or ρ_{ac} depending on frequency of the current I which is measured in amperes. The potential V, arising from I, is measured in volts. K_n is the geometric factor given by:

$$K_n = \tfrac{1}{2}an(n+1)(n+2)$$ (Only for dipole-dipole arrays.)

Where "a" is the dipole spacing in feet and "n" is the number of dipoles separating the sending and receiving dipoles; this gives, for apparent resistivity:

$$\rho = [2\pi V/I][\tfrac{1}{2}an(n+1)(n+2)]$$

from which we see that ρ is in units of ohm-feet. However, the apparent resistivity usually is plotted: $\rho/2\pi$

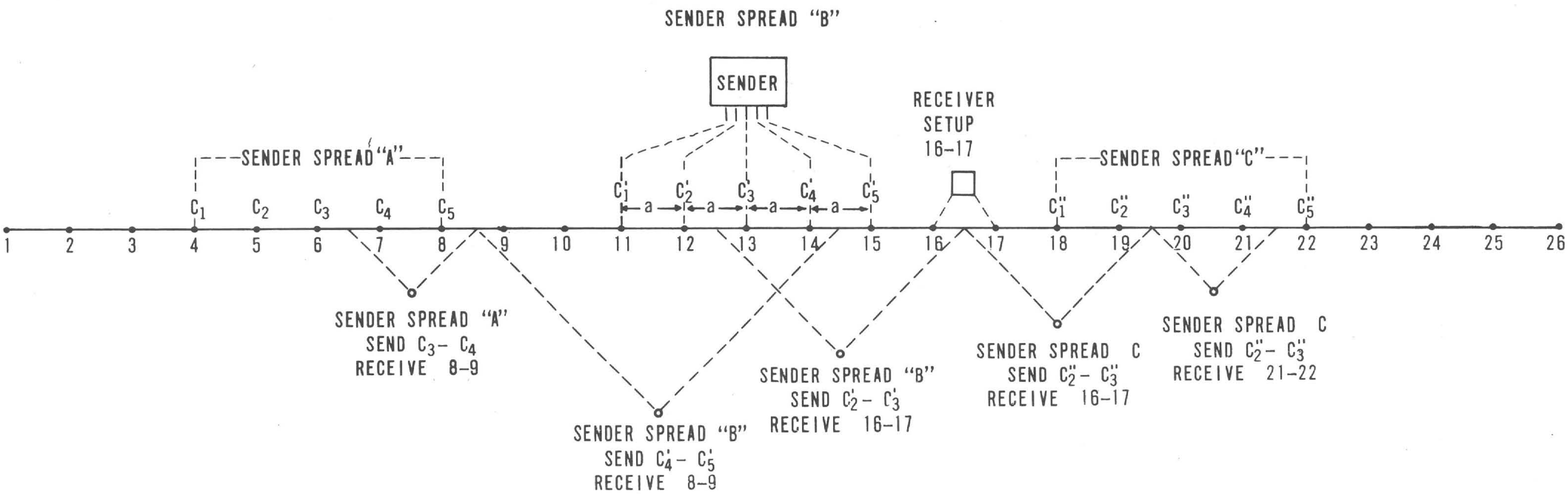
$$\rho/2\pi = VK_n/I = [V/I][\tfrac{1}{2}an\ (n+1)(n+2)]$$

$$MCF = 1000 \times PFE/[\rho_{dc}/2\pi]$$

Where MCF is the Metallic Conduction Factor and $\rho_{dc}/2\pi$ is apparent "D.C." resistivity.

References:
1. Wait, James R., "Overvoltage Research and Geophysical Applications", Pergamon Press, 1959.
2. "Mining Geophysics", Society of Exploration Geophysicists, Vol. I, Case Histories, October 1966.

Published by W. E. Heinrichs, Jr., et al., Engineering and Mining Journal, September 1967.



SCHEMATIC DIAGRAM ILLUSTRATING THE METHOD OF OBTAINING AND PLOTTING DIPOLE-DIPOLE I.P. DATA

Diagram shows three separate current electrode spreads along a traverse line. In normal procedure, there are three dipole separations between current electrode spreads. The receiver setups are moved outwards from the ends of each current electrode spread usually until three dipole spacings separate the potential electrode setup from the near end of the spread. Current is "sent" to each possible pair of electrodes for each receiver setup. For instance, in Sender Spread "B" when the receiver setup is between 14 and 15 only $C_3' - C_2'$ and $C_2' - C_1'$ can be "sent" so that data at 1 and 2 dipole separations is obtained respectively When the receiver is setup between 16 and 17; $C_5' - C_4'$, $C_4' - C_3'$, $C_3' - C_2'$ and $C_1' - C_2'$ are sent and data is obtained for 3, 4, 5 and 6 dipole separations respectively. Each sender spread provides 33 data points.

Fig. 1

(DATA POINTS OBTAINED FROM THE THREE SPREADS OF FIGURE 1)

