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

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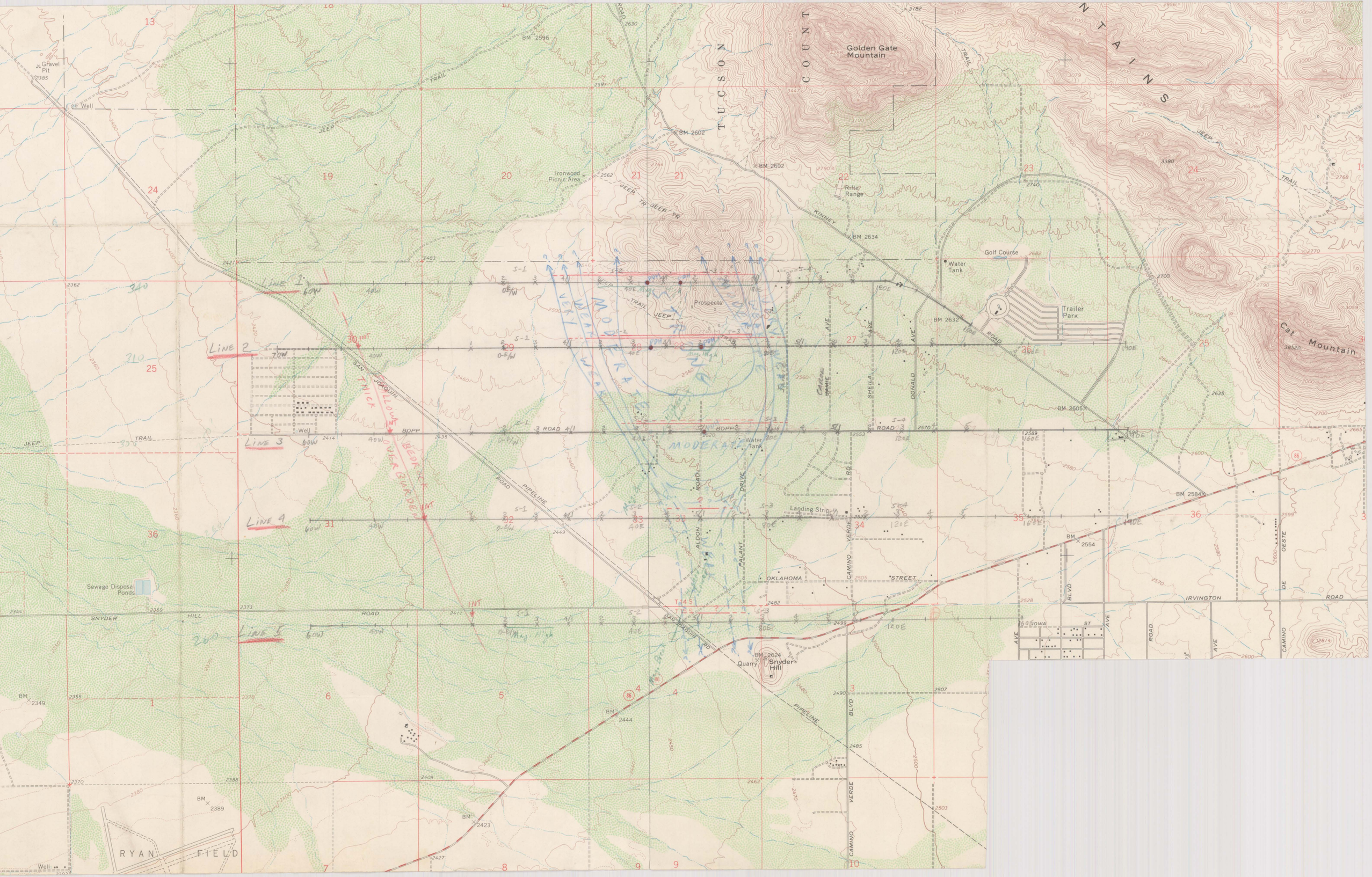
Golden Gate Mountain
TUCSON COUNTY MOUNTAINS
Gravel Pit
Well
Ironwood Picnic Area
Rifle Range
Golf Course
Water Tank
Trailer Park
Prospects
Cat Mountain
Landing Strip
Sewage Disposal Ponds
Quarry
Snyder Hill
RYAN FIELD
SNYDER HILL ROAD
SAN JOAQUIN
PIPELINE
KINNEY
IRVINGTON ROAD
OKLAHOMA STREET
ALDON
PALANT
VERDE
CAMINO DE OESTE
SHELA AVE
DONALD AVE
CAMINO SIME
LINE 1
LINE 2
LINE 3
LINE 4
LINE 5
THICK ALLUVIUM OVER BEDROCK
MODERATE
VERY THICK ALLUVIUM

Induced Polarization and Magnetic Survey
of the
Sedimentary Hills Area
Pima County, Arizona

for

Continental Oil Company

Minerals Division

September, 1973

by

Heinrichs GEOEXploration Company

P.O. Box 5964 Tucson, Arizona

GEOEX Job #825
CONOCO Job #MC-97

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Induced Polarization Location and
Interpretation Plan
Topographic Base Map

Sectional Data Sheets (all 1000 foot dipoles):
Line 1 (Spreads 1, 2, 3 & 4)
Line 2 (Spreads 1, 2, 3 & 4)
Line 3 (Spreads 1, 2, 3 & 4)
Line 4 (Spreads 1, 2, 3 & 4)
Line 5 (Spreads 1, 2 & 3)

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Introduction

At the request of Mr. Ray Barkley, District Geologist for the Minerals Division of Continental Oil Company, Heinrichs GEOEXploration Company conducted a combined induced polarization (I.P.) and magnetic survey of a portion of the Sedimentary Hills Area, Pima County, Arizona. The field work was done during the interim June 26 to August 1, 1973.

A total of five east-west I.P. lines, numbered 1 through 5 from north to south, were completed. All were oriented east-west and separated approximately 1/2 mile apart and all used 1000 foot length dipoles. Details as to location of this coverage are shown on the attached plan.

Each line consists of several end-on "spreads" of four or five sending electrodes. These rather short spreads were used for safety considerations in preference to the more efficient six or seven sending electrode spreads normally used. In that much of the area surveyed is residential, it was necessary as a safety precaution to use additional personnel as electrode and current wire guards. The four and five electrode spreads were felt to be a reasonable compromise as to number of extra crew personnel needed, length of wire and number of electrodes to patrol, and amount of coverage practical to obtain per day and not leaving electrode wires in the area overnight.

The frequency domain I.P. technique was used with a sending frequency pair of 0.1 and 1.0 hz on all lines. The collinear dipole-dipole array was the electrode configuration employed, which on a 1000 foot dipole spacing should typically give resolvable penetration within the zone from about 300 feet to 1500 feet or even as much as 2000 feet below surface. A GEOEX 5KVA Mark 4 I.P. system was used to obtain all data. The total I.P. surface coverage amounts to 22.5 line miles of which 16.7 line miles are "subsurface" plotted data.

Magnetic coverage was obtained along all I.P. lines on a 200 foot station interval over most of the length of each line, using a GeoMetrics Model G816 proton precession total field magnetometer. A total of 18.2 line miles of data was obtained.

The purpose of the I.P. coverage was to locate and define any significant sulfide mineralization at depth in an area mostly covered by shallow overburden near altered outcropping sediments showing minor copper staining and evidence of sulfides. The magnetic coverage was obtained to aid in further defining geologic units and structure. Also, magnetic pyrrhotite is known to be present in the area and associated with copper mineralization.

The data are presented on Sectional Data Sheets, one for each line, showing from top to bottom the apparent resistivity, the percent frequency effect (PFE) and metallic conduction factor (MCF), all contoured in "sectional"

form. The magnetic and self potential (SP) data are displayed at the bottom of the sheet in profile form. An "Induced Polarization Location and Interpretation Plan" shows the line locations and surface projected I.P. and magnetic interpretation at a scale of 1"=2000' and overlays the "Topographic Base Map" which is a portion of the Cat Mountain and Brown Mountain U.S.G.S. 7 1/2 minute topographic quadrangles.

GEOEX technical personnel involved on this project in the field were Mr. Ronald Petersen, Geophysicist, and Mr. Joe Martin, Crew Chief. Overall supervision, interpretation and report are by Mr. Chris S. Ludwig, Chief Geophysicist, assisted by the GEOEX staff. We wish here to extend our appreciation to Mr. Cleo Scott of Continental Oil Company for his most helpful assistance to the field crew.

Conclusions

A large, moderate to strong I.P. anomaly was delineated by Lines 1, 2, and 3, and covers most of Section 28 and part of Section 33 (see plan). This anomaly is about 5000 feet wide and is elongate in a NNW direction.

Except for a possible southerly, weak, continuation of the anomaly to Lines 4 and 5, no other significant appearing I.P. response was disclosed by the survey. However, some of the data mainly on the eastern halves of the lines were badly affected by cultural interference from grounded fences, water, gas, power and sewer lines, making it difficult to distinguish or rule out any possible "real" anomalism in those areas.

In the area of the moderate to strong I.P. anomaly, depth to the polarizable source is indicated as being within 300 feet of the surface and the source appears to persist with depth to at least 1500 feet below surface with no obvious change in strength or character with depth. The east and west margins of the anomaly seem to be steeply dipping and quite abrupt.

There is an excellent magnetic correlation (a broad 150 gamma high), with the I.P. anomaly on Line 1 and a small 80 gamma high on Line 2 correlates with a portion of the I.P. anomaly. There is no obvious resistivity or self potential correlation with the I.P. however.

Sulfides are the probable cause of the I.P. anomaly and very roughly 1 to 3 percent total sulfide by volume is estimated in the stronger portions of the anomaly.

There is a magnetic level change of 20 to 50 gammas on all five lines that suggests a N30° E striking geologic contact with higher magnetic susceptibility material to the west. This possible contact appears to be shifted about 3000 feet easterly on Lines 4 and 5 relative to Lines 1, 2, and 3. The magnetic level change is abrupt and is therefore due to a shallow geologic contact - likely buried less than 200 feet below surface.

Recommendations

The I.P. anomalism delineated to date is likely of sufficient sulfide concentration to be of potential economic interest providing the ratio of ore polarizers, such as chalcopyrite and molybdenite, to non-ore polarizers, such as pyrite and pyrrhotite, is high enough. We therefore recommend that the anomaly be further tested by drilling. Several initial geophysical drill sites are proposed here to help evaluate the cause and significance of the I.P. and magnetic anomalies in several settings. The sulfide zone is large enough that a major drilling program would be necessary to definitively evaluate its economic potential and our recommended drilling should be considered as only a very minimal effort unless it is uniformly discouraging.

The first drill hole is recommended near 55E on Line 1. This hole would test strong I.P. response and is within the broad magnetic high and a rather high resistivity zone. The hole should be drilled vertically to at least 1000 feet to properly test the zone of anomalous response.

A second target is suggested near 60E on Line 2 and should test strong I.P. response correlating with moderately low resistivities and an 80 gamma magnetic high. The hole should go vertically at least 1000 feet although the magnetic source is probably no deeper than 250 feet.

A third target is proposed near 45E on Line 2, also within the zone of strong I.P. response but in a relatively non-magnetic area. The resistivity is of intermediate level increasing slightly with depth. Again, a 1000 foot vertical hole is suggested.

A fourth target should be considered near 45E on Line 1. Again, this is within the zone of strong I.P. response and the broad magnetic high. However, the magnetics are quite erratic in this region, showing nearly 400 gammas amplitude in a narrow anomaly. Also, the resistivity indicates a local high between stations 40E and 50E - perhaps reflecting a zone of increased silicification. A 1000 foot vertical hole is again suggested.

To test the moderate strength I.P. response noted on Line 3, a 1000 foot vertical hole is proposed near 60E.

All of these drilling recommendations should, of course, be considered in relation to other available data such as geology and any existing drilling. One or two holes should be drilled considerably deeper than 1000 feet to see if there is any character change at depths below that sensed by this I.P. survey and to determine if there are any significant vertical mineralization gradients or alteration trends.

Additional drill targets can be defined by reference to the surface projected anomalism as shown on the interpretation plan, and its correlation with all information available to that time. Some consideration should also be given to the weaker fringes of the I.P. anomaly, particularly if in areas having interesting geochemical indications. In some

mining districts, the weaker I.P. zones can be of more interest than the stronger zones which may only be reflecting a high pyrite concentration. In this area, initial attention has been given to the stronger zones in the hope that they have the highest probability of being economically interesting.

Depending on the initial drilling results, additional I.P. and magnetic coverage may be warranted, mainly as fill-in and/or smaller dipole detail lines on the same grid or normal to the grid. Land status likely precludes work north of Line 1, but the anomaly is open-ended in that direction. A deep I.P. pole-pole depth probe is suggested near 55E on Line 2 to see if there is any significant I.P. character change at depth in excess of the 1500 feet already tested.

We recommend that a close liason be maintained with us during the drilling program to refine and up-date the geophysical interpretation and maximize its usefulness in selecting additional targets.

Comments on Drilling I.P. Targets

To maximize the probability that a recommended drill hole will intersect the source of an induced polarization anomaly, the following points should be considered:

1. The anomaly has been caused by some physical property, hopefully a polarizable body containing economically interesting metallic mineralization, and this property should be determined before abandoning the anomaly.

2. Location of drill holes should be made relative to the actual sending and receiving electrode positions as they exist on the ground.

3. Due to inherent limitations in the I.P. method, depth interpretations are only approximate and the determination of dip is severely limited, particularly for angles greater than 45°. Also, targets can generally be laterally resolved no finer than the station spacing (dipole) length). Because of these limitations, targets less than one dipole spacing in width, particularly when steeply dipping or deeper than the dipole length, may be difficult to intersect. In these cases, several drill holes in a fence line should be considered. For the steeply dipping cases, angle drilling may also prove advantageous, mainly where the direction of dip can be geologically inferred and the drill hole oriented such that an optimum intersection of the zone of interest is obtained.

4. An observed anomaly can be the effect of a polarizable body laterally offset to the side of a line and therefore, if practical, drilling should be confined to those portions of the anomalous zones well defined by several lines. Also, it should be noted that a single line cannot define the strike direction of an elongate anomalous zone - another reason for utilizing several parallel lines.

5. Logging of the drill core must be done with special care to note the quantity of all possible polarizable material such as pyrite, graphite, magnetite, manganese oxides and clay minerals as well as the polarizable ore minerals. The anomalous source could conceivably be overlooked if the core is not carefully logged.

6. Typical sections of core representing the gross physical properties of material encountered in the drilling should be tested in the laboratory for their I.P. parameters, if there is some doubt about confirmation of the anomalous source.

Interpretation

A broad, moderate to strong I.P. anomaly was found on Lines 1, 2, and 3, centered near 50E. The anomaly is somewhat elongate NNW and is about 5000 feet wide on Line 1, tapering to the south to about 3500 feet in width on Line 3.

The strength of anomalism is quite similar on Lines 1 and 2. On Line 3, the response is somewhat weakened and is classed as moderate. There is no definite indication that the source of anomalism continues south of Line 3 to Line 4. However, there is a weak zone of I.P. response at depth between 50E and 70E on Line 4 which may represent a south continuation - and if so, the depth to top is probably in excess of 1000 feet. More likely, this weak response is the lateral effect from the south edge of the main anomaly source somewhere between Lines 3 and 4. There are several grounded fences and a power line between 50E and 70E on Line 4 which somewhat complicates the response in this area.

Similarly, on Line 5 between about 55E and 75E there is a zone of weak response at depth. However, there is a pronounced high resistivity zone near 65E which can create a "fictitious" PFE high by amplifying the background response, and may be the sole cause of this minor anomaly. Regardless, nothing similar to the major anomalism noted on Lines 1, 2, and 3 was seen on Lines 4 and 5.

Within the main anomaly, the top of the source is indicated as being buried no deeper than about 300 feet and very good depth persistence is evident - say to at least 1500 feet below surface. No obvious strength or character changes are evident with depth or across the width of the anomaly. The PFE contour pattern is compatible with a shallow, steep sided, depth extended, homogeneous source, 4 to 5 dipoles wide. The resistivity contour pattern does show some variation across the width of the anomaly - perhaps reflecting different rock types and/or variations in degree or type of alteration.

The cause of this anomalism is likely metallic lustered sulfide mineralization although other non-sulfide metallic lustered minerals such as iron and manganese oxides or graphite (or conceivably clay) could be contributing factors.

Within the strongly anomalous zone, about 1 to 3 percent total sulfide average by volume (or roughly 2 to 6 percent by weight) is estimated based on comparison with "typical" disseminated sulfide zones here in the Southwest. The weak to moderate strength zones, on the same basis, are estimated to contain from about 1/2 to 2 percent total sulfide average by volume (or roughly 1 to 4 percent by weight).

These estimated sulfide concentrations are meant only to be a rough relative guide and in practice are often found to be at considerable variance with actual average assays of sulfide content. Regardless, the indicated sulfide content is high enough to be of definite economic interest providing that the ratio of ore polarizers (such as sulfides of copper, molybdenum, lead, etc.) to non-ore polarizers (such as pyrite, pyrrhotite, magnetite, etc.) is reasonably high.

The lack of a well defined resistivity low correlating with the I.P. anomalism suggests disseminated sulfide mineralization as the main cause rather than interconnected veinlets or shear zone sulfides. There is no significant self potential response present, implying a lack of interconnected, near surface, actively oxidizing sulfides. The lack of self potential response is not in conflict with a disseminated sulfide I.P. source interpretation.

A complexly shaped, broad, 150 gamma magnetic high closely correlates with the I.P. high on Line 1. The magnetic response could be due to pyrrhotite and/or magnetite in the sediments or a buried more magnetic intrusive.

Within the broad magnetic high are several strong, narrow, magnetic features which are likely caused by a very near surface or outcropping concentrations of magnetite or pyrrhotite or perhaps intrusive magnetic dikes or intercalated volcanic flows within the sediments.

On Line 2, at 60E, there is a rather narrow 80 gamma magnetic high which suggests a source buried about 200 to 250 feet below surface. This high is within the strong I.P. anomaly. Most of the width of the I.P. anomaly on Line 2, however, is quite non-magnetic and therefore different than Line 1. Perhaps the pyrrhotite or magnetite content in the sediments decreases south of Line 1 or, more likely, the cause of the broad magnetic high on Line 1 is a buried feature such as an intrusive which is not present as far south as Line 2. This intrusive interpretation is compatible with the mapped geology by Continental Oil Company which shows a small outcropping of Laramide quartz monzonite porphyry stock about 900 feet north of station 50E on Line 1.

All five lines show a magnetic level change, higher to the west, ranging from about 20 gammas on Line 5 to about 50 gammas on Line 1. The position of the level change as interpreted is indicated on the plan and suggests a N30°E striking contact, but with Lines 4 and 5 shifted about 3000 feet easterly relative to Lines 1, 2 and 3. Perhaps this shift is reflecting a structural discontinuity between Lines 3 and 4 and may be related to the termination of the main I.P. anomaly between Lines 3 and 4. The level

change is fairly abrupt and is therefore caused by a near surface contrast in magnetic susceptibility such as might be caused by a rock type change directly below the overburden. The trend of the level change transects the I.P. anomaly and has no obvious relation thereto.

A 90 gamma magnetic high was crossed on Line 5 near 10E. The anomaly shape suggests a source buried roughly 500 feet. Apparently this high does not extend very far north of Line 5 since only a very slight magnetic increase is discernable on Line 4, 3000 feet to the north.

The erratic magnetic profile along the central portion of Line 3 is probably mostly due to cultural interference along Bopp Road in the more heavily built up residential area.

The I.P. data on the eastern ends of Lines 1, 2, 3 and 4 is variably affected by cultural interference and it is difficult to be certain there is no "real" I.P. response in these areas. The main anomaly is not bothered by cultural interference except on Line 3 along Bopp Road where the eastern half of the main anomaly has been greatly disturbed. The eastern edge of the anomaly as interpreted is therefore somewhat uncertain.

The resistivity is quite variable along the lines but shows no obvious correlation with the I.P. anomalism. Most of the resistivity variation seems to be due to lateral changes in conductivity rather than depth effects. However, there is a possible layered situation from about 10W to 30E on Line 4 where higher resistivity material appears to overlie lower resistivity material. This could conceivably be reflecting a thrust sheet on the order of 500 feet in thickness.

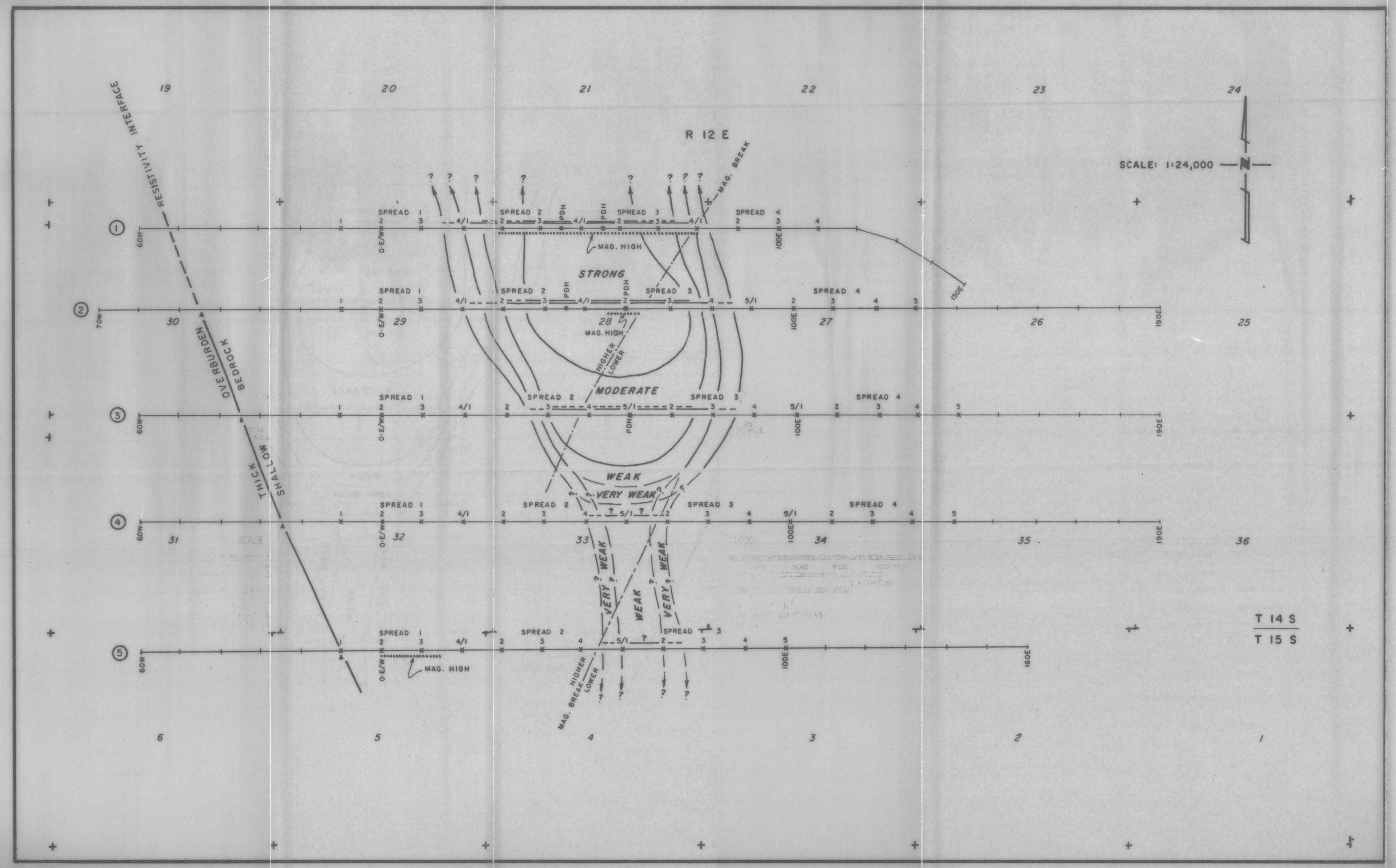
On the west ends of Line 2, 3, 4 and 5, the resistivity shows a sharp drop to the west and likely represents a basin-and-range fault with about a N20W strike. A section of alluvium is probably present west of this fault - likely in excess of 1500 feet thick. East of this fault the overburden is indicated as no thicker than about 500 feet and generally less than 300 feet thick.

Respectfully submitted,

Heinrichs GEOEXploration Co.

Chris S. Ludwig
Chief Geophysicist

CSL:mt



INDUCED POLARIZATION LOCATION
AND INTERPRETATION PLAN
of
SEDIMENTARY HILLS AREA
PIMA COUNTY, ARIZONA
for
CONTINENTAL OIL COMPANY
MINERALS DIVISION
by
HEINRICHS GEOEXPLORATION COMPANY
Job number 825-73 September 1973

This sheet overlays portions of U.S.G.S. Brown Mountain and Cat Mountain, Arizona quadrangles (7½ minute).

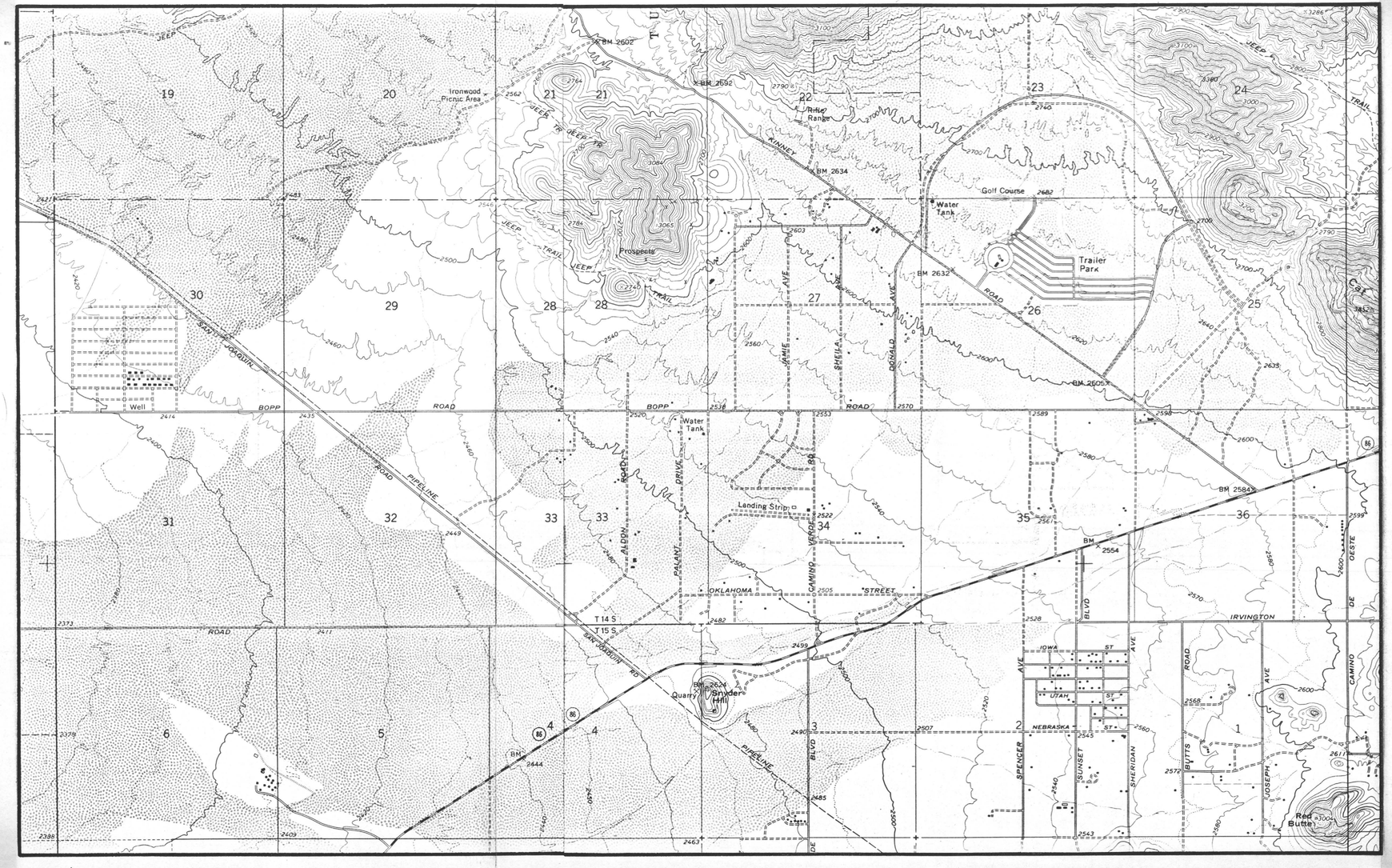
- (3) I. P. Line number
- I. P. Line
- Electrode
- Resistivity interface
- Station
- Proposed drill hole

Relative Anomaly Strength:
- Very Weak
- Weak
- Moderate
- Strong

Schematic contour of Relative Anomaly Strength

+ Section corner

30 Section number



TOPOGRAPHIC BASE MAP
of
SEDIMENTARY HILLS AREA
PIMA COUNTY, ARIZONA
for
CONTINENTAL OIL COMPANY
MINERALS DIVISION
by
HEINRICHS GEOEXPLORATION COMPANY
Job number 825-73 September 1973

GN MN
0°06' 2 MILS
13½° 240 MILS

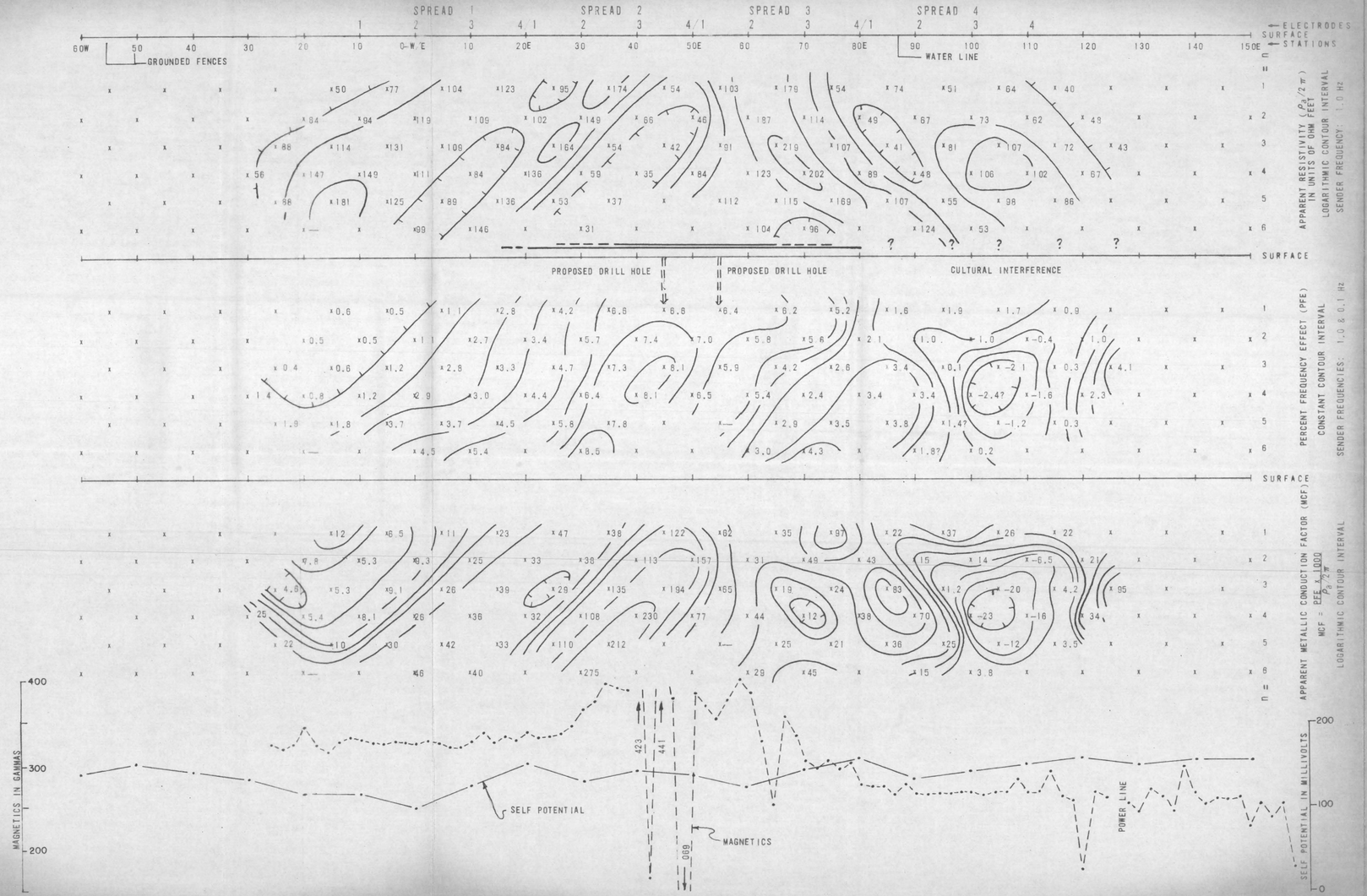
SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL



825-73

LINE NO.
1
SPREAD(S)
1,2,3 & 4
BEARING
EAST-WEST

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET

of

SEDIMENTARY HILLS
PIMA COUNTY, ARIZONA

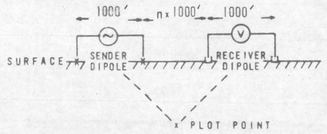
for

CONTINENTAL OIL COMPANY
MINERALS DIVISION

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

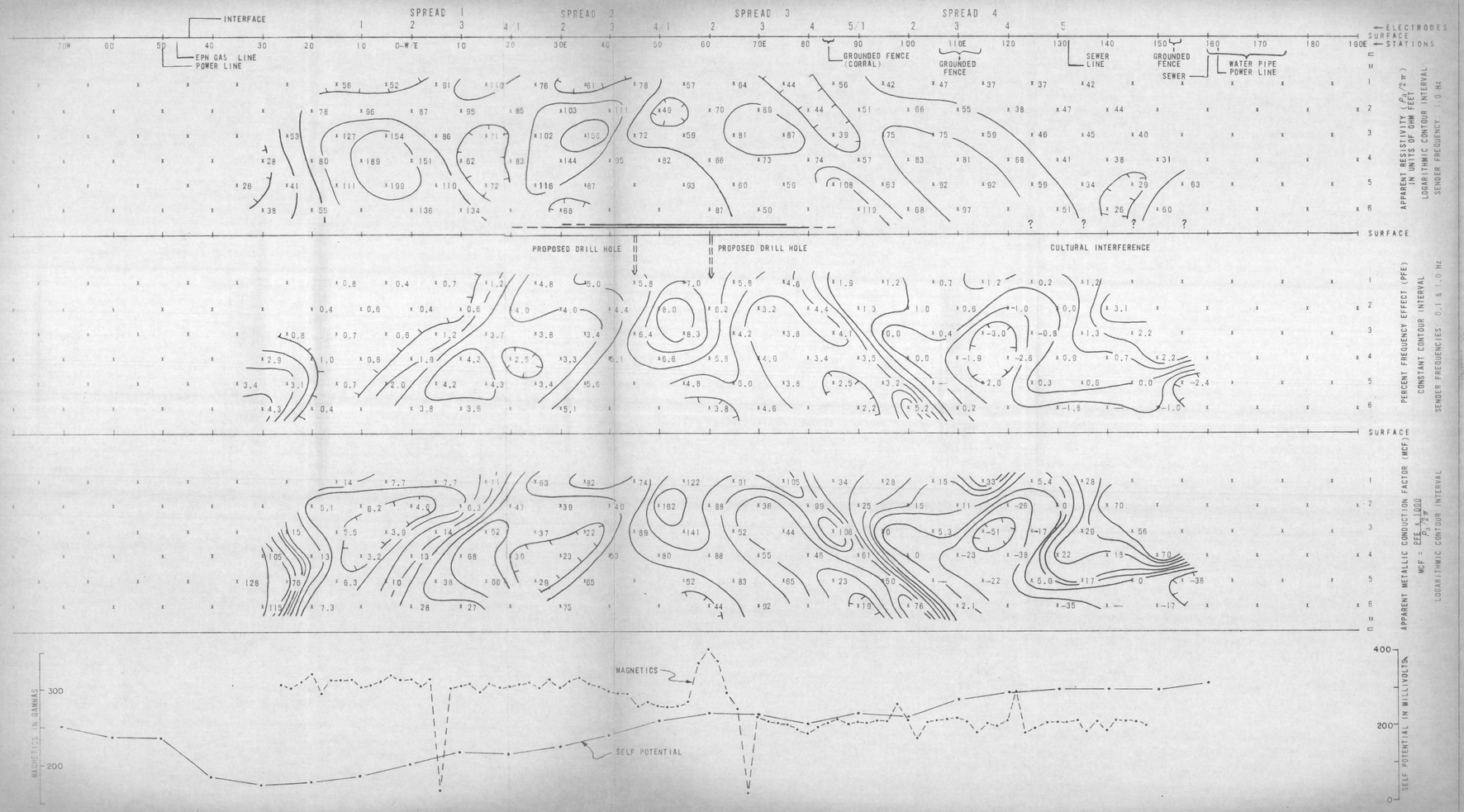
DIPOLE-DIPOLE ELECTRODE ARRAY



DATE

JUNE 1973

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



825-73

LINE NO.
2

SPREAD(S)
1,2,3 & 4

BEARING
EAST-WEST

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET

of

SEDIMENTARY HILLS
PIMA COUNTY, ARIZONA

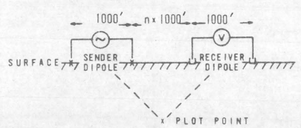
for

CONTINENTAL OIL COMPANY
MINERALS DIVISION

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



DATE
JULY 1973

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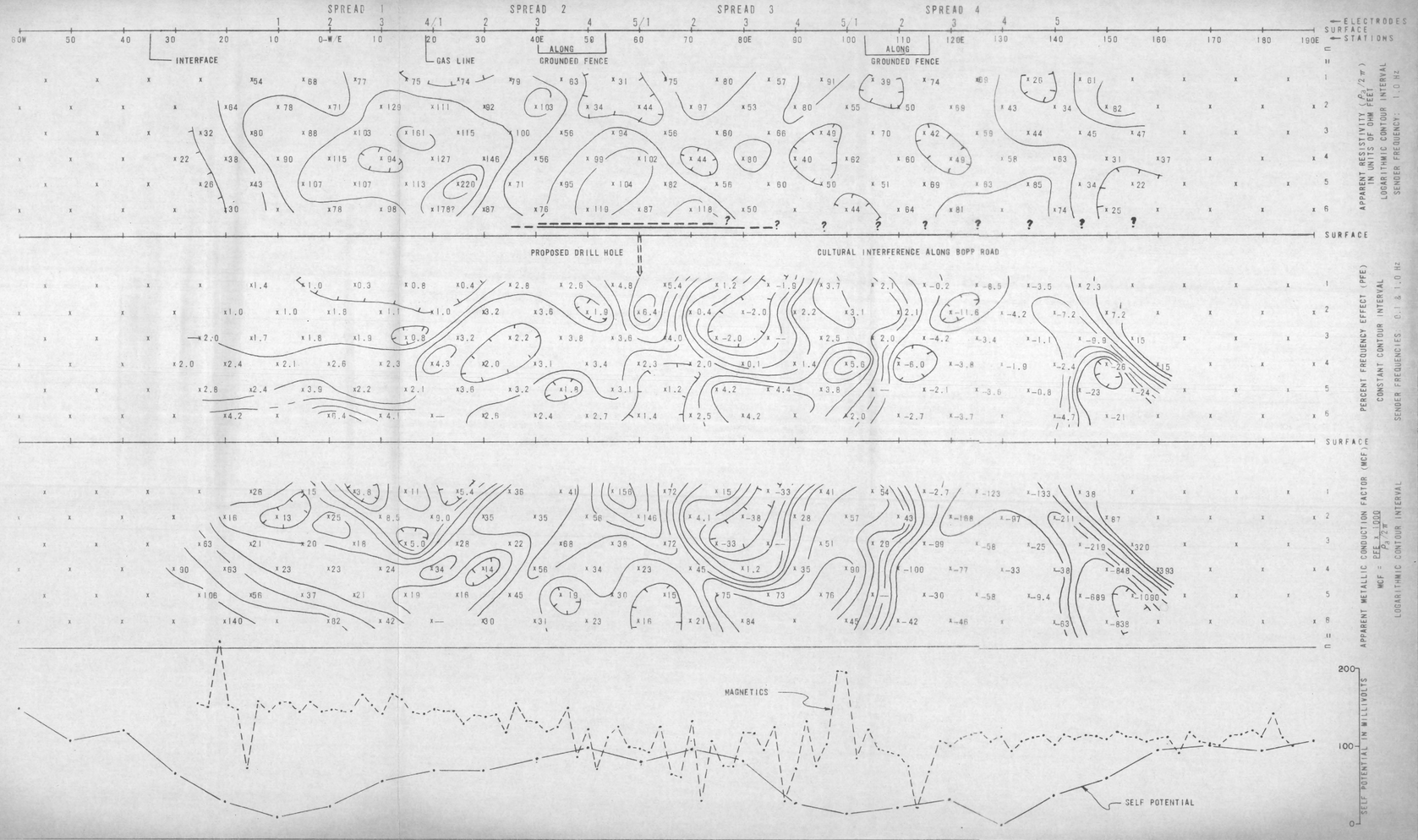


825-73

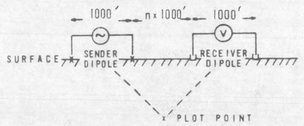
LINE NO.
3
SPREAD(S)
1,2,3 & 4
BEARING
EAST-WEST

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of SEDIMENTARY HILLS PIMA COUNTY, ARIZONA for CONTINENTAL OIL COMPANY MINERALS DIVISION

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



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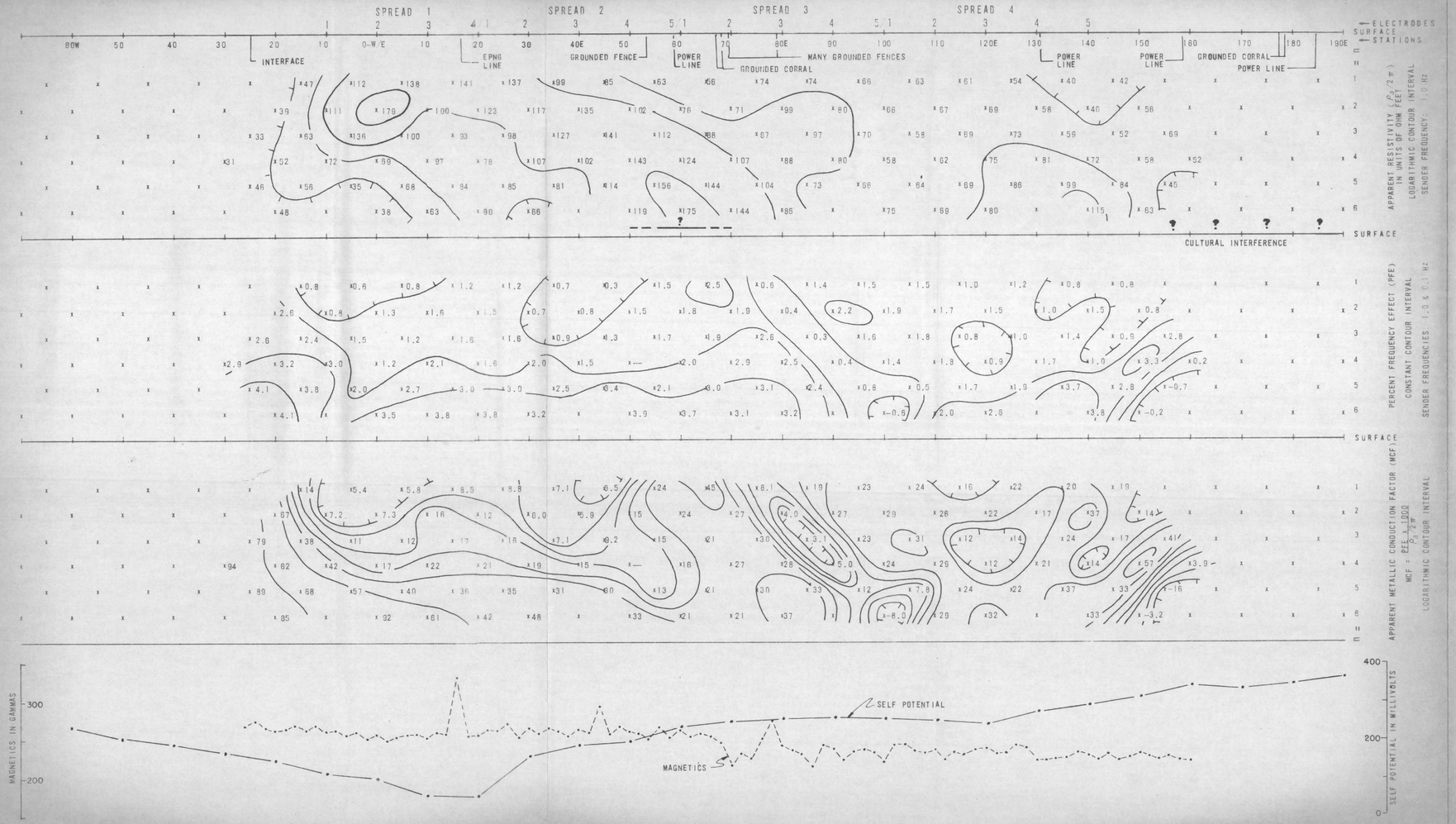


825-73

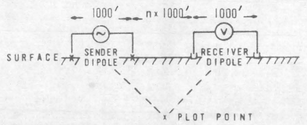
LINE 4
SPREAD 1,2,3 & 4
BEARING EAST-WEST

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of SEDIMENTARY HILLS PIMA COUNTY, ARIZONA for CONTINENTAL OIL COMPANY MINERALS DIVISION

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



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JULY 1973

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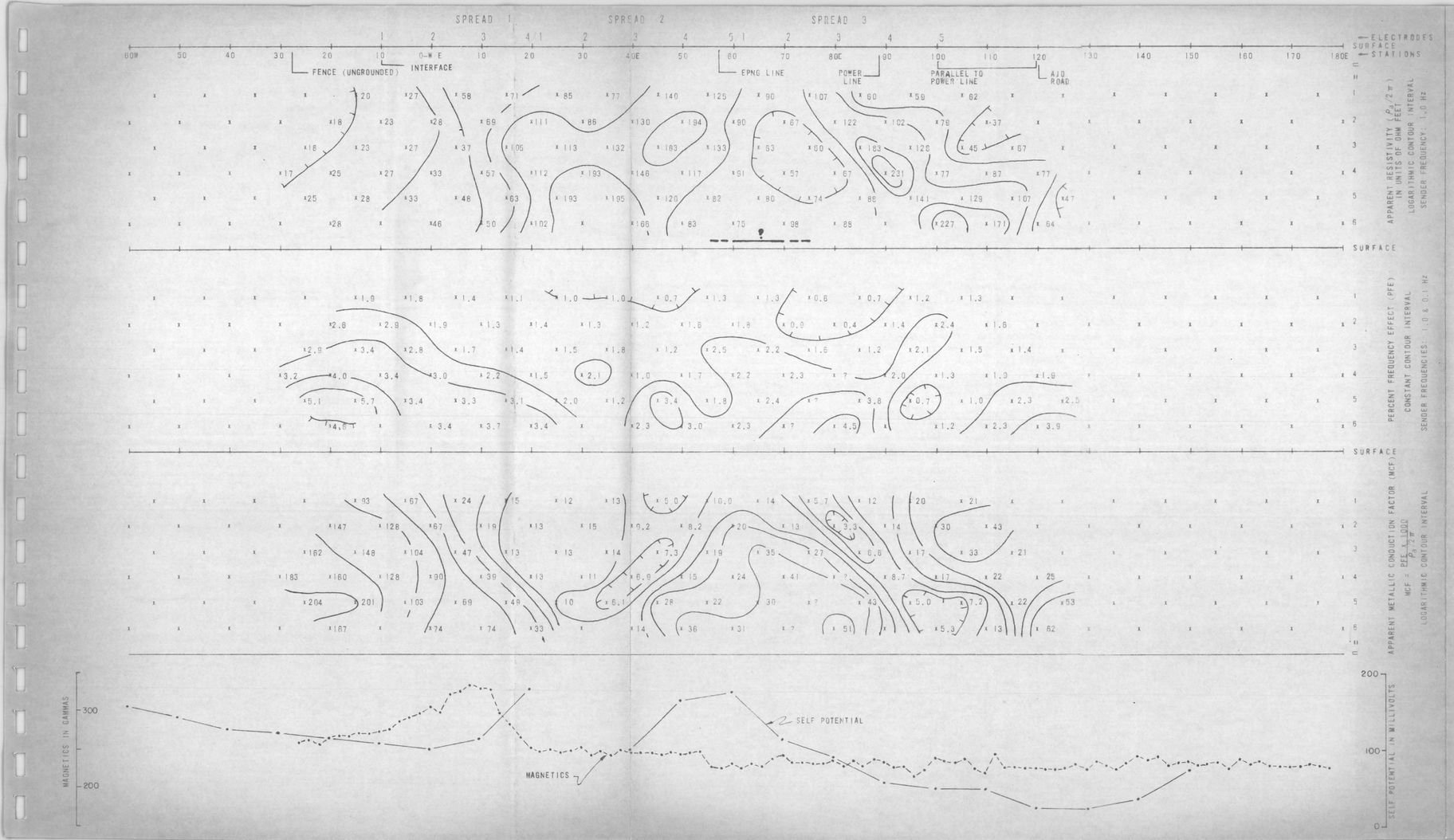


825-73

LINE NO. 5

SPREAD(S) 1, 2 & 3

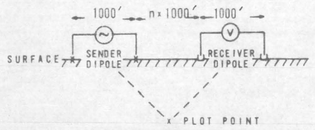
BEARING EAST-WEST

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET of SEDIMENTARY HILLS PIMA COUNTY, ARIZONA for CONTINENTAL OIL COMPANY MINERALS DIVISION

RELATIVE ANOMALY STRENGTH

VERY WEAK | WEAK | MODERATE | STRONG

DIPOLE-DIPOLE ELECTRODE ARRAY



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JULY 1973

HEINRICHS GEOEXPLORATION COMPANY

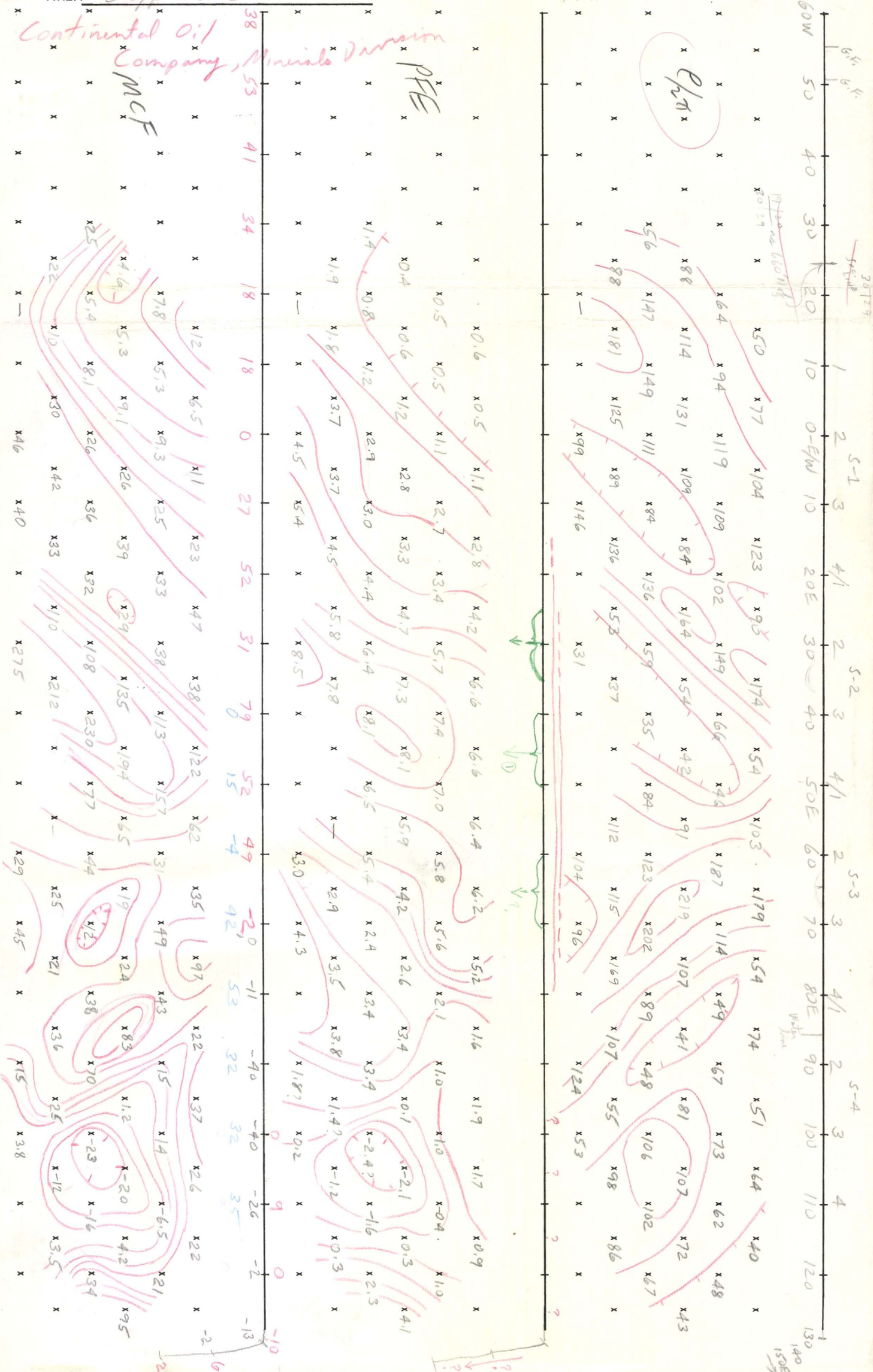
806 W. GRANT ROAD, POST OFFICE BOX 5964, TUCSON, ARIZ., 85703, PHONE: (602)623-0578

JOB# 825 LINE# 1 SP 1, 2, 3 & 4 a = 1000' ~~LOOKING~~ Bearing E-W

CLIENT Conoco DATE June 1973 FREQUENCIES 0.1 & 1.0 Hz

AREA Bopp Road

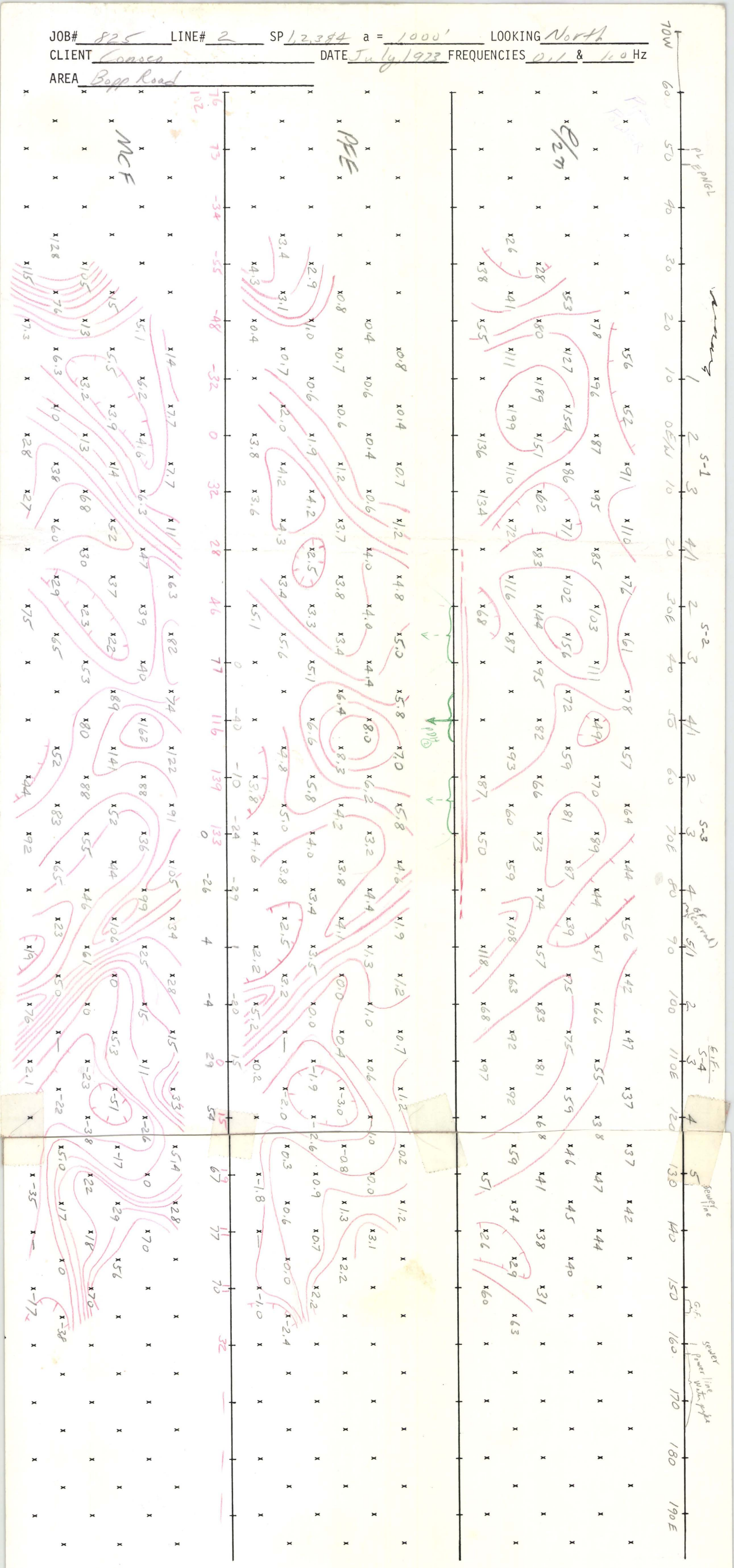
Continental Oil Company, Minerals Division



JOB# 825 LINE# 2 SP 1,2,3&4 a = 1000' LOOKING North

CLIENT Conoco DATE July 1973 FREQUENCIES 0.1 & 1.0 Hz

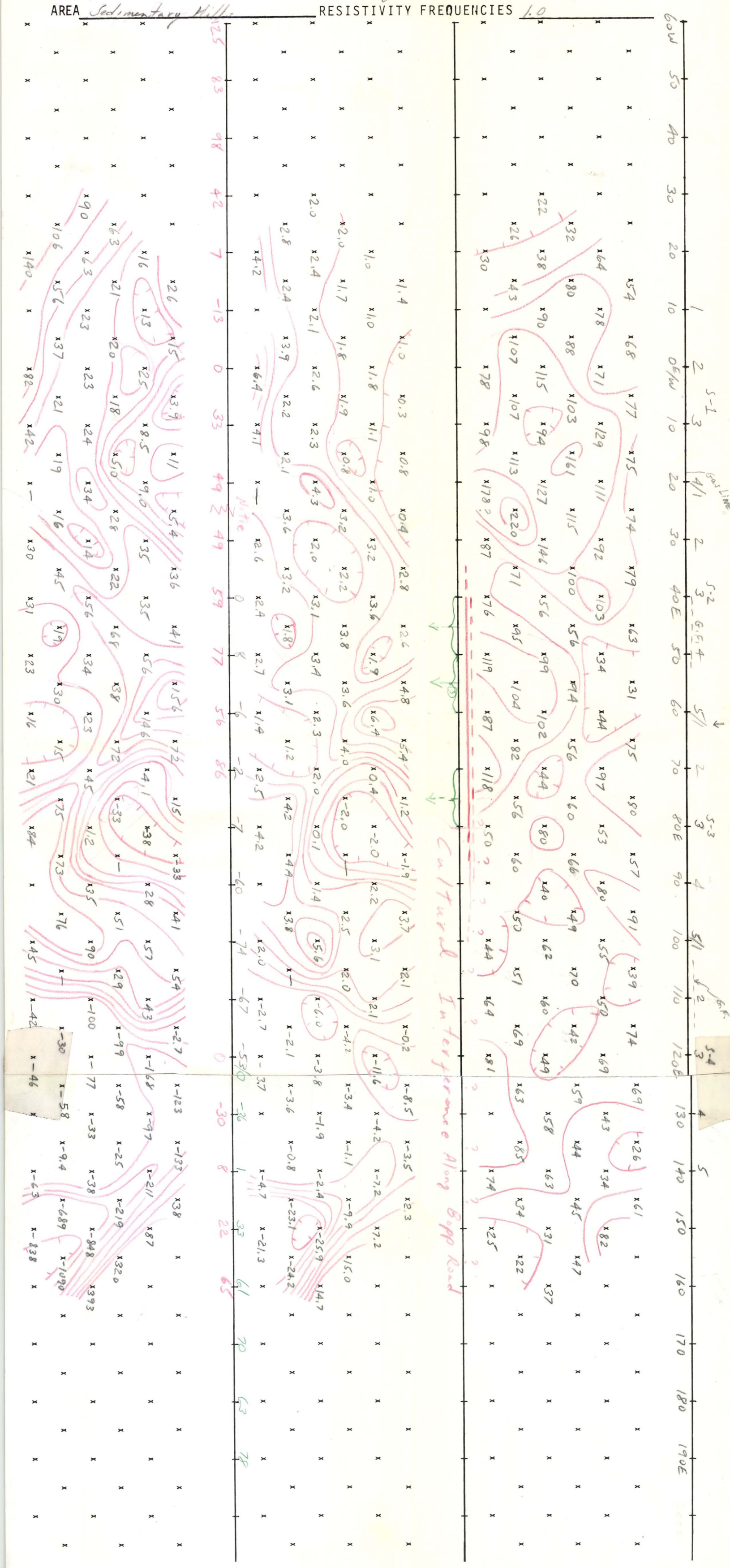
AREA Bopp Road



JOB# 825 LINE# 3 SP 1,2,3&4 a = 1000' BEARING E-W

CLIENT Conoco DATE July 1973 FREQUENCIES 0.1 & 1.0 Hz

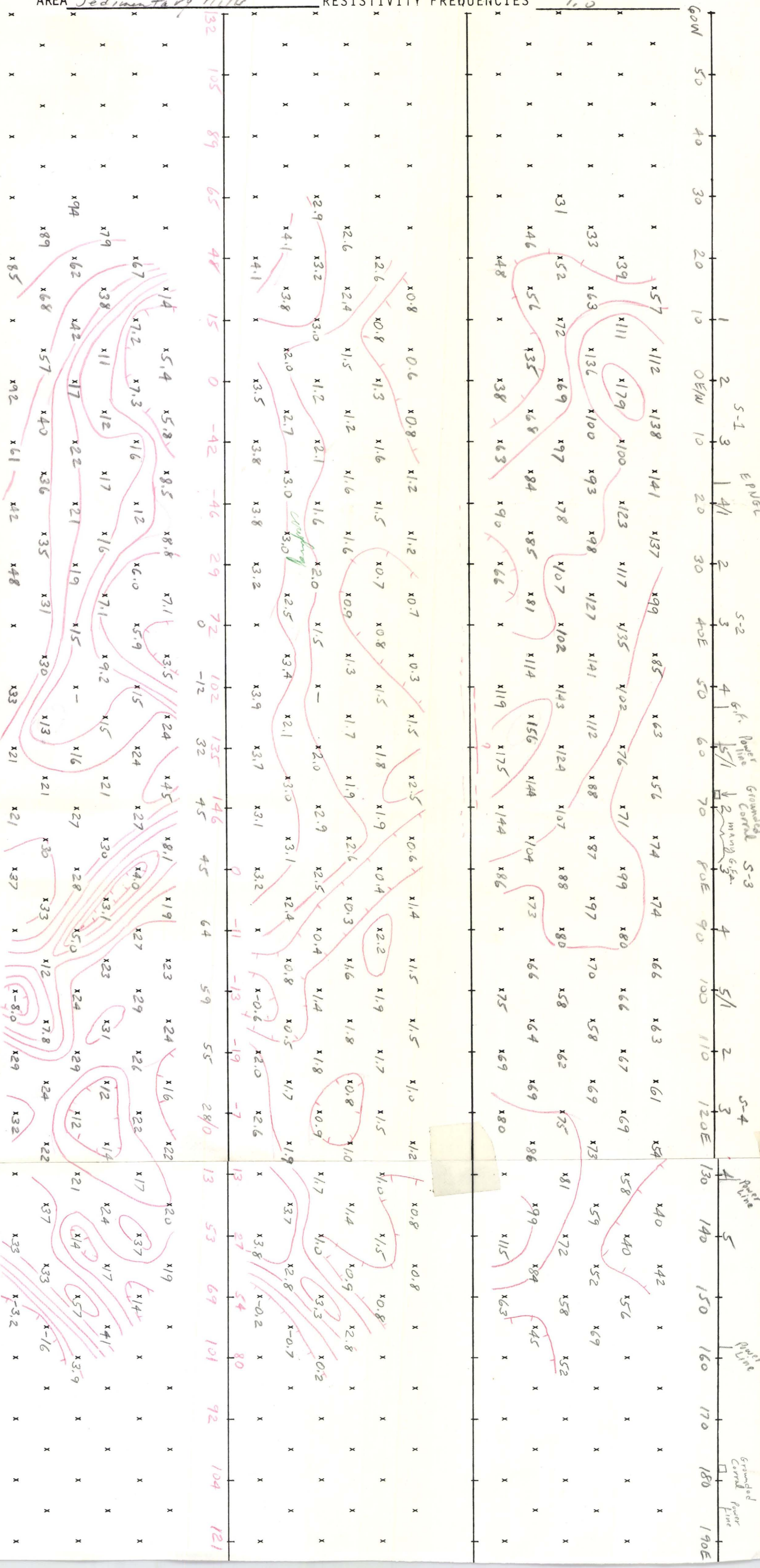
AREA Sedimentary Hills RESISTIVITY FREQUENCIES 1.0



JOB# 825 LINE# 4 SP 1, 2, 3 & 4 a = 1000' BEARING E-W

CLIENT Conoco DATE July, 1973 FREQUENCIES 0.1 & 1.0 Hz

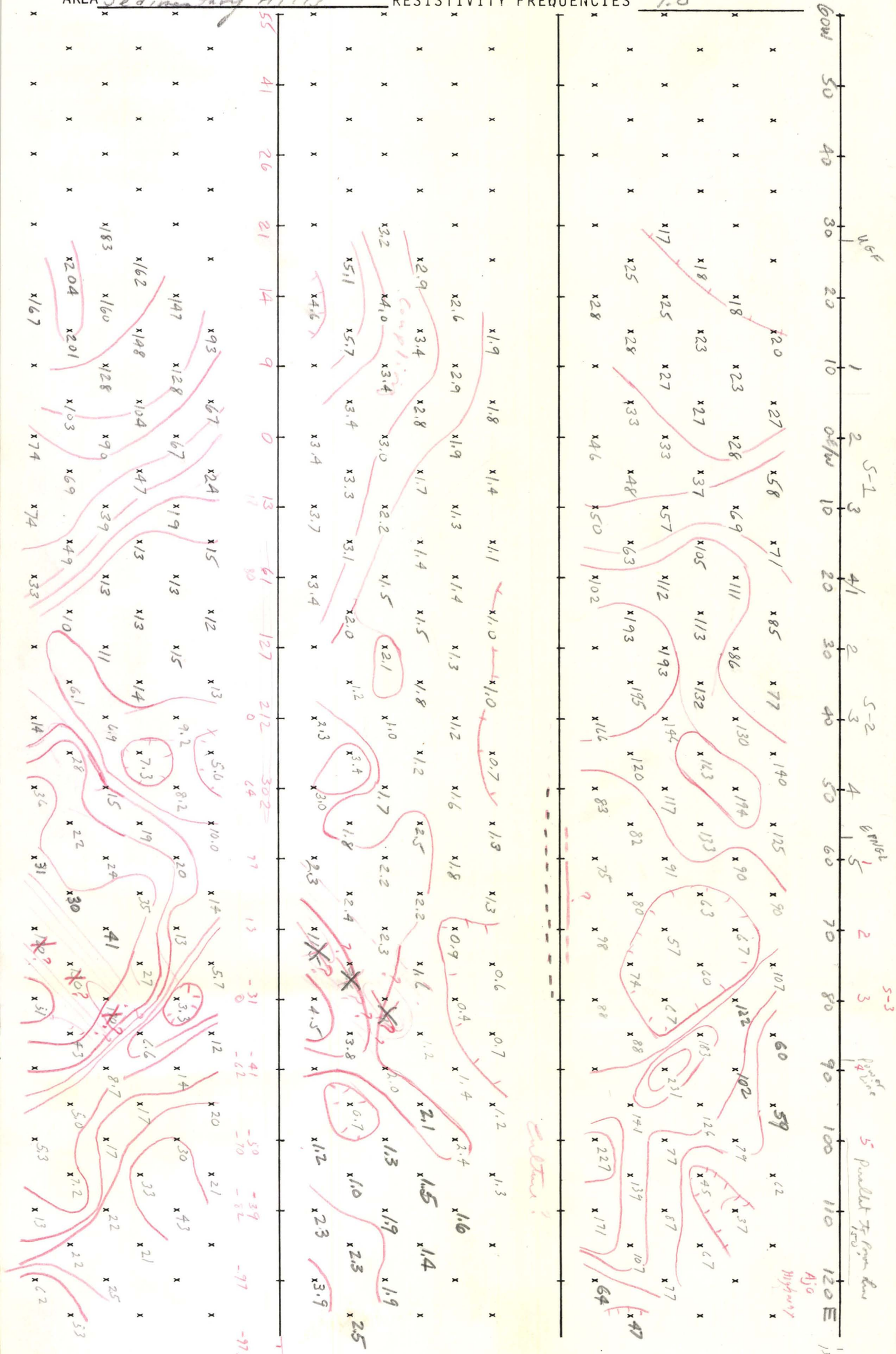
AREA Sedimentary Hills RESISTIVITY FREQUENCIES 1.0

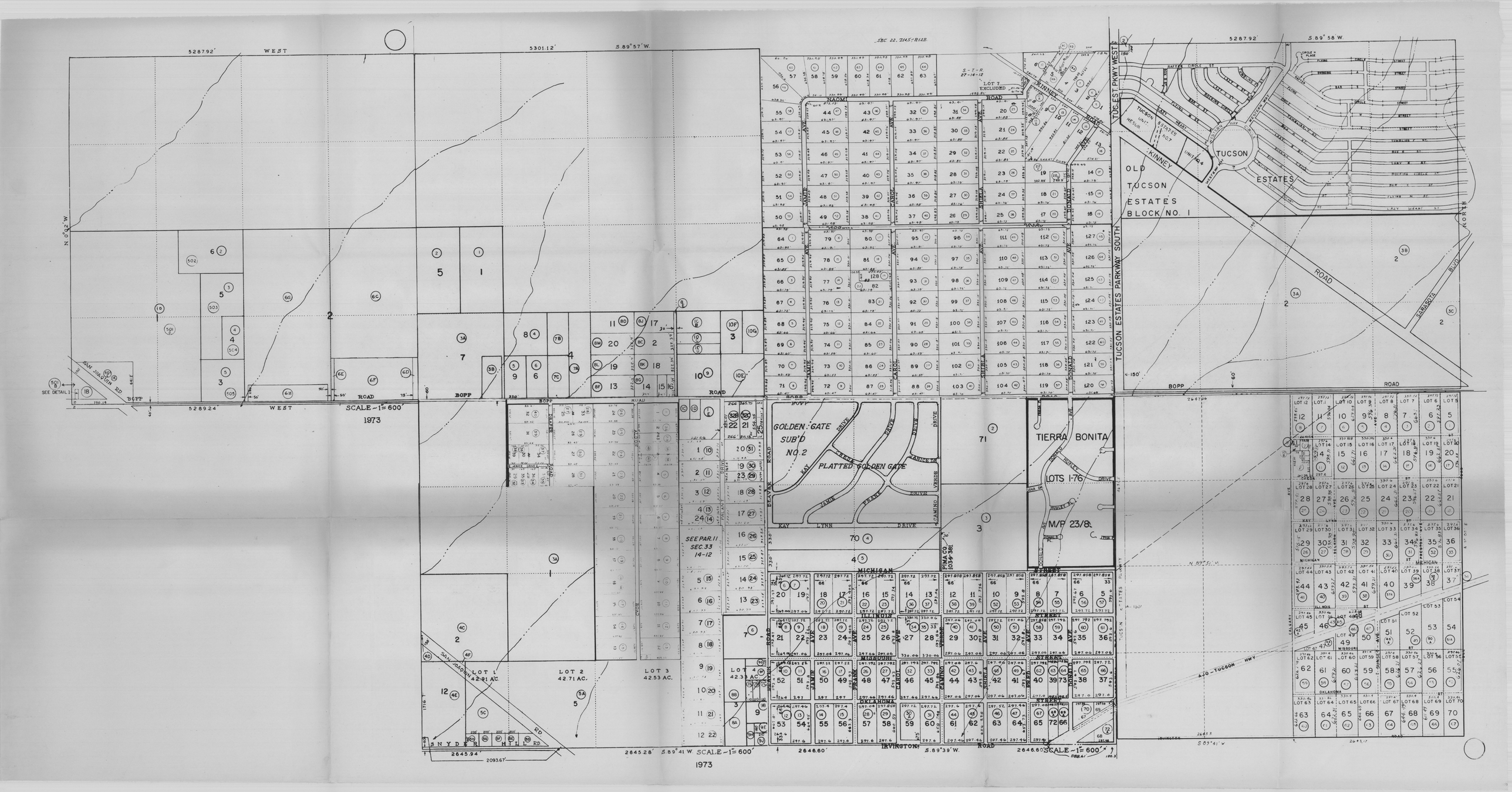


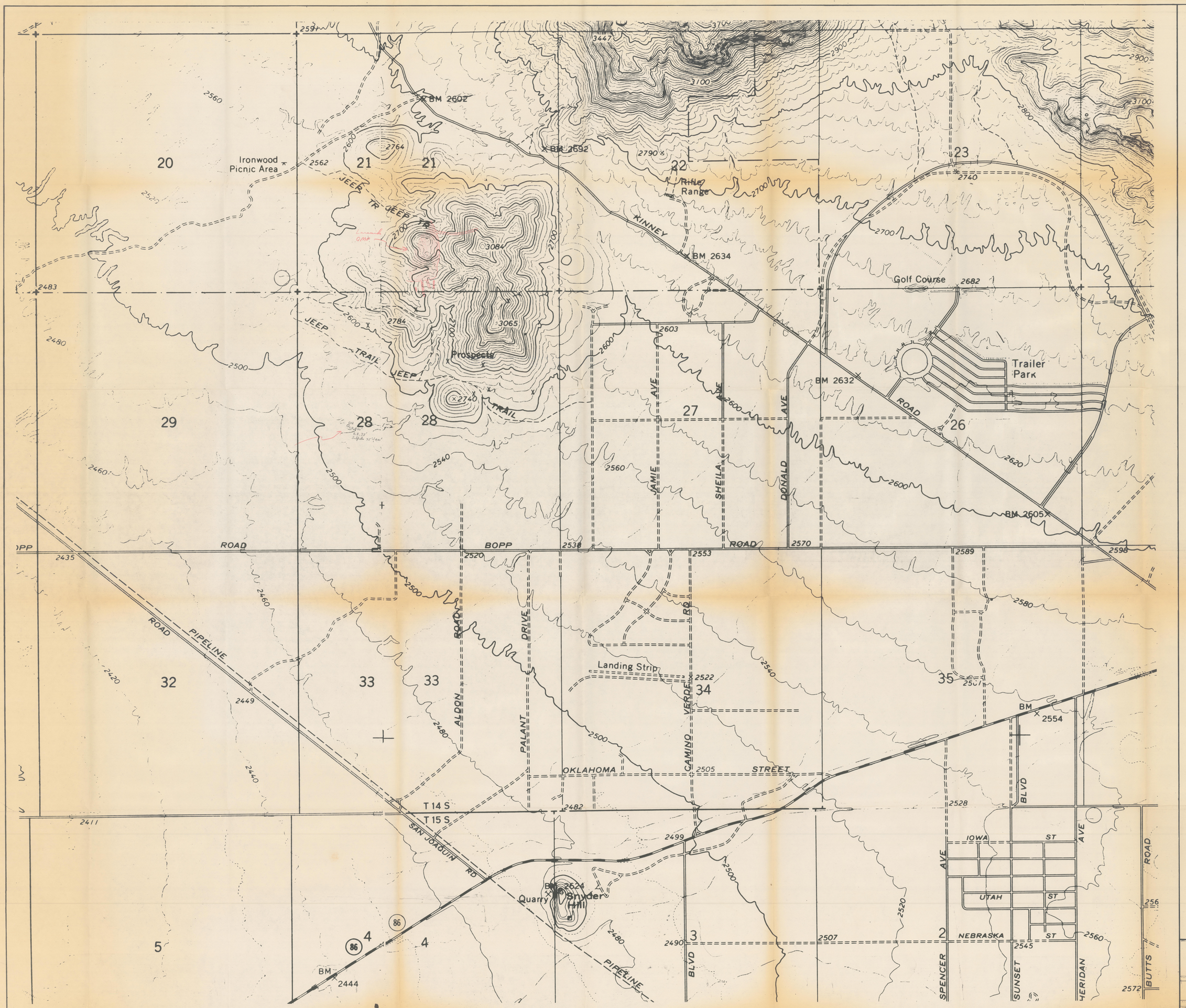
JOB# 825 LINE# 5 SP 1,2,3&4 a = 1000' BEARING E-W

CLIENT Cominco DATE July, 1973 FREQUENCIES 0.1 & 1.0 Hz

AREA Sedimentary Hills RESISTIVITY FREQUENCIES 1.0




SCALE - 1" = 600'
1973
WEST
S.89°57'W.
N.0°02'W.
SAN JOAQUIN RD
BOPP
ROAD
SEE DETAIL 1
LOT 1 42.91 AC.
LOT 2 42.71 AC.
LOT 3 42.53 AC.
SNYDER HILL RD
2645.94'
2093.67'
S.89°41'W.
2646.60'
S.89°39'W.
2646.60'
IRVINGTON
MICHIGAN
ILLINOIS
MISSOURI
OKLAHOMA
KAY
LYNN
DRIVE
GOLDEN GATE SUB'D NO. 2
PLATTED GOLDEN GATE
TIERRA BONITA
LOTS 1-76
M/P 23/8
SEE PAR. II SEC. 33 14-12
SEC 22, T14S-R12E
S-T-R 27-14-12
1 LOT EXCLUDED
NAOMI
KINNEY
TUCSON ESTATES PARKWAY SOUTH
OLD TUCSON ESTATES BLOCK NO. 1
TUCSON ESTATES
SARASOTA BLVD
TUCSON-HWY
S.89°58'W.
S.89°41'W.



E-266-12

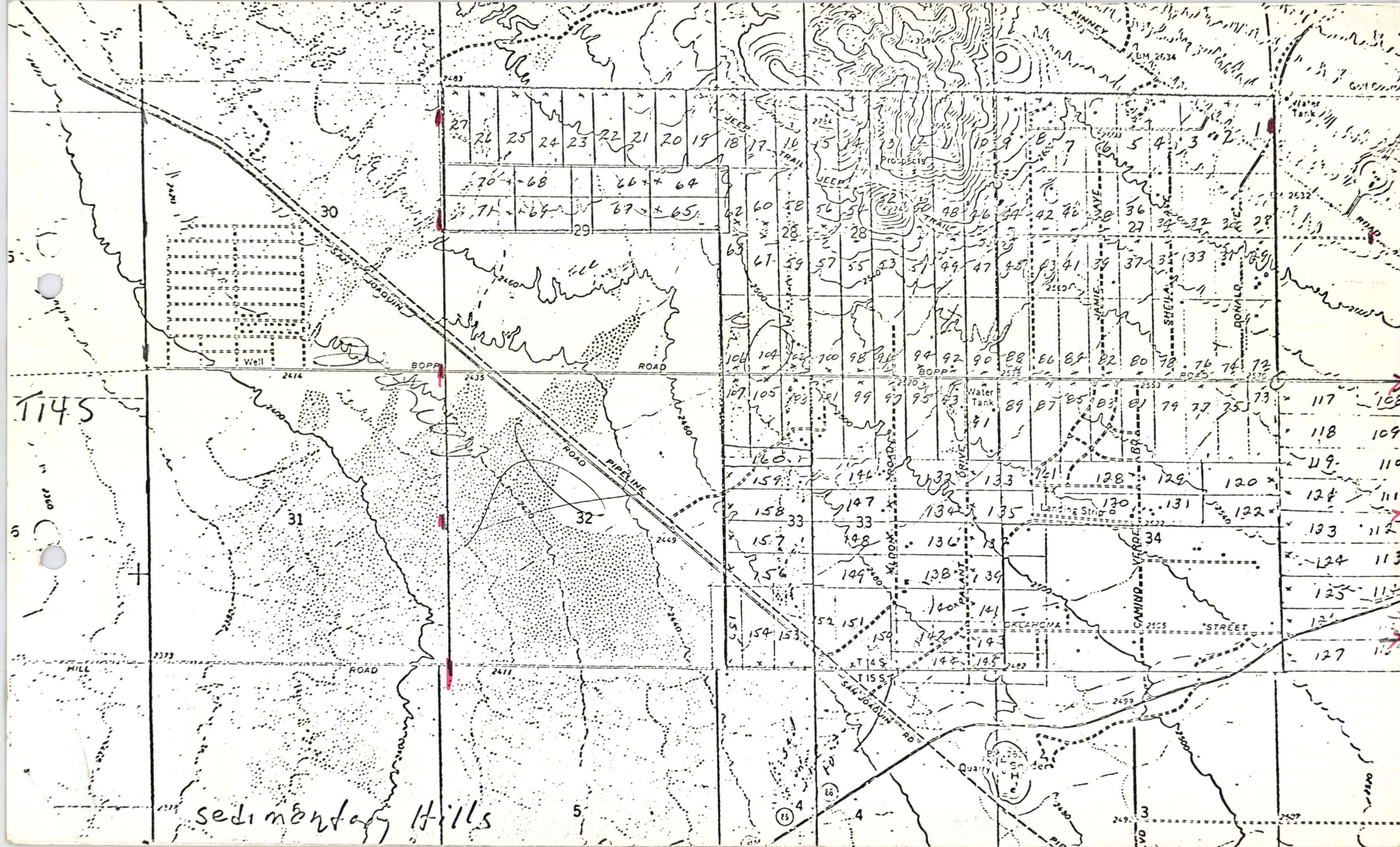
SEDIMENARY HILLS

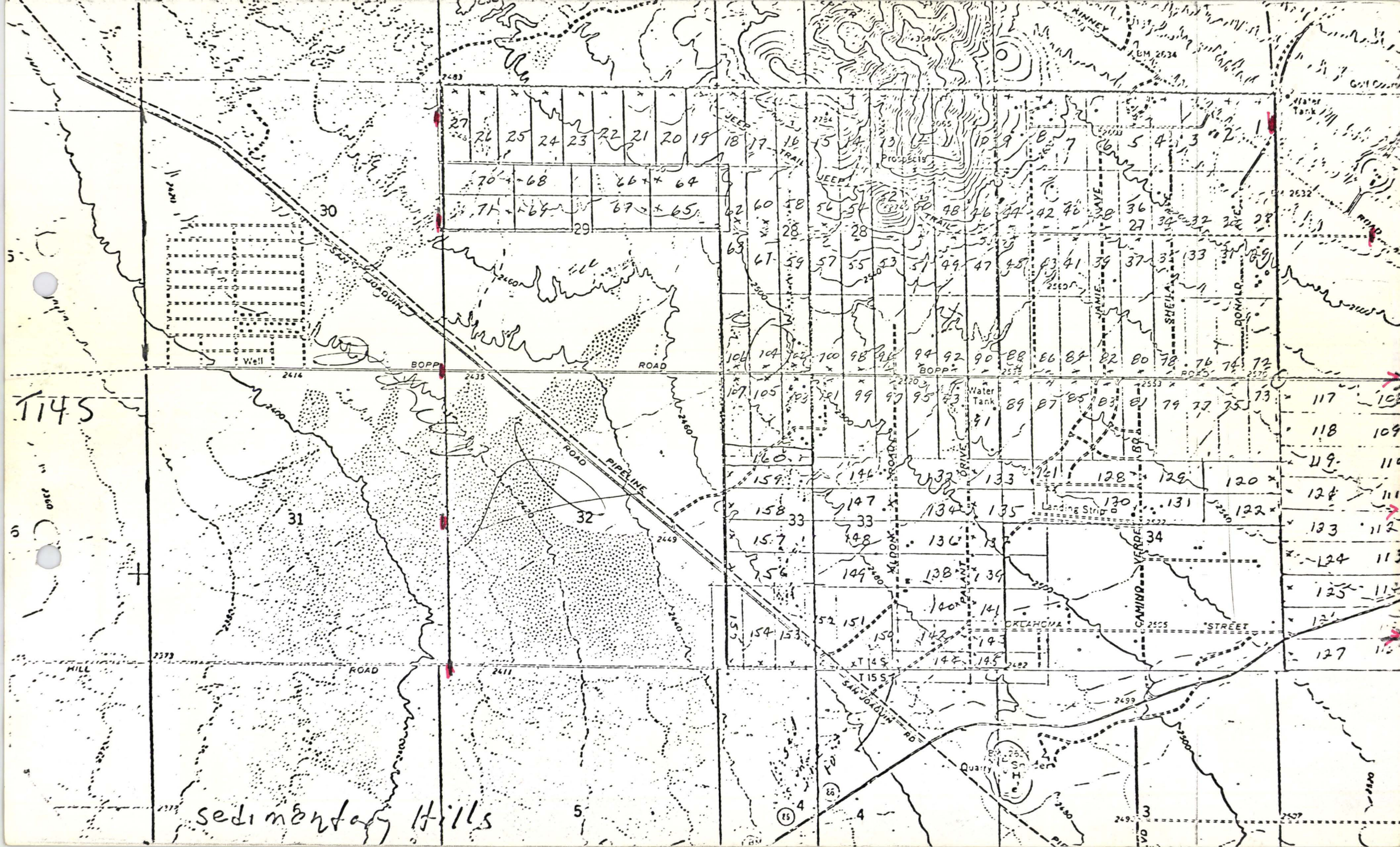
ARIZONA | PIMA | 1"=500' | 20'

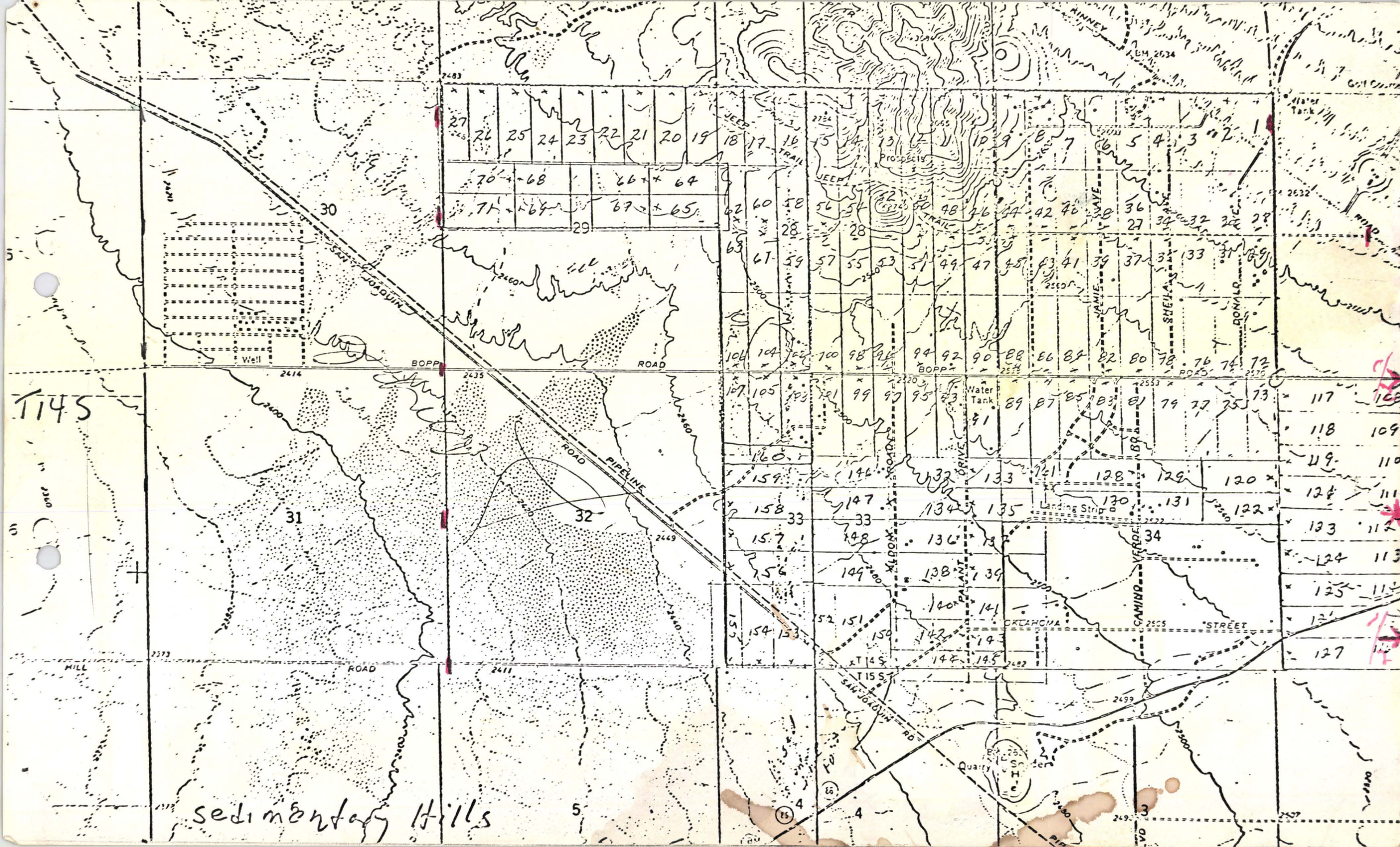
conoco

CONTINENTAL OIL COMPANY
MINERAL EXPLORATION DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

E-266-12


T14S
T15S
SAN JOAQUIN
PIPELINE
ROAD
BOPP
HILL
JEEP TRAIL
Well
Water Tank
Landing Strip
Prospects
Quarry
OKLAHOMA
STREET
CAMINO VERDE
PALANT DRIVE
KLOOK ROAD
JAMIE
SHEILA
DONALD
KINNEY
sedimentary Hills


T14S
T15S
SAN JOAQUIN
ROAD
PIPELINE
BOPP
ROAD
HILL
ROAD
Well
Prospects
Water Tank
Landing Strip
OKLAHOMA
STREET
CAMINO VERDE
PALANT
DRIVE
JAMIE
AVE
SHEILA
DONALD
JEEP
TRAIL
Quarry
Sedimentary Hills


T14S
T15S
SAN JOAQUIN
PIPELINE
ROAD
BOPP
HILL
Well
Water Tank
Landing Strip
Prospects
JEEP
TRAIL
OKLAHOMA
STREET
CAMINO VERDE
ALDONA
DRIVE
JAMIE
SHEILA
DONALD
Quarry
Sedimentary Hills

Minerals Department

Continental Oil Company
1706 West Grant Road
Tucson, Arizona 85705
(602) 623-3627

June 28, 1973

HEINRICHS
GEOEX
Cable: GEOEX

REC'D JUL 2 1973 REC'D

BOX 5964 TUCSON, ARIZONA 85703
Phone: (AREA 602) 623-0578

Heinrichs Geoexploration Company
806 West Grant Road
Tucson, Arizona 85703

Re: Proposed Induced Polarization and Magnetic Survey, T14S, R12E
Pima County, Arizona GEOEX Job #825
Our No. MC-~~82~~ 97

Dear Walter:

Attached is an executed copy of Geoexploration Agreement dated June 13, 1973, between Heinrichs Geoexploration Company and Continental Oil Company.

Yours truly,

Wes

Wes Pokluda
Senior Landman
Tucson District

WP: jg

Enclosure

HEINRICHS GEOEXPLORATION COMPANY

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

June 13, 1973

Continental Oil Company
Minerals Department
1706 West Grant Road
Tucson, Arizona 85705

Re: Proposed Induced Polarization
and Magnetic Survey, T14S R12E
Pima County, Arizona
GEOEX Job #825

Gentlemen:

Per our recent discussions and your request, this proposal-contract letter is submitted for your consideration and approval to conduct on your behalf the following described work:

Approximately 17 profile line miles of subsurface interpretable coverage of I.P. and perhaps simultaneous magnetometer station readings. Objective of the work is to provide any additional subsurface geological information obtainable by these methods which might aid and guide to possible drill targets and drilling efficiency.

Primary coverage will be 1000' dipoles and "N" intervals ranging from one up through 6 giving penetration to roughly 1500'. Production is estimated at approximately 1 to 2 profile miles per field work day. If magnetics is desired, stations will be run on 200' to 250' intervals along the I.P. lines. It is estimated this will add from about 5% to 10% to the overall job time and cost including presentation and preliminary interpretation.

A basic 3 man crew and equipment will be furnished and charged at the rate of $250.00 per work day plus expenses, and interpretation. Expenses include $15.00 per day plus $0.15 per mile per vehicle for one or two vehicles maximum probable at any one time. Other direct job related expenses are billed at 115% of our invoice cost.

Our normal work schedule is based on a five day week and an eight hour work day. Travel time up to one hour per day each way to and from the job site will not be charged. Overtime in excess of this schedule will be charged at $37.50 per hour for the three man crew plus expenses as above.

Standby time due to inclement weather or client request will be charged at half the daily rate plus expenses as above.

Final data compilation, computation, and drafting will be charged at $10.00 per hour. Supervision, final interpretation and report will be charged at $18.75 per hour. Rough field plots and preliminary field interpretations will be available during the project as needed.

We estimate the total billing on this basis would be about $5,000.00 or perhaps somewhat more, depending on cultural avoidance details and if any 1500' or 2000' dipole work appears warranted later and is included hereunder. This includes final drafting, interpretation and report. If no report were involved, the total billing would be reduced by about $500.00.

One or two extra helpers with their own vehicle would increase the rate of production proportionally if time is critical. Our daily base rate is increased by $50.00 for each helper but the overall project cost should be about the same as with a three man crew.

GEOEX will save the client harmless from all Workmen's Compensation liability, public liability and property damage liability incurred by GEOEX employees. All property permits, brushing, and trespass liability and related costs which are incurred on behalf of the client will be chargeable to the client at GEOEX cost plus 15%. All special insurance premiums, bonds, fees, duties, licenses, taxes, trespass permits, and related special fees, if any, will be billed to the client at GEOEX cost plus 15%.

Payments are due on presentation. Billings may be submitted weekly with final payment due on presentation of final report.

Crew availability is on or about 18 June, 1973, and we recommend starting as near this date as possible because of our prior personnel availability and equipment committments.

Extra personnel will be used as required to minimize unnecessary agitation of surface owners and liability exposure, as well as expediting production and exploration processing of the area. Especially initially, we would appreciate one of your field men accompanying our crew to the area, say, for the first day or two in order to establish good communication and coordination guide lines right from the start.

Your approval of this letter contract may be indicated by executing as provided below on the accompanying copy and returning same to us.

Sincerely,

Heinrichs GEOEXploration Co.

Walter E. Heinrichs, Jr.
President

CC: Extra enclosed

Accepted by: Continental Oil Company

Person: W. A. Petersen

Title: Manager of Metallics Exploration

Date: 6-20-73

HHL RCB
VP

Richard C. Moores II
Geologist
Minerals Department

Continental Oil Company
1706 West Grant Road
Tucson, Arizona 85705
(602) 623-3627
Res: (602) 325-7861

OVER

Sheriff's Office-
622-3366
Sgt. Wilson

or

Officer Check.

6/15/73

Two sedimentary samples with carbonaceous material

Lab IP tested: 3 & 0.3 hz

Label	$\rho/2\pi$ in ohm-feet	PFE	MCF
SED 10 150'	42	1.0	24
SED 13 152'	810	1.9	2.3

PFEs are quite low

Therefore, should not give any significant I.P. interference if they are reasonably representative

6/6/73

Conoco — Roy Barkley Called Walt Re:

20 Line miles I.P.

Surveyors start in field on 18th. June	go over maps. Week of 11th. (Fri 15th.) or earlier	2 Rigs Security Guard. John Scott Ulm.
Cat Brown		1000(a)
T14S R12E	26, 27 28, 29 33, W½34 W½35	dipols Photo 1" = 500'

I.P. RECEIVER NOTES second try

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E-W HALF W SP. 1 DATE 7-27-70

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10W	10-20W	→	20-30W	→	→	30-40W	→	→	
MULT.	1.0	1.0	1.0	1.0	1.0	0.1	1.0	0.1	0.1	
PFE	1.6	2.0	2.0	2.2	3.1	3.0	2.8	3.6	3.6	
AC MV	200	91.9	24.3	69.8	19.3	9.16	15.1	7.83	4.55	
Dr. PF	—	—	-0.2	+0.2	—	+0.1	—	—	—	
I	10	→								
Kn/1000	3	3	12	3	12	30	12	30	60	
PFEc	1.4	1.8	1.9	1.9	2.9	2.8	2.6	3.4	3.4	
ρ/Ωm	59	27	28	20	23	27	18	23	27	
MCF	24	67	67	93	128	104	147	148	128	
PFE Avg.										
AC										
DRIFT					2-4 PFE					
S.P.	+9.0	+4.7		+2.2			+4.7			
AC NOISE										
POT RES.										

* Portions of old fence at ≈ 28 m; wooden posts, wire down; road

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF W SP. 1 DATE 7-27-73

SEND	1-2	2-3	3-4	1-2	2-3	3-4	Cal	SP		
RECEIVE	40-50W	→	→	50-60W	→	→		0-10E		
MULT.	0.1	0.1	0.1	0.1	0.1	0.1	1.0			
PFE	3.2	4.2?	5.5?	3.4	5.5	4.8	+0.2			
AC Mu	6.11	4.26	2.77	2.98	2.44	1.68	2.05			
Drift	+0.2	+0.1	-0.8	—	+0.4	—	—			
T	10 →						2			
Km/1000	30	60	105	60	105	168				
							0.976	e Cal		
PFEc	2.9	4.0	5.7	3.2	5.1	4.6				
ρa	18	25	28	17	25	28				
MCF	162	160	201	183	204	167				
PFE Avg.										
AC										
DRIFT		3-7 PFE								
S.P.	+14.9			+14.7				+13.4		
AC NOISE										
POT RES.										

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF E SP. 1 DATE 7-22-83

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E	→	30-40E	→	→	40-50E	→	→	
MULT.	10	10	1.0	10	1.0	1.0	1.0	1.0	1.0	
PFE	1.5	1.5	1.6	1.2	1.7	1.6	1.6	1.7	1.6	
AC Mv	191	243	59.2	289	94.9	36.0	73.4	38.7	19.2	
Drift	—	+0.4	+0.2	—	+0.2	—	+0.2	—	-0.2	
I	10	→								
Rn/1000	3	3	12	3	12	30	12	30	60	
PFEc	1.3	1.1	1.3	1.0	1.4	1.4	1.3	1.5	1.5	
ρapp	56	71	69	85	111	105	86	113	112	
MCF	23	15	19	12	13	13	15	13	13	
PFE Avg.										
AC										
DRIFT										
S.P.	+13.4	+47.7		+66.2			+84.5			
AC NOISE										
POT RES.										

I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO.

PROJECT Conoco #825

LINE 5 BEARING E HALF E SP. 1 DATE 7-27-72

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	50-60 E	→	→	60-70 E	→	→	70-80 E	→		
MULT.	1.0	1.0	1.0							
PFE	2.0	2.4	2.2							
AC MV	45.2	32.9	18.8							
Drift	—	+0.2	—							
Z	10	→	→							
R_a/1000	30	60	105							
PFEc	1.8	2.1	2.0							
Chg	132	193	193							
MCF	14	11	10							
PFE Avg.										
AC										
DRIFT										
S.P.	+90.0									
AC NOISE										
POT RES.	#									

*Cross San Joaquin Rd at ≈5 ⅞ gas pipe

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conico #825 LINE 5 HALF W SP. 1 DATE 7-27-73

PAGE #1

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10 W	10-20 W	→	20-30 W	→	→	30-40 W	→	→	
RANGE	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	
VOLTAGE	380	340	380	300	340	380	310	340	380	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND	1-2	2-3	3-4	1-2	2-3	3-4				
RECEIVE	40-50 W	→	→	50-60 W	→	→				
RANGE	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3	30× 333.3				
VOLTAGE	310	340	380	320	340	380				
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0				

FREQUENCIES 1.0 0.1

SENDER NO. 6644-5

OPERATOR DK

RECEIVER NO. 20693-R

OPERATOR R.P.

COMMENTS:

CA - 2.0

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco # 825
LINE 5 HALF E SP. 1 DATE 7-27-73

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E	→	30-40E	→	→	40-50E	→	→	
RANGE	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	
VOLTAGE	320	340	310	380	340	320	380	340	310	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	50-60E	→	→	60-70E	→	→	70-80E	→		
RANGE	30x 333.3	30x 333.3	30x 333.3							
VOLTAGE	390	350	320							
CURRENT	10.0	10.0	10.0							

FREQUENCIES 1.0 0.1
SENDER NO. 6644-S
OPERATOR DK
RECEIVER NO. 20698-R
OPERATOR R.P.

COMMENTS:

I.P. RECEIVER NOTES

PAGE 1

Spread #2 C.P. 40E

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #82S

LINE 5 BEARING E HALF W SP. 2 DATE 7-30

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	Cal
RECEIVE	10-20W	→	→	→	20-30W	→	→	30-40W	→	
MULT.	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10
PFE	1.8	2.4	3.4	3.6	3.2	3.5	3.7	3.6	3.7	+0.1
AC Mv	12.3	9.58	5.47	4.91	5.60	4.61	2.70	3.18	2.75	202
Drift	—	+0.2	+0.4	+0.2	+0.2	+0.2	-0.2	+0.2	+0.5	—
I	10	10	9	8	10	10	9	10	10	2
Kn	30	60	105	168	60	105	168	105	168	
										Cal = 0.990
PFE	1.7	2.2	3.1	3.4	3.0	3.3	3.7	3.4	3.4	
ρ/m	37	57	63	102	33	48	50	33	46	
MCE	47	39	49	33	90	69	74	103	74	
PFE Avg.										
AC										
DRIFT										
S.P.	+5.0				+37.6		+7.6	+7.6		
AC NOISE										
POT RES.										

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF E SP. 2 DATE 7-30

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	40-50E	50-60E	→	60-70E	→	→	70-80E	→	→	→
MULT.	10	10	10	10	10	1.0	10	1.0	1.0	1.0
PFE	1.4	0.8	1.4	1.6	2.0	1.4	1.6	1.8	2.7	1.9
ACMV	258	470	110	422	164	54.7	272	67.9	44.7	19.7
Drift	+0.4	-0.2	—	+0.2	+0.4	—	+0.2	-0.4	—	—
I	10.0						9.0	9.0	10	10
Hz	3	3	12	3	12	30	3	12	30	60
PFE	1.0	0.7	1.2	1.3	1.6	1.2	1.3	1.8	2.5	1.7
ρa	765	140	130	125	194	163	90	89.5	133	117
MCF	13	5.0	9.2	10.0	8.2	7.3	14	20	19	15
PFE Avg.										
AC										
DRIFT										
S.P.	+64.1	+12.7		+0.3			-64.3			
AC NOISE										
POT RES.								PFE 2.27		

I.P. RECEIVER NOTES

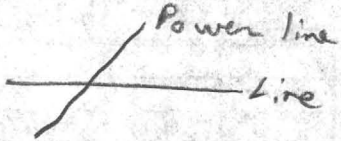
PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE S BEARING E HALF E SP. 2 DATE 7-30

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		Cal
RECEIVE	80-90E	→	→	→	90-100E	→	→	→		
MULT.	1.0	1.0	1.0	0.1	1.0	0.1	0.1	0.1		10
PFE	1.0	2.4	2.5	2.0	1.8	2.6	2.6	2.5		+0.3
AC Mv	51.0	21.4	15.3	7.89	18.0	9.50	7.52	4.48		202
DC Mv	-0.1	—	+0.2	—	—	+0.2	—	—		+0.2
I	9.0	10	10	10	9.0	10	10	10		
Ks	12	30	60	105	30	60	105	168		
PFE	0.9	2.2	2.2	1.8	1.6	2.3	2.4	2.3		0.2
Rho	167	63	91	82	59.5	56.5	80	74.5		.99
MCF	13	35	24	22	27	41	30	31		
PFE Avg.										
AC										
DRIFT				1.6-2.8 PFE						
S.P.	-44.0				-10.2					
AC NOISE										
POT RES.					X					

* Cross Power line at ≈88 E



I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF E SP. 2 DATE 7-30

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	100-110E	→	→	110-120E	→					
MULT.	1.0	0.1	0.1	0.1	0.1					
PFE	11.2	9.8	11.5	4.0	4.5					
AC mv	11.2	7.07	5.87	7.62	5.30					
Drift	-0.2	—	-0.4	—	-0.4					
I	9.	10	10	9	10					
Rx	60	105	168	105	168					
PFE	11.1	9.6	11.5	3.8	4.5					
ρ/a	665	74	97.5	88	88					
MCE	170	130	120	43	51					
PFE Avg.										
AC										
DRIFT										
S.P.	-9.4			+11.4						
AC NOISE										
POT RES.	#	ok		#						

Line runs ≈ parallel to power line;
average distance away = 150'

PAGE 1

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825

LINE 5 HALF W SP. 2 DATE 7-30

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	10-20W	→	→	→	20-30W	→	→	30-40W	→	
RANGE	30X 333.3	30X 333.3	30X 300.0	30X 266.6	30X 333.3	30X 333.3	30X 300.0	30X 333.3	30X 333.3	
VOLTAGE	400	390	480	580	400	400	490	400	400	
CURRENT	10.0	10.0	9.0	8.0	10.0	10.0	9.0	10.0	10.0	
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. 6644-5

OPERATOR DK

RECEIVER NO. 20693-R

OPERATOR RP

COMMENTS: CAL = 2.0

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825
LINE 5 HALF E SP. 2 DATE 7-31

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	40-50E	50-60E	→	60-70E	→	→	70-80E	→	→	→
RANGE	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 300.0	30x 300.0	30x 333.3	30x 333.3
VOLTAGE	380	390	390	470	390	380	500	410	380	390
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	10.0	10.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	80-90E	→	→	→	90-100E	→	→	→		
RANGE	30x 300.0	30x 333.3	30x 333.3	30x 333.3	30x 300.0	30x 333.3	30x 333.3	30x 333.3		
VOLTAGE	520	460	400	380	520	470	390	400		
CURRENT	9.0	10.0	10.0	10.0	9.0	10.0	10.0	10.0		

FREQUENCIES 1.0 0.1
SENDER NO. 6644-S
OPERATOR DK
RECEIVER NO. 20693-R
OPERATOR RP

COMMENTS:
CAL - 2.0

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825

LINE 5 HALF E SP. 2 DATE 7-31

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	100-110E	→	→	110-120E	→					
RANGE	30× 300.0	30× 333.3	30× 333.3	30× 300.0	30× 333.3					
VOLTAGE	520	480	380	510	480					
CURRENT	9.0	10.0	10.0	9.0	10.0					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. 6644-S

OPERATOR DK

RECEIVER NO. 20693-R

OPERATOR RP

COMMENTS:

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF W SP. 3 DATE 8-1-23

SEND	1-2	2-3	3-4	1-2	2-3	3-4	Cal			
RECEIVE	0-10E	→	→	10-20E	→	→				
MULT.	1.0	0.1		1.0	1.0	0.1	10			
PFE	1.0	2.3		1.0	3.5	3.0	0.0			
AC mv	16.8	9.93		22.1	11.5	4.44	201			
Drift	-0.3	—		—	+0.2	—	-0.1			
I	9.0	10.0		9	10	9	2			
Ky	105	168		60	105	168				
PFE	1.2	2.3		1.0	3.4	3.0	0.0			
Ca/2π	195	166		146	120	82.5	.995			
MCF	6.1	14		6.9	28	36				
PFE Avg.										
AC										
DRIFT										
S.P.	+17.0			+12.7						
AC NOISE										
POT RES.										

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE S BEARING E HALF E SP. 3 DATE 8-1-73

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	80-90E	90-100E	→	100-110E	→	→	110-120E	→	→	→
MULT.	10	10	1.0	10	1.0	1.0	10	1.0	1.0	1.0
PFE	0.6	0.7	0.4	1.4	1.6	1.2	1.3	2.4	2.3	2.1
Ac Mv	322	201	91.8	157	84.9	55.2	145	53.1	44.2	34.8
Drift	—	+0.1	—	+0.4	+0.3	—	—	—	+0.3	+0.2
I	9	10	9	8	10	9	7	8	10	9
Kn	3	3	12	3	12	30	3	12	30	60
PFE	0.6	0.7	0.4	1.2	1.4	1.2	1.3	2.4	2.1	2.10
Cg/lb	107	60	122	59	102	183	62	79	126	231
MCF	5.7	12	3.3	2.0	14	6.6	21	30	17	8.7
PFE Avg.										
AC										
DRIFT										
S.P.	-62.5	-8.5		-11.8			-17.3			
AC NOISE										
POT RES.										

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO.

PROJECT Conoco #825

LINE S BEARING E HALF E SP. 3 DATE 8-1-78

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	120-130E			→	128-140E			→		
MULT.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PFE	1.6	1.7	1.4	0.7	1.6	2.0	1.0	1.4		
Ac Nv	21.4	12.0	13.0	12.1	15.8	11.7	13.3	12.3		
Drift	—	+0.3	+0.2	—	+0.4	+0.2	—	+0.4		
I	7	8	10	9	7	8	10	9		
Kn	12	30	60	105	30	60	105	168		
PFE	1.6	1.5	1.3	0.7	1.4	1.9	1.0	1.2		
C1/2π	37	45	77	141	67	81	139	227		
MCF	43	33	17	5.0	21	22	7.2	5.3		
PFE Avg.										
AC										
DRIFT										
S.P.	0.0				0.0					
AC NOISE										
POT RES.	#									

Ajo Hwy at 120E

I.P. RECEIVER NOTES

PAGE 4

HEINRICHS GEOEXPLORATION CO.

PROJECT Conoco #825

LINE 5 BEARING E

HALF E SP. 3 DATE 8-1-73

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	140-150E	→	→	150-160E	→					
MULT.	0.1	0.1	0.1	0.1	0.1					
PFE	1.8	2.2	2.4	2.5	4.0					
AC MV	9.05	8.17	9.20	3.17	3.04					
Drift	-0.2	-0.2	+0.2	—	+0.2					
I	7	8	10	7	8					
Km	60	105	168	105	168					
PFE	1.9	2.3	2.3	2.5	3.9					
Ca/2π	77	107	171	47	63.5					
MCF	25	22	13	53	62					
PFE Avg.										
AC										
DRIFT										
S.P.	+13.7			+36.4						
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825

LINE 5 HALF W SP. 3 DATE 8/1

PAGE 1

SEND	1-2	2-3		1-2	2-3	3-4				
RECEIVE	0-10E	→		10-20E	→	→				
RANGE	30x 300.0	30x 333.3		30x 300.0	30x 333.3	30x 300.0				
VOLTAGE	450	410		440	400	560				
CURRENT	9.0	10.0		9.0	10.0	9.0				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. ~~20693-R~~ 6644-S

OPERATOR D.K

RECEIVER NO. ~~6644-S~~ 20693-R

OPERATOR RP

COMMENTS:

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825 LINE 5 HALF E SP. 3 DATE 8/1

PAGE 2

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	80-90E	90-100E	→	100-110E	→	→	110-120E	→	→	→
RANGE	30x 300.0	30x 333.3	30x 300.0	30x 266.6	30x 333.3	30x 300.0	30x 233.3	30x 266.6	30x 333.3	30x 300.0
VOLTAGE	460	420	460	480	410	460	500	480	410	460
CURRENT	9.0	10.0	9.0	8.0	10.0	9.0	7.0	8.0	10.0	9.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	120-130E	→	→	→	130-140E	→	→	→		
RANGE	30x 233.3	30x 266.6	30x 333.3	30x 300.0	30x 233.3	30x 266.6	30x 333.3	30x 300.0		
VOLTAGE	480	480	410	460	490	480	420	460		
CURRENT	7.6	8.0	10.0	9.0	7.0	8.0	10.0	9.0		

FREQUENCIES 1.0 0.1

SENDER NO. 6644-5

OPERATOR DK

RECEIVER NO. 20693-R

OPERATOR RP

COMMENTS: CAL - 2.0

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Congo #825

LINE 5 HALF E SP. 3 DATE 8/1

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	140-150E	→	→	150-160E	→					
RANGE	30X 233.3	30X 266.6	30X 333.3	30X 233.3	30X 266.6					
VOLTAGE	500	480	410	500	480					
CURRENT	7.0	8.0	10.0	7.0	8.0					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. CC44-5

OPERATOR DK

RECEIVER NO. 20693-R

OPERATOR RP

COMMENTS:

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE S BEARING E HALF E SP. 1 DATE 7-26-73

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E	→	30-40E	→	→	40-50E	→	→	
MULT.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
PFE	1.6	1.9	1.0	4.1	-4.0	-5.0	3.0	4.0	3.6	
AC Mv	87.3	136	88.8	64.9	35.5	24.3	70.1	65.7	46.9	
Drift	+0.1	—	—	—	—	—	—	-0.2	—	
PFE Avg.										
AC										
DRIFT										
S.P.	+46.4	-13.1		+13.8			+16.8			
AC NOISE										
POT RES.	O.K.									

ABORTED DUE TO BEING TO SEWER LINE (6" Tile Pipe)

I.P. RECEIVER NOTES

PAGE 1

HEINRICHS GEOEXPLORATION CO. PROJECT

LINE BEARING HALF SP. DATE

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	2-4	2-3	→	3-4	→	→	4-5	→	→	
MULT.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
PFE	1.6	1.9	1.0	4.1	-4.6	-5.0	3.0	4.0	3.6	
AC Mv	88.3	136	88.8	64.9	35.8	24.3	20.7	65.7	46.9	
Pr. ft	+0.1	—	—	—	—	—	—	-0.2	—	
PFE Avg.										
AC										
DRIFT										
S.P.	+46.4	-13.1		+13.8			+16.2			
AC NOISE										
POT RES.	O.K.									

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 5 BEARING E HALF E SP. 1 DATE 7-26-73

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	Cal	SP
RECEIVE	50-60E	→	→	60-70E	→	→	70-80E	→		0-10E
MULT.	1.0	1.0	1.0						10	
PFE	-0.4	-1.8	-1.6						+0.1	
AC.MV	76.9	70.0	49.5						204	
Drift	—	—	—						—	
PFE Avg.										
AC										
DRIFT										
S.P.	+87.0									-8.6
AC NOISE										
POT RES.	#									

Cross road, power line, + gas line at ≈48

I.P. RECEIVER NOTES

PAGE 2

HEINRICHS GEOEXPLORATION CO. PROJECT Conco #625

LINE 5 BEARING E HALF E SP. 1 DATE

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	Col	SP
RECEIVE	50-60E	→	→	60-70E	→	→	70-80E	→		0-10E
MULT.	1.0	1.0	1.0						1.0	
PFE	-0.4	-1.8	-1.6						+0.1	
AC MV	26.9	20.0	99.5						20.4	
Drift	—	—	—						—	
PFE Avg.										
AC										
DRIFT										
S.P.	+32.0									-8.6
AC NOISE										
POT RES.										

HEINRICHS GEOEXPLORATION CO.

I. P. SENDER NOTES

PROJECT Conoco #825

LINE 5 HALF E SP. 1 DATE 7-26-73

PAGE 1

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20 E	20-30 E	→	30-40 E	→	→	40-50 E	→	→	
RANGE	30X 333.3	30X 333.3	30X 333.3	30X 333.3	30X 333.3	30X 333.3	30X 333.3	30X 333.3	30X 333.3	
VOLTAGE	380	350	380	420	330	370	410	340	380	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	50-60 E	→	→	60-70 E	→	→	70-80 E	→		
RANGE	30X 333.3	30X 333.3	30X 333.3							
VOLTAGE	420	340	~~360~~ 380							
CURRENT	10.0	10.0	10.0							

FREQUENCIES 1.0 0.1

SENDER NO. 6644-5

OPERATOR DK.

RECEIVER NO. 20693-R

OPERATOR RP

COMMENTS: CAL - 2.0

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 1, HALF W, SR. 1, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-26

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	Col
RECEIVE	0-10w	10-30w	→	20-30	→	→	30-40	→	→	
MULTIPLIER	10	10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10
PFE	1.2	0.5	1.1	0.6	0.5	1.2	0.5	0.6	1.2	0.0
CUR. (AMPS)	5	6	5	6	6	5	6	6	5	3000
POINT NO.										
SEP. (n)										
H. F. MV	174	154	49.5	100.9	46.9	21.9	32.0	22.8	12.4	300
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	12	30	60	
0.3 PFE P_{CAL}	1.000	→	→	→	→	→	→	→	→	1.000
0.1 PFE PFE_c										
3.0 MV $P/2\pi$	104	77	119	50	94	131	64	114	149	
DRIFT MCF	11	6.5	9.3	12	5.3	9.1	7.8	5.3	8.1	
S. P.	+17.8	+.4	~~[illegible]~~	16.2	→	→	+6.8			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 835, AREA Conoco

LINE 1, HALF W, SP. 1, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-26-73

PAGE 2

HEINRICHS GEOEX

SEND		1-2	2-3	3-4	1-2	2-3					
RECEIVE		40-50	→	→	50-60	→					
MULTIPLIER		1.0	1.0	0.1	0.1	0.1					
PFE		0.4	0.8	1.8	1.4	1.9					
CUR. (AMPS)		6	6	5	6	6					
POINT No.											
SEP. (n)											
H. F. MV		17.5	14.7	8.60	5.59	5.63					
DRIFT											
1.0 PFE	K_n/1000	30	60	105	60	105					
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	88	147	181	56	88					
DRIFT	MCF	416	514	10	25	22					
S. P.		+11.5			-14.2						
NOISE											
POT RES.											
CULT & CMTS											

GF AT 51 W + 56 W

I. P. RECEIVER NOTES, JOB No. 825, AREA

LINE, HALF, SP, a =, BEARING

SENDER STA. = ELECTRODE No., DATE 6-26

PAGE 3

HEINRICHS GEOEX

SEND	CAL	SP	1-2	2-3	1-2	3-4	2-3	1-2		
RECEIVE		0-10E	10-20 E	20-30 E	→	30-40		→		
MULTIPLIER	10		10	10	1.0	10	1.0	1.0		
PFE	6.0		1.0	2.8	2.8	4.2	3.4	3.3		
CUR. (AMPS)	3000		6	6	6	5	6	6		
POINT No.										
SEP. (n)										
H. F. MV	298		206	245	54.8	150	50.9	17.3		
DRIFT	—		—	—	—	—	—	—		
1.0 PFE K_n/1000			3	3	12	3	12	30		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$			103	123	110	90	102	86		
DRIFT MCF			9.7	23	26	47	33	38		
S. P.		+27.1	+24.5	-20.9		+48.0				
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 1, HALF E, SP. 1, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-26-77

PAGE 4

HEINRICHS GEOEX

6-27

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	Cal
RECEIVE	40-50 E	→	→	50-60 E	→	→	60-70 E	→	→	
MULTIPLIER	1.0	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	10
PFE	5.7	4.7	4.9	7.4	6.4	5.8	[redacted]	7.8	8.6	0
CUR. (AMPS)	5	6	6	5	6	6	8.2	7.5	7.5	2000
POINT NO.							5.25			
SEP. (n)							3.08	2.63		
H. F. MV	62.2	32.7	13.8	8.98	5.91	3.02	[redacted]	[redacted]	1.38	200
DRIFT	—	—	+.1	+.2	—	—	[redacted]	—	+.3	
1.0 PFE K_n/1000	12	30	60	30	60	105	+-2	105	168	
0.3 PFE ρ_{CAL}							60			
0.1 PFE PFE_c				7.3			8.1		8.5	
3.0 MV $\rho/2\pi$	149	164	138	54	59	53	35	37	31	
DRIFT MCF	38	29	36	135	108	110	230	212	275	
S. P.	-26.4			-3.1			-51.1			
NOISE										
POT RES.										
CULT & CMTS										

Noise very bad

I. P. RECEIVER NOTES, JOB No. 835, AREA Conoco

LINE 1, HALF R, SP. 1, a = 1000, BEARING R

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-26

HEINRICHS GEOEX

PAGE 5

SEND		3-4	2-3								
RECEIVE		70-80	→								
MULTIPLIER											
PFE											
CUR. (AMPS)											
POINT No.											
SEP. (n)											
H. F. MV											
DRIFT											
1.0 PFE	K_n/1000	105	168								
0.3 PFE	P_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$P/2\pi$										
DRIFT	MCF										
S. P.		0									
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 1, HALF W, SP. 1, DATE JUNE 26

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10W	10-20W	→	20-30W	→	→	30-40W	→	→	
RANGE	30X166	30X200	30X166.6	30X200	30X200	30X166.6	30X200	3X200	3X166.6	
VOLTAGE	500	400	500	340	360	500	340	360	500	
CURRENT	5.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	
SEND	1-2	2-3	3-4	1-2	2-3					
RECEIVE	40-50W	→	→	50-60W						
RANGE	3X200	3X200	3X166	3X200	3X200					
VOLTAGE	340	360	500	340	360					
CURRENT	6.0	6.0	5.0	6.0	6.0					

FREQUENCIES 1.0 - 0.1

SENDER No.

OPERATOR RL

RECEIVER No.

OPERATOR

COMMENTS:

1-2 6A

2-3 6A

3-4

I.P. SENDER NOTES

JOB No. _____ AREA _____

LINE 1, HALF E, SP. 1, DATE June 26

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	10-20E	20-30E	→	30-40E	→		40-50E	→	
RANGE	3x200	3x200	3x200	30x166	30x200	30x200	30x166	30x200	30x200
VOLTAGE	340	400	340	500	400	340	500	380	340
CURRENT	6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
SEND	3-4	2-3	1-2	3-4	2-3	1-2			
RECEIVE	50-60E	→		60-70E	→				
RANGE	30x166	30x200	30x200	30x150	30x200	30x200			
VOLTAGE	500	380	340	440	360	340			
CURRENT	5.0	6.0	6.0	4.5	6.0	6.0			

FREQUENCIES 1.0 .91

SENDER No. 8661

OPERATOR JL

RECEIVER No.

OPERATOR

COMMENTS:

60-70E 3-4 4.5 amps

I. P. SENDER NOTES

JOB NO. _____ AREA CONOCO

LINE 1, HALF E, SP. 1, DATE June 27

PAGE _____

HEINRICHS GEOEX

SEND	3-4	2-3	1-2	3-4	2-3					
RECEIVE	60-70E →			70-80E →						
RANGE	30X175	30X250	30X250	30X175	30X250					
VOLTAGE	500	460	400	500	460					
CURRENT	5.25	7.5	7.5	5.25	7.5					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. 8661-5

OPERATOR LL

RECEIVER NO.

OPERATOR LM

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825 AREA Conoco

LINE 1, HALF ED, SR. 2, a = 1000, BEARING R

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-29

PAGE 1

HEINRICHS GEOEX

SEND	CAL	1-2	2-3	1-2	3-4	5-3	1-3	3-9	2-3	1-2
RECEIVE		40-50	50-60	→	60-70	→	→	70-80	→	→
MULTIPLIER	10	10	1.0	1.0	10	1.0	0.1	1.0	1.0	0.1
PFE	0.2	6.8	6.8	7.6	6.6	7.2	8.3	6.0	6.1	6.7
CUR. (AMPS)	2	5.25	5.25	5.25	4.5	5.25	5.25	4.5	5.25	5.25
POINT NO.										
SEP. (n)										
H. F. MV	203	304	94.3	28.7	155	19.5	7.32	70.2	16.0	7.36
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000		3	3	12	3	12	30	12	30	60
0.3 PFE ρ_{CAL}	Use 1,000									
0.1 PFE PFE_c		6.6	6.6	7.4	6.4	7.0	8.1	5.8	5.9	6.5
3.0 MV $\rho/2\pi$		174	54	66	103	46	42	187	91	84
DRIFT MCF		38	122	113	62	157	194	31	65	77
S. P.		+14.9	−19.3		+46.2			+10.9		
NOISE										
POT RES.								?+10.9		
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, STA. CONOCO

LINE 1, HALF R, SR. 2, a = 1000, BEARING R

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-29-8

PAGE 2

HEINRICHS GEOEX

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	80-90	→	→	90-100	→	→	100-110	→		
MULTIPLIER	1.0	1.0	0.1	1.0	0.1	0.1	0.1	0.1		
PFE	4.4	5.6	Noise	→						
CUR. (AMPS)	4.5	5.25	5.25	4.5	5.25	5.25	4.5	5.25		
POINT NO.										
SEP. (n)										
H. F. MV	32.9	10.8	5.61	15.1	5.93	3.38	7.33	2.11		
DRIFT	—	—	—							
1.0 PFE K_n/1000	30	60	105	60	105	168	105	168		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	4.2	5.4	—	—	—	—	—	—		
3.0 MV $\rho/2\pi$	219	123	112	201	119	108	171	100		
DRIFT MCF	19	44								
S. P.	−20.9			0			+3.4			
NOISE		5.5-6.0								
POT RES.										
CULT & CMTS										

Water Meter at 86 W

I. P. SENDER NOTES

JOB No. 825 AREA CONCO

LINE 1, HALF E, SP. 2, DATE June 28

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	40-50E	50-60	→	60-70E	→	→	70-80E	→	→
RANGE	30X175	30X175	30X175	30X150	30X175	30X175	30X150	30X175	30X175
VOLTAGE	600	500	600	800	500	600	800	500	600
CURRENT	5.25	5.25	5.25	4.5	5.25	5.25	4.5	5.25	5.25
SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	
RECEIVE	80-90E	→	→	90-100E	→	→	100-110E		
RANGE	30X150	30X175	30X175	30X150	30X175	30X175	30X150	30X175	
VOLTAGE	820	500	600	800	500	600	820	500	
CURRENT	4.5	5.25	5.25	4.5	5.25	5.25	4.5	5.25	

FREQUENCIES 1.0 0.1

SENDER No. 866

OPERATOR JL

RECEIVER No.

OPERATOR

COMMENTS: Low current 3-4

Hi current 1-2 2-3

32

$138\overline{)4400}$

414

260

| | | |

Power Lines Run Parallel to last 3 Sta.

I.P. RECEIVER NOTES, JOB No. 825, CA CONOCO

LINE 1, HALF E, SP. 2, a = 1000 BEARING F

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-2-73

PAGE _____

HEINRICHS GEOEX

SEND		3-4	2-3	1-2	3-4	2-3	1-2		CAL		
RECEIVE		90-100E	→	→	100-110	→	→				
MULTIPLIER		1.0	0.1	0.1	0.1	0.1	0.1		10		
PFE		2.6	2.0	3.2	3.6	4.6	5.6		.2		
CUR. (AMPS)		6	6	~~5.25~~ 5.25	6	→	→		2		
POINT No.											
SEP. (n)											
H.F. MV		20.6	6.70	3.80	8.62	3.98	2.12		204		
DRIFT		—	-.1	—	-.1	+.2	—		—		
1.0 PFE	K_n/1000	60	105	168	105	168	252				
0.3 PFE	P_{CAL}								0.980		
0.1 PFE	PFE_c	2.4	1.9	3.0	3.5	4.3	5.4				
3:0 MV	$P/2\pi$	202	115	104	169	96	87				
DRIFT	MCF	12	17	29	21	45	62				
S.P.		+10.3			-20.1						
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 82 AREA Cerro Co

LINE 1, HALF W, SP. 2, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE ~~[illegible]~~ 7-2

PAGE 3

HEINRICHS GEOEX

SEND	0-20	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	CAL
RECEIVE	0-10	→	→	10-20	→	→	20-30	→	→	
MULTIPLIER	1.0	1.0	1.0	1.0	0.1	0.1	1.0	0.1	0.1	
PFE	2.8	~~[illegible]~~	4.0	2.9	3.2	4.7	3.1	4.0	5.6	
CUR. (AMPS)	6	3.4	→	→	→	→	→	→	→	
POINT NO.										
SEP. (n)										
H. F. MV	54.9	16.8	13.7	22.2	8.56	7.95	11.3	5.16	5.33	
DRIFT	—	—	—	-.2	—	—	—	+.3	—	
1.0 PFE K_n/1000	12	30	60	30	60	105	60	105	165	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.6	3.2	3.8	2.8	3.0	4.5	2.9	3.7	5.4	
3.0 MV $\rho/2\pi$	108	82	134	109	84	136	111	89	146	
DRIFT MCF	24	39	28	26	36	33	26	42	40	
S. P.	+32.0			10.2			+26.2			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, CLIENT Conoco

LINE 1, HALF W, SP. 2, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-28

PAGE 4

HEINRICHS GEOEX

SEND		1-2	2-3								
RECEIVE		30-40	a →								
MULTIPLIER		0.1	0.1								
PFE		3.9	4.6								
CUR. (AMPS)		6 →									
POINT No.											
SEP. (n)											
H. F. MV		7.27	3.60								
DRIFT		—	-.1								
1.0 PFE	K_n/1000	105	168								
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	3.7	4.5								
3.0 MV	$\rho/2\pi$	125	99								
DRIFT	MCF	30	46								
S. P.		+12.7									
NOISE											
POT RES.											
CULT & CMTS											

I.P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 1, HALF E, SP. 2, DATE ~~June 28~~ July 2

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	3-4	2-3	1-2				
RECEIVE	90-100	→	→	100-110	→					
RANGE	30x175	30x200	30x200	30x200	30x200	30x200				
VOLTAGE	500	580	600	560	580	600				
CURRENT	5.25	6.0	6.0	6.0	6.0	6.0				
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER No. 8661 S

OPERATOR JR

RECEIVER No.

OPERATOR

COMMENTS:

Low current 3-4

Hi current 1-2-2-3

I. P. SENDER NOTES

JOB No. 825 AREA CONDO

LINE 1, HALF W, SP. 2, DATE July 2, 73

PAGE _____

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10W	→	→	10-20W	→	→	20-30W	→	→	
RANGE	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200	
VOLTAGE	600	580	560	600	580	560	600	580	560	
CURRENT	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
SEND	1-2	2-3								
RECEIVE	30-40W	→								
RANGE	30x200	30x200								
VOLTAGE	600	560								
CURRENT	6.0	6.0								

FREQUENCIES 1.0 0.1

SENDER No. 8661-S

OPERATOR JR

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, Conoco

LINE 1, HALF W, SR. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-25-23

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	CDL
RECEIVE	70-80 E	80-90	→	90-100	→		100-110	→		
MULTIPLIER	10	1.0	1.0	10	1.0	1.0	1.0	0.1	0.1	10
PFE	6.4	5.4	5.8	1.8	2.3	2.8	1.2	3.6	3.6	0.2
CUR. (AMPS)	5.25	5.25	5.25	4.5	5.25	5.25	4.5	5.25	5.25	
POINT NO.										
SEP. (n)										
H. F. MV	313	93.7	49.8	111	21.3	18.65	25.1	7.13	7.83	2.6
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	12	30	60	
0.3 PFE ρ_{CAL}	used 1,000	→								
0.1 PFE PFE_c	6.2	5.2	5.6	1.6	2.1	2.6	1.0	3.4	3.4	
3.0 MV $P/2\pi$	179	54	114	74	49	107	67	41	89	
DRIFT MCF	35	97	49	22	43	24	15	83	38	
S. P.	−108	−28.9		0			+13.5			
NOISE	−10.8?									
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, Conoco

LINE 1, HALF R, SP. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-5

PAGE 2

HEINRICHS GEOEX

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	110-120	→	→	120-130	→	→	130-140	→	→	
MULTIPLIER	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
PFE	0.3	3.7	4.0	-2.2	1.6?	2.0?	-1.0	0.4	3.4	
CUR. (AMPS)	4.5	5.25	4.5	?4.5	4.5	4.5	4.5	4.5	4.5	
POINT NO.										
SEP. (n)					?	?				
H. F. MV	12.15	4.23	4.58	~~7.99~~	2.36	3.31	4.19	1.42	2.16	
DRIFT	—	+.2	—	2.92	?	—	—	—	—	
1.0 PFE K_n/1000	30	60	105	?60	?105	168	105	168	252	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	0.1	3.4	3.8	-2.4?	1.4?	1.8?	-1.2	0.2	3.2	
3.0 MV $\rho/2\pi$	81	48	107	106	55	124	98	53	121	
DRIFT MCF	1.2	70	36	-23?	25?	15?	-12	3.8	26	
S. P.	+24.1			-10.4			+10.6			
NOISE										
POT RES.										
CULT & CMTS				↑						

See attached Note Page @ 122E Good

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 1, HALF E, SP. 3, DATE July 5, 73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	70-80 E	80-90 E →		90-100 E →			100-110 E →		
RANGE	30x175	30x175	30x175	30x150	30x175	30x175	30x150	30x175	30x175
VOLTAGE	500	300	440	560	300	440	540	300	440
CURRENT	5.25	5.25	5.25	4.5	5.25	5.25	4.5	5.25	5.25
SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	110-120 E →			120-130 E →			130-140 E →		
RANGE	30x150	30x175	30x175	30x150	30x150	30x150	30x150	30x150	30x150
VOLTAGE	560	300	440	540	300	400	540	300	400
CURRENT	4.5	5.25	[illegible]	4.5	4.5	4.5	4.5	4.5	4.5

FREQUENCIES	1.0 0.1 (4.5)
SENDER No.	8661
OPERATOR	JR
RECEIVER No.	
OPERATOR	JM

COMMENTS:

I.P. RECEIVER NOTES, JOB No. 825, CONOCO

LINE 1, HALF E, SP. 4, a = 1000, BEARING E

SENDER STA. 90 = ELECTRODE No. 2, DATE 7-6

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	CAL
RECEIVE	100-110	110-120	→	120-130	→	→	130-140	→	→	
MULTIPLIER	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1	1.0
PFE	1.9	1.7	1.0	0.9	-.4	-2.1	1.0	0.3	-1.6	0
CUR. (AMPS)	4	4	4	3	6	4.5	6	6	5.25	
POINT No.										
SEP. (n)										
H. F. MV	67.6	85.8	24.2	40.3	30.8	16.1	23.9	14.3	8.93	204
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	12	30	60	
0.3 PFE P_{CAL}	used 1.000 →									
0.1 PFE PFE_c										
3.0 MV $P/2\pi$	51	64	73	40	62	107	48	72	102	
DRIFT MCF	37	26	14	22	-6.5	-20	21	4.2	-16	
S. P.	+9.1	-8.7					+16.1			
NOISE				-102						
POT RES.				-10.2?						
CULT & CMTS										

OK BOCK

I.P. RECEIVER NOTES, JOB No. 825, Cono 20

LINE 1, HALF R, SP. 4, a = 1000, BEARING E

SENDER STA. 90 = ELECTRODE No. 2, DATE 6-7

PAGE 2

HEINRICHS GEOEX

SEND		3-4	2-3	1-2							
RECEIVE		140-150	→	→							
MULTIPLIER		0.1	0.1	0.1							
PFE		4.1	~~0.8~~	0.3							
CUR. (AMPS)			2.3								
POINT No.		6	6	5.25							
SEP. (n)											
H. F. MV		8.60	6.68	4.28							
DRIFT											
1.0 PFE	$K_n/1000$	30	60	105							
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	43	67	86							
DRIFT	MCF	95	34	3.5							
S. P.		-4.3									
NOISE											
POT RES.											
CULT & CMTS											

I.P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 1, HALF E, SP. 4, DATE July 12

PAGE _____

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	100-110 E	110-120 E →		120-130 E →			130-140 E →		
RANGE	30X1333	30X133	30X133	30X100	30X200	30X150	30X200	30X200	30X175
VOLTAGE	600	320	800	200	440	640	420	480	740
CURRENT	4.0	4.0	4.0	3.0	6.0	4.5	6.0	6.0	5.25
SEND	3-4	2-3	1-2						
RECEIVE	140-150 E →		→						
RANGE	30X200	30X200	30X175						
VOLTAGE	420	500	740						
CURRENT	6.0	6.0	5.25						

FREQUENCIES 1.0 - 0.1

SENDER No. 8661-5

OPERATOR JL

RECEIVER No.

OPERATOR D.M.

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 825, AREA CONOCO

LINE 2, HALF W, SR. 1, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-9-73

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	CAL
RECEIVE	0-100W	10-20W	→	20-30W	→	→	30-40W	→	→	
MULTIPLIER	10	10	1.0	10	1.0	1.0	1.0	1.0	1.0	10
PFE	0.6	0.4	0.4	0.8	0.6	0.6	0.4	0.7	0.6	0
CUR. (AMPS)	9	→	→	→	→	→	→	→	→	2
POINT NO.										
SEP. (n)										
H. F. MV	262	150	62.5	162	69.3	44.4	56.3	36.5	27.2	190
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$	3	3	12	3	12	30	12	30	60	
0.3 PFE ρ_{CAL}	1.042	→								
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	91	52	87	56	96	154	78	127	189	
DRIFT MCF	6.6	7.7	4.6	14	6.2	3.9	5.1	5.5	3.2	
S. P.	−31.8	−16.4		−7.2			+21.3			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 2, HALF W, SR 1, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-9-73

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	40-50W	→	→	50-60W	→	→	60-70W	→	→	
MULTIPLIER	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
PFE	0.8	1.0	0.7	2.9	3.1	0.4	3.4	4.3	3.2	
CUR. (AMPS)	9	→	→	→	→	→	→	→	→	
POINT No.										
SEP. (n)										
H. F. MV	15.3	11.5	9.10	3.96	3.34	2.81	2.18	1.93	1.74	
DRIFT	—	—	—	—	—	—	—	—	-.3	
1.0 PFE K_n/1000	30	60	105	60	105	168	105	168	252	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c									3.3	
3.0 MV $\rho/2\pi$	53	80	111	28	41	55	26	38	51	
DRIFT MCF	15	13	6.3	105	76	7.3	128	115	65	
S. P.	+107.4			+2.4			+26.7			
NOISE										
POT RES.										
CULT & CMTS										

MAP ON BACK ↑GF

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 2, HALF R, SR. 1, a = 1000, BEARING R

SENDER STA. 0 = ELECTRODE No. 2, DATE 7-9-73

PAGE 3

HEINRICHS GEOEX

SEND	5 P	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	0-10	10-20R	20-30	R →	30-40	→	→	40-50	→	→
MULTIPLIER		10	10	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PFE		+0.8	1.2	0.6	4.8	4.0	3.7	4.0	3.8	2.5
CUR. (AMPS)		9	→	→	→	→	→	→	→	→
POINT No.										
SEP. (n)		1	1	2	1	2	3	2	3	4
H. F. MV		262	318	68.1	220	61.3	20.35	73.9	29.35	12.0
DRIFT		—	—	—	—	—	—	—	—	—
1.0 PFE $K_n/1000$		3	3	12	3	12	30	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$		91	110	95	76	85	71	103	102	83
DRIFT MCF		8.8	11	6.3	63	47	52	39	37	30
S. P.	+32.0	-3.6	+17.9	~~[illegible]~~0	+31.0		+39.1			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA CONOCO

LINE 2, HALF R, SR. 1, a = 1000, BEARING R

SENDER STA. _____ = ELECTRODE NO. _____, DATE 8-9-73

PAGE 4

HEINRICHS GEOEX

SEND		3-4	2-3	1-2	3-4	2-3	1-2				
RECEIVE		50-60	→	→	60-70	→	→				
MULTIPLIER		1.0	1.0	1.0	1.0	0.1	0.1				
PFE		3.4	3.3	3.4	5.1	5.6	5.1				
CUR. (AMPS)		9	9	10.5	9	9	10.5				
POINT NO.											
SEP. (n)		3	4	5	4	5	6	5	6	(7)	
H. F. MV		44.8	20.8	11.1	13.75	7.12	4.08				
DRIFT		—	—	—	—	—	—				
1.0 PFE	$K_n/1000$	30	60	105	60	105	168				
0.3 PFE	P_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$P/2\pi$	156	144	116	95	87	68				
DRIFT	MCF	22	23	29	53	65	75				
S. P.		+22.9			−6.7						
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF W, SP. 1, DATE July 9

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4
RECEIVE	0-10 ω	10-20 ω →		20-30 ω →			30-40 ω →		
RANGE	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300
VOLTAGE	500	360	500	380	360	500	380	360	500
CURRENT	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
SEND	1-2	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4
RECEIVE	40-50 ω →			50-60 ω →			60-70 ω →		
RANGE	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300
VOLTAGE	380	360	500	380	360	500	360	380	500
CURRENT	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR JL

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF E, SP. 2, DATE July 9

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E	→	30-40E	→		40-50E	→		
RANGE	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	
VOLTAGE	350	340	360	500	360	360	500	340	360	
CURRENT	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
SEND	3-4	2-3	1-2	3-4	2-3	1-2				
RECEIVE	50-60E	→		60-70E	→					
RANGE	30x300	30x300	30x350	30x300	30x300	30x350				
VOLTAGE	500	340	400	500	340	400				
CURRENT	9.0	9.0	10.5	9.0	9.0	10.5				

FREQUENCIES	1.0 0.1
SENDER No.	6644
OPERATOR	JL
RECEIVER No.	
OPERATOR	

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 2, HALF E, SR. 2, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-10-73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	Cal
RECEIVE	40-50E	50-60E	→	60-70	→	→	70-80	→	→	
MULTIPLIER	1.0	10.0	1.0	1.0	1.0	1.0	1.0	0.1	0.1	10
PFE	5.0	7.9	4.4	7.0	8.0	6.4	6.2	8.3	6.6	0
CUR. (AMPS)	5	5.8	→							2
POINT NO.										
SEP. (n)										
H. F. MV	98.0	126	44.8	92.95	20.0	11.6	28.4	9.55	6.64	194
DRIFT	—	—	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	12	30	60	
0.3 PFE ρ_{CAL}	1.031	→								
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	61	78	111	57	49	72	70	59	82	
DRIFT MCF	82	74	40	122	162	89	88	141	80	
S. P.	-40.3	+30.4		-13.6		-	-5.7			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA CONOCO

LINE 2, HALF E, SP. 2, a = 100, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 8-10-73

PAGE 2

HEINRICHS GEOEX

SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	80-90	→	→	90-100	→	→	100-110	→		
MULTIPLIER	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
PFE	4.2	5.8	4.9	4.0	5.0	3.8	3.8	4.4		
CUR. (AMPS)	5 →									
POINT NO.										
SEP. (n)										
H. F. MV	13.05	5.31	4.275	5.89	2.78	2.52	2.71	1.44		
DRIFT	—	—	+.2	—	—	—	—	-.4		
1.0 PFE K_n/1000	30	60	105	60	105	168	105	168		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	81	66	93	73	60	87	59	50		
DRIFT MCF	52	88	52	55	83	44	65	92		
S. P.	+30.4			-20.7			+34.3			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 2, HALF W, SR. 2, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-10

PAGE 3

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	1-2	2-3	3-4	1-2	2-3		
RECEIVE	100-200W	→	→	20-30W	→	→	30-40W	→		
MULTIPLIER	1.0	0.1	0.1	1.0	0.1	0.1	0.1	0.1		
PFE	1.2	4.2	4.3	1.9	4.2	3.6	2.0	3.8		
CUR. (AMPS)	5	→	→	→	→	5.25	5.25	6		
POINT NO.										
SEP. (n)										
H. F. MV	13.9	5.015	3.32	12.2	5.06	4.06	9.66	4.70		
DRIFT	—	—	—	—	—	—	—	—		
1.0 PFE K_n/1000	30	60	105	60	105	168	105	168		
0.3 PFE P_{CAL}										
0.1 PFE PFE_c										
3.0 MV $P/2\pi$	86	62	72	151	110	134	199	136		
DRIFT MCF	14	68	60	13	38	27	10	28		
S. P.	—			+23.6			+10.1			
NOISE										
POT RES.										
CULT & CMTS										

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 2, HALF E, SP. 2, DATE July 10

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	40-50 E	50-60 E	→	60-70 E	→	→	70-80 E	→	→	
RANGE	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	
VOLTAGE	320	560	320	660	560	320	660	560	320	
CURRENT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
SEND	3-4	2-3	1-2	3-4	2-3	1-2	3-4	2-3		
RECEIVE	80-90 E	→	→	90-100 E	→	→	100-110 E	→		
RANGE	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166	30 x 166		
VOLTAGE	660	560	320	660	560	320	660	540		
CURRENT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		

FREQUENCIES	1.0 0.1
SENDER No.	6644
OPERATOR	JR
RECEIVER No.	
OPERATOR	JM

COMMENTS: CAL. 2 amps 120 v.

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF W, SP. 2, DATE July 10

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	1-2	2-3	3-4	1-2	2-3		
RECEIVE	10-20W	→	→	20-30W	→	→	30-40W			
RANGE	30X166	30X166	30X166	30X166	30X166	30X175	30X175	30X200		
VOLTAGE	320	540	640	320	540	720	360	640		
CURRENT	5.0	5.0	5.0	5.0	5.0	5.25	5.25	6.0		
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR SL

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 2, HALF E, SR. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-11

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	70-80	80-90	→	90-100	→	→	100-110	→	→	→
MULTIPLIER	10	10	10	10	1.0	1.0	1.0	1.0	0.1	0.1
PFE	5.8	4.6	3.2	1.9	4.4	3.8	1.2	1.3	4.1	3.4
CUR. (AMPS)	6	→	→							
POINT NO.										
SEP. (n)										
H. F. MV	122.5	842.	429	107	21.3	16.8	81.8	24.75	7.46	7.11
DRIFT	—	—	—	—	—	—	—	—	—	+.1
1.0 PFE K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}	1.039	→								
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	64	437	891	56	44	87	42	51	39	74
DRIFT MCF	91	105	3.6	34	99	44	28	25	106	46
S. P.	-25.6	+29.6		-7.8			+33.0			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 2, HALF E, SR. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-11-73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	110-120	→	→	→	120-130	→	→	→		
MULTIPLIER	1.0	1.0	0.1	0.1	1.0	0.1	0.1	0.1		
PFE	1.0	0	3.5	2.5	0.4	0	3.2	2.4		
CUR. (AMPS)	6	→	→							
POINT NO.										
SEP. (n)										
H. F. MV	31.8	14.5	5.51	5.92	14.4	7.965	3.49	4.04		
DRIFT	—	—	—	—	—	—	—	+.4		
1.0 PFE K_n/1000	12	30	60	105	30	60	105	168		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c								2.2		
3.0 MV $\rho/2\pi$	66	75	57	108	75	83	63	118		
DRIFT MCF	15	0	61	23	513	0	50	19		
S. P.	+25.0				+12.3					
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 2, HALF R, SR 3, a = _____, BEARING R

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-11

PAGE 3

HEINRICHS GEOEX

SEND		4-5	3-4	2-3	4-5	3-4		CAL			
RECEIVE		130-140	→	→	140-150	→					
MULTIPLIER		1.0	0.1	0.1	0.1	0.1		10			
PFE		-2.0	3.8	5.2	-2.2	[redacted]		0			
CUR. (AMPS)		10	7.2	6.3	10	0		2			
POINT NO.						7.2					
SEP. (n)											
H. F. MV		13.0	6.06	2.47	8.39	4.01		192.5			
DRIFT		-.2	—	—	-.4	[redacted]		—			
1.0 PFE	K_n/1000	60	105	168	105	-.3					
0.3 PFE	ρ_{CAL}					168					
0.1 PFE	PFE_c	-1.9			-2.0	0.2					
3.0 MV	$\rho/2\pi$	81	92	68	92	97					
DRIFT	MCF	-23	41	76	-22	2.1					
S. P.		+10.7			-7.0						
NOISE											
POT RES.											
CULT & CMTS											

Sewer at 132 E

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF E, SP. 3, DATE July 11, 73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	70-80 E	80-90 E →		90-100 E →			100-110 E →			
RANGE	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200
VOLTAGE	540	560	540	500	540	560	300	500	550	540
CURRENT	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	110-120 E →				120-130 E →					
RANGE	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200		
VOLTAGE	300	500	540	550	300	500	550	600		
CURRENT	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR JL

RECEIVER No.

OPERATOR JM

COMMENTS: CAL 2 Amps 100 V.

I. P. SENDER NOTES

JOB NO. 825 AREA CONOCO

LINE 2, HALF E, SP. 3, DATE July 11, 73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	130-140 E →			140-150 E						
RANGE	30X333	30X240	30X210	30X333	30X240					
VOLTAGE	540	580	600	500	580					
CURRENT	10.0	7.2	6.3	10.0	7.2					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER NO. 6644

OPERATOR JR

RECEIVER NO.

OPERATOR

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 2, HALF E, SR. 4, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-12

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	110-120	120-130	→	130-140	→		140-150	→		
MULTIPLIER	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1	0.1
PFE	0.7	1.3	0.6	0.2	-1.0	-3.0	[redacted]	0	-.8	-2.6
CUR. (AMPS)	6	6	6	6	6	9	1.2	6	6	9
POINT NO.							6			
SEP. (n)							82.1			
H. F. MV	90.8	71.1	26.5	71.9	18.6	17.0	[redacted]	22.8	8.85	9.91
DRIFT	—	+.2	—	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE P_{CAL}	1.034	→								
0.1 PFE PFE_c		1.2								
3.0 MV $P/2\pi$	47	37	55	37	38	59	42	47	46	68
DRIFT MCF	15	33	11	5.4	-26	-51	28	0	-17	-38
S. P.	+14.8	+4.4		-7.9			0			
NOISE										
POT RES.										
CULT & CMTS										

600 FT OF GEOhop on back

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 2, HALF L, SR. 4, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE ?

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	150-160	→		→	160-170	→		→		
MULTIPLIER	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
PFE	3.2	1.3	0.9	0.3	2.2	0.7	0.6	-1.8		
CUR. (AMPS)	6	6	9	9	6	6	9	10		
POINT NO.										
SEP. (n)										
H. F. MV	21.4	8.64	6.00	4.93	7.65	3.72	2.86	2.95		
DRIFT	+.2	—	—	—	—	—	—	—		
1.0 PFE $K_n/1000$	12	30	60	105	30	60	105	168		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	44	45	41	59	40	38	34	51		
DRIFT MCF	70	29	22	5.0	56	18	17	-35		
S. P.	+20.6									
NOISE										
POT RES.										
CULT & CMTS										

GF MOPON BOCK

I. P. RECEIVER NOTES, JOB NO. 825, AREA CONOCO

LINE 2, HALF E, SP. 4, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-12

PAGE 3

HEINRICHS GEOEX

SEND		4-5	3-4	3-3	4-5	3-4					Cal
RECEIVE		170-180	→	→	170-180	→					
MULTIPLIER		0.1	0.1	0.1	0.1						10
PFE		2.2	0 +-2	?	-2.4	-1.0					0
CUR. (AMPS)		6	6	9	6	8.25					2
POINT NO.											
SEP. (n)											
H. F. MV		3.04	1.62	1.34	3.50	2.87					193.5
DRIFT		—	—	—	—	—					—
1.0 PFE	$K_n/1000$	60	105	168	105	168					
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c										
3.0 MV	$\rho/2\pi$	31	29	26	63	60					
DRIFT	MCF	70	0	—	-38	-17					
S. P.		+21.6			+20.4						
NOISE											
POT RES.											
CULT & CMTS		over									

Too Noisy

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF E, SP. 4, DATE July 12, 73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	110-120 E	120-130 E		130-140 E →			140-150 E →			
RANGE	30X200	30X200	30X200	30X200	30X200	30X300	30X200	30X200	30X200	30X300
VOLTAGE	300	360	300	400	360	440	440	400	360	440
CURRENT	6.0	6.0	6.0	6.0	6.0	9.0	6.0	6.0	6.0	9.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	150-160 E		→		160-170 E		→			
RANGE	30X200	30X200	30X300	30X300	30X200	30X200	30X300	30X333		
VOLTAGE	460	400	560	400	460	400	460	420		
CURRENT	6.0	6.0	9.0	9.0	6.0	6.0	9.0	10.0		

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR 22

RECEIVER No.

OPERATOR 2M

COMMENTS: CAL 2 AMPS 160V

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 2, HALF E, SP. 4, DATE July 12 73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	170-180 E		→	180-190 E						
RANGE	30x200	30x200	30x300	30x200	30x275					
VOLTAGE	460	400	460	460	540					
CURRENT	6.0	6.0	9.0	6.0	8.25					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	1.0 0.1
SENDER No.	6644
OPERATOR	JL
RECEIVER No.	
OPERATOR	JM

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF W, SP. 1, a = 1000, BEARING W

SENDER STA. 0 = ELECTRODE No. 2, DATE 7-13-73

PAGE 1

HEINRICHS GEOEX

SEND		3-4	2-3	3-4	1-2	9-3	3-4	1-2	2-3	3-4	COL
RECEIVE		0-10W	10-20W	→	20-30	→	→	30-40	→	→	←
MULTIPLIER		1.0	10	1.0	10	1.0	1.0	1.0	1.0	0.1	1.0
PFE		0.3	1.0	1.8	1.4	1.0	1.8	1.0	1.7	2.1	0
CUR. (AMPS)		6	9	6	9	9	6	9	9	6	1
POINT No.											
SEP. (n)											
H. F. MV		151	197	34.4	158	56.8	17.15	46.9	23.35	8.78	97.1
DRIFT		-.2	—	—	—	—	—	—	—	—	—
1.0 PFE	K_n/1000	3	3	12	3	12	30	12	30	60	
0.3 PFE	P_{CAL}	1,030	→								
0.1 PFE	PFE_c	0.4									
3.0 MV	$P/2\pi$	78	68	71	54	78	88	64	80	90	
DRIFT	MCF	51	15	25	26	13	20	16	21	23	
S. P.		-12.7	+19.6		+35.1			+56.1			
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 3, HALF W, SP. 1, a = 1000, BEARING W

SENDER STA. 0 = ELECTRODE No. 2, DATE 7-13

PAGE 2

HEINRICHS GEOEX

SEND		1-2	2-3	3-4	1-2	2-3	3-4				
RECEIVE		40-50	→	→	50-60	→	→				
MULTIPLIER		0.1	0.1	0.1	0.1	0.1	0.1				
PFE		2.0	2.4	2.4	2.0	2.9	4.1				
CUR. (AMPS)		9	9	7.5	9	10	7.5				
POINT No.											
SEP. (n)											
H. F. MV		9.24	5.53	2.97	3.23	2.45	1.30				
DRIFT		—	—	—	—	—	-.2				
1.0 PFE	K_n/1000	30	60	105	60	105	168				
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c						4.2				
3.0 MV	$\rho/2\pi$	32	38	43	22	26	30				
DRIFT	MCF	63	63	56	90	106	140				
S. P.		-15.1			+42.0						
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF E, SP. 1, a = 1000, BEARING E

SENDER STA. 0 = ELECTRODE No. 2, DATE 7-13

PAGE 3

HEINRICHS GEOEX

SEND	SP	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2
RECEIVE	0-10R	10-30R	20-30 →		30-40R →			40-50 →		
MULTIPLIER		10	10	1.0	10	1.0	1.0	1.0	1.0	1.0
PFE		0.2	0.8	1.1	0.4	1.0	0.8	3.2	3.2	4.4
CUR. (AMPS)		9	9	9	6	9	9	6	9	9
POINT No.										
SEP. (n)										
H. F. MV		220	218	94.1	144	80.5	47.0	44.9	33.5	18.45
DRIFT		—	—	—	—	—	—	—	—	+.3
1.0 PFE $K_n/1000$		3	3	12	3	12	30	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										4.3
3.0 MV $\rho/2\pi$		76	75	129	74	111	161	92	115	127
DRIFT MCF		2.6	11	8.5	5.4	9.0	5.0	35	28	34
S. P.	+33.1	+15.8			+9.7			+18.1		
NOISE										
POT RES.										
CULT & CMTS										

MAP ON BACK

I. P. RECEIVER NOTES, JOB NO. 885, AREA Conoco

LINE 9, HALF E, SP. 1, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-13

PAGE 4

HEINRICHS GEOEX

SEND		3-4	2-3	1-2	3-4	2-3					
RECEIVE		50-60	→	→	60-70	→					
MULTIPLIER		1.0	1.0	1.0	0.1	0.1					
PFE		2.2	2.0	3.6	3.0	3.2					
CUR. (AMPS)		6	10	10	8	10					
POINT NO.											
SEP. (n)											
H. F. MV		19.5	23.6	20.3	7.21	6.58					
DRIFT		—	—	—	-.2	—					
1.0 PFE	$K_n/1000$	30	60	105	60	105					
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c				3.1						
3.0 MV	$\rho/2\pi$	100	146	220	56	71					
DRIFT	MCF	22	14	16	56	45					
S. P.		-20.6			+29.9						
NOISE											
POT RES.											
CULT & CMTS											

I.P. SENDER NOTES

JOB NO. 825 AREA Conoco

LINE 3, HALF W, SP. 1, DATE July 13

PAGE 23

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10 ω	10-20 ω →		20-30 ω →			30-40 ω →			
RANGE	30x200	30x300	30x200	30x300	30x300	30x200	30x300	30x300	30x200	
VOLTAGE	420	460	420	380	460	420	380	460	420	
CURRENT	6.0	9.0	6.0	9.0	9.0	6.0	9.0	9.0	6.0	
SEND	1-2	2-3	3-4	1-2	2-3	3-4				
RECEIVE	40-50 ω →			50-60 ω →						
RANGE	30x300	30x300	30x250	30x300	30x333	30x250				
VOLTAGE	380	460	520	380	500	520				
CURRENT	9.0	9.0	7.5	9.0	10.0	7.5				

FREQUENCIES 1.0 0.1

SENDER NO. 6644S

OPERATOR SR

RECEIVER NO.

OPERATOR 2M

COMMENTS: CAL 1AMP 60V

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 3, HALF E, SP. 1, DATE July 13

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E →		30-40E →			40-50E →			
RANGE	30X300	30X300	30X300	30X300	30X300	30X300	30X200	30X300	30X300	
VOLTAGE	380	460	380	420	460	360	420	440	380	
CURRENT	9.0	9.0	9.0	6.0	9.0	9.0	6.0	9.0	9.0	
SEND	3-4	2-3	1-2	3-4	2-3					
RECEIVE	50-60E	→		60-70E						
RANGE	30X200	30X333	30X333	30X266	30X333					
VOLTAGE	400	500	400	540	500					
CURRENT	6.0	10.0	10.0	8.0	10.0					

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR JR

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 3, HALF E, SR. 2, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE NO. _____, DATE 7-16

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	40-50	50-60	→	60-70	→	→	70-80	→	→	→
MULTIPLIER	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PFE	2.8	2.6	3.6	4.7	1.8	3.8	5.4	6.4	3.6	3.4
CUR. (AMPS)	9	→	→							
POINT NO.										
SEP. (n)										
H. F. MV	229	185	75.2	89.5	24.9	16.2	220	32.0	27.4	14.4
DRIFT	-.1	+.1	—	-.3	-.2	+.1	—	—	—	—
1.0 PFE $K_n/1000$	3	3	12	3	12	30	3	12	30	60
0.3 PFE P_{CAL}	1.029	→								
0.1 PFE PFE_c				4.8	1.9					
3.0 MV $P/2\pi$	79	63	103	31	34	56	75	44	94	99
DRIFT MCF	36	41	35	156	56	68	72	146	38	34
S. P.	+7.5	-13.9		+4.1	-		-4.3			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 3, HALF E, SR. 2, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-16

PAGE 2

HEINRICHS GEOEX

SEND		4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		CO2
RECEIVE		80-90	→	→	→	90-100	→	→	→		
MULTIPLIER		1.0	1.0	1.0	0.1	1.0	0.1	0.1	0.1		1.0
PFE		0.4	4.0	2.3	3.0	-2.0	2.0	1.2	1.4		0
CUR. (AMPS)		9	→	→							1
POINT NO.											
SEP. (n)											
H. F. MV		70.6	16.3	14.8	8.64	17.5	6.43	6.84	4.53		97.2
DRIFT					-.2						
1.0 PFE	K_n/1000	12	30	60	105	30	60	105	168		
0.3 PFE	P_{CAL}										
0.1 PFE	PFE_c				3.1						
3.0 MV	$P/2\pi$	97	56	102	104	60	44	82	87		
DRIFT	MCF	4.1	72	23	30	-33	45	15	16		
S. P.		-53.7				-14.0					
NOISE											
POT RES.											
CULT & CMTS											

90 E 125 Ft W of Key St.

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF E, SR. 2, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-16

PAGE 3

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	100-110 →			110-120 →						
MULTIPLIER	1.0	0.1	0.1	0.1	0.1					
PFE	0.1	4.3	2.4	4.4	4.2					
CUR. (AMPS)	9	10	→							
POINT NO.										
SEP. (n)										
H. F. MV	11.7	5.17	6.82	5.59	2.90					
DRIFT	—	+.3	-.2	—	—					
1.0 PFE K_n/1000	60	105	168	105	168					
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_C		4.2	2.5							
3.0 MV $\rho/2\pi$	80	56	118	60	50					
DRIFT MCF	1.2	75	21	73	84					
S. P.	+7.2			+14.1						
NOISE										
POT RES.										
CULT & CMTS										

100 ON FRONT DRIVE

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF W, SP. 2, a = 1000, BEARING W

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-16

PAGE 4

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	10-20E	→	→	→	20-30	→	→	30-40	→	
MULTIPLIER	1.0	1.0	0.1	0.1	1.0	0.1	0.1	0.1	0.1	
PFE	2.0	2.2	2.1	-3.1?	2.6	2.1	4.1	3.9	6.4	
CUR. (AMPS)	10	→	→							
POINT NO.										
SEP. (n)				? 10.29						
H. F. MV	33.3	15.3	10.47	1.29	18.7	9.88	5.68	9.86	4.49	
DRIFT	+.2	-.3	—	—	—	-.2	—	—	—	
1.0 PFE K_n/1000	30	60	105	168	60	105	168	105	168	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	1.9	2.3		—		2.2				
3.0 MV $\rho/2\pi$	103	94	113	178?	115	107	98	101	78	
DRIFT MCF	18	24	19	—	23	21	42	37	82	
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

GAS MAIN at 18 E

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 3, HALF E, SP. 2, DATE July 16

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	40-50E	50-60E →		60-70E	→		70-80E	→		
RANGE	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300
VOLTAGE	400	300	400	260	300	400	280	260	300	400
CURRENT	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
SEND	5-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	80-90E	→		→	90-100E	→		→		
RANGE	30x300	30x300	30x300	30x300	30x300	30x300	30x300	30x300		
VOLTAGE	280	260	300	400	270	260	280	400		
CURRENT	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0		

FREQUENCIES 1.0 0.1

SENDER No. 6684

OPERATOR JL

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 3, HALF 6, SP. 2, DATE July 16

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	100-110 E		→	110-120 E						
RANGE	30X300	30X333	30X333	30X300	30X300					
VOLTAGE	300	300	320	360	300					
CURRENT	9.0	10.0	100	10.0	10.0					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 0.1

SENDER No. 6644

OPERATOR JL

RECEIVER No.

OPERATOR JM

COMMENTS:

I. P. SENDER NOTES

JOB No. 825 AREA Conoco

LINE 3, HALF 10, SP. 2, DATE July 16, 73

PAGE 3

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	10-20	→		→	20-30	→	→	30-40	→	
RANGE	30X333	30X333	30X333	30X333	30X333	30X333	30X333	30X333	30X333	
VOLTAGE	480	320	300	340	440	320	300	440	320	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	1.0 0.1
SENDER No.	6644
OPERATOR	JL
RECEIVER No.	
OPERATOR	JM

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF F.11 SR. F.11, a = _____, BEARING F.11

SENDER STA. _____ = ELECTRODE No. _____, DATE 6-17

PAGE XY2

HEINRICHS GEOEX

SEND		1-2	2-3	2-3	3-4			~~Col~~	Col		
RECEIVE		0-10R	0-10E	10-20F	→						
MULTIPLIER		0.1	0.1	0.1	0.1			1.0	1.0		
PFE		[redacted]	2.4	1.8	2.6			+.2	9		
CUR. (AMPS)		2.6	9	9	10				1		
POINT NO.		9									
SEP. (n)		5									
H. F. MV		4.84	3.97	7.90	6.86			97.0	97.2		
DRIFT		—	—	—	-.3						
1.0 PFE	K_n/1000	168	168	105	168						
0.3 PFE	ρ_{CAL}	1.029									
0.1 PFE	PFE_c	2.6	2.4	1.8	2.7						
3.0 MV	$\rho/2\pi$	87	76	95	119						
DRIFT	MCF	30	31	19	23						
S. P.		-11.2	+49.7								
NOISE											
POT RES.											
CULT & CMTS											

I. P. RECEIVER NOTES, JOB No. 825, AREA Cowco

LINE 3, HALF E, SP. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-17

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	80-90	90-100 →		100-110	→		110-120	→		
MULTIPLIER	10	10	1.0	10	1.0	0.1	10	1.0	1.0	0.1
PFE	1.2	-2.0	-2.0	3.6	2.2	-23	2.2	3.0	2.4	1.3
CUR. (AMPS)	10 →									
POINT NO.										
SEP. (n)	259		42.75							
H. F. MV	[illegible]	185	[illegible]	293.5	64.5	7.42	126.0	44.2	15.8	6.56
DRIFT	—	-.3	—	-.2	—	-.3	+.2	-.3	-.2	-.3
1.0 PFE K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE P_{CAL}	1.029									
0.1 PFE PFE_c	1.2	-1.9	-2.0	3.7	2.2	—	2.1	3.1	2.5	1.4
3.0 MV $P/2\pi$	60	57	53	91	80	23?	39	55	49	40
DRIFT MCF	15	-33	38	41	28	—	54	57	51	35
S. P. +	100.7	-41.2		+10.4			-27.6			
NOISE										
POT RES.										
CULT & CMTS										

ON BACK

-23 ON 100 PFE RANGE

I. P. RECEIVER NOTES, JOB No. 825, AREA CONOCO

LINE 3, HALF E, SP. 3, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-17

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	CAL	CAL
RECEIVE	120-130	→	→	→	130-140	→	→	→		
MULTIPLIER	1.0	1.0	1.0	0.1	1.0	0.1	0.1	0.1	1.0	1.0
PFE	2.4	5.9	8.0	4.8	-4.2	-6.0	?	2.0?	-0.2	
CUR. (AMPS)	10 →			?						
POINT No.										
SEP. (n)									96.3	
H. F. MV	45.7	24.1	10.5	4.78	13.7	9.69	4.68	2.55		95.5
DRIFT	—	-.2	-.2	+-.2	—	—	—	—		
1.0 PFE K_n/1000	12	30	60	105	30	60	105	168	7-18-73	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	2.4	6.0	8.1	4.8	-4.2	-6.0	—	2.0		
3.0 MV $\rho/2\pi$	56	74	65	52	42	60	51	44		
DRIFT MCF	43	81	125	93	-99	-100	—	45		
S. P.	-30.3				+38.7					
NOISE										
POT RES.										
CULT & CMTS										

CAL 2 amps NOISE 10 X 193 +.1

130 E - Seven strant TGE high tension power line, road

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 3, HALF E, SR 3, a = 100, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE 7-17

PAGE 3

HEINRICHS GEOEX

SEND	140-150 →			45	3-4	4-5	3-4	2-3	1-2	
RECEIVE	4-5	3-4	2-3	150-160 →		120-130E				
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	1.0	1.0	0.1	0.1	
PFE	-4.2	-1.9	-4.4	-4.6	-3.6	1.8	~~4.0~~	3.2	2.8	
CUR. (AMPS)							-2.0			
POINT NO.										
SEP. (n)										
H. F. MV	7.97	6.39	3.71	5.79	4.66	35.8	20.9	9.35	4.47	
DRIFT	-0.8	+0.4	-3.3	~~-4.6~~	+0.3	-0.2				
1.0 PFE K_n/1000	60	105	168	-2.0 105	168	12	30	60	105	
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	-3.8	-2.1	-2.7	-3.6	-3.7	1.9	-2.0	3.2	2.8	
3.0 MV $\rho/2\pi$	49	69	64	63	81	44	65	58	48	
DRIFT MCF	-77	-30	-42	-58	-46	43	-31	55	58	
S. P.	+13.6			+42.8		-13.8				
NOISE										
POT RES.										
CULT & CMTS										

Repeat

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 3, HALF W, SP. F711, DATE July 17

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	2-3	3-4	1-2	2-3	1-2	3-4	2-3	1-2
RECEIVE	0-10W	0-10E	10-20E	→	80-90E	90-100E	→	100-110E	→	
RANGE	30X300	30X300	30X300	30X333	30X333	30X333	30X333	30X333	30X333	30X333
VOLTAGE	240	220	220	300	260	240	260	300	290	260
CURRENT	9.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	110-120E	→		→	120-130E	→	→	→		
RANGE	30X333	30X333	30X333	30X333	30X333	30X333	30X333	30X333		
VOLTAGE	360	300	240	300	360	300	290	260		
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.		

FREQUENCIES 1.0 0.1

SENDER No. 6699 S

OPERATOR JL

RECEIVER No.

OPERATOR J.M

COMMENTS: CA1 1 Amp [redacted] 40 V

I. P. RECEIVER NOTES, JOB No. 825, AREA Coxoxoo

LINE 3, HALF E, SP. 3, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE No. _____, DATE _____

PAGE _____

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	4-5	3-4	
RECEIVE	130-140E →			→	140-150E →		→	150-160E →		
MULTIPLIER	30X333	30X333	30X333	30X333	30X333	30X333	30X333	30X333	30X333	
PFE	360	300	240	280	360	300	240	360	300	
CUR. (AMPS)	10.0	10.0	[redacted]10.	10.	10	10	10	10.0	10.0	
POINT NO.										
SEP. (n)										
H. F. MV	CAL 1 AMP 40 VOLTS									
DRIFT										
1.0 PFE K_n/1000	4-5	3-4	2-3	1-2						
0.3 PFE P_{CAL}	120-130 E →			→	→ REPEAT FROM JULY 17					
0.1 PFE PFE_c	30X333	30X333	30X333	30X333						
3.0 MV P/Z	340	300	240	280						
DRIFT MCF	10.0	10.0	10.0	10.0						
S. P.										
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 3, HALF E, SP. 4, a = 1000, BEARING E

SENDER STA. 120E = ELECTRODE No. 3, DATE 7-18-73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-3	4-5	3-4	2-3	1-2
RECEIVE	120-130	130-140	→	140-150	→	→	150-160	→	→	→
MULTIPLIER	10.0	10.0	1.0	1.0	1.0	1.0	10.0	1.0	0.1	0.1
PFE	-0.2	-8.0	-11.8	-3.4	-4.4	-3.6	+2.2	-7.2	-1.8	-2.2
CUR. (AMPS)	6	6	6	6	6	6	6	6	6	9
POINT No.										
SEP. (n)										
H. F. MV	~~22.6~~	133	33.3	50.8	20.8	11.4	117.0	16.5	8.49	8.46
DRIFT	—	+1.0	-0.4	+0.2	-0.4	-0.4	-0.2	0.0	-1.4	-0.6
1.0 PFE K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	-0.2	-8.5	-11.6	-3.5	-4.2	-3.4	2.3	-7.2	-1.1	-1.9
3.0 MV $\rho/2\pi$	74	69	69	26	43	59	61	34	44	58
DRIFT MCF	-2.7	-123	-168	-133	-97	-58	38	-211	-25	-33
S. P.	-35.7	+36.2	~~+32.8~~	+32.8			+27.6			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conco

LINE 3, HALF E, SP. 4, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE ~~7-18-73~~ 7-19-73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4
RECEIVE	160-170	→	→	→	170-180	→	→	→	180-190	→
MULTIPLIER	1.0	1.0	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1
PFE	~~+10.5~~ +9.2	-10.5	-2.6	-1.0	+15.0	-26.0	-23.0	-4.7	+15.0	-25.0
CUR. (AMPS)										
POINT No.	9	9	9	9	10	10	10	10	10	10
SEP. (n)										
H. F. MV	~~59.5~~ 59.3	13.1	9.05	7.05	15.1	4.91	3.08	4.27	6.02	2.04
DRIFT	—	-1.2	-0.4	-0.4	0.0	-0.2	+0.3	-2.5 - +2.5	+0.6	-1.6
1.0 PFE K_n/1000	12	30	60	105	30	60	105	168	60	105
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	7.2	-9.9	-2.4	-0.8	15.0	-25.9	-23.1	-4.7	14.7	-24.2
3.0 MV $\rho/2\pi$	82	45	63	85	47	31	34	74	37	22
DRIFT MCF	87	-219	-38	-9.4	320	-848	-689	-63	393	-1090
S. P.	+9.4				-7.2				+14.6	
NOISE										
POT RES.										
CULT & CMTS										

Fence from ≈ 157-160; ungrounded

Line crosses Kinney Rd at ≈ 185

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 3, HALF E, SR. 4, a = 1000, BEARING E

SENDER STA. _____ = ELECTRODE No. _____, DATE ~~7-18-73~~ 7-19-73

HEINRICHS GEOEX

PAGE 3

SEND	2-3	4-5	3-4	Cal	Cal	Cal					
RECEIVE	180-190	190-200	→		7-18	7-19					
MULTIPLIER	0.1	0.01		10.0	10.0	10					
PFE	-22.5	-99.3 NR		0.0	-0.2	0.0					
CUR. (AMPS)											
POINT No.	10	10	10								
SEP. (n)											
H. F. Mv	1.46	.703	NR	+.9 19.2	192	193					
DRIFT	-2.4	erratic			-0.1	—					
1.0 PFE K_n/1000	168	105	168								
0.3 PFE P_{CAL}						1.036					
0.1 PFE PFE_c	-21.3										
3.0 MV $P/2\pi$	25										
DRIFT MCF	-8.38										
S. P.		-23.1									
*NOISE											
POT RES.											
CULT & CMTS											

*noise = 2 mv

I. P. RECEIVER NOTES, JOB NO. _____, AREA _____

LINE 3, HALF E, SR 4, a = _____, BEARING _____

SENDER STA. _____ = ELECTRODE NO. _____, DATE _____

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	120-130	130-140 E		140-150E →			150-160 →			
MULTIPLIER	30 ~~x 33~~	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200	30x200
PFE	~~400~~	260	270	220	260	260	260	220	260	400
CUR. (AMPS)	~~1.0~~	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	9.0
POINT NO.	30x200									
SEP. (n)	270									
H. F. MV	6.0									
DRIFT										
1.0 PFE K_n/1000	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
0.3 PFE ρ_{CAL}	160-170 →				170-180 →					
0.1 PFE PFE_C										
3.0 MV $\rho/2\pi$										
DRIFT MCF										
S. P.										
NOISE		CAL 2 AMPS 90 volts								
POT RES.										
CULT & CMTS										

I. P. SENDER NOTES

JOB NO. 825 AREA CONOCO

LINE 3, HALF E, SP. 4, DATE 19 July 73

PAGE _____

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	2-1	4-5	3-4	2-3	2-1	4-5	3-4
RECEIVE	160-170	→		→	170-180	→	→	→	180-190	→
RANGE	High	High	High	High	High	High	High	High	High	High
VOLTAGE	420	380	400	400	480	420	460	440	480	420
CURRENT	9AMP	9AMP	9AMP	9AMP	10AMP	10AMP	10AMP	10AMP	10AMP	10AMP
SEND	2-3	4-5	3-4							
RECEIVE	180-190	190-200	→							
RANGE	High	High	High							
VOLTAGE	480	480	420							
CURRENT	10AMP	10AMP	10AMP							

FREQUENCIES 1.0 & 0.1

SENDER NO. 6644-S

OPERATOR D. KOLAIN

RECEIVER NO.

OPERATOR

COMMENTS: Cal-2AMPS

I. P. RECEIVER NOTES, JOB NO. 82S, AREA Canisa

LINE 4, HALF W, SP. 1, a = 1000', BEARING E-W

SENDER STA. 10 E = ELECTRODE NO. 3, DATE 7-20-73

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	-3-4	1-2	2-3	3-4	1-2	2-3	3-4	1-2
RECEIVE	0-10W	10-20W	→	20-30W	→	→	30-40W	→	→	40-50W
MULTIPLIER	10	10	10	10	1.0	1.0	1.0	1.0	1.0	1.0
PFE	1.0	0.6	1.4	0.9	0.8	1.6	~~2.6~~ 2.6	2.4	3.0	2.6
CUR. (AMPS)	10	→	→							
POINT NO.										
SEP. (n)										
H. F. MV	429	351	140	179	86.9	42.7	~~30.4~~ 30.6	19.8	11.3	10.3
DRIFT	+0.4	—	+0.2	+0.2	—	+0.2	-0.1	+0.1	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	12	30	60	30
0.3 PFE P_{CAL}	1.064	→								
0.1 PFE PFE_c	0.8	0.6	1.3	0.8	0.8	1.5	2.6	2.4	3.0	2.6
3.0 MV $P/2\pi$	137	112	179	57	111	136	39	63	72	33
DRIFT MCF	5.8	5.4	7.3	14	7.2	11	67	38	42	79
S. P.	+16.0	+33.1		+17.2			+23.9			+16.1
NOISE								~~2-7 PFE~~	2-7 PFE	
POT RES.										
CULT & CMTS										

Dr. KF

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF W, SR. 1, a = 1000', BEARING E-W

SENDER STA. 10E = ELECTRODE No. 3, DATE 7-20-73

PAGE 2

HEINRICHS GEOEX

SEND	2-3	3-4	1-2	2-3	3-4	Cal				
RECEIVE	40-50 W	→	50-60 W	→	→		10-0E			
MULTIPLIER	0.1	0.1	0.1	0.1	0.1	10				
PFE	3.2	3.8	2.9	4.1	4.0	0.0				
CUR. (AMPS)	10 →									
POINT No.										
SEP. (n)			4.82							
H. F. Mv	8.08	5.03	~~4.76~~	4.12	2.70	188				
DRIFT	—	+0.1	-0.1	—	-0.2	~~0.0~~				
1.0 PFE K_n/1000	60	105	60	105	168	-0.2				
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	3.2	3.8	2.9	4.1	4.1	—				
3.0 MV $\rho/2\pi$	52	56	31	46	48					
DRIFT MCF	62	68	94	89	85					
S. P.		~~+5.4~~					+41.5			
NOISE		+26.4								
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Condce

LINE 4, HALF E, SR 1, a = 1000', BEARING E-W

SENDER STA 10E = ELECTRODE No. 3, DATE 7-20-73

PAGE 3

HEINRICHS GEOEX

SEND		1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	3-4
RECEIVE		10-20E	20-30E	→	30-40E	→	→	40-50E	→	→	50-60E
MULTIPLIER		10	10	10	10	1.0	1.0	1.0	1.0	1.0	1.0
PFE		0.8	1.2	1.8	1.4	1.5	1.6	0.7	1.6	1.5	0.7
CUR. (AMPS)		10 →									
POINT No.											
SEP. (n)				1		2	3	2	3	4	
H. F. MV		435	443	78.1	429	96.2	29.2	91.4	30.8	4.5	35.8
DRIFT										-0.2 \ 12.2	-0.3 \ 39.9
1.0 PFE	K_n/1000	3	3	12	3	12	30	12	30	60	30
0.3 PFE	ρ_{CAL}	0.8	1.2	1.6	1.2	1.5	1.6	0.7	1.6	1.6	0.9
0.1 PFE	PFE_c	139	141	100	137	123	93	117	98	78	127
3.0 MV	$\rho/2\pi$	5.8	8.5	16	8.8	12	17	6.0	16	21	7.1
DRIFT	MCF	+0.2	+0.2	+0.4	+0.4	—	—	—	—	-0.2	
S. P.		-4.5	+75.3		+42.7			+29.6			+33.1
NOISE											
POT RES.											
CULT & CMTS		*									

*Cross San Joaquin Rd and Gas line at ≈ 16-17E

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF P, SR. #1, a = 1600', BEARING E-W

SENDER STA. 10 E = ELECTRODE No. 3, DATE 7-20-73

PAGE 4

HEINRICHS GEOEX

SEND		2-3	1-2	3-4	2-3	1-2	3-4	2-3			
RECEIVE		50-60E	→	60-70E	→						
MULTIPLIER		1.0	0.1	1.0	0.1	0.1					
PFE		2.0	2.8	1.4	2.5	2.9					
CUR. (AMPS)		10 →									
POINT No.											
SEP. (n)				4	5	6					
H. F. Mv		16.8	7.64	16.0	7.28	3.72					
DRIFT		-0.1	-0.4	-0.2	-0.1	-0.5					
1.0 PFE	K_n/1000	60	105	60	105	168					
0.3 PFE	ρ_{CAL}	2.0	3.0	1.5	2.5	3.2					
0.1 PFE	PFE_c	107	85	102	81	66					
3.0 MV	P/2π	19	35	15	31	48					
DRIFT	MCF		1.2-3.8PFE			1-5PFE					
S. P.				+11.2							
NOISE											
POT RES.											
CULT & CMTS		*				X					

* Grounded fence ~~at~~ at ≈53 ⊥ line; also grounded fence ∥ to line and 100' S; Cross rd. at ≈59.5; power line ⊥ line at rd.

X ~~Has~~ sta 60-70 is ≈150' short, stopped short of corral, trailer houses, etc; grounded fence

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF W, SP. 1, DATE 7 - 20 - 73

PAGE 1

HEINRICHS GEOEX

SEND	3-4	2-3	3-4	1-2	2-3	3-4	1-2	2-3	3-4	
RECEIVE	0-10w	10-20w	→	20-30w		→	30-40w	→		
RANGE	H1	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	
VOLTAGE	390	390	390	430	370	400	430	370	390	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND	1-2	2-3	3-4	1-2	2-3	3-4				
RECEIVE	40-50w	→	→	50-60w	→	→				
RANGE	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3				
VOLTAGE	440	380	400	440	360	380				
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0				

FREQUENCIES 1.0 & 0.1

SENDER No. 6644-5

OPERATOR D.K.

RECEIVER No. 20693-R

OPERATOR R.P.

COMMENTS:

CAL = 2.0 AMPS

I. P. SENDER NOTES

JOB No. 825 AREA CONICO

LINE 4, HALF E, SP. 1, DATE 7-20-73

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20E	20-30E	→	30-40E	→	→	40-50E	→	→	
RANGE	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	333.3	30x333.3	30x333.3	30x333.3	
VOLTAGE	440	360	440	380	370	440	390	370	420	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND	3-4	2-3	1-2	3-4	2-3	1-2				
RECEIVE	50-60E	→	→	60-70E	→	→				
RANGE	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3	30x333.3				
VOLTAGE	390	370	440	390	360	440				
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0				

FREQUENCIES	1.0 + 0.1
SENDER No.	6644-5
OPERATOR	DK
RECEIVER No.	30693-R
OPERATOR	R.P.

COMMENTS:

CAL - 2.0

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF W, SR. 2, a = 1000', BEARING E-W

SENDER STA. 40E = ELECTRODE No. 3, DATE 7-23-73

PAGE 1

HEINRICHS GEOEX

SEND		1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3
RECEIVE		10-20 W	→	→	→	20-30 W	→	→	30-40 W	→
MULTIPLIER		1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PFE		1.1	2.1	3.0	3.8	1.2	2.8	3.6	2.0	3.5
CUR. (AMPS)		9	8	10	10	9	8	10	9	8
POINT No.										
SEP. (n)										
H. F. MV		28.2	12.2	7.54	5.05	~~48.2~~	4.84	3.50	2.81	1.71
DRIFT		-0.2	—	—	+0.1	—\9.71	+0.2	-0.4	—	—
1.0 PFE	K_n/1000	30	60	105	168	60	105	168	105	168
0.3 PFE	P_{CAL}	1.2	2.1	3.0	3.8	1.2	2.7	3.8	2.0	3.5
0.1 PFE	PFE_c	100	97	84	90	69	68	63	35	38
3.0 MV	$P/2\pi$	12	22	36	42	17	40	61	57	92
DRIFT	MCF			1-4 PFE	2-5 PFE			1-5 PFE		
S. P.		+30.7				+10.0			+18.4	
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB NO. 825, AREA Conoco

LINE 4, HALF E, SR. 2, a = 1000', BEARING E-W

SENDER STA. 40 E = ELECTRODE NO. 3, DATE 7-23-73

PAGE 2

HEINRICHS GEOEX

SEND		1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE		40-50E	50-60E	→	60-70E	→	→	70-80E	→	→	→
MULTIPLIER		10	10	1.0	10	1.0	1.0	10	1.0	1.0	1.0
PFE		~~2.0~~	0.3	0.8	1.6	1.6	~~2.8~~	2.6	1.8	1.6	
CUR. (AMPS)		0.8					1.2				
POINT NO.		9	8	9	10	8	9	10	10	8	9
SEP. (n)											
H. F. MV		280	212	95.4	197	64.0	39.9	174	59.8	28.1	20.1
DRIFT		+0.2	—	—	+0.2	+0.2	-0.2	+0.2	+0.1	-0.2	—
1.0 PFE	K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE	ρ_{CAL}	0.7	0.3	0.8	1.5	1.5	1.3	2.5	1.8	1.7	—
0.1 PFE	PFE_c	99	85	135	63	102	141	56	76	112	143
3.0 MV	$\rho/2\pi$	7.1	3.5	5.9	24	15	9.2	45	24	15	—
DRIFT	MCF								18-32 DFE		
S. P.		-11.8	+43.9		+13.0			0.0			
NOISE								≥5 MV			
POT RES.											
CULT & CMTS								*	#		

~~# drift excess~~

* Grounded corral at ≈68, 100' square; houses all around

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF E, SP. 2, a = 1000', BEARING E-W

SENDER STA. 40 E = ELECTRODE No. 3, DATE 7-23-73

PAGE 3

HEINRICHS GEOEX

SEND		4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE		80-90 E	→	→	→	90-100 E	→	→	→		
MULTIPLIER		1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1		
PFE		1.9	1.9	1.8	2.2	2.6	2.9	3.0	3.8		
CUR. (AMPS)		10	10	8	9	10	10	8	9		
POINT No.											
SEP. (n)					12.69						
H. F. MV		55.5	27.7	15.6	12.6	27.4	16.7	10.3	8.80		
DRIFT		—	—	-0.4	+0.2	—	—	—	+0.3		
1.0 PFE	K_n/1000	12	30	60	105	30	60	105	168		
0.3 PFE	ρ_{CAL}										
0.1 PFE	PFE_c	1.9	1.9	2.0	2.1	2.6	2.9	3.0	3.7		
3.0 MV	$\rho/2\pi$	71	88	124	~~216~~ 156	87	107	144	175		
DRIFT	MCF	27	21	16	~~9.6~~ 13	30	27	21	21		
S. P.		+19.0				-5.6					
NOISE											
POT RES.											
CULT & CMTS		#				7-24-73					

many grounded lines, etc. between 70-80 E

I. P. RECEIVER NOTES, JOB No. 825, AREA Canoca

LINE 4, HALF E, SR. 2, a = 1000', BEARING E-W

SENDER STA. 40E = ELECTRODE No. 3, DATE 7-24-73

PAGE 4

HEINRICHS GEOEX

SEND		4-5	3-4	2-3	4-5	3-4	Cal	Cal			
RECEIVE		100-110 E	→	→	110-120 E	→	~~10~~	7-24-73			
MULTIPLIER		1.0	0.1	0.1	0.1	0.1	10	10			
PFE		2.5	3.1	3.0	2.4	3.2	0.0	0.0			
CUR. (AMPS)		10	10	8	10	10	2	2			
POINT No.											
SEP. (n)											
H. F. MV		13.8	9.33	6.46	4.81	4.83	188	187			
DRIFT		—	—	-0.2	-16.51	—	—	—			
1.0 PFE	K_n/1000	60	105	168	105	168					
0.3 PFE	P_{CAL}	1.064 →									
0.1 PFE	PFE_c	2.5	3.1	3.1	2.4	3.2					
3.0 MV	$P/2\pi$	88	104	144	73	86					
DRIFT	MCF	28	30	21	33	37					
S. P.		-3.8	+		-27.0						
NOISE											
POT RES.											
CULT & CMTS											

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF W, SP. 2, DATE 7-23-73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	3-4	4-5	1-2	2-3	3-4	1-2	2-3	
RECEIVE	10-20W	→			20-30W			30-40W		
RANGE	30x300.0	30x266.6	30x333.3	30x333.3	30x300.0	30x266.6	30x333.3	30x300.0	30x266.6	
VOLTAGE	540	500	440	390	540	500	440	420	500	
CURRENT	9.0	8.0	10.0	10.0	9.0	8.0	10.0	9.0	8.0	
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 & 0.1

SENDER No. 6644-S

OPERATOR DK

RECEIVER No. 20693-R

OPERATOR R.P.

COMMENTS:

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF E, SP. 2, DATE 7-23-73

PAGE 2

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	40-50E	50-60E	→	60-70E	→	→	70-80E	→	→	→
RANGE	30x300.0	30x266.6	30x300.0	30x333.3	30x266.6	30x300.0	30x333.3	30x333.3	30x266.6	30x300.0
VOLTAGE	520	480	520	440	480	520	390	430	480	530
CURRENT	9.0	8.0	9.0	10.0	8.0	9.0	10.0	10.0	8.0	9.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	80-90E	→	→	→	90-100E	→	→	→		
RANGE	30x333.3	30x333.3	30x266.6	30x300.0	30x333.3	30x333.3	30x266.6	30x300.0		
VOLTAGE	390	430	460	520	390	450	490	540		
CURRENT	10.0	10.0	8.0	9.0	10.0	10.0	8.0	9.0		

FREQUENCIES	1.0 + 0.1
SENDER No.	6644-5
OPERATOR	DK
RECEIVER No.	20693-R
OPERATOR	R.P.

COMMENTS:

CAL - 2.0

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF E, SP. 2, DATE 7-24-73

PAGE 3

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	4-5	3-4					
RECEIVE	160-110E	→	→	110-120	→					
RANGE	3D 333.3	3D 333.3	3D 266.6	3D 333.3	3D 333.3					
VOLTAGE	390	446	490	400	440					
CURRENT	10.0	10.0	8.0	10.0	10.0					
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	1.0 + 0.1
SENDER No.	6644-S
OPERATOR	D.K.
RECEIVER No.	20693-R
OPERATOR	R.P.

COMMENTS:

CAL- 2.0

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF E, SR. 3, a = 1000', BEARING E-W

SENDER STA. 80 E = ELECTRODE No. 3, DATE 7-24-73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	3-4		1-2	2-3	1-2	3-4	2-3	1-2	Cal
RECEIVE	10-20E	→		80-90E	90-100E	→	100-110E	→		
MULTIPLIER	1.0	0.1		10	10	1.0	10	1.0	1.0	10
PFE	3.6	3.9		0.6	1.4	0.4	1.6	2.2	0.5	0.0
CUR. (AMPS)	10 →			10 →						2
POINT No.										
SEP. (n)										
H. F. MV	10.2	6.68		232	231	77.6	208	63.0	30.3	188
DRIFT	+0.4	—		—	—	—	+0.2	—	+0.4	+0.1
1.0 PFE K_n/1000	105	168		3	3	12	3	12	30	
0.3 PFE P_{CAL}	3.4	3.9		0.6	1.4	0.4	1.5	2.2	0.3	1.064
0.1 PFE PFE_c	114	119		74	74	99	66	80	97	
3.0 MV $P/2\pi$	30	33		8.1	19	4.0	23	27	3.1	
DRIFT MCF		3-5 PFE								
S. P.	-39.0			-11.1	-2.1		-5.9			
NOISE										
POT RES.										
CULT & CMTS										

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF E, SP. 3, a = 1000', BEARING E-W

SENDER STA. 80E = ELECTRODE No. 3, DATE 7-24-73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	110-120E	→		→	120-130E	→		→		
MULTIPLIER	1.0	1.0	1.0	1.0	1.8	1.0	0.1	0.1		
PFE	1.6	2.0	1.6	0.6	1.7	1.8	1.4	0.8		
CUR. (AMPS)	10 →									
POINT No.										
SEP. (n)										
H. F. MV	196	51.4	21.8	12.5	52.2	18.3	9.05	5.87		
DRIFT	+0.2	+0.2	—	+0.4	—	—	—	—		
1.0 PFE K_n/1000	3	12	30	60	12	30	60	105		
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c	1.5	1.9	1.6	0.4	1.7	1.8	1.4	0.8		
3.0 MV $\rho/2\pi$	63	66	70	80	67	58	58	66		
DRIFT MCF	24	29	23	5.0	26	31	24	12		
S. P.	+11.7				+20.0					
NOISE										
POT RES.										
CULT & CMTS					*					

* Corral, ungrounded, at approx 120

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF E, SP. 3, a = 1000', BEARING E-W

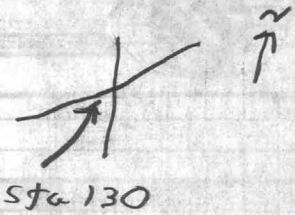
SENDER STA. 80 E = ELECTRODE No. 3, DATE 7-24-73

PAGE 3

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	4-5	3-4	
RECEIVE	130-140E	→	→	→	140-150E	→	→	150-160E	→	
MULTIPLIER	1.0	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1	
PFE	0.6	2.0	0.6	-0.6	0.9	~~1.2~~	2.3	~~4.0~~	2.8	
CUR. (AMPS)	10 →					1.6		1.6		
POINT NO.										
SEP. (n)										
H. F. MV	21.5	9.69	5.75	4.21	11.8	6.22	3.86	~~7.64~~	4.48	
DRIFT	-0.4	+0.4	+0.3	—	—	-0.2	+0.6	-0.2 7.70	+0.4	
1.0 PFE K_n/1000	30	60	105	168	60	105	168	105	168	
0.3 PFE ρ_{CAL}	0.8	1.8	0.5	-0.6	0.9	1.7	2.0	1.9	2.6	
0.1 PFE PFE_C	69	62	64	75	75	69	69	86	80	
3.0 MV $\rho/2\pi$	12	29	7.8	-8.0	12	24	29	22	32	
DRIFT MCF		1-3 PFE								
S. P.	+14.7				+26.7			+26.0		
NOISE										
POT RES.										
CULT & CMTS	#							□		

Power lines and road at ≈ 131



□ Power line at ≈ 158 N-S and E-W

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF E, SP. 3, DATE 7-24-73

PAGE 1

HEINRICHS GEOEX

SEND	2-3	3-4		1-2	2-3	1-2	3-4	2-3	1-2	
RECEIVE	10-20W	→		80-90E	90-100E	→	100-110E	→	→	
RANGE	30/333.3	30/333.3		30/333.3	30/333.3	30/333.3	30/333.3	30/333.3	30/333.3	
VOLTAGE	380	410		460	380	440	400	380	460	
CURRENT	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	110-120E	→	→	→	120-130E	→		→		
RANGE	30/333.3	30/333.3	30/333.3	30/333.3	30/333.3	30/333.3	30/333.3	30/333.3		
VOLTAGE	470	400	390	450	380	400	380	460		
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		

FREQUENCIES	10 & 0.1
SENDER No.	6644-5
OPERATOR	DK
RECEIVER No.	20693-R
OPERATOR	R.P.

COMMENTS:

CAL - 2.0

I. P. SENDER NOTES

JOB NO. 825 AREA CONOCO

LINE 4, HALF E, SP. 3, DATE 7-24-73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	4-5	3-4	
RECEIVE	130-140E	→	→	→	140-150E	→	→	150-60E	→	
RANGE	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	30 x 333.3	
VOLTAGE	460	400	370	450	460	380	370	460	390	
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES	1.0 & 0.1
SENDER NO.	6644-S
OPERATOR	D.K.
RECEIVER NO.	20693-R
OPERATOR	R.P.

COMMENTS:

I. P. RECEIVER NOTES, JOB No. 825, AREA Conoco

LINE 4, HALF E, SP. 4, a = 1000', BEARING E-W

SENDER STA. 120 E = ELECTRODE No. 3, DATE 7-25-73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	120-130E	130-140E	→	140-150E	→	→	150-160E	→	→	→
MULTIPLIER	10	10	1.0	10	1.0	1.0	10	1.0	1.0	1.0
PFE	1.0	1.2	1.4 1.5	0.8	1.0	1.0	0.8	1.5	1.4	1.7
CUR. (AMPS)	10 →									
POINT No.										
SEP. (n)										
H. F. MV	196	174	55.1	129	46.3	23.5	133	32.1	18.8	13.0
DRIFT	—	—	-0.2	—	—	—	—	—	—	—
1.0 PFE K_n/1000	3	3	12	3	12	30	3	12	30	60
0.3 PFE ρ_{CAL}										
0.1 PFE PFE_c										
3.0 MV $\rho/2\pi$	61	54	69	40	58	73	42	40	59	81
DRIFT MCF	16	22	22	20	17	14	19	37	24	21
S. P.	+13.2	+39.4		+16.0			+31.9			
NOISE										
POT RES.										
CULT & CMTS										

I.P. RECEIVER NOTES

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 4 BEARING E-W HALF E SP. 4 DATE 7-28-73

SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2	1-2	
RECEIVE	160-170E	→	→	→	170-180E	→	→	→	→	
MULT.	1.0	1.0	1.0	0.1	1.0	0.1	0.1	0.1	0.1	
PFE	0.8	1.0	1.2	3.6	2.8	3.4	2.8	3.8	3.8	
M V-hf	44.8	16.6	11.5	9.04	22.0	9.34	7.67	6.51	6.58	
Drift	—	+0.3	+0.4	-0.2	—	+0.2	—		—	
Cur.	10 →									
Kn	12	30	60	105	30	60	105	168	168	
PFEc	0.8	0.9	1.0	3.7	2.8	3.3	2.8	3.8	3.8	
Pl/m	56	52	72	99	69	58	84		115	
MCF	14	17	14	37	41	57	33		33	
PFE Avg.										
AC									2.6-4.4 PFE	
DRIFT										
S.P.	-8.5				+12.0					
AC NOISE										
POT RES.										

* Quarter corner $\frac{E\ 1/16}{S\ 35}$ ≈ 50' W of 170

I.P. RECEIVER NOTES

PAGE 3

HEINRICHS GEOEXPLORATION CO. PROJECT Conoco #825

LINE 4 BEARING E-W HALF E SP. 4 DATE 7-25-

SEND	4-5	3-4	2-3		Cal	Cal				
RECEIVE	180-190#	→	→							
MULT.	0.1	0.1	0.1		10	10				
PFE	0.2	-0.7	-0.2		0.0	0.0				
H.F. M_v	8.26	4.09	3.60		192	190	185			
Drift	+0.1	—	—		—	+0.4				
Cur	10	→			2					
K_n	60	105	168		1.042	Pcal				
PFE_c	0.2	-0.7	-0.2							
ρ_{app}	52	45	63							
Mcf	3.9	-16	-3.2							
PFE Avg.										
AC										
DRIFT										
S.P.	+17.4									
AC NOISE										
POT RES.	#									

line parallels power line beginning at ≈172

Grounded corral at ≈178-179

Power line crosses line at ≈184;

Quarter corner 535/536 at 184

I. P. SENDER NOTES

JOB No. 825 AREA CONOCO

LINE 4, HALF E, SP. 4, DATE 7-25-73

PAGE 1

HEINRICHS GEOEX

SEND	1-2	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2
RECEIVE	120-130E	130-140E	→	140-150E	→	→	150-160E	→	→	→
RANGE	30x 333.3	30x 333.3	30x 333.3	30x 332.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3
VOLTAGE	440	450	440	446	450	460	440	440	440	460
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
SEND	4-5	3-4	2-3	1-2	4-5	3-4	2-3	1-2		
RECEIVE	160-170E	→	→	→	170-180E	→	→	→		
RANGE	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3	30x 333.3		
VOLTAGE	440	440	440	450	440	440	440	460		
CURRENT	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		

FREQUENCIES 1.0 ± 0.1

SENDER No. 6644-S

OPERATOR D.K.

RECEIVER No. 20693-R

OPERATOR R.P.

COMMENTS:

CAL – 2.0

I. P. SENDER NOTES

JOB NO. 825 AREA CONOCO

LINE 4, HALF E, SP. 4, DATE 7-25-73

PAGE 2

HEINRICHS GEOEX

SEND	4-5	3-4	2-3							
RECEIVE	180-190E	→	→							
RANGE	30x 333.3	30x 333.3	30x 333.3							
VOLTAGE	440	440	430							
CURRENT	10.0	10.0	10.0							
SEND										
RECEIVE										
RANGE										
VOLTAGE										
CURRENT										

FREQUENCIES 1.0 + 0.1

SENDER NO. 6644-S

OPERATOR D.K

RECEIVER NO. 20693-R

OPERATOR R.P

COMMENTS: