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

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February 28, 1980

Mr. Lester Cox
RR #1
Box 739
Miami, Arizona 85539

Re: Bustamonte-Bronx
GEOEX #942

Dear Lester:

Finally found the Bronx data. Also, that copies were mailed toJJohn Bustamonte at his request in 1974 which were never paid for.

No report was ever written and the data are only rough field copies in pencil with no interpretation. There were four one spread IP lines run, three on 500 foot dipoles and one on 250' dipoles. Also a couple of geological sketches of the tunnels showing where some drilling had been done and some spot grab samples along the vein.

These data do not appear to be worth much (probably why John forgot to pay for it) either technically or practically, but we would be happy to machine copy the seven pages as is, and mail them to you for $35.00.

Perhaps more useful for you would be for us to learn of your plans for the area and to provide some consulting assistance and interpretation of the data, if seemingly worthwhile, and to integrate it with whatever other technical data you have on hand or, that we could jointly acquire, published or otherwise. Any such effort of course should be addressed in context with your own thoughts and objectives.

Let us know your pleasure and we will respond accordingly. If you should call and I am not in, ask for Mark Anders.

Regards,

Walter E. Heinrichs, Jr.

WEH:mt
Enclosures: GEOEX leaflet and services rate sheet.

STATEMENT

June 7, 1974

Mr. John V. Bustamonte
Box 1724
Globe, AZ 88501

Re: GEOEX Job #942
Field Plots
I.P. Survey
Bustamonte Area, Ariz.

Machine Copies of Rough Field Plots Furnished----------$25.00

TOTAL $25.00

(301)

cc: Enclosed

423-2481 Room 133 Robt. H Anderson.
X43

$25.00

6/7/74

The Radvac.

1967

Major Metals Mining Co.

Star Route.

Pinal Mts.

Gila, County

Box 1724
Globe, AZ
85501

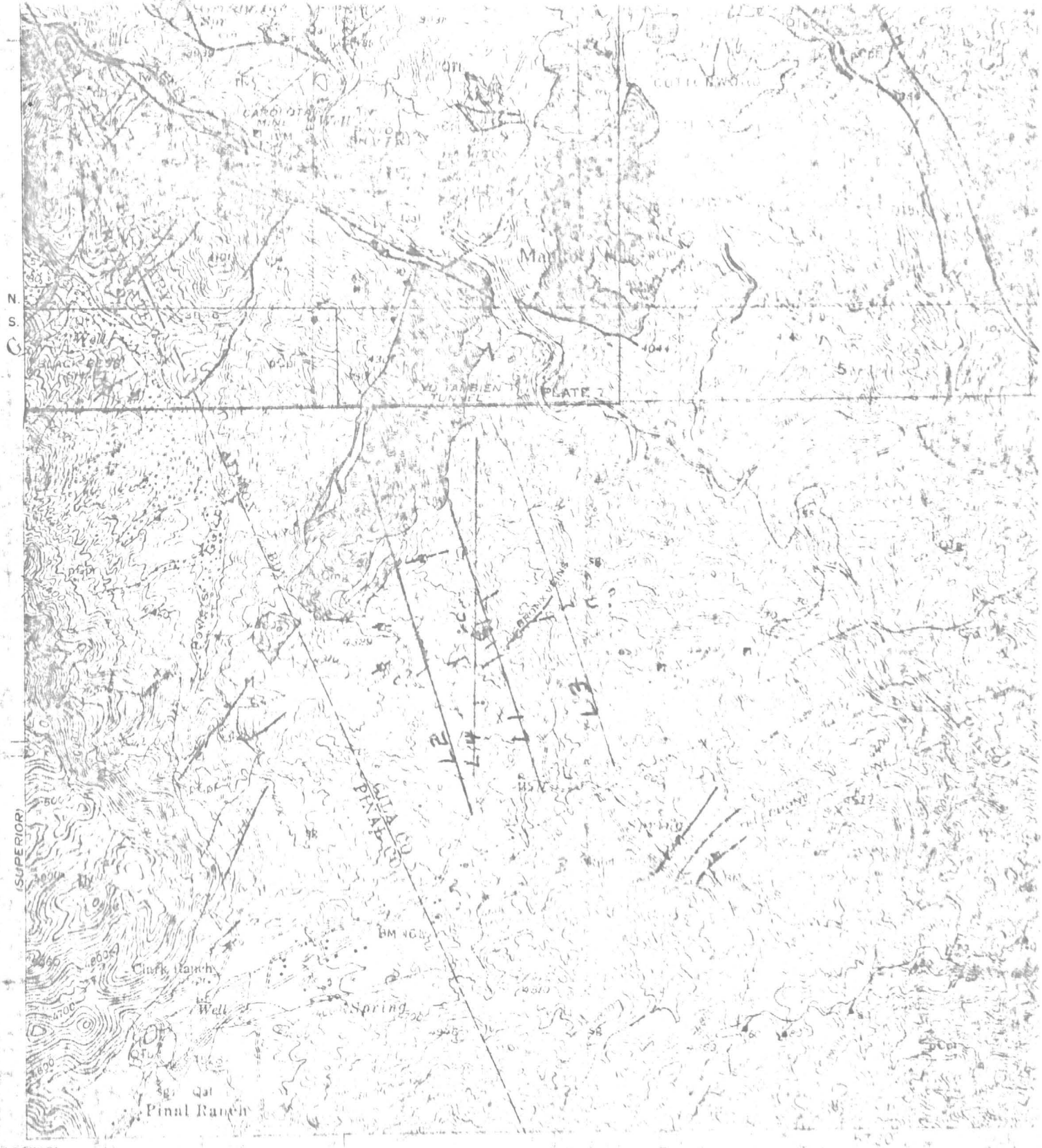
Mr. John V.
Bustamante

Pinto Creek

" Valley

Just E. of Pinal County Line.

Globe 425-4863



Base from U. S. Geological Survey topographic quadrangles: Inspiration 1945, Globe 1945, Pinal Ranch 1948

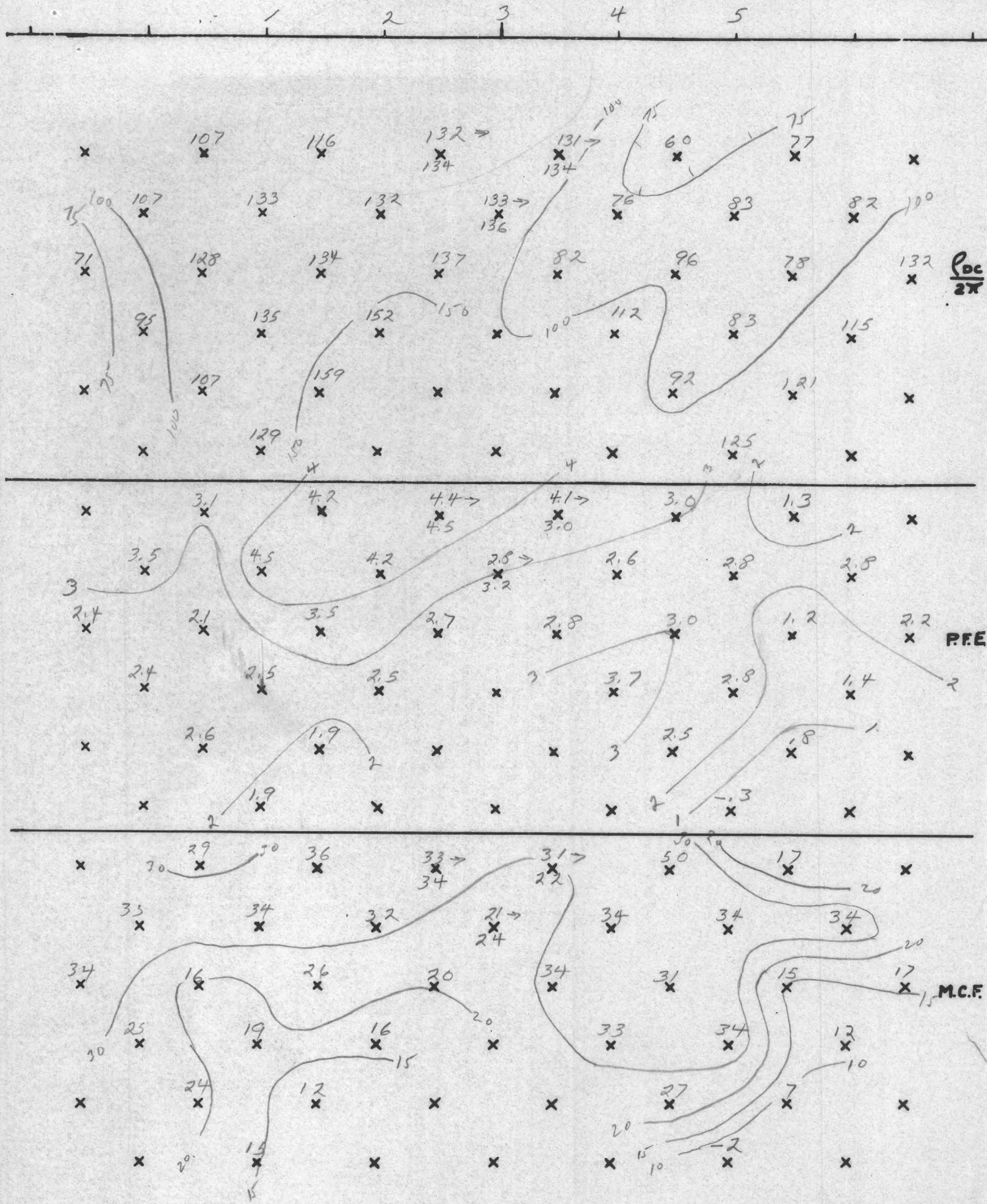
Bustamante IP Layout (Approx)

Scale 1:24000

from Geologic Map of the Globe-Miami District Pinal Co. Arizona

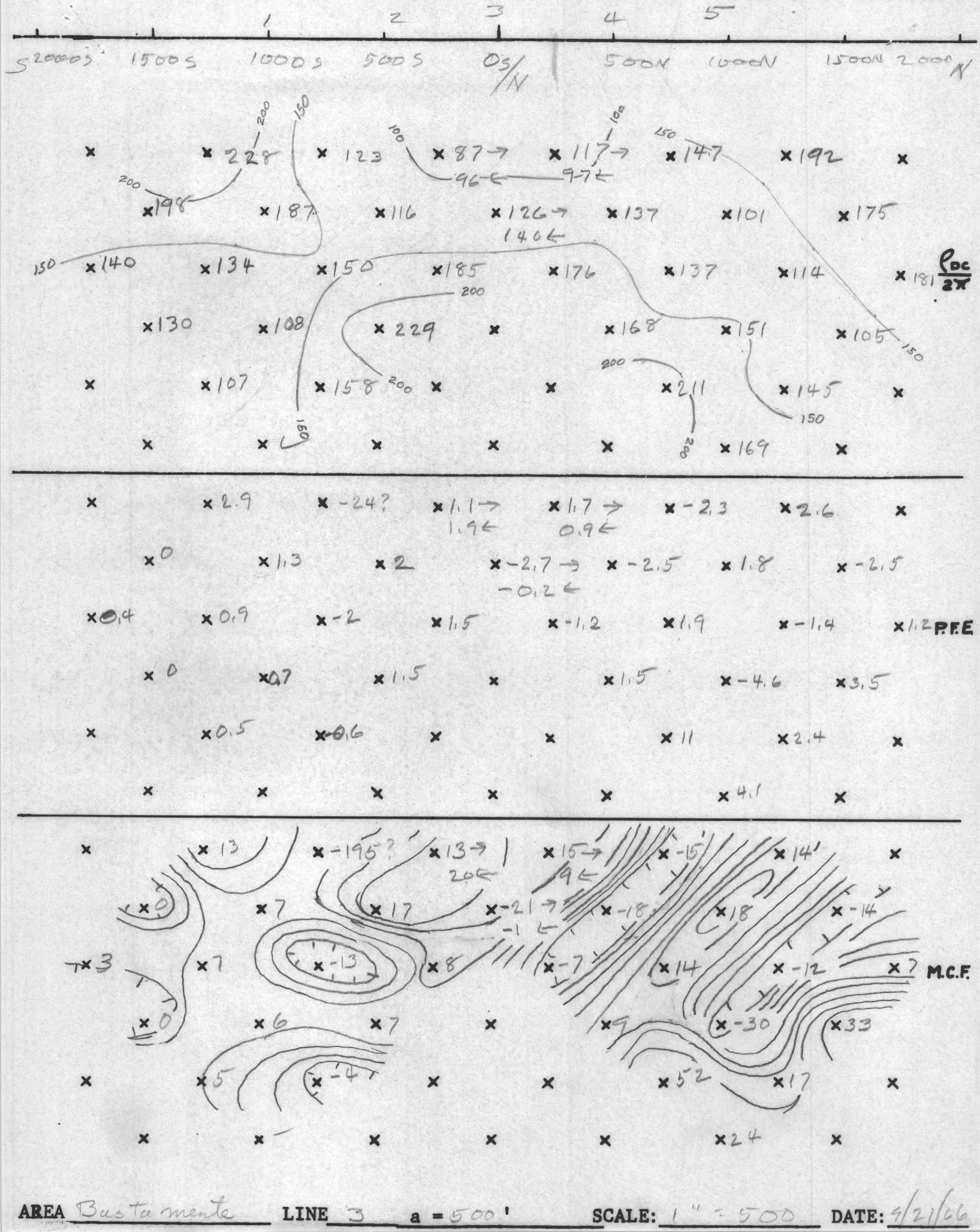
APPROXIMATE MEAN DECLINATION, 196

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



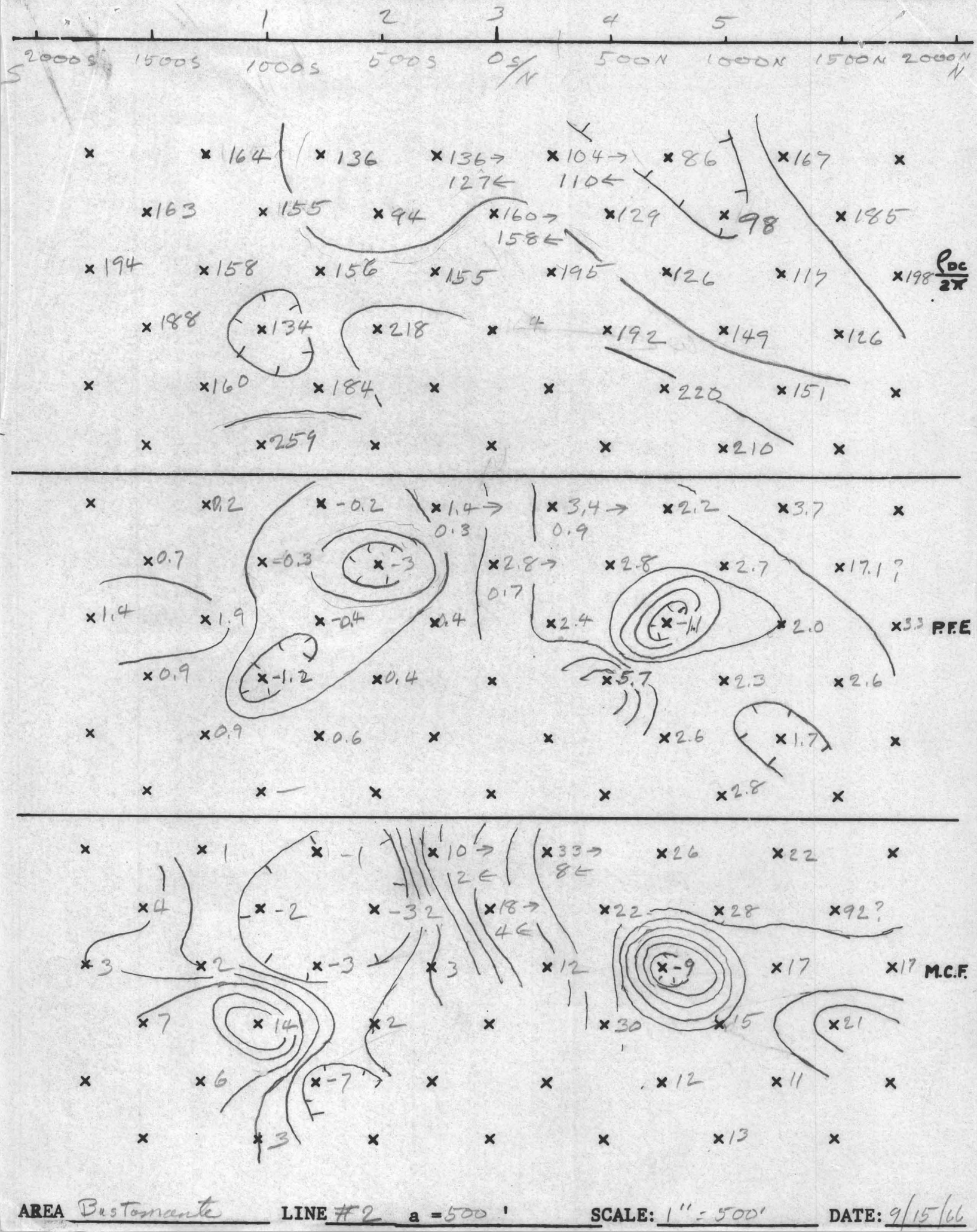
AREA Bustamonte - Kayser LINE 4 a = 250' SCALE: 1" = 250' DATE: 4/6/67

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



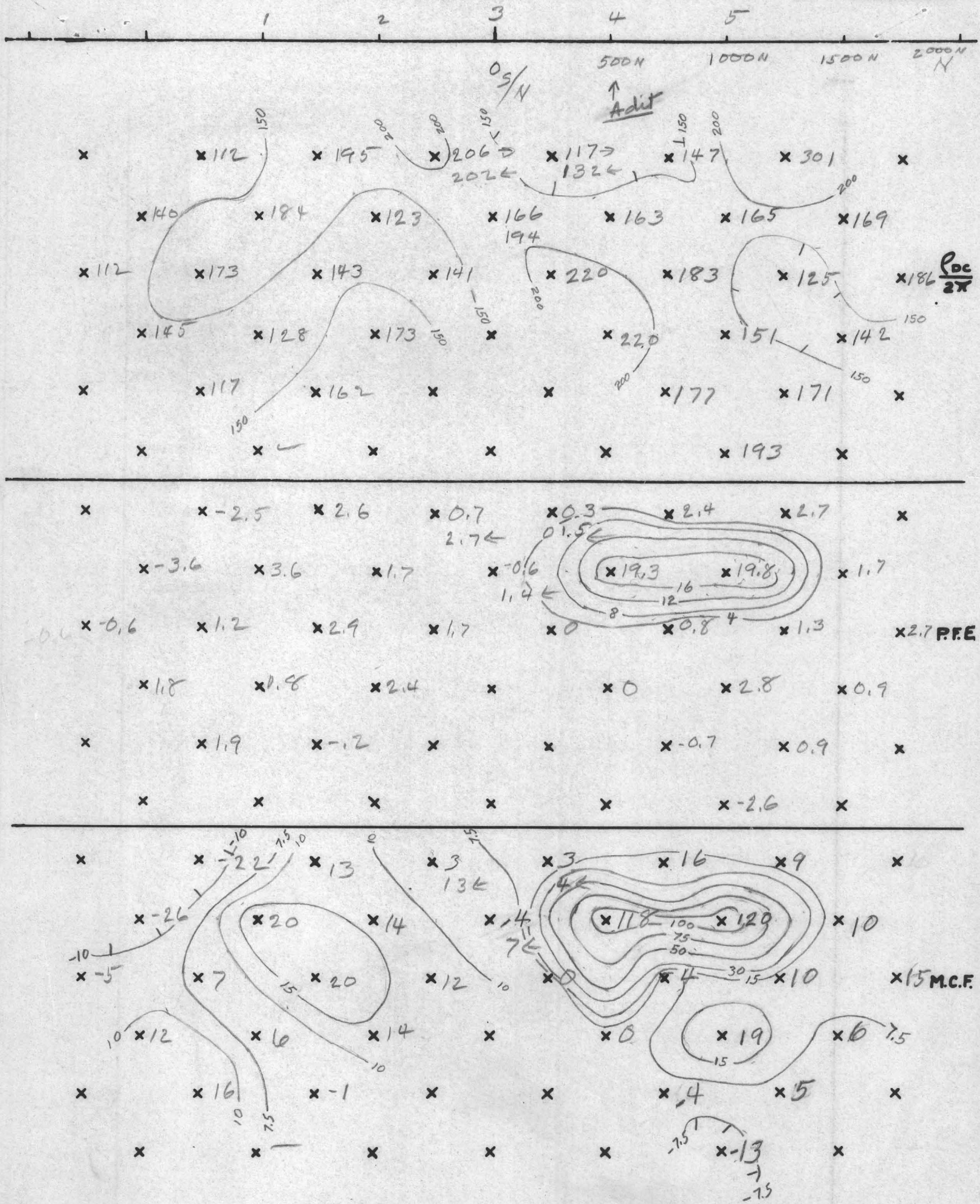
AREA Bustamente LINE 3 a = 500' SCALE: 1" = 500 DATE: 9/21/66

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W

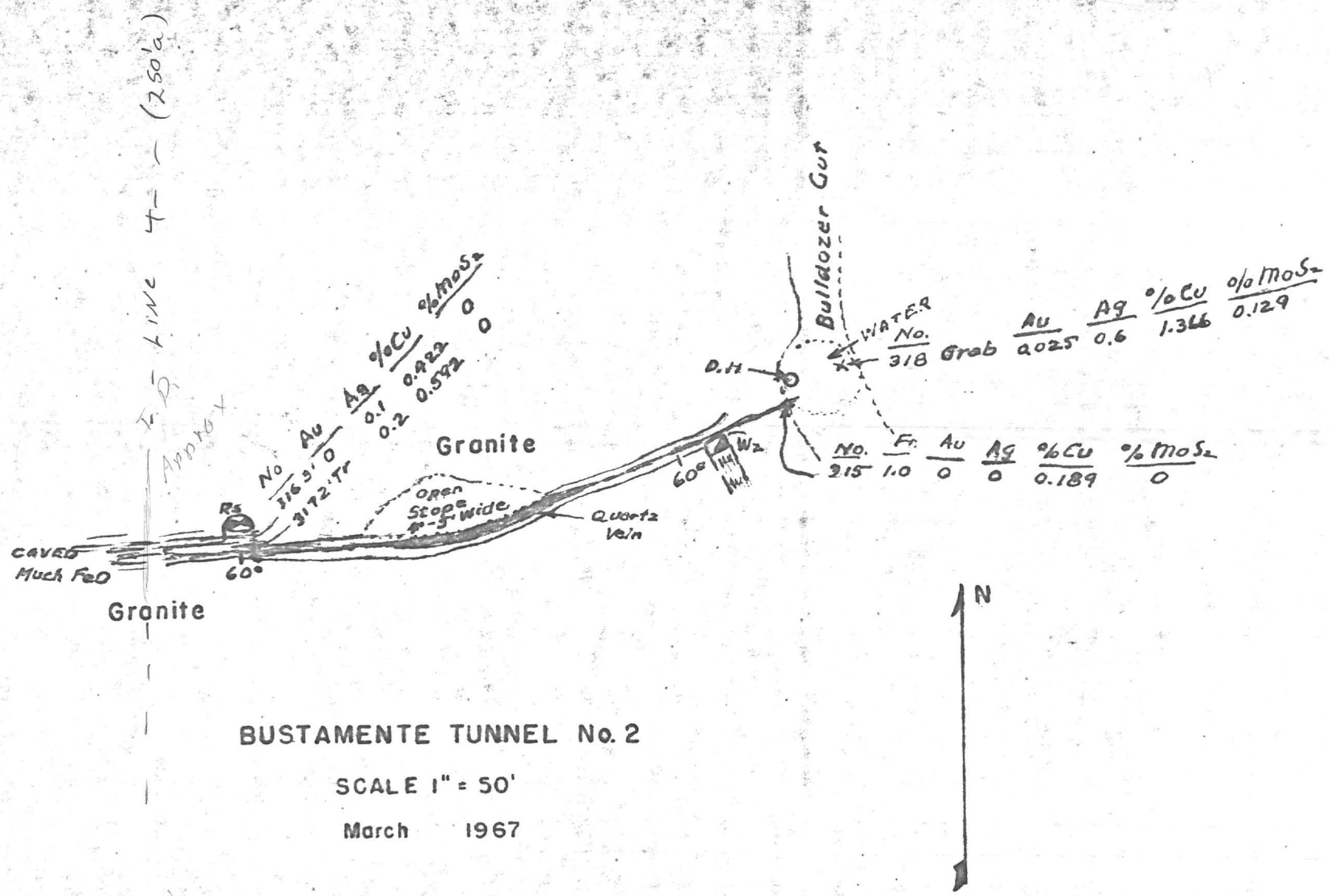


AREA Bustamante LINE #2 a = 500' SCALE: 1" = 500' DATE: 9/15/66

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



AREA Bustamante LINE 1 a = 500' SCALE: 1" = 500 DATE: 9-19-66



BUSTAMENTE TUNNEL No. 2

SCALE 1" = 50'

March 1967

Telephone 363-3302

Hand Sample Serial 12659-12671

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

W. C. WANLASS, President
L. G. HALL, Vice President
G. P. WILLIAMS, Treasurer
LILY M. HOTTINGER, Secretary
P. O. Box 1528
Salt Lake City, Utah 84110

Mine L. K. Requa
1744 Yale Avenue
Salt Lake City, Utah 84108

RESULTS PER TON OF 2000 POUNDS

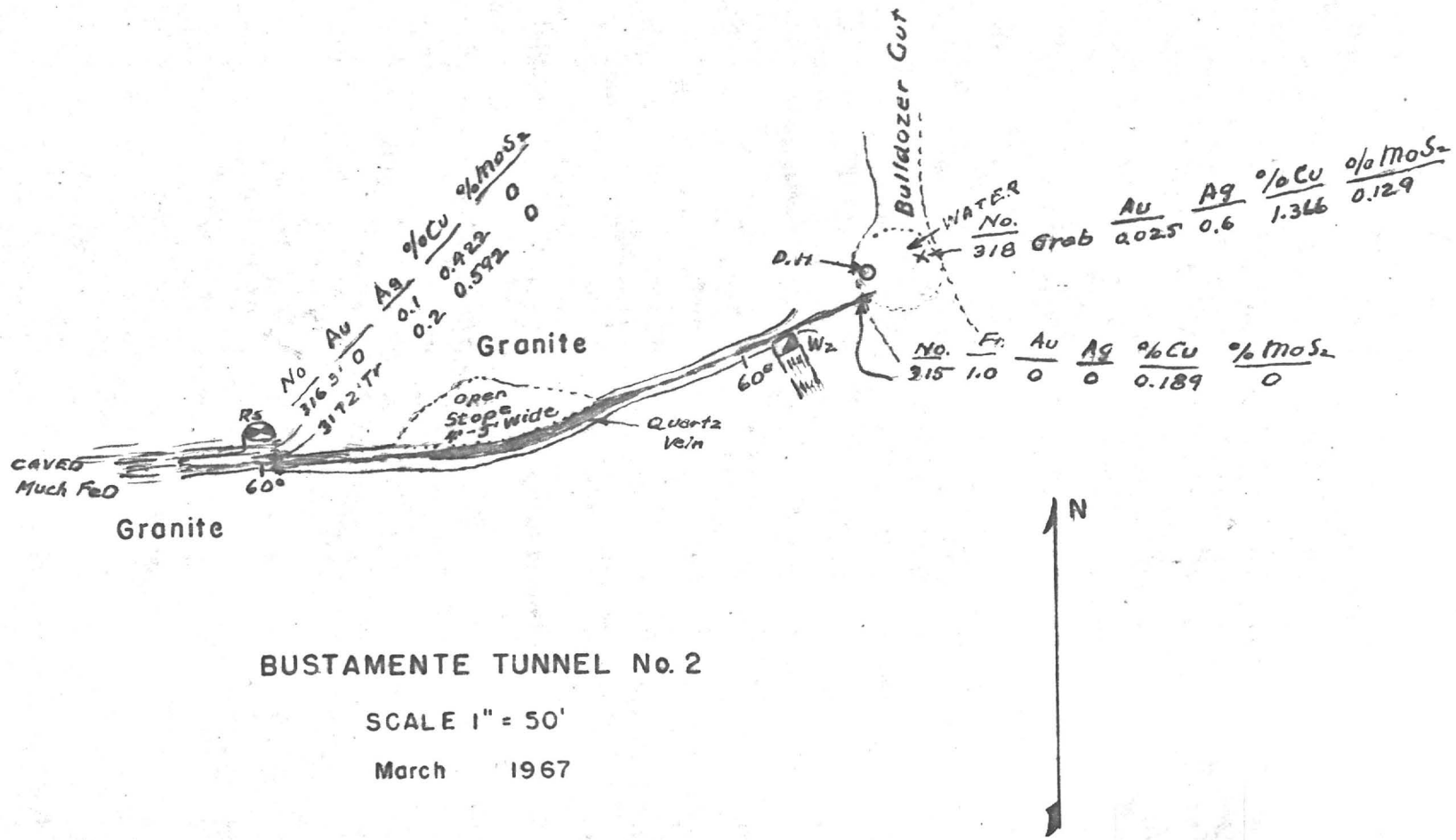
March 30, 1967

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Wet on Ore	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent
Gibson & Bustamente Samples, Miami, Arizona										MoS_2	
306	Trace	None		0.157		Lowest Gibson Tunnel					
307	0.005	0.1		0.056		"	"	"			
308	Trace	0.1		0.069		"	"	"			
309	Trace	0.1		0.642		"	"	"			Mo
310	Trace	0.4		1.619		Karol Hill 3' cut					
311				0.126		Bustamente Tun. #5				0.333	0.200
312				0.132		"	"			0.710	0.426
313						Bustamente Outcrop			#5	0.011	0.006
314						"	"			0.026	0.015
315	None	None		0.189		Bustamente Tun. #2				None	
316	None	0.1		0.422		"	"			None	
317	Trace	0.2		0.592		"	"			None	
318	0.025	0.6		1.366		"	"			0.129	0.078

Remarks

Charges $ 86.25

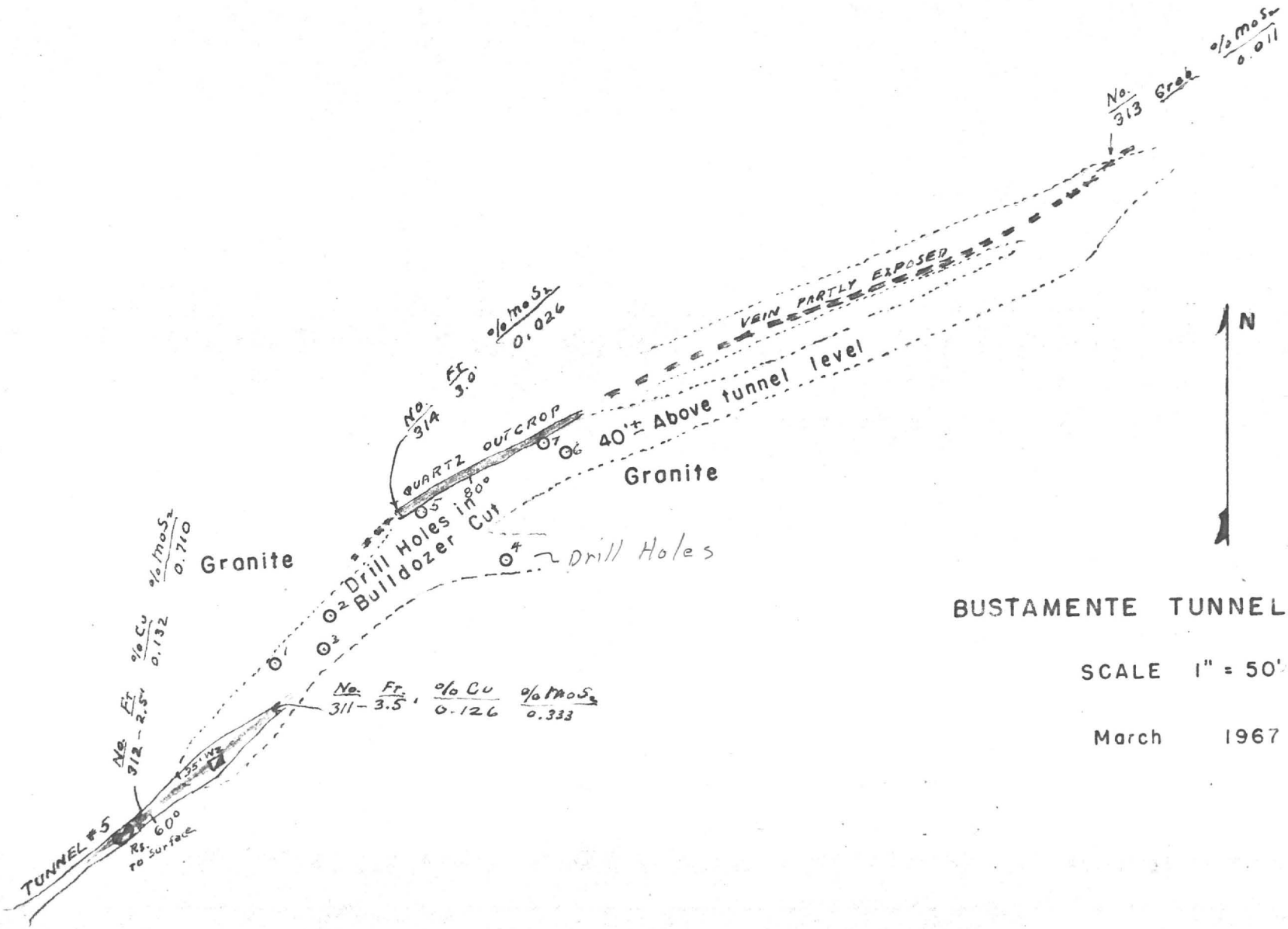
W. C. Wanlass



BUSTAMENTE TUNNEL No. 2

SCALE 1" = 50'

March 1967



BUSTAMENTE TUNNEL No. 5

SCALE 1" = 50'

March 1967

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project BUSTAMANTE Line #1 S½ Field date 9-19-66 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	1-2	2-3
(B) Receive	0-500	500	1000	1000	1500	→	1500	2000	→	→	2000	2500
(C) n separation	300	300	300	300	100	10	100	100	30	10	30	30
(D) I DIV	0.9	1.4	0.9	1.4	1.4	0.9	0.7	1.4	1.4	0.9	0.7	1.4
(E) Vdc (avg) M	154.	366.	564.	352.5	555.6	16.4	101.5	83.0	25.85	10.04	31.5	31.4
(F) DCcal M	.515	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3} M	1.5	1.5	6.0	1.5	6.0	15	1.5	6.0	15.0	30.0	6.0	15
(H) ρdc=ExFxGx10^3/D	132.	202.	194	195	1230	141.0	112.0	184	143	172.8	140.	173
(I) Vac Σ	150.	349.	545.	336.	535.	15.8	102.0	78.5	24.6	9.6	32.	3[illegible]4
(J) AC noise x 2	.04	→	→	→	→	→	→	→	→	→	→	→
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.979	→	→	→	→	→	→	→	→	→	→	→
(M) ρdc/ρac=ExL/K	1005	1027	1014	1026	1017	1017	.975	1.036	1029	1024	.964	1012
(N) PFE=(M-1)(10^2)	0.5	2.7	1.4	2.6	1.7	1.7	-2.5	3.6	2.9	2.4	-3.6	1.2
(O) MCF=(M-1)(10^5)/H	4	13	7	13	14	12	-22	20	20	14	-26	7
	+10	+8		-4		+13					+6	

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	3-4	4-5	1-2	2-3	3-4	4-5		1-2				
(B) Receive	→	→	2500	3000	→	→		2-3				
(C) n separation	10	→	→	→	→	→		300				
(D) I	1.4	0.9	0.7	1.4	1.4	0.9		1.0				
(E) Vdc (avg)	11.58	5.4	10.15	13.1	6.075	→		194				
(F) DCcal	.516	→	→	→	→	→						
(G) Kn x 10^{-3}	30	52.5	15	30	52.5	84.0						
(H) ρdc=ExFxGx10^3/D	128	162	112	145	117							
(I) Vac Σ	11.25	5.30	10.0	12.6	5.84	→		190				
(J) AC noise x 2	.09	→	→	→	→	→						
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.979	→	→	→	→	→						
(M) ρdc/ρac =ExL/K	1008	.997	.994	1018	1019							
(N) PFE=(M-1)(10^2)	.8	-.2	-.6	1.8	1.9							
(O) MCF=(M-1)(10^5)/H	6	-1	-5	12	16							
			+10									

LINE 1

INDUCED POLARIZATION SENDER NOTES

Project: BUSTAMANTE Line: #1 S. 1/2 Date: 9/20/66

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	0-5	5-10	→	10-15	→		15-20	→				
Time												
Range	220v	230v	220v	210v	220v	220v	250v	220v	220v	220v		
Current	0.9A	1.4A	0.9A	1.4A	1.4A	0.9A	0.7A	1.4A	1.4A	0.9A		
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL 2-3		
Receive	20-25	→			25-30	→						
Time												
Range	250v	220v	230v	230v	250v	220v	220v	230v		210v		
Current	0.7A	1.4A	1.4A	0.9A	0.7A	1.4A	1.4A	0.9A		1.0A		

INDUCED POLARIZATION - RECEIVER NOTES

PAGE _____

Project: BUSTAMANTE Line: #1 S½ Int.Cal 102 Date: 9-19-66

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
Rec.	0-500	500-1000		1000-1500		→	1500-2000			→	2000-2500	
Time	300	300	300	300	100	10	100	100	30	10	30	30
DC-1	77 77	185 181	280 285	176 177	28.0 27.8	8.0 8.3	50.5 51.0	41.0 42.0	13.7 12.2	4.95 5.00	16.0 15.3	15.4 16.2
DC-2	77 77	185 181	278 283	175 177	27.8 27.5	8.0 8.5	50.5 51.0	41.0 42.0	13.5 12.3	4.85 4.90	16.0 15.2	15.7 15.7
Σ	154 154	366 366	565 561	353 352	558 553	16.3 16.5	101.5 101.5	83.0 83.0	259 258		31.3 31.2	31.6 31.4
DC-3			283 280		280 275					4.90 5.50		15.7 15.7
Dc-4			280 288		27.8 27.8					4.85 5.50		31.4
Σ			563 568		555 556							
DC-AV	154	366	564	352.5	555.6	16.4	101.5	83.0	25.85	10.04	31.5	31.4
AC-1	75	174	270	168	268	7.9	51	39.5	12.3	4.8	16.0	15.2
AC-2	75	175	275	168	267	7.9	51	39.0	12.3	4.8	16.0	15.2
Σ	150	349	545	336	535	15.8	102	78.5	24.6	9.6	320	30.4
S. P.	+10	+8		-4			+13				+6	
AC-N	.04	.04		.04			.04				.04	
Pot.Res.	1500	2000		2000			2000				2000	

P P P*

CROSSED FENCE AT 1300 FT.

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bustamante Line: #1 S ½ Int.Cal _____ Date: 9-19-66

Send	3-4	4-5	1-2	2-3	3-4	4-5		CHL LAMP				
Rec.	→	→	2500	3000	→	→		2-3				
Time	10	10	10	10	10	3		300				
DC-1	5.60 6.20	2.70 2.70	5.2 5.1	6.65 6.50	2.95 3.10			97 97				
DC-2	5.50 5.80	2.70 2.70	5.2 5.0	6.60 6.55	3.0 3.10			97 97				
Σ	1180 1130	5.40 5.40	103 102	1315 1315	605 610							
DC-3	5.70 5.90		5.0 5.1	6.60 6.60	2.95 3.10			194				
Dc-4	5.70 5.90		5.1 5.0	1310	605							
Σ	1160 1160		101 101									
DC-AV	11.575	5.40	10.15	131	6.075							
AC-1	5.65	2.65	5.0	6.30	2.92	1.5		95				
AC-2	5.65	2.65	5.0	6.30	2.92			95				
Σ	1125	5.30	10.0	12.60	5.84			190				
S. P.			+10									
AC-N			.04									
Pot.Res.			1500									

P

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bustamante Line 1 N5 Field date 9/16/66 Data page_____ Comp. date_____. Comp by JWL

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
(B) Receive	0-5N	5-10N	→	10-15	→	→	15-20	→	→	→	20-2500	—
(C) n separation	1	1	2	1	2	3	1	2	3	4	2	3
(D) I	0.8	1.4	0.8	1.4	1.4	0.8	0.9	1.4	1.4	0.8	1.0	1.4
(E) Vdc (avg)	215	214	43.26	269	74.7	23.1	354	75.25	33.53	11.5	55.3	22.87
(F) DCcal	.5102											
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30	6	15
(H) ρ dc=ExFxGx10^3/D	206	117	166	147	163	220	301	165	183	220	169	125
(I) Vac Σ	208	208	42.4	256	61	22.5	336	61.20	32.4	11.2	53.0	2[illegible]
(J) AC noise x 2												
(K) Vac(corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.974											
(M) ρ dc/ρac=ExL/K	1007	1003	.994	1024	1.193	1000	1027	1198	1.008	1.0	1.017	1013
(N) PFE=(M-1)(10^2)	0.7	0.3	-0.6	2.4	19.3	0	2.7	19.8	0.8	0	1.7	1.3
(O) MCF=(M-1)(10^5)/H	3	3	-4	16	118	0	9	120	4	0	10	10

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	2-3	1-2	4-5	34	2-3	1-2		Cal				
(B) Receive	→	→	25-3000	→	→	→		3-4				
(C) n separation	4	5	3	4	5	6						
(D) I	1.4	0.8	1.0	1.4	1.4	0.8		1.				
(E) Vdc (avg)	13.825	5.3	24.25 7.675	13	8.96	3.6		196				
(F) DCcal												
(G) Kn x 10^{-3}	30	52.5	15	30	52.5	84						
(H) ρ dc=ExFxGx10^3/D	151	177	186 59	142	171	193						
(I) Vac Σ	13.1	5.2	7.3 23	12.55	8.65	3.6		191				
(J) AC noise x 2												
(K) Vac (corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.028	.993	1027	1009	1009	.974						
(N) PFE=(M-1)(10^2)	2.8	-0.7	2.7	0.9	0.9	-2.6						
(O) MCF=(M-1)(10^5)/H	19	-4	15	6	5	-13						

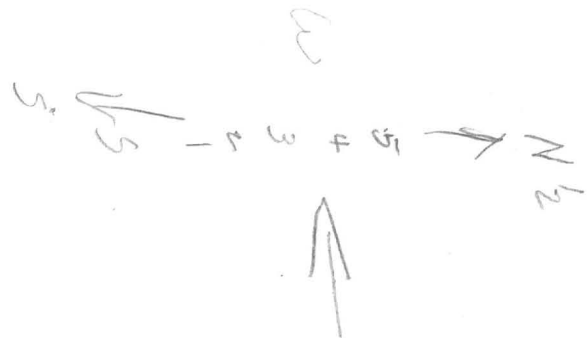
$(196)(x) = 191$

$x = \frac{191}{196} = .974$

1000

$$(1960)(x) = 1000$$

$$x = \frac{1000}{1960}$$



INDUCED POLARIZATION SENDER NOTES

Project: BUSTAMANTE Line: No. I Date: 9/16/66

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	250v	230v	250v	230v	230v	260	230v	240v	230v	260		
Current	0.8A	1.4A	0.8A	1.4A	1.4A	0.8v	0.9A	1.4A	1.4A	0.8A		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAL 3-4		
Receive	20-25	→	→	→	25-30					500		
Time												
Range	250v	230v	230v	260v	250v	230v	230v	260v		170v		
Current	1.0A	1.4A	1.4A	0.8A	1.0A	1.4A	1.4A	0.8A		1.0A		

INDUCED POLARIZATION SENDER NOTES

Project: BUSTAMANTE Line: No. I Date: 9/16/66

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

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bustamante Line: # 1 D 2 Int.Cal 100 Date: 9-16-66

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
Rec.	0-500	500-	1000	1000-1500	→		1500-	2000	→		2000-	2500
Time	300	300	30	300	100	30	300	100	30	30	100	30
DC-1	110 105	107 107	21.5 21.5	133 136	40.0 38.5	11.3 11.8	177 177	38.5 36.5	16.7 16.3	6.1 6.8	27.0 28.3	10.5 12.3
DC-2	110 105	107 107	21.7 21.8	133 136	36.8 38.0	11.3 11.8	177 177	38.5 37.0	16.3 17.3	4.8 6.6	27.0 28.3	11.7 11.2
Σ	215 215	214	43.5 43.5	269	74.5 74.6	23.1 23.1	354	75.0 75.5	33 33.6	12.9 11.4	55.3 55.3	22.8 22.9
DC-3			21.7 21.6		36.6 38.0				17.2 16.8	4.8 6.7		11.7 11.2
Dc-4										5.6 5.2		
Σ			43.3		74.6				34	11.5 10.8		22.9
DC-AV	215	214	43.26	269	74.7	23.1	354	75.25	33.59	11.5	55.3	22.87
AC-1	104	104	21.2	128	30.5	11.3	168	30.60	16.2	5.6	26.5	11.0
AC-2	104	104	21.2	128	30.5	11.2	168	30.60	16.2	5.6	26.5	11.0
Σ	208	208	42.4	256	61.0	22.5	336	61.20	32.4	11.2	53.0	22
S. P.	+1	+4		+2			+1				+15	
AC-N	.04	.04		.04			.04				.04	
Pot.Res.	1000	300		1000			2000				2000	

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: BUSTAMANTE Line: #1 A ½ Int.Cal _____ Date: 9-16-66

Send	2-3	1-2	4-5	3-4	2-3	1-2		CHL				
Rec.	→	→	2500	3000	→	→		3-4				
Time	10	10	30	10	10			300				
DC-1	68 70	2.7 2.6	3.90 3.80	6.50 6.50	4.80 4.30	1.65 2.0		98 98				
DC-2	66 73	2.7 2.6	3.80 3.85	6.45 6.55	4.55 4.40	1.70 1.70		98 98				
Σ	138 139	5.3 5.2	7.70 7.65		9.1 8.95	~~4.65~~ 3.40						
DC-3	67 69		12.3 12.0		4.80 4.20	1.65 2.10						
Dc-4	69 71		12.0 12.2		4.80 4.0	1.90 1.75						
Σ	136 140		24.25		9.8 8.8	3.75 3.65						
DC-AV	138.25	5.3	24.22 7.675	13.	8.96	3.6						
AC-1	6.55	2.6	3.65	6.25	4.30	1.80		95				
AC-2	6.55	2.6	3.65	6.30	4.35	1.80		96				
Σ	13.10	5.2	7.30	12.55	8.65	3.6		191				
S. P.			-7									
AC-N			.04									
Pot.Res.			7500									

11.5
11.5 23

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bustamante Line 2 S½ Field date_____ 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	1-2	2-3
(B) Receive	0-5S	5-10S	→	10-15S	→	→	15-20S	→	→	→	20-25S	→
(C) n separation	1	1	2	1	2	3	1	2	3	4	2	3
(D) I	2	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg) ①	288	332	102.7	355	61.34	40.5	427	101.05	40.6	28.45	106.2	41.1
(F) DCcal	.512	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30	6	15
(H) ρ dc=ExFxGx10^3/D	110	127	158	136	94	155	164	155	156	218	163	158
(I) Vac Σ ②	276	320	98.6	344	61.10	39	412	100.68	39.4	27.4	102	3[illegible]6
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.967	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K Ans	1009	1003	1007	.998	.970	1004	1002	.970	.996	1004	1007	1003
(N) PFE=(M-1)(10^2)	0.9	0.3	0.7	-0.2	-3.0	0.4	0.2	-.3	-0.4	0.4	0.7	0.3
(O) MCF=(M-1)(10^5)/H	8	2	4	-1	-32	3	1	-2	-3	2	4	2

195.5

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	3-4	4-5	1-2	2-3	3-4	4-5		Cal				
(B) Receive	→	→	25-30S	→	→	→						
(C) n separation	4	5	3	4	5	6						
(D) I	→	→	→	→	→	→						
(E) Vdc (avg)	17.5	13.7	50.68	24.55	11.9	12.05		195.5				
(F) DCcal	→	→	→	→	→	→						
(G) Kn x 10^{-3}	30	52.5	15	30	52.5	84						
(H) ρ dc=ExFxGx10^3/D	134	184	194	188	160	259						
(I) Vac Σ	16.6	13.4	48.7	23.4	11.4	11.55		189				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→	→						
(M) ρdc/ρac =ExL/K	1019	.988	1006	1014	1009	1009						
(N) PFE=(M-1)(10^2)	1.9	-1.2	0.6	1.4	0.9	0.9						
(O) MCF=(M-1)(10^5)/H	14	-7	3	7	6	3						

LINE 2

$(DcAv)(X) = 100$

$(97.66)(X) = 100$

$X = \frac{100}{97.66}$

$\frac{(DcCal)(DcAv)(Km)}{I}$

2

$PFE\left(\frac{(AcDcCal)(DcAv)}{Ac} + 1\right) 100$

$DcAv \quad 97.66$

$Ac \quad 96.5$

$(X)(97.66) = 96.5$

INDUCED POLARIZATION SENDER NOTES

Project: Pertamente Line: 2, 5½ Date:

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	0-5	5-10	→	10-15	→	→	15-20	→	→	→		
Time												
Range	150v	120v	150v	150v	120v	150v	130v	150v	120v	160v		
Current	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A		
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5				
Receive	20-25	→	→	→	25-30	→	→	→				
Time												
Range	130v	150v	120v	150v	130v	150v	120v	150v				
Current	2A	2A	2A	2A	2A	2A	2A	2A				

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: BASTAMANTE Line: #2 S 1/2 Int.Cal _____ Date: 9-19-66

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
Rec.	0-500S	500-	1000S	1000-	1500-	→	1500-	2000-	→	→	2000-	2500
Time	300	300	100	300	100	30	300	100	30	30	100	30
DC-1	144 144	166 167	52.7 50.0	177 178	30.55 30.80	20.5 20.0	213 214	50.55 50.50	20.0 20.7	14.0 14.2	53.0 53.2	20.0 21.3
DC-2	144 144	166 167	52.7 50.0	177 178	30.53 30.80	20.5 20.0	213 214	50.50 50.55	19.8 20.7	14.1 14.4	53.1 53.1	19.9 21.3
Σ	288	332	102.7	355	61.34	40.5	427	101.05	40.6	28.45	106.2	41.1
DC-3										14.2 14.2		20.0 21.3
Dc-4										14.1 14.3		
Σ												
DC-AV												
AC-1	138	160	4.93	172	30.55	19.5	206	50.35	19.7	13.7	51.0	19.8
AC-2	138	160	4.93	172	30.55	19.5	206	50.33	19.7	13.7	51.0	19.8
Σ	276	320	9.86	344	61.10	39.0	412	100.68	39.4	27.4	102.0	39.6
S. P.	+17	+18		-21			+6				+26	
AC-N	.04	.04		.04			.04				.04	
Pot. Res	1000	1000		1000			4K				1K	

ABOUT 1800 FT. OUT WE CROSSED GROUNDED FINCE CROSSED HIWAY AT 2000

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: BUSTAMANTE Line: #2 S 1/2 Int.Cal _____ Date: 9-19-66

Send	3-4	4-5	1-2	2-3	3-4	4-5		7-8 CAL				
Rec.	→	→	2500	3000	→	→		1 AMP				
Time	30	30	30	30	30	10		300				
DC-1	8.6 8.7	7.2 6.4	25.5 25.5	12.2 12.4	5.8 6.1	5.8 6.2		97 98				
DC-2	8.7 8.6	7.3 6.5	24.8 25.8	12.3 12.2	5.8 6.1	5.8 6.3		98 98				
Σ	17.5	13.7	50.68	24.55	11.9	12.05		195.5				
DC-3		6.8 7.0	25.1 25.4									
Dc-4			25.3 25.3									
Σ												
DC-AV												
AC-1	8.3	6.7	24.4	11.7	5.7	5.8		94				
AC-2	8.3	6.7	24.3	11.7	5.7	5.75		95				
Σ	16.6	13.4	48.7	23.4	11.4	11.55		189				
S. P.			74									
AC-N			64									

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bartlamite Line 2 N ½ Field date 9/15/64 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	4-5	3-4
(B) Receive	0-500	500-1000 N		1000-1500 N →			1500 —			2000	2000-2500 —	
(C) n separation	1	1	2	1	2	3	1	2	3	4	2	3
(D) I	2 —											
(E) Vdc (avg) ①	177	135	52	111.7	42.13	25.35	217.2	32.01	16.42	12.52	60.18	15.28
(F) DCcal	1024											
(G) Kn x 10^{-3} ②	1.5	1.5	6	1.5	6	15	1.5	6	15	30	6	15
(H) ρ dc=ExFxGx10^3/D Ans	136	104	160	86	129	195	167	98	126	192	185	117
(I) Vac Σ	172.5	129	50	108	40.5	24.45	207	30.8	164	11.7	50.8	10.8
(J) AC noise x 2	—											
(K) Vac(corr) = $\sqrt{I^2 - J^2}$	—											
(L) AC-DC cal.	.988											
(M) ρ dc/ρac=ExL/K	1014	1034	1023	1022	1028	1024	1037	1027	.989	1057	1.171	1020
(N) PFE=(M-1)(10^2)	1.4	3.4	2.8	2.2	2.8	2.4	3.7	2.7	-1.1	5.7	17.1	2.0
(O) MCF=(M-1)(10^5)/H	10	33	18	26	22	12	22	28	-9	30	92?	17

Project_____ Line_____ Field date_____ Data page_____ Cal Comp. date_____ Comp by_____

(A) Send	2-3	1-2	4-5	3-4	2-3	1-2		3-4				
(B) Receive	—		2500 —	3000	—	—						
(C) n separation	4	5	3	4	5	6						
(D) I	—					→		1.0				
(E) Vdc (avg)	9.73	8.18	25.72	8.20	5.61	4.89		97.66				
(F) DCcal												
(G) Kn x 10^{-3}	30	52.5	15	30	52.5	84						
(H) ρ dc=ExFxGx10^3/D	149	220	198	126	151	210						
(I) Vac Σ	9.4	7.88	24.6	7.9	5.45	4.7		96.5				
(J) AC noise x 2	—											
(K) Vac (corr) = $\sqrt{I^2 - J^2}$	—											
(L) AC-DC cal.	—											
(M) ρdc/ρac =ExL/K	1023	1026	1033	1026	1017	1028						
(N) PFE=(M-1)(10^2)	2.3	2.6	3.3	2.6	1.7	2.8						
(O) MCF=(M-1)(10^5)/H	15	12	17	21	11	13						

INDUCED POLARIZATION SENDER NOTES

Project: Bustamente Line: 2 - N½ Date: 15 Sep 1966

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	→	10-16	→		16-20	→	→	→		
Time												
Range	180v	200v	180v	120v	200v	180v	150v	120	190v	180v		
Current	2A	2A	2A	2A	2A	2A	2A	2A	2A	2A		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal 3-4		
Receive	20-25	→	→	→	25-30							
Time												
Range	150v	120v	190	180	150v	120v	190v	180v		60V		
Current	2A	2A	2A	2A	2A	2A	2A	2A		1A		

INDUCED POLARIZATION - RECEIVER NOTES PAGE 1

Project: Bustamante Line: #2 n. Int.Cal 99 Date: 9-15-66

Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
Rec.	0-500	500-	1000	1000-	1500	→	1500-	2000		→		
Time	300	300	100	300	100	30	300	100	30	30		
DC-1	177 177	135 135	51.7 52.3	113 112	42.5 41.8	25.5 25.5	218 216	31.5 33.2	16.0 16.7	11.8 13.3		
DC-2	177	135 135	51.7 52.3	112 111	43.5 40.8	25.1 25.3	218 217	31.2 32.5	16.3 16.7	13.3 11.7		
Σ					2	2		2		3		
DC-3				110 112	42.0 42.2	25.3 25.3		31.5 32.2		13.7 11.3		
Dc-4				10			29					
Σ					126	20		121	19	15.1		
DC-AV	177.0	135.0	52.0	111.7	42.13	25.35	217.2	32.01	16.42	12.52		
AC-1	173	129	50	108	40.5	24.4	207	30.8	16.4	11.7		
AC-2	172	129	50	108	40.5	24.5	207	30.8	16.4	11.7		
Σ	172.5	129	50	108	40.5	24.45	207	30.8	16.4	11.7		
S. P.	+18	+14		-19			+9					
AC-N	.04	.04		.04			.04					
Pot.Res.	1000	1000	100	100			100					

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: Bustamante Line: # 1 N. Int.Cal _____ Date: 9-15-66

Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CHG.		
Rec.	2000	2500	→	→	2500	3000	→	→		3-4		
Time	100	30	30	10	30	10	10	610		300		
DC-1	600 60.4	15.2 15.3	9.7 9.7	8.10 8.30	25.7 25.7	8.10 8.30	5.50 5.50	4.80 4.90		98 98		
DC-2	60.0 60.3	15.3 15.3	9.8 9.7	8.10 7.90	25.8 25.7	8.10 8.30	5.70 5.60	4.70 4.90		97		
Σ				2				~~19.30~~		23 20		
DC-3		11	29	8.60 8.10	29	8.0 8.20	5.80 5.60	5.10 4.70				
Dc-4				8.10 8.20		8.10 8.50	5.70 5.50	5.30 4.70				
Σ				65.40		160	490	89.70				
DC-AV	60.18	15.28	9.72	8.18	25.72	8.20	5.61	4.89		97.66		
AC-1	50.8	14.8	9.4	7.88	24.6	7.90	5.45	4.70		96		
AC-2	50.8	14.8	9.4	7.88	24.6	7.90	5.45	4.70		97		
Σ	50.8	14.8	9.4	7.88	24.6	7.9	5.45	~~9.40~~		96.5		
S. P.	-1				-2			4.7				
AC-N	.04				.04							
Pot.Res.	1000 K				1000 k							

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Portamonte Line 3 N ½ Field date 9/21/66 Data page_____ Comp. date_____. Comp by_____

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-3	3-4	2-3	1-2	4-5	3-4
(B) Receive	0-5	5-10	→	10-15	→	→	15-20 N	→	→	→	20-25 N	→
(C) n separation	1	1	2	1	2	3	1	2	3	4	2	3
(D) I	1.5	1.4	1.5	1.2	1.4	1.5	1.10	1.2	1.4	1.5	1.1	1.2
(E) Vdc (avg) (1)	167	210	60.53	226	61.30	33.85	271	38.9	24.5	16.14	61.73	17.5
(F) DCcal	.5208	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	1.5	1.5	6	1.5	6	15	1.5	6	15	30	6	15
(H) ρ dc=ExFxGx10^3/D	87	117	126	147	137	176	192	101	137	168	175	114
(I) Vac Σ (2)	160	200	60.25	224	60.9	33.2	256	37	23.3	15.14	61.34	[illegible]
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.969	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.011	1.017	.973	.977	.975	.988	1.026	1.018	1.019	1.015	.975	.986
(N) PFE=(M-1)(10^2)	1.1	1.7	-2.7	-2.26	-2.5	-1.2	2.6	1.8	1.9	1.5	-2.5	-1.4
(O) MCF=(M-1)(10^5)/H	13	15	-21	-15	-18	-7	14	18	14	9	-14	-12

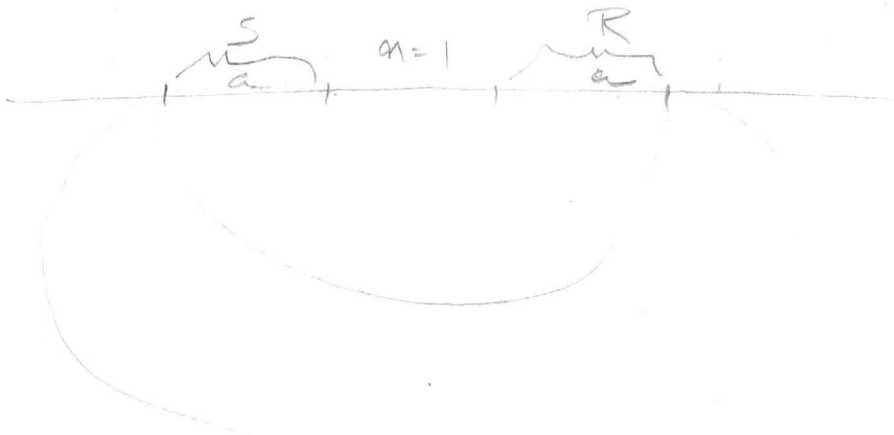
Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	2-3	1-2	4-3	3-4	2-3	1-2		cal				
(B) Receive	→	→	25-30 N									
(C) n separation	4	5	3	4	5	6						
(D) I	1.4	1.5	1.1	1.2	1.4	1.5		1.0				
(E) Vdc (avg)	13.55	11.55	25.67	8.08	7.40	5.775		192				
(F) DCcal	→	→	→	→	→	→						
(G) Kn x 10^{-3}	30	52.5	15	30	52.5	84						
(H) ρ dc=ExFxGx10^3/D	151	211	181	105	145	169						
(I) Vac Σ	13.76	10.08	24.5	7.56	7.0	5.4		186				
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$						→						
(L) AC-DC cal.						→						
(M) ρdc/ρac =ExL/K	.954	1.110	1.012	1.035	1.024	1.041						
(N) PFE=(M-1)(10^2)	-4.6	11.0	1.2	3.5	2.4	4.1						
(O) MCF=(M-1)(10^5)/H	-30	52	7	33	17	24						

LINE 3

$$\rho_{dc} = \frac{(D_c\ A_v)(D_c\ C_{al})(K_n)}{\text{current} = I}$$

Case 1



$$\left(\frac{D_c}{A_c} - 1\right) 100 = PFE$$

$$\left.\begin{matrix} 172\ D_c \\ \\ 186\ A_c \end{matrix}\right\}$$

Case x

$n = 1-6$

$n = 5$

$$(x)(D_c) = \frac{A_c}{D_c}$$

INDUCED POLARIZATION SENDER NOTES

Project: Bustamante Line: #3 N. 1/2 Date: 9/21/66

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	150v	200v	150v	170v	200v	150v	150v	170v	200v	150v		
Current	1.5A	1.4A	1.5A	1.2A	1.4A	1.5A	1.10A	1.2A	1.4A	1.5A		
Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAL 3-4		
Receive	20-25	→		→	25-30	→		→				
Time												
Range	150v	170v	200v	150v	150v	170v	200v	150v		160v		
Current	1.10A	1.2A	1.4A	1.5A	1.10A	1.2A	1.4A	1.5A		1.0A		

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bustamante Line: #3 N. ½ Int.Cal 101 Date: 9-21-66

*	Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
8.10	Rec.	0500	500 —	1000	1000 —	1500 —	→	1500 —	2000 —	→	→	2000 —	2500
7.70	Time	300	300	100	300	100	30	300	30	30	10	100	30
8.00	DC-1	83	105	30.30	118	30.60	16.75	134	19.7	12.4	7.90	30.93	9.0
7.60		84	105	30.23	118	30.70	17.10	137	19.3	12.2	8.20	30.80	8.2
8.30	DC-2	83	106	30.30	118	30.60	16.75	134	19.9	12.7	7.75	30.93	8.8
7.90		84	105	30.23	118	30.70	17.10	137	18.9	12.3	8.70	30.80	8.8
8.70	Σ	167	105	60.53	226	61.30	33.85	271	390	24.6	16.10	61.73	17.2
7.50		167	105	60.53	226	61.30	33.85	271	388	24.0	16.45	61.73	17.6
8.10	DC-3									12.7	8.65		8.8
7.70										12.1	8.45		8.8
	Dc-4									12.3	8.20		1
										12.4	7.85		
	Σ									24.8	17.10		17.6
										24.7	16.05		
	DC-AV	167	210	60.53	226	61.30	33.85	271	38.9	24.5	16.14	61.73	17.5
	AC-1	80	100	30.12	112	30.45	16.6	128	18.5	11.7	7.70	30.67	8.6
	AC-2	80	100	30.13	112	30.45	16.6	128	18.5	11.6	7.70	30.67	8.6
	Σ	160	200	60.25	224	60.90	33.2	256	37.0	23.3	15.40	61.34	17.2
	S. P.	-26	+9	→	-7	→	→	+3	→	→	→	-13	→
	AC-N	.04	.04	→	.04	→	→	.04	→	→	→	.04	→
	Pot.Res.	4000	2000	→	2000	→	→	2000	→	→	→	2000	→

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bustamante Line: #3 n½ Int.Cal _____ Date: 9-21-66

Send	2-3	1-2	4-5	3-4	2-3	1-2		CAL. 1 mmp					
Rec.	→	→	2500	3000	→	→		3-4					
Time	10	10	200	10	10			300					
DC-1	6.78 6.78	5.70 5.85	128 128	4.00 4.05	4.00 3.50	2.95 2.85		96 96					
DC-2	6.80 6.75	5.70 5.85	128 128	4.23 3.95	3.95 3.35	2.95 2.90		96 96					
Σ	13.56 13.55	11.55 11.55	256 256	8.05 8.18	7.50 7.30	5.70 5.85							
DC-3				4.35 2.70									
Dc-4				8.05									
Σ	→	→	→	→	→	→							
DC-AV	13.555	11.55	256	8.08	7.40	5.775							
AC-1	6.88	5.65	122	3.78	3.50	2.75		93					
AC-2	6.88	5.03	123	3.78	3.50	2.75		93					
Σ	13.76	10.08	245	7.56	7.00	5.40							
S. P.	→	→	+7	→	→	→							
AC-N	→	→	.04	→	→	→							
	→	→	1000	→	→	→							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bustamante Line 3 S ½ Field date 9/21/66 Data page_____ Comp. date_____. Comp by H.P.

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
(B) Receive	0-5	5-10	→	10-15	5 →	→	15-20	5 →	→	→	20-25	5 →
(C) n separation	1	1	2	1	2	3	1	2	3	4	2	3
(D) I ÷	1.1	1.2	1.1	1.4	1.2	1.1	1.5	1.4	1.2	1.1	1.5	1.4
(E) Vdc (avg) ×	138.7	148.3	50	222	45.1	26.25	442	84.5	23.3	16.3	95.9	24.2
(F) DCcal	.515											
(G) Kn x 10^{-3} ×	1.5	1.5	6	1.5	6	15	1.5	6	15	30	6	15
(H) ρ dc=ExFxGx10^3/D	97	96	140	123	116	185	228	187	150	229	198	124
(I) Vac Σ	131.8	139.6	48	280?	42.4	24.8	412	80	22.8	15.4	92	[illegible]
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.959											
(M) ρ dc/ρac=ExL/K	1.009	1019	.998	.760	1090	1015	1029	1013	.980	1015	1.000	1009
(N) PFE=(M-1)(10^2)	0.9	1.9	-0.2	-24?	2.0	1.5	2.9	1.3	-2.0	1.5	0	0.9
(O) MCF=(M-1)(10^5)/H	9	20	-1	-195	17	8	13	7	-13	7	0	7

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	3-4	4-5	1-2	2-3	3-4	4-5		cal				
(B) Receive	→	→	25-30	5 →	→	→						
(C) n separation	4	5	3	4	5	6						
(D) I	1.2	1.1	1.6	1.4	1.2	1.1						
(E) Vdc (avg)	8.4	6.43	28.9	11.75	4.75			194		168		
(F) DCcal												
(G) Kn x 10^{-3}	30	52.5	15	30	52.5							
(H) ρ dc=ExFxGx10^3/D	108	158	140	130	107							
(I) Vac Σ	8	6.2	27.6	11.26	4.53			186		162		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρdc/ρac =ExL/K	1.007	.994	1004	1.000	1.005							
(N) PFE=(M-1)(10^2)	0.7	-0.6	0.4	0	0.5							
(O) MCF=(M-1)(10^5)/H	6	-4	3	0	5							

.958 .964

INDUCED POLARIZATION SENDER NOTES

Project: BUSTAMANTE Line: #3 5 1/2 Date: 9/21/66

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
Receive	0-5	5-10	→	10-15	→		15-20	→				
Time												
Range	130v	170v	150v	190v	170v	150v	140	190v	170v	150v		
Current	1.1A	1.2A	1.1A	1.4A	1.2A	1.1A	1.5A	1.4A	1.2A	1.1A		
Send	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL 2-3	1-2	
Receive	20-25	→			25-30	→						
Time												
Range	140v	190v	170v	150v	160v	190v	170v	150v		130v	120v	
Current	1.5A	1.4A	1.2A	1.1A	1.6A	1.4A	1.2A	1.1A		1.0A	1.0A	

INDUCED POLARIZATION - RECEIVER NOTES

PAGE _____

Project: BUSTAMANTE Line: # 3 S.T. Int.Cal _____ Date: 9-21-66

4.2	Send	3-4	4-5	1-2	2-3	3-4	4-5		CAL. 1 AMP	CAL 1 AMP			
4.35	Rec.								3-4	1-2			
4.25	Time	10	10	30	10	10	10		300	300			
4.10	DC-1	4.30	3.25	14.6	5.80	2.15			84	97			
4.20		4.35	3.18	14.3	5.95	2.60			84	97			
4.13		4.00	3.30	14.5	5.80	2.60			84	97			
4.23	DC-2	4.38	3.10	14.4	5.95	2.20			84	97			
	Σ	8.65 8.38	6.43 6.48	28.9 28.9	11.75 11.55	4.75 4.80							
	DC-3	4.10 4.20	3.35 3.10			2.45 2.25							
	Dc-4	4.18 4.10	6.45			2.50 2.25							
	Σ	8.30				4.70 4.75							
	DC-AV	8.40	6.43	28.9	11.75	4.75			168	194			
	AC-1	4.00	3.1	13.8	5.63	2.28			81	93			
	AC-2	4.00	3.1	13.8	5.63	2.25			81	93			
	Σ	8.00	6.2	27.6	11.26	4.53			162	186			
	S. P.			-9									
	AC-N			04									
	Pot.Res.			1060									

* AT 2500 FT. OUT WAS ABOUT 50 FT. FROM ROAD.

INDUCED POLARIZATION - RECEIVER NOTES PAGE _____

Project: Bustamante Line: #3 S.½ Int.Cal 101 Date: 9-21-66

Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3
Rec.	0-500											
Time	100	100	30	300	30	30	300	100	30	30	100	30
DC-1	7.20 67.0	75.0 73.3	24.0 27.0	111 111	22.7 22.4	13.3 13.0	222 220	43.5 41.0	11.8 11.7	8.4 7.7	47.0 49.0	11.9 12.3
DC-2	7.25 6.60	75.0 73.3	23.5 26.5	111 111	22.7 22.4	13.2 13.0	222 220	43.5 41.0	11.7 11.4	8.7 7.8	46.8 49.0	11.8 12.4
Σ	13.90 13.5	148.3 148.3	51.0 49.0	222 222	45.1 45.1		442 442		23.5 23.1		96 95.8	24.2 24.2
DC-3												
Dc-4												
Σ												
DC-AV	138.75	148.3	50.00	222	45.1	26.25	442	84.5	23.3	16.3	95.9	24.2
AC-1	65.8	69.8	24.0	1.40	21.2	12.4	2.06	40.0	11.4	7.7	46	11.5
AC-2	66.0	69.8	24.0	1.40	21.2	12.4	206	40.0	11.4	7.7	46	11.5
Σ	131.8	139.6	48.0	2.80	42.4	24.8	412	80.0	22.8	15.4	92	23.0
S. P.	-9	-3		+4			+2				+5	
AC-N	.04	.04		.04			.04				.04	
	50M	2000		2000			2000				1500	

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bustamonte Line 4 N 1/2 Field date 4/5/67 Data page_____ Comp. date 4/6/67. Comp by K.B.

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-250	250-500		500-750	→		750-1000		→			
(C) n separation												
(D) I	2.0	2.0	2.0	2.0	2.0	2.0	1.2	2.0	2.0	2.0		
(E) Vdc (avg)	338	335	85	153	48.5	21	119	53	24.5	14.3		
(F) DCcal	1.04166	→								→		
(G) Kn x 10^{-3}	.75	.75	3	.75	3	7.5	.75	3	7.5	15		
(H) ρ dc=ExFxGx10^3/D	132	131	133	60	76	82	77	83	96	112		
(I) Vac Σ	317	315	81	145.5	46.3	20	115	50.5	23.3	13.5		
(J) AC noise x 2												
(K) Vac(corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.97916	→								→		
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	4.4	4.1	2.8	3.0	2.6	2.8	1.3	2.8	3.0	3.7		
(O) MCF=(M-1)(10^5)/H	33	31	21	50	34	34	17	34	31	33		

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		Cal		
(B) Receive	1000-1250		→		1250-1500		→					
(C) n separation												
(D) I	1.2	2.0	2.0	2.0	1.2	2.0	2.0	2.0		1000		
(E) Vdc (avg)	31.5	19.9	10.6	6.75	20.35	14.7	8.85	5.2		96		
(F) DCcal	→							→				
(G) Kn x 10^{-3}	3	7.5	15	26.25	7.5	15	26.25	42				
(H) ρ dc=ExFxGx10^3/D	82	78	83	92	132	115	121	125				
(I) Vac Σ	30	19.25	10.1	6.45	19.5	14.2	8.6	5.6		94		
(J) AC noise x 2												
(K) Vac (corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→							→				
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	2.8	1.2	2.8	2.5	2.2	1.4	.8	-.3				
(O) MCF=(M-1)(10^5)/H	34	15	34	27	17	12	7	-2				

LINE 4

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Bustamonte
LINE 4 HALF 10 SP. ____ DATE 4-5

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal
RECEIVE	1000	1250	→	→	1250	1500	→	→		4-5
RANGE	100	30	30	10	30	30	30	10		300
DC 1	31.5/30	20.1/19.7	10.4/10.8	6.7/6.8	20/20.7	14.7/14.7	8.7/9	5.6/5.8		96/96
DC 2	31.5/31.5	20.1/19.7	10.4/10.8	6.7/6.8	20/20.7	14.7/14.7	8.7/9	5.6/5.8		96/96
DC 3	31.5/31.5	20.1/19.7	10.4/10.8	6.7/6.8	20/20.7	14.7/14.7	8.7/9	5.6/5.8		96/96
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.	31.5	19.9	10.6	6.75	20.35	14.7	8.85	5.7		
AC 1	30	19.3	10.1	6.45	19.5	14.2	8.4	5.6		94
AC 2	30	19.2	10.1	6.45	19.5	14.2	8.8	5.6		94
AC AVG.										
S.P.	-17				+14					
AC NOISE	.03				.04					
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Bustamonte
LINE 4 HALF N SP. ____ DATE 4-5

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-250	250-500		500-750	→		750-1000	→		
RANGE	1000	1000	300	300	100	100	300	100	100	30
DC 1	338/338	335/335	85/85	153/153	49/48	21/21	120/118	53/53	24/25	14.2/14.4
DC 2	338/338	335/335	85/85	153/153	49/48	21/21	120/118	53/53	24/25	14.2/14.4
DC 3	338/338	335/335	85/85	153/153	49/48	21/21	120/118	53/53	24/25	14.2/14.4
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.	338	335	85	153	48.5	21	119	53	24.5	14.3
AC 1	317	315	81	146	46.3	20	115	50.5	23.3	13.5
AC 2	317	315	81	145	46.5	20	115	50.5	23.3	13.5
AC AVG.										
S.P.	+9	+10		-9			+8			
AC NOISE	.1	.06		.04			.04			
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT BUSTAMONTE

LINE 4 HALF N SP. ____ DATE 4-5

PAGE 1

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-250N	250-500N		500-750N		→	750-1000N		→	→
RANGE										
VOLTAGE										
CURRENT	2000	2000	2000	2000	2000	2000	1200	2000	2000	2000
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		4-5
RECEIVE	1000-1250N		→	→	1250-1500N		→	→		CAL
RANGE										
VOLTAGE										
CURRENT	1200	2000	2000	2000	1200	2000	2000	2000		1000

FREQUENCIES 0.5 3.0

SENDER NO. MKI 2631 S

OPERATOR MONTIERTH

RECEIVER NO. 5644

OPERATOR HURLEY

COMMENTS:

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project Bustamonte Line 4 5½ Field date 4/5/67 Data page_____ Comp. date 4/6/67 Comp by K.R.

(A) Send	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5		
(B) Receive	0-250	250-500		500-750		→	750-1000			→		
(C) n separation												
(D) I	1.2	2.0	1.2	2.0	2.0	1.2	2.0	2.0	2.0	1.2		
(E) Vdc (avg)	20.4	34.0	51.75	29.5	83.75	20.75	27.0	84.5	34	11.55		
(F) DCcal	1.0526	→								→		
(G) Kn x 10^{-3}	.75	.75	3	.75	3	7.5	.75	3	7.5	15		
(H) ρ dc=ExFxGx10^3/D	134	134	136	116	132	137	107	133	134	152		
(I) Vac Σ	19.6	32.2	49.6	28.0	79.5	20	25.9	80	32.5	11.15		
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.98947	→								→		
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	3.0	4.5	3.2	4.2	4.2	2.7	3.1	4.5	3.5	2.5		
(O) MCF=(M-1)(10^5)/H	22	34	24	36	32	20	29	34	26	16		

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		Cal		
(B) Receive	1000-1250	→		→	1250-1500			→				
(C) n separation												
(D) I	2.0	2.0	2.0	1.2	2.0	2.0	2.0	1.2		1000		
(E) Vdc (avg)	68	32.5	17.15	6.925	17.9	12	7.75	3.5		95		
(F) DCcal	→							→				
(G) Kn x 10^{-3}	3	7.5	15	26.25	7.5	15	26.25	42				
(H) ρ dc=ExFxGx10^3/D	107	128	135	159	71	95	107	129				
(I) Vac Σ	65	31.5	16.55	6.725	17.3	11.6	7.475	3.4		94		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→							→				
(M) ρdc/ρac =ExL/K												
(N) PFE=(M-1)(10^2)	3.5	2.1	2.5	1.9	2.4	2.4	2.6	1.9				
(O) MCF=(M-1)(10^5)/H	33	16	19	12	34	25	24	15				

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Bustamante
LINE 4 HALF 5 SP. ____ DATE 4-5

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-250	250-500	500	500-750	→		750-1000	→		
RANGE	300	1000	100	1000	100	100	300	300	100	30
DC 1	20.5/20.5	340/340	52.5/51	300/290	83.5/84	20.5/21	270/270	83/86	34/34	11.5/11.6
DC 2	20.5/20.5	340/340	52.5/51	300/290	83.5/84	20.5/21	270/270	83/86	34/34	11.5/11.6
DC 3	20.5/20.5	340/340	52.5/51	300/290	83.5/84	20.5/21	270/270	83/86	34/34	11.5/11.6
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.	20.4	340	51.75	295	83.75	20.75	270	84.5	34	11.55
AC 1	19.6	322	45.7	280	79.5	20	259	80	32.5	11.2
AC 2	19.6	322	45.5	280	79.5	20	259	80	32.5	11.1
AC AVG.										
S.P.	-5	-3		+32			+10			
AC NOISE	.03	.03		.03			.03			
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT Bustamante
LINE 4 HALF S SP. ____ DATE 4-5

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal
RECEIVE	1000	1250	→	→	1250	1500	→	→		1-2
RANGE	100	100	30	10	30	30	10	10		300
DC 1	68/68	32.5/32.5	17.3/17	6.95/6.9	17.8/18	12/12	7.7/7.8	3.5/3.5		95/95
DC 2	68/68	32.5/32.5	17.3/17	6.9/6.95	17.9/17.9	12/12	7.7/7.8	3.5/3.5		95/95
DC 3	68/68	32.5/32.5	17.3/17	6.9/6.95	17.8/18	12/12	7.7/7.8	3.5/3.5		95/95
DC 4				6.9/6.95	17.8/18					
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.	68	32.5	17.15	6.925	17.9	12	7.75	3.5		95
AC 1	65	31.5	16.5	6.75	17.3	11.6	7.5	3.4		96
AC 2	65	31.5	16.6	6.7	17.3	11.6	7.45	3.4		96
AC AVG.										
S.P.	-5				+10					
AC NOISE	.02				.02					
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT _____

LINE 4 HALF 5 SP. ____ DATE 4-5

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-250 S	250-500 S		500-750 S		→	750-1000 S		→	
RANGE										
VOLTAGE										
CURRENT	1200	2000	1200	2000	2000	1200	2000	2000	2000	1200
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		1-2
RECEIVE	1000-1250		→		1250-1500		→			CAL
RANGE										
VOLTAGE										
CURRENT	2000	2000	2000	1200	2000	2000	2000	1200		1000

FREQUENCIES .05 3.0

SENDER NO. MK-1 26315

OPERATOR MONTIERTH

RECEIVER NO. 5644

OPERATOR HURLEY

COMMENTS: