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

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

ACCESS STATEMENT

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

CONSTRAINTS STATEMENT

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

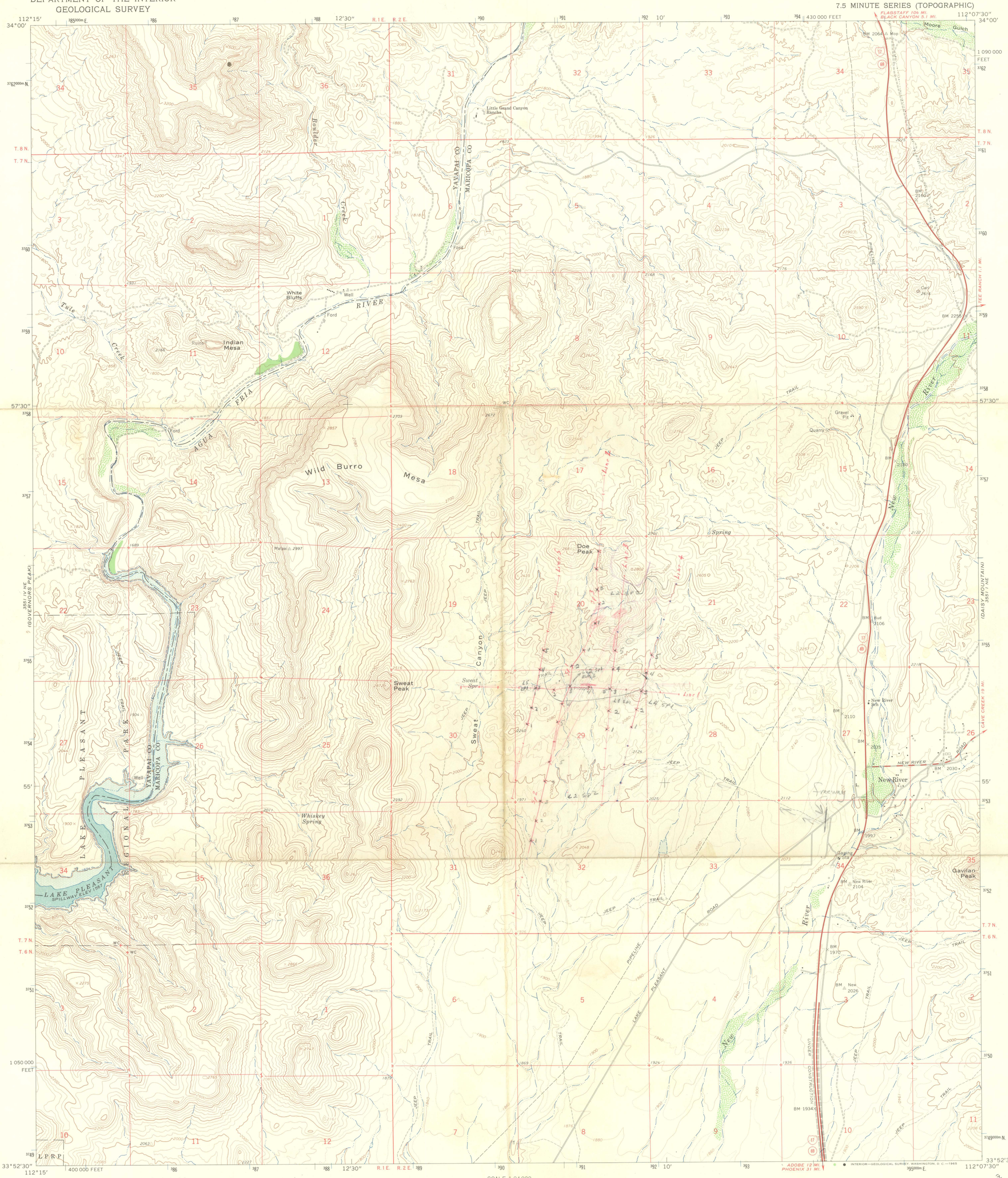
The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official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

QUALITY STATEMENT

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NEW RIVER QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

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

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

Areas covered by dashed light-blue pattern are subject to controlled inundation

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

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

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

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — State Route

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

Corp of CF+I

NEW RIVER, ARIZ.
N3352.5—W11207.5/7.5
1964
AMS 3551 I NW—SERIES V898

Job # 486

New River
486

INDUCED POLARIZATION AND RESISTIVITY SURVEY

of

THE BONNIE BELL PROJECT AREA

NEW RIVER, ARIZONA

December 1969
January 1970

for

C. F. AND I. STEEL CORPORATION

by

HEINRICHS GEOEXPLORATION COMPANY

P. O. Box 5671 - Tucson, Arizona

Telephone 1-602-623-0578

GEOEX Job #486-69

TABLE OF CONTENTS

	Page
Index Map	
Introduction ----------	1
Conclusions and Recommendations ----------	2
Correlating I.P. & Drilling Results ----------	2A
Interpretation ----------	3
Explanation of Interpretive Symbols ----------	4A

Sectional Data Sheets

- Line 1
- Line 2
- Line 3
- Line 4
- Line 5

Basis of the Induced Polarization Method

In Map Pocket

- Induced Polarization Location and Interpretation Plan

GENERAL LOCATION
of
NEW RIVER AREA
C F & I STEEL CORP.

ARIZONA

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS

AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793

U.S.A.
Post Office Box 5671
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

INTRODUCTION

A reconnaissance induced polarization survey was completed over the Bonnie Bell Project Area, New River, Maricopa County, Arizona, for the C. F. & I. Steel Corporation. The field portion of this survey was performed from December 2, 1969 to December 19, 1969 by Heinrichs GEOEXploration Company. The initial work order for the job was issued for $4,000.00 maximum; however, for reasons discussed in the report, an additional $2,000.00 was requested and granted for further coverage.

The original assignment by Mr. James Brooks of C. F. & I. was to have us place two standard five electrode spreads, perpendicular to each other, with the common center points located near the prospect pit about 750 feet north and 2,000 feet east of the northwest corner of Section 29, T. 7 N., R. 2 E.. Line 1 was oriented approximately east-west and Line 2 is oriented about N. 10° E. as indicated on the enclosed "Induced Polarization Location and Interpretation Plan". The remainder of the original $4,000.00 was to be used as needed to follow up any anomalism detected on Lines 1 and 2. The additional funds were used on Lines 4, 5 and Spread 3 of Line 2.

All I.P. data was obtained using the dual frequency technique on standard five current electrode (four sending dipoles) spreads, using frequencies of 1.0 and 0.1 Hz, according to the methods described in the appended "Basis of the I.P. Method". A total of 35,250 feet of n=3 "subsurface" and 63,000 feet of surface data were obtained using 750 foot "a" spacings. The high power GEOEX Mark IV sender and new GEOEX Mark 4C receiver were used on all lines at our option.

The following GEOEX personnel were involved in various phases of this job: Mr. J. M. Peckenpaugh, Crew Chief, Mr. Dave Townsend, Sender Operator and Mr. Gary Carpenter, Field Technician. Mr. Paul A. Head, Geophysicist was in charge of the entire program including compilation of this report and was assisted by various members of the Tucson Staff.

GEOEX wishes to extend their thanks to C. F. & I. Steel Corporation and Mr. James Brooks in particular for advice and assistance given during this project.

CONCLUSIONS AND RECOMMENDATIONS

We conclude that the undefined deep anomalism to the south of Line 1 and near Line 2 may have potential economic significance, and that the prospect definitely merits more intensive geological and geophysical exploration - including two drill holes based solely on the reconnaissance I. P. survey.

Specifically there are two anomalies on the project which we consider to require test drilling at this time. The moderate anomaly at 10.0 S. on Line 2 possibly is not related to the "diabase" sill noted on Line 3 and we recommend this anomaly be drilled to a minimum depth of 500 feet to confirm its true cause. The drill site should be located within 100 feet of 10.0 S.. The other proposed drill site is located at 67.5 S. on Line 2. This hole should be programmed for a minimum of 750 feet to test for possible deep mineralization.

The reconnaissance I. P. survey should be continued to the east of Line 4, to the west of Line 5 and extensions made to the south on Lines 3, 4 and 5. Extensions to the north would possibly be helpful, but the surface geology would be more useful at this time. Concurrently with this I.P. work, a comprehensive geologic mapping program should be carried out.

A detailed I.P. program in the vicinity of the test holes should follow the discovery of any economically significant mineralization. This would consist of a minimum of three standard five electrode spreads using an "a" spacing of 750 feet. Additional detail work should logically follow the completion of the reconnaissance I.P. program as indicated.

CORRELATING I.P. AND DRILLING RESULTS

When a drill hole fails to intersect the target as predicted the following points should be considered:

1. Something has caused the anomaly and its cause should be determined prior to abandoning the anomaly.

2. The drill hole must be located correctly relative to actual electrode (aluminum foil) positions on the ground regardless of surveyed stations.

3. Interpretation or drafting error might be at fault.

4. Poor resolution of thin bodies relative to dipole spacing could cause inaccurate placement of a drill hole . Depth determinations are approximate and the drill can pass over or under an ore body of limited size.

5. An anomaly could be a lateral effect observed when a line passes to one side of a polarizing body.

6. Logging of the drill core <u>must</u> be done with special care to note the relative quantities of <u>all</u> polarizable minerals such as iron pyrite, magnetite, graphite, manganese oxide, etc. as well as the ore minerals. Many times the target sought has been overlooked in logging the drill core.

7. Typical pieces of core representing the gross physical property variations of material encountered in the drilling, should be analyzed in the laboratory if there is doubt about confirming anomaly cause and geologic correlation.

INTERPRETATION

The results of this survey were unexpected because the I.P. anomalism is very wide spread and the strongest anomalies are not in the near vicinity of the existing prospect pits. In addition, the major proportion of the observed frequency effects are at variance with the expected anomaly patterns typical of this environment. For these reasons, the PFE's and MCF's of this survey must be carefully considered in relation to topography and outcropping material showing positive evidence of sulphides or their oxidized equivalents. The topographic highs in this area are at least in part supported by silicified portions of the precambrian schists which in isolated places are copper stained.

An on site examination of the anomalous area at the north end of Line 3 by Mr. Brooks of C. F. & I. and Mr. Head of GEOEX, did reveal what was loosely termed "diabase" which at one time contained large amounts of pyrite. The total extent of that material is unknown at this time, however, the anomalous zone marked "A" on the "Induced Polarization Location and Interpretation Plan" is all that can be determined from the reconnaissance I. P. Program to date. There is reason to believe that the "diabase" on Line 2 is an unexposed, down thrown fault block, based on similar appearing electrical effects on Line 3.

This "diabase" is apparently flat lying as opposed to the steeply dipping schists. This is of concern because most of the anomalous features observed on this survey are characteristic of broad flat lying bodies fairly deeply buried. The schists could also cause these deep appearing effects if they were fairly uniformly mineralized but oxidized down to a depth of 300 to 700 feet over most of the area. These effects might also be due to a mineralized band situated laterally on either side of the I.P. lines.

Anomaly "B" represents our attempt to define these apparently deep frequency effects in terms of near surface or exposed mineralization on Lines 1, 2, 3 and 5. "B" coincides with a possible anomalous band bearing about N. 30° E., parallel to a prominent topographic ridge that projects roughly into Mr. Sweat's prospect at 45.0 W. on Line 1. If this is a valid interpretation, then Line 1 does not cross polarizing material near a particularly strong exposure, and the material must become more strongly mineralized to the south of Line 1 on or near Line 2 under alluvial cover. Lines 2, 3, 4 and 5 are poorly oriented to properly locate and interpret this feature if "B" is actually geologically valid.

Deeply oxidized and widespread mineralization seems to be more difficult to justify geologically, but the rather exceptionally widespread I.P. effects noted, preclude ruling out that possibility. Anomaly "A" is probably explained in terms of the mineralized diabase on the hill and is not likely to be of economic importance. Anomaly "B" is mostly our supposition but may have some valid relation to near surface geology. Area "C" on the plan map is a very approximate outline of anomalous frequency effects which seem to be caused by polarizable material at least 500 feet deep under alluvial cover. The remainder of the anomalous I.P. effects are either open ended or can probably be explained based on surface geology.

EXPLANATION OF INTERPRETIVE SYMBOLS

The relative strength of induced polarization anomalies is usually determined based on the strongest effects detected on a given project, sometimes graded according to metallic conduction factor only, or at times, by percent frequency effect only. Most of the time anomaly strength must be related to a combination of MCF, PFE, and depth.

In addition to relative I.P. anomaly strength symbols, question marks are used to indicate reliability of anomalies. Arrows are used to indicate I.P. effects extending beyond interpretable data. An arrow is always followed by a question mark unless data from another source confirms the extension.

No relative strength symbol less than one dipole length is possible because neither the beginning or the end of an anomalous pattern can be located more accurately than half a dipole width. A question mark superimposed on a relative strength symbol will indicate questionable validity of the anomaly for one dipole width only. Two question marks indicates an anomaly is questionable over two dipoles width.

A small triangle is used on the plan map to indicate a change of resistivity. This interface may be a geologic feature or strictly an electrical feature. Other special symbols such as the self potential low are noted on the plan map legend and are usually discussed in the report.

All field data was completely checked and computed on the Control Data #6400 computer to insure maximum reliability. These computations are on file and are available on request.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

Paul A Head

Paul A. Head
Geophysicist

Approved:

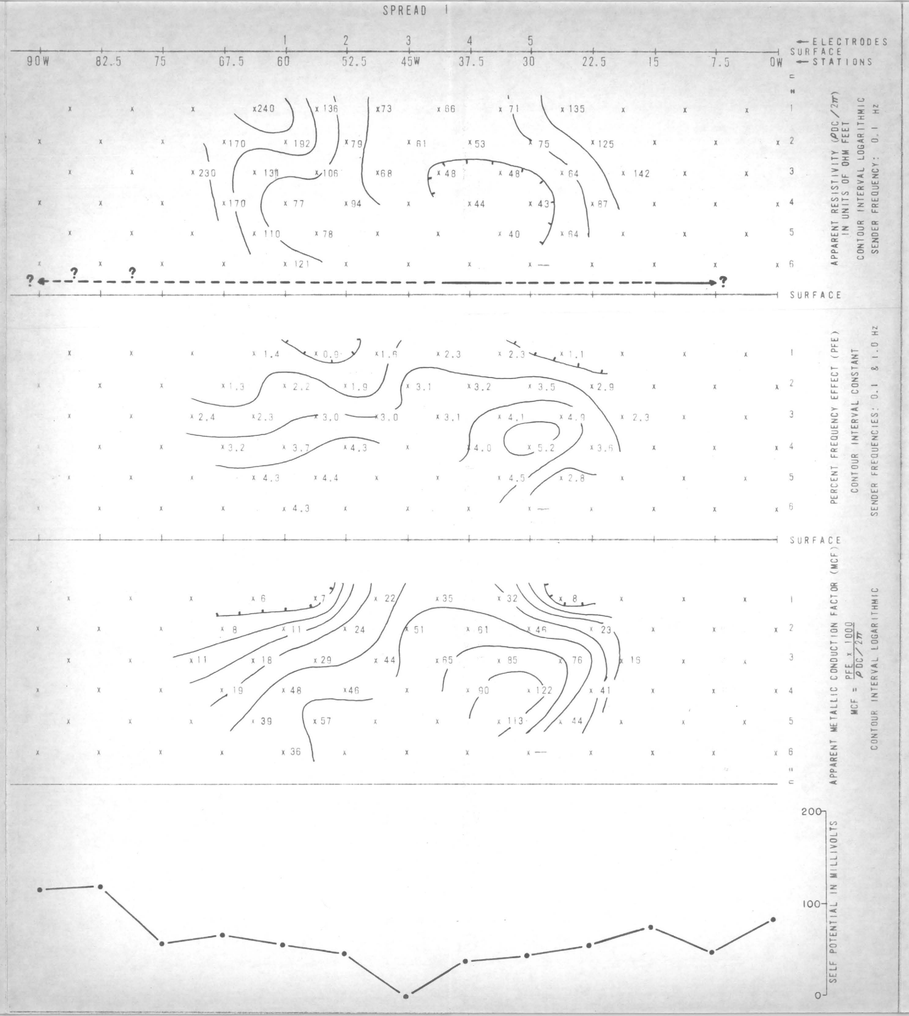
W. E. Heinrichs, Jr.
President and General Manager

Line 1, Spread 1 a = 750 Feet

The resistivity plot is typical of the pattern expected over vertical to steeply dipping rocks, but shows no distinct single feature which can be precisely interpreted. The pattern is more probably due to a gradational resistivity change with the central portion of the line passing over rocks having a resistivity of about 75 ohm feet. Both ends of the line indicate rocks of greater than 100 ohm feet.

The frequency effects indicate two possible separate centers of mineralization, at 40.0 W. and at about 10.0 W., based on either MCF or PFE anomalism. The westerly end of the line shows PFE anomalism only, which can be interpreted as caused by relatively horizontal mineralization at depth.

A minor S.P. low tends to support the I.P. anomaly at 37.5 W. and could be caused by near surface oxidizing sulphides.



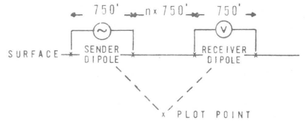
486-69

LINE NO.
1
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE
SECTIONAL DATA SHEET
for
C. F. & I. STEEL CORP.

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
NEW RIVER
LOOKING
NORTH
DATE
DECEMBER 1969

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA (SYDNEY) 39 Hume Street Crows Nest, NSW Phone: 439-1793
U.S.A. Post Office Box 5671 Tucson, Arizona 85703 Phone: (602) 623-0578 Cable: GEOEX, Tucson

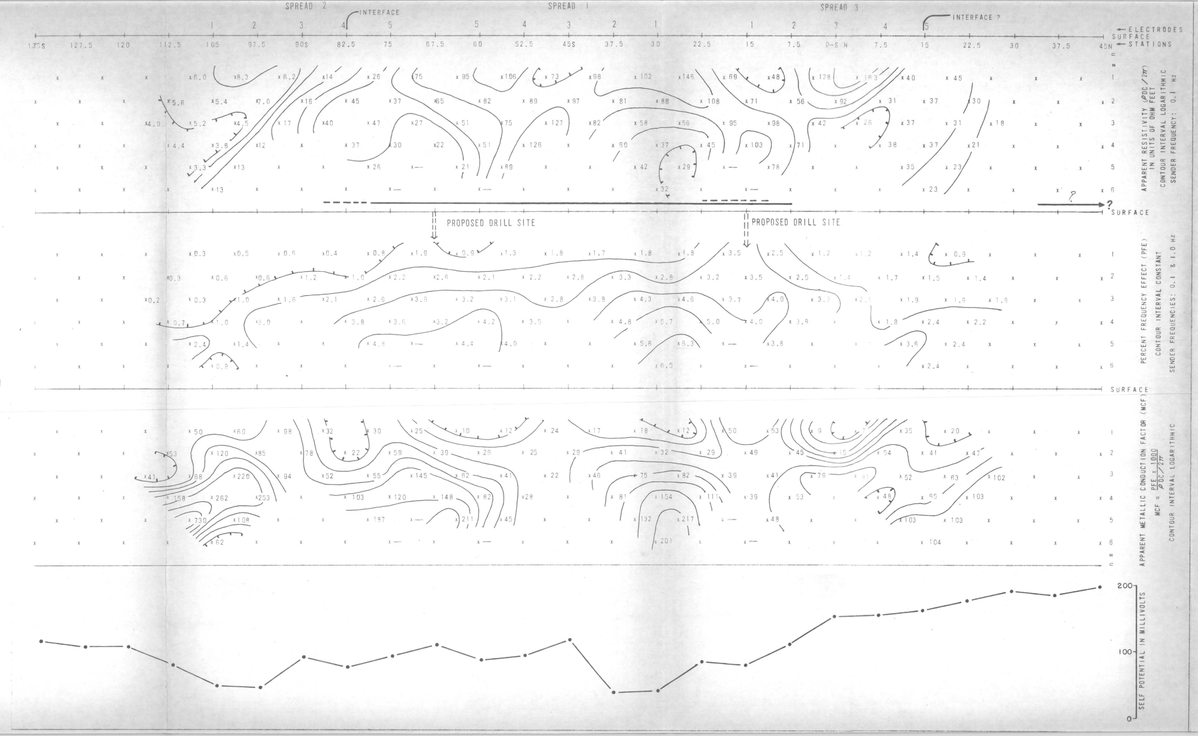
Jde

Line 2, Spreads 1, 2 & 3 a = 750 Feet.

An electrical interface located at 82.5 S. separates material of less than ten ohm feet resistivity, probably alluvium, from material of approximately 75 to 100 ohm feet resistivity. A partially developed interface pattern at 15 N. is indicated as questionable and may in fact represent a gradational change of resistivity. Between these interfaces are two or possibly three narrow bands of relatively high resistivity material, probably caused by steeply dipping formations near 30.0 S., 0.0 N. and 63.0 S.

The frequency effects on Line 2 are mostly weak, but are caused by a very wide, deeply buried source located between 78.0 S. and 22.5 S. The moderate anomaly continuing north from 22.5 S. to 10.0 S. is probably due to an entirely separate source. However the combined anomalies could also be due to a single nearly horizontal source that approaches surface near 10.0 S. This anomaly pattern would also be typical of a polarizing body at surface, striking nearly parallel to the line. Beginning at 33.0 N. a weak anomaly is noted which continues north beyond this survey.

A minor S.P. low occurs at 30.0 S which correlates with weak I.P. effects.



486-69

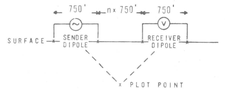
INDUCED POLARIZATION TRAVERSE
SECTIONAL DATA SHEET
for

C. F. & I. STEEL CORP.

LINE NO. 2
SPREAD(S) 1,2 & 3

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
NEW RIVER
LOOKING
WEST
DATE
DECEMBER 1969

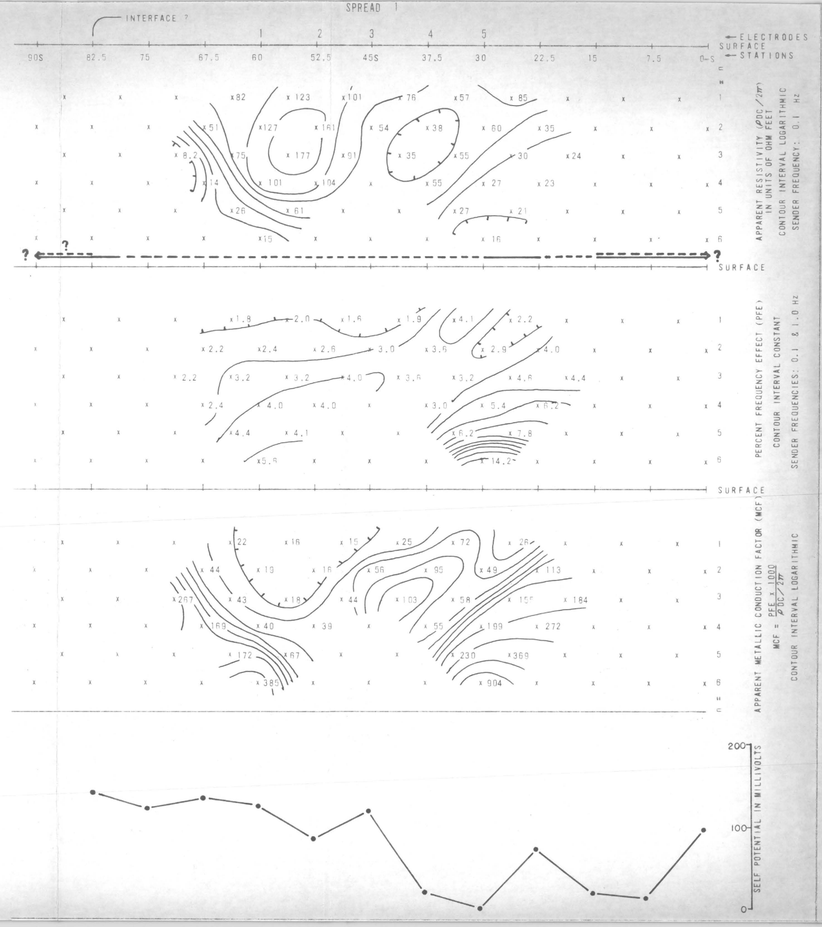
HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1783
U.S.A.
Post Office Box 5671
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

Line 3, Spread 1 a = 750 Feet

Steeply dipping rocks, with gradational resistivity changes probably account for the resistivity pattern shown. A possible interface at 82.5 S may separate rocks of less than 10 ohm feet from rocks at 100 to 200 ohm feet. Based on Line 2 we expect that interface marks the same change of very low resistivity on the south from moderate values to the north.

The moderate MCF anomaly near this interface is very likely due in part to the abrupt resistivity change and slightly elevated PFE values. Definite moderate to strong frequency effects are noted at the extreme north end of the line and are apparently due to rather near surface polarizable material. The weak and very weak frequency effects noted over the central portions of the line are likely due to something at depth or a few hundred feet to either side of the line.

Self potential lows at 30.0 S and 7.5 S. correlate well with frequency effects.



486-69

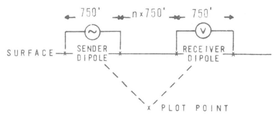
LINE NO.
3
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for C. F. & I. STEEL CORP.

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
NEW RIVER

LOOKING
WEST

DATE
DECEMBER 1969

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5671
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

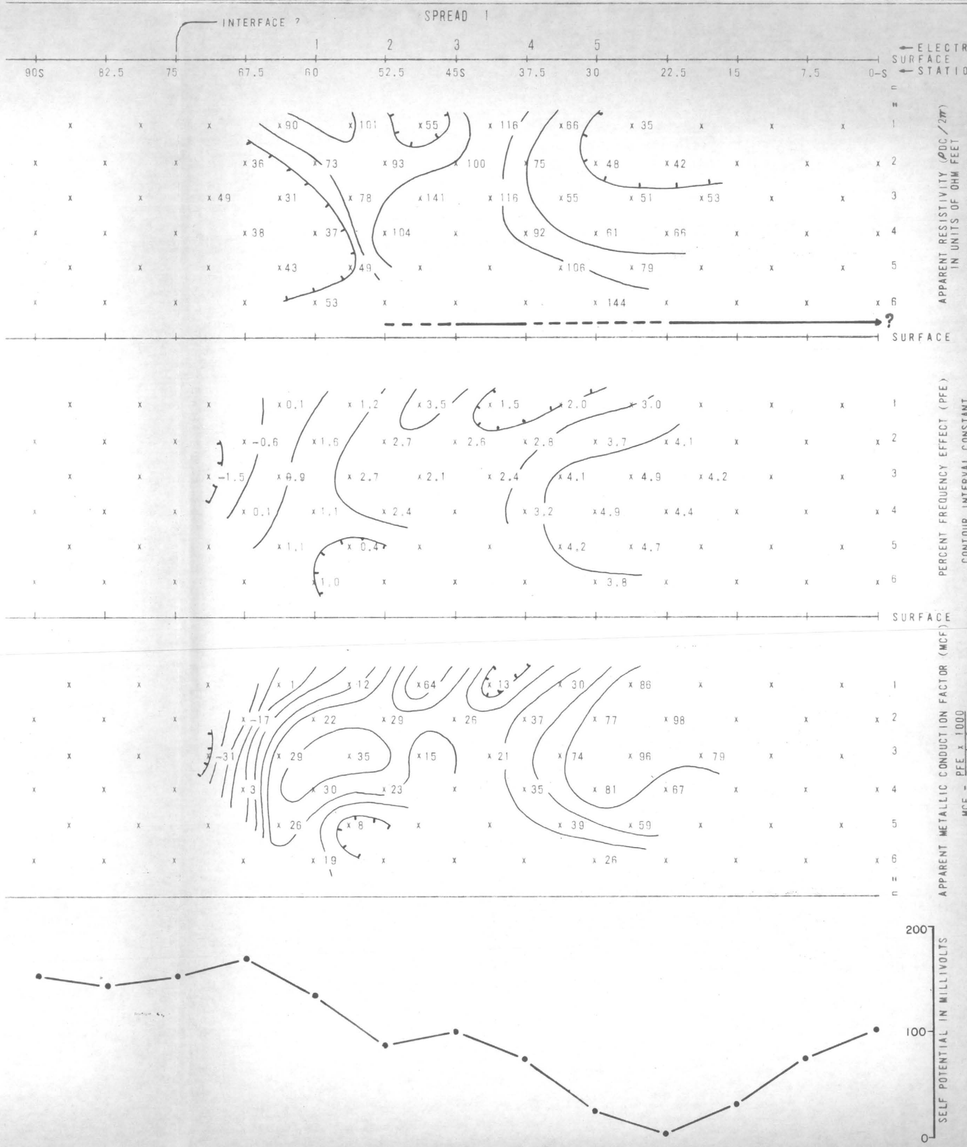
Line 4, Spread 1 a = 750 Feet

A possible interface is indicated near 75.0 S. by an incomplete apparent resistivity pattern. Other near vertical but gradational resistivity changes are probably responsible for the remainder of the resistivity patterns observed on this line. The central portion of the line is somewhat more resistive than either end.

North from station 52.5 S., Line 4 indicates very weak to weak frequency effects with increasing strength to the north and continuing north off this survey. Slightly more intense anomalism is centered near 40.0 S.

It should be noted that these frequency effects are near surface effects and agree quite well with the expected patterns of the steeply dipping precambrian schists. We would expect any mineralization causing these effects to be conformable with the schistosity.

A broad weak self potential anomaly was detected at 22.5 S. which may correlate to the I. P. effects.



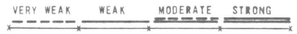
486-69

LINE NO. 4

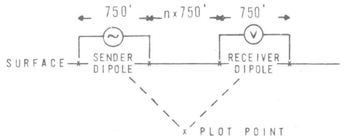
SPREAD(S) 1

INDUCED POLARIZATION TRAVERSE
SECTIONAL DATA SHEET
for
C. F. & I. STEEL CORP.

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
NEW RIVER

LOOKING
WEST

DATE
DECEMBER 1969

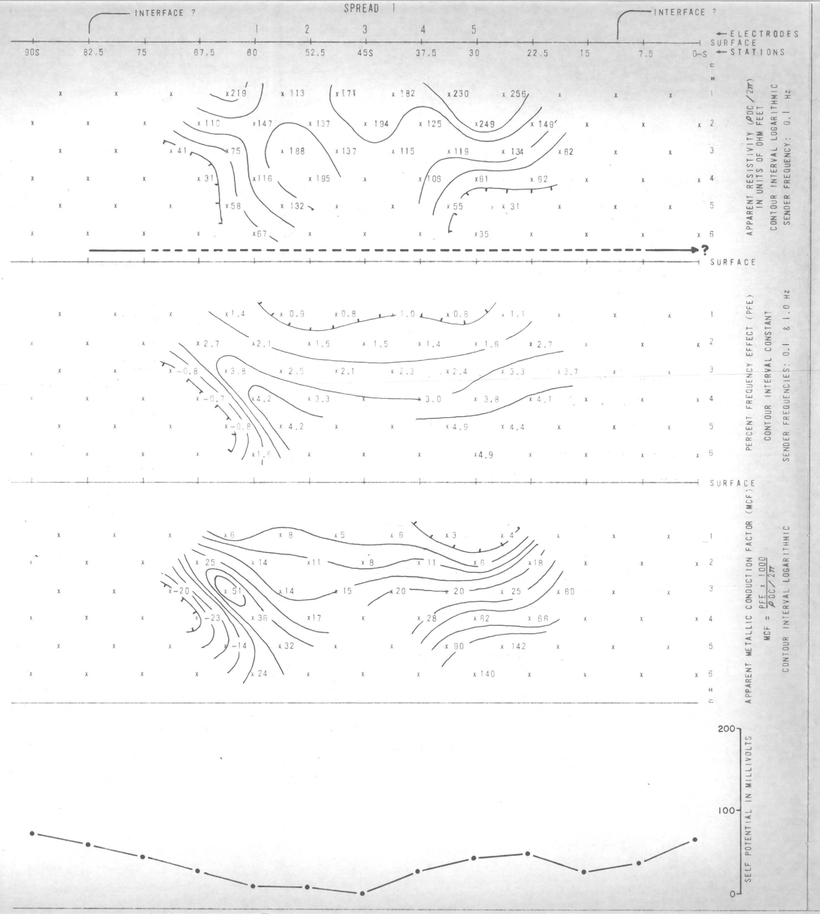
HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5671
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

Line 5, Spread 1 a = 750 Feet

Moderate (30 to 50 ohm feet) resistivity material on the north and south ends of this line may be separated from the higher resistivity materials by interfaces near 80.5 S. and near 10.0 S. Complete apparent resistivity patterns were not developed that would permit definite placement of these features.

The entire length of this line is very weakly anomalous except at the extreme ends where the polarization effects become slightly stronger. The weak anomaly to the north seems to represent a slightly decreased depth of burial than the central portions of the line where the source material is perhaps as much as 750 feet deep. This deep appearing anomaly could be the interference effects caused by inadequate resolution of the anomalies at the ends of the line. The weak anomaly on the south is a near surface effect, and based on only a partial pattern, it is most likely a narrow tabular body having a steep dip.

No significant S. P. effects are noted.



486-69

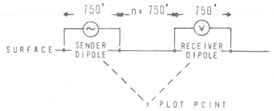
LINE NO.
5
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for C. F. & I. STEEL CORP.

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



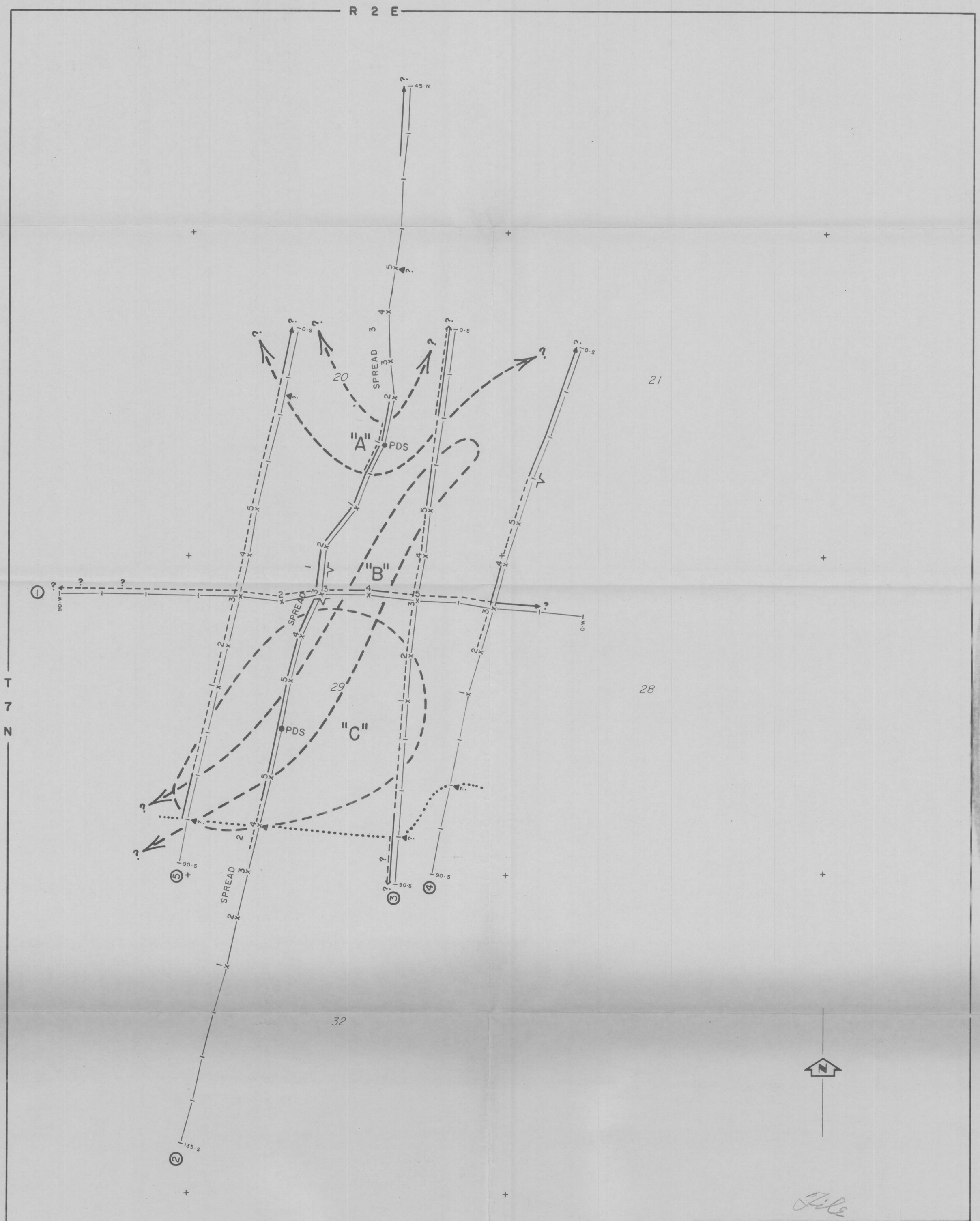
AREA
NEW RIVER

LOOKING
WEST

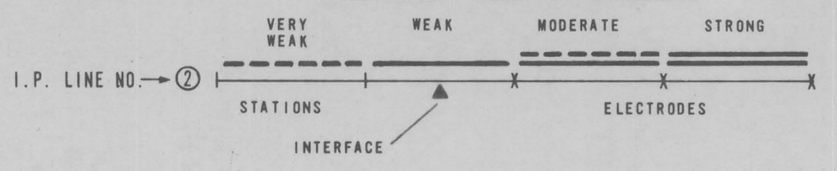
DATE
DECEMBER 1969

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA (SYDNEY) 39 Hume Street Crows Nest, NSW Phone: 439-1793
U.S.A. Post Office Box 5671 Tucson, Arizona 85703 Phone: (602) 623-0578 Cable: GEOEX, Tucson

File



RELATIVE ANOMALY STRENGTH



● PDS - PROPOSED DRILL SITE

⊽ —— SELF POTENTIAL LOW

File

HEINRICHS
GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578 Cable: GEOEX, Tucson
geophysical engineers vancouver sydney

486-69

INDUCED POLARIZATION LOCATION AND INTERPRETATION PLAN

NEW RIVER AREA

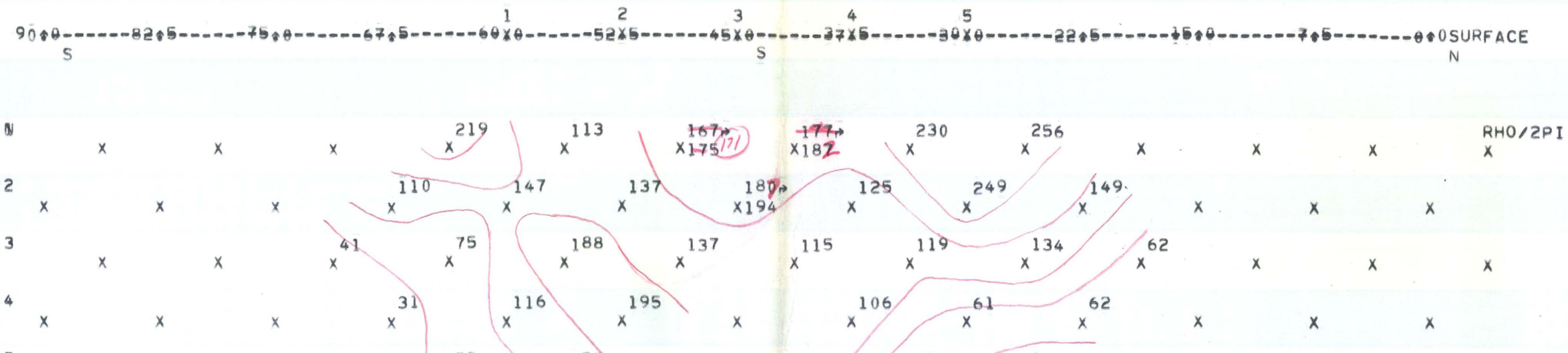
MARICOPA COUNTY, ARIZONA

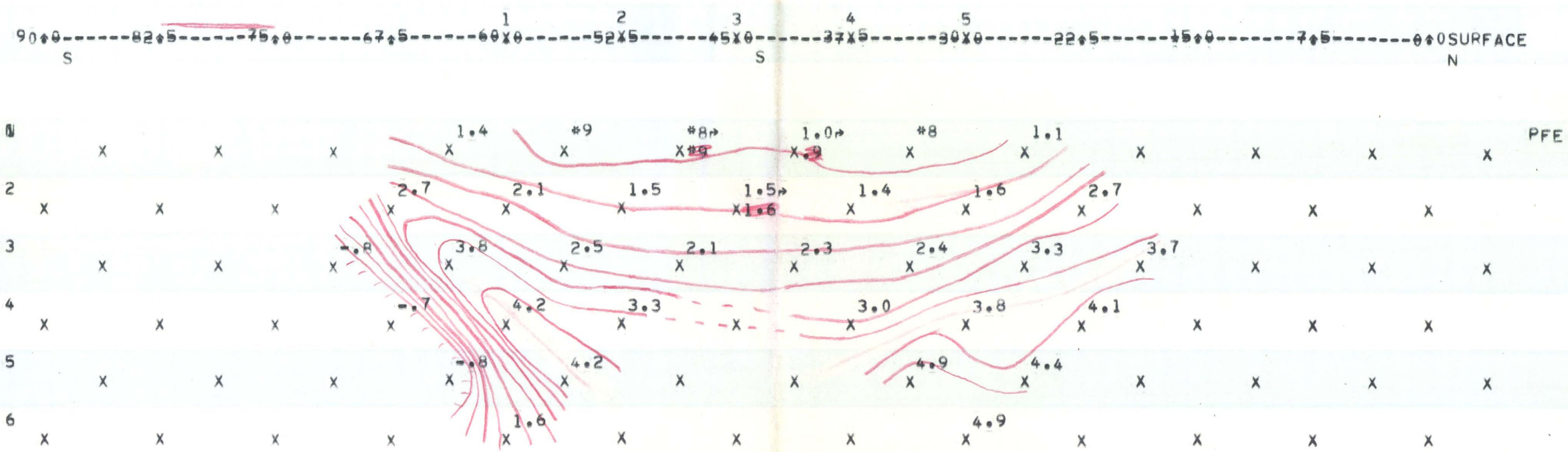
FOR

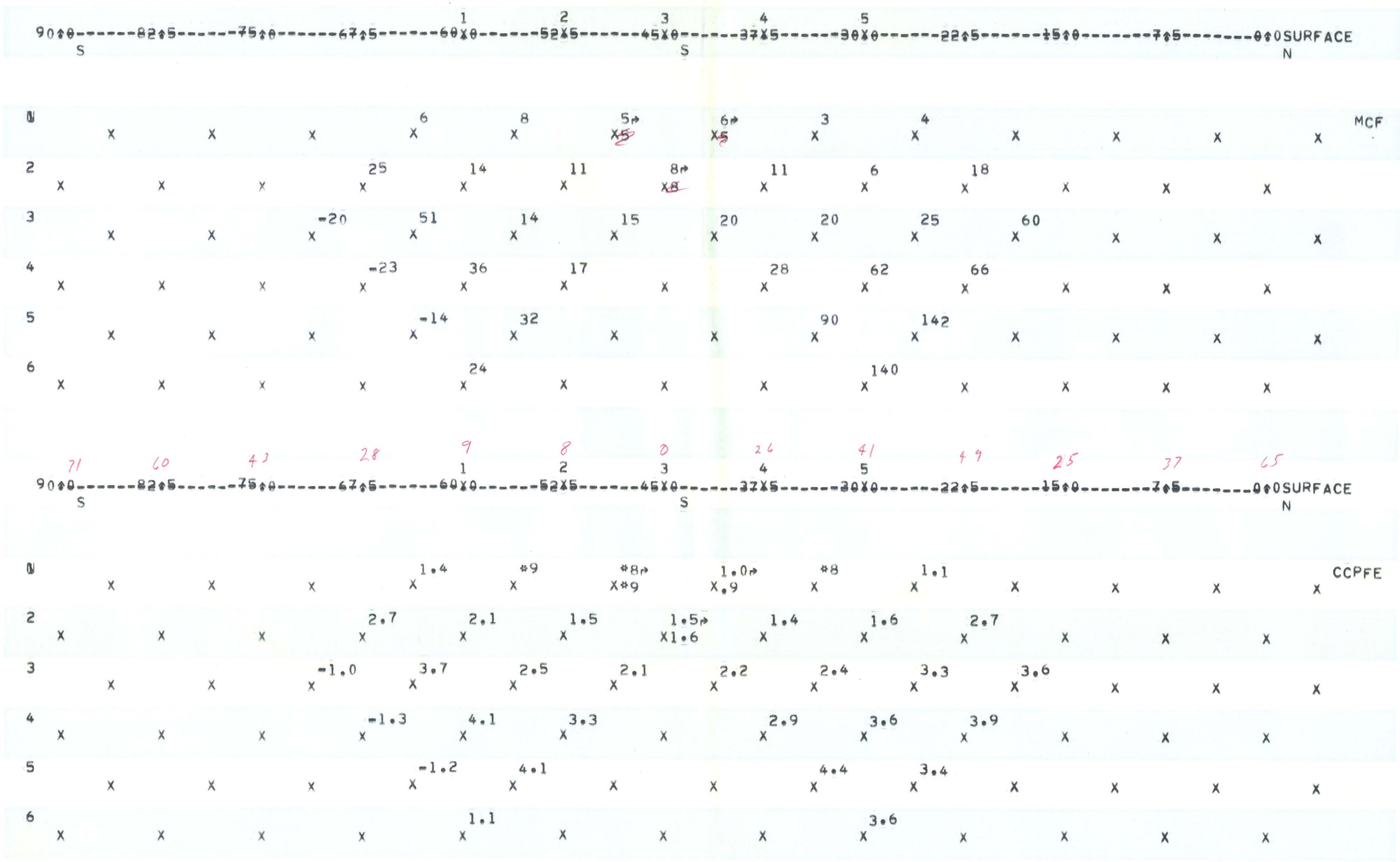
C. F. & I. STEEL CORP.

SCALE: 1" = 1000' | DRAWN BY: JAY DOWNS | DATE: DEC. 1969

HEINRICHS GEOEX JOB 486/69 LINE 5 SPREAD 1 LOOKING W 12/19/69 A= 750 FEET



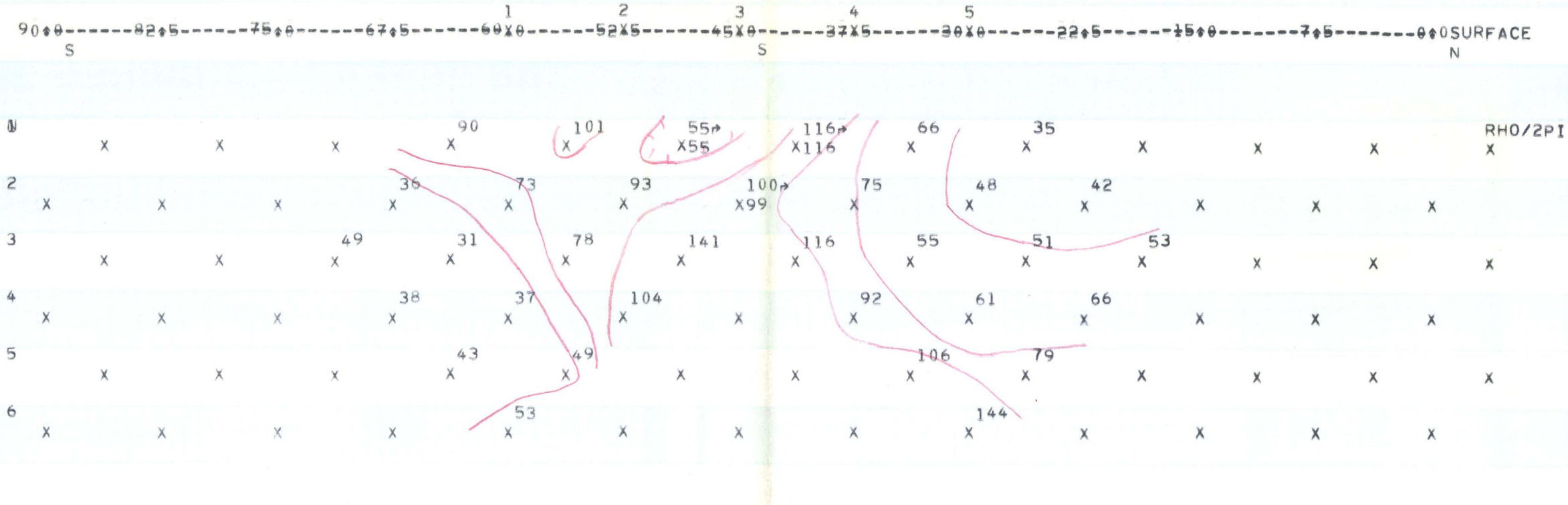


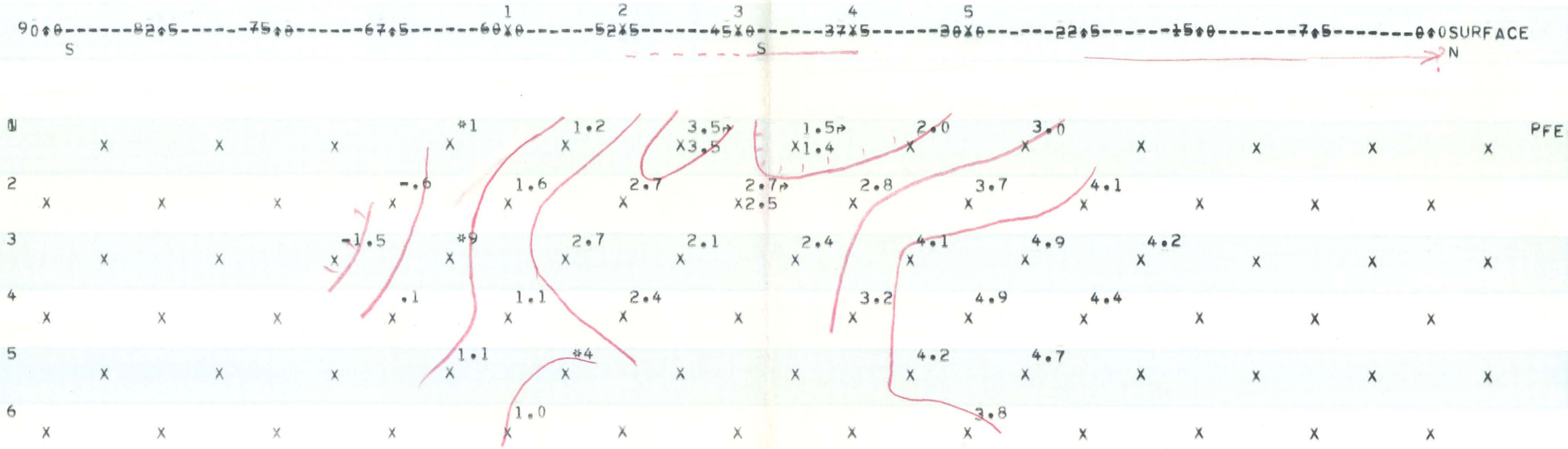

1 2 3 4 5
90↑0------82↑5------75↑0------67↑5------60X0------52X5------45X0------37X5------30X0------22↑5------15↑0------7↑5------0↑0SURFACE
S S N
N 6 8 5↱ 6↱ 3 4 MCF
2 25 14 11 8↱ 11 6 18
3 -20 51 14 15 20 20 25 60
4 -23 36 17 28 62 66
5 -14 32 90 142
6 24 140
71 60 43 28 9 8 0 26 41 49 25 37 65
1 2 3 4 5
90↑0------82↑5------75↑0------67↑5------60X0------52X5------45X0------37X5------30X0------22↑5------15↑0------7↑5------0↑0SURFACE
S S N
N 1.4 *9 *8↱ 1.0↱ *8 1.1 CCPFE
2 2.7 2.1 1.5 1.5↱ 1.4 1.6 2.7
3 -1.0 3.7 2.5 2.1 2.2 2.4 3.3 3.6
4 -1.3 4.1 3.3 2.9 3.6 3.9
5 -1.2 4.1 4.4 3.4
6 1.1 3.6

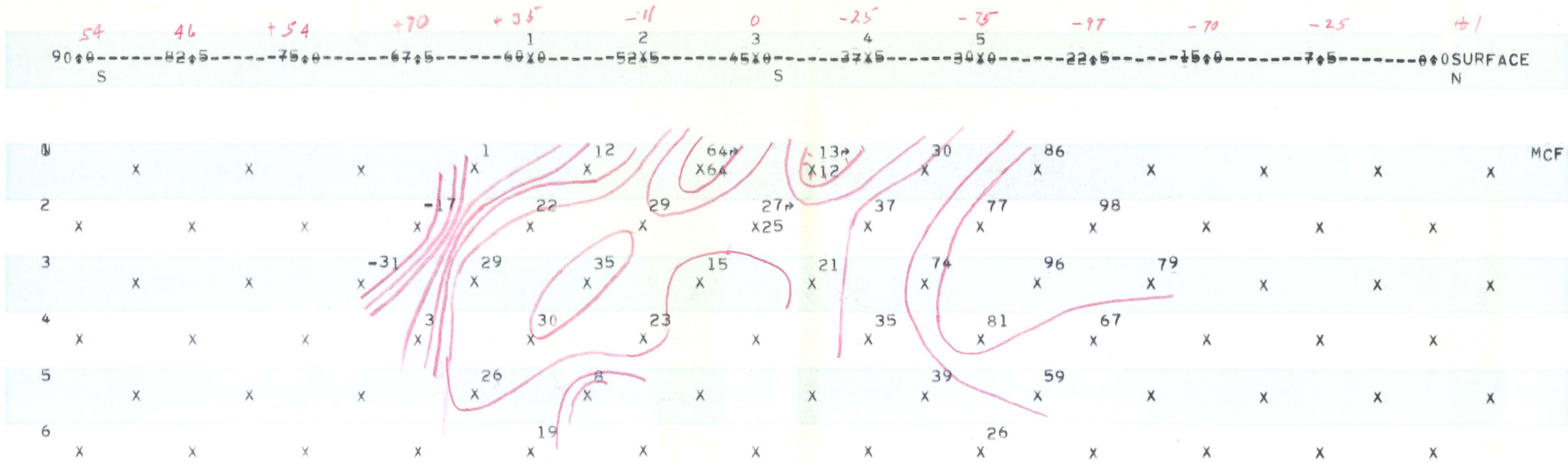
```
                                                                1         2         3         4         5
90*0------82*5------75*0------67*5------60X0------52X5------45X0------37X5------30X0------22*5------15*0-------7*5-------0*0SURFACE
  S                                                                                S                                                                                                                                N

N                                                   6         8         5*        6*        3         4                                                                                                   CCMCF
      X         X         X         X         X         X         X5        X5        X         X         X         X         X         X
2                                         25        14        11        8*        11        6         18
   X         X         X         X         X         X         X8        X         X         X         X         X         X
3                                   -25       50        14        15        20        20        24        58
      X         X         X         X         X         X         X         X         X         X         X         X         X
4                                         -42       35        17                  27        58        62
   X         X         X         X         X         X         X         X         X         X         X         X         X
5                                             -21       31                  81        110
      X         X         X         X         X         X         X         X         X         X         X         X         X
6                                                 16                                  104
   X         X         X         X         X         X         X         X         X         X         X         X         X
```

```
BCD INPUT *ENDFILE*INPUT
ERROR NUMBER    0065 DETECTED BY INPUTC  AT ADDRESO 021331
CALLED FROM IPDATA  AT 002147

ERROR SUMMARY
    ERROR      TIMES
     0065       0001
```

HEINRICHS GEOEX JOB 486/69 LINE 4 SPREAD 1 LOOKING W 12/13/69 A= 750 FEET

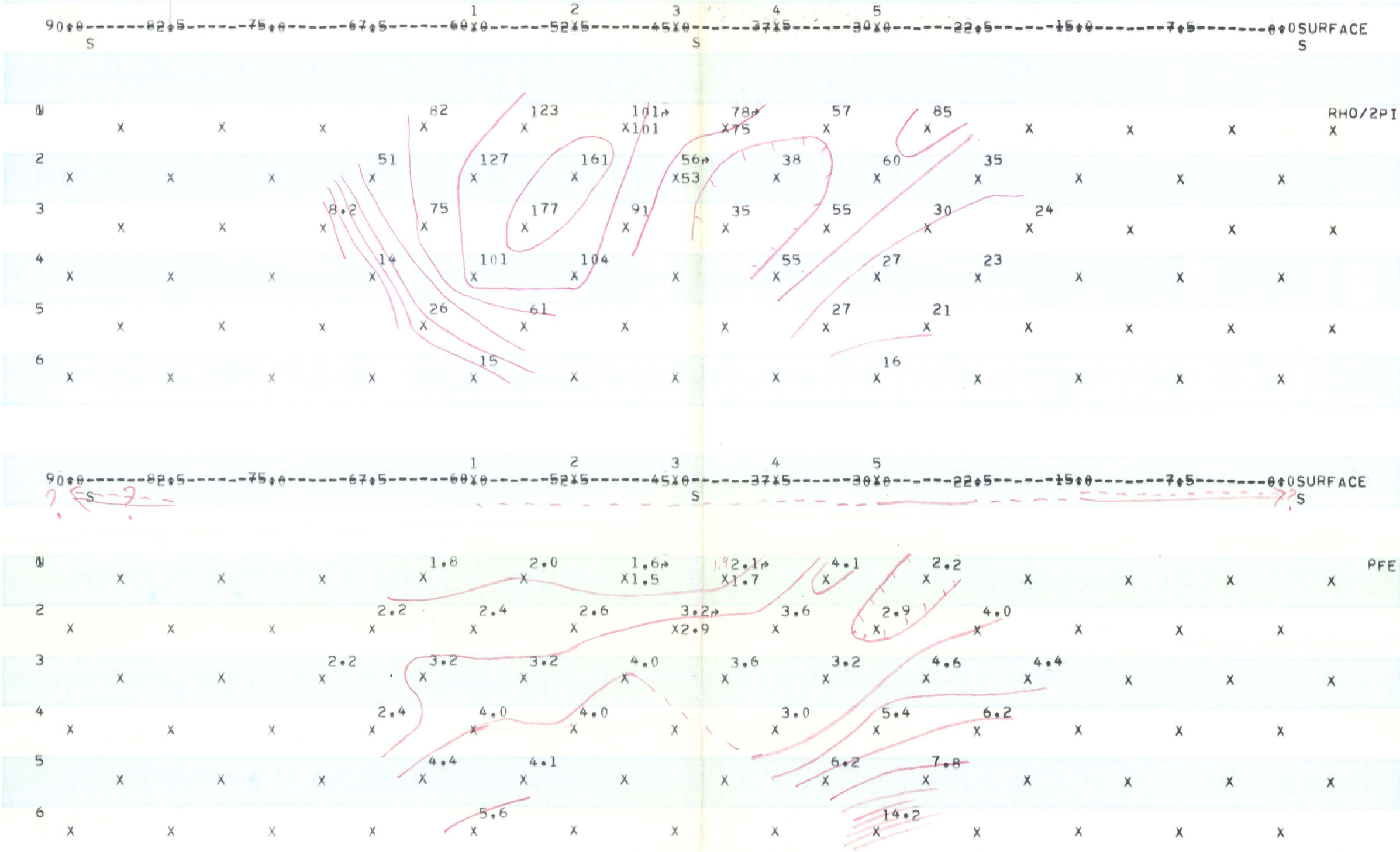


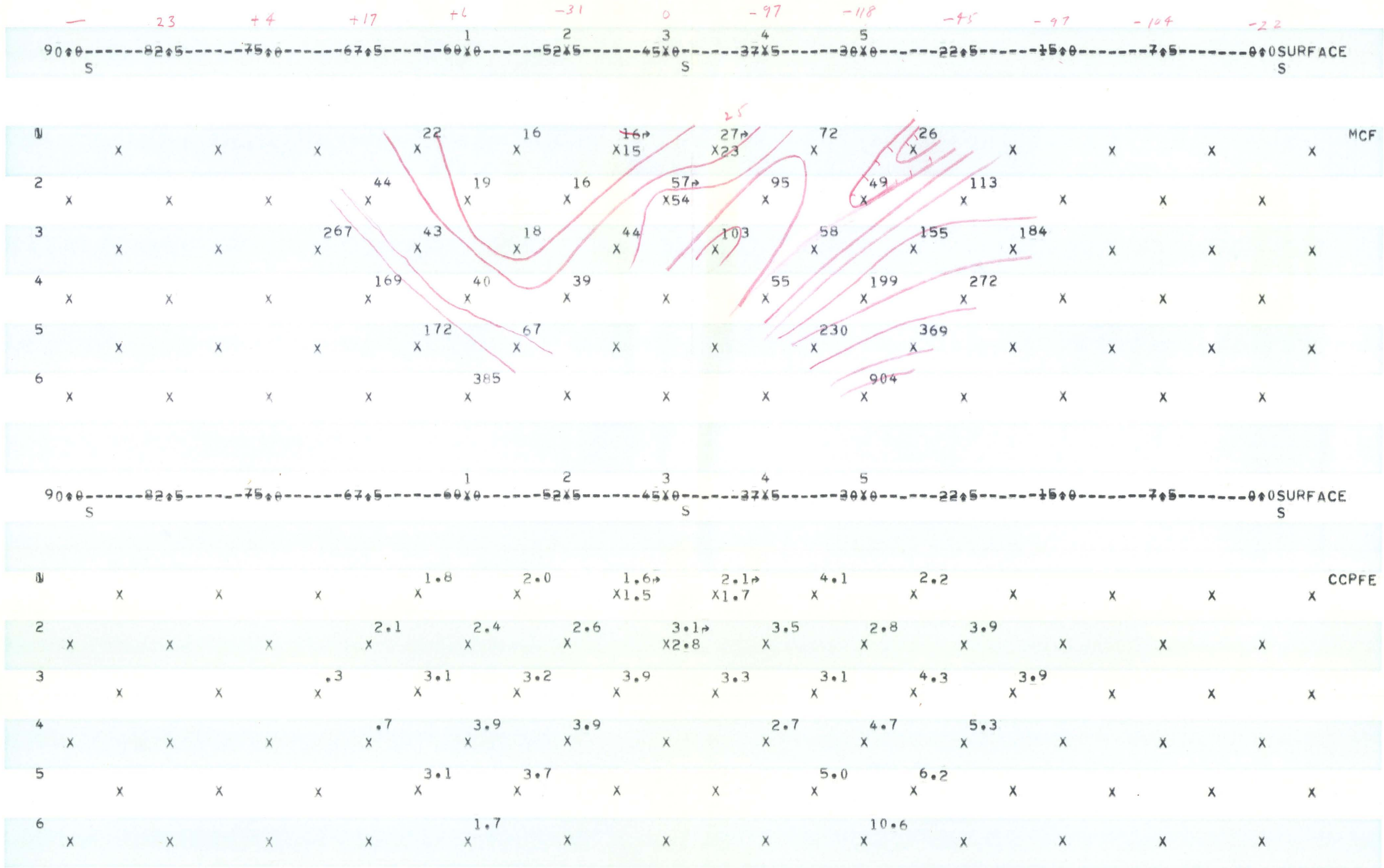




BUSINESS FORMS PRINTING COMPANY
ENGINEERED FOR HIGH SPEED PRINTERS

HEINRICHS GEOEX JOB 486/69 LINE 3 SPREAD 1 LOOKING W 12/9/69 A= 750 FEET

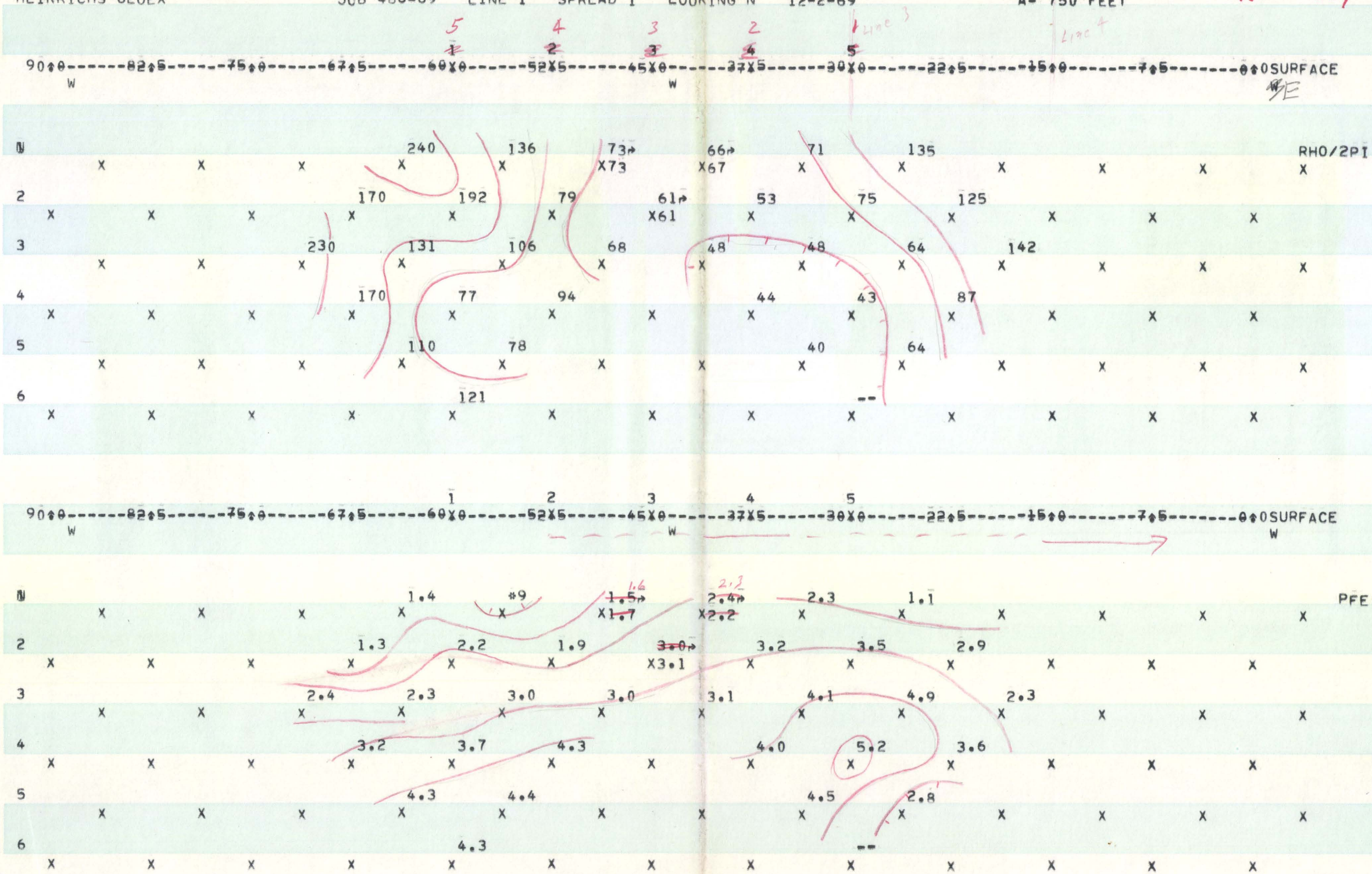


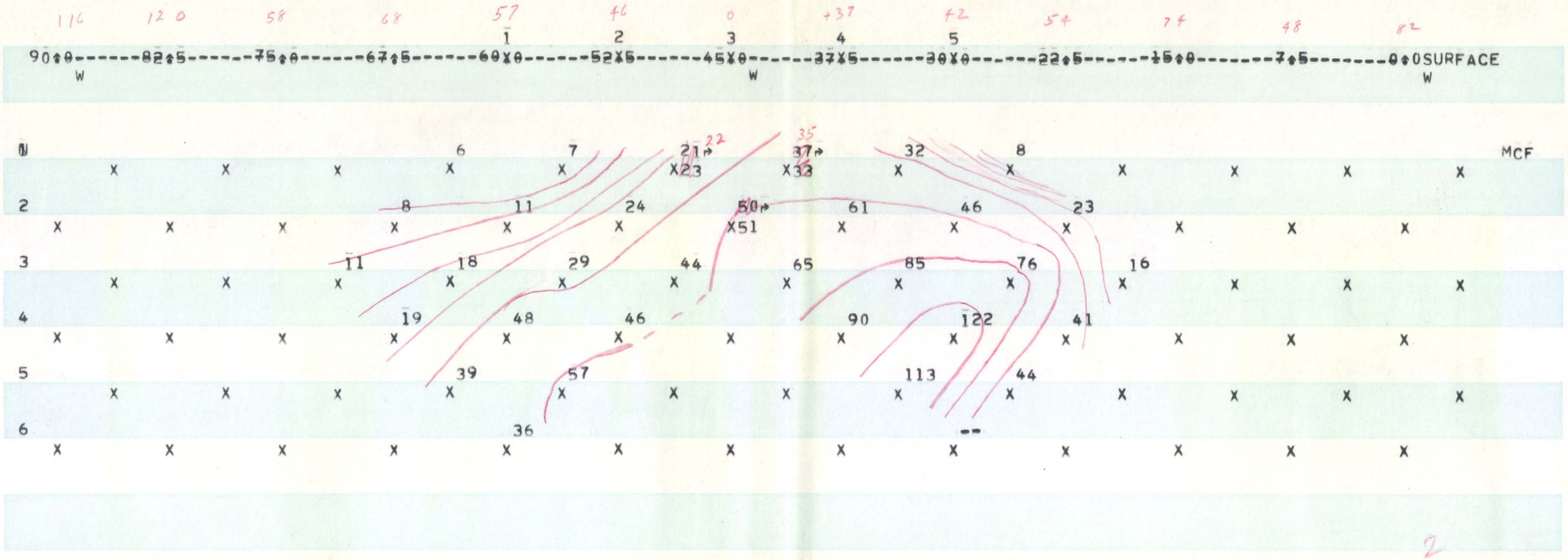

— 23 +4 +17 +6 -31 0 -97 -118 -45 -97 -104 -22
1 2 3 4 5
90.0 82.5 75.0 67.5 60.0 52.5 45.0 37.5 30.0 22.5 15.0 7.5 0.0 SURFACE
S S S
MCF
1: 22 16 16 27 72 26
2: 44 19 16 57 95 49 113
3: 267 43 18 44 103 58 155 184
4: 169 40 39 55 199 272
5: 172 67 230 369
6: 385 904
25
CCPFE
1: 1.8 2.0 1.6 2.1 4.1 2.2
2: 2.1 2.4 2.6 3.1 3.5 2.8 3.9
3: .3 3.1 3.2 3.9 3.3 3.1 4.3 3.9
4: .7 3.9 3.9 2.7 4.7 5.3
5: 3.1 3.7 5.0 6.2
6: 1.7 10.6

```
                                                                 1         2         3         4         5
90.0------82.5------75.0------67.5------60X0------52X5------45X0------37X5------30X0------22.5------15.0-------7.5-------0.0SURFACE
  S                                                                        S                                                                                                                    S

N                                                 22        16        16*       27*       72        26                                                                                    CCMCF
      X         X         X         X         X         X15       X23       X         X         X         X         X         X
2                                         42        19        16        56*       92        48        110
   X         X         X         X         X         X         X53       X         X         X         X         X         X
3                                 39        41        18        43        95        56        144       165
      X         X         X         X         X         X         X         X         X         X         X         X         X
4                                         50        38        38                  50        172       232
   X         X         X         X         X         X         X         X         X         X         X         X         X
5                                         122       61                  186       292
      X         X         X         X         X         X         X         X         X         X         X         X         X
6                                         115                                     677
   X         X         X         X         X         X         X         X         X         X         X         X         X
```

HEINRICHS GEOEX JOB 486-69 LINE 1 SPREAD 1 LOOKING N 12-2-69 A= 750 FEET

1.0 0.1





2

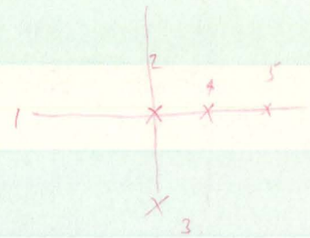
CD-209 12V lmp. } Burgess Quarry Office

Ice South

624 2351 EX 31

5

20 - -



JOB 486/69 LINE 4 SPREAD 1

LOOKING W DATE Dec 13, 69 A= 750 foot

CENTER -45.0 LABEL S/N FREQ. 1.0 0.1

COUPLING yes

12-16-69
MD

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 4 HALF South 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	45.0-37.5	37.5 —	30.0	30.0 —	—	22.5	22.5 —	—	—	15.0
RANGE	10.0	1.0	1.0	10.0	1.0	1.0	10.0	1.0	1.0	.1
DC 1 .1	2.0	4.1	3.1	1.8	3.3	2.7	.7	2.2	3.3	2.9
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	198.	91.8	42.0	173.0	39.2	24.0	155.	31.2	13.2	8.81
AC 2 1.0	0.0	00	0.0	0.0	00	00	.1	0.0	00	-0.2
AC AVG.										
S.P.	-109	+454		+358			-159			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 4 HALF 1 SOUTH SP. 1 DATE

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CA 1
RECEIVE	15.0	—	—	7.5	7.5	—	—	00		3-4
RANGE	1.0	.1	.1	.1	.1	.1	.1	.1		10
DC 1	0.0	1.5	1.7	1.0	-.9	.7	1.7	1.6		.6
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	15.5	5.25	3.19	2.41	8.65	3.27	2.1	1.62		195.
AC 2 1.0	00	0.0	00	00	00	00	00	00		00
AC AVG.										
S.P.	(~~.109~~)									
AC NOISE	-085)				+081					
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT New River 486-69

LINE 4 HALF South SP. 1 DATE 12-13-69

PAGE 12

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5 —	30.0	30.0 —		22.5	22.5 —			15.0
RANGE	Low	"	Low	"	"	"	"	"	"	"
VOLTAGE	400	180	400	120	180	400	280	120	180	400
CURRENT	4.0	4.0	4.0	"	"	"	4.0	"	4.0	4.0
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		Cal
RECEIVE	15.0 —			7.5	7.5 —			00		3-4
RANGE	Low	"	"	"	"	"	"	Low		Low
VOLTAGE	280	120	180	480	280	120	180	400		80
CURRENT	4.0A	"	"	"	4.0	"	"	4.0A		2.0A

FREQUENCIES .1 1.0

SENDER NO. MK 4 6644-5

OPERATOR

RECEIVER NO. 4C

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69

LINE 4 HALF 2 North SP. 1 DATE

PAGE 1

SEND	1-2	2-3	1-2	3-4	2-3	1-2	45	3-4	2-3	1-2
RECEIVE	45.0-52.5	52.5 —	60.0	60.0 —	—	67.5	67.5 —	—	—	75.0
RANGE	1.0	10.0	1.0	10.0	1.0	1.0	1.0	1.0	0.1	0.1
DC 1	3.7	1.8	2.9	2.3	3.0	2.6	3.2	3.9	4.3	3.4
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1	91.5	197.	41.8	112.	31.6	19.6	58.7	20.0	9.19	7.65
AC 2	0.0	+0.2	0.0	+0.2	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-24.5	-50.0		-22.2			+27.6			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 4 HALF North SP. 1 DATE 12/15

PAGE 2

SEND	4-5	3-4	2-3	1-2	45	3-4	2-3	1-2			Cal
RECEIVE	75.0			82.5	82.5			90.0			2-3
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1			10.0
DC 1 .1	4.3	5.1	5.0	4.4	4.4	4.6	4.9	4.0			~~+.4~~
DC 2											+.2
DC 3											
DC 4											
DC 5											
DC 6											
DC 7											
DC 8											
DC AVG.											
AC 1 1.0	17.4	8.36	4.99	5.03	8.76	5.41	3.73	4.26			194.
AC 2 1.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0			0.0
AC AVG.											
S.P.	+50.7				+26.7						
AC NOISE											
POT RES.											

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT New River 486-69

LINE 4 HALF North SP. 1 DATE 12-15-69

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0-52.5	52.5 —	60.0	60.0 —	—	67.5	67.5 —	—	—	75.0
RANGE	Low	"	"	"	"	"	"	"	"	Low
VOLTAGE	280	120	280	170	120	280	400	180	120	280
CURRENT	4.0A	4.0A	"	"	"	"	4.0A	4.0A	"	4.0A
SEND	4-5	3-4	2-3	1-2	45	3-4	2-3	1-2	CAL	
RECEIVE	75.0 —	—	—	82.5	82.5 —	—	—	90.0	2-3	
RANGE	Low	"	"	"	Low	"	"	Low	Low	
VOLTAGE	400	180	120	280	400	180	120	280	60	
CURRENT	4.0A	"	"	4.0A	4.0A	"	"	4.0A	2.0A	

FREQUENCIES .1 1.0

SENDER NO. MK4 6644-S

OPERATOR

RECEIVER NO. 4C

OPERATOR

COMMENTS:

HEINRICHS GEOEX JOB 486/69 LINE 4 SPREAD 1 LOOKING W 12/13/69 A= 750 FEET

4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	I	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	2.000		
20	41	31	18	33	27	7	22	33	29	DC	0	15	17	10	-9	7	17	16	6	LEFT	
20	41	31	18	33	27	7	22	33	29		0	15	17	10	-9	7	17	16	6	SIDE	
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6			
2.0	4.1	3.1	1.8	3.3	2.7	.7	2.2	3.3	2.9	PFEA	0.0	1.5	1.7	1.0	-.9	.7	1.7	1.6	.6		
198.0	91.80	42.00	173.0	39.20	24.00	155.0	31.20	13.20	8.810	AC1	15.50	5.250	3.190	2.410	8.650	3.270	2.100	1.620	195.0		
0.0	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	-.2	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
198.0	91.80	42.00	173.0	39.20	24.00	155.1	31.20	13.20	8.801	ACA	15.50	5.250	3.190	2.410	8.650	3.270	2.100	1.620	195.0		
115.8	54.82	99.35	101.0	92.90	141.4	89.51	73.15	78.21	104.0	RHO	35.55	30.56	37.21	48.86	49.16	37.77	42.87	52.86	1.026	DC CAL	
1.4	3.5	2.5	1.2	2.7	2.1	.1	1.6	2.7	2.4	PFE	-.6	.9	1.1	.4	-1.5	.1	1.1	1.0	-.600	AC CAL	
12	64	25	12	29	15	1	22	35	23	MCF	-17	29	30	8	-31	3	26	19			

4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	I	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	2.000		
37	18	29	23	30	26	32	39	43	34	DC	43	51	50	44	44	46	49	40	2	RIGHT	
37	18	29	23	30	26	32	39	43	34		43	51	50	44	44	46	49	40	2	SIDE	
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6			
3.7	1.8	2.9	2.3	3.0	2.6	3.2	3.9	4.3	3.4	PFEA	4.3	5.1	5.0	4.4	4.4	4.6	4.9	4.0	.2		
91.50	197.0	41.80	112.0	31.60	19.60	58.70	20.00	9.190	7.650	AC1	17.40	8.360	4.990	5.030	8.760	5.410	3.730	4.260	194.0		
0.0	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	-.2	0.0	0.0	0.0	0.0	0.0	0.0		
91.50	197.2	41.80	112.1	31.60	19.60	58.70	20.00	9.190	7.650	ACA	17.40	8.360	4.985	5.030	8.760	5.410	3.730	4.260	194.0		
54.92	116.1	99.58	66.31	75.35	116.4	35.06	48.11	55.48	91.56	RHO	42.02	50.85	60.65	106.4	52.93	65.51	79.26	143.6	1.031	DC CAL	
3.5	1.5	2.7	2.0	2.8	2.4	3.0	3.7	4.1	3.2	PFE	4.1	4.9	4.9	4.2	4.2	4.4	4.7	3.8	-.200	AC CAL	
64	13	27	30	37	21	86	77	74	35	MCF	98	96	81	39	79	67	59	26			

BUSINESS FORMS PRINTING COMPANY BLUE SCALE BAR ENGINEERED FOR HIGH SPEED PRINTERS

JOB 486 LINE 3 SPREAD 1

LOOKING W DATE Dec 9 A= 750 feet

CENTER -45.0 LABEL S/N FREQ. 1.0 - 0.1

COUPLING yes

12-15-69
MD

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New Rives 486-69
LINE 3 HALF 5 SP. 1 DATE 12/9

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	23	3-4	4-5
RECEIVE	45.0-37.5	37.5 →	30.0	30.0 →		22.5	22.5	→		15.00
RANGE	10.0	10.0	1.0	10.0	1.0	1.0	10.0	1.0	1.0	0.1
DC 1 .1	1.7	1.5	3.9	2.0	2.6	4.0	1.8	2.4	3.2	4.0
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.				236.0			158.0			
AC 1 1.0	112.	173.	19.7	~~236.~~	68.0	13.3	~~15.~~	60.3	29.7	7.55
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-30.8	+37.2					+11.1			
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New Rider 486-69
LINE 3 HALF S SP. 1 DATE 12/9

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	15.0	→	→	7.5	7.5	→	→	0.0	3-4	
RANGE	1.0	1.0	0.1	0.1	0.1	0.1	0.1	.01	16.0	
DC 1 .1	2.2	3.2	4.0	4.1	2.2	2.4	4.4	5.6	-1.2	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.					1.57	1.35	1.21			
AC 1 1.0	24.1	14.2	8.42	2.55	~~15.7~~	~~13.5~~	~~12.1~~	.373	4195.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-12.9				#18.6					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT New River 486-69

LINE 3 HALF 1 SP. 1 DATE 12-10-69

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45-37.5	37.5-3	30.0	30.0	—	22.5	22.5	—	—	15.0
RANGE	Hi	—	—	—	—	—	—	—	—	—
VOLTAGE	415	415	415	415	415	415	410	415	410	410
CURRENT	3.5 A	4.0 A	3.5 A	4.5 A	4.0 A	3.5 A	4.5 A	4.5 A	4.0 A	3.5 A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	3-4
RECEIVE	15.0	—	—	7.5	7.5	—	—	0.0		
RANGE	Hi	—	—	—	—	—	—	—	—	Hi
VOLTAGE	405	405	410	410	405	405	410	410		200
CURRENT	4.5 A	4.5 A	4.0 A	3.5 A	4.5 A	4.5 A	4.0 A	3.5 A		2.0 A

FREQUENCIES 1.0 .1

SENDER NO. M K-4 6644-S

OPERATOR DJG

RECEIVER NO. 4C

OPERATOR G.C.

COMMENTS:

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT NEW RIVER 486-69
LINE 3 HALF N SP. 1 DATE 12/10

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45 0 52.5	52.5	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE	10.0	10.	1.0	10.	1.0	0.1	10.	1.0	1.0	0.1
DC 1 .1	2.4	2.9	4.0	4.9	4.4	4.4	3.0	3.7	4.0	3.8
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.			29.5			7.36				3.81
AC 1 1.0	216.	167.	~~[illegible]~~	119.	20.0	~~[illegible]~~	181.	31.5	11.6	~~[illegible]~~
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-99.0	-21.2		+72.5			-51.6			
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 3 HALF N SP. 1 DATE 12/10

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAC	
RECEIVE	75.0	→	→	82.5	82.5	→	→	79.0	23	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	0.1	.01	10.0	
DC 1 .1	4.8	5.4	6.2	7.0	5.2	7.0	8.6	15.0	+.8	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	18.5	6.18	2.81	1.58	4.98	2.34	1.22	.535	196.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-6.9				+81.7					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT ~~[illegible]~~ New River 486-69

LINE 3 HALF 2 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	45-52.5	52.5 —	— 60	60 —	—	— 67.5	67.5 —	—	—	75
RANGE	Lo —	—	—	—	—	—	—	—	—	Lo
VOLTAGE	450	460	455	530	460	455	640	525	455	450
CURRENT	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	(A)	2-3
RECEIVE	75 —	—	—	— 82.5	82.5 —	—	—	— 90	(A)	"
RANGE	Lo —	—	—	—	—	—	—	Lo		Lo
VOLTAGE	635	520	455	450	630	515	450	450		175
CURRENT	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A	5.0 A		2.0 A

FREQUENCIES 1.0 .1

SENDER NO. MK 4 6644-5

OPERATOR DJG

RECEIVER NO. 4C

OPERATOR G.C.

COMMENTS:

HEINRICHS GEOEX JOB 486/69 LINE 3 SPREAD 1 LOOKING W 12/9/69 A= 750 FEET

3.500	4.000	3.500	4.500	4.000	3.500	4.500	4.500	4.000	3.500	I	4.500	4.500	4.000	3.500	4.500	4.500	4.000	3.500	2.000	
17	15	29	20	26	40	18	24	32	40	DC	22	32	40	41	22	24	44	56	0	LEFT
17	15	29	20	26	40	18	24	32	40		22	32	40	41	22	24	44	56	0	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
1.7	1.5	2.9	2.0	2.6	4.0	1.8	2.4	3.2	4.0	PFEA	2.2	3.2	4.0	4.1	2.2	2.4	4.4	5.6	0.0	
112.0	173.0	19.70	236.0	68.00	13.30	158.0	60.30	29.70	7.550	AC1	24.10	14.20	8.420	2.550	1.570	1.350	1.210	.373	195.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
112.0	173.0	19.70	236.0	68.00	13.30	158.0	60.30	29.70	7.550	ACA	24.10	14.20	8.420	2.550	1.570	1.350	1.210	.373	195.0	
75.10	101.3	53.46	123.4	161.0	91.20	82.48	126.7	176.8	103.5	RHO	50.52	75.15	101.0	61.26	8.23	14.18	25.51	14.54	1.026	DC CAL
1.7	1.5	2.9	2.0	2.6	4.0	1.8	2.4	3.2	4.0	PFE	2.2	3.2	4.0	4.1	2.2	2.4	4.4	5.6	-0.000	AC CAL
23	15	54	16	16	44	22	19	18	39	MCF	44	43	40	67	267	169	172	385		
0.0	0.0	.1	0.0	0.0	.1	0.0	0.0	0.0	.1	CPFE	.1	.1	.1	.4	1.9	1.7	1.3	3.9		
1.7	1.5	2.8	2.0	2.6	3.9	1.8	2.4	3.2	3.9	CCPFE	2.1	3.1	3.9	3.7	.3	.7	3.1	1.7		
23	15	53	16	16	43	22	19	18	38	CCMCF	42	41	38	61	39	50	122	115		

5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	I	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.000	
24	29	40	49	44	44	30	37	40	38	DC	48	54	62	70	52	70	86	150	8	RIGHT
24	29	40	49	44	44	30	37	40	38		48	54	62	70	52	70	86	150	8	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
2.4	2.9	4.0	4.9	4.4	4.4	3.0	3.7	4.0	3.8	PFEA	4.8	5.4	6.2	7.0	5.2	7.0	8.6	15.0	.8	
216.0	167.0	29.50	119.0	20.00	7.360	181.0	31.50	11.60	5.810	AC1	18.50	6.180	2.810	1.580	4.980	2.340	1.220	.535	196.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
216.0	167.0	29.50	119.0	20.00	7.360	181.0	31.50	11.60	5.810	ACA	18.50	6.180	2.810	1.580	4.980	2.340	1.220	.535	196.0	
100.8	78.29	55.92	56.88	38.06	35.01	84.94	59.53	54.97	54.96	RHO	35.34	29.68	27.20	26.97	23.87	22.82	21.14	15.71	1.020	DC CAL
1.6	2.1	3.2	4.1	3.6	3.6	2.2	2.9	3.2	3.0	PFE	4.0	4.6	5.4	6.2	4.4	6.2	7.8	14.2	-.800	AC CAL
16	27	57	72	95	103	26	49	58	55	MCF	113	155	199	230	184	272	369	904		
0.0	0.0	.1	0.0	.1	.3	0.0	.1	.1	.3	CPFE	.1	.3	.7	1.2	.5	.9	1.6	3.6		
1.6	2.1	3.1	4.1	3.5	3.3	2.2	2.8	3.1	2.7	CCPFE	3.9	4.3	4.7	5.0	3.9	5.3	6.2	10.6		
16	27	56	72	92	95	26	48	56	50	CCMCF	110	144	172	186	165	232	292	677		

BUSINESS FORMS PRINTING COMPANY ENGINEERED FOR HIGH SPEED PRINTERS

JOB 486 LINE 1 SPREAD 1

LOOKING N DATE Dec 2-69 A= 750 feet

CENTER -45.0 LABEL W/W FREQ. 1.0 0.1

COUPLING yes

2nd half Sander Notes
ALL 3 amp Cal 2.0

12-5-69
MD

#1 elect 15 E

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT NEW RIVER 486-69
LINE 1 HALF W SP. 1 DATE 12/2

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0→52.5	52.5→60.0		60.0	→	67.5	67.5	→		75.0
RANGE	10.0	1.0	1.0	10.0	1.0	0.1	10.0	1.0	1.0	0.1
DC 1 ·1	1.6	1.1	2.5	.3	1.3	2.4	.9	1.6	2.4	3.7
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1/1.0	114.	93.6	19.3	175.	25.3	8.61	308.	60.9	13.4	5.85
AC 2/1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	0.0
AC AVG.										
S.P.	+46.4	+10.3		+11.4			-10.4			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-6
LINE 1 HALF W SP. 1 DATE 12/2

PAGE

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL.	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-3	
RANGE	1.0	1.0	0.1	0.1	1.0	1.0	0.1	0.1	10.0	
DC 1 .1	.8	1.7	3.1	3.8	1.9	2.6	3.7	3.7	-0.6	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	54.4	16.6	4.81	2.76	29.2	10.7	3.90	2.69	195.	
AC 2 1.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	
AC AVG.	+61.6				-3.6					
S.P.										
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT NEW RIVER 486-69

LINE 1 HALF W SP. 1 DATE 12/2

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	50-52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE	Low	→	→	→	→	→	→	→	→	→
VOLTAGE	670	640	500	320	620	500	320	500	620	500
CURRENT	4.A	3.0 A	3.0A	"	"	"	"	"	"	"
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-3	
RANGE	→	→	→	→	→	→	→	→	→	Low
VOLTAGE	320	320	620	500	220	320	620	500	420	
CURRENT	3.0A	3.0A	3.0A	3.0A	3.0A	"	3.0	3.0	2 Amp	

FREQUENCIES 1.0 0.1

SENDER NO. 6644-5

OPERATOR G. P.

RECEIVER NO. 4C

OPERATOR J.M.P

COMMENTS:

1-2 2-3 3-4 4-5

10X 100 + 200

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT NEW RIVER 48-69
LINE 1 HALF E SP. 1 DATE 12/3

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5	→ 30.0	30.0	→	22.5	22.5	→	→	15.0
RANGE	1.0	1.0	1.0	1.0	1.0	0.1	10.0	1.0	0.1	0.1
DC 1 .1	1.7	2.7	3.3	2.5	3.4	3.3	1.3	3.7	4.3	4.2
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	93.2	83.8	19.2	90.2	16.6	6.00	174.	23.7	6.01	2.77
AC 2 1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	+36.5	+4.7		+11.5			+19.5			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

PROJECT NEW RIVER 486-69
LINE 1 HALF E SP. 1 DATE 12/3

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	15.0	→	→	7.5	7.5	→	→	0.0	3-4	
RANGE	1.0	0.1	0.1	0.1	1.0	0.1	0.1		10.0	
DC 1 .1	3.1	5.1	5.4	4.8	2.5	3.8	3.0		+.2	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	39.4	12.4	2.64	1.42	18.0	5.47	2.30		195.	
AC 2 1.0	0.0	0.0	0.0	0.2 ±	0.0	0.0	0.0		0.0	
AC AVG.										
S.P.	-26.4				+34.1					
AC NOISE										
POT RES.										

HEINRICHS GEOEX JOB 486-69 LINE 1 SPREAD 1 LOOKING N 12-2-69 A= 750 FEET

4.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	I	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	2.000	
16	11	25	3	13	24	9	16	24	37	DC	8	17	31	38	19	26	37	37	-6	LEFT
16	11	25	3	13	24	9	16	24	37		8	17	31	38	19	26	37	37	-6	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
1.6	1.1	2.5	.3	1.3	2.4	.9	1.6	2.4	3.7	PFEA	.8	1.7	3.1	3.8	1.9	2.6	3.7	3.7	-.6	
114.0	93.60	19.30	175.0	25.30	8.610	308.0	60.90	13.40	5.850	AC1	54.40	16.60	4.810	2.760	29.20	10.70	3.900	2.690	195.0	
0.0	0.0	0.0	0.0	0.0	0.0	.2	0.0	-.1	0.0	AC2	.2	0.0	0.0	0.0	.1	0.0	0.0	0.0	0.0	
114.0	93.60	19.30	175.0	25.30	8.610	308.3	60.90	13.39	5.850	ACA	54.45	16.60	4.810	2.760	29.21	10.70	3.900	2.690	195.0	
67.22	73.22	61.23	135.8	79.33	68.22	240.5	191.5	106.2	93.87	RHO	169.7	130.6	76.74	77.58	230.2	169.9	109.5	120.9	1.026	DC CAL
2.2	1.7	3.1	.9	1.9	3.0	1.4	2.2	3.0	4.3	PFE	1.3	2.3	3.7	4.4	2.4	3.2	4.3	4.3	.600	AC CAL
33	23	51	7	24	44	6	11	29	46	MCF	8	18	48	57	11	19	39	36		

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	I	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	2.000	
17	27	33	25	34	33	13	37	43	42	DC	31	51	54	48	25	38	30		2	RIGHT
17	27	33	25	34	33	13	37	43	42		31	51	54	48	25	38	30		2	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
1.7	2.7	3.3	2.5	3.4	3.3	1.3	3.7	4.3	4.2	PFEA	3.1	5.1	5.4	4.8	2.5	3.8	3.0	0.0	.2	
93.20	83.80	19.20	90.20	16.60	6.000	174.0	23.70	6.010	2.770	AC1	39.40	7.940	2.640	1.420	18.00	5.470	2.300	0.000	195.0	
0.0	.1	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	0.0	
93.20	83.84	19.21	90.20	16.60	6.000	174.0	23.70	6.010	2.770	ACA	39.40	7.940	2.640	1.421	18.00	5.470	2.300	0.000	195.0	
72.77	66.07	60.91	70.98	52.71	47.58	135.3	75.48	48.13	44.32	RHO	124.7	64.07	42.73	39.99	141.6	87.18	63.66	*000.0	1.026	DC CAL
1.5	2.4	3.0	2.3	3.2	3.1	1.1	3.5	4.1	4.0	PFE	2.9	4.9	5.2	4.5	2.3	3.6	2.8	*000.0	-.200	AC CAL
21	37	50	32	61	65	8	46	85	90	MCF	23	76	122	113	16	41	44	*0000.		

BUSINESS FORMS PRINTING COMPANY ENGINEERED FOR HIGH SPEED PRINTERS

JOB 486-69 LINE 5 SPREAD 1

LOOKING W DATE Dec 19, 69 A= 750 ft

CENTER -45.0 LABEL S/N FREQ. 1.0 - 0.1

COUPLING yes

12-22-69
MD

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 5 HALF 5 SP. 1 DATE 12/19

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5 →	30.0	30.0	→	22.5	22.5	→	→	15.0
RANGE	10.0	10.0	10.0	10.0	1.0	1.0	10.0	1.0	1.0	1.0
DC 1 .1	1.3	1.3	2.0	1.3	1.9	2.5	1.8	2.5	2.9	3.7
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	400.	374.	103.	242.	72.5	28.9	466.	77.4	39.6	20.3
AC 2 1.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
AC AVG.										
S.P.	+7.9	+0.7		+19.0			+15.7			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69

LINE 5 HALF S SP. 1 DATE 12/19

PAGE

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5		CAL 1
RECEIVE	15.0	→	→	7.5	7.5	→	→	0.0		3-4
RANGE	1.0	1.0	1.0	0.1	0.1	0.1	0.1	0.1		10.0
DC 1 .1	3.1	4.2	4.6	4.6	-.4	-.3	-.4	2.0		+.4
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	57.6	15.5	12.0	7.83	8.86	3.37	3.60	2.55		194.
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
AC AVG.										
S.P.	+17.0				+10.9					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT NEW RIVER

LINE 5 HALF S SP. 1 DATE 12/19

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0	37.5	—	30.0	—	22.5	22.5	—	—	45.0
RANGE	HIGH	HIGH	"	"	"	"	"	HIGH	"	HIGH
VOLTAGE	400	320	400	260	320	400	240	240	320	400
CURRENT	5.0A	5.0A	"	"	"	"	5.0A	5.0A	"	5.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	45.0	—	—	7.5	7.5	—	—	0.0	3-4	
RANGE	HIGH	"	"	"	HIGH	"	"	HIGH	~~HIGH~~	HIGH
VOLTAGE	240	240	320	400	240	"	320	400	120	
CURRENT	5.0A	"	"	5.0A	5.0	"	"	5.0A	2.0A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 5 HALF N SP. 1 DATE 12/19

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0 52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE	10.0	10.0	1.0	10.0	1.0	1.0	10.0	10.0	1.0	1.0
DC 1 .1	-.4	-.1	+.3	-.4	+.2	1.1	-.1	.4	1.2	1.8
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	353.	374.	94.6	488.	65.9	24.0	54.0.	13.1	24.9	11.0
AC 2 1.0	0.0	+0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	+26.0	+15.0		+ 8.3			-24.0			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

PROJECT New River 486-69
LINE 5 HALF N SP. 1 DATE 12/19

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL-	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-5	
RANGE	1.0	1.0	0.1	0.1	1.0	0.1	0.1	0.1	10.0	
DC 1 .1	1.5	2.1	2.6	3.8	2.5	2.9	3.2	3.7	-1.1	D.C.
DC 2									+29.0	AC
DC 3									-8.2	No
DC 4								USC	+9	FILTER
DC 5									-8.2	
DC 6									+9	
DC 7									-8.2	
DC 8									+9.0	
DC AVG.										
AC 1 1.0	77.2	27.7	6.30	3.17	12.7	6.35	1.81	1.27	192.0	
AC 2 1.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0+.2	
AC AVG.	~~+12.2~~									
S.P.	+12.2				+27.5					
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT NEW RIVER

LINE 5 HALF N SP. 1 DATE 12/19

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0	52.5	60.0	60.0	—	67.5	62.5	—	—	75.0
RANGE	HIGH	"	"	"	"	"	HIGH	"	"	HIGH
VOLTAGE	240	240	"	300	240	"	380	300	240	240
CURRENT	5.0A	"	"	"	"	"	5.0A	"	"	5.0A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE	75.0	—	—	82.5	82.5	—	—	90.0	2-3	
RANGE	HIGH	"	"	"	HIGH	"	"	"	HIGH	
VOLTAGE	380	300	240	240	380	300	240	240	100	
CURRENT	5.0A	"	"	5.0A	5.0A	"	"	5.0	2.0A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEX JOB 486/69 LINE 5 SPREAD 1 LOOKING W 12/19/69 A= 750 FEET

5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	I	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.000	
13	13	20	13	19	25	18	25	29	37	DC	31	42	46	46	-4	-3	-4	20	4	LEFT
13	13	20	13	19	25	18	25	29	37		31	42	46	46	-4	-3	-4	20	4	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
1.3	1.3	2.0	1.3	1.9	2.5	1.8	2.5	2.9	3.7	PFEA	3.1	4.2	4.6	4.6	-.4	-.3	-.4	2.0	.4	
400.0	374.0	103.0	242.0	72.50	28.90	466.0	77.40	39.60	20.30	AC1	57.60	15.50	12.00	7.830	8.860	3.370	3.600	2.550	194.0	
-.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.1	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
399.8	374.0	103.0	242.0	72.50	28.90	466.0	77.40	39.58	20.30	ACA	57.60	15.50	12.00	7.830	8.860	3.370	3.600	2.550	194.0	
187.2	175.1	194.2	113.3	136.6	136.9	219.2	146.6	188.3	194.6	RHO	109.8	74.64	116.0	132.5	40.77	31.05	57.99	67.31	1.031	DC CAL
.9	.9	1.6	.9	1.5	2.1	1.4	2.1	2.5	3.3	PFE	2.7	3.8	4.2	4.2	-.8	-.7	-.8	1.6	-.400	AC CAL
5	5	8	8	11	15	6	14	14	17	MCF	25	51	36	32	-20	-23	-14	24		
0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	.0	CPFE	0.0	.1	.1	.1	.2	.6	.4	.5		
.9	.9	1.6	.9	1.5	2.1	1.4	2.1	2.5	3.3	CCPFE	2.7	3.7	4.1	4.1	-1.0	-1.3	-1.2	1.1		
5	5	8	8	11	15	6	14	14	17	CCMCF	25	50	35	31	-25	-42	-21	16		

5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	I	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.000	
-4	-1	3	-4	2	11	-1	4	12	18	DC	15	21	26	38	25	29	32	37	-11	RIGHT
-4	-1	3	-4	2	11	-1	4	12	18		15	21	26	38	25	29	32	37	-11	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
-.4	-.1	.3	-.4	.2	1.1	-.1	.4	1.2	1.8	PFEA	1.5	2.1	2.6	3.8	2.5	2.9	3.2	3.7	-1.1	
353.0	374.0	94.60	488.0	65.90	24.00	540.0	131.0	24.90	11.00	AC1	77.20	27.70	6.300	3.170	12.70	6.350	1.810	1.270	192.0	
0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	.2	0.0	0.0	0.0	0.0	.2	
353.0	374.2	94.60	488.0	65.90	24.00	540.0	131.0	24.90	11.00	ACA	77.20	27.70	6.300	3.173	12.70	6.350	1.810	1.270	192.2	
166.6	177.1	179.9	230.3	125.2	115.0	255.7	249.3	119.4	106.1	RHO	148.5	134.0	61.25	54.56	61.67	61.91	30.97	34.94	1.041	DC CAL
.8	1.0	1.5	.8	1.4	2.3	1.1	1.6	2.4	3.0	PFE	2.7	3.3	3.8	4.9	3.7	4.1	4.4	4.9	1.200	AC CAL
5	6	8	3	11	20	4	6	20	28	MCF	18	25	62	90	60	66	142	140		
0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	.0	.1	CPFE	0.0	.0	.2	.5	.1	.2	1.0	1.3		
.8	1.0	1.5	.8	1.4	2.2	1.1	1.6	2.4	2.9	CCPFE	2.7	3.3	3.6	4.4	3.6	3.9	3.4	3.6		
5	6	8	3	11	20	4	6	20	27	CCMCF	18	24	58	81	58	62	110	104		

JOB 486-69 LINE 2 SPREAD 1

LOOKING W DATE Dec 6 A= 750 feet

CENTER -45.0 LABEL S/N FREQ. 1.0 - 0.1

COUPLING Yes

12-9-69

MD

Line 2 # elec 11 N

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 4/6-69
LINE 2 HALF S SP. 1 DATE 12/6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0-52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE 1.	10.0	1.0	1.0	10.0	1.0	1.0	10.0	1.0	0.1	0.1
DC 1	1.9	~~[illegible]~~	2.8	1.5	2.4	3.0	1.1	2.3	3.3	3.7
DC 2		~~[illegible]~~								
DC 3		1.8								
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.		93.1								
AC 1 1.0	126.	~~[illegible]~~	30.5	136.	28.4	16.1	122.	26.0	7.48	7.93
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-8.7	+26.3		+10.1			+27.0			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69

LINE 2 HALF S SP. 1 DATE 1/46

PAGE

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL.	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-3	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	.01		10.0	
DC 1 .1	2.2	3.4	4.4	4.2	4.7	3.4	4.6		0.2	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	20.1	6.46	3.21	3.18	3.34	1.36	.743		195.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
AC AVG.										
S.P.	-2.1				+9.1					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT NEW RIVER

LINE 2 HALF 5 SP. 1 DATE 12/6

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE										
RANGE	LOW	HIGH	LOW	H	H	LOO	H	H	H	LOW
VOLTAGE	500	380	500	380	380	500	480	380	380	500
CURRENT	3. A	3. A	3. A	3. A	3. A	3. A	3. A	3. A	3. A	3. A
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE									2-3	
RANGE	H	H	H	LOW	H	H	H	LOW	HIGH	
VOLTAGE	480	380	380	500	480	380	380		260	
CURRENT	3. A	3. A	3. A	3. A	3. A	3. A	3. A		2. A	

FREQUENCIES 1.0 .1

SENDER NO. M 4

OPERATOR GC

RECEIVER NO.

OPERATOR MP

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 4869 PAGE
LINE 2 HALF N SP. 1 DATE 12/5

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5 →	30.0	30.0	→	22.5	22.5	→	→	15.0
RANGE	1.0	10.0	1.0	10.0	1.0	1.0	10.0	1.0	0.1	0.1
DC 1 .1	2.2	2.0	3.3	2.1	3.6	4.1	2.1	3.1	4.6	5.1
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	93.4	126.	30.7	131.	25.5	10.3	187.0	28.1	7.22	3.71
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-26.0	+11.1		+60.3			-32.7			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT NEW RIVER 486-69

LINE 2 HALF N SP. 1 DATE 12/5

PAGE

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	15.0	0.1 →		7.5	7.5	→		0.0	3-4	
RANGE	1.0	~~1.0~~	0.1	0.1	1.0	0.1	0.1	.01	10.0	
DC 1 .1	3.2	4.9	6.0	6.0	4.1	5.3	6.5	6.8	.3	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	35.0	7.00	2.29	1.50	12.5	2.80	1.02	.710	196.	
AC 2 1.0	0.0	0.0	0.0	0.2	0.0	0.0	-0.2	0.0	0.0	
AC AVG.										
S.P.	+39.3				+40.4					
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT NEW RIVER

LINE 2 HALF N SP. 1 DATE 12/6

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE										
RANGE							LOW	HIGH	HIGH	HIGH
VOLTAGE	480	380	480	400	380	480	520	400	380	480
CURRENT	3.0A	3.A	3.A	3.A	3.A	3.A	3.A	3.A	3.A	3.A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE									3-4	
RANGE	LOW	HIGH			LOW	HIGH			HIGH	
VOLTAGE	520	400	380	480	520	400	380	480	240	
CURRENT	3.A	3.A	3.A	3.A	3.A	3.A	3.A	3.A	2.0A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEX JOB 486-69 LINE 2 SPREAD 1 LOOKING W 12/6/69 A= 750 FEET

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	I	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	2.000	
19	18	28	15	24	30	11	23	33	37	DC	22	34	44	42	47	34	46		2	LEFT
19	18	28	15	24	30	11	23	33	37		22	34	44	42	47	34	46		2	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
1.9	1.8	2.8	1.5	2.4	3.0	1.1	2.3	3.3	3.7	PFEA	2.2	3.4	4.4	4.2	4.7	3.4	4.6	0.0	.2	
126.0	93.10	30.50	136.0	28.40	16.10	122.0	26.00	9.480	7.930	AC1	20.10	6.460	3.210	3.180	3.340	1.360	.743	0.000	195.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
126.0	93.10	30.50	136.0	28.40	16.10	122.0	26.00	9.480	7.930	ACA	20.10	6.460	3.210	3.180	3.340	1.360	.743	0.000	195.0	
98.57	72.76	96.29	106.0	89.31	127.3	94.69	81.68	75.18	126.3	RHO	63.08	51.28	51.46	89.04	26.85	21.59	20.88	*000.0	1.026	DC CAL
1.7	1.6	2.6	1.3	2.2	2.8	.9	2.1	3.1	3.5	PFE	2.0	3.2	4.2	4.0	4.5	3.2	4.4	*000.0	-.200	AC CAL
17	22	27	12	25	22	10	26	41	28	MCF	32	62	82	45	168	148	211	*0000.		
0.0	0.0	0.0	0.0	0.0	.0	0.0	.0	.1	.1	CPFE	.0	.2	.3	.2	.4	1.0	1.7	0.0		
1.7	1.6	2.6	1.3	2.2	2.8	.9	2.1	3.0	3.4	CCPFE	2.0	3.0	3.9	3.8	4.1	2.2	2.7	*000.0		
17	22	27	12	25	22	10	25	40	27	CCMCF	31	59	76	42	153	103	131	*0000.		

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	I	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	2.000	
22	20	33	21	36	41	21	31	46	51	DC	32	49	60	60	41	53	65	68	3	RIGHT
22	20	33	21	36	41	21	31	46	51		32	49	60	60	41	53	65	68	3	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
2.2	2.0	3.3	2.1	3.6	4.1	2.1	3.1	4.6	5.1	PFEA	3.2	4.9	6.0	6.0	4.1	5.3	6.5	6.8	.3	
93.40	126.0	30.70	131.0	25.50	10.30	187.0	28.10	7.220	3.710	AC1	35.00	7.000	2.290	1.500	12.50	2.800	1.020	.710	196.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	0.0	0.0	.2	0.0	0.0	-.2	0.0	0.0	
93.40	126.0	30.70	131.0	25.50	10.30	187.0	28.10	7.220	3.710	ACA	35.00	7.000	2.290	1.501	12.50	2.800	1.019	.710	196.0	
72.84	98.07	96.80	102.1	80.64	81.82	145.7	88.43	57.63	59.51	RHO	110.2	56.04	37.05	42.47	99.30	45.00	29.01	32.41	1.020	DC CAL
1.9	1.7	3.0	1.8	3.3	3.8	1.8	2.8	4.3	4.8	PFE	2.9	4.6	5.7	5.6	3.8	5.0	6.3	6.5	-.300	AC CAL
26	17	31	18	41	46	12	32	75	81	MCF	56	82	154	132	38	111	217	201		
0.0	0.0	0.0	0.0	.0	.1	0.0	0.0	.1	.2	CPFE	0.0	.1	.5	.6	.1	.4	1.1	1.4		
1.9	1.7	3.0	1.8	3.3	3.7	1.8	2.8	4.2	4.6	CCPFE	2.9	4.5	5.2	5.0	3.7	4.6	5.2	5.1		
26	17	31	18	40	45	12	32	72	77	CCMCF	26	80	141	117	38	103	180	157		

BUSINESS FORMS PRINTING COMPANY BLUE GRAPH BAR ENGINEERED FOR HIGH SPEED PRINTERS

JOB 486-69 LINE 2 SPREAD 3

LOOKING W DATE Dec 17, 69 A= 750 feet

CENTER 0.0 LABEL S/N FREQ. 1.0 - 0.1

COUPLING yes

12-22-69

MD

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New Liver 486-69
LINE 2 HALF 5 SP. 3 DATE 12/17

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	16.-37.5	37.5	30.0	39.6	→	22.5	22.5			15.0
RANGE	10.0	10.0	0.1	[illegible]	1.0	0.1	10.0	1.0	1.0	0.1
DC 1	0.2	-.2	.2	[illegible]	1.1	2.0	2.2	2.1	2.6	2.4
DC 2				1.1						
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1	277.	216.	39.0	79.6	23.5	6.93	115.	29.4	16.1	5.89
AC 2	0.0	0.0	0.0	0.0	0.0	+0.2	+0.2	0.0	0.0	0.0
AC AVG.										
S.P.	-42.9	-29.6		-20.0			-25.5			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

PROJECT New River 486-69
LINE 2 HALF S SP. 3 DATE 12/17

SEND	1-2	2-3	3-4	4-5						CAL
RECEIVE	15.0	→	→	7.8						3-4
RANGE	1.0	1.0	0.1	0.1						10.0
DC 1	2.0	2.2	2.6	2.4				FILTER	.1 DC.	<1.4
DC 2									AC .1	+.6
DC 3										-.8
DC 4									use	+.6
DC 5										-.8
DC 6										+.6
DC 7										-.8
DC 8										+.6
DC AVG.										
AC 1	44.0	15.0	8.53	3.70						193.
AC 2	0.0	0.0	0.0	0.0						0.0
AC AVG.										
S.P.	+1.8									
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT NEW RIVER

LINE 2 HALF 5 SP. 2 DATE 12/17

SEND	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	3-4	4-5
RECEIVE										
RANGE	LOW	"	"	"	"	"	"	"	LOW	"
VOLTAGE	400	200	240	400	580	220	240	400	240	400
CURRENT	4.0A	4.0A	4.0A	"	"	"	"	"	4.0A	4.0A
SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE									3-4	
RANGE	LOW	"	"	"					LOW	
VOLTAGE	580	200	240	400					120	
CURRENT	4.0A	"	"	4.0A					2.0A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69

LINE 2 HALF 14 SP. 3 DATE 12/18

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0-52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE	10.0	10.0	1.0	1.0	1.0	0.1	1.0	1.0	0.1	0.1
DC 1 .1	1.6	1.2	1.6	1.9	2.1	2.5	1.3	1.9	2.3	2.2
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	222.	279.	39.3	67.4	13.3	4.36	77.5	15.7	6.23	3.20
AC 2 1.0	0.0	+0.2	0.0	+0.2	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	+3.0	+8.2		+15.5			+15.4			
AC NOISE										
POT. RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT NEW RIVER 486-69
LINE 2 HALF N SP. 3 DATE 12/8

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL.	
RECEIVE	75.0	→	→	82.0	82.0	→	→	90.0	2-3	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	0.1	.01	10.0	
DC 1 .1	1.8	2.4	2.8	4.0	2.8	2.6	2.8	2.8	+.4	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.								.692		
AC 1 1.0	12.8	5.23	3.11	1.66	3.08	1.80	1.12	~~0.92~~	194.	
AC 2 1.0	0.0	+0.1	0.0	0.0	+0.1	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-7.6				+12.3					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT NEW RIVER

LINE 2 HALF N SP. 3 DATE 12/18

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE										
RANGE	LOW	"	"	"	"	"	LOW	"	"	"
VOLTAGE	580	200	580	240	200	580	400	240	200	580
CURRENT	4.0A	"	"	"	"	"	4.0A	"	"	"
SEND	4-5	3-4	-2-3	1-2	4-5	3-4	2-3	1-2	CAL	
RECEIVE									2-3	
RANGE	LOW	"	"	"	"	"	"	LOW	LOW	
VOLTAGE	400	240	200	580	400	240	200	580	100	
CURRENT	4.0A	"	"	4.0A	"	"	"	4.0A	2.0A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEX JOB 486-69 LINE 2 SPREAD 3 LOOKING W 12/17/69 A= 750 FEET

4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	I	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	2.000		
2	-2	2	11	11	20	22	21	26	24	DC	20	22	26	24						-14	LEFT
2	-2	2	11	11	20	22	21	26	24		20	22	26	24						-14	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6			
.2	-.2	.2	1.1	1.1	2.0	2.2	2.1	2.6	2.4	PFEA	2.0	2.2	2.6	2.4	0.0	0.0	0.0	0.0	-1.4		
277.0	216.0	39.00	79.60	23.50	6.930	115.0	29.40	16.10	5.890	AC1	44.00	15.00	8.530	3.700	0.000	0.000	0.000	0.000	193.0		
0.0	0.0	0.0	0.0	0.0	.2	.2	0.0	0.0	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
277.0	216.0	39.00	79.60	23.50	6.937	115.1	29.40	16.10	5.890	ACA	44.00	15.00	8.530	3.700	0.000	0.000	0.000	0.000	193.0		
164.0	127.4	92.39	47.56	56.16	41.77	69.45	70.95	97.60	71.28	RHO	106.1	90.58	103.4	78.35	*000.0	*000.0	*000.0	*000.0	1.036	DC CAL	
1.6	1.2	1.6	2.5	2.5	3.3	3.5	3.5	4.0	3.8	PFE	3.4	3.6	4.0	3.8	*000.0	*000.0	*000.0	*000.0	1.400	AC CAL	
10	9	17	53	45	79	50	49	41	53	MCF	32	40	39	48	*0000.	*0000.	*0000.	*0000.			
0.0	0.0	0.0	0.0	.1	.2	0.0	.0	.1	.2	CPFE	0.0	.1	.1	.3	0.0	0.0	0.0	0.0			
1.6	1.2	1.6	2.5	2.4	3.1	3.5	3.5	3.9	3.6	CCPFE	3.4	3.5	3.9	3.5	*000.0	*000.0	*000.0	*000.0			
10	9	17	53	43	74	50	49	40	51	CCMCF	32	39	38	45	*0000.	*0000.	*0000.	*0000.			

4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	I	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	2.000		
16	12	16	19	21	25	13	19	23	22	DC	18	24	28	40	23	26	28	28	4	RIGHT	
16	12	16	19	21	25	13	19	23	22		18	24	28	40	23	26	28	28	4	SIDE	
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6			
1.6	1.2	1.6	1.9	2.1	2.5	1.3	1.9	2.3	2.2	PFEA	1.8	2.4	2.8	4.0	2.3	2.6	2.8	2.8	.4		
222.0	279.0	39.30	67.40	13.30	4.360	77.50	15.70	6.230	3.200	AC1	12.80	5.230	3.110	1.660	3.080	1.800	1.120	.692	194.0		
0.0	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	AC2	0.0	.1	0.0	0.0	.1	0.0	0.0	0.0	0.0		
222.0	279.3	39.30	67.47	13.30	4.360	77.50	15.70	6.230	3.200	ACA	12.80	5.233	3.110	1.660	3.082	1.800	1.120	.692	194.0		
130.3	163.1	92.25	39.67	31.37	25.81	45.35	36.96	36.81	37.78	RHO	30.11	30.94	36.94	34.90	18.20	21.34	23.28	23.01	1.031	DC CAL	
1.2	.7	1.2	1.4	1.7	2.1	.9	1.5	1.9	1.8	PFE	1.4	1.9	2.4	3.6	1.8	2.2	2.4	2.4	-.400	AC CAL	
9	4	13	35	54	81	20	41	52	48	MCF	47	63	65	103	102	103	103	104			
0.0	0.0	0.0	0.0	.1	.4	0.0	.1	.3	.5	CPFE	.1	.3	.5	.8	.7	1.0	1.4	2.2			
1.2	.7	1.2	1.4	1.6	1.7	.9	1.4	1.6	1.3	CCPFE	1.3	1.6	1.9	2.8	1.2	1.2	1.0	.2			
9	4	13	35	50	66	20	38	45	36	CCMCF	42	53	52	79	66	57	41	9			

JOB 486 - 69 LINE 2 SPREAD 2

LOOKING W DATE Dec 8 A= 750 feet

CENTER -90.0 LABEL S / S FREQ. 1.0 - 0.1

COUPLING Yes

12-19-69
MD

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 2 HALF S SP. 2 DATE 1/28

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45.0-52.5	52.5 →	60.0	60.0 →		67.5	67.5 →			75.00
RANGE	1.0	1.0	1.0	1.0	.1	.1	1.0	.1	.1	.1
DC 1 .1	.9	1.1	1.7	1.1	1.2	2.2	1.9	1.3	1.6	3.6
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	35.2	16.1	10.4	21.7	4.6	4.39	15.8	3.54	1.18	1.57
AC 2 1.0	+.1	0.0	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0
AC AVG.										
S.P.	+22.7	+33.0		11.9			45.5			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 2 HALF 5 SP. 2 DATE 12/8

PAGE

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	COL	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-3	
RANGE	.1	.1	.01	.01	.1	.01	.01	.01	10.0	
DC 1 .1	.9	1.0	1.6	2.0	.8	1.3	3.0	1.4	.6	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	3.68	1.35	.496	.957	1.28	.579	.241	.600	197.0	
AC 2 1.0	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	+9.7				+63.7					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO. ASSUMED PROJECT 486

I. P. SENDER NOTES

LINE 2 HALF 5 SP. 2 DATE

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE										
RANGE										
VOLTAGE										
CURRENT	6.0	→								
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal
RECEIVE										3-4
RANGE										
VOLTAGE										
CURRENT	6.0	→								2.0

FREQUENCIES 1 0.1

SENDER NO.

OPERATOR

RECEIVER NO.

OPERATOR

COMMENTS:

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 2 HALF N SP. 2 DATE 12-9-69

PAGE 1

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5	30.0	30.0	—	22.5	22.5	—	—	15.0
RANGE	1.0	1.0	1.0	1.0	1.0	1.0	10.0	1.0	1.0	.1
DC 1 1.0	.3	.2	1.0	.4	.6	1.2	1.5	1.8	2.1	3.4
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	15.9	34.9	10.3	18.3	28.7	10.2	192.	23.8	11.9	4.64
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.2	0.0
AC AVG.										
S.P.	+401	+300		+045			+065			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69

LINE 2 HALF N SP. 2 DATE 12-9-69

SEND	1-2	2-3	3-4	4-5						CAL
RECEIVE	15.0			7.5						3-4
RANGE	1.0	.1	.1	.1						10.0
DC 1 .1	2.7	2.9	3.2	4.4						-.4
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	4.2	6.86	3.78	1.82						195.
AC 2 1.0	0.0	0.0	0.0	0.0						00
AC AVG.										
S.P.	-158									
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PAGE

PROJECT NEW RIVER

LINE 2 HALF N SP. 2 DATE 12/9

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE										
RANGE	HIGH	"	—	"	—	—	—	—	—	HIGH
VOLTAGE	280	280	"	220	"	"	200	220	280	"
CURRENT	6.A	6.A	6.A	"	"	"	"	"	"	"
SEND	1-2	2-3	3-4	4-5					CAL	
RECEIVE									3-4	
RANGE	HIGH	"	"						HIGH	
VOLTAGE	200	220	280	280					80	
CURRENT	6.A	"	6.A	6.A					2.A	

FREQUENCIES _____ _____

SENDER NO.

OPERATOR

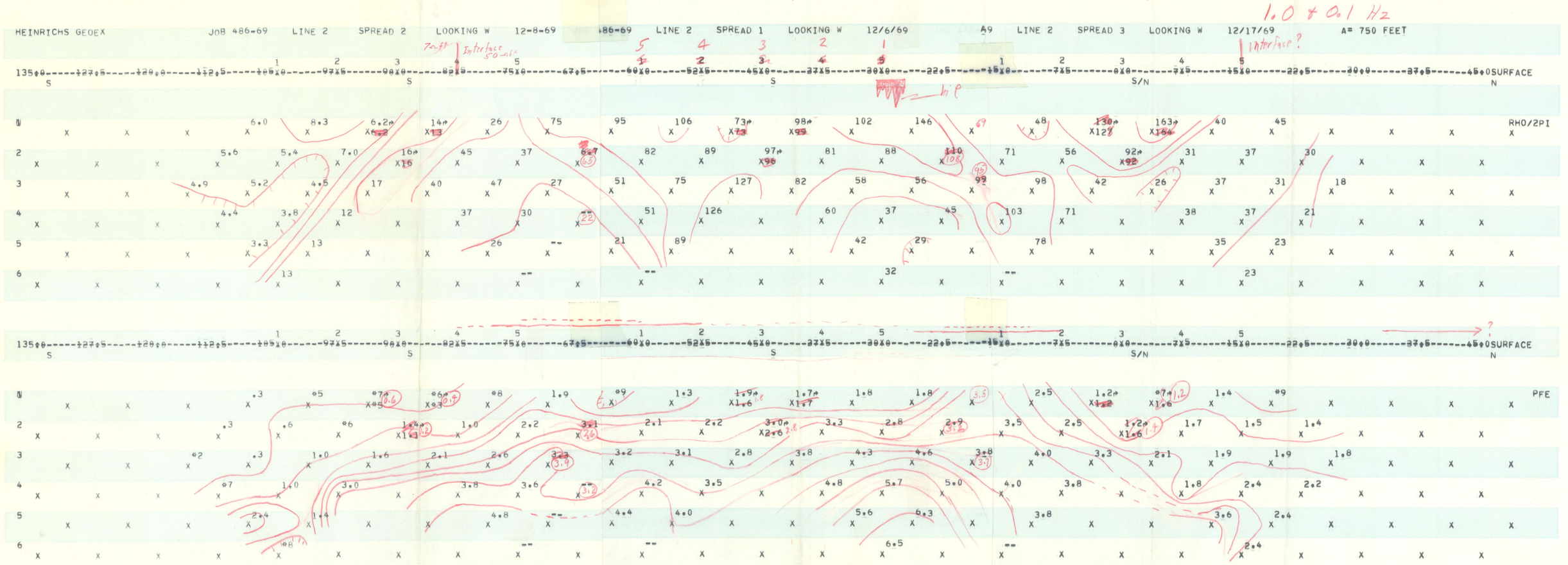
RECEIVER NO.

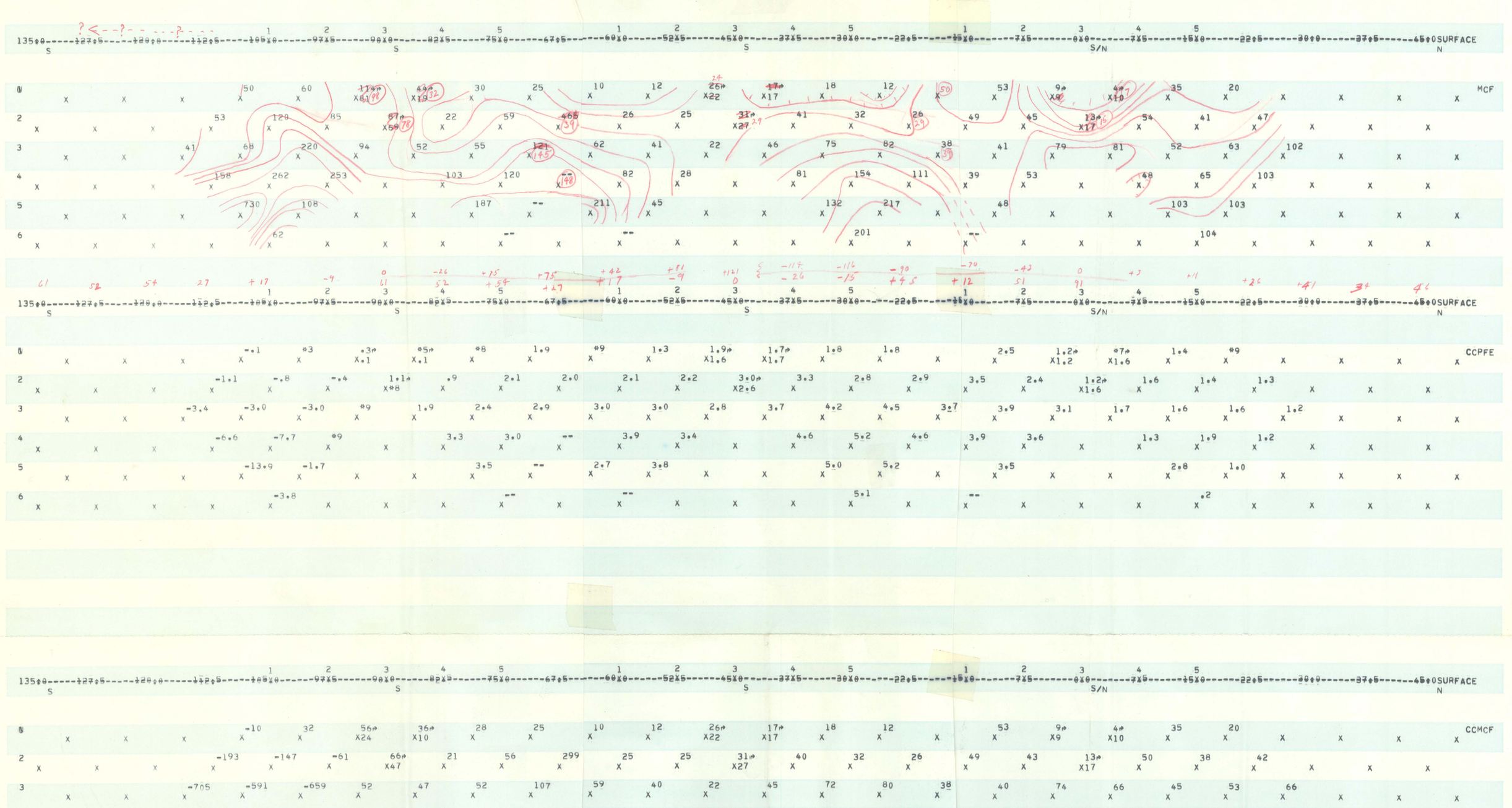
OPERATOR

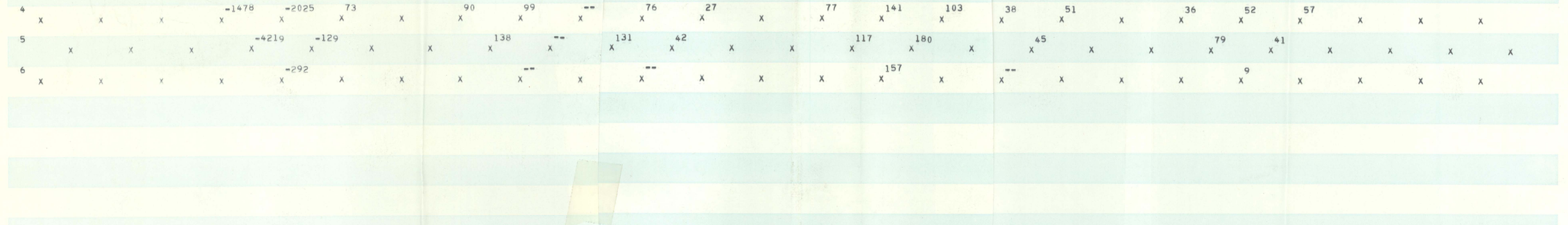
COMMENTS:

1.0 & 0.1 Hz

HEINRICHS GEOEX JOB 486-69 LINE 2 SPREAD 2 LOOKING W 12-8-69 | 486-69 LINE 2 SPREAD 1 LOOKING W 12/6/69 | A9 LINE 2 SPREAD 3 LOOKING W 12/17/69 A= 750 FEET







HEINRICHS GEOEX JOB 486-69 LINE 2 SPREAD 2 LOOKING W 12-8-69 A= 750 FEET

6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	I	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	2.000	
9	11	17	11	12	22	9	13	16	36	DC	9	10	16	20	8	13	30	14	6	LEFT
9	11	17	11	12	22	9	13	16	36		9	10	16	20	8	13	30	14	6	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
.9	1.1	1.7	1.1	1.2	2.2	.9	1.3	1.6	3.6	PFEA	.9	1.0	1.6	2.0	.8	1.3	3.0	1.4	.6	
35.20	16.10	10.40	21.70	4.600	4.390	15.80	3.540	1.180	1.510	AC1	3.680	1.350	.496	.957	1.280	.579	.241	.600	197.0	
.1	0.0	0.0	0.0	0.0	0.0	0.0	.1	0.0	0.0	AC2	0.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
35.22	16.10	10.40	21.70	4.600	4.390	15.80	3.542	1.180	1.510	ACA	3.680	1.351	.496	.957	1.280	.579	.241	.600	197.0	
13.44	6.16	16.01	8.30	7.05	16.98	6.03	5.43	4.54	11.84	RHO	5.62	5.16	3.81	12.93	4.88	4.44	3.29	12.89	1.015	DC CAL
.3	.5	1.1	.5	.6	1.6	.3	.6	1.0	3.0	PFE	.3	.3	1.0	1.4	.2	.7	2.4	.8	-.600	AC CAL
19	81	69	60	85	94	50	120	220	253	MCF	53	68	262	108	41	158	730	62		
.1	.4	.3	.2	1.0	.7	.4	1.5	4.0	2.1	CPFE	1.4	3.4	8.7	3.1	3.6	7.3	16.3	4.6		
.1	.1	.8	.3	-.4	.9	-.1	-.8	-3.0	.9	CCPFE	-1.1	-3.0	-7.7	-1.7	-3.4	-6.6	-13.9	-3.8		
10	24	47	32	-61	52	-10	-147	-659	73	CCMCF	-193	-591	-2025	-129	-705	-1478	-4219	-292		

6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	I	6.000	6.000	6.000	6.000	6.000	6.000	6.000	6.000	2.000	
3	2	10	4	6	17	15	18	21	34	DC	27	29	32	44					-4	RIGHT
3	2	10	4	6	17	15	18	21	34		27	29	32	44					-4	SIDE
1	1	2	1	2	3	1	2	3	4	N	2	3	4	5	3	4	5	6		
.3	.2	1.0	.4	.6	1.7	1.5	1.8	2.1	3.4	PFEA	2.7	2.9	3.2	4.4	0.0	0.0	0.0	0.0	-.4	
15.90	34.90	10.30	68.30	28.70	10.20	192.0	23.80	11.90	4.640	AC1	4.200	6.860	3.780	1.820	0.000	0.000	0.000	0.000	195.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-.2	0.0	AC2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15.90	34.90	10.30	68.30	28.70	10.20	192.0	23.80	11.89	4.640	ACA	4.200	6.860	3.780	1.820	0.000	0.000	0.000	0.000	195.0	
6.16	13.50	16.07	26.48	44.60	40.05	75.25	37.42	46.91	37.05	RHO	6.66	27.26	30.12	25.68	*000.0	*000.0	*000.0	*000.0	1.026	DC CAL
.7	.6	1.4	.8	1.0	2.1	1.9	2.2	2.6	3.8	PFE	3.1	3.3	3.6	4.8	*000.0	*000.0	*000.0	*000.0	.400	AC CAL
114	44	87	30	22	52	25	59	55	103	MCF	465	121	120	187	*0000.	*0000.	*0000.	*0000.		
.4	.1	.3	.0	.1	.2	0.0	.1	.2	.5	CPFE	1.1	.4	.6	1.3	0.0	0.0	0.0	0.0		
.3	.5	1.1	.8	.9	1.9	1.9	2.1	2.4	3.3	CCPFE	2.0	2.9	3.0	3.5	*000.0	*000.0	*000.0	*000.0		
56	36	66	28	21	47	25	56	52	90	CCMCF	299	107	99	138	*0000.	*0000.	*0000.	*0000.		

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PAGE

PROJECT New Rives 486-69
LINE 3 HALF 5 SP. 1 DATE 12/9

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	23	3-4	4-5
RECEIVE	150-37.5	37.5 →	30.0	30.0 →		22.5	22.5	→		15.00
RANGE	10.0	10.0	1.0	1.0	1.0	1.0	10.0	1.0	1.0	0.1
DC 1 .1	1.9	1.5	3.9	2.0	2.6	4.0	1.8	2.4	3.2	4.0
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.				236.0			154.0			
AC 1 1.0	112.	173.	19.7	[illegible]	68.0	13.3	15.80	60.3	29.7	7.53
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-30.8	+37.2					+11.1			
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 48-69
LINE 2 HALF S SP. 1 DATE 12/6

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	1550-52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE .1	10.0	1.0	1.0	10.0	1.0	1.0	10.0	1.0	0.1	0.1
DC 1	1.9	~~1.8~~	2.8	1.5	2.4	3.0	1.1	2.3	3.3	3.9
DC 2		~~1.8~~								
DC 3		1.8								
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.		93.1								
AC 1 1.0	126.	~~93.1~~	30.5	136.	28.4	16.1	122.	26.0	9.48	9.93
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-8.9	+26.3		+10.1			+27.0			
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT NEW RIVER 4BC-69
LINE 2 HALF N SP. 1 DATE 12/5

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	15.0	→	→	7.5	7.5	→	→	0.0	3-4	
RANGE	1.0	1.0	0.1	0.1	1.0	0.1	0.1	.01	10.0	
DC 1 .1	3.2	4.9	6.0	6.0	4.1	5.3	6.5	6.8	.3	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	33.0	7.00	2.29	1.50	12.5	2.80	1.02	.710	196.	
AC 2 1.0	0.0	0.0	0.0	0.2	0.0	0.0	-0.2	0.0	0.0	
AC AVG.										
S.P.	+38.3				+40.4					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 4669

LINE 2 HALF N SP. 1 DATE 12/5

PAGE

SEND	4-5	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5
RECEIVE	45.0-37.5	37.5 →	30.0	30.0	→	22.5	22.5	→	→	15.0
RANGE	1.0	10.0	1.0	10.0	1.0	1.0	10.0	1.0	0.1	0.1
DC 1 .1	2.2	2.0	3.3	2.1	3.6	4.1	2.1	3.1	4.6	5.1
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	93.4	126.	30.7	131.	25.5	10.3	187.0	28.1	7.22	3.71
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-26.0	+11.1		+60.3			-32.7			
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT New River 486-69 PAGE

LINE 3 HALF S SP. 1 DATE 12/9

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	CAL	
RECEIVE	15.0	→	→	7.5	7.5	→	→	0.0	3-4	
RANGE	1.0	1.0	0.1	0.1	0.1	0.1	0.1	.01	16.0	
DC 1 .01	2.2	3.2	4.0	4.1	2.2	2.4	4.4	5.6	-1.7	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.					1.97	1.35	1.21			
AC 1 1.0	24.1	14.2	8.42	2.55	~~15.7~~	~~13.5~~	~~12.7~~	373	195.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-12.9				+18.6					
AC NOISE										
POT RES.										

PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 3 HALF N SP. 1 DATE 12/10

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAC	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90	23	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10.0	
DC 1 .1	4.8	5.4	6.2	7.0	5.2	7.0	8.6	15.0	+.8	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	18.5	6.18	2.81	1.58	4.98	2.34	1.22	.535	196.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AC AVG.										
S.P.	-6.9				+21.7					
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I.P. RECEIVER NOTES

PROJECT NEW RIVER 486-69

LINE 3 HALF N SP. 1 DATE 12/10

PAGE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	45 52.5	52.5	60.0	60.0	→	67.5	67.5	→	→	75.0
RANGE	10.0	10.	1.0	10.	1.0	0.1	10.	1.0	1.0	0.1
DC 1 .1	2.4	2.9	4.0	4.9	4.4	4.4	3.0	3.7	4.0	3.8
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.			29.5			7.36				3.81
AC 1 1.0	216.	167	~~39.5~~	119	20.0	~~7.36~~	181	31.5	11.6	~~5~~
AC 2 1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AC AVG.										
S.P.	-99.0	-21.2		+72.5			-51.6			
AC NOISE										
POT RES.										

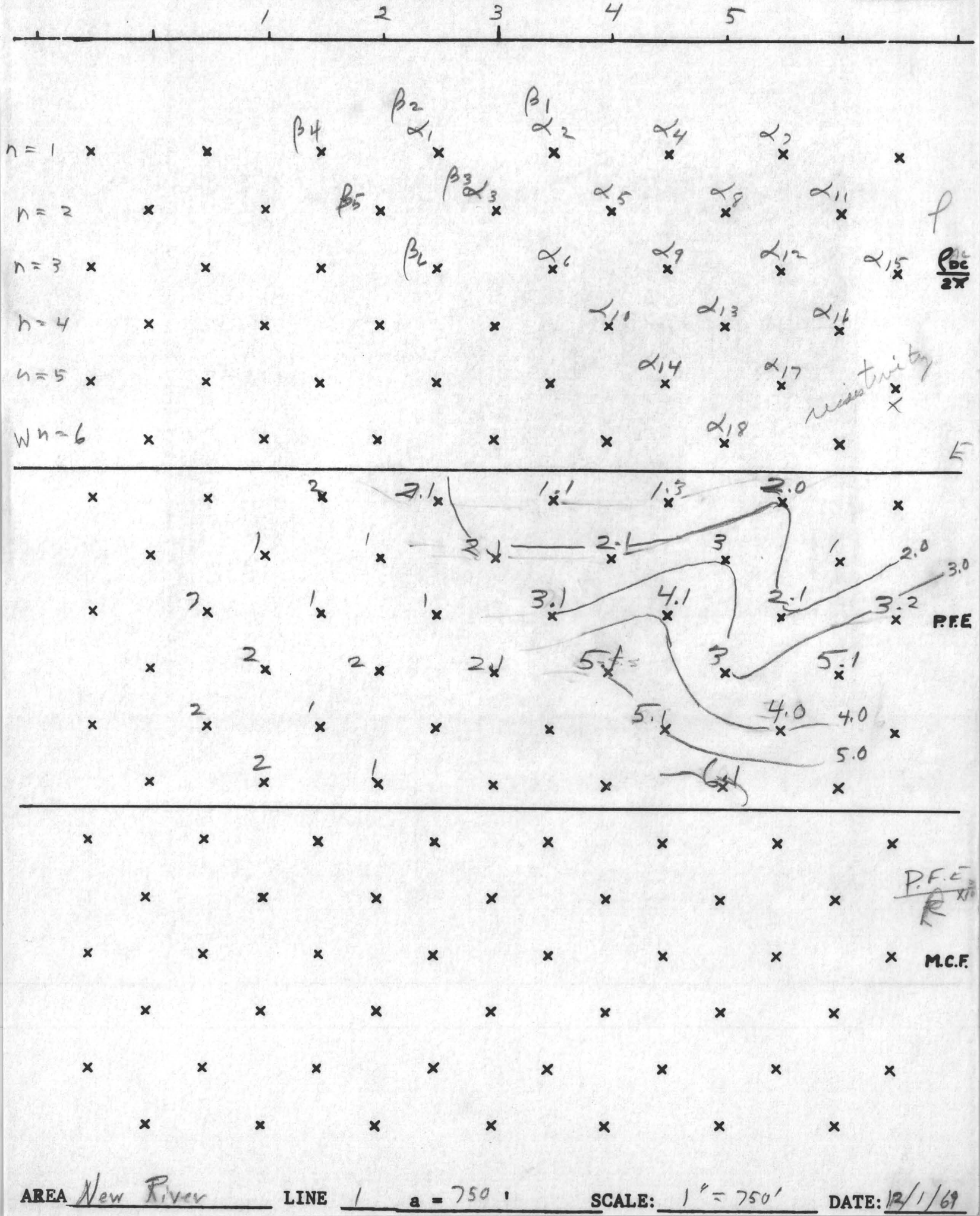
PAGE

HEINRICHS GEOEXPLORATION CO.
I.P. RECEIVER NOTES

PROJECT New River 486-69
LINE 2 HALF S SP. 1 DATE 12/6

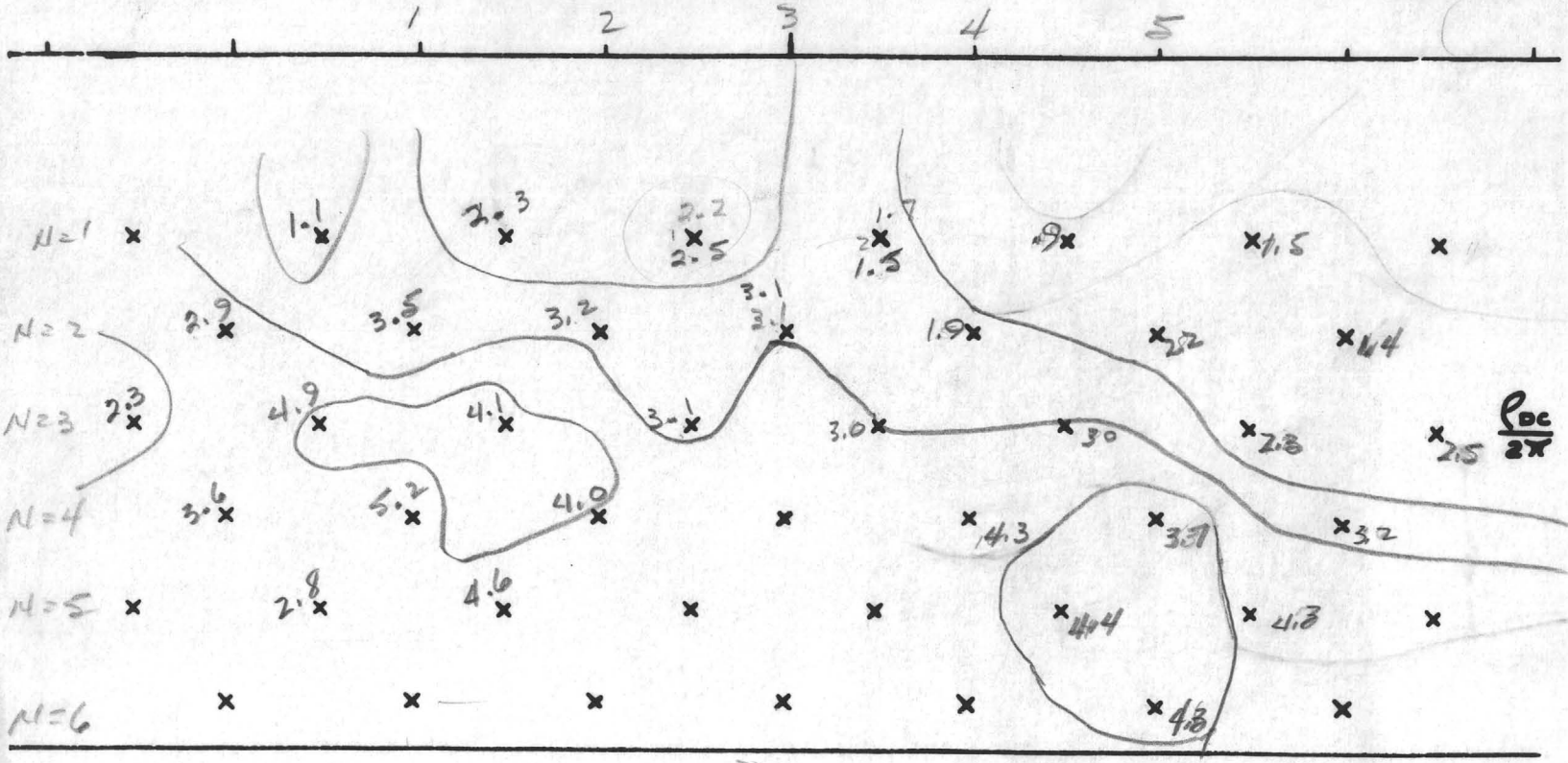
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL.	
RECEIVE	75.0	→	→	82.5	82.5	→	→	90.0	2-3	
RANGE	1.0	0.1	0.1	0.1	0.1	0.1	.01		10.0	
DC 1 .1	2.3	3.4	4.4	4.2	4.7	3.4	4.6		0.2	
DC 2										
DC 3										
DC 4										
DC 5										
DC 6										
DC 7										
DC 8										
DC AVG.										
AC 1 1.0	20.1	6.46	3.21	3.18	3.34	1.36	.743		195.	
AC 2 1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
AC AVG.										
S.P.	-2.1				+9.1					
AC NOISE										
POT RES.										

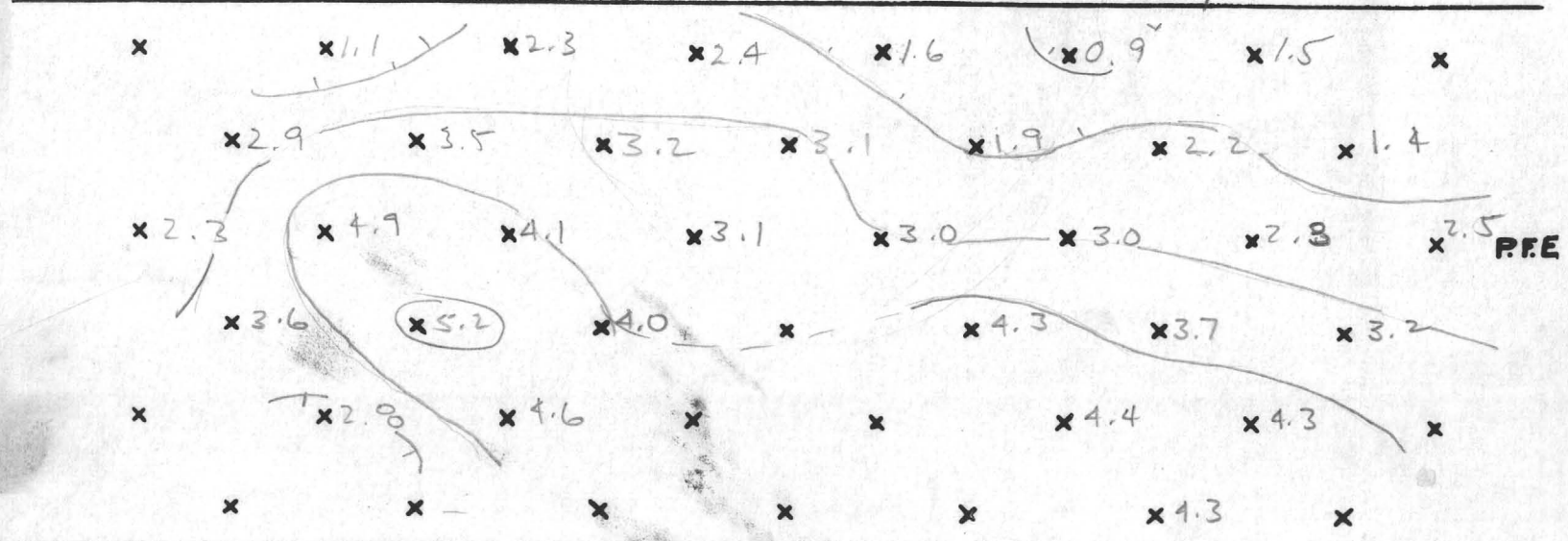
HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING N

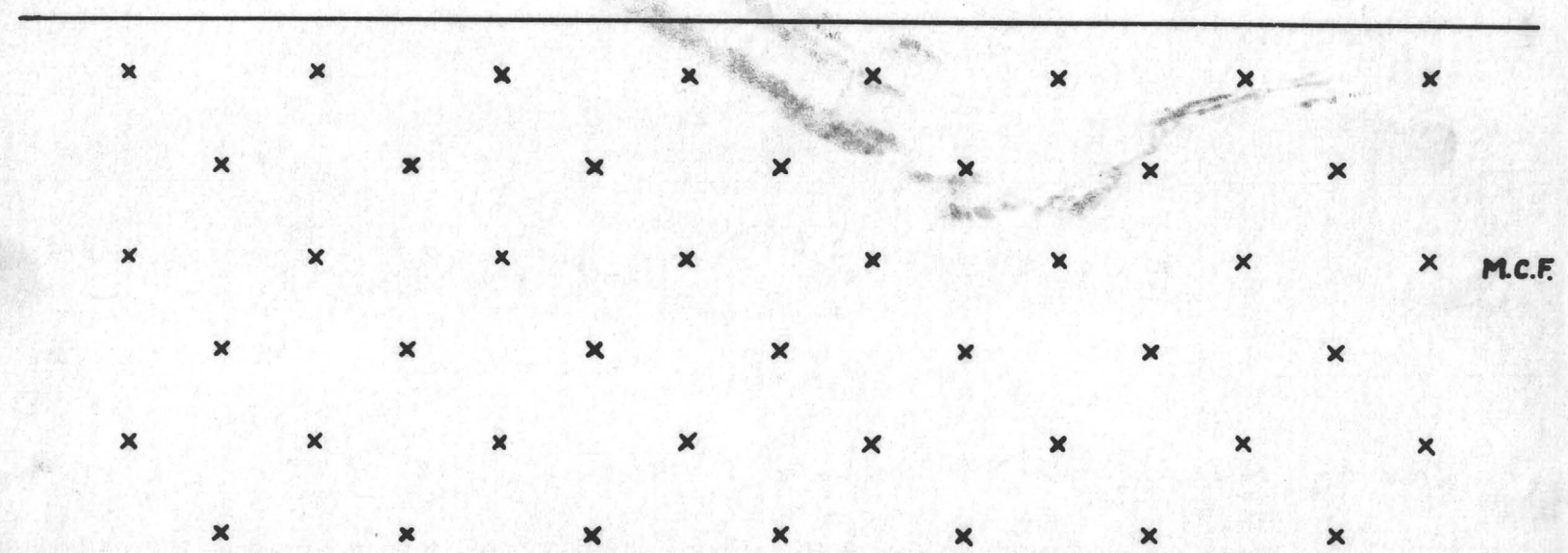


AREA New River LINE 1 a = 750' SCALE: 1" = 750' DATE: 12/1/69

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING S

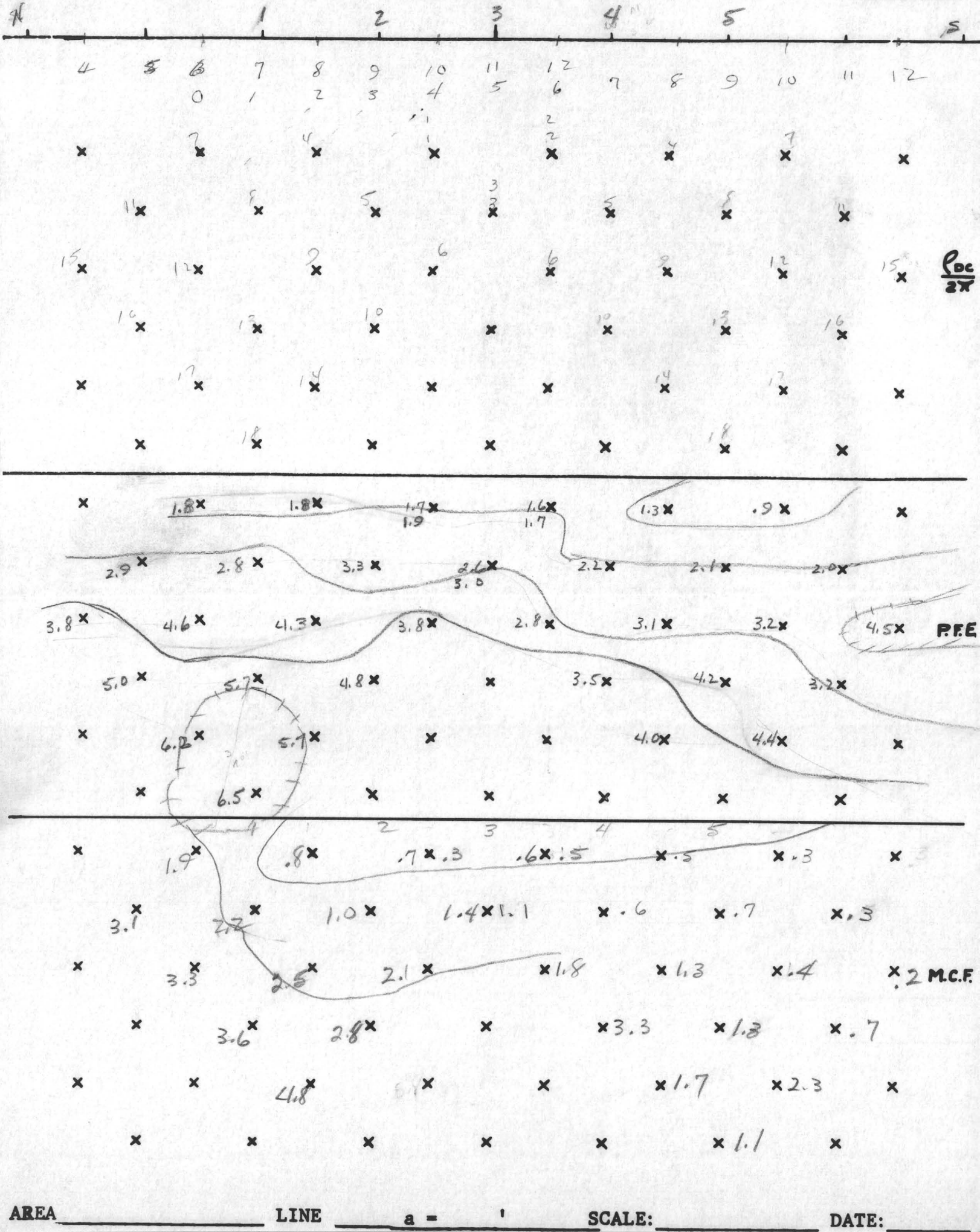






AREA _____ LINE _____ a = ' SCALE: _____ DATE: _____

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING EAST



AREA _____ LINE _____ a = ' SCALE: _____ DATE: _____

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project New River Line 1 Field date 12/3 Data page 1 Comp. date 12/3 . Comp by JMP

(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	45.0 → 52.5	52.5 →	60.0	60.0	→	67.5	67.5	→	→	75.0		
(C) n separation												
(D) I												
(E) Vdc (avg)												
(F) DCcal												
(G) Kn x 10^{-3}	2.25	2.25	9.0	2.25	9.0	22.5	2.25	9.0	22.5	45.0		
(H) ρ dc=ExFxGx10^3/D												
(I) Vac Σ												
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2) -0.6	2.2	1.7	3.1	.9	1.9	3.0	1.5	2.2	3.0	4.3		
(O) MCF=(M-1)(10^5)/H												

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2				
(B) Receive	75.0	→	→	82.5	82.5	→	→	90.0				
(C) n separation												
(D) I												
(E) Vdc (avg)												
(F) DCcal												
(G) Kn x 10^{-3}	9.0	22.5	45.0	78.75	22.5	45.0	78.75	126.0				
(H) ρ dc=ExFxGx10^3/D												
(I) Vac Σ												
(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) -0.6	1.4	2.3	3.7	4.4	2.5	3.2	4.3	4.2				
(O) MCF=(M-1)(10^5)/H												

.1 + 1.0

a = 750'

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page_____

Project C.F.&I. New River Line 1/E Field date_____ Data page_____ Comp. date_____. Comp by_____

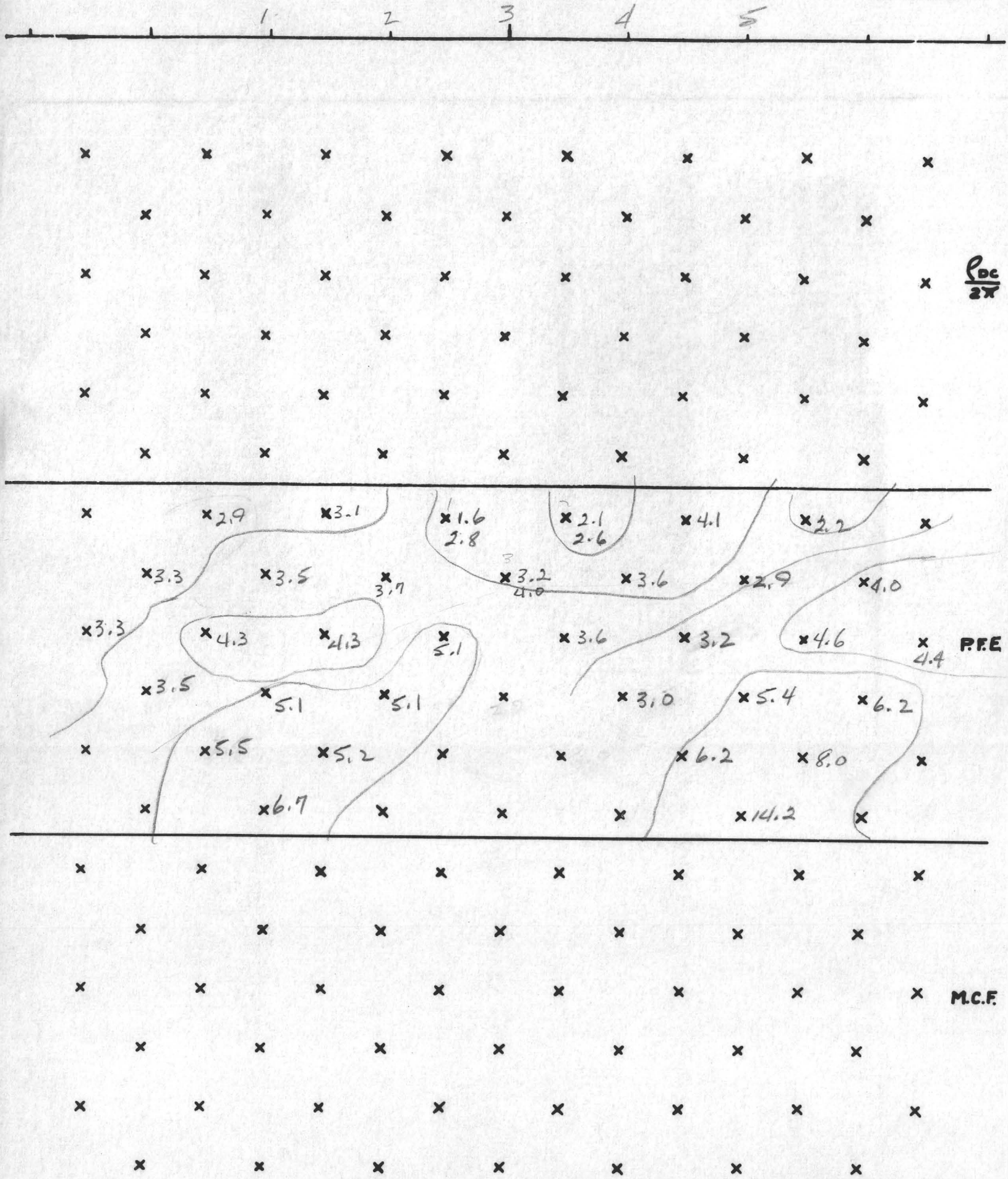
(A) Send	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
(B) Receive	0-2.5 E	2.5-5.0 →		5.0-7.5 →			( ) →					
(C) n separation												
(D) I												
(E) ~~Vdc (avg)~~												
(F) ~~DCcal~~												
(G) Kn x 10^{-3}	2.25	2.25	9.0	2.25	9.0	22.5	2.25	9.0	22.5	45.0		
(H) ρ dc=I x V x G x 10^3/D	α_1	α_2	α_3	α_4	α_5	α_6	α_7	α_8	α_9	α_{10}		
(I) Vac Σ	→											
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.												
(M) ρ dc/ρac=ExL/K												
(N) PFE=(M-1)(10^2)	( ) -(0.2)	( ) -(0.2)	( ) -(0.2)	( ) -(0.2)	( ) -(0.2)	( )						
(O) MCF=(M-1)(10^5)/H												

Project_____ Line_____ Field date_____ Data page_____ Comp. date_____ Comp by_____

(A) Send	4-5	3-4	2-3	1-2	4-5	--	-				Cal.	
(B) Receive	( ) →				( ) →							
(C) n separation												
(D) I											2.0	
(E) Vdc (avg)	α_{11}	α_{12}	α_{13}	α_{14}	α_{15}	α_{16}	α_{17}	α_{18}				
(F) DCcal												
(G) Kn x 10^{-3}	9.0	22.5	45.0	78.75	22.5	45.0	78.75	126.0				
(H) ρ dc=ExFxGx10^3/D												
(I) Vac Σ												
(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)											+0.2	
(O) MCF=(M-1)(10^5)/H												

Log Contour 1.0, 1.5, 2.0, 3.0, 5.0, 7.5, 10.0, 15.0 etc. (Resistivity & MCF)
Contour PFE in integers 1.0, 2.0, 3.0
Put Voltages in millivolts, current in amps. ⇒ ρ in ohm-ft.

HEINRICHS GEOEX. INDUCED POLARIZATION SECTIONAL DATA PLOT, LOOKING W



AREA _____ LINE _____ a = ' SCALE: _____ DATE: _____