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INDUCED POLARIZATION SURVEY

BUCKSKIN CLAIMS

YAVAPAI COUNTY, ARIZONA

for

Dorman S. O'Leary

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. BOX 5671 TUCSON, ARIZONA

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I.P. LOCATION PLAN

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LINE 1
LINE 2
LINE 3
LINE 4

INTRODUCTION

At the request of Mr. Dorman S. O'Leary of Wickenburg, Arizona, Heinrichs Geoexploration Company, Tucson, Arizona, completed an Induced Polarization Survey over the Buckskin Claims in Sections 4 and 5, T 8 N, R 1 W, Yavapai County, Arizona.

Four induced polarization lines were run consisting of one spread each, giving a total surface coverage of 24,000 feet, of which 14,000 feet is subsurface plotted data. All lines were run north-south on a 500 foot dipole spacing for maximum coverage, resolution, and penetration.

The induced polarization measurements were taken with the dual frequency technique on a dipole-dipole electrode configuration. The two frequencies used were 0.05 and 3.0 cycles per second.

The data are presented on sectional data sheets, one for each line, showing resistivity, percent frequency effect (PFE), and metallic conduction factor (MCF) contoured in section; and self potential (SP) in profile form. An index map of the area showing location of lines run is also included.

Heinrichs personnel involved in the field were Dan Anderson, Geophysical Crew Chief; Harvey Durand, Geologist; and Jim Bauersachs, Technical Assistant. Interpretation, compilation and report by the Geoex staff in Tucson, Arizona, under the supervision of Chris S. Ludwig, Senior Geophysicist.

CONCLUSIONS, RECOMMENDATIONS AND INTERPRETATION

No induced polarization anomalism, other than minor background variations and inductive coupling interference, was noted on any of the lines.

It is believed that no extensive sulfide mineralization of more than 1% by volume occurs in the vicinity of the I.P. lines down to a depth of about 750 feet.

Resistivities indicate the granite-volcanic contact on Lines 1, 2, and 3, and possibly Line 4. The granite is higher in resistivity than the volcanics, as is typical in the Southwest. The contact is near 0.5N on Line 1, 0.0N/S on Line 2, 0.5N on Line 3, and possibly near 0.75S, Line 4, being most sharply defined on Line 2.

Self potentials show no variation other than random background effects not related to sulfide.

It is recommended that no further induced polarization be done unless additional new ideas or information presents itself, or to answer specific geologic questions.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

Chris S. Ludwig

Chris S. Ludwig, Senior Geophysicist

APPROVED:

Walter E. Heinrichs, Jr.
President & General Manager

NOV. 16

P#1

50 yd

MIKE O'LEARY
BRADSHAW MOUNT

LINE A, EAST ⊗ of

TR.MK. REG. U.S. PAT. OFF.

STA	TIM	RANG	RED	POL	REMARKS	
Bas	1013	1	70	+	700	6700
2H	1017	1	141	+	1410	7410
2G	1020	1	172	+	1720	7720
2G+25	1021	1	144	−	1440	4560
2G	1022	2	124	+	3720	9720
2E	1024	1	59	+	590	6590
2D	1025	2	72	+	2160	8160
2C	1026	1	35	+	350	6350
2B	1028	2	75	+	2250	8250
2A	1029	1	115	+	1150	7150
1M	1030	2	87	−	2610	3390
1L	1030	1	124	−	1240	4760
1K	1031	2	108	+	3240	9240
1J	1031	1	75	+	750	6750
1I	1031	1	06	+	60	6060
1H	1032	1	83	+	830	6830
1G	1033	1	110	−	1100	4900
1F	1036	2	76	+	2280	8280
1E	1036	1	46	−	460	5540
1D	1037	1	34	−	340	5660
1C	1038	1	46	−	460	5540
1B	1039	1	37	−	370	5630
1A	1040	1	28	−	280	5720
Bas	1055	1	70	+	700	6700
2I	1117	1	170	+	1700	7700
2J	1119	1	124	+	1240	7240
2K	1122	1	110	+	1100	7100
2L	1124	1	38	+	380	6380
2M	1132	1	38	+	380	6360
3A	1138	1	10	+	100	6100

⊗ of X

ON 57 CLAIM LINE West

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2

50 ft

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STA	TIM	RANG	RED	POL	REMARKS	
3 B	1145	1	32	−	320	5680
3 C	1146	1	22	−	220	5780
3 D	1147	1	50	−	500	5500
3 E	1150	1	69	−	690	5310
3 F	1151	1	24	−	240	5760
3 G	1152	1	29	−	290	5710
3 H	1154	1	36	−	360	5640
3 I	1158	1	57	−	570	5430
3 J	1200	1	61	−	610	5390
3 K	1202	1	64	−	640	5360
LINE	BE					
(3B+25)						
0	1229	1	22	+	220	6220
1	1230	1	63	−	630	5370
2	1231	1	27	−	270	5730
3	1231	1	42	−	420	5580
4	1232	1	02	−	20	5980
5	1235	1	46	+	460	6460
6	1235	1	125	+	1250	7250
7	1239	1	182	+	1820	7820
8	1240	1	163	+	1630	7630
9	1240	1	158	+	1580	7580
10	1241	1	81	+	810	6810
11	1242	1	20	+	200	6200
12	1243	1	51	+	510	6510
13	1244	1	80	+	800	6800
14	1245	1	07	+	70	6070
15	1245	1	18	+	180	6180
16	1246	1	104	+	1040	7040
17	1248	1	92	−	920	5080

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3 50-ft

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	STA	TIME	RANG	REQ	POL	REM	
	18	1249	1	80	−	800	5200
	19	1250	1	74	−	740	5260
	20		1	81	−	810	5190
	21		1	34	−	340	5660
	22		1	48	−	480	5520
	23	1253	1	134	−	1340	5660
	B1		1	70	+	700	6700
	LINE B W.						
(B+3)	0	1343	1	20	+	200	6200
	1		1	20	−	200	5800
	2		1	49	+	490	6490
	3						
	4		1	148	+	1480	7480
	5	1350	1	73	−	730	5270
+1	6		1	90	+	900	6900
147	7		1	62	+	620	6620
(0-3)	8		3	88	−	8800	−2800
	9	1355	2	135	+	4050	10050
+1	10		2	60	+	180	6180
111	11		3	94	+	9400	15400
11½	12		1	22	+	220	6220
	13		3	144	−	14400	−8400
	14	1412	1	172	+	1720	7720
(13½)	15		3	149	+	14900	20900
189	16		1	99	−	990	5010
	17		1	69	−	690	5310
	18		1	121	−	1210	4790
	19	1420	1	112	−	1120	4880
	20		1	56	−	560	5440

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4

50 ft

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STA	TIME	RANGE	RED	POL	REMARKS	
21	1425	2	91	−	2730	3270
22	1427	1	90	−	900	5100
LINE CE from BW 7						
1	1444	2	207	+	6210	12210
2		1	238	+	2380	8380
3		1	02	−	20	5980
5		1	42	+	420	6420
6 & 3A-						
7	1450	1	07	−	70	5930
8		1	25	+	250	6230
9		1	19	+	190	6190
10		1	13	+	130	6130
11		1	14	+	140	6140
12		1	45	+	450	6450
13	1455	1	100	+	1000	7000
14		1	41	+	410	6410
15		1	27	+	270	6270
16		1	112	+	1120	7120
17		1	36	+	360	6360
18	1500	1	18	+	180	6180
19		1	29	+	290	6290
B1	1502	1	67	+	670	6870
20		1	06	−	60	5940
21	1510	1	02	+	20	6020
22		1	18	+	180	6180
23	1515	1	46	−	460	5540
24		1	85	−	850	5150
25		1	22	−	220	5780

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5 50 ft

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STA	TIME	RANGE	Red	POL	REF	ABS
26	1520	1	18	+	180	6180
27	1522	1	78	—	780	5220
28	1533	1	71	—	710	5290
29		1	70	—	700	5300
30		1	71	—	710	5290
31		1	54	—	540	5460
32	1540	1	57	—	570	5430
33		1	46	—	460	5540
34		1	44	—	440	5560
(1C) 35	1545	1	50	—	500	5500
LINE D						
1L 0	1538	2	83	—	2490	3510
1		1	152	+	1520	4480
2		1	38	+	380	6380
3		1	33	—	330	5670
4		1	81	—	810	5190
5		1	74	—	740	5260
B1	1609	1	68	+	680	

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Mike O'Heard
Breakhorn Farms

1
Nov 17 66

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50 ft

Sta	Time	Rang	Dist	Pol		
4B1	1050	1.0	70	+		

Line E Going East from Rog NE 6000

0						
1	1100	1	63	—	630	5370
2		1	13	—	130	5870
3		1	34	—	340	5660
4		1	16	—	160	5840
5	1103	1	35	—	350	5650
6	1106	1	165	—	1650	4350
7		1	102	—	1020	4980
8		1	128	—	1280	4720
9	1108	1	205	—	2050	3950
10		1	145	+	1450	7450
11		1	215	—	2150	3850
12	1118	1	145	—	1450	4550
13		1	155	—	1550	4450
14		1	150	—	1500	4500
15		1	138	—	1380	4620
16		1	158	—	1580	4420
17		1	116	—	1160	4840
18	1125	1	85	—	850	5150
19		1	65	—	650	5350
20		1	141	—	1410	4590
21		1	120	—	1200	4800
22		1	160	—	1600	4400
23	1137	1	170	—	1700	4300
24		1	215	—	2150	3850
25		2	83	—	2490	3510
26		2	75	—	2250	3750
27		2	78	—	2340	3660

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2.
50 ~~gt~~

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STA	TIME	RAN	DIAL	POL		
28		2	88	—	2640	3360
29		2	82	—	2460	3540
30	1145	2	72	—	2160	3840
31		2	75	—	2250	3750
32		2	83	—	2490	3510
33		2	80	—	2400	3600
34		2	74	—	2220	3780
35		2	75	—	2250	3750
36		2	58	—	1740	4260
37		2	65	—	1950	4050
38		2	65	—	1950	4050
39		1	120	—	1200	4800
40		1	153	—	1530	4470
41		1	51	—	510	5490
42		1	20	—	200	5800
43		1	112	—	1120	4880
44		1	167	—	1670	4310
45		1	167	—	1670	4310
46		1	160	—	1600	4400

END
Line

Neat
Houses,

B2	1250	1	27	—		
B1	1300	1	68	+		6000
B2	1314	1	27	—	270-	5730
B2	1315	1	106	—	1060	4940

6790

reset
Mag

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Continuation 50 off Line Beyond 3 Nov 17 66

0-27

STA	TIME	MIN	Dial	Pol	Solution	of B.E
1	1350	1	155	—	1550	5270
2		1	198	—	1980	4810
3	1355	1	141	—	1410	5380
4		1	162	—	1620	5170
5		1	151	—	1510	5280
6		1	136	—	1360	5430
7		1	145	—	1450	5340
8		1	165	—	1650	5140
9		1	137	—	1370	5420
10	1405	1	205	—	2050	4740
11		1	88	—	880	5910
12		1	110	—	1100	5690
13		1	102	—	1020	5770
14		1	0	— +	00	6790
15		1	51	+	510	6280
16		1	86	+	860	5930
17		1	121	—	1210	5580
18	1435	1	161	—	1610	5180
19		1	150	—	1500	5290
20		1	130	—	1300	5490
21		1	60	—	600	6190
22		1	68	—	680	6110
23	1446	1	90	—	900	5890
24		1	56	—	560	6230
25		1	116	—	1160	5630
26		1	153	—	1530	5260
27		1	85	—	850	5940
28		1	115	—	1150	5640
29		1	90	—	900	5890
30		1	108	—	1080	5710

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5 of 4

STA	TIME	RAN	DIAL	Rof		
31	1455	1	33	—	330	6460
32		1	96	—	960	5830
33		1	115	—	1150	5640
34		1	150	—	1500	5290
35		1	165	—	1650	5140
36	1500	1	175	—	1750	5040
37		1	162	—	1620	5170
38		1	160	—	1600	5190
39		1	119	—	1190	5600
40		1	63	—	630	6160
41		1	108	—	1080	5710
42		1	107	—	1070	5720
43		1	59	—	590	6200
45		1	70	—	700	6090
46		1	33	—	330	6460
47		1	10	—	100	6690
X B2		1	105	—	1050	5740

End Line B
at switchback.

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5

Line FN of switchback 50 ft

Sta	Time	Ran	Dial	Pol.		+
B2	1055	1	106	—	1060	5730
1	1115	1	96	—	960	5830
2	1117	1	54	+	540	5330
3		1	57	—	570	6220
4		1	73	—	730	6060
5		1	91	—	910	5880
6	1130	1	81	—	810	5980
7		1	106	—	1060	5730
8		1	104	—	1040	5750
9		1	84	—	840	5950
10		1	72	—	720	6070
11		1	05	—	50	6740
12		1	03	—	30	6760
13		1	117	—	1170	5620
14		1	21	—	210	6580
15		1	110	—	1100	5690
16		1	167	—	1670	5030
17	1210	1	125	—	1250	5540
18		1	115	—	1150	5640
19		1	126	—	1260	5530
20		1	170	—	1700	5090
21		1	202	—	2020	4570
22		1	200	—	2000	4790

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line G

6

50 cft

STA	Time	Raw	Dah	Pol.		
0	1245	1	287	—	2870	3920
1		2	87	—	2610	4180
2		2	81	—	2430	4360
3		2	69	—	2070	4720
4		1	195	—	1950	4840
5		1	190	—	1900	4890
6		1	06	—	60	6730
7		1	10	—	100	6690
8		1	10	+	100	6890
9		1	40	—	400	6590
10		1	25	—	250	6540
11		1	23	—	230	6560
12		1	35	+	350	7140
13		1	82	—	820	5970
14	1.20	1	149	—	1490	5300
15					atd	
16						
17	1.50	1	59	—	590	6200
18		1	43	Geocen GA 7K	430	6360
19		1	0	+ —	00	6790
20		1	12	—	120	6670
21		1	44	7H	440	6350
22		1	61	—	610	6180
23		1	101	—	1010	5780
24		1	124	—	1240	5550
25		1	118	—	1180	5610
26		1	47	—	470	6320
27	2.10	1	125	—	1250	5540
28	2.15	1	124	—	1240	5550
29		1	102	—	1020	5770
B2	3.05	1	107	—	1070	5720

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Line H - from switchboard. 7 50 ft

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Sta	Time	Ran	Pitch	Rol		
0						
1	325	1	103	—	30	6760
2		1	98	—	980	5810
3		1	155	—	1550	5240
4		1	150	—	1500	5290
5		1	122	—	1220	5570
6		1	230	+	2300	9090
7		1	92	—	920	5870
8		1	142	—	1420	5370
9	330	1	149	—	1490	5300
10		1	145	—	1450	5340
11		1	162	—	1620	5170
12		1	148	—	1480	5310
13		1	115	—	1150	5640
14		1	147	—	1470	5320
15		1	156	—	1560	5230
16		1	160	—	1600	5190
17	340	1	161	—	1610	5180
18		1	150	—	1500	5290
19		1	135	—	1350	5440
20		1	116	—	1160	5630
21		1	146	—	1460	5330
22		1	138	—	1380	5410
23		1	125	—	1250	5540
23		1	109	—	1090	5700
24		1	138	—	1380	5410
25		1	111	—	1110	5680
26		1	140	—	1400	5390
27		1	131	—	1310	5480
28		1	138	—	1380	5410

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Soft

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time	R	D	P		
29	1	136	—	1360	5430
30	1	122	—	1220	5570
31	1	77	—	770	6020
32	1	67	—	670	6120
33	1	111	—	1110	5680
34	1	45	—	450	6340
35	1	114	end Road	1140	5650
36	1	54	—	540	6250
37	1	117	—	1170	5620
38	1	06	—	60	6730
39	1	72	—	720	6070
40	1	98	—	980	5810
41	1	105	—	1050	5740
42	1	104	—	1040	5750
43	1	98	—	980	5810
44	2	105	+	3150	9940
45	1	81	—	810	5980
46	1	162	—	1620	5170
47	1	43	—	430	6360
48	1	100	—	1000	5790
B2	1	106	—	1060	5730

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Line I (50 off)

STA	Time	RAN	Dial	Pol.		
0	1200	2	104	—	3120	3670
1		2	74	—	2220	4570
2		2	79	—	2370	4420
3		1	176	—	1760	5030
4		2	95	—	2850	3940
5		2	87	—	2610	4180
6		2	81	—	2430	4360
7		2	92	—	2760	4030
8		2	91	—	2730	4060
9		1	225	—	2250	4540
10		2	89	—	2670	4120
11		1	194	—	1940	4850
12		2	92	—	2760	4030
13		1	244	—	2440	4850
B2		1	106	—	1060	5730

Note 100 ft STATIONS

Line J - 100 ft STATIONS

STA	Time	RAN	Dial	Pol	DATA	DISTANCE
1	1.25	1	142	—	1420	5370
2		1	100	—	1000	5790
3		1	131	—	1310	5480
4		1	120	—	1200	5590
5		1	82	—	820	5970
6		1	25	—	250	6540
7		2	152	—	4560	2230
8		1	32	—	320	6470
9		1	117	—	1170	5620
10		1	148	—	1480	5310
11		1	140	—	1400	5390

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10

100 ft

TRADE MARK REG. U.S. PAT. OFF.

STA	Time	Rem	Dial	Pol		
12	135	16	107	—	1070	5720
13		1	90	—	900	5890
14		1	67	—	670	6120
15		1	95	—	950	5840
16		1	69	—	690	6100
17		1	110	—	1100	5690
18		1	126	—	1260	5530
19	200	1	95	—	950	5840
20		1	189	—	1890	4900
21		1	175	—	1350	5440
22		1	185	—	1850	4940
23		1	159	—	1590	5200
24		1	139	—	1390	5400
25		1	165	—	1650	5140
26		1	178	—	1780	5050
27		1	146	—	1460	5330
28		1	109	—	1090	5700
29		1	65	—	650	6140
30		1	130	—	1300	5490
31		1	180	—	1800	4990
32		1	169	—	1690	5100
33		1	84	—	840	5950
34		1	146	—	1460	5330
35		1	140	—	1400	5390
37		1	143	—	1430	5360
38		1	88	—	1880	4910
39		1	156	—	1560	5230
40		1	62	—	620	6170
41		1	120	—	1200	5590
42		1	165	—	1650	5140

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11

100 ft

TR.MK. REG. U.S. PAT. OFF.

	Time	R	Dial	P		
43	230	1	125	—	1250	5540
44		1	117	—	1170	5620
45		1	145	—	1450	5340
46		1	119	—	1190	5600
47		1	139	—	1390	5400
48		1	109	—	1090	5700
49		1	135	—	1350	5440
50		1	76	—	760	6030
51		1	98	—	980	5810
52		1	76	—	760	6030
53		1	148	—	1480	5310
B2		1	107	—	1070	5720

Patrolled
Tri
STA

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10
2180
3408 June K 100 ft

12

NOV 21 66

STA	Time	RAN	Dial	Rd		
P2	1010	1	110	—	1110	5680
0			15		END of Line	
1	1100	1	190	—	1900	4890
2		1	189	—	1890	4900
3		1	168	—	1680	5110
4		1	95	—	950	5840
5		1	61	—	610	6180
6		1	74	—	740	6050
7		1	78	—	780	6010
8	1130	1	63	—	630	6160
9		1	109	—	1090	5700
10		1	158	—	1580	5210
11	changed	1	165	—	1650	5140
12	to	1	116	—	1160	5630
13	50 ft	1	207	—	2070	4720
14		1	138	—	1380	5410
15	STA	1	153	—	1530	5260
16		1	166	—	1660	5130
17		1	137	—	1370	5420
18		1	158	—	1580	5210
19		1	154	—	1540	5250
20		1	168	—	1680	5110
21		1	170	—	1700	5090
22		1	171	—	1710	5080
23		1	168	—	1680	5110
24	off map	1	187	—	1870	4920
25		2	117	—	3510	3280
26	+25 ft	1	07	—	70	6720
27	180 (2)	1	76	—	760	6030
28		1	22	—	220	6570

N

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TRMK. REG. U.S. PAT. OFF.

13

Now

50 ft

STA	Time	R	Dial	P		
29	1200	1	92	—	920	5870
30		1	150	—	1500	5290
31	125 ft	1	107	—	1070	5720
32	(2)100(+)	1	94	—	940	5820
33		1	118	—	1180	5610
34		1	118	—	1180	5610
35		1	72	—	720	6070
36		1	106	—	1060	5730
37		1	94	—	940	5850
38	125 ft	1	79	—	790	6000
39	+0	1	95	—	950	5840
40		1	150	—	1500	5290
41	Tri	1	163	—	1630	5160
42	STA	1	157	—	1570	5220
43		1	156	—	1560	5230
44		1	159	—	1590	5200
45		1	134	—	1340	5450
46		1	178	—	1780	5010
47		1	210	—	2100	4690
48	Right	1	186	—	1860	4930
49		1	131	—	1310	5480
50		1	165	—	1650	5140
51		1	136	—	1360	5430
52		1	219	—	2190	4600
53		1	168	—	1680	5110
54		1	215	—	2150	4640
55		1	178	—	1780	5010
56		1	197	—	1970	4820
57		1	194	—	1940	4850
58		2	90	—	2700	4090

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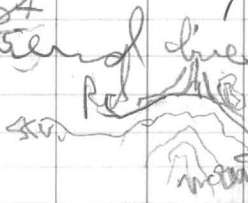
5 of 8 — 14

TRDMK. REG. U.S. PAT. OFF.

STA	Time	Ran	Dial	Pol		
59	1.00	2	92	—	2760	4030
60		2	146	—	4380	2310
61		2	224	—	6720	70
62		2	172	—	5160	1630
63		1	221	—	2210	4580
64		2	89	—	2670	4120
65		1	240	—	2400	4390
66		1	216	—	2160	4630
67	1.20	1	195	—	1950	4840
68		1	196	—	1960	4830
69		1	185	—	1850	4940
70		1	195	—	1450	5340
71		1	175	—	1750	5040
72	25' Diam	1	197	—	1970	4820
73	114(3)+	1	196	—	1960	4830
74		1	181	—	1810	4980
75	+25) 205	1	200	+	2000	8790
76	(2)+	1	210	—	2100	4690
77		1	202	—	2020	4770
78	1.35	1	200	—	2000	4790
79		1	204	—	2040	4750
80		1	207	—	2070	4720
81		1	205	—	2050	4740
82		1	202	—	2020	4770
83		1	207	—	2070	4720
84		1	200	—	2000	4790
85 end of line			206	—	2060	4730



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50 ft.

15

Nov 21

along Rd,
from dirt K, to hinsch

STA	time	RAN	Dind	Pol		
0	is level K					
1	145	1	196	—	1960	4830
2		1	204	—	2040	4750
3		1	196	—	1960	4830
4		1	157	—	1970	4820
5		1	203	—	2030	4760
6		1	208	—	2080	4710
7		1	202	—	2020	4770
8		1	201	—	2010	4780
9		1	205	—	2050	4740
10		1	200	—	2000	4790
11		1	222	—	2220	4570
12		1	206	—	2060	4730
13		1	203	—	2030	4760
14		1	209		2090	4700
15	155	1	200	—	2000	4790

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16

Line L 50 of

Nov 21

TRMK. REG. U.S. PAT. OFF.

STARTS on Rd offset

STA	Time	RAN	Dial R. at Rd			
0						
1		1	192	—	1920	4870
2		1	202	—	2020	4770
3	225	1	217	—	2170	4620
4		1	223	—	2230	4560
5		1	220	—	2200	4590
6	IN RR,	1	223	—	2230	4560
7		1	222	—	2220	4570
8		1	210	—	2100	4690
9		1	235	—	2350	4440
10		1	224	—	2240	4550
11		1	245	—	2450	4340
12		1	235	—	2350	4440
13		1	210	—	2100	4690
14		1	232	—	2320	4470
15		1	242	—	2420	4370
16		1	240	—	2400	4390
17		2	83	—	2490	4300
18		2	82	—	2460	4330
19		2	79	—	2370	4420
20		1	201	—	2010	4780
21	Right	1	292	—	2920	3870
22		2	81	—	2430	4360
23		1	220	—	2200	4590
24		1	239	—	2390	4400
25		2	82	—	2460	4330
26		2	78	—	2340	4450
27		1	229	—	2290	4500
28		1	219	—	2190	4600
29		1	212	—	2120	4670

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50 ft

17

Nov 71

TRMK. REG. U.S. PAT. OFF.

STA	time	RAN	Dial	Pol	calc	14.
30	250	1	231	—	2310	4480
31		1	245	—	2450	4340
32		1	220	—	2200	4590
33		1	139	—	1390	5400
34		1	235	—	2350	4440
35		1	240	—	2400	4390
36		2	85	—	2550	4240
37		1	211	—	2110	4680
38		1	240	—	2400	4390
39		1	225	—	2250	4540
40		1	239	—	2390	4400
41		1	239	—	2390	4400
42		2	79	—	2370	4420
43		1	245	—	2450	4340
44		1	220	—	2200	4590
45		1	235	—	2350	4440
46		1	180	—	1800	4990
47		2	92	—	2760	4030
48		2	84	—	2520	4270
49		2	88	—	2640	4150
50		1	218	—	2180	4618
51		2	83	—	2490	4300
52		1	232	—	2320	4470
53		1	246	—	2460	4330
54		2	83	—	2490	4300
55		1	248	—	2480	4310
56		1	232	—	2320	4476
57		2	98	—	2940	3850
58		1	241	—	2410	4380
59		1	239	—	2390	4400

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50 ft

18

Wood 1

Sta	Time	Rem	Dial	Pole		
60	4.80	1	242	—	2420	4370
61		1	238	—	2380	4410
62		1	198	—	1980	4810
63		2	81	—	2430	4360
64		1	195	—	1950	4840
65		1	214	—	2140	4650
66		2	80	—	2400	4390
67		1	241	—	2410	4380
68		1	232	—	2320	4340
69		1	238	—	2380	4410
70		1	215	—	2150	4640
71	4.10	1	230	—	2300	4490
72		2	54	—	2520	4270
73		1	235	—	2350	4440
74		1	242	—	2420	4370
75		1	245	—	2450	4340
76		1	231	—	2310	4420
77		1	249	—	2490	4300
78		2	59	—	2670	4120
79		1	247	—	2470	4320
80		2	102	—	3060	3730
81		1	243	—	2430	4360
82		1	145	—	1450	5340
83		1	122	—	1220	5570
84		1	136	—	1360	5430
85		1	108	—	1080	5710
86		1	64	—	640	6150
87		1	93	—	930	5860
88		1	125	—	1250	5540
89		1	80	—	800	5990
90			Road			

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Soft Sta
Line M.

19

Nov 22

Sta	Time	Pan	Dial	Pal		
B2	1200	1	104	—	1040	
0	at line					
1		1	137	—	1370	5420
2		1	124	—	1240	5550
3		1	129	—	1290	5500
4		1	130	—	1300	5490
5		1	124	—	1240	5550
6		1	134	—	1340	5450
7		1	135	—	1350	5440
8		1	139	—	1390	5400
9		1	144	—	1440	5350
10		1	140	—	1400	5390
11		1	148	—	1480	5310
12		1	150	—	1500	5290
13		1	155	—	1550	5240
14		1	140	—	1400	5390
15		1	110	—	1100	5690
16		1	126	—	1260	5530
17		1	166	—	1660	5130
18		1	105	—	1050	5740
19		1	172	—	1720	5070
20		1	171	—	1710	5080
21		1	168	—	1680	5110
22		1	188	—	1880	4910
23		1	196	—	1960	4830
24		1	212	—	2120	4670
25		1	209	—	2090	4700
26		1	192	—	1920	4870
27		1	203	—	2030	4760
28		1	208	—	2080	4710

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30 ft

20
Nov 22

TR.MK. REG. U.S. PAT. OFF.

Sta	Time	Run	Dial	Pol		
29	1:00	1	213	—	2130	4660
30		1	206	—	2060	4730
31		1	288	—	2860	3910
32		1	168	—	1680	5110
		1	195	—	1950	4840
33		1	230	—	2300	4490
35 34		1	180	—	1800	4990
35		1	287	—	2610	4180
36		2	78	—	2340	4450
38 37		1	231	—	2310	4480
38		2	77	—	2310	4480
39		2	77	—	2310	4480
40		1	211	—	2110	4680
41		1	243	—	2430	4360
42		1	222	—	2220	4570
43		2	89	—	2670	4120
44		2	86	—	2580	4210
45		1	234	—	2340	4450
47 46		2	88	—	2640	4150
47		2	77	—	2310	4480
48		2	96	—	2880	3910
50 49		2	86	—	2580	4210
50		2	92	—	2760	4030
51		1	194	—	1940	4850
52		1	165	—	1650	5140
53		1	99	—	990	5800
54		1	135	—	1350	5440
55		1	135	—	1350	5440
57 56		1	13	—	1300	5490
58 57		1	153	—	1530	5260

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21

Nov 22

50 ft

Sta	Time	RA	Dial	Pol.		
58	222	1	143	—	1430	5360
59		1	147	—	1490	5300
60		1	152	—	1520	5270
61		1	155	—	1550	5240
62		1	160	—	1600	5190
63		1	147	—	1470	5320
64		1	130	—	1300	5490
65		1	185	—	1850	4940
66		1	109	—	1090	5700
67		1	97	—	970	5820
68		1	148	—	1480	5310
69		1	148	—	1480	5310
70		1	146	—	1460	5330
71		1	143	To P.	1430	5360
72		1	142	—	1420	5370
73		1	139	—	1390	5400
74		1	79	—	790	6000
75		1	78	—	780	6010
76		1	148	—	1480	5310
77		1	136	—	1360	5430
78		1	132	—	1320	5470
79		1	103	—	1030	5760
80		1	138	—	1380	5410
81		1	144	—	1440	5350
82		1	07	—	70	6720
83		1	05	+	50	6840
84		1	15	—	150	6640
85		1	140	—	1400	5390
86		1	147	—	1470	5320
87		1	135	—	1350	5440

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22

Nov 22

50 ft

STA	Time	Ran	Dial	Pol		
88		1	107	—	1070	5720
89		1	111	—	1110	5680
90		1	100	—	1000	5790
B2	3,40	1	103	—	1030	5760

Note → 100 ft 1

LINE N.

STA	Time	Ran	Dial	Pol		
1	4,05	—	161	—	1610	5180
2	—	1	164	—	1640	5150
3		1	152	—	1520	5270
4		1	146	—	1460	5330
5		1	145	—	1450	5240
6		1	91	—	910	5880
7		1	153	—	1530	5260
8		1	139	—	1390	5400
9		1	114	—	1140	5650
10		1	125	—	1250	5540
11		1	185	—	1850	4940
12		1	196	—	1960	4830
13		1	95	—	950	5880
14		1	149	—	1490	5300
15		1	216	—	2160	4630
16		1	149	—	1490	5300
17		1	235	—	2350	4440
18		1	208	—	2080	4710
19		1	193	—	1930	4860
20		1	234	—	2340	4450
21		1	201	—	2010	4780

END Line

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23
Nov 23

Line O

STA	Time	RAN	Dial	Pol		
B2	1145		105	—	1050	
0						
1			59	—	590	6200
2			97	—	970	5820
3			83		830	5960
4			130		1300	5490
5		1	61	—	610	6180
6		1	98	—	980	5810
7		1	117	—	1170	5620
8		1	210	—	2100	4690
9		1	162	—	1620	5170
10		1	165	—	1650	5140
11		1	148	—	1480	5310
12		1	155	—	1550	5240
13		1	172	—	1720	5070
14		1	168	—	1680	5110
15		1	92	—	920	5870
16		1	125	—	1250	5540
17		1	164	—	1640	5150
18		1	134	—	1340	5450
19		1	173	—	1730	5060
20		1	178	—	1780	5010
21		1	183	—	1830	4960
22		1	174	—	1740	5050
23		1	190	—	1900	4890
24		1	202	—	2040	4750
25		1	204	—	2040	4750
26		1	200	—	2000	4790
27		1	182	—	1820	4970
28		1	190	—	1900	4890

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50 ft
Down Rel.

24
Nov 73

STA	Time	Pan	Dial	Pol		
29	1.00	1	204	—	2040	4750
30		1	201	—	2010	4780
31		1	219	—	2190	4600
32		1	239	—	2390	4400
33		2	55	—	2550	4240
34		2	91	—	2730	4060
35		2	58	—	2690	4150
36		2	93	—	2790	4000
37		1	28	—	280	6510
38		2	82	—	2860	4130
39		2	81	—	2430	4360
40		2	78	—	2340	4450
41		1	215	—	2150	4640
42		1	199	—	1990	4800
43		1	187	—	1870	4920
44		1	174	—	1740	5050
45		1	188	—	1880	4910
46		1	171	—	1710	5080
47		1	186	—	1860	4930
48		1	174	—	1740	5050
49		1	180	—	1800	4990
50		1	161	—	1610	5180
51		1	203	—	2030	4760
52		1	173	—	1730	5060
53		1	179	—	1790	5000
54		1	166	—	1660	5130
55		1	149	—	1490	5300
56		1	42	—	420	6370
57		2	97	—	2910	3880
58		1	128	—	1280	5510

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50 ft

25

Nov 23

TR.MK. REG. U.S. PAT. OFF.

Sta	time	Pan	Dial	Pal		
59	2.00	1	111	—	1110	5680
60		1	130	—	1300	5490
61		1	149	—	1490	5300
62		1	155	—	1550	5240
63		1	80	+	800	5990
64		1	134	—	1340	5450
65		1	145	—	1450	5340
66		1	100	—	1000	5790
67		1	102	—	1020	5770
68		1	129	—	1290	5500
69		1	93	—	930	5860
70		1	19	—	190	6600
71		1	120	—	1200	5590
72		1	111	—	1110	5680
73		1	132	—	1320	5470
74		1	65	END	650	6140
75						
B2	2.40	1	104	—	1040	

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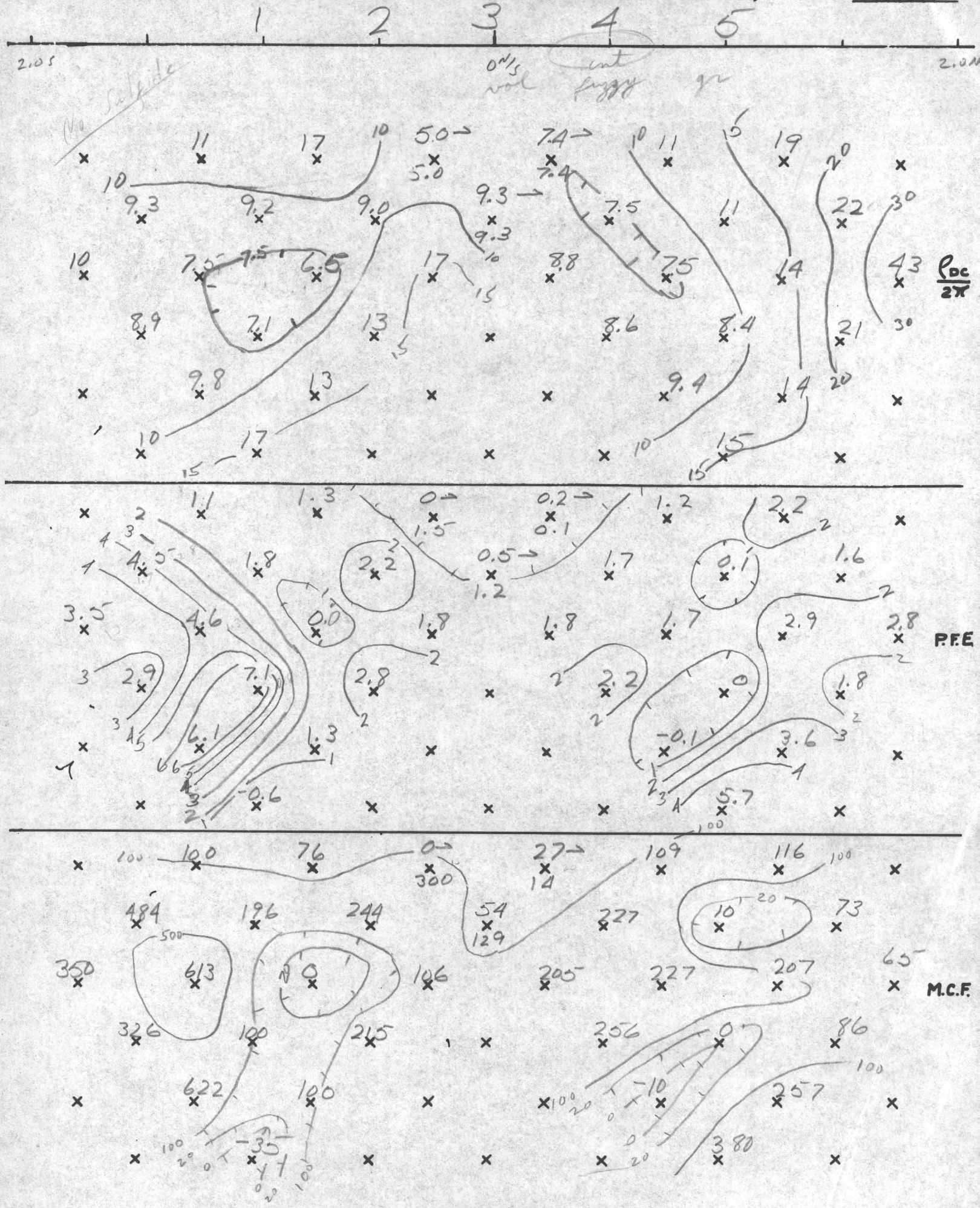
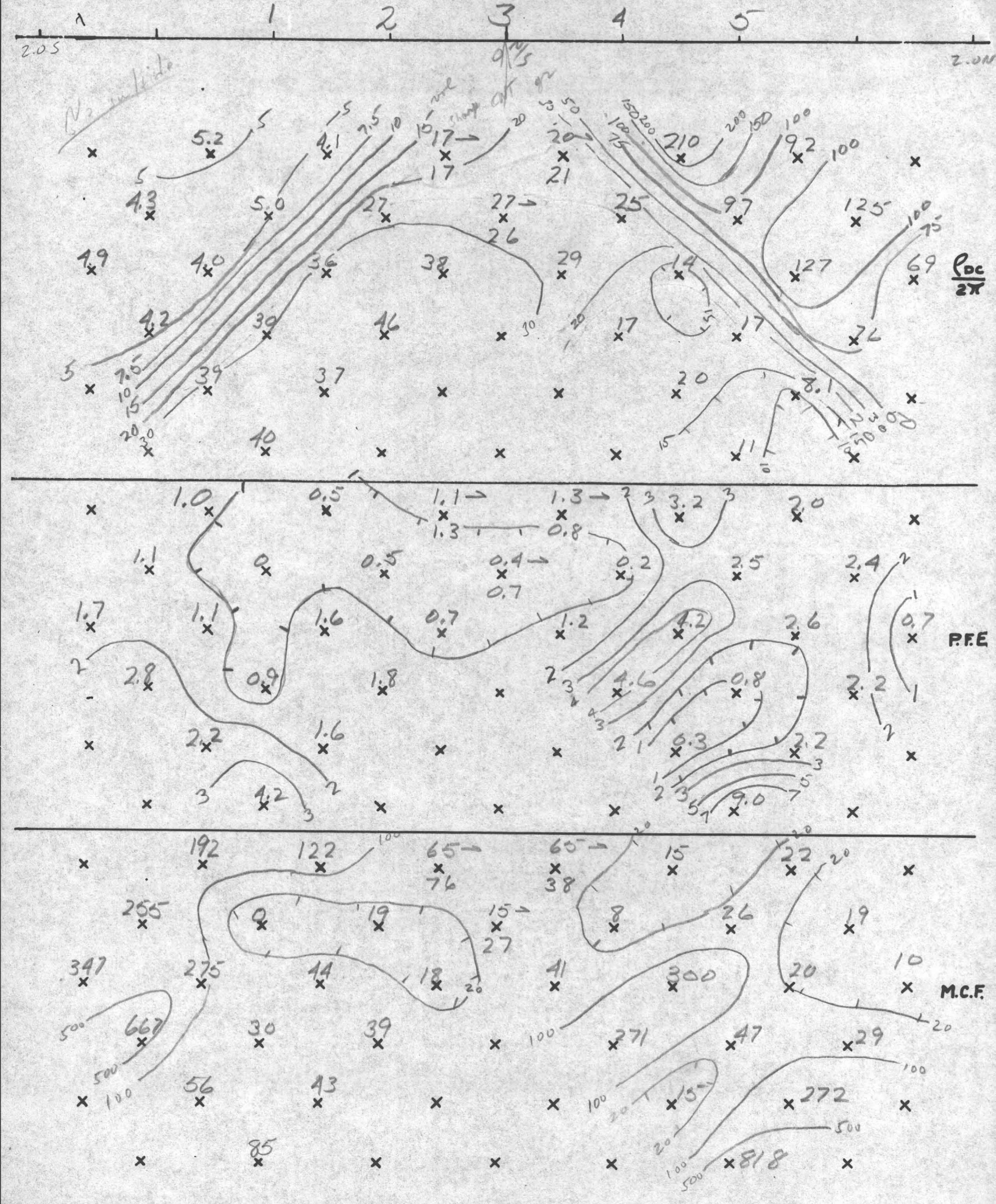
HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING West



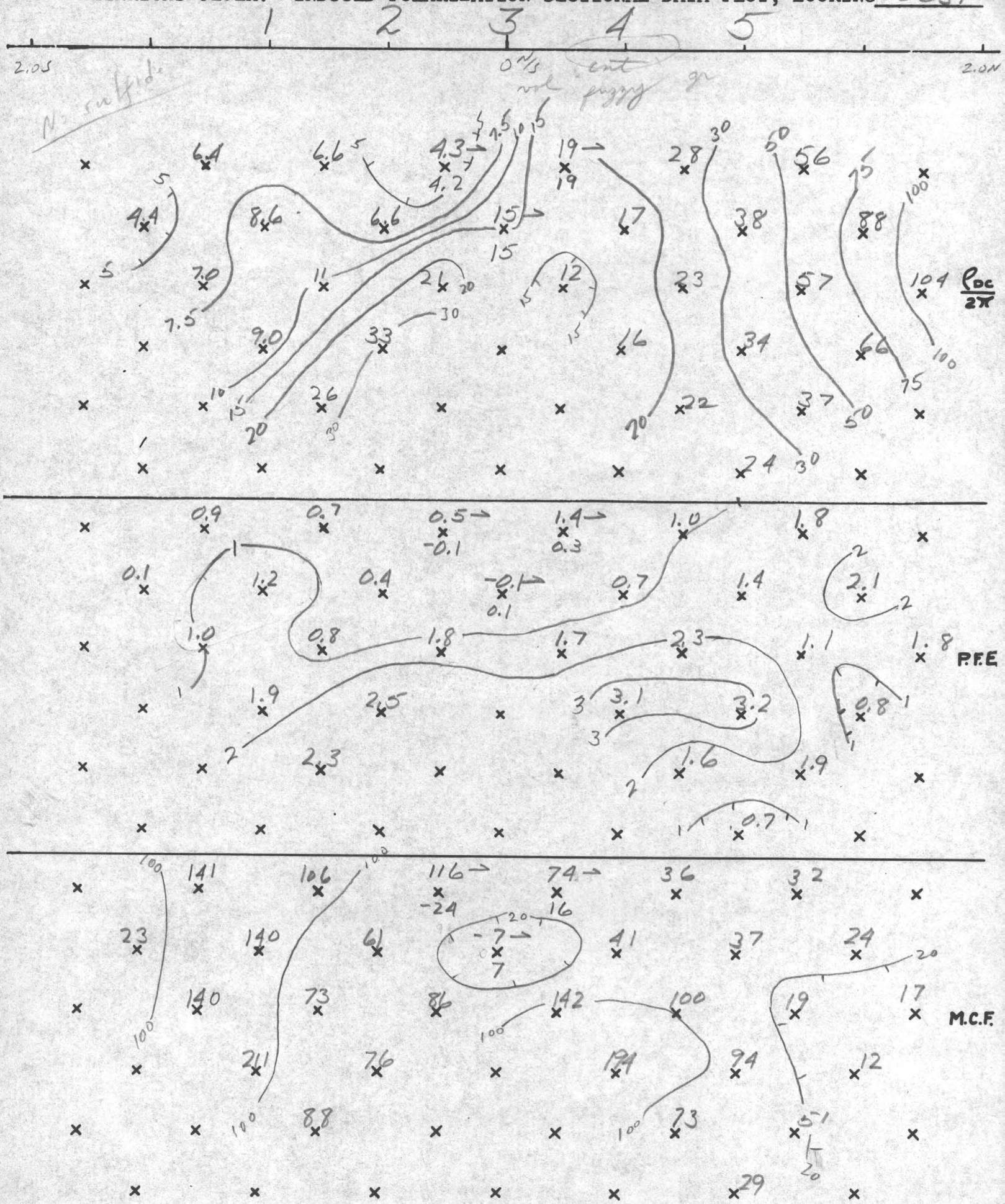
AREA Buckskin Claims LINE 1 a = 500' SCALE: 1" = 500 DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING West



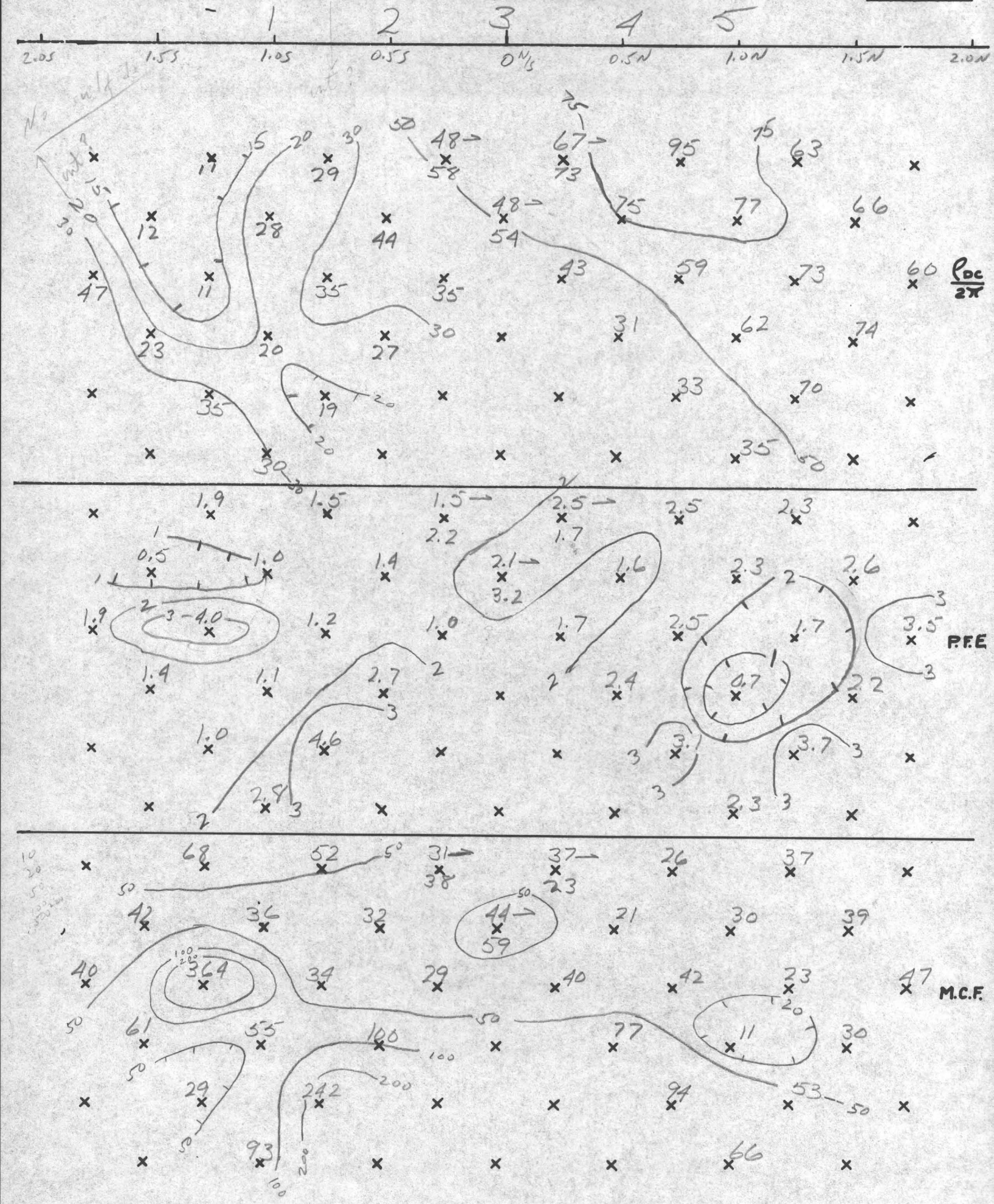
AREA Buckskin LINE 2 a = 500' SCALE: 1" = 500' DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING West



AREA Buckskin Claims LINE 3 a = 500' SCALE: 1" = 500' DATE:

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING WEST



AREA Buckskin LINE 4 a = 500' SCALE: 1" = 500' DATE:

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HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 1

Project BUCKSKIN Line set "A" N½ Field date 11-18-65 Data page 1 Comp. date 11-18-65 . Comp by DA

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-500N	5-10	→	10-15	→	→	15-20	→	→	→		
(C) n separation	10	30	10	30	3	3	30	10	3	1		
(D) I	1.8	→	→	→	→	→	→	→	→	→		
(E) Vdc (avg)	6.38	9.50	2.98	13.55	2.42	1.135	24.15	3.64	0.96	0.555		
(F) DCcal	.983											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	5.0	7.4	9.3	11	7.5	8.8	19	11	7.5	8.6		
(I) Vac Σ	6.35	9.45	2.95	13.3	2.37	1.11	23.5	3.62	0.94	.54		
(J) AC noise x 2	.02	.02		.03			.03					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.996	→	→	→	→	→	→	→	→	→		
(M) ρ dc/ρac=ExL/K	1.000	1.002	1.005	1.012	1.017	1.018	1.022	1.001	1.017	1.022		
(N) PFE=(M-1)(10^2)	0	0.2	0.5	1.2	1.7	1.8	2.2	0.1	1.7	2.2		
(O) MCF=(M-1)(10^5)/H	0	27	54	109	227	205	116	10	227	256		
	-2.1	-0.7		+3.9			-7.1					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		2-3		
(B) Receive	20-25	→	→	→	25-30	→	→	→		CAL		
(C) n separation	10	3	1	1	3	1	1	1		300		
(D) I	1.8	→	→	→	→	→	→	→		~~7.8~~	1.8	
(E) Vdc (avg)	7.20	1.81	.543	.345	5.54	1.37	.505	.345		193.0		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	22	14	8.4	9.4	43	21	14	15				
(I) Vac Σ	7.05	1.75	.54	.34	5.36	1.34	.485	.325		192.0		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.996	→	→	→	→	→	→	→				
(M) ρdc/ρac =ExL/K	1.016	1.029	1.000	999	1.028	1.018	1.036	1.057				
(N) PFE=(M-1)(10^2)	1.6	2.9	0	-0.1	2.8	1.8	3.6	5.7				
(O) MCF=(M-1)(10^5)/H	73	207	0	-10	65	86	257	380				
	+6.9				-2.3							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project BUCKSKIN Line 1 Set A 5½ Field date 11-8-65 Data page 2 Comp. date 11-18-65. Comp by DA

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-5005	5-105	→	10-155	→	→	15-205	→	→	→		
(C) n separation	30	10	10	30	10	3	30	10	3	3		
(D) I	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8		
(E) Vdc (avg)	10.5	6.38	2.98	22.05	2.90	2.22	14.25	2.96	0.84	.815		
(F) DCcal	.934											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	7.4	5.0	9.3	17	9.0	17	11	9.2	6.5	13		
(I) Vac Σ	10.5	6.30	2.95	21.8	2.85	2.19	14.10	2.92	0.84	.795		
(J) AC noise x 2	.01	.05	.02				.01					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.002	→	→	→	→	→	→	→	→	→		
(M) ρ dc/ρac=ExL/K	1.001	1.015	1.012	1.013	1.022	1.018	1.011	1.018	1.000	1.028		
(N) PFE=(M-1)(10^2)	0.1	1.5	1.2	1.3	2.2	1.8	1.1	1.8	0	2.8		
(O) MCF=(M-1)(10^5)/H	14	300	129	76	244	106	100	196	0	215		
	+0.3	-7.7		+0.5			+0.4					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
(B) Receive	20-255	→	→	→	25-305	→	→	→		CAL		
(C) n separation	10	3	1	1	3	1	1	1		300		
(D) I	1.8	→	→	→	→	→	→	→		2.0		
(E) Vdc (avg)	3.00	0.96	.454	0.46	1.30	.575	.36	.39		214.0		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	9.3	7.5	7.1	13	10	8.9	9.8	17				
(I) Vac Σ	2.88	0.92	.425	.455	1.26	0.56	0.34	.395		214.5		
(J) AC noise x 2	.01				.02							
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.045	1.046	1.071	1.013	1.035	1.029	1.061	.994				
(N) PFE=(M-1)(10^2)	4.5	4.6	7.1	1.3	3.5	2.9	6.1	-0.6				
(O) MCF=(M-1)(10^5)/H	484	613	100	100	350	326	622	-35				
	+4.9				-6.4							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 1

Project: Buckskin Line: 1 Set A 5 1/2 Int.Cal 98.0 Date: 11-18-65

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Rec.	0-500	5-10	→	10-15	→	→	15-20	→	→	→		
Time	30	10	10	30	10	3	30	10	3	3		
DC-1	10.6	6.40	3.00	22.0	2.90	2.24	14.3	2.98	.90	.84	7/588 84	
DC-2	10.4	6.35	2.95	22.1	2.90	2.18	14.2	2.95	80	80		6/489 81
Σ						2.21		2.96	85	.82		
DC-3	10.6	6.40	3.00	22.1	2.90	2.26	14.3	3.00	86	.84		
Dc-4	10.4	6.35	2.95	22.0	2.90	2.18	14.2	2.92	80	78		
Σ						2.22	14.25	2.96	.83	.81		
DC-AV	10.5	6.38	2.98	22.05	2.90	2.22			(.84)	(.81)		
AC-1	10.5	6.30	2.95	21.8	2.85	2.19	14.1	2.92	0.84	.79		
AC-2	10.5	"	"	"	"	"	"	"	"	.80		
Σ	"	"	"	"	"	"	"	"	"	.795		
S. P.	+0.3	−7.7		+0.5		+	0.4					
AC-N	.01	.005		.002			.01					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: BUCKSKIN Line: 1-A-5½ Int.Cal _____ Date: 11-18-65

Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
Rec.	20-25	→	→	→	25-30	→	→	→		CAL		
Time	10	3	1	1	3	1	1	1		300		
DC-1	3.00	.96	.420	.410 .450	1.38	.54	.32 .45	.46		214		
DC-2	3.00	.96	.540	.480 .380	1.34	.65 .52	.25 .48	.39 .41		214		
Σ			.405	.520		.64	.29	.35				
DC-3	3.00	.90	.495	.500 .480	1.30	.45 .65	.46 .29	.46 .30		214		
Dc-4	3.00	1.02	.360 .305		1.25 1.24			.52 .22				
Σ	3.00				1.28							
DC-AV	3.00	.96	.454	.46	1.30	.575	.361					
AC-1	2.88	.92	.425	.455	1.26	.56	.34	.395				
AC-2	"	"	"	"	"	"	.34			215		
Σ	"	"	"	"	"					214		
S. P.	+4.9				-6.4					214.5		
AC-N	.01				.02							

INDUCED POLARIZATION SENDER NOTES

Project: _____ Line: 1-A-5½ Date: _____

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal
Receive	0-500	5-10	→	10-15	→	→	15-20	→	→	→		2-3
Time												
Range												
Current	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8		2.0
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL		
Receive	20-25	→	→	→	25-30	→	→	→		2-3		
Time												
Range												
Current	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8		

INDUCED POLARIZATION - RECEIVER NOTES PAGE 3

Project: Buckskin Line: 1-A-N 1/2 Int.Cal 95.0 Date: 11-18-65

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-500	5-10	—	10-15		→	15-20	→	→	→		
Time	10	30	10	30	3	3	30	10	3	1		
DC-1	6.45	9.90	2.98	13.5	2.36	1.10	23.7	3.80	.95	.54	.56	
DC-2	6.25	9.10	2.98	13.6	2.50	1.16	24.6	3.58	.98	.58	.55	
Σ	6.35	9.50			2.43	1.13	24.2	3.64	.96	.56		
DC-3	6.70	10.0	2.98	13.5	2.32	1.16	23.5	3.75	.90	.45	.56	
Dc-4	6.10	9.0	2.98	13.6	2.50	1.13	24.7	3.52	1.02	.68	.55	
Σ	6.40	9.50			2.41	1.14	24.1	3.64	.96			
DC-AV										.555		
AC-1	6.35	9.45	2.95	13.3	2.37	1.11	23.5	3.62	0.94	.54		
AC-2	"	9.45	"	13.3	"	1.11	"	"	"			
Σ	"			13.3	"							
S. P.	-2.1	-0.7		+3.9			-7.1					
AC-N	.02	.02		.03			.03					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 4

Project: BUCKSKIN Line: 1-A- N½ Int.Cal _____ Date: 11-18-65

Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
Rec.	20-25				25-30					CAL		
Time	10	3	1	1	10	3	1	1		300		
DC-1	7.18	1.79	54	35	5.60	1.40	47	438		1.93		
DC-2	7.22	1.84	535	35	5.48	132	53	231		193.0		
Σ	7.20	1.82	.543	.35	5.54	1.36	.50	.33				
DC-3	7.18	1.78	.54	37	5.55	151	58	37		193.0		
Dc-4	7.22	1.80	545	29	5.55	126	44	34		193.0		
Σ	7.20	1.80	.542	.34	5.55	1.38	.51	.36				
DC-AV					5.54	1.37						
AC-1	7.05	1.75	.54	.34	5.35	1.34	0.48	.325				
AC-2	"	"	.54	"	5.38	"	49			1.92		
Σ	"	"	.54	.34	5.36	1.34	.485			192.0		
S. P.	+6.9				-2.3							
AC-N	.03				.03							

INDUCED POLARIZATION SENDER NOTES

Project: _____ Line: 1-A-N/2 Date: _____

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive	0-5	5-10	→	10-15	→		15-20	→	→	→		
Time												
Range												
Current	1.8	1.8	1.8	1.8	1.5	1.8	1.8	1.8	1.8	1.8		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAL		
Receive	20-25	→	→	→	25-30	→	→	→		3-4		
Time												
Range												
Current	1.8	1.8	1.8	1.8	1.8	1.8	1.5	1.8	1.8 →			

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project Buckskin Line 2 Set A" N½ Field date 11-19-65 Data page _____ Comp. date _____. Comp by _____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-500N	5-10N	→	10-15N	→	→	15-20N	→	→	→		
(C) n separation	30	30	10	300	10	10	100	100	3	3		
(D) I	1.6	2.0	1.6	2.0	2.0	1.6	1.0	2.0	2.0	1.6		
(E) Vdc (avg)	19.08	29.08	7.60	300.0	8.75	3.29	65.8	34.65	1.935	.95		
(F) DCcal	.935											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	17	20	27	210	25	29	92	97	14	17		
(I) Vac Σ	18.7	28.45	7.50	288.0	8.65	3.22	63.9	33.5	1.84	0.90		
(J) AC noise x 2	.06	.04		.03			.02					
(K) Vac(corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K	1.011	1.013	1.004	1.032	1.002	1.012	1.020	1.025	1.042	1.046		
(N) PFE=(M-1)(10^2)	1.1	1.3	0.4	3.2	0.2	1.2	2.0	2.5	4.2	4.6		
(O) MCF=(M-1)(10^5)/H	65	65	15	15	8	41	22	26	300	271		
	+16.2	+0.7		-9.3			+10.9					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
(B) Receive	20-25N	→	→	→	25-30	→	→	→		CHL		
(C) n separation	30	30	3	1	10	10	1	1		800		
(D) I	1.0	2.0	2.0	1.6	1.0	2.0	2.0	1.6		2.0		
(E) Vdc (avg)	22.32	18.12	1.18	.668	4.93	5.42	.33	.22		214		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	125	127	17	20	69	76	8.1	11				
(I) Vac Σ	21.6	17.5	1.16	.66	4.85	5.25	.32	.20		212		
(J) AC noise x 2	.02				.02							
(K) Vac (corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.991											
(M) ρdc/ρac =ExL/K	1.024	1.026	1.008	1.003	1.007	1.022	1.022	1.090				
(N) PFE=(M-1)(10^2)	2.4	2.6	0.8	0.3	0.7	2.2	2.2	9.0				
(O) MCF=(M-1)(10^5)/H	19	20	47	15	10	29	272	818				
	-11.3				-7.2							

16.9
9.3
7.6

18.5

5.58

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 1

Project BUCKSKIN Line 2 Set A 5% Field date 11-19-65 Data page _____ Comp. date _____. Comp by _____

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-500S	5-10S	→	10-15S	→	→	15-20S	→	→	→		
(C) n separation	30	30	10	10	30	10	10	3	10	3		
(D) I	1.2	2.0	1.0	2.0	2.0	1.0	1.6	2.0	2.0	1.0		
(E) Vdc (avg)	18.15	23.8	4.58	5.88	9.65	2.70	5.94	1.80	5.13	1.66		
(F) DCcal	.930	→	→	→	→	→	→	→	→	→		
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	21	17	26	4.1	27	38	5.2	5.0	36	46		
(I) Vac Σ	18.00	23.5	4.55	5.85	9.60	2.68	5.88	1.80	5.05	1.63		
(J) AC noise x 2	.10	.07		.06			.04					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.000	→	→	→	→	→	→	→	→	→		
(M) ρ dc/ρac=ExL/K	1.008	1.013	1.007	1.005	1.005	1.007	1.010	1.000	1.016	1.018		
(N) PFE=(M-1)(10^2)	0.8	1.3	0.7	0.5	0.5	0.7	1.0	0	1.6	1.8		
(O) MCF=(M-1)(10^5)/H	38	76	27	122	19	18	192	0	44	39		
	-1.6	+9.6		-4.4			-2.1					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
(B) Receive	20-25S	→	→	→	25-30S	→	→	→		SAL		
(C) n separation	3	1	3	1	1	1	3	1		300		
(D) I	1.4	2.0	2.0	1.0	1.4	2.0	2.0	1.0		2.0		
(E) Vdc (avg)	1.072	.571	2.15	.760	.49	.298	1.595	.625		215.0		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	4.3	4.0	30	37	4.9	4.2	39	49				
(I) Vac Σ	1.06	.565	2.13	.748	.48	.290	1.56	.600		215.0		
(J) AC noise x 2	.02				.02							
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.000	→	→	→	→	→	→	→				
(M) ρdc/ρac =ExL/K	1.011	1.011	1.009	1.016	1.017	1.028	1.022	1.042				
(N) PFE=(M-1)(10^2)	1.1	1.1	0.9	1.6	1.7	2.8	2.2	4.2				
(O) MCF=(M-1)(10^5)/H	255	275	30	43	347	667	56	85				
	+4.7				-5.4							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 1

Project: Buckskin Line: 2-A-5 1/2 Int.Cal 96.0 Date: 11-19-65

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Rec.	0-5	5-10	→	10-15	→	→	15-20	→	→	→		
Time	30	30	10	10	30	10	10	3	10	3		
DC-1	18.4	23.9	4.6	5.90	9.70	2.68	6.00	1.80	5.08	1.66		
DC-2	17.9	23.7	4.55	5.85	9.60	2.72	5.88	1.80	5.18	1.66		
Σ	18.15	23.8	4.58	5.88	9.65	2.70	5.94	1.80	5.13	1.66		
DC-3	18.4	24.0	4.60	5.90	9.70	2.70	6.00	1.85	5.02	1.66		
Dc-4	17.9	23.6	4.55	5.85	9.60	2.70	5.88	1.75	5.25	1.66		
Σ	18.15	23.8	4.58	5.88	9.65	2.70	5.94	1.80	5.13	1.66		
DC-AV												
AC-1	18.05	23.5	4.55	5.85	9.60	2.68	5.88	1.80	5.05	1.63		
AC-2	"	"	4.55	"	"	"	"	"	"	"		
Σ												
S. P.	-1.6	+9.6		-4.4			-2.1					
AC-N	.10	.07		.06			.04					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: BUCKSKIN Line: 2-A-5½ Int.Cal 95.5 Date: 11-19-65

Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
Rec.	20-25			→	25-30			→		CAL		
Time	3	3	3	1	1	1	3	1		300		
DC-1	1.10	.580	2.16	3 .750 2	49	.30	1.58	.56		215		
DC-2	1.05	540	2.15	775	49	.295	1.60	68		215		
Σ	1.075	6.00	2.155	.735	.49	.298	1.59	.62				
DC-3	1.10	605	2.14	768	.50	.318	1.54	52		215		
Dc-4	1.04	555	2.16	750	48	278	1.66	76		215		
Σ	1.07	.545	2.15	.782	.49	.298	1.60	.64				
DC-AV					.49			63				
AC-1	1.06	565	213	0.745	.48	.290	1.56	.60		215		
AC-2	"	"	"	.750	"	"				215		
Σ												
S. P.	+4.7				-5.4							
AC-N	.02				.02							

INDUCED POLARIZATION SENDER NOTES

Project: Buckhorn Line: 5 1/2 line 2A Date:

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive												
Time												
Range												
Current	1.2	2.0	1.0	2.0	2.0	1.0	1.6	2.0	2.0	1.0		
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal		
Receive										2-3		
Time												
Range												
Current	1.4	2.0	2.0	1.0	1.4	2.0	2.0	1.0		2.0		

INDUCED POLARIZATION - RECEIVER NOTES PAGE 3

Project: BUCKSKIN Line: 2-A-N½ Int.Cal 95.0 Date: 11-19-65

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-5.00	5-10	→	10-15	→	→	15-20	→	→	→		
Time	30	30	10	300	10	10	100	100	3	3		
DC-1	19.1	28.8	7.58	300	8.60	3.22	65.5	34.8	1.87	.97		
DC-2	19.0	29.3	7.62	300	8.90	3.35	66.2	34.5	2.00	.93		
Σ	19.05	29.05	7.60	300.0	8.75	3.28	65.8	34.65	1.94	.73		
DC-3	19.2	29.05	7.82	300.0	8.70	3.20	65.5	34.8	1.70	1.14		
Dc-4	19.0	29.05	7.38	300.0	880	3.40	66.2	34.5	2.17	.63		
Σ	19.10	29.1	7.60	300	8.75	3.30	65.8	34.65	1.93	1.30		
DC-AV												
AC-1	18.7	28.45	7.50	288.0	8.65	3.22	63.8	33.5	1.84	0.90		
AC-2			7.50	"	8.65	"	64.0	"	"	"		
Σ							63.9					
S. P.	+16.2	+0.7		-9.3			+10.9					
AC-N	.06	.04		.03			.02					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 4

Project: BUCKSKIN Line: 2-A-N 1/2 Int.Cal 95.0 Date: 11-19-65

Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		23
Rec.	20-25				25-30					CAL		
Time	30	30	3	1	10	10	1	1		300		5P
DC-1	22.0	19.6	1.09	.66	4.95	5.30		33		214		
DC-2	22.6	16.9	130	83	490	555		12		214		
Σ	22.3	18.25		52	4.92	5.42		.22				23
DC-3	21.9	19.4	1.28	88	5.15	5.25				214		39
Dc-4	22.9	16.6	1.05	45	4.75	560				214		33
Σ	22.4	18.0			4.95	5.42	.36					32
DC-AV	22.35			.668								
AC-1	21.6	17.5	1.16	.66	4.85	5.25	.30	.20				
AC-2	"	"	"	"	"	"				210		
Σ										212		
S. P.	-11.3				-7.2							
AC-N	.02				.02							

INDUCED POLARIZATION SENDER NOTES

Project: Buchanan Line: N 1/2 Line 2A Date:

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive												
Time												
Range												
Current	1.6	2.0	1.6	2.0	2.0	1.6	1.0	2.0	2.0	1.6		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal		
Receive										3-4		
Time												
Range												
Current	1.0	2.0	2.0	1.6	1.0	2.0	2.0	1.6		2.0		

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 1

Project Buckskin Line 3A-5½ Field date 11-20-65 Data page _____ Comp. date _____. Comp by DA

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-500	5-10	→	10-15	→	→	15-20	→	→	→		
(C) n separation	30	10	10	30	3	3	30	10	3	3		
(D) I	2.0	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0	1.8		
(E) Vdc (avg)	26.6	6.025	5.415	9.31	2.36	2.63	9.075	3.05	1.58	2.08		
(F) DCcal	.939											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	19	4.2	15	6.6	6.6	21	6.4	8.6	11	33		
(I) Vac Σ	26.4	6.00	5.38	9.20	2.34	2.57	8.95	3.00	1.56	2.02		
(J) AC noise x 2	.10	.08		.06			.03					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.995											
(M) ρ dc/ρac=ExL/K	1.003	.999	1.001	1.007	1.004	1.018	1.009	1.012	1.008	1.025		
(N) PFE=(M-1)(10^2)	0.3	-0.1	0.1	0.7	0.4	1.8	0.9	1.2	0.8	2.5		
(O) MCF=(M-1)(10^5)/H	16	-24	7	106	61	86	141	140	73	76		
	+9.2	+3.1		-2.1			+4.6					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
(B) Receive	20-25	→	→	→	25-30	→	→	→		CAL		
(C) n separation	3	3	1	3						300		
(D) I	2.0	2.0	2.0	1.8						2.0		
(E) Vdc (avg)	1.57	.995	.640	.946						213		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5								
(H) ρ dc=ExFxGx10^3/D	4.4	7.0	9.0	26								
(I) Vac Σ	1.56	.975	.625	.92						212.0		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.995											
(M) ρdc/ρac =ExL/K	1.001	1.010	1.019	1.023								
(N) PFE=(M-1)(10^2)	0.1	1.0	1.9	2.3								
(O) MCF=(M-1)(10^5)/H	23	14	211	88								

CLIFF

+1.9

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project BUCKSKIN Line 3A - N½ Field date 11-20-65 Data page _____ Comp. date _____. Comp by DM

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-500	5-10	→	10-15	→	→	15-20	→	→	→		
(C) n separation	10	30	10	100	10	3	100	30	10	3		
(D) I	2.0	2.0	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0		
(E) Vdc (avg)	5.98	26.7	5.30	39.4	5.92	1.625	70.5	13.35	3.28	1.14		
(F) DCcal	.952											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	4.3	19	15	28	17	12	56	38	23	16		
(I) Vac Σ	5.92	26.2	5.28	38.8	5.85	1.59	68.9	13.1	3.19	1.10		
(J) AC noise x 2	.02	.02		.02			.02					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.995											
(M) ρ dc/ρac=ExL/K	1.005	1.014	.999	1.010	1.007	1.017	1.018	1.014	1.023	1.031		
(N) PFE=(M-1)(10^2)	0.5	1.4	-0.1	1.0	0.7	1.7	1.8	1.4	2.3	3.1		
(O) MCF=(M-1)(10^5)/H	116	74	-7	36	41	142	32	37	100	194		
	+14.1	-3.1		+3.5			-8.0					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
(B) Receive	20-25	→	→	→	25-30	→	→	→		CAL		
(C) n separation	30	10	3	3	30	10	3	1		300		
(D) I	1.8	2.0	2.0	2.0	1.8	2.0	2.0	2.0		2.0		
(E) Vdc (avg)	27.75	8.03	2.38	.878	13.15	4.595	1.485	.607		210		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	88	57	34	22	104	66	37	24				
(I) Vac Σ	27.05	7.90	2.295	.86	12.85	4.535	1.45	.60		209.0		
(J) AC noise x 2	.02				.02							
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.021	1.011	1.032	1.016	1.018	1.008	1.019	1.007				
(N) PFE=(M-1)(10^2)	2.1	1.1	3.2	1.6	1.8	0.8	1.9	0.7				
(O) MCF=(M-1)(10^5)/H	24	19	94	73	17	12	51	29				
	-1.9				-3.3							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 1

Project: BUCKSKIN Line: 3A5 1/2 Int.Cal 95.0 Date: 11-20-65

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Rec.	0-5	5-10	→	10-15	→	→	15-20	→	→	→		
Time	30	10	10	30	3	3	30	10	3	3		
DC-1	8.38	6.00	5.42	9.45	2.34	2.66	9.3	3.00	1.60	2.05		
DC-2	8.45	6.05	5.38	9.20	2.38	2.60	8.8	3.10	1.55	2.14		
Σ	8.42	6.025	5.40	9.32	2.36	2.63	9.05	3.05	1.585	2.095		
DC-3	8.38	6.00	5.38	9.40	2.41	2.66	9.5	2.95	1.54	1.93		
Dc-4	8.45	6.05	5.48	9.20	2.30	2.60	8.8	3.15	1.62	2.20		.135
Σ	8.42	6.025	5.43	9.30	2.36	2.63	9.15	3.05	1.58	2.065		
DC-AV	26.6						9.10					
AC-1	8.35	6.00	5.38	9.20	2.34	2.57	9.00	3.00	1.56	2.02		
AC-2	8.35	"	"	"	"	2.57	8.90	3.00	1.56	"		
Σ	26.4						8.95					
S. P.	+9.2	+3.1		-2.1			+4.6					
AC-N	.10	.08		.06			.03					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: Buckbin Line: 3-A-5 1/2 Int.Cal _____ Date: _____

Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
Rec.	20-25	→	→	→	25-30	→	→	→		CAL		
Time	3	3	1	3						300		
DC-1	1.54	.97	.628	1.02						212		
DC-2	1.54	.97	.595	84						214		
Σ	1.48	.96	.640	.93								
DC-3	1.68	1.02	.642	1.00						212		
Dc-4	1.48	90	638	90						214		
Σ	1.70	1.12		.96						213		
DC-AV	1.58											
AC-1	1.56	0.98	.625	.92								
AC-2	"	97	.625	92						212.0		
Σ		.975	.625	.92						"		
S. P.	+1.9											
AC-N	.02											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 3

Project: Buckskin Line: 3-A-N½ Int.Cal _____ Date: 11-20-65

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-500	5-10	→	10-15	→	→	15-20	→	→	→		
Time	10	30	10	100	10	3	100	30	10	3		
DC-1	5.98	26.5	5.60	39.8	6.05	1.60	70.5	13.4	3.40	1.31		
DC-2	5.98	26.9	5.00	39.0	5.80	1.65	70.5	13.4	3.10	.99		
Σ		26.7	5.30	39.4	5.92	1.62	70.5	13.4	3.25	1.15		
DC-3	5.98	26.4	5.40	39.8	5.88	1.65	70.5	13.3	3.25	1.19		
Dc-4	5.98	27.0	5.20	39.0	5.96	1.60	70.5	13.3	3.35	1.10		
Σ		26.7	5.30	39.4	5.92	1.62		13.3	3.30	1.14		
DC-AV								13.35	3.28			
AC-1	5.92	26.2	5.28	38.5	5.85	1.59	68.8	13.1	3.18	1.10		
AC-2	"			38.8			69.0	"	3.20	1.10		
Σ							68.9		3.19			
S. P.	+14.1	-3.1		+3.5			-8.0					
AC-N	.02	.02		.02			.02					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 4

Project: Buckskin Line: 3-A-N 1/2 Int.Cal _____ Date: _____

Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
Rec.	20-25	→	→	→	25-30	→	→	→		CAL		
Time	30	10	3	3	30	10	3			300		
DC-1	27.7	7.90	2.39	86	12.6	4.58	1.45	60		210.0		
DC-2	27.8	8.20	2.35	91	13.7	4.62	1.50	62		210.0		
Σ	27.75	8.05	2.37	.882	13.2	4.60	1.48	65				
DC-3	27.6	7.90	2.23	86	12.6	4.58	1.45	5.45		210		
Dc-4	27.9	8.15	2.49	89	13.5	4.58	1.52	65 56		210		
Σ	27.75	8.025	2.39	.875	13.0	4.58	1.49	63				
DC-AV					13.1	4.59						
AC-1	27.0	7.92	2.29	.86	12.8	4.52	1.45	.60		209.0		
AC-2	27.1	7.88	2.30		12.9	4.55	"					
Σ	27.05	7.90	2.295		12.85	4.44						
S. P.	-1.7				-3.3							
AC-N	.02				.02							

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: _____ Line: _____ Int.Cal _____ Date: _____

Send												
Rec.												
Time												
DC-1												
DC-2												
Σ												
DC-3												
Dc-4												
Σ												
DC-AV												
AC-1												
AC-2												
Σ												
S. P.												
AC-N												

INDUCED POLARIZATION SENDER NOTES

Project: _____ Line: N/2 _____ Date: _____

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive												
Time												
Range												
Current	2.0	2.0	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2			Cal	
Receive											3-4	
Time												
Range												
Current	1.5	2.0	2.0	2.0	1.8	2.0	2.0	2.0			2.0	

INDUCED POLARIZATION SENDER NOTES

Project: _____ Line: 5½ 3A Date: _____

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive												
Time												
Range												
Current	2.0	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0	1.8		
Send	1-2	2-3	3-4	4-5							Cal	
Receive											2-3	
Time												
Range												
Current	2.0	2.0	2.0	1.8							2.0	

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INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project BUCKSKIN Line 4A-5½ Field date 11-21-65 Data page _____ Comp. date 11-22-65 Comp by DA

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-500	5-10 →		10-15 →			15-20 →					
(C) n separation	100	100	30	30	30	10	30	10	10	3		
(D) I	1.2	1.4	1.2	1.4	1.4	1.2	2.0	1.4	1.4	1.2		
(E) Vdc (avg)	60.5	56.7	11.25	27.9	10.75	2.88	15.8	6.72	3.43	1.13		
(F) DCcal	.959											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	73	58	54	29	44	35	11	28	35	27		
(I) Vac Σ	59.5	55.5	10.9	27.5	10.60	2.85	15.5	6.65	3.39	1.10		
(J) AC noise x 2	.02	.01		.01			.01					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	1.000											
(M) ρ dc/ρac=ExL/K	1.017	1.022	1.032	1.015	1.014	1.010	1.019	1.010	1.012	1.027		
(N) PFE=(M-1)(10^2)	1.7	2.2	3.2	1.5	1.4	1.0	1.9	1.0	1.2	2.7		
(O) MCF=(M-1)(10^5)/H	23	38	59	52	32	29	68	36	34	100		
	-9.2	+3.1		-2.9			+6.5					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
(B) Receive	20-25 →				25-30 →					CAL		
(C) n separation	10	3	3	1	10	3	3	1		300		
(D) I	2.0	1.4	1.4	1.2	2.0	1.4	1.4	1.2		1.4		
(E) Vdc (avg)	4.34	1.04	0.95	0.455	3.26	1.105	0.97	0.4525		146		
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84				
(H) ρ dc=ExFxGx10^3/D	12	11	20	19	47	23	35	30				
(I) Vac Σ	4.32	1.00	0.94	.435	3.20	1.09	.96	.44		146		
(J) AC noise x 2	.01				.01							
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.005	1.040	1.011	1.046	1.019	1.014	1.010	1.028				
(N) PFE=(M-1)(10^2)	0.5	4.0	1.1	4.6	1.9	1.4	1.0	2.8				
(O) MCF=(M-1)(10^5)/H	42	364	55	242	40	61	29	93				
	-0.2				+1.0							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 1

Project BUCKSKIN Line AA-N½ Field date 11-21-65 Data page _____ Comp. date _____. Comp by DA

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-500	5-10 →		10-15 →			15-20 →					
(C) n separation	100	100	30	300	30	10	100	30	10	3		
(D) I	2.0	1.4	2.0	1.4	1.6	2.0	1.2	1.4	1.6	2.0		
(E) Vdc (avg)	66.8	64.8	16.85	92.25	20.88	5.92	52.7	18.62	6.58	2.15		
(F) DCcal	.959											
(G) Kn x 10^{-3}	1.5	1.5	6.0	1.5	6.0	15.0	1.5	6.0	15.0	30.0		
(H) ρ dc=ExFxGx10^3/D	48	67	48	95	75	43	63	77	59	31		
(I) Vac Σ	65.8	63.2	16.5	90.0	20.55	5.82	5.15	18.2	6.42	2.10		
(J) AC noise x 2	.02	.03		.06			.03					
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K	1.015	1.025	1.021	1.025	1.016	1.017	1.023	1.023	1.025	1.024		
(N) PFE=(M-1)(10^2)	1.5	2.5	2.1	2.5	1.6	1.7	2.3	2.3	2.5	2.4		
(O) MCF=(M-1)(10^5)/H	31	37	44	26	21	40	37	30	42	77		
	+1.7	-0.2		-3.9			+1.2					

Project _____ Line _____ Field date _____ Data page _____ Comp. date _____ Comp by _____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2				
(B) Receive	20-25 →				25-30 →							
(C) n separation	30	30	10	3	10	10	3	3				
(D) I	1.2	1.4	1.4	2.0	1.2	1.4	1.4	2.0				
(E) Vdc (avg)	13.85	7.12	3.00	1.32	4.99	3.60	1.94	.88				
(F) DCcal												
(G) Kn x 10^{-3}	6.0	15.0	30.0	52.5	15.0	30.0	52.5	84.0				
(H) ρ dc=ExFxGx10^3/D	66	73	62	33	60	74	70	35				
(I) Vac Σ	13.5	7.00	2.98	1.28	4.82	3.52	1.87	.86				
(J) AC noise x 2	.02				.02							
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.026	1.017	1.007	1.031	1.035	1.022	1.037	1.023				
(N) PFE=(M-1)(10^2)	2.6	1.7	0.7	3.1	3.5	2.2	3.7	2.3				
(O) MCF=(M-1)(10^5)/H	39	23	11	94	47	30	53	66				
	-1.9				+4.5							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 1

Project: BUCKSKIN Line: A-A-N½ Int.Cal _____ Date: 11-21-65

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-500	5-10 →		10-15	→		15-20	→				
Time	100	100	30	300	30	10	100	30	10	3		
DC-1	66.8	65.0	16.8	92.5	20.8	6.10	53.0	18.4	6.40	2.15		
DC-2	66.8	64.5	16.9	92.0	20.9	5.75	52.5	18.8	6.78	2.15		
Σ		64.8	16.85	92.25	20.85	5.92	52.8	18.6	6.59	2.15		
DC-3	66.8	65.2	16.9	92.0	21.0	5.85	52.8	18.6	6.40	2.14		
Dc-4	66.8	64.5	16.8	92.5	20.8	6.00	52.5	18.8	6.75	2.15		
Σ		64.8	16.85	92.25	20.9	5.92	5.26	18.7	6.57	2.15		
DC-AV							52.7	18.65				
AC-1	65.8	63.2	16.5	90.0	20.55	5.82	51.5	18.2	6.42	2.10		
AC-2	"	"	"	"	"	"	"	"	"			
Σ				90.0	20.55		51.5	18.2	6.42			
S. P.	+1.7	-0.2		-3.9			+1.2					
AC-N	.02	.03		.06			.03					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: Buckskin Line: 4 A-N 1/2 Int.Cal _____ Date: 11-21-65

Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		3-4		
Rec.	20-25	→	→	→	25-30	→	→	→				
Time	30	30	10	3	10	10	3	3				
DC-1	14.3	7.3	3.02	1.30	4.90	3.62	1.93	0.90				
DC-2	13.5	6.9	2.98	1.35	5.08	3.58	1.95	.86				
Σ	13.9	7.1	3.00	1.32	4.99	3.60	1.94	.88				
DC-3	14.2	7.4	3.02	1.19	4.80	3.62	1.86	90				
Dc-4	13.5	6.9	2.98	1.45	518	3.58	2.02	86				
Σ	13.8	7.15	3.00	1.32	4.99	3.60	1.94	.88				
DC-AV												
AC-1	13.5	7.00	2.98	1.28	4.82	3.52	1.86	.86				
AC-2	"	"	"	"	"	3.52	1.88	"				
Σ							1.87					
S. P.	-1.9				+4.5							
AC-N	.02				.02							

INDUCED POLARIZATION SENDER NOTES

Project: Lucky-Jim Line: N½ 4A Date:

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Receive												
Time												
Range												
Current	2.0	1.4	2.0	1.4	1.6	2.0	1.2	1.4	1.6	2.0		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		4-5 -	cal	
Receive												
Time												
Range												
Current	1.2	1.4	1.4	2.0	1.2	1.4	1.4	2.0				

INDUCED POLARIZATION - RECEIVER NOTES PAGE 3

Project: BUCKSKIN Line: A-A-8 1/2 Int.Cal _____ Date: _____

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Rec.	0-5	5-10	→	10-15	→	→	15-20	→	→	→		
Time	100	100	30	30	30	10	30	10	10	3		
DC-1	60.5	57.2	11.0	27.8	10.8	3.02	15.5	7.00	3.48	1.16		
DC-2	60.5	56.5	11.5	28.0	10.7	2.75	16.0	6.45	3.38	1.10		
Σ	60.5	56.8	11.25	27.9	10.75	2.88	15.8	6.72	3.43	1.13		
DC-3	60.5	56.8	11.0	27.9	10.8	2.95	15.5	6.65	3.48	1.15		
Dc-4	60.5	56.5	11.5	27.9	10.7	2.82	16.0	6.80	3.38	1.11		
Σ	60.5	56.65	11.25	27.9	10.75	2.88	15.8	6.72	3.43	1.13		
DC-AV		57.2										
AC-1	59.5	55.5	10.9	27.5	10.6	2.85	15.5	6.65	3.40	1.10		
AC-2	"	"	"	"	"	"	"	"	3.38	"		
Σ									3.39			
S. P.	-9.2	+3.1		-2.9			+6.5					
AC-N	.02	.01		.01			.01					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 4

Project: Buckskin Line: 4A 5½ Int.Cal _____ Date: 11-21-65

Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		2-3		
Rec.	20-25			>	25-30			>		CAL		
Time	10	3	3	1	10	3	3	1		300		
DC-1	3.80	1.24	80	0.45	3.28	1.10	0.97	.44		146		
DC-2	4.88	.85	1.10	40	3.24	1.11	.97	46		146		
Σ	4.34	1.04	95	.45	3.26	1.105	0.97	.45				
DC-3	3.80	1.30	.82	52	3.18	1.08	.95	47		146		
Dc-4	4.90	79	108	40	3.35	1.13	99	44		146		
Σ	4.35	1.04	95	.46	3.26	1.105	.97	.455				
DC-AV												
AC-1	4.32	1.00	0.94	0.43	3.20	1.09	.96	44				
AC-2	"	"	"	0.44	"	"	"			146.0		
Σ				.435						146.0		
S. P.	-0.2				+1.0							
AC-N	.01				.01							

INDUCED POLARIZATION SENDER NOTES

Project: Buckskin Line: 5½ 4A Date:

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive												
Time												
Range												
Current	1.2	1.4	1.2	1.4	1.4	1.2	2.0	1.4	1.4	1.2		
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal		
Receive										2-3		
Time												
Range												
Current	2.0	1.4	1.4	1.2	2.0	1.4	1.4	1.2		1.4		

HEINRICHS GEOEXPLORATION CO.
BOX 5671 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0578

BASIS OF THE INDUCED POLARIZATION METHOD

The induced polarization method is based on the electrical properties exhibited by electronic or metallic conductors imbedded 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 the flow 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 mode as a guide. These capacitive-like properties are normally measured by three different techniques.

In the time domain (pulse) method, a steady direct current is imposed across the block for a few seconds and abruptly terminated so that the capacitive-like 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. The more area determined, the more capacitance or polarization the block exhibits.

In the frequency domain method, the percentage difference between the impedance (AC resistance) offered to a lower and a 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 across the block. This phase delay also increases as polarization increases.

Almost all metallic lustered sulfides such as for example; pyrite, chalcopyrite, chalcocite, bornite and molybdenite are electronic conductors and the rocks and ground water, with which they permeate or are permeated, are ionic conductors, therefore if an electric current is made to flow through a sulfide deposit, it will polarize and can be detected by the three methods described above.

This induced polarization property is not entirely unique with sulfides since magnetite, graphite 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 types of problems.

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 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 individual application and the geophysicist's discretion.

The two frequencies we most commonly use are 0.05 and 3.0 cycles per second, respectively or so called "D.C." and "A.C." modes. 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 (earth) currents and

electrode polarization. The upper limit is determined by electro-magnetic coupling effects which increase rapidly with increasing frequency.

In our standard reconnaissance field practice, five equally spaced co-linear current electrodes are placed in the ground by burying aluminum foil in pits wetted with brine. Observations are made in accordance with a symmetrical dipole-dipole configuration where the distance between the receiver or potential electrodes is kept equal to the distance between adjacent 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 are 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 proportional to PFE and inversely proportional 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 Figure 3.

Selection of electrode spacings is determined by the objectives to be reached in a given survey. This spacing will range from very small (50 feet or less) for very detailed and shallow surveys, up to 1,000 feet, or occasionally more, for broad and 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 such size, shape and position factors as 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. A rule of thumb used in practice is that, with a good contrast of electrical properties, using the symmetrical - co-linear dipole-dipole system, and having data from 1 through 6 in "n" separations, two times the dipole length is the maximum depth of detectable penetration, and 0.2 times the dipole length is about the minimum 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 will not likely be detectable. 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 feet for the following: An overburden of more than 2,000 feet 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 feet of the surface generally would not be detected. A spherical or elongated cylindrical body whose top is more than about 1,000 feet below surface and whose diameter is much less than 1,000 feet would be just out of the range of detectability. A Dike-like or sill-like zone whose width is less than 100 feet 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 to 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 more 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 zone's width. Because of these factors, we usually use 500 to 1,000 foot dipole spacings in prospecting for porphyry-type deposits.

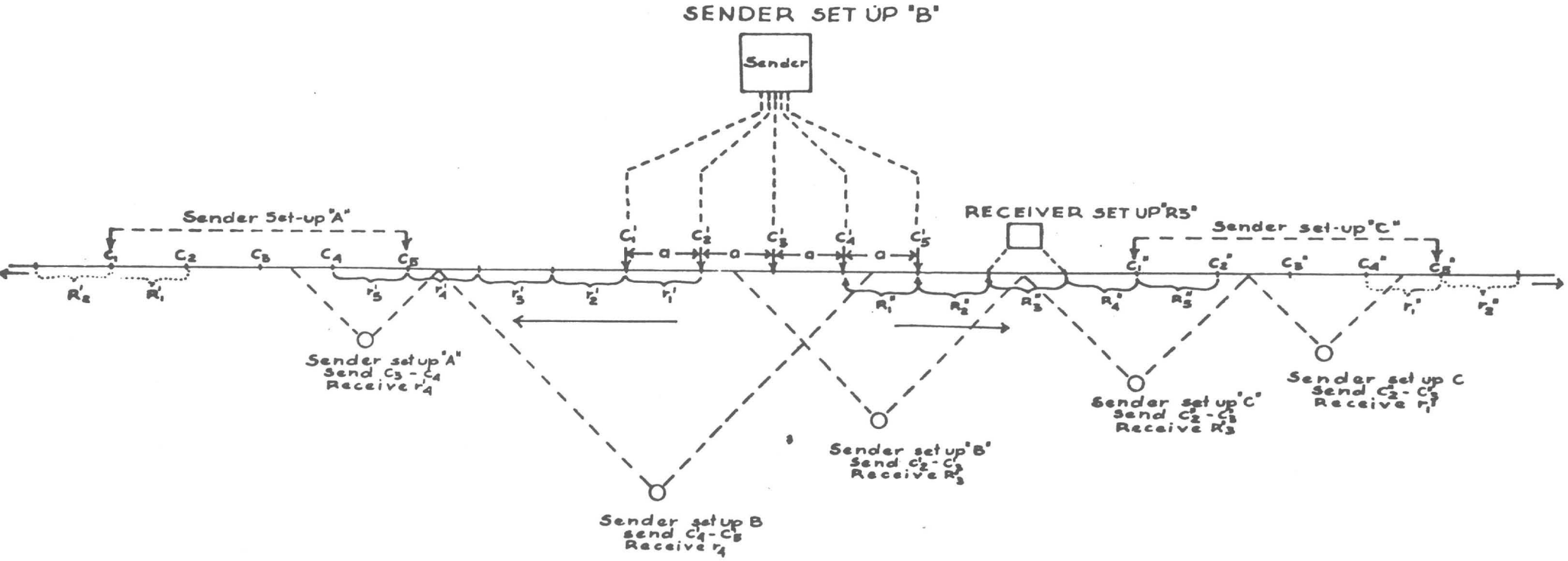
The field data are interpreted after plotting the PFE, MCF and resistivity as in Figures 1 and 2. These values are then contoured, the resistivity and metallic conduction factor logarithmically (because of the usual large variations in magnitude) and the percent frequency effect on a constant interval. This two dimensional method of plotting gives an additional leverage 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.

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 to this interpretational technique is that only a few simple geometric cases related to a relatively few number of layers have been theoretically developed. However, extremely valuable information can still be derived in alluvial and lake bed applications for depth to bedrock and ground water purposes, etc.

In interpreting PFE's, values of 0 to 4 percent 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 frequency effects but tends to amplify the electro-magnetic frequency effects making a correction imperative.

Figure 1



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 setup "B" when the receiver is receiving at R_1 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 at R_5'; $C_5' - C_4'$, $C_4' - C_3'$, $C_3' - C_2'$, and $C_1' - C_2'$ are sent and data is obtained for 3, 4, 5 and 6 dipole separations respectively. Each sender setup provides 33 data points.

Figure 2

(Data obtained from the three setups of Figure 1)

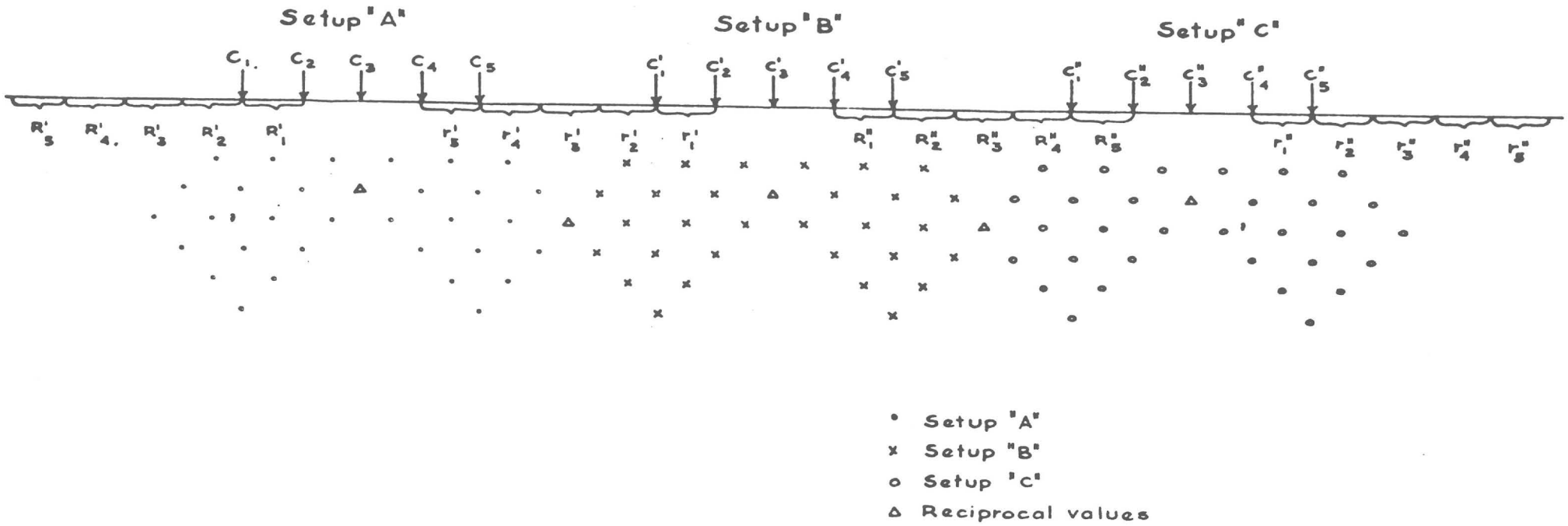


FIGURE 3

$$PFE = \left(\frac{\rho dc}{\rho ac} - 1\right) 100$$

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.

$$\rho = \frac{2\pi V}{I} Kn$$

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:

$$Kn = \frac{an(n+1)(n+2)}{2}$$

(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:

$$\rho = \frac{2\pi V}{I} \left(\frac{an(n+1)(n+2)}{2}\right)$$

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

$$\frac{\rho}{2\pi} = \frac{V}{I} Kn = \frac{V}{I} \left(\frac{an(n+1)(n+2)}{2}\right)$$

$$MCF = \frac{PFE}{\rho dc/2\pi} \times 1000$$

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

INDUCTIVE COUPLING INTERFERENCE

If $a(n+1)\sqrt{\frac{f}{\rho/2\pi}}$ is less than 1000 then the inductive coupling false frequency effect will be less than 2.5%. Likewise if less than 1500 the false effect will be less than 5%, and if less than 2000, the false effect will be less than 10%. Frequency f is in cycles per second.

P.O. BOX 1041

DORMAN S. O'LEARY
REGISTERED MINING ENGINEER
WICKENBURG, ARIZONA

MU 4-2287

June 28, 1964

JUN 1964
GEOEX

Mr. Walter Heinrichs
P. O. Box 5671
Tucson, Arizona

Dear Mr. Heinrichs:

I would very much appreciate information on your capabilities for locating ore shoots on lead-silver veins in schist. The property I have in mind has one developed ore shoot, partly mined out, but with enough ore left to yield some empirical data, if necessary, and 10 or 12 areas 100 by about 250 feet with favorable surface and geochemical indications. If practical, I would like to run a geophysical survey on these areas to pick the most favorable one for underground exploration.

Please reply at your convenience.

Very truly,

D. S. O'Leary

D. S. O'Leary

November 11, 1965

Mr. D. S. O'Leary
P. O. Box 1041
Wickenburg, Arizona

Re: Proposed Induces Polarization Survey

Dear Mr. O'Leary:

As discussed on the phone November 10, 1965, it is our understanding that your plan to run 15,000 feet of I. P. divided into five spreads of 3,000 feet each on 500 foot dipole spacing. For 15,000 feet of subsurface data at the 3n separation it will be necessary on the surface to traverse 27,500 feet. We estimate the total charge on the project as outlined, will be approximately $2,000.00. This is based on a charge rate as follows:

Services

One crew day	$250.00
Interpretation, compilation, and drafting	100.00
Travel, Tucson-Tucson and weather standby	One-half daily rate

Normally, inclement weather standby time can be usefully spent plotting, computing data and etc.

Expenses

no → Room and board at our cost.
Reproductions, maps, communications charged at our cost.
Vehicles will be charged at the rate of $10.00 a day and $0.10 a mile.

You will have, or provide permission, and/ or be liable for all damage and incident expenses connected with trespass where our personnel are asked to work by you.

If the project should exceed present plans, billings will be every two weeks. We expect to have our crew leave Tucson Monday or Tuesday, the 15th or
no 16th of November. We will let you know at least a day ahead of time of their exact day of departure.

An advance of $1,000.00 is required in order to proceed with balance due on completion of report.

Please indicate your understanding and agreement to the foregoing, by signing and dating in the space provided and returning the enclosed copy to our Tucson office.

If you have any questions, please let us know.

Very truly yours,

HEINRICHS GEOEXPLORATION COMPANY

E. Grover Heinrichs
Vice President

APPROVED_____

DATE_____

EGH:jc
Enclosure: 1

Reg. Misc. F

July 8, 1964

COPY

Mr. Dorman S. O'Leary
Registered Mining Engineer
P. O. Box 1041
Wickenburg, Arizona

Dear Mr. O'Leary:

Thank you for your inquiry of 28 June 1964.

As you likely expect, a completely objective literal answer to your question is that it all depends on the technical details of combined size, shape, depth below surface, and physical property contrast between ore and host rock. More objectively, if you have favorable surface and meaningful geochem indications, this suggests depth of occurrence may not be extreme and if so, expectations are good.

Generally speaking this is a fairly standard problem, a reasonable application, and average results or better are at least possible. In any event, the chance for an empirical test at the outset is an excellent and highly recommended approach.

Best results are usually obtained by working from the known to the unknown, and the scope and interpretation of work over unknown areas may be guaged and judged accordingly.

Exact choice of method or methods should be left to technical discretion, if possible, based on a brief review of known facts, data and if not too remote an area, inspection by one of our personnel. Coincidently, we now have a crew working out of or nearby Wickenburg and sometime during the

next week or so if you wish, the crew manager could discuss matters in greater detail with you when mutually convenient.

We will look forward to further word from you.

Very truly yours,

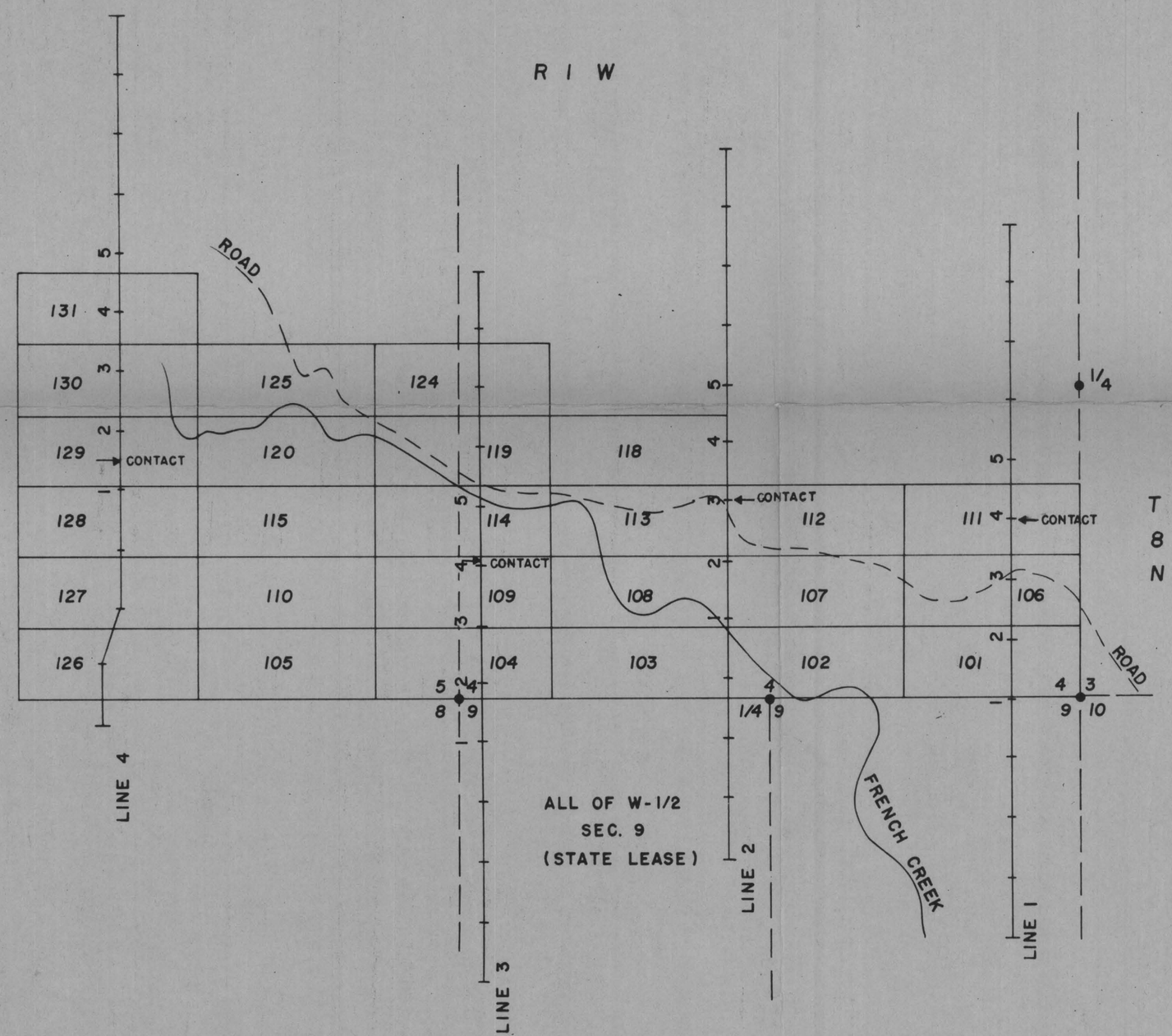
HEINRICHS GEOEXPLORATION CO.

Walter E. Heinrichs, Jr.,
Geological Engineer
President.

WEH:jh

cc: E. G. Heinrichs

COPY



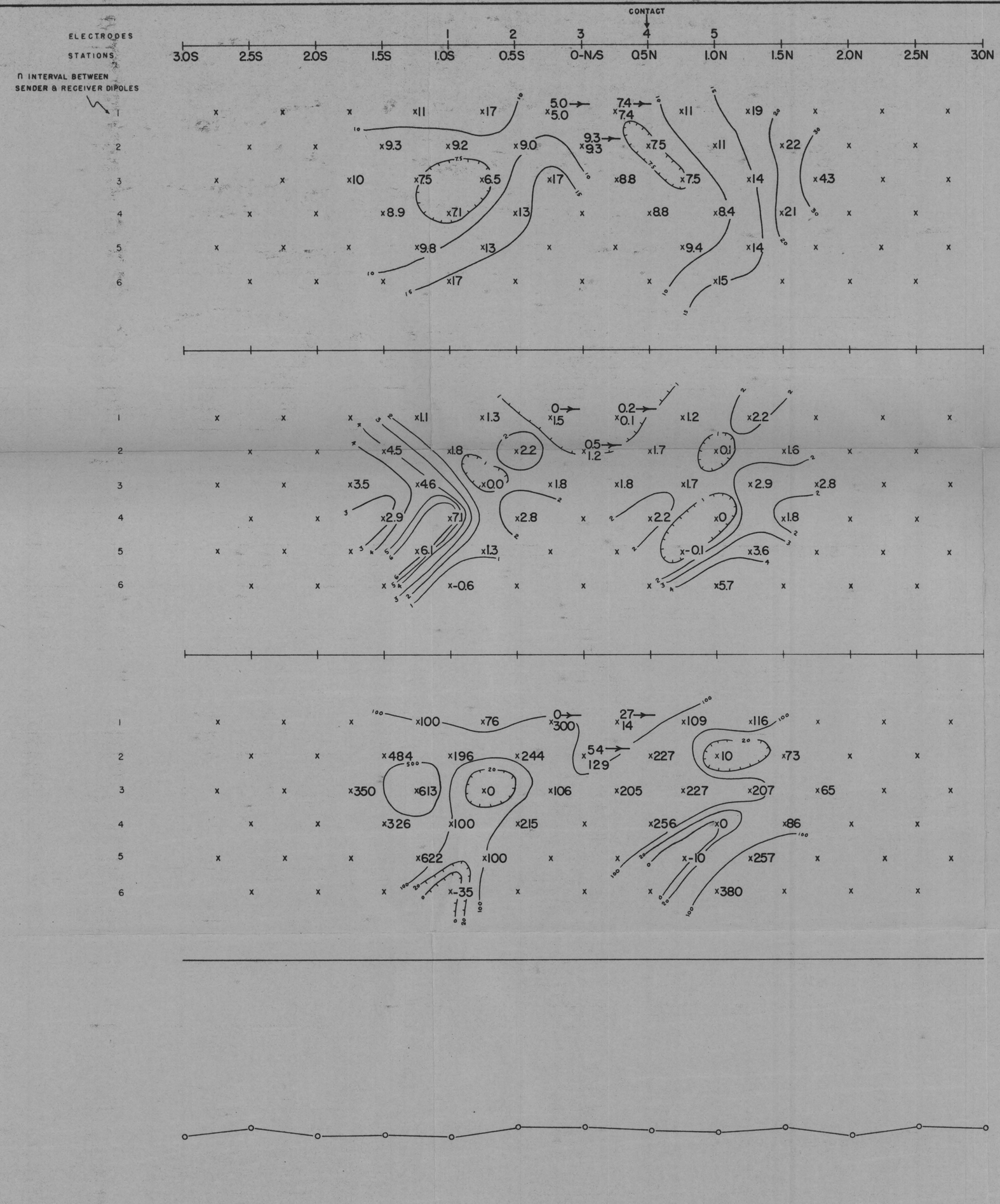
HEINRICHS GEOEXPLORATION CO.
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
GEOPHYSICAL ENGINEERS

INDUCED POLARIZATION
LOCATION PLAN

FOR

D. O'LEARY
BUCKSKIN CLAIMS
YAVAPAI COUNTY, ARIZ.

Scale 1" = 500' | Date DEC. 1965



EXPLANATION

ELECTRODE ARRAY: 50.0' — n x — 50.0' — 50.0'
SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING WEST

SECTIONAL DATA SHEET

LINE NO. 1

INDUCED POLARIZATION TRAVERSE

BUCKSKIN PROSPECT

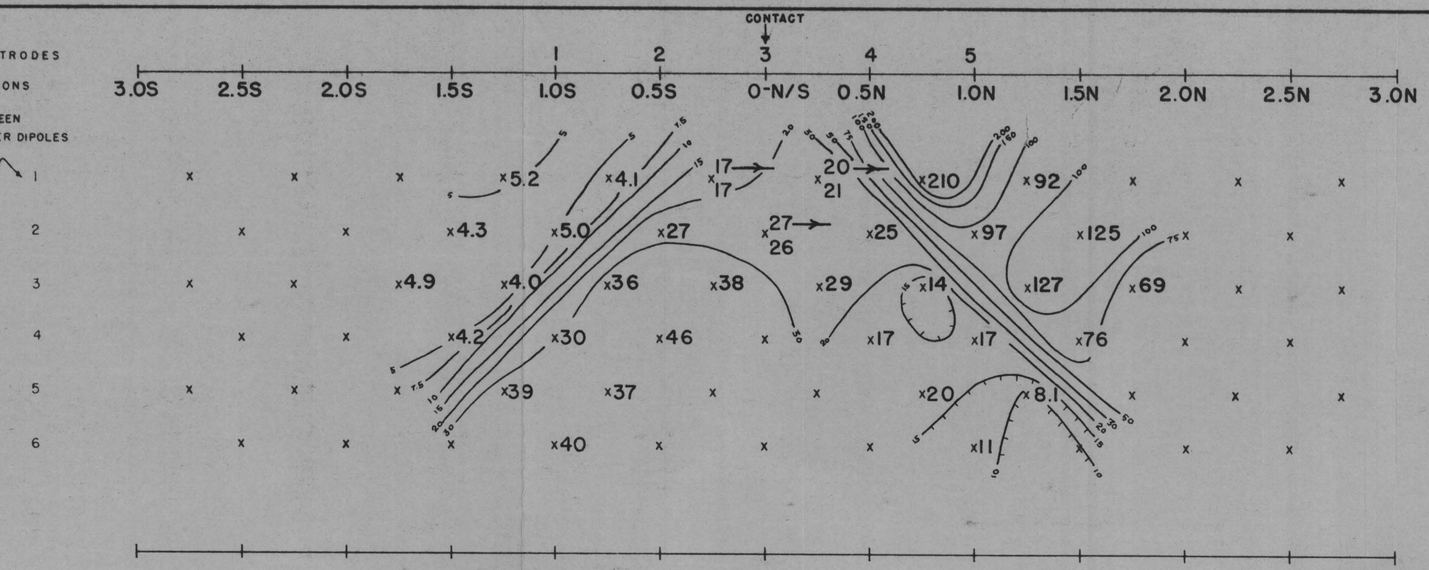
HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1"=500' DATE: NOV. 1965

FOR

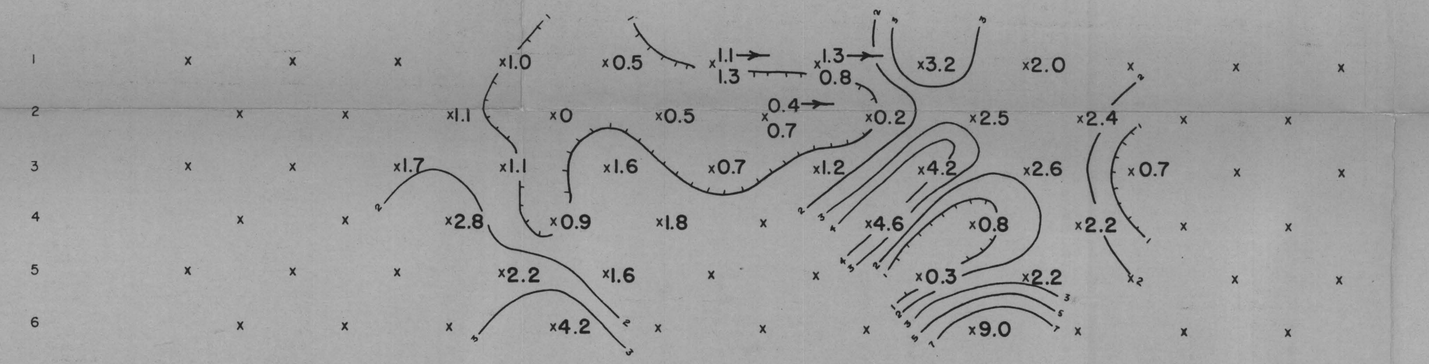
DORMAN S. O'LEARY

WICKENBURG, ARIZONA

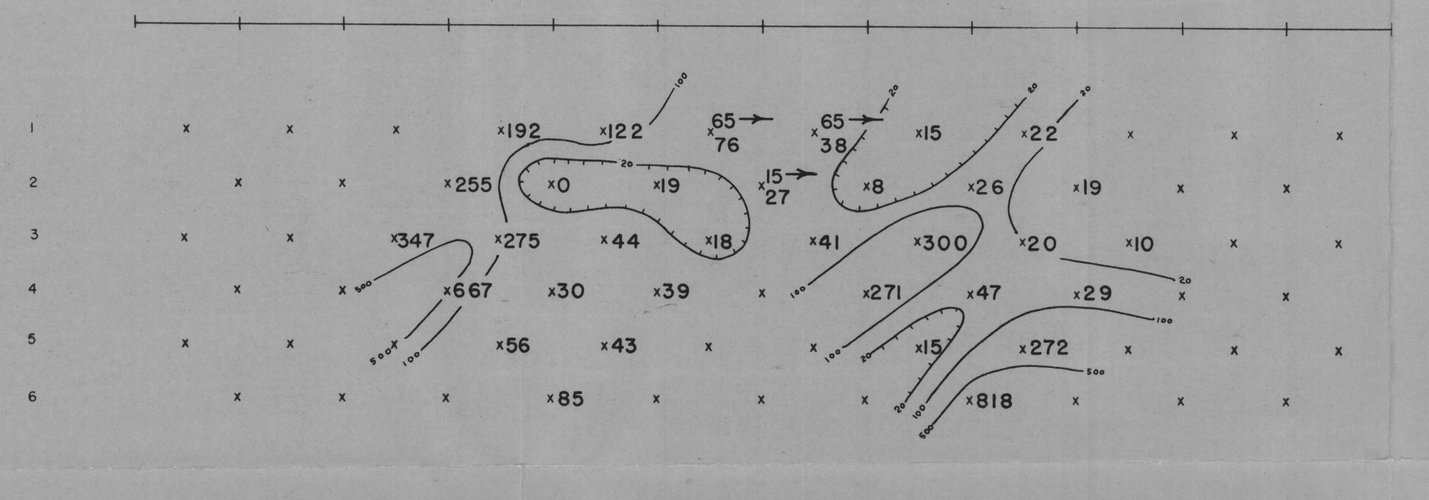


APPARENT RESISTIVITY ($\rho_{DC}/2\pi$) IN UNITS OF OHM FEET

CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY: 0.05 c.p.s.



PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: 0.05 & 3.0 c.p.s

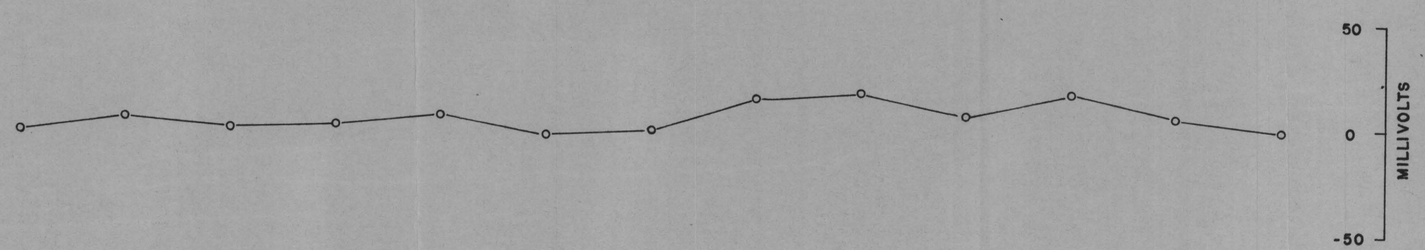


APPARENT "METALLIC CONDUCTION" FACTOR (MCF)

$$(MCF) = \frac{PFE \times 1000}{\rho_{DC}/2\pi}$$

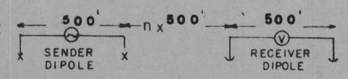
CONTOUR INTERVAL LOGARITHMIC

SELF POTENTIAL

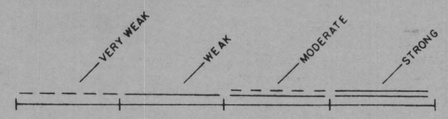


EXPLANATION

ELECTRODE ARRAY:



RELATIVE ANOMALY STRENGTH

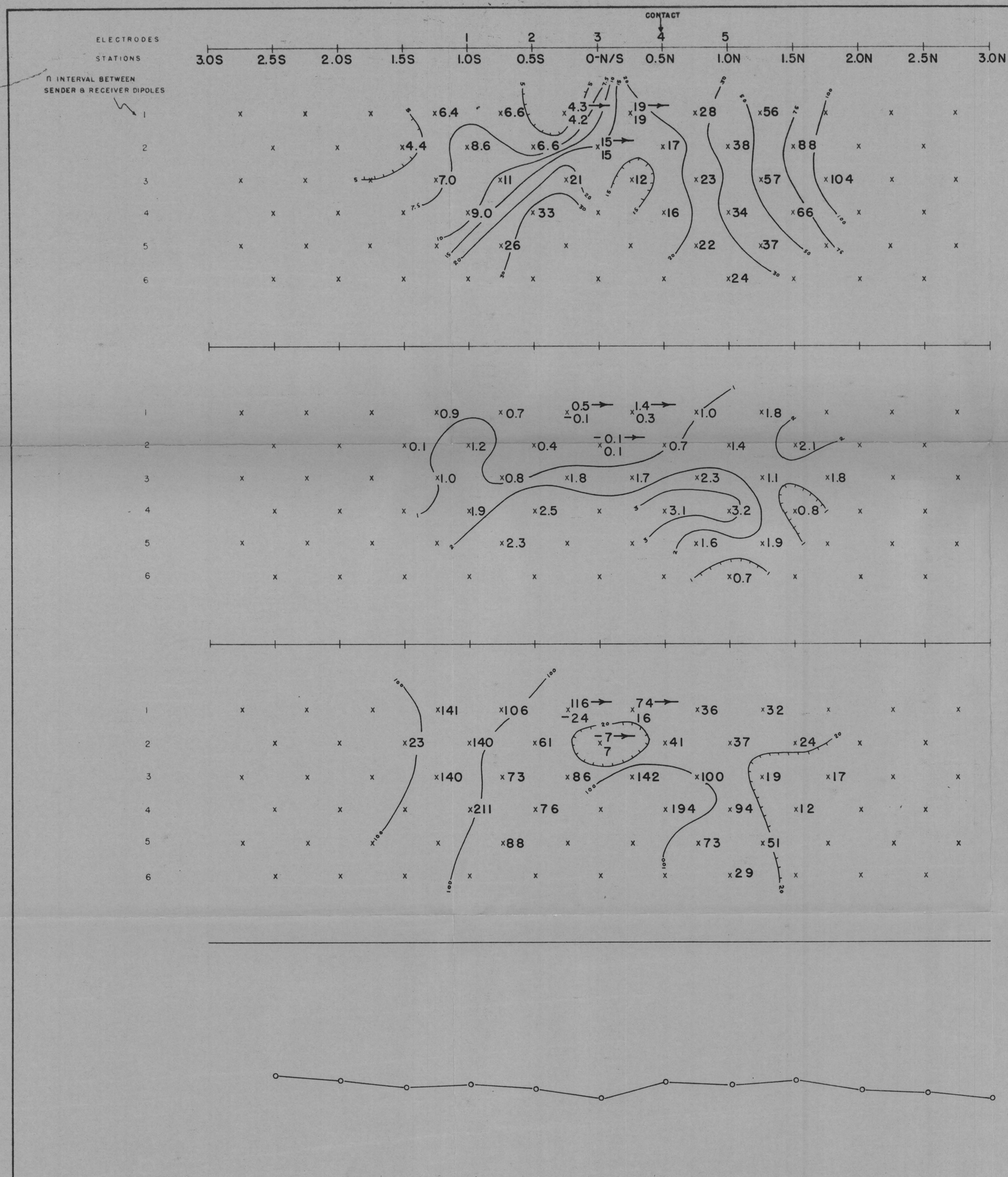


LOOKING WEST

SECTIONAL DATA SHEET
LINE NO. 2
INDUCED POLARIZATION TRAVERSE
BUCKSKIN PROSPECT
HEINRICHS GEOEXPLORATION COMPANY
SCALE: 1"=500' DATE: NOV. 1965

FOR

DORMAN S. O'LEARY
WICKENBURG, ARIZONA



EXPLANATION

ELECTRODE ARRAY: 500' — n × 500' — 500'; SENDER DIPOLE; RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING WEST

SECTIONAL DATA SHEET

LINE NO. 3

INDUCED POLARIZATION TRAVERSE

BUCKSKIN PROSPECT

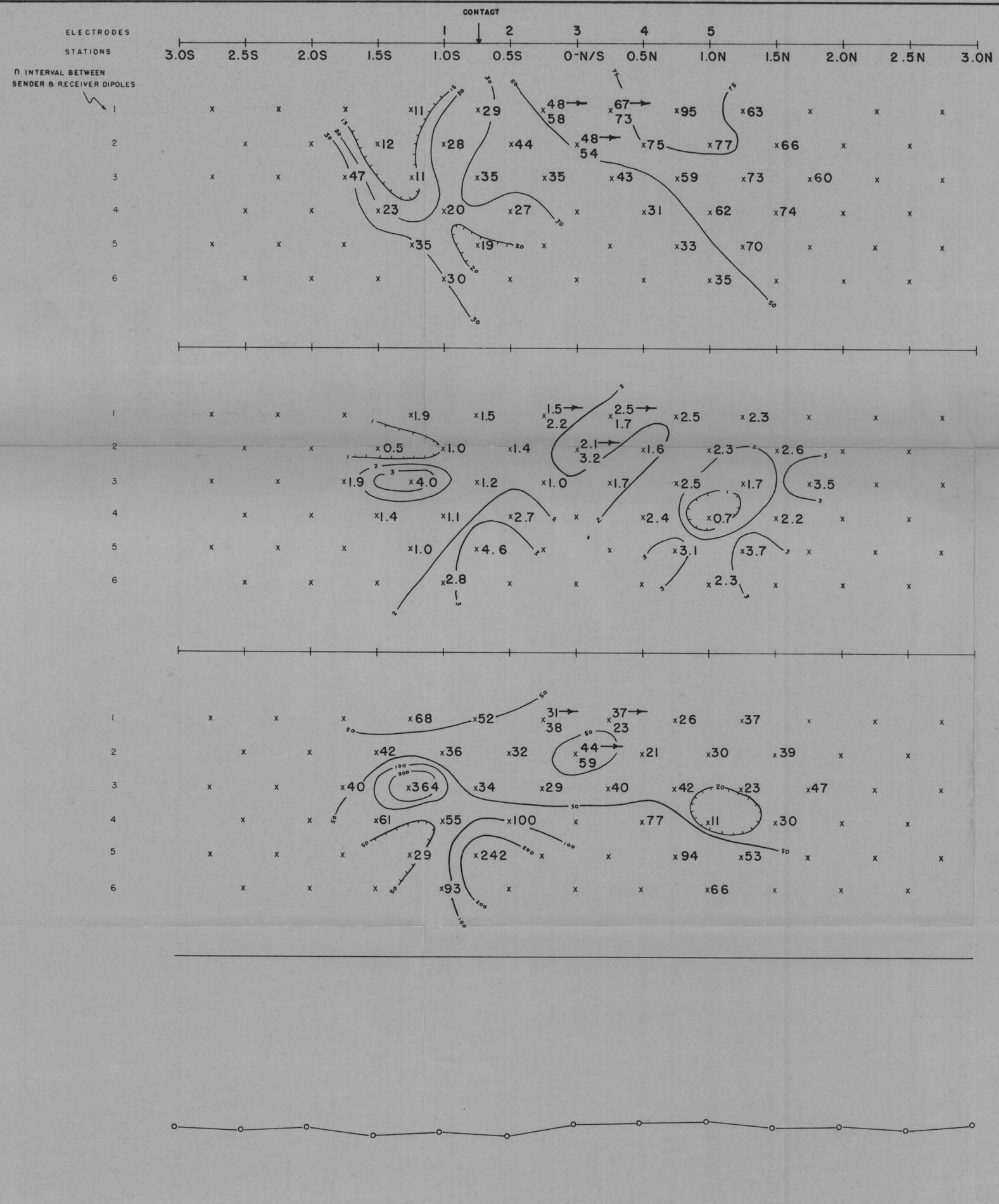
HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1"=500' DATE: NOV. 1965

FOR

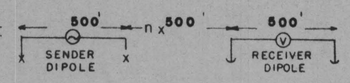
DORMAN S. O'LEARY

WICKENBURG, ARIZONA

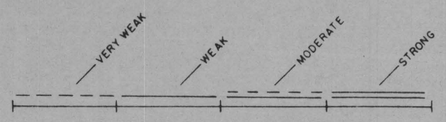


EXPLANATION

ELECTRODE ARRAY:



RELATIVE ANOMALY STRENGTH



LOOKING WEST

SECTIONAL DATA SHEET

LINE NO. 4

INDUCED POLARIZATION TRAVERSE

BUCKSKIN PROSPECT

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 500' DATE: NOV. 1965

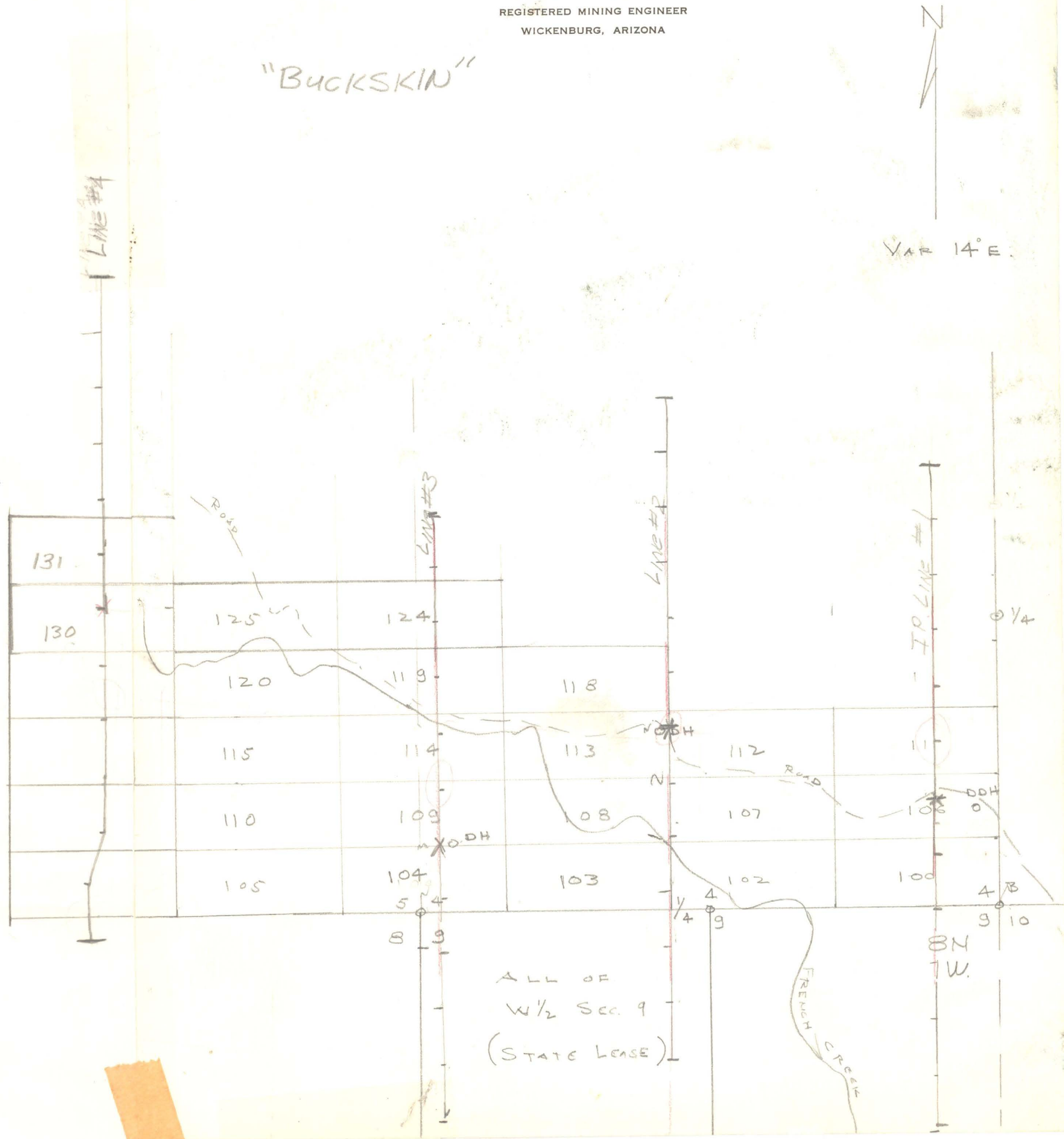
FOR

DORMAN S. O'LEARY

WICKENBURG, ARIZONA

P.O. BOX 1041

DORMAN S. O'LEARY
REGISTERED MINING ENGINEER
WICKENBURG, ARIZONA

MU 4-2287

"BUCKSKIN"