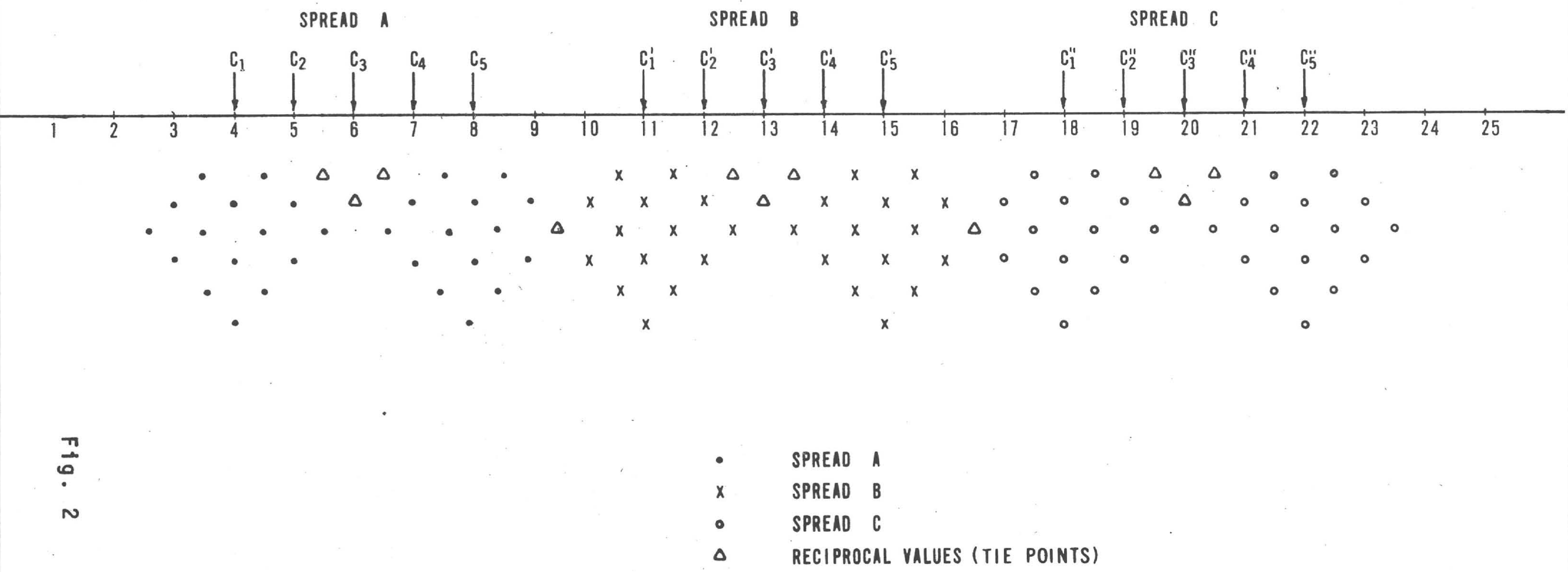
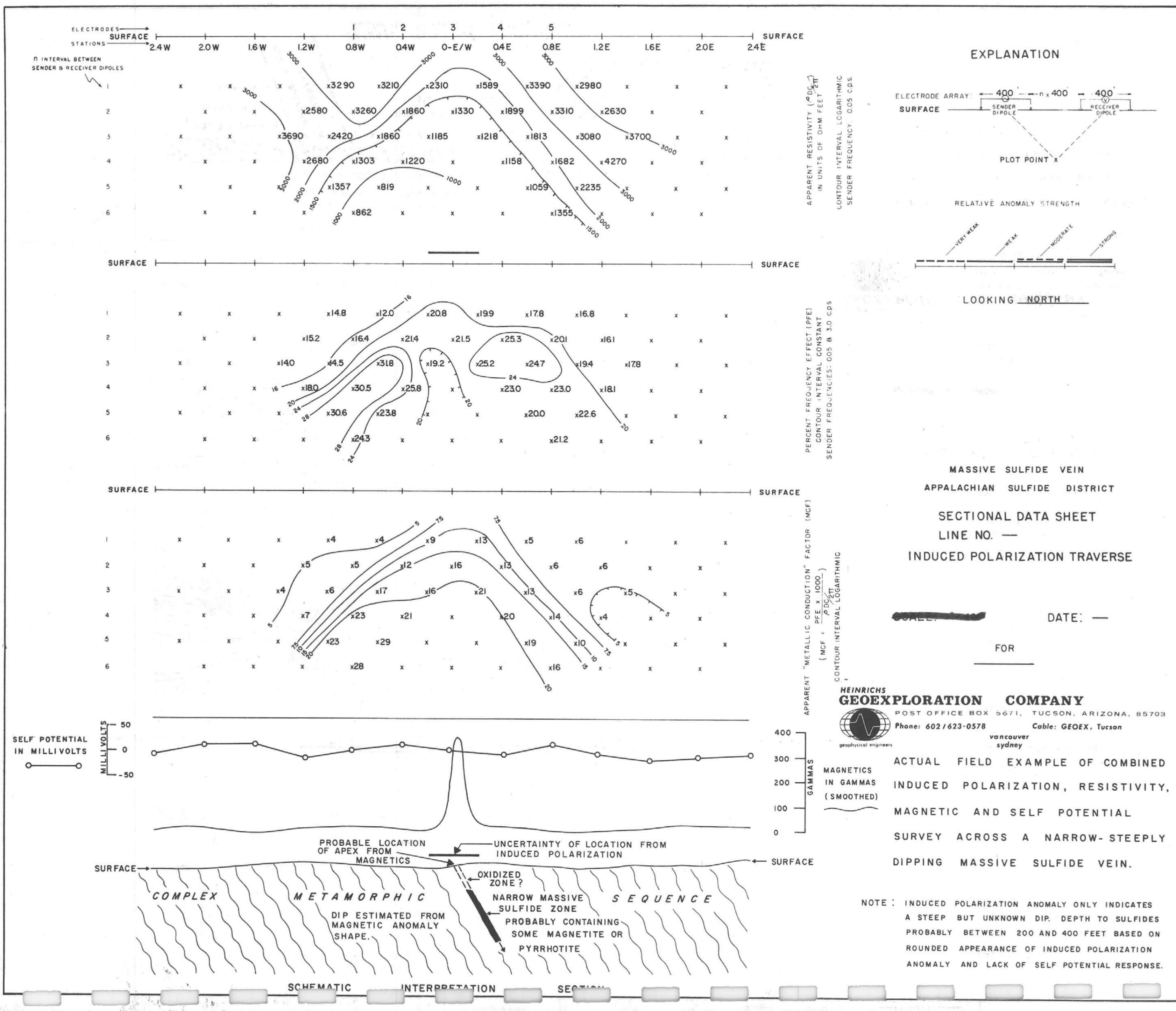
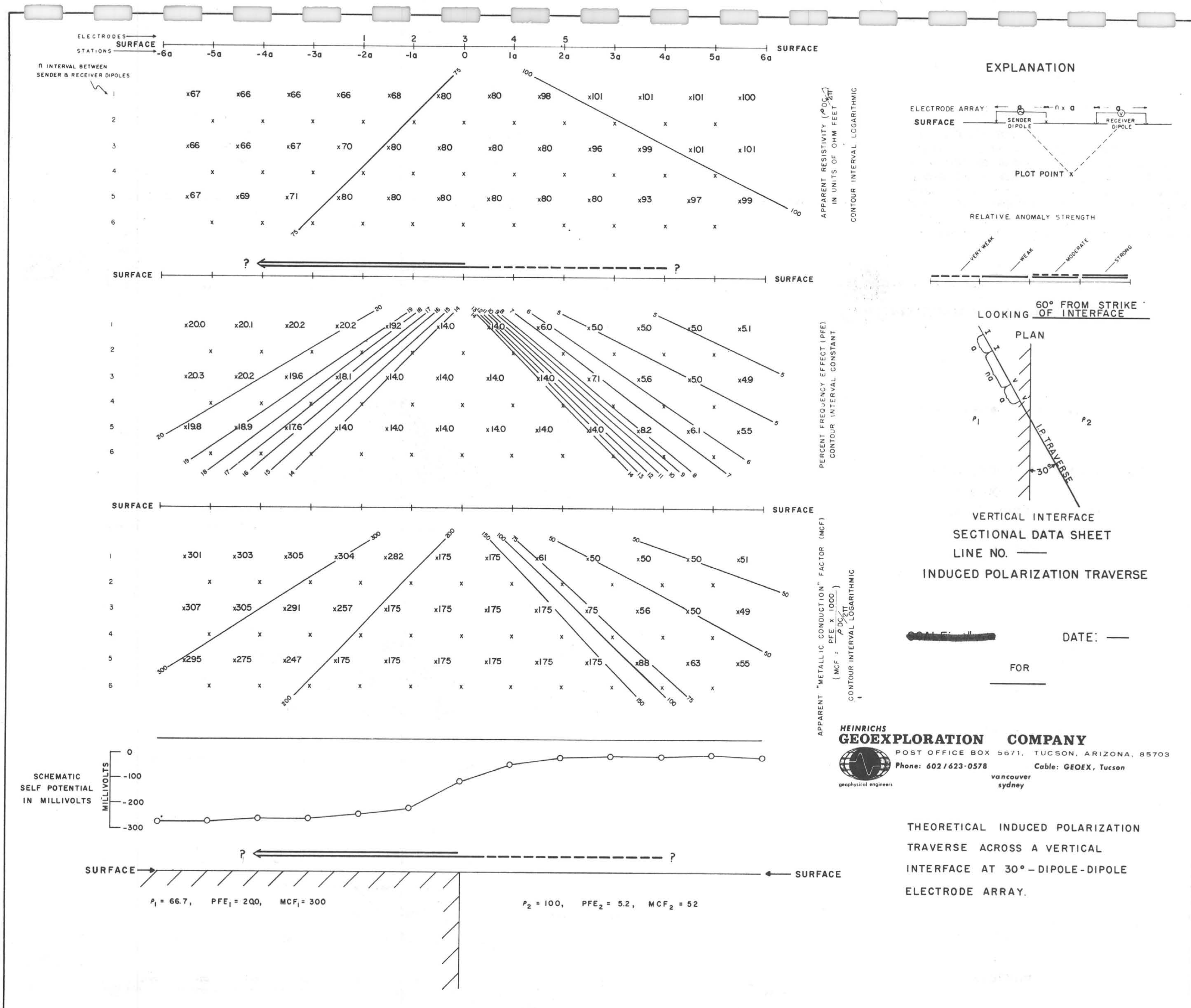
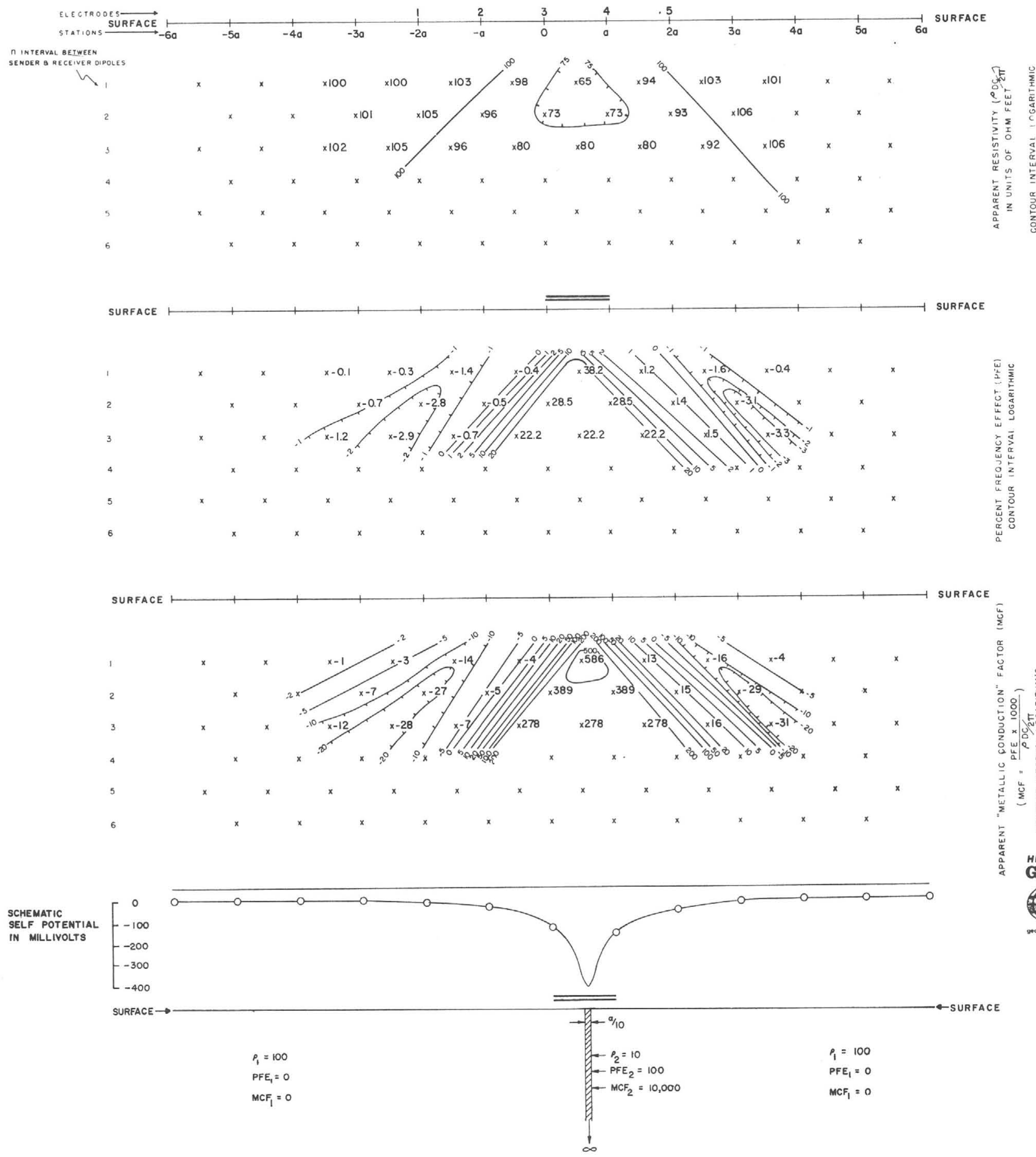


Fig. 2


EXPLANATION
ELECTRODE ARRAY: 400 — n x 400 — 400
SURFACE
SENDER DIPOLE
RECEIVER DIPOLE
PLOT POINT
RELATIVE ANOMALY STRENGTH
VERY WEAK
WEAK
MODERATE
STRONG
LOOKING NORTH
ELECTRODES
SURFACE
STATIONS
2.4W 2.0W 1.6W 1.2W 0.8W 0.4W 0-E/W 0.4E 0.8E 1.2E 1.6E 2.0E 2.4E
n INTERVAL BETWEEN SENDER & RECEIVER DIPOLES
APPARENT RESISTIVITY IN UNITS OF OHM FEET
CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY .005 CPS
PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: .005 & 3.0 CPS
APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
CONTOUR INTERVAL LOGARITHMIC
SELF POTENTIAL IN MILLIVOLTS
MILLIVOLTS
MAGNETICS IN GAMMAS (SMOOTHED)
GAMMAS
PROBABLE LOCATION OF APEX FROM MAGNETICS
UNCERTAINTY OF LOCATION FROM INDUCED POLARIZATION
OXIDIZED ZONE?
NARROW MASSIVE SULFIDE ZONE PROBABLY CONTAINING SOME MAGNETITE OR PYRRHOTITE
DIP ESTIMATED FROM MAGNETIC ANOMALY SHAPE.
COMPLEX METAMORPHIC SEQUENCE
SCHEMATIC INTERPRETATION SECTION
MASSIVE SULFIDE VEIN
APPALACHIAN SULFIDE DISTRICT
SECTIONAL DATA SHEET
LINE NO. —
INDUCED POLARIZATION TRAVERSE
[redacted]
DATE: —
FOR
HEINRICHS GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578
Cable: GEOEX, Tucson
vancouver
sydney
geophysical engineers
ACTUAL FIELD EXAMPLE OF COMBINED INDUCED POLARIZATION, RESISTIVITY, MAGNETIC AND SELF POTENTIAL SURVEY ACROSS A NARROW-STEEPLY DIPPING MASSIVE SULFIDE VEIN.
NOTE: INDUCED POLARIZATION ANOMALY ONLY INDICATES A STEEP BUT UNKNOWN DIP. DEPTH TO SULFIDES PROBABLY BETWEEN 200 AND 400 FEET BASED ON ROUNDED APPEARANCE OF INDUCED POLARIZATION ANOMALY AND LACK OF SELF POTENTIAL RESPONSE.


EXPLANATION
ELECTRODE ARRAY: a — n x a — a
SURFACE
SENDER DIPOLE
RECEIVER DIPOLE
PLOT POINT
RELATIVE ANOMALY STRENGTH
VERY WEAK
WEAK
MODERATE
STRONG
LOOKING 60° FROM STRIKE OF INTERFACE
PLAN
IP TRAVERSE
30°
VERTICAL INTERFACE
ELECTRODES
SURFACE
STATIONS
-6a -5a -4a -3a -2a -1a 0 1a 2a 3a 4a 5a 6a
n INTERVAL BETWEEN SENDER & RECEIVER DIPOLES
APPARENT RESISTIVITY IN UNITS OF OHM FEET
CONTOUR INTERVAL LOGARITHMIC
PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
CONTOUR INTERVAL LOGARITHMIC
SCHEMATIC SELF POTENTIAL IN MILLIVOLTS
MILLIVOLTS
ρ1 = 66.7, PFE1 = 20.0, MCF1 = 300
ρ2 = 100, PFE2 = 5.2, MCF2 = 52
SECTIONAL DATA SHEET
LINE NO. —
INDUCED POLARIZATION TRAVERSE
[redacted]
DATE: —
FOR
HEINRICHS GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578
Cable: GEOEX, Tucson
vancouver
sydney
geophysical engineers
THEORETICAL INDUCED POLARIZATION TRAVERSE ACROSS A VERTICAL INTERFACE AT 30° - DIPOLE-DIPOLE ELECTRODE ARRAY.



EXPLANATION

ELECTRODE ARRAY
SURFACE
SENDER DIPOLE
RECEIVER DIPOLE
PLOT POINT

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING NORMAL TO STRIKE

VERTICAL
TABULAR BODY

SECTIONAL DATA SHEET
LINE NO. ——
INDUCED POLARIZATION TRAVERSE

[redacted] DATE: ——

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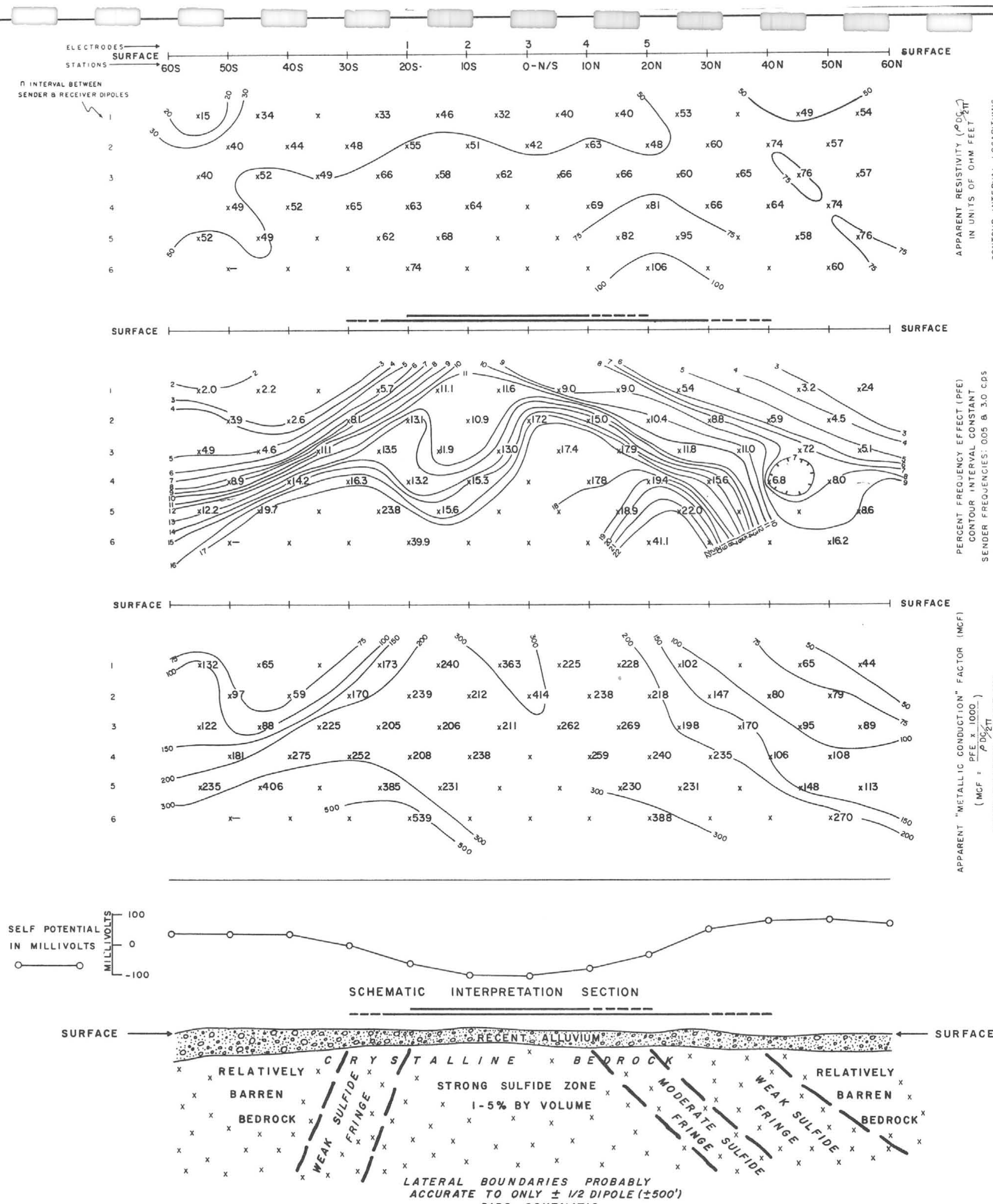
THEORETICAL DIPOLE-DIPOLE INDUCED POLARIZATION RESPONSE OVER A CONDUCTIVE VERTICAL TABULAR SULFIDE BODY CROSSED NORMAL TO THE STRIKE [HAVING A THICKNESS OF 1/10 THE ELECTRODE SPACING (a), A RESISTIVITY CONTRAST OF 10:1, A BACKGROUND RESISTIVITY (ρ_1) OF 100, A BACKGROUND PFE_1 OF 0, AND A PFE_2 OF 100 IN THE SULFIDE ZONE]



EXPLANATION

ELECTRODE ARRAY 1000' — n x 1000 — 1000'
SURFACE
SENDER DIPOLE
RECEIVER DIPOLE
PLOT POINT

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING WEST

PIMA MINING DISTRICT
PIMA COUNTY, ARIZONA

SECTIONAL DATA SHEET
LINE NO. —
INDUCED POLARIZATION TRAVERSE

[redacted] DATE: —

FOR

HEINRICHS GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578 Cable: GEOEX, Tucson
vancouver
sydney
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ACTUAL FIELD EXAMPLE OF INDUCED POLARIZATION TRAVERSE OVER DISSEMINATED PORPHYRY TYPE SULFIDE MINERALIZATION

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.

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 1

HEINRICHS GEOEX

LINE 1, HALF W, SP. 1, a = 500, BEARING ~~N 70° E~~ S 70° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

SEND	5-6	4-5	5-6	3-4	4-5	5-6	6-7	2-3	3-4	3-4
RECEIVE	0-10W	10-20W	→	20-30W	→	→	→	30-40W	→	CAL
MULTIPLIER	10	10	10	10	1.0	10	10	100	10	10
PFE	1.1	1.3	1.5	1.6	1.3	1.4	1.8	1.8	1.5	0.0
CUR. (AMPS)	5	5	5	5	5	5	5	5	5	2
POINT NO.										
SEP. (n)	1	1	2	1	2	3	4	1	2	
H. F. MV	613	698	257	606	226	110	47.3	1950	325	199
DRIFT	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.0
1.0 PFE / K_n/1000	5.75	5.75	23.0	5.75	23.0	57.5	115	5.75	23.0	0-M
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										0-F
3.0 MV / $\rho/2\pi$	712	811	1194	704	1050	1278	1104	2265	1510	
DRIFT / MCF	1.5	2.0	1.3	2.3	1.2	1.1	2.0	1.0	1.0	
S. P.	18.7	14.0		18.0				2.5		
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

LINE 1, HALF W, SP. 1, a = 500, BEARING N [illegible] ~~N 70 E~~ S 70 W

SENDER STA. D = ELECTRODE NO. 4, DATE 6-18-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	6-1	2-3	3-4	3-4
RECEIVE	0-10W	10-20W	→	20-30W	→	→	→	30-40W	→	CAL
MULTIPLIER	10	10	10	10	10	10	10	100	10	10
PFE	1.1	[illegible]	1.5	1.6	1.3	1.4	[illegible]	1.9	1.5	0.0
CUR. (AMPS)	5	[illegible]	5	5	5	5	5	5	5	2
POINT NO.	5.75	5.75	23.0	5.75	23.0	57.5	115	5.75	23.0	
SEP. (n)	1	1	2	1	2	2	4	1	2	
H. F. MV	[illegible]	649	250	606	226	110	[illegible]	1950	[illegible]	198
DRIFT	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0
1.0 PFE / $K_n/1000$	5.75	5.75	23.0	5.75	23.0	57.5	115	5.75	23.0	[illegible]
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_C										
3.0 MV / $\rho/2\pi$	[illegible]	4054	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
DRIFT / MCF	[illegible]	232	125	363	122	1212	230	116	126	
S. P.	18.7	14.0	[illegible]	18.0				2.5		
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 2

HEINRICHS GEOEX

LINE 1, HALF W, SP. 1, a = 500', BEARING S-70°W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

SEND		4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE		→	→	→	40-50W	→	→	→	→	→	CAL
MULTIPLIER		10	10	1.0	100	10	1.0	1.0	1.0	1.0	10
PFE		1.5	1.6	1.9	1.5	1.5	1.7	1.8	1.7	2.0	0.0
CUR. (AMPS)		5	5	4	5	5	5	5	5	4	
POINT NO.											
SEP. (n)		3	4	5	1	2	3	4	5	6	
H. F. MV		200	111	44.1	1280	439	101.0	80	48.9	20.4	197
DRIFT		0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
1.0 PFE	$K_n/1000$	57.5	115	201	5.75	23.0	57.5	115	201	322	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2323	2579	2238	1487	2040	1173	1859	1986	1659	
DRIFT	MCF	1.0	1.0	.85	1.0	1.0	1.5	1.0	1.0	1.2	
S. P.					9.4						
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 1, HALF W, SP. 1, a = 500', BEARING S 70° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

PAGE 2

HEINRICHS GEOEX

SEND		4-5	4-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE				→	40-50W					→	CAL
MULTIPLIER		10	10	1.0	100	10	1.0	1.0	1.0	1.0	10
PFE		1.4	1.6	1.9	1.5	1.5	1.9	1.9	1.7	2.0	0.0
CUR. (AMPS)		5	5	4	5	5	5	5	5	4	
POINT NO.											
SEP. (n)		3	4	5	1	2	3	4	5	6	
H. F. MV		200	111	44.1	1790	439	101.0	80	41.9	20.4	199
DRIFT		0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
1.0 PFE	$K_n/1000$	57.5	115	201	5.75	23.0	57.5	115	201	322	1.0
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2823	7594	2238	1487	2040	1173	1859	1986	1659	
DRIFT	MCF	1.0	1.0	.85	1.0	1.0	1.5	1.0	1.0	1.2	
S. P.					9.4						
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 3

HEINRICHS GEOEX

LINE 1, HALF W, SP. 1, a = 500', BEARING S-70°-W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

SEND	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2
RECEIVE	50-60W	→	→	→	→	60-70W	→	→	→	70-80W
MULTIPLIER	10	10	1.0	1.0	1.0	10	1.0	1.0	1.0	1.0
PFE	1.7	1.5	1.7	1.8	1.8	1.5	1.7	1.9	2.1	2.0
CUR. (AMPS)	5	5	5	5	5	5	5	5	5	5
POINT NO.										
SEP. (n)	2	3	4	5	6	3	4	5	6	4
H. F. MV	245	114	32.1	34.7	22.1	174	97.1	31.8	38.3	79.6
DRIFT	0.2	0.1	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.2
1.0 PFE / K_n/1000	23.0	57.5	115	201	322	57.5	115	201	322	115
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$	1138	1324	746	1409	1438	2021	2256	1291	2491	1849
DRIFT / MCF	1.4	1.1	2.3	1.3	1.3	1.0	1.0	1.4	1.0	1.1
S. P.	11.7					-1.7				17.6
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 1, HALF W, SP. 1, a = 500', BEARING S-70° W

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

PAGE 3

HEINRICHS GEOEX

SEND		1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2
RECEIVE		50-60W	→	→	→	→	60-70W	→	→	→	70-80W
MULTIPLIER		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PFE		1.7	1.8	1.7	1.8	1.9	1.5	1.7	1.9	2.1	2.0
CUR. (AMPS)		5	5	5	5	5	5	5	5	5	5
POINT NO.											
SEP. (n)		2	3	4	5	6	3	4	5	6	4
H. F. MV		245	114	32.1	34.7	22.1	134	98.1	31.8	29.3	79.6
DRIFT		0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.6	0.1	0.2
1.0 PFE	$K_n/1000$	23.0	57.5	115	201	322	57.5	115	201	322	115
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	1138	1324	746	1409	1428	2021	2256	1291	2891	1944
DRIFT	MCF	1.4	1.1	2.3	1.3	1.3	1.0	1.0	1.4	1.0	1.1
S. P.		11.7					-1.9				119.6
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°-E

SENDER STA. 4 = ELECTRODE NO. 0, DATE 6-18-76

PAGE 4

HEINRICHS GEOEX

SEND		2-3	3-4		4-5		2-3	3-4	2-3	4-5	3-4 ✓
RECEIVE		⟶	⟶		CAL		0-10-E	10-20E	⟶	20-30E	⟶
MULTIPLIER		1.0	1.0		10		10	10	10	10	10
PFE		2.0	2.1		-0.1		1.3	1.8	1.9	1.7	1.7
CUR. (AMPS)		5	5				5	5	5	5	5
POINT NO.											
SEP. (n)		5	6				1	1	2	1	2
H. F. Mv		47.6	17.1		198		684	527	225	913	325
DRIFT		0.1	0.2		0.0		0.0	0.4	0.6	0.2	0.4
1.0 PFE	K_n/1000	201	322				5.75	5.75	23.0	5.75	23.0
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c							1.6	1.6		1.5
3.0 MV	$\rho/2\pi$	1933	1112				795	612	1045	1061	1510
DRIFT	MCF	1.0	2.1				2.0	3.0	2.0	2.0	1.0
S. P.							31.6	3.6		12.0	
NOISE											
POT RES.											
CULT & CMTS											

HEINRICHS GEOEX

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

PAGE 4

LINE ______, HALF E, SP. 1, a = 500', BEARING N-70° E

SENDER STA. 4 = ELECTRODE NO. 0, DATE 6-18-76

SEND		2-3	3-4		4-5		2-3	3-4	2-3	4-6	3-4
RECEIVE		→	→		CAL		0-10 E	10-20 E	→	20-30 E	→
MULTIPLIER		1.0	1.0		10		10	10	10	10	10
PFE		2.0	2.1		-0.1		1.2	1.8	1.9	1.7	1.4
CUR. (AMPS)		5	5				5	5	5	5	5
POINT NO.											
SEP. (n)		5	6				1	1	2	1	2
H. F. MV		476	19.1		198		684	[illegible]	225	913	325
DRIFT		0.1	0.2		0.0		0.0	0.4	0.6	0.2	0.4
1.0 PFE	$K_n/1000$	201	322				3176	3.65	220	1980?	23.0?
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c							1.6	1.6		1.5
3.0 MV	$\rho/2\pi$	1953	1112				795	612	1045	1061	1910
DRIFT	MCF	1.0	2.1				2.0	3.0	2.0	2.0	1.0
S. P.							31.6	3.6		12.0	
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 5

HEINRICHS GEOEX

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

SEND		2-3	1-2	5-6	4-5	3-4	2-3	1-2	6-7	5-6	6-7
RECEIVE		→	→	30-40E	→	→	→	→	40-50E	—	CAL
MULTIPLIER		1.0	1.0	100	10	10	1.0	1.0	100	10	10
PFE		2.0	2.0	1.2	1.5	1.1	1.6	1.7	1.5	1.5	-0.1
CUR. (AMPS)		5	5	5	5	5	5	5	5	5	
POINT NO.											
SEP. (n)		3	4	1	2	3	4	5	1	2	
H. F. MV		89.6	50.4	1900	570	119	96.4	60.0	1030	409	198
DRIFT		0.2	0.4	-0.1	0.1	0.0	0.0	0.0	-0.1	0.0	0.1
1.0 PFE	K_n/1000	57.5	115	5.75	23.0	57.5	115	201	5.75	23.0	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C		1.8								
3.0 MV	$\rho/2\pi$	1041	1171	2207	2649	1382	2240	2436	1197	1900	
DRIFT	MCF	2.0	2.0	.54	1.0	1.1	.71	1.0	1.3	1.0	
S. P.				10.3					33.6		
NOISE											Final PFE
POT RES.											0-0.2
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 5

HEINRICHS GEOEX

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-18-76

SEND		2-3	1-2	5-6	4-5	3-4	2-3	[illegible]	6-7	5-6	6-7
RECEIVE		→	→	30-40E	→	→	→	→	40-50E	→	CAL
MULTIPLIER		1.0	1.0	100	10	10	1.0	1.0	100	10	10
PFE		2.0	2.0	1.2	1.5	1.1	1.6	1.9	1.5	1.5	-0.1
CUR. (AMPS)		5	5	5	5	5	5	5	5	5	
POINT NO.											
SEP. (n)		3	4	1	2	3	4	5	1	2	
H. F. MV		99.6	50.4	1900	576	119	96.4	600	1030	469	198
DRIFT		0.2	0.4	-0.1	0.1	0.0	0.0	0.0	-0.1	0.0	0.1
1.0 PFE	$K_n/1000$	57.5	115	5.75	23.0	57.5	115.5	201	5.75	23.0	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c		1.8								
3.0 MV	$\rho/2\pi$	1041	1171	2209	2649	1382	2240	2436	1197	1900	
DRIFT	MCF	2.0	2.0	.54	1.0	1.1	.71	1.0	1.3	1.0	
S. P.				10.3					33.6		
NOISE											[illegible]
POT RES.											[illegible]
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 1102, AREA Wood Pecker Mine

PAGE 6

HEINRICHS GEOEX

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 4 = ELECTRODE No. 0, DATE 6-18-76

SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7
RECEIVE	→			→	50-60E	→			→	60-70E
MULTIPLIER	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
PFE	1.5	1.3	1.7	1.8	1.8	1.6	1.8	1.6	1.8	1.4
CUR. (AMPS)	5	5	5	4	5	5	5	5	5	5
POINT No.										
SEP. (n)	3	4	5	6	2	3	4	5	6	3
H. F. Mv	189	50.2	45.6	31.0	226	152	91.9	28.1	28.6	89.0
DRIFT	-0.1	0.0	0.0	0.0	0.4	0.2	0.1	0.2	0.2	-0.1
1.0 PFE / $K_n/1000$	57.5	115	201	322	23.0	57.5	115	201	322	57.5
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c					1.6					
3.0 MV / $\rho/2\pi$	2184	1166	1852	2521	1050	1766	2135	1141	1860	1034
DRIFT / MCF	1.0	1.1	1.0	.71	2.0	1.0	1.0	1.4	1.1	1.4
S. P.					20.4					22.8
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. K1102, AREA Wood Pecker Mine

LINE 1, HALF E, SP. 1, a = 500', BEARING N-70°E

SENDER STA. 4 = ELECTRODE NO. 6, DATE 6-18-76

PAGE 6

HEINRICHS GEOEX

SEND		4-5	3-4	2-3	1-2	6-7	5-6	5	3-4	2-3	6-7
RECEIVE		→	→	→	→	50-60E	→	→	→	→	60-70E
MULTIPLIER		10	1.0	1.0	1.0	10	10	1.0	1.0	1.0	
PFE		1.6	1.3	1.7	1.8	1.8	1.6	1.8	1.6	1.8	1.4
CUR. (AMPS)		5	5	5	4	5	5	5	5	5	5
POINT NO.											
SEP. (n)		3	4	5	6	2	3	4	5	6	3
H. F. Mv		189	50.2	45.6	21.0	226	152	91.9	28.1	28.6	810
DRIFT		-0.1	0.0	2.0	0.0	0.4	0.2	0.1	0.2	0.2	-0.1
1.0 PFE	K_n/1000	52.5	115	201	322	25.0	52.5	115	201	322	52.5
0.3 PFE	ρ_{CAL}		1.3								
0.1 PFE	PFE_C					1.6					
3.0 MV	$\rho/2\pi$	[illegible]	1166	1852	2521	1050	1966	2135	1141	1860	1034
DRIFT	MCF	1.0	1.1	1.0	.21	2.0	1.0	1.0	1.4	1.1	1.4
S. P.						20.4					22.8
NOISE											
POT RES.											
CULT & CMTS											

I.P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine PAGE 7

HEINRICHS GEOEX

LINE 1, HALF E, SP. 1, a = 500', BEARING N 70°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-19-76

SEND		5-6	4-5	3-4	6-7	5-6	4-5				
RECEIVE		→	→	→	70-80E	→	→				
MULTIPLIER		1.0	1.0	1.0	1.0	1.0					
PFE		1.3	1.6	1.2	2.1	1.9	2.2				
CUR. (AMPS)		5	5	5	5	5	5				
POINT NO.											
SEP. (n)		4	5	6	4	5	6				
H. F. MV		62.2	44.8	15.2	57.4	49.5	40.7				
DRIFT		-0.1	0.0	0.0	0.2	0.2	0.2				
1.0 PFE	K_n/1000	115	201	322	115	201	322				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	1145	1819	989	1334	1969	2648				
DRIFT	MCF	1.1	1.1	1.2	2.0	1.1	1.0				
S. P.					12.1						
NOISE											
POT RES.											
CULT & CMTS											

I.P. RECEIVER NOTES, JOB NO. 1162, AREA Woodpecker Mine PAGE 2

LINE 1, HALF E, SP. 1, a = 500', BEARING N 70° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-19-76

HEINRICHS GEOEX

SEND		5-6	4-5	3-4	6-7	5-6	4-6				
RECEIVE		→	→	→	70 80E	→	→				
MULTIPLIER		1.0	1.0	1.0	1.0	1.0					
PFE		1.3	1.6	1.2	2.1	1.9	[illegible]				
CUR. (AMPS)		5	5	5	5.4	5.5	5.[illegible]				
POINT NO.											
SEP. (n)		4	5	6	4	5	6				
H. F. MV		67.2	44.8	16.2	57.4	110.5	40.1				
DRIFT		-0.1	0.0	0.0	0.2	0.2	0.2				
1.0 PFE	$K_n/1000$	115	201	322	115	201	322				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	1145	1419	904	1824	1969	2048				
DRIFT	MCF	1.1	1.1	1.2	2.6	1.1	1.0				
S. P.					12.1						
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. 1102 (1102), AREA Wood Pecker Mine

LINE 1, HALF W, SP. 1, DATE 6-18-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	6-7	2-3	3-4	3-4
RECEIVE	0-10 W	10-20 W	→	20-30 W	→		→	30-40 W	→	CAL
RANGE	20X250	→							20X250	20X100
VOLTAGE	660	390	660	330	390	650	690	450	330	210
CURRENT	5	5	→						5	2
SEND	4-5	5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2
RECEIVE	→		→	40-50 W	→				→	CAL
RANGE	20X250	20X250	20X200	20X250	→			20X250	20X200	20X100
VOLTAGE	390	650	560	590	450	330	390	650	560	620
CURRENT	5	5	4	5	5	5	5	5	4	2

FREQUENCIES 3.0 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR V.S	
RECEIVER No. 25705-R	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

HEINRICHS GEOEX

PAGE 1

JOB NO. [illegible] AREA [illegible]

LINE 1, HALF [illegible], SP. 1, DATE 6-18-76

SEND										
RECEIVE										
RANGE	20x250								20x250	
VOLTAGE	660	390	660	330	390	650	690	450	330	210
CURRENT	5	5							5	2
SEND										
RECEIVE										
RANGE	20x250	20x250		20x250						
VOLTAGE	390	650	560	590	450	330	390	650		
CURRENT	5		4	5	5	5	5	5		

FREQUENCIES	
SENDER No. 267 215	POWER UNIT ID
OPERATOR	
RECEIVER No. 25705R	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE

LINE 1, HALF W, SP. 1, DATE 6-18-76

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2
RECEIVE	50-60W	→	→	→	→	60-70W	→	→	→	70-80W
RANGE	20X250	→	→	→	20X250	→	→	→	20X250	20X250
VOLTAGE	570	450	330	390	640	570	450	330	390	570
CURRENT	5	→	→	→	5	→	→	→	5	5
SEND	~~2-3~~	~~3-4~~								
RECEIVE										
RANGE	~~20X250~~	~~20X250~~								
VOLTAGE	~~450~~	~~330~~								
CURRENT	~~5~~	~~5~~								

FREQUENCIES	
SENDER No. 267215	POWER UNIT ID
OPERATOR ~~B.B.~~ V.S.	
RECEIVER No.	HOURS RUN
OPERATOR R.R.	

COMMENTS:

I. P. SENDER NOTES

JOB NO. 11[illegible] AREA WOODPECKER MINE

LINE 1, HALF [illegible], SP. 1, DATE 6-18-76

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2
RECEIVE	60 Mw	→			→	60 Mw	→		→	[illegible]
RANGE	20x250	→			20x250	→			20x250	20x2[illegible]
VOLTAGE	570	450	330	390	640	570	450	330	390	570
CURRENT	5	→			5				5	
SEND	2-3	3-4								
RECEIVE										
RANGE	20x250	20x250								
VOLTAGE	450	330								
CURRENT	5	5								

FREQUENCIES

SENDER No. 267215	POWER UNIT ID
OPERATOR [illegible]	
RECEIVER No.	HOURS RUN
OPERATOR R.R.	

COMMENTS:

I. P. SENDER NOTES

PAGE 3

HEINRICHS GEOEX

JOB No. 1102 AREA Wood Pecker Mine

LINE 1, HALF W, SP. 1, DATE 6/19/76

SEND	2-3	3-4		~~4-5~~	3-4	2-3	3-4	2-3	4-5	3-4
RECEIVE	———	———→		~~CAL~~	CAL	0-10E	10-20E	——→	20-30E	———
RANGE	20X250	20X250			20X100	20X250	———	———	———	20X250
VOLTAGE	450	330			190	480	330	460	390	330
CURRENT	5	5			2	5	5	———	———	5
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 & 0.3	
SENDER No. 269215	POWER UNIT ID
OPERATOR V.S	
RECEIVER No.	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

PAGE 3

HEINRICHS GEOEX

JOB No. [illegible] AREA Wood Parker Mine

LINE ______, HALF [illegible], SP. 1, DATE 6/19/76

SEND	2-3	3-4		~~4-5~~	3-4	2-3	3-4	2-3	4-5	2-4
RECEIVE	———	———→		~~[illegible]~~	CAL	[illegible]	10-20	——→	[illegible]	———
RANGE	20X250	20X250			20X100	20X250	———	———	———	20X250
VOLTAGE	450	330			190	480	330	460	390	330
CURRENT	5	5			2	5	5	———	———	5
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 50403	
SENDER No. 267215	POWER UNIT ID
OPERATOR VE	
RECEIVER No.	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

JOB NO. 1102 AREA WOODPECKER MINE

LINE 1, HALF ______, SP. ______, DATE 6/18/76

PAGE 4

HEINRICHS GEOEX

SEND	2-3	1-2	5-6	4-5	3-4	2-3	1-2	6-7	5-6	6-7
RECEIVE	———	——→	30-40E	———	———	———	——→	40-50E	———	CAL
RANGE	20X250	———	20X250	———	———	———	20X250	———	20X250	20X200
VOLTAGE	460	570	630	380	330	450	560	680	630	480
CURRENT	5	———	5	———	———	———	5	5	5	2
SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7
RECEIVE	———	———	———	——→	50-60E	———	———	———	——→	60-70E
RANGE	20X250	———	———	20X250	20X200	20X250	———	———	20X250	20X250
VOLTAGE	380	330	450	560	560	650	390	330	460	700
CURRENT	5	5	5	5	4	5	5	5	5	5

FREQUENCIES 3.0 0.3

SENDER NO. 267215

OPERATOR V.S.

RECEIVER NO. 25705R

OPERATOR R.R.

POWER UNIT ID

HOURS RUN

COMMENTS:

I. P. SENDER NOTES

PAGE 4

HEINRICHS GEOEX

JOB NO. ________ AREA WOODPECKER MINE

LINE ________, HALF ________, SP. ________, DATE 6/18/76

SEND	[illegible]	1-2	5-6	4-5	3-4	2-3	1-2	6-7	5-6	6-7
RECEIVE	—	—	[illegible]	—	—	—	—	[illegible]	—	[illegible]
RANGE	20X250	—	20X250	—	—	—	20X250	—	20X250	20X2[illegible]
VOLTAGE	460	570	630	390	330	450	560	680	630	480
CURRENT	5	—	5	—	—	—	5	[illegible]	5	2
SEND	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7
RECEIVE	—	—	—	—	50-60	—	—	—	—	60-70
RANGE	20X250	—	—	20X250	20X200	20X250	—	—	20X250	20X250
VOLTAGE	390	330	450	560	560	650	390	330	460	700
CURRENT	5	5	[illegible]	5	4	5	[illegible]	[illegible]	5	5

FREQUENCIES 1.0, 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR V.S.	
RECEIVER No. [illegible]	HOURS RUN
OPERATOR [illegible]	

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE

LINE 1, HALF ____, SP. ____, DATE 6-19-76

PAGE 5

HEINRICHS GEOEX

SEND	5-6	4-5	3-4	6-7	5-6	4-5				
RECEIVE	⟶	⟶	⟶	70-80E	⟶	⟶				
RANGE	20X250	⟶	⟶	⟶	⟶	20X250				
VOLTAGE	650	390	330	700	650	390				
CURRENT	5	⟶	⟶	⟶	⟶	5				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 0.3

SENDER No. 267215	POWER UNIT ID
OPERATOR V.S	
RECEIVER No.	HOURS RUN
OPERATOR R.R	

COMMENTS:

I. P. SENDER NOTES

JOB NO. ______ AREA WOOD PECKER MINE

LINE ______, HALF ______, SP. ______, DATE 6-19-76

PAGE ______

HEINRICHS GEOEX

SEND		9-4	8-3	8-7	5-6	4-5				
RECEIVE	———	———	——→	To fire	———	——→				
RANGE	20X250	———	———	———	———	20X250				
VOLTAGE	650	390	330	700	650	390				
CURRENT	5	———	———	———	———	5				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 0.3

SENDER NO. 267215 | POWER UNIT ID

OPERATOR V.S.

RECEIVER NO. | HOURS RUN

OPERATOR R.R.

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 1

HEINRICHS GEOEX

LINE 2, HALF W, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND		5-6	4-5	5-6	3-4	4-5	5-6	2-3	3-4	4-5	4-5
RECEIVE		0-.2W	.2-.4W	⟶	.4-.6W	⟶	⟶	.6-.8W	—	—	CAL
MULTIPLIER		100	10	10	100	10	10	100	10	10	10
PFE		1.0	1.1	0.9	1.7	1.4	1.3	1.2	1.1	1.3	-0.1
CUR. (AMPS)		5	6	5	8	6	5	6	8	6	2
POINT NO.											
SEP. (n)		1	1	2	1	2	3	1	2	3	
H. F. MV		1000	743	277	1180	396	328	1440	278	194	199
DRIFT		0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
1.0 PFE	$K_n/1000$	5.75	5.75	23.0	5.75	23.0	57.5	5.75	23.0	57.5	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	1162	768	1287	857	1533	3810	1394	807	1878	
DRIFT	MCF	1.1	1.4	1.1	2.0	1.0	.34	1.0	1.4	1.1	
S. P.		9.0	17.1		16.0			-1.6			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker, M.NC

LINE 2, HALF W, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 1

HEINRICHS GEOEX

SEND		5-6	4-5	5-6	3-4	4-5	5-6	2-3	3-4	4-5	?-?
RECEIVE		0-.2W	.2-.4W	→	.4-.6W	→	→	.6-.8W	→	→	(?)
MULTIPLIER		100	10	10	100	10	10	100	10	10	10
PFE		1.0	1.1	0.4	1.9	1.4	1.2	1.2	1.1	1.3	0.1
CUR. (AMPS)		5	6	5	8	6	6	8	8	6	2
POINT NO.											
SEP. (n)		1	1	2	1	2	3	1	2	3	
H. F. MV		1000	743	277	1180	296	229	1040	278	194	144
DRIFT		0.1	0.0	0.0	0.0	0.6	0.1	0.0	0.1	0.0	0.1
1.0 PFE	$K_n/1000$	5.75	5.75	23.0	5.75	23.0	57.5	5.75	23.0	57.5	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	1162	768	1241	951	[illegible]	3010	1294	901	1614	
DRIFT	MCF	1.1	1.4	1.1	2.0	1.0	.34	1.0	1.4	1.1	
S. P.		9.0	17.1		16.0			-1.6			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 2, HALF W, SP. 1, a = 200', BEARING N.75°.E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 2

HEINRICHS GEOEX

SEND		5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2	1-2
RECEIVE		→	→	.8-1.0W	→	→	→	→	→	1.0-1.2W	CAL
MULTIPLIER		10	1.0	100	10	10	10	1.0	1.0	10	
PFE		1.3	1.5	1.5	1.4	1.4	1.2	1.1	1.4	1.6	-0.1
CUR. (AMPS)		5	5	6	6	8	6	5	5	6	2
POINT NO.											
SEP. (n)		4	5	1	2	3	4	5	6	2	
H. F. MV		102	55.4	3180	457	147	122	77.1	42.6	631	198
DRIFT		0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1
1.0 PFE	$K_n/1000$	115	201	5.75	23.0	57.5	115	201	322	23.0	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	2370	2250	3070	1770	1067	2362	3131	2771	2443	
DRIFT	MCF	1.0	1.0	.51	1.1	1.3	1.0	.35	1.0	1.0	
S. P.				21.5						-14.9	Fluct
NOISE											0-.01
POT RES.											PFE
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 2, HALF W, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 2

HEINRICHS GEOEX

SEND		5-6	6-7	1-2	2-3	3-4	4-5	5-6	6-7	1-2	1-2
RECEIVE		→	→	.8-1.0W	→	→	→	→	→	1.0-1.2W	[illegible]
MULTIPLIER		10	1.0	100	10	10	10	1.0	1.0	10	
PFE		1.3	1.5	1.5	1.4	1.4	1.2	1.2	1.4	1.6	[illegible]
CUR. (AMPS)		5	5	6	6	8	6	5	5	6	2
POINT NO.											
SEP. (n)		4	5	1	2	3	4	5	6	2	
H. F. MV		102	55.4	3180	457	141	122	78.1	42.6	631	148
DRIFT		0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1
1.0 PFE	$K_n/1000$	115	201	5.75	23.0	57.5	115	201	322	23.0	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2390	2250	3010	1710	1067	2362	3131	2771	2443	
DRIFT	MCF	1.0	1.0	.51	1.1	1.3	1.0	.35	1.0	1.0	
S. P.				21.5						14.9	[illegible]
NOISE											
POT RES.											[illegible]
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

PAGE 3

HEINRICHS GEOEX

LINE 2, HALF W, SP. 1, a = 200', BEARING N75°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND		2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE		→	→	→	→	1.2-1.4W	→	→	→	1.4-1.6W	—
MULTIPLIER		10	1.0	1.0	1.0	10	10	1.0	1.0	10	1.0
PFE		1.4	1.7	1.6	1.6	1.7	1.5	1.6	1.7	1.8	1.8
CUR. (AMPS)		6	8	6	5	6	6	8	6	6	6
POINT NO.											
SEP. (n)		3	4	5	6	3	4	5	6	4	5
H. F. MV		144	64.8	85.8	51.4	417	110	63.4	77.9	316	98.0
DRIFT		0.1	0.1	0.0	0.1	0.2	0.2	0.0	0.0	0.4	0.1
1.0 PFE	$K_n/1000$	57.5	115	201	322	57.5	115	201	322	115	201
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	1394	941	2903	3344	4037	2130	1609	4223	6118	3316
DRIFT	MCF	1.0	2.0	1.0	1.0	.42	1.0	1.0	.40	.30	1.0
S. P.						18.5				28.4	
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Wood Pecker Mine

LINE 1, HALF W, SP. 1, a = 200', BEARING N 15° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 3

HEINRICHS GEOEX

SEND		2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE		→			→	1.2-1.4W	→		→	1.4-1.6W	→
MULTIPLIER		10	1.0	1.0	1.0	10	10	1.0	1.0	10	1.0
PFE		1.4	1.7	1.6	1.6	1.7	1.5	1.6	1.7	1.9	1.9
CUR. (AMPS)		6	8	6	5	6	6	8	6	6	6
POINT NO.											
SEP. (n)		3	4	5	6	3	4	5	6	4	5
H. F. MV		144	64.9	95.8	51.4	917	110	63.4	71.9	316	[illegible]
DRIFT		0.1	0.1	0.0	0.1	0.2	0.2	0.0	0.0	0.4	0.1
1.0 PFE	$K_n/1000$	57.5	115	201	322	57.5	115	201	322	115	201
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	1344	1441	2903	3344	4937	2130	1609	4727	6118	2316
DRIFT	MCF	1.0	2.0	1.0	1.0	.42	1.0	1.0	.40	.30	1.0
S. P.						18.5				284	
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 4

HEINRICHS GEOEX

LINE 2, HALF E, SP. 1, a = 200', BEARING N75°-E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND		3-4		3-4	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE		→		CAL	0-.2E	.2-.4E	→	.4-.6E	→	→	→
MULTIPLIER		1.0		10	10	100	10	100	10	10	10
PFE		1.7		-0.1	1.1	0.9	1.0	1.1	1.1	1.1	1.3
CUR. (AMPS)		8		2	6	8	6	6	8	6	6
POINT NO.											
SEP. (n)		6			1	1	2	1	2	3	4
H. F. MV		65.8		198	822	1630	384	3660	509	153	109
DRIFT		0.2		0.0	0.0	0.1	0.0	-0.2	0.0	-0.1	0.0
1.0 PFE	$K_n/1000$	322			5.75	5.75	23.0	5.75	23.0	57.5	115
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_C										
3.0 MV	$\rho/2\pi$	2675			796	1183	1487	3543	1478	1481	2110
DRIFT	MCF	1.0			1.4	1.0	1.0	.31	1.0	1.0	1.0
S. P.					14.3	20.8		-8.1			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker M.N.

LINE 2, HALF E, SP. 1, a = 200', BEARING N75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 4

HEINRICHS GEOEX

SEND		3-4		[illegible]	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE		→		CAL	0-.2E	.2-.4E	→	.4-.6E	→		
MULTIPLIER		1.0		1.0	10	100	10	1000	10	10	10
PFE		1.7		-0.1	1.1	0.9	1.0	1.1	1.1	1.1	[illegible]
CUR. (AMPS)		8		2	6	8	5	6	8	6	6
POINT NO.											
SEP. (n)		6			1	1	2	1	2	3	4
H. F. MV		65.8		198	822	1650	784	2660	509	153	100
DRIFT		0.2		0.0	0.6	0.1	0.0	-0.2	0.0	-0.1	0.0
1.0 PFE	$K_n/1000$	32.2			5.75	5.75	23.0	5.75	23.0	57.5	115
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	[illegible]			746	1183	1480	3643	1468	1481	2110
DRIFT	MCF	[illegible]			1.4	1.0	1.0	[illegible]	1.2	1.6	1.4
S. P.					14.3	20.8		-8.1			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

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HEINRICHS GEOEX

LINE 2, HALF E, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 1 = ELECTRODE NO. 4, DATE 6-20-76

SEND		5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE		6-8E	→	→	→	→	.8-10E	→	→	→	CAL
MULTIPLIER		100	10	10	1.0	1.0	100	100	10	10	10
PFE		1.6	1.5	1.4	1.4	1.7	1.5	1.5	1.5	1.2	0.0
CUR. (AMPS)		5	6	8	6	6	5	5	6	8	2
POINT NO.											
SEP. (n)		1	2	3	4	5	1	2	3	4	
H. F. Mv		1800	712	159	60.0	48.9	2590	1220	725	179	198
DRIFT		0.1	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.1	0.0
1.0 PFE	K_n/1000	5.75	23.0	57.5	115	201	5.75	23.0	57.5	115	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2103	2757	1154	1162	1655	3009	5669	7018	2599	
DRIFT	MCF	1.0	1.0	1.2	1.2	1.0	1.0	.26	.21	.46	
S. P.		21.0					12.4				
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 2, HALF E, SP. 1, a = 200', BEARING N 75°E

SENDER STA. 1 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 5

HEINRICHS GEOEX

SEND		5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE		6-.8E	→	→	→	→	8-1.0E	→	→	→	[illegible]
MULTIPLIER		100	10	10	1.0	1.0	100	100	10	10	10
PFE		1.6	1.6	1.4	1.4	1.7	1.5	1.5	1.6	1.2	[illegible]
CUR. (AMPS)		5	6	8	6	6	5	5	6	8	2
POINT NO.											
SEP. (n)		1	2	3	4	5	1	2	3	4	
H. F. MV		1980	712	159	60.0	49.9	2590	1220	925	179	198
DRIFT		0.1	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.1	0.0
1.0 PFE	$K_n/1000$	5.75	23.0	57.5	115	201	5.75	23.0	57.5	115	
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2103	2959	1164	1162	1656	3009	5669	9019	2599	
DRIFT	MCF	1.0	1.0	1.2	1.2	1.0	1.0	.26	.21	.46	
S. P.		240					124				
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 6

HEINRICHS GEOEX

LINE 2, HALF E, SP. 1, a = 200', BEARING N-75°-E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND		2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE		⟶	⟶	1.0-1.2E	⟶	⟶	⟶	⟶	1.2-1.4E	⟶	⟶
MULTIPLIER		1.0	1.0	10	10	10	1.0	1.0	10	10	10
PFE		1.6	1.7	1.4	1.3	1.4	1.4	1.6	1.7	1.5	1.4
CUR. (AMPS)		6	6	5	5	6	8	6	5	5	6
POINT NO.											
SEP. (n)		5	6	2	3	4	5	6	3	4	5
H. F. MV		76.2	65.1	464	344	265	71.8	34.6	178	152	125
DRIFT		0.0	0.0	0.0	0.0	0.2	-0.1	0.1	0.2	0.2	0.6
1.0 PFE	K_n/1000	201	322	23.0	57.5	115	201	322	57.5	115	201
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2579	3529	2156	3996	5131	1822	1876	2068	3531	4230
DRIFT	MCF	1.0	1.0	1.0	.32	.30	1.0	1.0	1.0	.42	.33
S. P.				17.0					-2.0		
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

LINE 2, HALF E, SP. 1, a = 200', BEARING N-75°-E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

PAGE 6

HEINRICHS GEOEX

SEND		2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE		———	———→	1.0-1.2k	———	———	———	———→	1.2-1.4k	———	———
MULTIPLIER		1.0	1.0	10	10	10	1.0	1.0	10	10	10
PFE		1.6	1.9	1.4	1.3	1.4	1.9	1.6	1.9	1.5	1.4
CUR. (AMPS)		6	6	5	5	6	8	6	5	5	6
POINT NO.											
SEP. (n)		5	6	2	3	4	5	6	3	4	5
H. F. MV		16.2	65.1	464	240	265	71.8	54.6	178	152	128
DRIFT		0.0	0.0	0.0	0.0	0.2	-0.1	0.1	0.2	0.2	0.0
1.0 PFE	$K_n/1000$	201	322	23.0	57.5	115	201	322	57.5	115	201
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	2579	5529	2156	3446	8151	1922	1476	2068	3551	[illegible]
DRIFT	MCF	1.0	1.0	1.0	.32	.30	1.0	1.0	1.0	.42	.33
S. P.				17.0					-2.0		
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 7

HEINRICHS GEOEX

LINE 2, HALF E, SP. 1, a = 200', BEARING N75°E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND		3-4	6-7	5-6	4-5							
RECEIVE		→	1.4-1.6E	→	→							
MULTIPLIER		1.0	10	10	10							
PFE		1.5	1.4	1.5	1.5							
CUR. (AMPS)		8	5	5	6							
POINT NO.												
SEP. (n)		6	4	5	6							
H. F. MV		39.8	216	203	189							
DRIFT		0.1	0.0	0.2	0.0							
1.0 PFE	K_n/1000	322	115	201	322							
0.3 PFE	ρ_{CAL}											
0.1 PFE	PFE_C											
3.0 MV	$\rho/2\pi$	1618	5018	8243	10,245							
DRIFT	MCF	1.0	.27	.18	.15							
S. P.			16.6									
NOISE												
POT RES.												
CULT & CMTS												

I. P. RECEIVER NOTES, JOB NO. 1102, AREA Woodpecker Mine

PAGE 7

HEINRICHS GEOEX

LINE 2, HALF E, SP. 1, a = 200', BEARING N 75° E

SENDER STA. 0 = ELECTRODE NO. 4, DATE 6-20-76

SEND	3-4	6-7	5-6	4-5						
RECEIVE	→	1.4-1.6E	→	→						
MULTIPLIER	1.0	10	10	10						
PFE	1.5	1.4	1.5	1.5						
CUR. (AMPS)	8	5	5	6						
POINT NO.										
SEP. (n)	6	4	5	6						
H. F. MV	39.8	216	203	189						
DRIFT	0.1	0.0	0.2	0.0						
1.0 PFE / $K_n/1000$	322	114	201	322						
0.3 PFE / ρ_{CAL}										
0.1 PFE / PFE_c										
3.0 MV / $\rho/2\pi$	1618	4018	8245	10245						
DRIFT / MCF	1.0	.27	.18	.15						
S. P.		16.6								
NOISE										
POT RES.										
CULT & CMTS										

I. P. SENDER NOTES

JOB No. 1102 AREA Woodpecker Mine

LINE 2, HALF W, SP. 1, DATE 6-20-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	2-3	34	4-5	4-5
RECEIVE	0-.2W	.2-.4W	→	.4-.6W	→	→	.6-.8W	—	—	CAL
RANGE	20X250	20X300	20X250	20X400	20X300	20X250	20X300	20X400	20X300	10X200
VOLTAGE	600	430	600	380	430	600	430	380	430	200
CURRENT	5	6	5	8	6	5	6	8	6	2
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6*	6-7	1-2	1-2
RECEIVE	→	→	.8-1.0W	→	→	→	→	→	1.0-1.2W	CAL
RANGE	20X250	20X250	20X300	20X300	20X400	20X300	20X250	20X250	20X300	10X200
VOLTAGE	590	600	480	430	380	430	580	590	480	190
CURRENT	5	5	6	6	8	6	5	5	6	2

FREQUENCIES 3.0 – 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR LANG	
RECEIVER No. 25705K	HOURS RUN
OPERATOR RR	

COMMENTS:

* Change in Amp from 5 to 7

I. P. SENDER NOTES

JOB No. 1102 AREA Woodpecker M. NC

LINE ______, HALF W, SP. 1, DATE 6-20-76

PAGE 1

HEINRICHS GEOEX

SEND	5-6	4-5	5-6	3-4	4-5	5-6	2-3	3-4	4-5	4-5
RECEIVE	0-.2W	.2-.4W	→	.4-.6W	→	→	.6-.8W	—	—	CAL
RANGE	20X250	20X300	20X250	20X400	20X300	20X250	20X300	20X400	20X300	10X200
VOLTAGE	600	430	600	380	430	600	430	380	430	200
CURRENT	[illegible]	6	5	8	6	[illegible]	6	8		
SEND	5-6	6-7	1-2	2-3	3-4	4-5	5-6*	6-7	1-2	1-2
RECEIVE	→	→	.8-1.0W	→	→	→	→	→	1.0-1.2W	CAL
RANGE	20X250	20X250	20X300	20X500	20X400	20X600	[illegible]	20X250	20X300	10X800
VOLTAGE	590	600	480	430	380	430	580	590	480	190
CURRENT	—	—	[illegible]	2	[illegible]		[illegible]	—		

FREQUENCIES 3.0 - .03

SENDER No. 267215

POWER UNIT ID

OPERATOR CAEDENDHIAM

RECEIVER No. 25105R

HOURS RUN

OPERATOR RR

COMMENTS:

* CHANGE ... RANGE FROM 5 TO 7

I. P. SENDER NOTES

JOB NO. 1102 AREA Wood Pecker Mine

LINE 2, HALF W, SP. 1, DATE 6-20-76

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HEINRICHS GEOEX

SEND	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	———	———	———	———→	1.2-1.4W	———	———	———→	1.4-1.6W	———
RANGE	20X300	20X400	20X300	20X250	20X300	20X300	20X400	20X300	20X300	20X300
VOLTAGE	420	380	430	590	480	420	380	430	480	420
CURRENT	6	8	6	5	6	6	8	6	6	6

SEND	3-4		3-4	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE	———→		CAL	0-.2E	.2-.4E	———→	.4-.6E	———	———	———→
RANGE	20X400		10X200	20X300	20X400	20X300	20X300	20X400	20X300	20X300
VOLTAGE	380		170	420	370	420	430	370	430	480
CURRENT	8		2	6	8	6	6	8	6	6

FREQUENCIES 3.0 - 0.3	
SENDER NO. 26721S	POWER UNIT ID
OPERATOR V.S	
RECEIVER NO. 25705-R	HOURS RUN
OPERATOR RR	

COMMENTS:

I. P. SENDER NOTES

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HEINRICHS GEOEX

JOB NO. NA-2 AREA Wood Pecker Mine

LINE 2, HALF W, SP. 1, DATE 6-20-76

SEND	2-3	3-4	4-5	5-6	1-2	2-3	3-4	4-5	1-2	2-3
RECEIVE	⟶			⟶	1.2-1.4W	⟶		⟶	1.4-1.6W	⟶
RANGE	20X300	20X400	20X300	20X250	20X300	20X300	20X400	20X300	20X500	20X300
VOLTAGE	420	380	430	590	580	420	380	480	480	420
CURRENT	6	[illegible]	6	4	6	7	8	6	6	[illegible]

SEND	3-4		3-4	2-3	3-4	2-3	4-5	3-4	2-3	1-2
RECEIVE	⟶		CAL	0-.2E	.2-.4E	⟶	.4-.6E	⟶		⟶
RANGE	20X400		10X200	20X300	20X400	20X300	20X300	20X400	20X300	20X300
VOLTAGE	380		170	420	370	420	430	370	430	480
CURRENT	9		2	6	9	6	8	2	1	[illegible]

FREQUENCIES 3.0 – 0.3

SENDER NO. 367215

POWER UNIT ID

OPERATOR V.S.

RECEIVER NO. 75705-R

HOURS RUN

OPERATOR KR

COMMENTS:

I. P. SENDER NOTES

JOB NO. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

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HEINRICHS GEOEX

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE	.6-.8E	→	→	→	→	.8-1.0E	→	→	→	CA1
RANGE	20X250	20X300	20X400	20X300	20X300	20X250	20X350	20X300	20X400	20X100
VOLTAGE	570	430	470	420	470	570	570	420	370	470
CURRENT	5	6	8	6	6	5	5	6	8	2
SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	→	→	1.0-1.2E	→	→	→	→	1.2-1.4E	→	→
RANGE	20X300	20X300	20X250	20X250	20X300	20X400	20X300	20X250	20X250	20X300
VOLTAGE	420	470	570	570	420	450	420	570	570	420
CURRENT	6	6	5	5	6	8	6	5	6	6

FREQUENCIES 3.0, 0.3	
SENDER No. 267215	POWER UNIT ID
OPERATOR V.S	
RECEIVER No. 25705-R	HOURS RUN
OPERATOR R.R	

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

PAGE 3

HEINRICHS GEOEX

SEND	5-6	4-5	3-4	2-3	1-2	6-7	5-6	4-5	3-4	6-7
RECEIVE	1-.8E	→	→	→	→	.8-1.0E	→	→	→	CAL
RANGE	20x250	20x300	20x400	20x300	20x300	20x250	20x350	20x300	20x400	20x100
VOLTAGE	570	430	470	420	470	570	570	420	370	170
CURRENT	5	6	2	6	6	5	5	2	[illegible]	[illegible]
SEND	2-3	1-2	6-7	5-6	4-5	3-4	2-3	6-7	5-6	4-5
RECEIVE	→	→	1.0-1.2	→	→	→	→	1.2-1.4E	→	→
RANGE	20x300	20x300	20x250	20x250	20x300	20x400	20x300	20x250	20x350	20x300
VOLTAGE	420	470	570	570	420	450	420	570	570	420
CURRENT	6	6	5	6	6	9	6	6	5	6

FREQUENCIES	3.0 , 0.3	
SENDER No.	267215	POWER UNIT ID
OPERATOR	V. S.	
RECEIVER No.	25105 R	HOURS RUN
OPERATOR	R. R.	

COMMENTS:

I. P. SENDER NOTES

JOB No. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

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HEINRICHS GEOEX

SEND	3-4	6-7	5-6	4-5						
RECEIVE	→	1.4-1.6F	→	→						
RANGE	20X400	20X250	20X250	20X300						
VOLTAGE	370	570	570	420						
CURRENT	8	5	5	6						
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 3.0 0.3

SENDER No.	267215	POWER UNIT ID
OPERATOR	V.S	
RECEIVER No.	25705-R	HOURS RUN
OPERATOR	R.R	

COMMENTS:

I. P. SENDER NOTES

HEINRICHS GEOEX

JOB NO. 1102 AREA WOODPECKER MINE

LINE 2, HALF E, SP. 1, DATE 6-20-76

SEND	3-4	8-9	4-6	4-56						
RECEIVE	[illegible]									
RANGE	20x400	20x250	20x250	20x300						
VOLTAGE	370	570	570	420						
CURRENT	8	5	3	6						
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	3.0 0.3	
SENDER NO. 267215	POWER UNIT ID	
OPERATOR V.S		
RECEIVER NO. 5705R	HOURS RUN	
OPERATOR D.R		

COMMENTS: