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ELECTRICAL GEOPHYSICAL SURVEY
USING DUAL FREQUENCY INDUCED POLARIZATION
RESISTIVITY AND SELF POTENTIAL

Squaw Peak Mine Area
Yavapai County, Arizona

November 1968

For Phillips Petroleum Co.
Minerals Division

**ELECTRICAL GEOPHYSICAL SURVEY
USING DUAL FREQUENCY INDUCED POLARIZATION
RESISTIVITY AND SELF POTENTIAL**

**Squaw Peak Mine Area
Yavapai County, Arizona**

November 1968

For

**Phillips Petroleum Company
Minerals Division**

By

**Heinrichs Geoexploration Company
P. O. Box 5671 Tucson, Arizona 85703
Phone: 623-0578 Area Code: 602**

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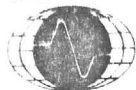
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GENERAL LOCATION
of
SQUAW PEAK AREA
for
PHILLIPS PETROLEUM COMPANY
MINERALS DIVISION

ARIZONA



HEINRICH
GEOEXPLORATION COMPANY



GEOPHYSICAL
ENGINEERS

BOX 5671 TUCSON, ARIZONA 85703
PH: 602/623-0578 CABLE: GEOEX, TUCSON

SYDNEY

VANCOUVER

INTRODUCTION

At the request of Mr. Robert Forest and on behalf of Phillips Petroleum Company, Mineral Division, Heinrichs Geoexploration Company conducted a preliminary reconnaissance induced polarization (I.P.) survey in the vicinity of the Squaw Peak Mine Area, Yavapai County, Arizona. The field work was completed between November 11 and November 25, 1968.

The dual frequency induced polarization technique was employed as described in the appended "Basis of the Induced Polarization Method", obtaining data from the conventional collinear dipole-dipole electrode configuration. Sending spreads using five electrodes were energized by an upper frequency of either 1.0 or 3.0 Hz and a lower frequency of 0.1 Hz. The data collected was compiled and plotted as outlined in "Basis of the Induced Polarization Method".

A total of five 1000 foot and one 500 foot dipole spreads were used, resulting in 54,000 feet of surface data and 36,500 feet of plotted subsurface data. Two of these spreads were completed using 1.0 Hz and Geox heavy duty Mark 4 sender and 8 KW generator because of the extremely low resistivity material in the valley. The standard duty Mark 7 and 1.5 KW generator was used on the other 4 spreads. The effective exploration zone for the 1000 foot spreads is between about 200 feet and 1,500 feet deep. The 500 foot spread is effective from 100 feet to a depth of about 750 feet.

The Geox field personnel who worked on this project were Donald Berglind, Crew Chief; Bryan Terrell and Chris Dahlberg, sender operators; and Mr. Blain Gaul, Richard Martinez, and Severo Chavez were field technicians. Only five of these men were used at any one time. Report and interpretation are by Paul Head and Chris Ludwig with assistance of the Geox Tucson staff.

CONCLUSIONS AND RECOMMENDATIONS

Probable sulfide caused polarization anomalism was seen in an apparently shallow zone west of the Verde Fault on both Lines 1 and 2. On Line 1 the anomalism lies from about 0 NE/SW to about 15 NE or 20 NE and is strongest between 2.5 NE and 10 NE. The source of anomalism would appear to be somewhat depth limited, the majority of mineralization being within about 500 feet of the surface.

On Line 2, the anomalous zone appears to lie between Stations 0 NE/SW and 10 NE. Since no detailed 500 foot dipole spacing coverage was obtained on this line the interpretation will not be as accurate as on Line 1. However, again the anomalism would appear to be related to a depth-limited source.

Both Line 1 and 2 indicate that the I. P. anomalism is related to a minor resistivity low, perhaps an alteration zone. The I.P. anomalism seems to correlate well with the area of interest outlined on our copy of the 1" = 200' topographic plan (Sheet 5, Squaw Peak Area).

Quantity of sulfide indicated in the most anomalous zone on Line 1 is probably less than one percent by volume (roughly two percent by weight) unless the occurrence was solely confined to or within a very narrow or thin zone (considerably less than 500 feet) in which case, more than one percent sulfide would be necessary to cause this degree of anomalism. If the majority of causative sulfide is ore sulfide (copper, molybdenum, etc.) rather than pyrite or other non-economic polarizable material, this anomaly could be of potential economic interest and should therefore be further investigated.

Based on the geophysical work to date, drilling in the vicinity of 2.5 NE to 10 NE Line 1 would be recommended except that it appears that DDH-3 in particular and DDH-1 to some extent have already sampled this zone.

If the drill results from DDH-1 and 3 are economically encouraging and it is desired to more completely outline the sulfide zone, additional I.P. coverage on a smaller (say 250 or 300 feet) dipole spacing is recommended. This detailed work should be on a line spacing of about 500 feet to obtain

relatively complete coverage and on the same line orientation as line 1 and 2.

The Verde fault shows as a very pronounced steeply dipping electrical interface near 25 NE, lines 1 and 2, with more conductive material to the NE. No detectable sulfide mineralization appears to relate directly to the fault. Interpretation in the vicinity of the fault and east thereof is somewhat difficult due to the strong electromagnetic inductive coupling interference caused by the very low resistivities east of the fault.

The conductive material just east of the fault (probably recent sediments and volcanics) appears to be at least 1,500 feet thick. The apparent resistivity in this area at depth shows no indication of approaching the higher resistivity seen to the west of the fault. Line 3 shows this area to be quite low in resistivity over a considerable north-south distance.

On line 1 east of 90 NE and line 2 of 70 NE very low resistivity material is noted. This is likely recent sediments saturated with fairly saline water.

Self potentials show only minor background variation along the lines except for a pronounced step near 20 SW line 1 that may relate to a rock type change or be artificially caused and is not expected to relate to sulfide.

Further electrical method investigations of the block NE of the Verde fault below 1,500 feet depth would be very marginal. Conceivably the depth to pre-mineral rocks could be determined by resistivity, but, magnetics, gravity or even seismic work might be preferable. Identification of mineralization in pre-mineral rocks at depths below 1,500 feet under such conditions would be most difficult and expensive. Sometimes it is possible to take advantage of drill holes if they can be kept open for effective electrode accessibility. All of these alternative approaches should be weighed and evaluated against drill costs, apparent geologic potential and encouraging factors already on hand.

INTERPRETATION

Line 1, Spreads 1 and 3, a = 1000 feet

The resistivity interface at 25.0 NE is the dominant feature observed on this line and is correlated to the Verde Fault. Another resistivity interface may exist at 90.0 NE, probably representing a transition to saline water bearing valley fill. A third anomaly exists in the vicinity of 30.0 to 50.0 SW. Due to insufficient coverage to be sure that full "normal" effects were seen on both sides of the features, it is not fully defined as to position or cause. It is not a single boundary interface, however, and is probably a steeply dipping conductive zone. The Verde Fault is apparently steeply dipping (direction undetermined) and separates moderately resistive rocks (200 to 300 ohm feet) on the west from low resistivity rocks, likely sediments (15 to 5 ohm feet) to the east. The 90.0 NE interface separates the low resistivity material from very low (2 to 1 ohm feet) resistivity saline sediments further east in the valley.

Electromagnetic coupling northeast from the Verde Fault has completely overwhelmed any polarization effects that might be present. There does appear to be valid probable sulfide caused non-coupling anomalism from 0.0 NE/SW to 10.0 NE and possibly to 20.0 NE. This very weak anomaly is associated with a slight near surface apparent resistivity low not related to the fault zone.

The steep S.P. gradient near 30 SW on Spread 1 is probably artificially caused by being too near one of the large aluminum foil sending electrodes undergoing an electrochemical reaction. A rock type change could conceivably cause this gradient, however.

Line 1, Spread 2, a = 500 feet

This spread of 500 foot dipoles was recommended to confirm the validity of the very weak frequency effects noted on Spread 1.

Very good general agreement of the 1000 foot dipole and the 500 foot dipole spreads were obtained. A weak anomaly was detected between 2.5 NE to 10.0 NE. The anomaly is not sharp and shows very definite indication of continuing NE 1000 feet

or more as a very weak zone. The MCF pattern indicates that the cause of the anomaly is most likely to be a sparsely mineralized body not having any great depth extension. Near surface low resistivity pods are defined on the 500 foot dipole which may represent zones of altered rocks.

Line 2, Spreads 1 and 2, a = 1000 feet

This line is oriented parallel to Line 1, located as shown on the plan map. The results from this line are much the same as those seen on Line 1. Electromagnetic coupling will account for all high PFE values east of the Verde Fault. A very weak PFE anomaly from 0 NE to perhaps 20.0 NE is of non-coupling origin and has the same general appearance as the anomaly on Line 1.

Line 3, Spread 1, a = 1000 feet

This is a N-S oriented line lying east of the Verde Fault, entirely in low resistivity material. As a result, the entire length of the line shows strong EM coupling effects. The use of 1.0 Hz as an upper frequency helped ease this problem, but did not eliminate the trouble.

The resistivity data from Line 3 indicates that there are no high or moderate resistivity rocks within 1,500 feet of surface such as those west of the Verde Fault. This also is confirmed by the resistivity results of Lines 1 and 2 which indicate deep alluvium also of the order of plus 1,500 feet.

Respectfully submitted,
HEINRICHS GEOEXPLORATION CO.

Paul A. Head

Paul A. Head, Geophysicist

Chris S. Ludwig

Chris S. Ludwig
Senior Geophysicist

January 4, 1969
P. O. Box ~~5671~~ 5964
Tucson, Arizona 85703



PHILLIPS PETROLEUM COMPANY

Minerals Division
P. O. Box 2453
Reno, Nevada 89505

INTERNATIONAL
GEOEX
GENERAL INTERESTS
TUCSON, ARIZONA



SEP 5 1968

BOX 5671 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0578

September 3, 1968

Mr. Walter E. Heinrichs, Jr.
President & General Manager
Heinrichs Geoexploration Company
P. O. Box 5671
Tucson, Arizona 85703

Dear Mr. Heinrichs:

In your letter of August 30, 1968, you requested additional information on the geology of the Squaw Peak mine.

The mineralization consists almost entirely of chalcopyrite and molybdenite. Pyrite is scarce. Mineralization occurs as disseminations and along fractures. Quartz veinlets are present in some areas and are often mineralized, particularly with molybdenite.


The ore occurs in a stock of diorite and granodiorite which has intruded Precambrian granite. All rocks are probably Precambrian in age. Monzonite dikes cut the Precambrian granite around the mineralized stock, but they contain little mineralization.

Biotite is abundant in the mineralized diorite and granodiorite. The monzonite dikes and the granite country rock contain both biotite and hornblende.

Alteration of the mineralized stock is weak. Some of the biotite has been altered to chlorite. Calcite is also present as an alteration product. Sericite is scarce. Alteration has clouded some of the feldspars, but most appear fresh.

You estimated that a preliminary reconnaissance of the area would require about a month's work in the field. For our budgeting purposes we would like to have an estimate of the cost of a one-month program.

Sincerely,


R. T. FOREST

RTF/bjh

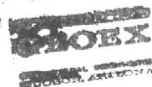


PHILLIPS PETROLEUM COMPANY

Minerals Division

P. O. Box 2453

Reno, Nevada 89505



AUG 27 1968

BOX 5671 TUCSON, ARIZONA 85703

Phone: (AREA 602) 623-0578

August 26, 1968

Mr. Grover Heinrichs
Heinricks Geoexploration Company
Box 5671
Tucson, Arizona 85703

Dear Mr. Heinrichs:

Enclosed is a map of the area at the Squaw Peak Mine near Camp Verde, Arizona, which we discussed on the phone last week. On this map I have outlined the approximate area of mineralization in red pencil.

If you want to send someone to look at the job site, I could fly to Phoenix and go out to Camp Verde with someone during the month of October.

Sincerely,

R. T. Forest
R. T. FOREST *ujh*

RTF/bjh
Enc.

JOB 308-68 LINE 2 SPREAD 1

LOOKING N 15 W DATE Nov 18-68 A= 1000 ft

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING YES



26 Nov 68
Re



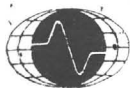
HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 575W SP. 1 DATE

PAGE



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DC 1	3.2 3.0	3.3 1.6	3.0 2.8	3.1 0.8	2.9 2.8	1.2 4.3	1.9 1.4	3.2 0.5	4.5 2.3	2.6 4.4										
DC 2	3.0 3.1	3.3 1.6	3.0 2.0	3.1 0.8	2.9 2.8	9.2 5.0	1.9 1.4	4.1 0.0	4.8 1.9	1.3 4.8										
DC 3	3.1					1.2 4.0		3.8 0.3	4.2 2.4	1.6 4.3										
DC 4						1.1 4.0		3.2 0.5		2.6 3.2										
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	215.	229.	73.1	154.	95.1	46.0	153.	36.6	34.3	18.9										
AC 2	+0	+0	+0.5	+0.2	-0.4	+0.0	+0.8	+0.5	+0.7	+0.3										
AC AVG.																				
S.P.	+3	-3				+17							-16							
AC NOISE	.02	.02				-.02							.02							
POT RES.	6K	4K				2K							600N							



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I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 5754 SP. 1 DATE

P A G E

2

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HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE 3
PROJECT 308-62
LINE 2 HALF S754 SP. 1 DATE 1-8

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CURRENT	2.5A	2.5A	2.5A	1.5A	2.5A	2.5A	1.5A	1.5A	2.5A	2.5A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		C41
RECEIVE	40-50				30-40			2		2-3
RANGE										
VOLTAGE	460V	170V	130V	190V	6160V	190V	130V	190V		
CURRENT	1.0A	1.8A	2.0A	2.0A	1.0A	1.0A	2.0A	2.0A		1.5

FREQUENCIES 3.0 10

SENDER NO. 13 122-8

OPERATOR 57

RECEIVER NO.

OPERATOR 13

COMMENTS :



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF N75E SP. 1 DATE

PAGE
4

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RECEIVE	0-10 NE				10-20 NE				20-30 NE				30-40 NE							
RANGE	1				10				1				.1				.1			
DC 1	1.3	4.0	3.6	3.6	3.9	2.8	3.0	0.7	4.9	2.1	-0.7	6.3	7.0	-2.9	4.3	-0.1	13.2	-7.9	-5.0	9.1
DC 2	1.7	3.9	3.4	4.2	1.9	4.9	3.0	0.7	4.3	2.7	-0.5	6.0	7.8	-3.3	5.2	-1.8	17.1	-12.0	-7.5	11.0
DC 3	2.0	3.3	2.6	3.7	3.1	4.3			3.4	2.8	-0.3	5.5	8.0	-3.9	7.5	-2.6	-19.2	20.0	-10.6	13.5
DC 4					2.8	2.1									8.2	-3.5	-15.0	22.0	-13.0	16.0
DC 5																	-17.1	24.5	-14.8	17.8
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	91.1	12.9	22.2	5	125.	20.2	3.4	6	27.6	7.1	0	1.8	8	3.8	3					
AC 2	+0.2	+0.3	+0.0	0.0	+0.7	0.0	0.0	+0.2	0.0	0.0	+0.2	0.0	-0.2							
AC AVG.																				
S.P.	15	-1			+7								+5							
AC NOISE	.02	.03			.01								.01							
POT RES.	20K	25K			1K								1K							



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I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF N75E SP. 1 DATE

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HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 2 HALF 175 SP. 1 DATE 11-18

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6

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RECEIVE	8-10	10-20	—	20-30	—	—	30-40	—	—	—
RANGE										
VOLTAGE	480V	290V	440V	130V	380V	360V	190V	140V	380V	360V
CURRENT	1.0A	1.5A	.75A	2.0A	2.0A	.75A	2.0A	2.0A	2.0A	.75A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	501
RECEIVE	40-60	—	—	—	40-60	—	—	—	3-4	2-3
RANGE										
VOLTAGE	190V	140V	380V	1410V	190V	1410V	380V	360V	3	290V
CURRENT	2.0A	2.0A	2.0A	.75A	2.0A	2.0A	2.0A	.75A	1.5A	1.5A

FREQUENCIES 3.0 4.0

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OPERATOR 71

RECEIVER NO. 16681-12

OPERATOR 12

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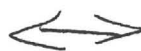
Volt M+T-1 N.G. Does not

JOB 308 - 68 LINE 2 SPREAD 1

LOOKING N 15 W DATE Nov 18 - 68 A= 1000 ft

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING YES



26 Nov 68
Re



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 575h SP. 1 DATE

PAGE

1

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10 SW		10-20 SW				20-30 SW						30-40 SW							
RANGE	10		10		1		10		1		1		10		1		1		1	
DC 1	32	30	33	16	30	28	31	08	29	28	12	43	19	14	32	05	45	23	26	44
DC 2	30	31	33	16	30	28	31	08	29	28	02	50	19	14	41	00	48	19	18	48
DC 3	31										12	40			38	03	42	24	16	43
DC 4											11	40			32	05			26	32
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	215.		224.		731		154.		95.1		46.0		153.		36.6		34.3		18.9	
AC 2	+0		+0		+.5		+0.2		-0.4		+0.0		+0.8		+0.5		+0.7		+0.3	
AC AVG.																				
S.P.	+3		-3				+17						-16							
AC NOISE	.02		.02				.02						.02							
POT RES.	6K		4K				2K						600N							



HEINRICHS GEOEXPLORATION CO. I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF S754SP. 1 DATE

PAGE
2

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-50SW								50-50SW								2-3
RANGE	1 X4	.1		1		.1			.1	.1		.1		.01			10
DC 1	9-8	15-6.0	78-51	1.8		4.0-91-142	130										1.1-0.2
DC 2		10.1-6.9	8.3-50	85	0.0	13.0-140											1.1-0.2
DC 3		11.9-8.1	7.9-45	11.7-1.5	-14.6	17.4											
DC 4		13.4-8.1		13.8-3.8	-18.8	19.2											
DC 5		12.8-7.6		14.4	15.0												
DC 6																	
DC 7																	
DC 8																	
DC AVG.																	
AC 1	28.3	7.94	10.7	6.24	3.55	1.21	1.58	.72H									153.5
AC 2		+0.5	-1.2	+2.1	+0.1	+7.6		-0.3									+0.0
AC AVG.																	
S.P.	-7					1.6											
AC NOISE	.01					.01											
POT RES.	1K					1K											



HEINRICHS GEOEXPLORATION CO. I. P. SENDER NOTES

PROJECT 308-61
LINE 2 HALF S754SP. 1 DATE 11-11

PAGE
3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	2-4	4-5
RECEIVE	6-10	10-20	→	20-30	→	→	30-40	→	→	→
RANGE										
VOLTAGE	240V	160V	240V	280V	160V	240V	700V	280V	160V	240V
CURRENT	2.5A	2.5A	2.5A	1.5A	2.5A	2.5A	1.5A	1.5A	2.5A	2.5A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL
RECEIVE	60-80	→	→	→	50-60	→	→	→		2-3
RANGE										
VOLTAGE	460V	190V	130V	190V	460V	190V	130V	190V		
CURRENT	1.0A	1.8A	2.0A	2.0A	1.0A	1.0A	2.0A	2.0A		1.5

FREQUENCIES 3.0 0.10

SENDER NO. 13671-5

OPERATOR 57

RECEIVER NO.

OPERATOR 13

COMMENTS:

[illegible][illegible]

X



HEINRICH'S GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE 6
PROJECT 208-68
LINE 2 HALF N75E SP. 1 DATE 11-18

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RECEIVE	8-10	10-20	—	20-30	—	—	30-40	—	—	—
RANGE										
VOLTAGE	480V	290V	440V	130V	380V	360V	190V	140V	380V	380V
CURRENT	1.0A	1.5A	.75A	2.0A	2.0A	.75A	2.0A	2.0A	2.0A	.75A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	Cal	Cal
RECEIVE	40-50	—	—	—	50-60	—	—	—	3-4	2-3
RANGE										
VOLTAGE	190V	140V	380V	140V	190V	140V	380V	360V	3	290V
CURRENT	2.0A	2.0A	2.0A	.75A	2.0A	2.0A	2.0A	.75A	1.5A	1.5A

FREQUENCIES 3.0 0.10

SENDER NO. 13671-S

OPERATOR 71

RECEIVER NO. 16681-R

OPERATOR 13

COMMENTS:

Volt Meter N.G. Does not

JOB 308-68 LINE 2 SPREAD 2

LOOKING N 15 W DATE Nov 23 A= 1000 feet

CENTER 60.0 LABEL NE/NE FREQ. 1.0

COUPLING YES



26 Nov 8
RC



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 5754 SP. 2 DATE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	60-50NE	50-40NE					40-30NE						30-20NE							
RANGE	1	1	.1				1	.1		.01			1	.1		.1			.01	
DC 1	-0.1 2.5	1.8-0.9	-0.9 4.2	2.0-0.1	3.0 0.1	-28.4	36.0	3.1-1.2	10.3-5.0	4.8-2.0	7.6	8.4								
DC 2	-0.8 2.8	1.8-0.9	-1.3 4.1	2.0-0.1	2.9 0.9	-36.0	48.8	3.1-1.2	6.9-5.9	6.4-2.3	1.88	54.4								
DC 3	-1.0 3.1		-1.5 5.1		1.7 1.9	-52.0	65.6		8.4-4.8	6.6-2.5	6.08	68.4								
DC 4	-1.7 3.9		-1.2 5.0		0.9 2.7	67.6	-6.4		6.1-4.0	6.8-2.9	37.6	47.6								
DC 5						15.6	-17.2		9.2-8.0	8.0-2.2	51.2	32.0								
DC 6						28.0	29.2		7.3-3.4	5.9-1.2	1.2	8.6								
DC 7												6.0	40.8							
DC 8												52.0	51.6							
DC AVG.																				
AC 1	13.1	54.5	1.93	31.9	5.78	.438	19.9	7.39	2.65	.343										
AC 2	0.0	-0.8	+0.7	-0.7	-0.4	-1.0	-0.4	-0.3	-0.2	+0.2										
AC AVG.																				
S.P.	+13	-15				-3							-8							
AC NOISE	.02	0.1				.01							.01							
POT RES.	2K	1K				2K							1K							



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 5754 SP. 2 DATE

PAGE

2

[illegible]



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE 3
PROJECT 308-68
LINE 2 HALF SW SP. 2 DATE 1-23

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	60-50	50-40	→	40-30	→	→	30-20	→	→	→
RANGE										
VOLTAGE	4140V	260V	4140V	370V	260V	4140V	560V	370V	260V	450V
CURRENT	6.0A	9.0A	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CHL
RECEIVE	20-10	→	→	→	10-0	→	→	→		2-3
RANGE										
VOLTAGE	560V	370V	260V	450V	560V	370V	260V	450V		80V
CURRENT	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A		8.0A

FREQUENCIES 1.0 0.15

SENDER NO. 6674-5

OPERATOR 71

RECEIVER NO. 16681-12

OPERATOR 13

COMMENTS :



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF N75E SP. 2 DATE

SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	50-70NE	70-80NE					80-90NE						90-100NE							
RANGE	1	1		1			1		1		.01		.1		.1		.01		.01	
DC 1	3.0 -0.8	1.8 0.0		13.8 -8.6	-2.1 3.9	6.9 -5.0	-1.9 16.8	-5.9 9.9	7.2 1.6	40.8 -61.6										
DC 2	3.1 -1.1	1.4 0.1		12.0 -7.5	-2.3 4.1	8.1 -4.1	-2.4 14.0	-8.8 8.1	-0.4 18.0	67.2 -79.2										
DC 3	3.4 -1.1	1.0 0.9		11.0 -7.0	-2.6 4.1	8.2 -4.6	-1.1 14.3	-11.9 16.3	-19.6 32.0	48.0 -56.0										
DC 4	3.3 -1.0	0.7 1.1		10.6 -7.0	-2.8 4.2	7.3 -3.5	-6.2 23.8	-15.1 19.0	32.4 43.2	76.4 -80.8										
DC 5				10.2 -4.9	-2.9 4.6	6.4 -3.2	1.9 15.9	-2.3 5.7	-44.0 54.4	41.6 -43.2										
DC 6				7.8 -4.0		6.8 -3.0	4.8 10.1	-4.2 9.9	-52.4 60.4	63.6 -65.2										
DC 7																				
DC 8																				
DC AVG.																				
AC 1	36.3	19.7		19.2		10.1	1.94	.324	2.94	1.28	.617	N.164								
AC 2	0.0	-0.1		+0.2		-0.1	-0.1	+0.8	+0.6	+0.1	-0.1									
AC AVG.																				
S.P.	+12	+3				+3							+15							
AC NOISE	<.01	<.01				<.01							<.01							
POT RES.	600n	500n				1k							500n							



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF N 75 E SP. 2 DATE

SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2		CAL
RECEIVE	100-110 NE							110-120 NE										3 4
RANGE																		10
DC 1																		0.4 00
DC 2																		0.4 00
DC 3																		
DC 4																		
DC 5																		
DC 6																		
DC 7																		
DC 8																		
DC AVG.																		
AC 1																		202.5
AC 2																		0.0
AC AVG.																		
S.P.																		
AC NOISE																		
POT RES.																		



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 2 HALF NE SP. 2 DATE 11-3

PAGE
6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	60-70	70-80	—	80-90	—	—	90-100	—	—	—
RANGE										
VOLTAGE	560V	360V	550V	260V	360V	550V	440V	260V	360V	550V
CURRENT	6.0A	9.0A	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal
RECEIVE	100-110	—	—	—	110-120	—	—	—		3-4
RANGE										
VOLTAGE										60V
CURRENT										2.0A

FREQUENCIES 1.0 0.15

SENDER NO. 664131-5

OPERATOR 57

RECEIVER NO.

OPERATOR 13

COMMENTS :

JOB 308-68

LINE 2

SPREAD 2

LOOKING N 15 W

DATE Nov 23

A = 1000 feet

CENTER 60.0

LABEL NE/NE

FREQ. 1.0

COUPLING YES

26 nov 8

RC



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF 5754SP 2 DATE

PAGE

[illegible]



HEINRICHS GEOEXPLORATION CO.
I. P. RECEIVER NOTES

PROJECT 308
LINE 2 HALF SW SP. 2 DATE 11-23

PAGE
2

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5		CAL
RECEIVE	20-10NB							10-0NB										2 3
RANGE	1	1		.1	.01	.1	.1	.1		.1		.1		.01				10
DC 1	-0.2 2.4	3.9 4.0	3.6 10.6	3.2 6.4	12.6-8.0	6.5-4.4	-1.2 36.8											-0.5 0.0
DC 2	0.0 1.1	-3.7 5.6	-7.1 14.4	7.6-39.6	10.6-1.0	21.1-10.2	51.6-20.4											-0.5 0.0
DC 3	4.4-4.1	-1.3 3.9	-3.8 7.9	7.6-39.6	1.8 5.8	-4.7 10.9	32.0-35.6											
DC 4	6.1 0.9	-2.0 9.1	-0.9 7.2	8.4-11.6	5.0-15.9	14.3-15.0	48.8-44.0											
DC 5	-2.9 6.7	-8.1 10.7	1.6 7.8	47.2	11.7 14.8	6.1 4.0	49.2-38.8											
DC 6			0.6 3.1		-15.2 30	10.2-10.0	43.2-39.6											
DC 7			4.0 5.5		9.7 3.8	19.4-19.6	47.2-7.6											
DC 8						12.1-4.8												
DC AVG.																		
AC 1	165	10.4	4.21	573	6.31	4.88	2.16	.314										202.5
AC 2	-0.5	-0.5	-0.3	+0.1	-0.5	-0.9	+0.1											-0.2
AC AVG.																		
S.P.	-2					-13												
AC NOISE	.04					.03												
POT RES.	1K					1K												



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 2 HALF SW SP. 2 DATE 11-23

PAGE
3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	
RECEIVE	60-50	50-40	→	40-30	→	→	30-20	→	→	→	
RANGE											
VOLTAGE	440V	260V	440V	370V	260V	440V	560V	370V	260V	450V	
CURRENT	6.0A	9.0A	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A	
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5			CAL
RECEIVE	20-10	→	→	→	10-0	→	→	→			2-3
RANGE											
VOLTAGE	560V	370V	260V	450V	560V	370V	260V	450V			80V
CURRENT	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A			8.0A

FREQUENCIES 1.0 0.15

SENDER NO. 0644-5

OPERATOR 71

RECEIVER NO. 16681-12

OPERATOR 13

COMMENTS:



HEINRICH'S GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT

308-68

LINE

2

HALF NE SP.

7

DATE 10-23

PAGE
6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	60-70	70-80	—	80-90	—	—	90-100	—	—	—
RANGE										
VOLTAGE	560V	360V	550V	260V	360V	550V	440V	260V	360V	550V
CURRENT	1.0A	9.0A	6.0A	9.0A	9.0A	6.0A	6.0A	9.0A	9.0A	6.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		cal
RECEIVE	160-110	—	—	—	110-120	—	—	—		3-4
RANGE										
VOLTAGE										60V
CURRENT										2.0A

FREQUENCIES 7.0 0.15

SENDER NO. 66-141-5

OPERATOR 57

RECEIVER NO.

OPERATOR 13

COMMENTS :

JOB 306-68 LINE 3 SPREAD 1

LOOKING West DATE Nov 25 A= 1000 feet

CENTER 0.0 LABEL SIN FREQ. 1.0

COUPLING YES

↔ X AC X DC X
26 nov 68
pc



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

1

PROJECT 308
LINE 3 HALF S SP. 1 DATE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10.5	10-20.5				20-30.5							30-40.5							
RANGE	1	1	.1	1	.1	1	.1	1	1	1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.01
DC 1	-0.2	2.2	1.8	-0.1	2.0	1.0	-0.4	1.0	1.1	1.2	6.0	0.1	2.0	2.0	1.5	-1.4	1.9	40.4	-40.0	
DC 2	0.4	2.0	1.7	0.0	1.7	1.2	2.0	0.4	1.8	0.8	-1.0	1.5	0.1	2.0	1.5	1.0	1.2	-0.4	37.6	-28.0
DC 3	0.0	2.5	1.8	0.0	0.9	2.1		2.2	0.1	-0.7	6.4			0.8	2.3	1.0	0.9	-9.3	12.0	-12.0
DC 4	0.1	1.7						2.5	-0.5	2.9	1.3	0					13.8	-4.9	55.5	-39.2
DC 5																	15.0	-15.7	27.6	-19.6
DC 6																	16.8	-12.1	12.8	-40.0
DC 7																			92.0	-87.2
DC 8																				
DC AVG.																				
AC 1	14.2	24.8	4.72	35.2	6.81	1.84	39.9	8.39	2.28	7.27										
AC 2	-0.7	-0.5	-0.4	-0.6	-0.1	+0.9	0.0	-0.4	-0.9	0.0										
AC AVG.																				
S.P.	-1	+3				+11							+2							
AC NOISE	.01	.02	-			-0.3							.01							
POT RES.	600n	600n				600n							2k							



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 3 HALF S SP. 1 DATE

PAGE

2

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-50S								50-60S								2 3
RANGE X	1	.1	.1	.1	.1	.01	.1	.1	.1	.1	.1	.01	.01	.01	.01	.01	10
DC 1	3.6 -0.1	9.8 -11.1	-5.6 -0.4	16.0 20.0	2.6 2.2	-4.0 19.9	1.2 80.0										0.0 0.8
DC 2	3.1 1.6	13.1 -11.1	15.6 8.8	80.4 88.4	4.5 1.9	-10.5 3.8	-75.2 51.6										0.0 0.8
DC 3	1.1 1.0	10.1 -0.9	-40.4 36.8	-48.8 69.2	-4.8 5.4	17.1 -10.0	-21.2 51.2										
DC 4		7.9 -10.1	0.0 -12.0	-48.4 28.0	1.3 4.0	6.1 18.3	-15.2 35.4										
DC 5		19.3 -14.2	28.0 -17.6	40 28.0	-1.8	-8.9	-32.8 56.0										
DC 6		21.4 -16.9	40.0 -25.0	32.4 92.4			-42.4										
DC 7				-40.8 4.4													
DC 8				-4.0 47.2													
DC AVG.																	
AC 1	10H	2.98	102	.378	3.39	1.24	.513	.219									203.0
AC 2	+0.1	0.6	+0.1	+0.4	+0.1	+1.0	0.0										0.0
AC AVG.																	
S.P.	+10								+12								
AC NOISE	.02								.03								
POT RES.	1K								1K								



HEINRICH'S GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE

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PROJECT 308-68
LINE 3 HALF 5 SP. 1 DATE 1/25

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	3-10	10-20	---	20-30	---	---	30-40	---	---	---
RANGE										
VOLTAGE	680V	460V	680V	420V	460V	680V	460V	420V	460V	680V
CURRENT	5.0A	6.0A	5.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A	5.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		5-6
RECEIVE	40-50	---	---	---	---	---	---	---		2-3
RANGE										
VOLTAGE	460V	420V	460V	680V	460V	5120V	460V	680V		120V
CURRENT	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A	5.0A		2.0A

FREQUENCIES 1.0 0.15

SENDER NO. 66401-5

OPERATOR ST

RECEIVER NO. 165842

OPERATOR 13

COMMENTS:

High Range 1-2, 2-3, 3-4
Low Range 4-5



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 3 HALF N SP. 1 DATE

[illegible]



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 3 HALF N SP. 1 DATE

[illegible]



HEINRICH'S GEOEXPLORATION CO.

I. P. SENDER NOTES

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PROJECT 308-68
LINE 3 HALF N SP. 1 DATE 1/23

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	6-10	10-20	→	20-30	→	→	30-40	→	→	→
RANGE										
VOLTAGE	4400	4000	4400	4400	4000	4400	6600	4400	4000	4400
CURRENT	6.0A	6.0A	6.0A	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		C/L
RECEIVE	2-50	→	→	→	50-60	→	→	→		3-4
RANGE										
VOLTAGE	6600	4400	4000	4400	6600	4400	4000			1400
CURRENT	5.0A	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A			2.0A

FREQUENCIES 1.0 .15SENDER NO. 6644-5OPERATOR 71RECEIVER NO. 116621-12OPERATOR 13

COMMENTS:

Low Range 4-5

High " 12, 2-3, 3-4

JOB 306-68 LINE 3 SPREAD 1

LOOKING West DATE Nov 25 A = 1000 feet

CENTER 0.0 LABEL SIN FREQ. 1.0

COUPLING YES

\longleftrightarrow X AC X BC X

26 nov 68
pc



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 3 HALF S SP. 1 DATE

PAGE
/[illegible]



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 3 HALF 5 SP. 1 DATE

PAGE
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SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-50S								50-60S								2 3
RANGE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10
DC 1	3.6 -0.1	9.8 -11.1	-5.6 -0.4	16.0 20.0	2.6 2.2	-4.0 19.9	1.2 800										0.0 0.8
DC 2	3.1 1.6	13.1 -11.1	15.6 8.8	60.4 88.4	4.5 1.9	-10.5 3.8	-75.2 51.6										0.0 0.8
DC 3	1.1 1.0	10.1 -0.9	-40.4 36.8	-48.8 69.2	-4.8 5.4	17.1 -10.0	-21.2 51.2										
DC 4		7.9 -10.1	0.0 -12.0	-48.4 28.0	1.3 4.0	6.1 18.3	-75.2 35.4										
DC 5		19.3 -14.2	28.0 -17.6	40 28.0	-1.8	-8.9	-32.8 56.0										
DC 6		21.4 -16.9	40.0 -25.0	32.4 92.4			-42.4										
DC 7				-40.8 4.4													
DC 8				-4.0 47.2													
DC AVG.																	
AC 1	10H	29.8	102	.378	3.39	1.24	.513	2.19									203.0
AC 2	+0.1	0.6	+0.1	+0.4	+0.1	+1.0	0.0										0.0
AC AVG.																	
S.P.	+10				+12												
AC NOISE	.02				.03												
POT RES.	1K				1K												



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 3 HALF 5 SP. 1 DATE 1/28

PAGE
3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10	10-20	—	20-30	—	—	30-40	—	—	—
RANGE										
VOLTAGE	680V	460V	680V	420V	460V	680V	460V	420V	460V	680V
CURRENT	5.0A	6.0A	5.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A	5.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL
RECEIVE	40-50	—	—	—	—	—	—	—		2-3
RANGE										
VOLTAGE	460V	420V	460V	680V	460V	680V	460V	680V		120V
CURRENT	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A	5.0A		2.0A

FREQUENCIES 1.0 0.15

SENDER NO. 6644-5


OPERATOR 57

RECEIVER NO. 166812

OPERATOR 13

COMMENTS:

High Range 1-2, 2-3, 3-4,
Low Range 4-5



HEINRICH'S GEOEXPLORATION CO.

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I.P. RECEIVER NOTES

PROJECT 308

LINE 3 HALF N SP. 1 DATE

SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2		CAL
RECEIVE	40-50N							50-60N										3 4
RANGE	.1		.1		.01		.01		.01		.01		.01		.01			10
DC 1	3.1 0.8		9.3 5.0		-5.8 1.9		22.1 -6.0		10.9 -0.4		5.0 12.2							-0.8 0.0
DC 2	5.9 -2.1		-1.1 13.1		-15.0 23.1		21.9 -2.0		14.8 -6.8		-2.8 15.9							-9.8 0.0
DC 3	7.1 -1.0		4.8 6.3		-12.0 18.1		20.0 -3.4		20.2 -12.9		-8.7 10.0							
DC 4	5.5 -0.6		4.9 0.2		-10.8 -1.8		17.8 -3.9		23.0 -8.0		5.1 8.2							
DC 5			-18.1 2.7		11.8 -18.1		17.1 -2.9		18.9 -4.4		-33.2 6.0							
DC 6			-3.2 26.0		7.0 24.8		20.5 5.4		12.9 -10.1		-8.8 23.1							
DC 7			-9.8 13.1		-5.7 24.2		9.0 9.8		21.0 -6.4									
DC 8			-13.0 23.2		-18.2		7.0 11.5											
DC AVG.																		
AC 1	1.9 8		1.3 9		.9 0.8		.7 3 4		3 4 0		3 2 6		.2 4 2		.2 1 9			-2 0 3.0
AC 2	+0.2		-0.1		-0.1		+2 4		-0.1		-0.3							-0.6
AC AVG.																		
S.P.	+6								+12									
AC NOISE	.03								.02									
POT RES.	1K								700N									



HEINRICH'S GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT 308-68LINE 3 HALF N SP. 1 DATE 1/28PAGE
6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10	10-20	→	20-30	→	→	30-40	→	→	→
RANGE										
VOLTAGE	4400	4000	4400	4400	4000	4400	6600	4400	4000	4400
CURRENT	6.0A	6.0A	6.0A	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A	6.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAL
RECEIVE	40-50	→	→	→	50-60	→	→	→		3-4
RANGE										
VOLTAGE	6600	4400	4000	4400	6600	4400	4000			1400
CURRENT	5.0A	6.0A	6.0A	6.0A	5.0A	6.0A	6.0A			2.0A

FREQUENCIES 1.0 .15SENDER NO. 6644-5OPERATOR 71RECEIVER NO. 110121-12OPERATOR 13

COMMENTS

Low range 45
High " 12, 2-3, 3-4

JOB 308-68 LINE 1 SPREAD Nov 68

LOOKING N 15 W DATE Nov 68 A= 1000

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING YES

PFE PROGRAM





HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

PROJECT 308
LINE 1 HALF S75W SP. 1 DATE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10 SW		10-20 SW				20-30 SW						30-40 SW							
RANGE	10		10		1		10		1		1		1		1		1		.1	
DC 1	3.9	1.4	2.5	4.1	2.0	2.1	0.9	2.5	2.3	4.0	2.0	5.1	3.0	0.9	3.0	0.0	5.4	1.4	5.9	-4.1
DC 2	3.5	1.4	1.8	4.1	2.8	-6.0	1.1	1.9	1.5	3.5	3.1	4.1	2.9	0.9	2.1	1.0	1.8	2.6	5.0	-3.6
DC 3	3.1	2.6	1.6	3.8	1.9	-0.7	0.8	3.0	1.0	6.7	-0.3	8.0	3.3	0.5	3.7	-2.9	1.1	4.0	4.2	-2.7
DC 4	1.8	4.0			8.4	-1.5			2.8	0.9	-2.8	5.7			7.1	-3.8	6.1	2.2		
DC 5					4.8	-0.6			3.1	5.6	-0.3	7.0			-1.7	6.0	2.5			
DC 6					7.3	-1.6														
DC 7																				
DC 8																				
DC AVG.																				
AC 1	149.0	132.	62.2	238.	54.7	37.3	73.4	36.2	11.7	8.77										
AC 2	+0	+0.6	-0.2	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	-0.2	-0.0				
AC AVG.																				
S.P.	-14	+9			+118								+52							
AC NOISE	.01	.01			.02								.02							
POT RES.	2K	1K			1K								2K							



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF SW SP. 1 DATE

PAGE

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-80SW							50-60SW									2 3
RANGE	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	10
DC 1	3.4 0.0	4.3 -0.9	7.4 -2.0	1.4 3.1	7.3 -7.2	8.9 -0.7	50 -2.8	9.8 -1.6	-0.20								
DC 2	5.8 -5.0	5.5 -5.8	8.1 -2.5	5.3 6.4	10.4 -11.0	-6.9 15.1	8.9 5.0	2.0 7.4	-0.20								
DC 3	3.3 -1.7	-3.9 6.2	0.1 9.0	-5.4 5.0	7.4 -7.5	-2.1 0.9	3.2 9.4	-3.3 16.6									
DC 4	6.9 -3.5	-2.3 6.8	1.3 3.6		14.0 -8.0	7.8 -6.9	-6.0 14.9	-7.3 17.2									
DC 5	7.2 -0.8	-1.8 5.4	5.2 2.1		13.0 -13.4	15.0 -12.4	2.7 4.9	-1.9 9.8									
DC 6	3.6 0.4	-1.9 5.6	2.3 6.2		-2.9 5.0	4.4 10.9	3.4 5.3	-3.9 12.1									
DC 7					2.7 -1.7	-8.1 12.7	8.7 5.1	-3.1 6.5									
DC 8																	
DC AVG.																	
AC 1	9.12	6.20	2.45	20.9	9.22	8.80	4.73	4.87	200								
AC 2	+0.2	+0.1	0.0	+0.1	+0	+0.1	0.0	+0.1	-0.1								
AC AVG.																	
S.P.	-3								+14								
AC NOISE	.01								.02								
POT RES.	1K								1K								



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308
LINE 1 HALF S75W SP. 1 DATE

PAGE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10SW	10-20SW					20-30SW						30-40SW							
RANGE																				
VOLTAGE	270	220		270		290		220		270		270		280		270		270		270
CURRENT	2.0	2.0		2.0		2.0		2.0		2.0		1.0		2.0		2.0		2.0		2.0
SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5				CAL
RECEIVE	40-50SW							50-60SW												
RANGE																				
VOLTAGE	220	280		220		270		220		280		270		270						290
CURRENT	1.0	2.0		2.0		2.0		1.0		2.0		2.0		2.0		2.0				2.0

FREQUENCIES 3.0 1

SENDER NO. 13671 S

OPERATOR 71457

RECEIVER NO. 16681 R

OPERATOR 13

COMMENTS :



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF N75E SP. 1 DATE

PAGE

SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2	CAL
RECEIVE	40-50NE								50-60NE								3 4
RANGE	.1		.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01			1
DC 1	4.0 2.9	-0.1 1.2	5.9 5.0	6.0 9.1	13.6 -1.6	10.0 13.0	5.9 21.6										-0.9 2.2
DC 2	4.5 2.7	-0.8 10.4	7.7 5.3	4.0 10.3	18.1 -5.7	10.0 18.5	0.1 21.4										-1.0 2.2
DC 3	3.9 3.2	0.1 12.7	5.2 5.8	3.0 10.0	3.0 11.7	6.7 15.1	-0.8 14.2										-1.0
DC 4		-2.8 13.1	6.2 6.8	3.1 10.1	1.5 14.0	2.3 21.5	16.3 2.5										
DC 5		-0.3 11.1		3.1 12.9	0 14.1	-2.1 14.3	23.0 -1.7										
DC 6				5.2													
DC 7																	
DC 8																	
DC AVG.																	
AC 1	2.30	.754	.365	.244	-8.28	.329	.183	.130									.995
AC 2	0	0	-0.1	+0.1	0	+0.3	-0.2	+0.2									+0.2
AC AVG.																	
S.P.	-2								-4								
AC NOISE	.01								.01								
POT RES.	3K								4K								



HEINRICH'S GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE _____
PROJECT 308
LINE 1 HALF 15E SP. 1 DATE _____

SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	0-10NE	10-20NE			20-30NE								30-40NE							
RANGE																				
VOLTAGE	400	800	380	100	200	400	180	100	200	400										
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0										
SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2			CAL	
RECEIVE	40-50NE							50-60NE											3	4
RANGE																				
VOLTAGE	180	100	200	400	180	100	200	400											100W	
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0											1.0	

FREQUENCIES 30 .1

SENDER NO. 136715

OPERATOR 71 + 57

RECEIVER NO. 16681R

OPERATOR 13

COMMENTS :

JOB 308-68 LINE 1 SPREAD AK CR

LOOKING N 15 W DATE Nov 68 A= 1000

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING YES

PFE PROGRAM
Z



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF S75WSP. 1 DATE

PAGE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10 SW		10-20 SW				20-30 SW						30-40 SW							
RANGE	10		10		1		10		1		1		1		1		1		-1	
DC 1	3.9	1.4	2.5	4.1	2.0	2.1	0.9	2.5	2.3	4.0	2.0	6.1	3.0	0.9	3.0	0.0	6.4	1.4	5.9	-4.1
DC 2	3.5	1.4	1.8	4.1	2.8	-6.0	1.1	1.9	1.5	3.5	3.1	4.1	2.9	0.9	2.1	1.0	1.8	2.6	5.0	3.6
DC 3	3.1	2.6	1.6	3.8	1.9	-0.7	0.8	3.0	1.0	6.7	-0.3	8.0	2.3	0.5	3.7	2.9	1.1	4.0	4.2	2.7
DC 4	1.8	4.0			8.4	-1.5			2.8	0.9	-2.8	5.7			7.1	-3.6	6.1	2.2		
DC 5					4.8	-0.6			3.1	5.6	-0.3	7.0			-1.7	6.0	2.5			
DC 6					7.3	-1.6														
DC 7																				
DC 8																				
DC AVG.																				
AC 1	149.0	132.	62.2	238.	54.7	37.3	73.4	36.2	11.7	8.77										
AC 2	+0	+0.6	-0.2	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	-0.2	-0.0				
AC AVG.																				
S.P.	-14	+9			+118								+52							
AC NOISE	.01	.01			.02								.02							
POT RES.	2K	1K			1K								2K							

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-80SW								50-60SW								2 3
RANGE	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	10
DC 1	3.4	0.0	4.3	-0.9	7.4	-2.0	1.4	3.1	7.3	-2.2	8.9	-0.7	5.0	-2.8	9.8	-1.5	-0.20
DC 2	5.8	-5.0	15.5	-5.8	8.1	-2.5	5.3	6.4	10.4	-11.0	-6.9	15.1	8.9	5.0	2.0	7.4	-0.20
DC 3	3.3	-1.7	-3.9	6.2	0.1	9.0	-5.4	5.0	7.4	-7.5	-2.1	0.9	3.2	9.4	-3.3	16.6	
DC 4	6.9	-3.5	-2.3	6.8	1.3	3.6			14.0	-8.0	7.8	-6.9	-6.0	14.9	-2.3	17.2	
DC 5	7.0	-0.8	-1.8	5.4	5.2	2.1			13.0	-13.1	18.0	(-12.1)	2.7	4.9	-1.9	9.8	
DC 6	3.6	0.4	-1.9	5.6	2.3	6.2			-2.9	5.0	4.4	10.9	3.4	5.3	-3.9	17.1	
DC 7									2.7	-1.7	-8.1	12.7	8.7	5.1	-3.1	6.5	
DC 8																	
DC AVG.																	
AC 1	9.12	6.20	2.45	2.09	9.22	8.80	4.73	4.87	200								
AC 2	+0.2	+0.1	0.0	+0.1	+0	+0.1	0.0	+0.1	-0.1								
AC AVG.																	
S.P.	-3								+14								
AC NOISE	.01								.02								
POT RES.	1K								1K								

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-10SW		10-20SW				20-30SW						30-40SW							
RANGE																				
VOLTAGE	270		220		270		290		220		270		220		280		270		270	
CURRENT	2.0		2.0		2.0		2.0		2.0		2.0		1.0		2.0		2.0		2.0	
SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5			CAL	
RECEIVE	40-50SW								50-60SW											
RANGE																				
VOLTAGE	220		280		220		270		220		290		220		270				290	
CURRENT	1.0		2.0		2.0		2.0		1.0		2.0		2.0		2.0				2.0	
FREQUENCIES <u>3.0</u> <u>1</u>										COMMENTS:										
SENDER NO. <u>136715</u>																				
OPERATOR <u>71457</u>																				
RECEIVER NO. <u>16681R</u>																				
OPERATOR <u>13</u>																				

SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	0-10NE		10-20NE				20-30NE						30-40N							
RANGE	1		1		1		1		1		1		1		.1		.1		.01	
DC 1	2.4 3.8		3.2 2.3		4.1 1.5		2.0 3.9		2.0 2.0		2.3 2.7		2.1 1.0		2.1 1.5		-1.0 8.0		2.5 5.9	
DC 2	2.4 2.4		3.5 2.9		0.8 6.0		1.5 4.0		2.0		3.9 1.9		2.4 1.0		2.2 1.7		-1.7 4.1		0.4 5.4	
DC 3	3.0 2.1		2.0 2.4		0.8 1.9		1.4 3.9		2.9 3.2		2.6 0.9		2.1 1.5		1.2 7.7		4.1 6.9			
DC 4					3.2												-3.8 9.3		1.6 2.6	
DC 5																			4.7 5.0	
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	65.7		75.2		31.5		65.3		19.4		10.8		12.5		3.04		1.27		.783	
AC 2	-0.1		+.1		0		-1.0		+0.1		0		0		-0.1		+0.9		+0.2	
AC AVG.																				
S.P.	-4		-2				-1						+2							
AC NOISE	.02		.02				.02						.04							
POT RES.	5K		3K				2K						4K							

[illegible]



HEINRICH'S GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT 308LINE 1 HALF N15E SP. 1 DATE

PAGE

SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	0-10 NE	10-20 NE				20-30 NE							30-40 NE							
RANGE																				
VOLTAGE	400	800	380	100	200	400	180	100	200	400										
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0										
SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2			CAL	
RECEIVE	40-50 NE							50-60 NE											3	4
RANGE																				
VOLTAGE	180	100	200	400	180	100	200	400											100V.	
CURRENT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0											1.0	

FREQUENCIES 30 .1SENDER NO. 136715OPERATOR 71 + 57RECEIVER NO. 16681ROPERATOR 13

COMMENTS:

JOB 308-68 LINE 1 SPREAD 2

LOOKING N15W DATE Nov 19 A= 500 ft

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING yes



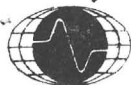
26 Nov 68
RC



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE 1
PROJECT 308
LINE 1 HALF S75W SP. 2 DATE

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-5SW	5-10SW					10-15SW						15-20SW							
RANGE	10	10		1		10		1		1		10	10		1		1			
DC 1	30.40	27 1.8		35 3.6		18 0.9		1.0 3.8		7.2 0.8		1.0 1.9	0.0 2.8		2.6 2.0		2.6 4.9			
DC 2	30.40	26 1.7		36 3.5		16 1.9		1.0 3.8		6.5 1.8		1.0 1.9	0.0 2.8		2.7 1.9		3.0 4.1			
DC 3						16 1.9				6.0 1.9							3.7 3.7			
DC 4										5.0 1.9										
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	199.	162.5		54.4		339.		47.3		27.3		233.	118.		28.1		20.6			
AC 2	0.0	0.0		0.0		0.0		0.0		+0.5		+0.1	+0.1		+0.4		+0.8			
AC AVG.																				
S.P.	+5	+1				+3						+11								
AC NOISE	.02	.02				.02						.02								
POT RES.	1K	2K				1K						1K								



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE 2
PROJECT 308
LINE 1 HALF 575W SP. 2 DATE

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-50SW								50-60SW								2 3
RANGE	1	1	1	1	1												10
DC 1	39 0.9	40 -0.6	2.2 3.7	9.0 -2.2													0.1 1.1
DC 2	29 0.7	4.7 -1.1	1.0 4.8	10.5 -1.4													0.1 1.1
DC 3	37 0.6	0.1 3.1	32 4.5	35 -0.8	MISSED TIMED SEND												
DC 4	37 0.6	3.0	0.8 4.0	86 -1.3													
DC 5			1.0 3.9	9.7 -2.0													
DC 6				9.0													
DC 7																	
DC 8																	
DC AVG.																	
AC 1	79.9	64.9	21.6	18.1													101.0
AC 2	+0.6	+0.1	+0.4	+0.8													+0.3
AC AVG.																	
S.P.	-3								-1								
AC NOISE	.2								.02								
POT RES.	1K								400								



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PAGE 3
PROJECT 308-68
LINE 1 HALF 5254 SP. 2 DATE 11-19

SEND	4-5	3-11	4-5	2-3	3-11	4-5	1-2	2-3	3-11	4-5
RECEIVE	1-2	1-10	---	1-10	---	---	15-10	---	---	---
RANGE										
VOLTAGE	440V	360V	440V	580V	360V	440V	360V	580V	360V	440V
CURRENT	2.0A	2.0A	2.0A	2.0A	2.0A	2.0A	1.0A	2.0A	2.0A	2.0A
SEND	1-2	2-3	3-11	4-5	1-2	2-3	3-11	4-5		C91
RECEIVE	16-25				25-30					2-3
RANGE										
VOLTAGE	360V	560V	370V	440V	360V	560V	360V	440V		290V
CURRENT	1.0A	2.0A	2.0A	2.0A	1.0A	2.0A	2.0A	2.0A		1.0A

FREQUENCIES 300 010

SENDER NO. 1303100

OPERATOR 57

RECEIVER NO. 1303100

OPERATOR 13

COMMENTS:

HIGH MODE - 3-11,
LOW MODE - 4-5, 2-3, 1-2



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF N75E SP. 2 DATE

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SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	0-5 NE	5-10 NE					10-15 NE						15-20 NE							
RANGE	10	10			1		10		1		1		10		1		1		1	
DC 1	2.9 2.9	4.1 3.6			1.2 6.2		4.0 3.4		3.1 3.3		0.9 5.2		3.6 3.1		3.7 3.1		1.9 4.1		4.2 1.3	
DC 2	2.9 2.9	4.3 3.5			1.1 6.5		4.0 3.4		3.7 3.1		0.9 5.2		3.5 3.1		3.7 3.1		1.1 4.1		3.9 1.5	
DC 3		4.2 3.6			1.1 6.5				3.6 3.2		3.9 2.0		3.5				1.2		3.4 1.3	
DC 4											2.9 2.3								4.2 0.9	
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	121.	196.			41.1		159.		55.4		19.6		375.		73.1		430		17.8	
AC 2	+0.4	+0.3			+0.4		+0.1		+0.2		0.0		0.0		0.0		0.0		+0.1	
AC AVG.																				
S.P.	+8	-6					-6						+9							
AC NOISE	.02	.02					.02						.02							
POT RES.	1K	1K					2K						2K							



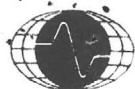
HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF N75E SP. 2 DATE

PAGE
5

SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2		CAL
RECEIVE	20-25TUE								25-30NE									3 14
RANGE	1		1		1		.1		.1									10
DC 1	3.3	3.9	4.9	2.5	1.9	4.1	1.0	6.0										0.0 0.8
DC 2	33	3.6	5.1	2.2	0.9	5.0	-26	111										0.1 0.8
DC 3	32	3.5	5.0	2.9	0.5	5.0	40	00										0.1
DC 4					0.8	5.3	5.1	-1.0										
DC 5							5.2	-1										
DC 6																		1.45
DC 7																		
DC 8																		
DC AVG.																		
AC 1	86.6	26.8	19.9	9.4	3	9.3	3.45											203
AC 2	0.0	+0.7	+0.1	0.0														-0.1
AC AVG.																		
S.P.	+15																	
AC NOISE	.02																	
POT RES.	3K																	

SITTING ON FAULT
COULDN'T BUCK SP
AC NOISE HIGH



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 1-2 HALF N/75E SP. 2 DATE 11-21

PAGE
6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	8-5	5-16	16-15	16-15	15-20	15-20	15-20	15-20	15-20	15-20
RANGE										
VOLTAGE	540V	580V	540V	390V	580V	540V	460V	390V	580V	540V
CURRENT	1.5A	2.0A	1.5A	2.0A	2.0A	1.5A	2.0A	2.0A	2.0A	1.5A
SEND	4-5	3-4	2-3	7-2	11-5	3-4				500
RECEIVE	20-15	20-15	20-15	25-30	25-30	25-30				500
RANGE										3-4
VOLTAGE	460V	390V	580V	540V	460V	390V				390V
CURRENT	2.0A	2.0A	2.0A	1.5A	2.0A	2.0A				2.0A

FREQUENCIES 32 0.10

SENDER NO. 13671-5

OPERATOR 73

RECEIVER NO. 16651-K

OPERATOR 13

COMMENTS :

JOB 308-68 LINE 1 SPREAD 2

LOOKING N15W DATE Nov 19 A= 500 feet

CENTER 0.0 LABEL SW/NE FREQ. 3.0

COUPLING yes

26 Nov 68
RC
↔



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF S75W SP. 2 DATE 26 Nov 68

PAGE
1

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	0-5SW	5-10SW					10-15SW						15-20SW							
RANGE	10	10		1			10		1		1		10		10		1			1
DC 1	30.40	27.18		35.26			18.09		1.0 3.8		7.2 0.8		1.0 1.9		0.0 2.8		2.6 2.0		2.6 4.9	
DC 2	30.40	26.17		36.35			18.19		1.0 3.8		6.5 1.8		1.0 1.9		0.0 2.8		2.7 1.9		3.0 4.1	
DC 3							16.19				6.0 1.9								3.7 3.7	
DC 4											6.0 1.9									
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	199.	162.5		54.4			339.		473		27.3		233.		118.		28.1		20.6	
AC 2	0.0	0.0		0.0			0.0		0.0		+0.5		+0.1		+0.1		+0.4		+0.8	
AC AVG.																				
S.P.	+5	+1					+3						+11							
AC NOISE	.02	.02					.02						.02							
POT RES.	1K	2K					1K						1K							



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF 5754 SP. 2 DATE 11/19

PAGE
2

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5	CAL
RECEIVE	40-50SW								50-60SW								2 3
RANGE	1	1	1	1	1												10
DC 1	30 0.9	40 -0.6	2.2 3.7	9.0 -2.2													0.1 11
DC 2	29 0.9	4.7 -1.1	1.0 4.8	10.5 -1.4													0.1 11
DC 3	30 0.6	0.1 3.1	0.2 4.5	8.5 -0.8					MISSED	TIMED	SEND						
DC 4	30 0.6	0.0	0.8 4.0	8.5 -1.0													
DC 5			1.0 3.9	8.7 -2.0													
DC 6				9.0													
DC 7																	
DC 8																	
DC AVG.																	
AC 1	79.9	64.9	21.6	18.1													101.0
AC 2	+0.6	+0.1	+0.4	+0.8													+0.3
AC AVG.																	
S.P.	-3								-1								
AC NOISE	.2								.02								
POT RES.	1K								400								



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-08
LINE 1 HALF 5754 SP. 2 DATE 11/19

PAGE
3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	10-5	5-10	—	10-15	—	—	15-20	—	—	—
RANGE										
VOLTAGE	440V	360V	440V	580V	360V	440V	360V	580V	360V	440V
CURRENT	2.0A	2.0A	2.0A	2.0A	2.0A	2.0A	1.0A	2.0A	2.0A	2.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		C91
RECEIVE	20-25	—	—	—	25-30	—	—	—		2-3
RANGE										
VOLTAGE	360V	560V	370V	440V	360V	560V	360V	440V		290V
CURRENT	1.0A	2.0A	2.0A	2.0A	1.0A	2.0A	2.0A	2.0A		1.0A

FREQUENCIES 30 010

SENDER NO. 13671-5

OPERATOR 57

RECEIVER NO. 10681-R

OPERATOR 13

COMMENTS:

HIGH MODE - 3-4,
LOW MODE - 4-5, 2-3, 1-2

SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	0-5 NE	5-10 NE				10-15 NE							15-20 NE							
RANGE	10	10			1	10			1		1		10		1		1		1	
DC 1	20 2.9	4.1 3.6		1.2 6.2		40 3.4		3.1 3.3		0.9 5.2		3.8 3.1		3.7 3.1		1.1 4.1		4.2 1.3		
DC 2	20 2.9	4.3 3.5		1.1 6.5		40 3.4		3.7 3.1		0.9 5.2		3.5 3.1		3.7 3.1		1.1 4.1		3.8 1.5		
DC 3		4.2 3.6		1.1 6.5				3.8 3.2		3.9 2.0		3.5				1.2		3.4 1.3		
DC 4										2.9 2.3								4.2 0.9		
DC 5																				
DC 6																				
DC 7																				
DC 8																				
DC AVG.																				
AC 1	121.	196.		41.1		159.		55.4		19.6		375.		73.1		430		17.8		
AC 2	+0.4	+0.3		+0.4		+0.1		+0.2		0.0		0.0		0.0		0.0		+0.1		
AC AVG.																				
S.P.	+8	-6				-6						+9								
AC NOISE	102	02				02						102								
POT RES.	1K	1K				2K						2K								

SEND	4	5	3	4	2	3	1	2	4	5	3	4	2	3	1	2	CAL
RECEIVE	20-25IVE								25-30NE								3 14
RANGE	1		1		1		.1		.1								10
DC 1	3.3	3.9	4.9	2.5	1.9	4.1	1.0	6.0									0.0 0.8
DC 2	3.3	3.5	5.1	2.2	0.9	5.0	-2.6	11.1									0.1 0.8
DC 3	3.2	3.8	5.0	2.9	0.5	5.0	4.0	0.1	SITTING ON FAULT								0.1
DC 4					0.8	5.3	5.1	-2.0	COULDN'T BUCK SP								
DC 5					5.2 -1				AC NOISE HIGH								
DC 6																	.45
DC 7																	.5
DC 8																	
DC AVG.																	
AC 1	86.6	26.8	19.9	9.4	3	9.3	3.4	5									203
AC 2	0.0	+0.7	+0.1	0.0													-0.1
AC AVG.																	
S.P.	+15																
AC NOISE	.02																
POT RES.	3K																



HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT

308-68

LINE 12AHALF 1/5 SP. 2 DATE 11-21

PAGE

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SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	8-5	5-10	10-7	10-15	→	→	15-20	→	→	→
RANGE										
VOLTAGE	540V	580V	540V	390V	580V	540V	460V	390V	580V	540V
CURRENT	1.5A	2.0A	1.5A	2.0A	2.0A	1.5A	2.0A	2.0A	2.0A	1.5A
SEND	4-5	3-4	2-3	7-2	4-5	3-4				2-1
RECEIVE	20-25	→	→	→	25-30	→				500
RANGE										3-4
VOLTAGE	460V	390V	580V	540V	460V	390V				390V
CURRENT	2.0A	2.0A	2.0A	1.5A	2.0A	2.0A				2.0A

FREQUENCIES 30 0.10SENDER NO. 13671-5OPERATOR 73RECEIVER NO. 16681-ROPERATOR 13

COMMENTS:

JOB 308-CR LINE 1 SPREAD 3

LOOKING N 15 W DATE Nov 21 A= 1000 ft

CENTER 60.0 LABEL NE/NE FREQ. 3.0

COUPLING YES

27 nov 68
Rc



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF S75W SP. 3 DATE 1

SEND	4	5	3	4	4	5	2	3	3	4	4	5	1	2	2	3	3	4	4	5
RECEIVE	60-50NE	50-40NE					40-30NE						30-20NE							
RANGE	.1	.1		-0.1			.1		.1		.01		1		.1		.1		.01	
DC 1	3.9 4.0	2.0 1.8	1.5 14.0	7.1 -1.9	2.8 0.2	-7.6 40.4	-0.1 6.1	5.5 5.0	0.4 19.2											
DC 2	-1.9 10.0	2.7 1.0	0.2 16.9	5.5 0	9.7 -0.9	-16.4 39.6	-0.5 6.5	1.4 4.1	-0.8 36.8											
DC 3	4.1 -2.6	3.1 0.8	-4.1 19.1	3.8 1.6	9.0 -2.1	-8.4 30.0	-0.4 5.8	3.0 5.0	-33.2 44.0											
DC 4	11.8 -10.1	3.8 0.1	0.6 15.1	2.4 2.9	11.0 -5.0	1.4 15.2	-0.8 6.2	1.8 8.9	-18.4 39.6											
DC 5	2.7 -1.4		3.1 12.7	1.0 4.1	14.5 -6.4	16.4 12.0			-4.1 15.6	16.8 -0.8										
DC 6	10.3 -9.1		4.9 6.8	-0.6	15.8 -8.0	8.4 18.8			-5.3 16.2	20.8 8.4										
DC 7			3.0 12.1						-10.8											
DC 8																				
DC AVG.																				
AC 1	3.2 2	7.1 3	.50 4	3.5 8	1.1 4	.18 7	10.3	1.7 3	1.00	.210										
AC 2	+0.1	+0.1	+1.0	-0.1	0.0	+0.5	2.0	+0.1	-0.1	+0.5										
AC AVG.																				
S.P.	-6	-8		-9									+3							
AC NOISE	.01	.01		.01									.04							
POT RES.	9K	2K		2K									1K							



HEINRICH'S GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF S75W SP. 3 DATE

[illegible]



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

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PROJECT 308-68
LINE 1 HALF S75W SP. 3 DATE 11-21

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	0-10	10-10	— 7	20-50	—	— 7	30-40	—	—	—
RANGE										
VOLTAGE	150V	340V	150V	240V	240V	150V	260V	240V	240V	150V
CURRENT	1.5A	3.0A	1.5A	1.5A	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL
RECEIVE	10-50	—	—	— 7	50-60	—	—	—		1000
RANGE										2-3
VOLTAGE	260V	240V	240V	150V	260V	240V	240V	150V		295V
CURRENT	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A		1.5A

FREQUENCIES 3.0 2.10

SENDER NO. 13671-S

OPERATOR 73

RECEIVER NO.

OPERATOR

COMMENTS :



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF N75E SP. 3 DATE

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SEND	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
RECEIVE	60-70 NE	70-80 NE			80-90 NE								90-100 NE							
RANGE	.1	.1	.01		1		.01		.01		.01		.1	.01	.01					
DC 1	4.0 0.8	4.1 -1.1	15.6 -8.8	4.0 2.0	12.1 0.9	-0.8 36.8	7.4 4.0	19.8 3.9	-2.8 45.6											
DC 2	2.7 2.1	4.9 -1.3	20.7 -10.3	4.1 2.0	13.7 -0.5	-8.0 31.6	5.1 0.9	15.3 9.0	3.6 79.6											
DC 3	1.7 3.3	5.0 -1.7	24.0 -13.7	4.1	15.0 -1.0	-9.2 48.0	8.0 1.0	11.4 15.0	3.2 40.0											
DC 4	-0.1 6.8	5.0 -1.7	22.9 -13.2		17.0 -4.4	-16.8 52.0	10.2 -1.0	4.9 20.8	6.0 29.6											
DC 5			12.7 -1.0		19.9 -6.4	-24.8 60.0	12.1 -3.0	0.7 23.8	14.0 28.0											
DC 6			22.1 -9.1		22.7 -8.1	-26.4 59.6	14.2 -4.8	-3.0 15.0	23.6 20.0											
DC 7																6.9 12.5				
DC 8																2.7				
DC AVG.																				
AC 1	600	5.39	.844	10.1	.864	.266	250	.636	.158											
AC 2	-0.1	-0.1	+0.0	0.0	0.0	+1.0	+0.6	-0.1	-0.1											
AC AVG.																				
S.P.	-10	+2		-1																
AC NOISE	.01	.01		.01									.01							
POT RES.	1K	1K		1K									2K							



HEINRICH'S GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-6A
LINE 1 HALF N 75 W SP. 3 DATE 11-21

PAGE
6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10	10-20	→	20-30	→	→	30-40	→	→	→
RANGE										
VOLTAGE	320V	375V	320V	340V	375V	390V	280V	340V	375V	390V
CURRENT	2.5A	2.5A	2.5A	3.0	2.5A	3.0A	3.0A	3.0A	2.5A	3.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAI
RECEIVE	40-50	→	→	→	50-60	→	→	→		1000
RANGE										3-4
VOLTAGE										360V
CURRENT										2.5A

FREQUENCIES 3.0 0.10

SENDER NO. 13671-5

OPERATOR 73

RECEIVER NO.

OPERATOR

COMMENTS :

[illegible]



HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT 308
LINE 1 HALF 575W SP. 3 DATE

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2

SEND	1	2	2	3	3	4	4	5	1	2	2	3	3	4	4	5		CAL
RECEIVE	20-10NE								10-0NE									2 3
RANGE	.1	.1	.01	.01	.1	.01	.01											10
DC 1	0.1 9.7	3.1	-7.2	35.6	-2.2	5.0												0.3 0.9
DC 2	5.8 -1.9	6.1 3.1	8.8 16.4		7.1 -7.0													0.3 0.9
DC 3	17.9/1.9	12.6 8.0	31.5 -16.4		14.1 -5.0													
DC 4	6.9 2.5	2.1 11.1	45.2 13.6		11.8 7.9													
DC 5	4.0 5.0	3.7 2.2	38.0/52.6		5.1 -1.9													
DC 6	1.9 5.4	7.3 -4.0	31.6 52.4		11.0 -4.9													
DC 7	3.6 5.8	13.1 17.1	-16.0 48.0		5.7 5.0													
DC 8	2.9 5.9	11.1	-11.6 35.6		1.0 6.9													
DC AVG.																		
AC 1	4.55	1.26	.800	-1.99	1.54	.509	.391											154.0
AC 2	+0.1	-0.2	+0.5		+0.0													-0.1
AC AVG.																		
S.P.	+1.2				0													1
AC NOISE	.05				.05													
POT RES.	1K				1K													



HEINRICHS GEOEXPLORATION CO.
I. P. SENDER NOTES

PROJECT 308-68
LINE 1 HALF 575W SP. 3 DATE 11-21

PAGE
3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	
RECEIVE	0-10	10-20	→	20-30	→	→	30-40	→	→	→	
RANGE											
VOLTAGE	150V	340V	150V	240V	240V	150V	260V	240V	240V	150V	
CURRENT	1.5A	3.0A	1.5A	1.5A	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A	
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5			CAL
RECEIVE	40-50	→	→	→	50-60	→	→	→			1000
RANGE											2-3
VOLTAGE	260V	240V	240V	150V	260V	240V	240V	150V			295V
CURRENT	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A	2.0A	1.5A			1.5A

FREQUENCIES 3.0 0.10

SENDER NO. 13671-8

OPERATOR 73

RECEIVER NO.

OPERATOR

COMMENTS:

	1	2	2	3	1	2	3	4	2	3	1	2	4	5	3	4	2	3	1	2
SEND																				
RECEIVE	60-70 NE	70-80 NE			80-90 NE								90-100 NE							
RANGE	.1	.1	.01		.1	.01	.01	.1	.01	.01			.1	.01	.01					
DC 1	4.0 0.8	4.1 -1.1	15.6 -8.8	4.0 2.0	12.1 0.9	-0.8 36.8	7.4 4.0	19.8 3.9	-2.8 45.6											
DC 2	2.7 2.1	4.9 -1.3	20.7 -10.3	4.1 2.0	13.7 -0.5	-8.0 39.6	5.1 0.9	15.3 9.0	3.6 79.6											
DC 3	1.7 3.3	5.0 -1.7	24.0 -13.7	4.1	15.0 -1.0	-9.2 48.0	8.0 1.0	11.4 15.0	3.2 40.0											
DC 4	-0.1 6.8	5.0 -1.7	22.7 -13.2		17.0 -4.4	16.8 52.0	10.2 -1.0	4.9 20.8	6.0 29.6											
DC 5			12.7 -1.0		19.9 -6.4	24.8 60.0	12.1 -3.0	0.7 23.8	14.0 28.0											
DC 6			22.1 -9.1		22.7 -8.1	26.4 59.6	14.2 -4.8	-3.0 15.0	23.6 20.0											
DC 7																6.9 12.5				
DC 8																2.7				
DC AVG.																				
AC 1	6.00	5.39	.844	10.1	.864	.266	2.50	.636	.158											
AC 2	-0.1	-0.1	+0.0	0.0	0.0	+1.0	+0.6	-0.1	-0.1											
AC AVG.													FENCE	95-105 NE						
S.P.	+10	+2		-1																
AC NOISE	.01	.01		.01									.01							
POT RES.	1K	1K		1K									2K							

[illegible]



HEINRICH'S GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT 308-6ALINE 1 HALF 1.25 WSP. 3 DATE 11-21PAGE
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SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	0-10	10-20	→	20-30	→	→	30-40	→	→	→
RANGE										
VOLTAGE	320V	375V	320V	340V	375V	390V	280V	340V	375V	390V
CURRENT	2.5A	2.5A	2.5A	3.0	2.5A	3.0A	3.0A	3.0A	2.5A	3.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CAI
RECEIVE	40-50	→	→	→	50-60	→	→	→		1000
RANGE										3-4
VOLTAGE										360V
CURRENT										2.5A

FREQUENCIES 3.0 0.10SENDER NO. 13671-5OPERATOR 73

RECEIVER NO.

OPERATOR

COMMENTS: