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GEOPHYSICAL INVESTIGATIONS

Magnetic, Self Potential and Induced Polarization

ORIZABA MINE VICINITY

Maricopa County, Arizona

for

DEMCO CORPORATION

July 1963

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

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- Self Potential Contour Plan

INTRODUCTION

Subsequent to a reconnaissance survey in May 1963 of the Orizaba Mine area, Sections 29, 30, 31,32, T 8 N, R 3 E, Maricopa County, Arizona for Messers Dannelley, Ellison and Meacham of the Demco Corporation, Phoenix, Arizona owners of the property, Heinrichs Geoexploration Company of Tucson, Arizona in late June and early July of 1963 completed field investigations by three geophysical methods on part of the mineralized zone and it's enclosing environment. This report summarizes the methods used with conclusions and recommendations drawn therefrom.

CONCLUSIONS

The geophysical techniques employed have delineated a zone of strong sulfide mineralization striking approximately N 30° E. The effects of this zone are strong across a variable width of 200 to 600 feet with sharp boundaries on the northwest and southeast sides. Geologically it is known to be a shear zone, but as would be expected, geophysically it shows as a dike or vein like feature. At least three mineralized shears in the zone are known from surface geologic mapping, and also pretty well reflected in the self potential results, although the fifty foot station spacing would have an integrating effect for several

separate and narrow bodies. The induced polarization dipole spacing used would tend to integrate all such in a narrow zone into one. In other words, there could well be narrow bodies of highly massive sulfide separated by bodies of rock carrying much lower sulfide content and the geophysical data could tend to integrate it as a homogeneous mass of intermediate sulfide content. It is not cut off either to the northeast or southwest although the evidence indicates it may be either just about closed off to the southwest or has become suddenly deeper either due to faulting or plunge. A high sulfide content is indicated though there is no known method which can discriminate the amount of economic minerals present, if any, in sulfide environments. There is no depth cutoff determination from the work done. The self potential readings do not penetrate below the zone of presently active oxidation. The 250 foot dipole spacing used on all the induced polarization lines indicate sulfides to the maximum depth of penetration, or possibly about 400 feet. Line six was also run on a 500 foot dipole separation and shows sulfide still present at maximum depth of penetration, or about 800 feet.

The amount of apparent sulfide, in conjunction with some small past production and reported copper values indicate good potential for a mine.

RECOMMENDATIONS

1. The necessary step of getting control of more land should be initiated immediately. This should involve not only more to the east, but also more laterally to allow for dump, mill, office and general mining activity repair and storage facilities, etc. Excess land holdings can always be reduced, while the opposite of always being able to get more is not true. For lateral land control, a suggestion is that the claims should cover at least one half mile on each side of the mineral zone. A rapid investigation should be made along strike to determine it's possible extent. This can be done in a three fold manner--fly over the area to get a panoramic view of formations and alteration, then ground check the observed geology, and finally some reconnaissance geophysics near the apparent limits. Possibly the land presently held covers the southwestern extremity, but the northeastern extremity is critical and any available land in that direction should be the first brought into the holdings.

2. Geologic study and field investigations should be initiated to attempt to learn the mineralizing source. If there is a mineralized intrusive anywhere in the district it could be of far greater importance than the shear zone presently being evaluated.

3. Drilling will, of course, eventually be necessary. Enough information is now at hand to select some drill targets

and drilling could proceed while other geologic investigations and land acquisitions are in progress, or, on the other hand, it can be held in abeyance. One obvious drill site is near the old mine, as it has had production and there are strong geophysical indications of sulfide there. If a map of the old underground workings is available, a site can be selected from which both a vertical hole into reported mineralization can be drilled as well as an angle hole southerly to pass into the hill in the vicinity of Line 6 at depth below stations 2, 3 and 4.

Another drill site would be in the creek near Lines 10 and 11 with an angle hole southerly to pass at depth into the hill on the south side of the above lines. Rather than trying to intersect the zones normal to the dip, initial holes should be about a 45° angle to gain depth rapidly. Drillers should be prepared to stay with any depth hole up to a first maximum of 1,000 feet vertically, or until the shear zone has been definitely penetrated in angle holes. Drill holes should collar NX and this size held as long as practical before necessary reductions, if such should occur. Provision should be made to catch, dry and save sludge as a precaution against poor core recovery as well as for spot assay checking against core sampling. Unless cost was to be considerably less, churn drilling is not recommended.

4. Eventually, if things look encouraging from the initial drilling, do more geophysical surveys over possible extensions.

For detail, S. P. and I. P. are adequate, but a close check should be kept to see if any possible magnetic associations occur in other parts of the district. An occasional single magnetic profile will be adequate for this.

INTERPRETATION

1. Magnetics. This method gave rather disappointing and inconclusive results. There is magnetic variation in the area, but its relation to known mineralization and ore occurrences was not demonstrated. Possibly a survey with an instrument of higher sensitivity might give more satisfactory results but its use is not recommended at this time because of the possibility and/or probability that the only magnetic minerals associated with the sulfides are random small scatterings and pockets of pyrrhotite and magnetite which in some cases are fresh and unaltered and in other cases leached and altered resulting in a picture of erratic highs and lows causing confusion in the interpretation. In a broad sense, there is a magnetic low over the exposed and altered surface of the shear zone with a weak high paralleling it to the north where little or no mineralization is exposed. In as much as the shear zone and apparent zone of interest dips steeply to the north, this magnetic high could possibly be an expression of the sulfide zone at depth, greater than any depth of alteration and oxidation and with any contained magnetic minerals also unaltered. However, since

diorite is exposed to the north as well as other schist layers containing, in places, outcrops of magnetite, it is more probable that the magnetics are reflecting this rather than the first hypothesis above.

2. Self Potential: This method gave very satisfactory results always keeping in mind that its use is limited to oxidizing sulfides. A zone of self potential low with sharp boundaries was outlined. This zone is cut off to the north, west and south but quite open to the east. A range of greater than 450 millivolts was read with a zone of apparent strong interest centered on and around the exposed surface of the shear zone. Self potential results would indicate that either the sulfides are cut off to the west in the vicinity of Line 4 or that north-south faulting has resulted in the ground lying west of here being down-dropped below the zone of active oxidation. To the east, there is no indication that the sulfide zone is decreasing in any fashion - width, depth, intensity of oxidation.

The greatest intensity of self potential so far found is on Lines 6 and 10, in each case on a hill with some of the best exposed geology and in the case of Line 6 quite near the old mine workings. There are several parallel zones, the strongest and widest being the center one. The zone to the north is narrow. The one to the south merges to the east with the center one. Strictly from the self potential data, the inference must be

drawn that there are a series of larger and more massive sulfide zones interconnected by weaker sulfide zones. However, it is possible that due to variable shearing intensity and/or associated ground-water conditions, oxidation is more active in some spots than in others.

3. Induced Polarization: This method also gave very satisfactory results with the plots of the data showing almost classic or text book curves for this type of deposit. All four lines showed strong anomalism centered on the shear zone and self potential low, with the exception of Line 2, the most westerly line run, which is the only one that does not have a corresponding self potential anomaly, thus suggesting the possibility of non-oxidizing and/or deeper sulfide.

The anomalism increases in intensity to the northeast but the width remains relatively constant, namely 500 to 600 feet. This width is an integrated value since the I. P. spread technique used was not designed for defining a series of closely spaced narrow sulfide zones.

This anomalism must be classified as strong, even on Line 2 where the effects are the weakest. These effects are undoubtedly due to sulfide mineralization becoming increased to the northeast to Line 14 where they are strongest.

Confining the zone of anomalism is a resistivity low which adds to the interest of the induced polarization results. This

resistivity low is probably the result of the alteration of the rocks in the shear zone during mineralization, the presence of the sulfides themselves and their subsequent oxidation to soluable and highly conductive materials. Just as the I. P. effects increased to the northeast, this resistivity low becomes lower to the northeast making the ground northeast of Line 14 very interesting.

A steep north dip is indicated on these lines. However, the dip of a nearly vertical feature is very difficult to detect with the induced polarization spread technique used. The area of strongest response in the mineralized zone itself appears to hug the foot wall of the shear on all five lines.

On all of the spreads, there is no indication of a bottoming out of sulfides or even a reduction in percentage.

TECHNIQUES AND PROCEDURES

Upon the recommendation of GEOEX, Demco surveyed a grid of eleven lines, each 200 feet apart, and stations on 50 foot spacings, to form a square 2,000 ft. by 2,000 ft. with a center base line along the strike of the mineralization. These stations were occupied and readings taken using a Jalander vertical intensity magnetometer reading to 10 gamma accuracy. Most readings were taken during the warmer middle hours of the day to minimize temperature and diurnal drift. Corrected readings were

plotted in both profile and contour form and are appended to this report. The measured gamma quantities are local variations in magnetic polarization and susceptibility of the immediate geologic environment and an arbitrary base level is assumed without regard to the total earth's field. In interpretation procedures either magnetic highs or lows or even slope intervals may be significant.

Self potential readings were taken at most of the same stations of the grid. The field operation was accomplished by a man reading a Leeds-Northrup millivolt potentiometer set at the center of each line and hooked by wires to two porous pot electrodes, one stationary by the meter and one moved from station to station along the line. Ground water and oxygen in contact with sulfide minerals set in force a chemical oxidation process that produces an electrical current, often likened to a battery. Porous pots set into the ground act as battery terminals, and the potentiometer reads the minute voltages being generated in the ground. The readings obtained were also plotted both in profiles and contour plan and appended. Generally, the more negative the values, the more active the zone.

Induced Polarization surveys utilizing a co-linear dipole-dipole or Eltran electrode configuration were made over four lines 2, 6 and 10 of the surveyed grid, and the equivalent of 14 if the grid were to be extended to the east. Briefly, the

technique consists of a sender operator sending monitored and controlled current at two different frequencies into the ground from a portable generator through wires to equally spaced electrodes. A receiver operator measures the voltage received at intervals along the line. Depth and lateral penetration of the current are a function of the equally spaced electrodes and receiver positions. In this case, where the zone to be investigated is a relatively narrow and steeply dipping feature, the short 250 foot interval, or dipole spacing, was used on all lines to obtain optimum interpretable data and degree of resolution. On Line 6 a second profile was run using 500 ft. dipoles to see the results of greater depth penetration notwithstanding consequent loss of detail due to integration effects of greater volumes of surrounding earth in relation to the quantity contained in the zone of interest.

Frequency domain equipment, as differentiated from some which operates in the time domain (pulse polarization) was used. Apparent resistivities were measured at 0.05 and 3.0 cycles per second on a dipole-dipole electrode configuration so as to obtain the three quantities, direct current resistivity (rho DC over 2pi) percent frequency effect (PFE), and an arbitrary term called "metallic conduction" factor (MCF), necessary for interpretation. The percent frequency effect is simply the percentage difference in apparent resistivity between the lower and the higher frequency

of measurement. The MCF is obtained by multiplying in the PFE by 1,000 and dividing by the DC resistivity.

These values are plotted on sectional data sheets with the following conventions: the plotting points are established by the intersection of a diagonal from the center of the receiving dipole in order to give a two-dimensional effect. The resistivities are plotted on the upper half of the data sheets with the PFE values as superscripts. The MCF values are plotted on the lower half. Both the resistivities and the MCF values are contoured schematically on a logarithmic interval as an interpretational aid.

The principle upon which the induced polarization method operates is that metallic (electronic) conductors embedded in an electrolytic conducting medium behave as capacitors and therefore offer less impedance to an alternating current than to a direct one, thereby giving a frequency dependent resistivity. Most materials exhibiting a metallic luster give a frequency effect, including the metallic sulfides, magnetite and graphite. In addition to metallic materials, certain clay minerals exhibit the effect slightly.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

J. W. Marlatt

M. J. W. Marlatt

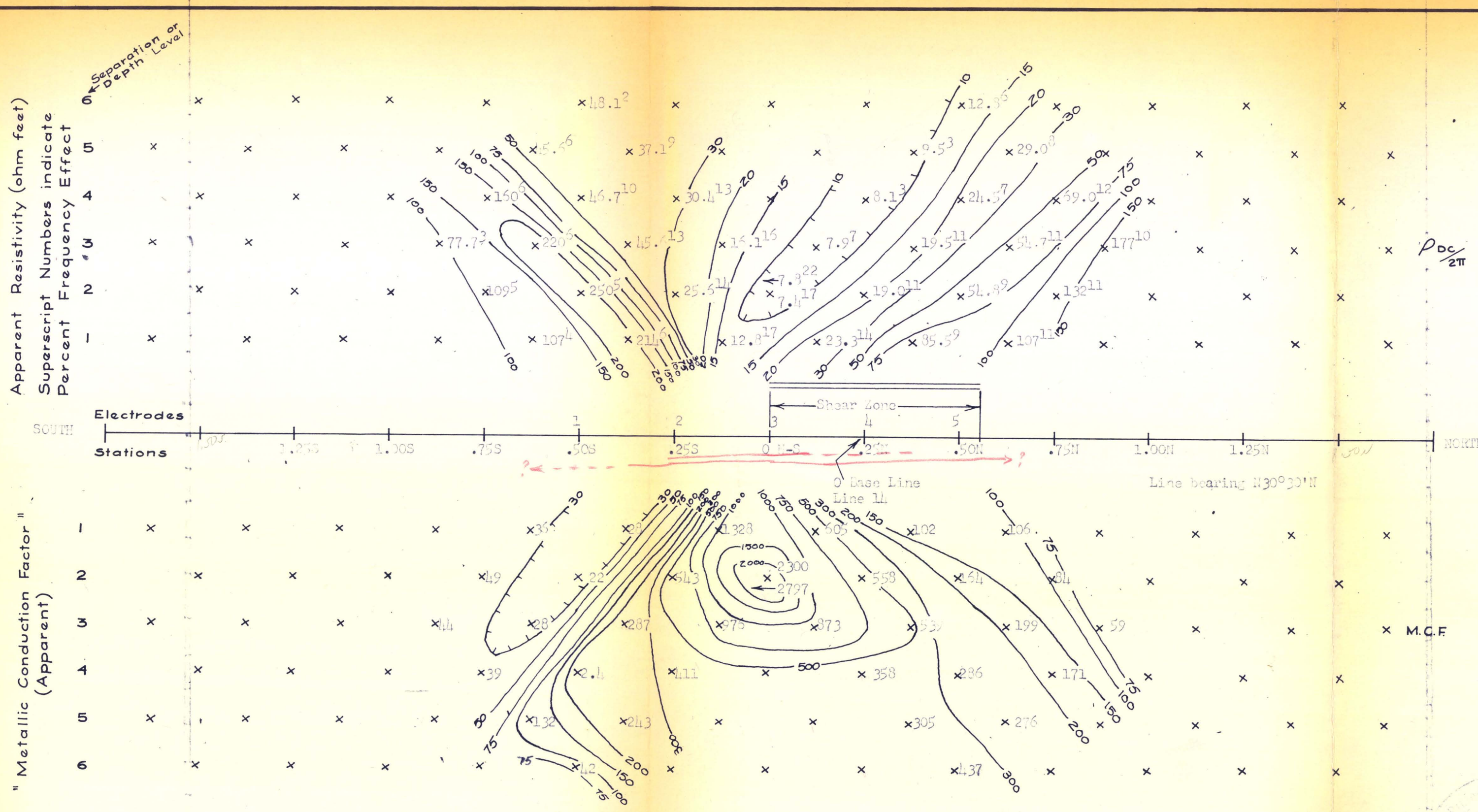
Registered Professional Engineer
CERTIFICATE EXPIRES
DEC. 31, 1963
ARIZONA, U.S.A.

Walter E. Heinrichs, Jr.

C. S. Ludwig

HEINRICHS GEOEXPLORATION COMPANY

July 12, 1963



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic

SECTIONAL DATA SHEET

LINE No. 14

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

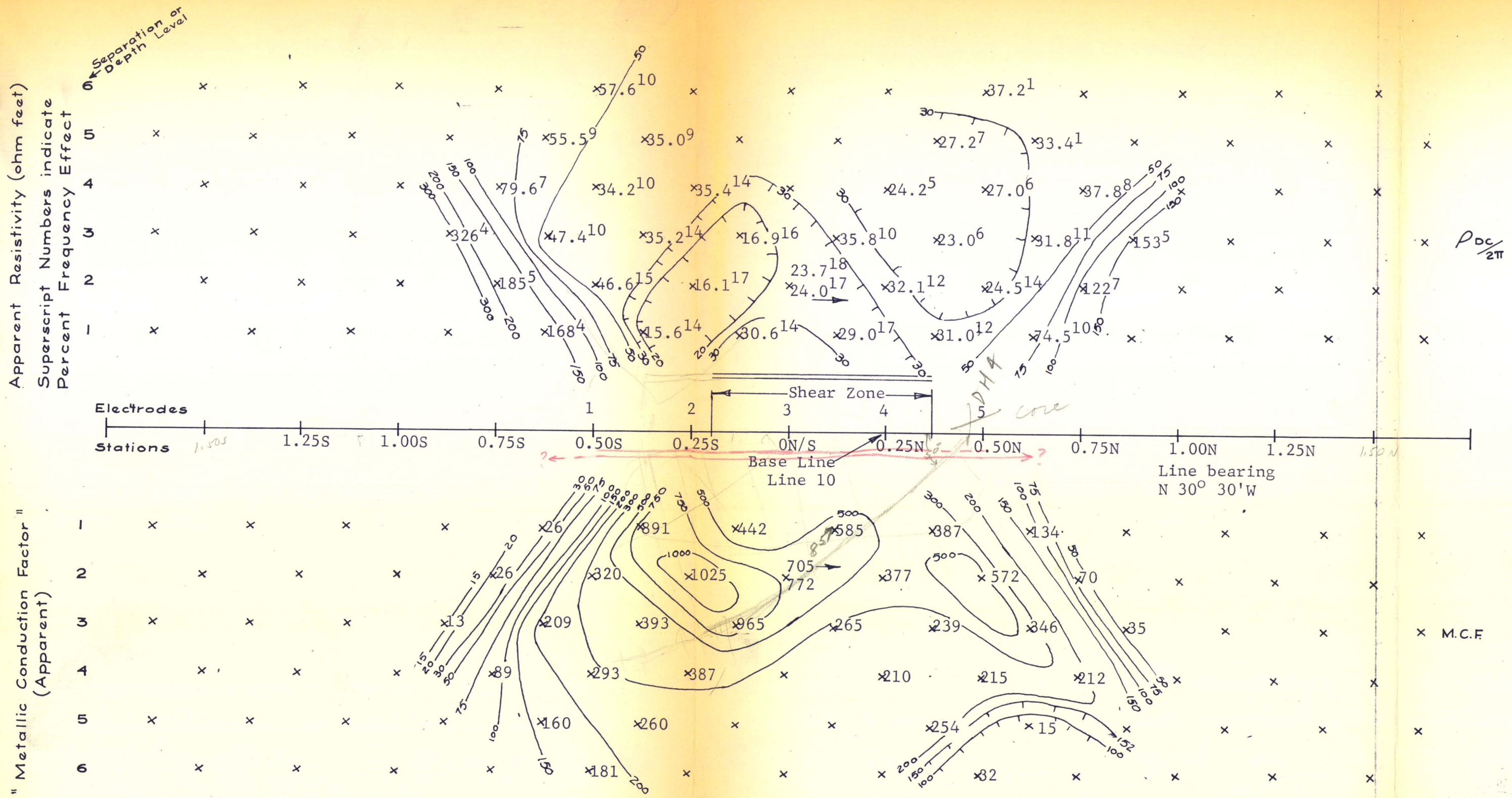
SCALE: 1" = 250' DATE: July, 1963

for

DENCO CORPORATION

ORIZABA MINE

Maricopa County, Arizona



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic

SECTIONAL DATA SHEET

LINE No. Line 10

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

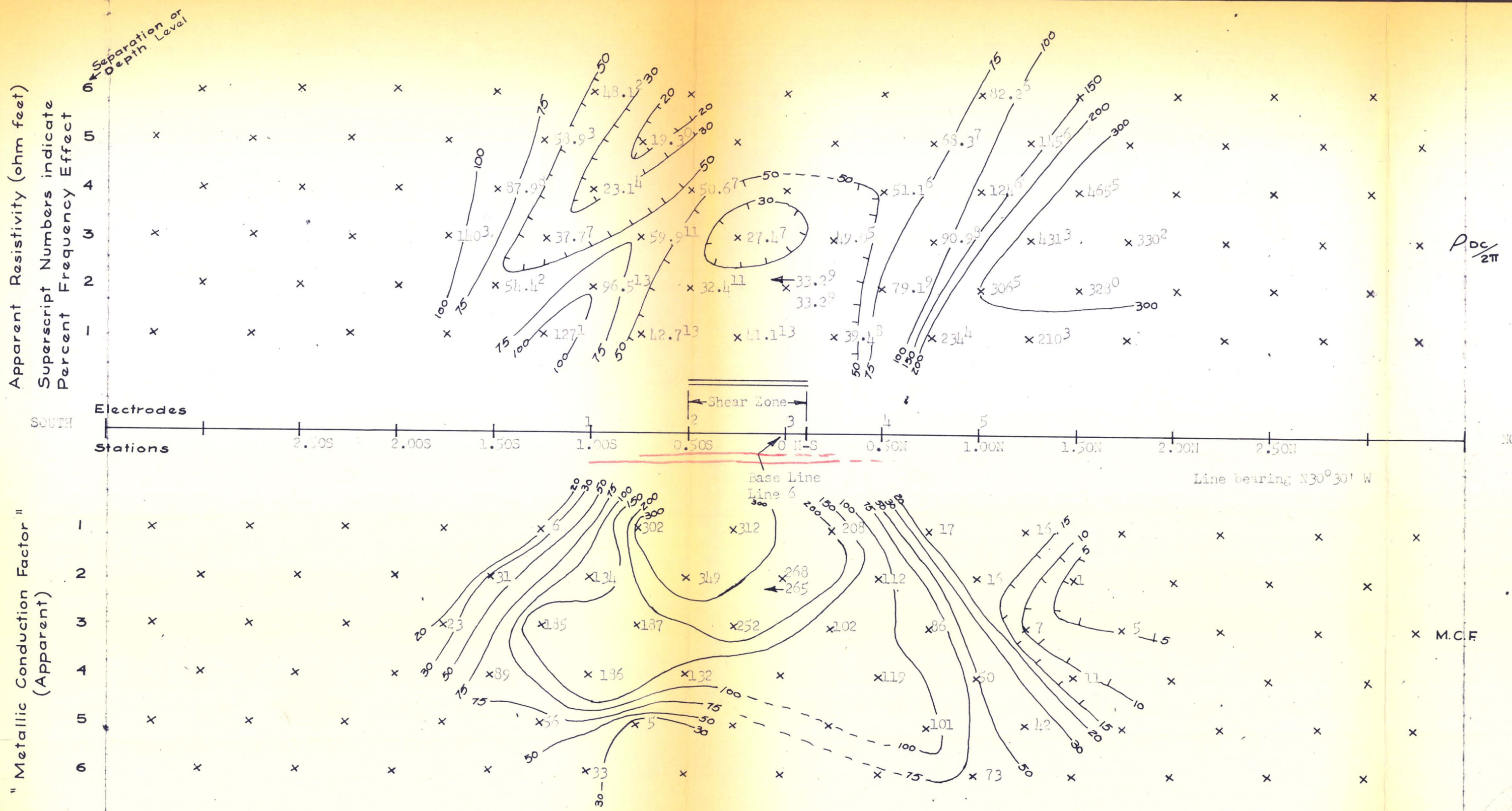
SCALE: 1" = 250' DATE: July 1963

for

DEMCO CORPORATION

ORIZABA MINE

Maricopa County, Arizona



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic

SECTIONAL DATA SHEET

LINE No. 6 Spread 2

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

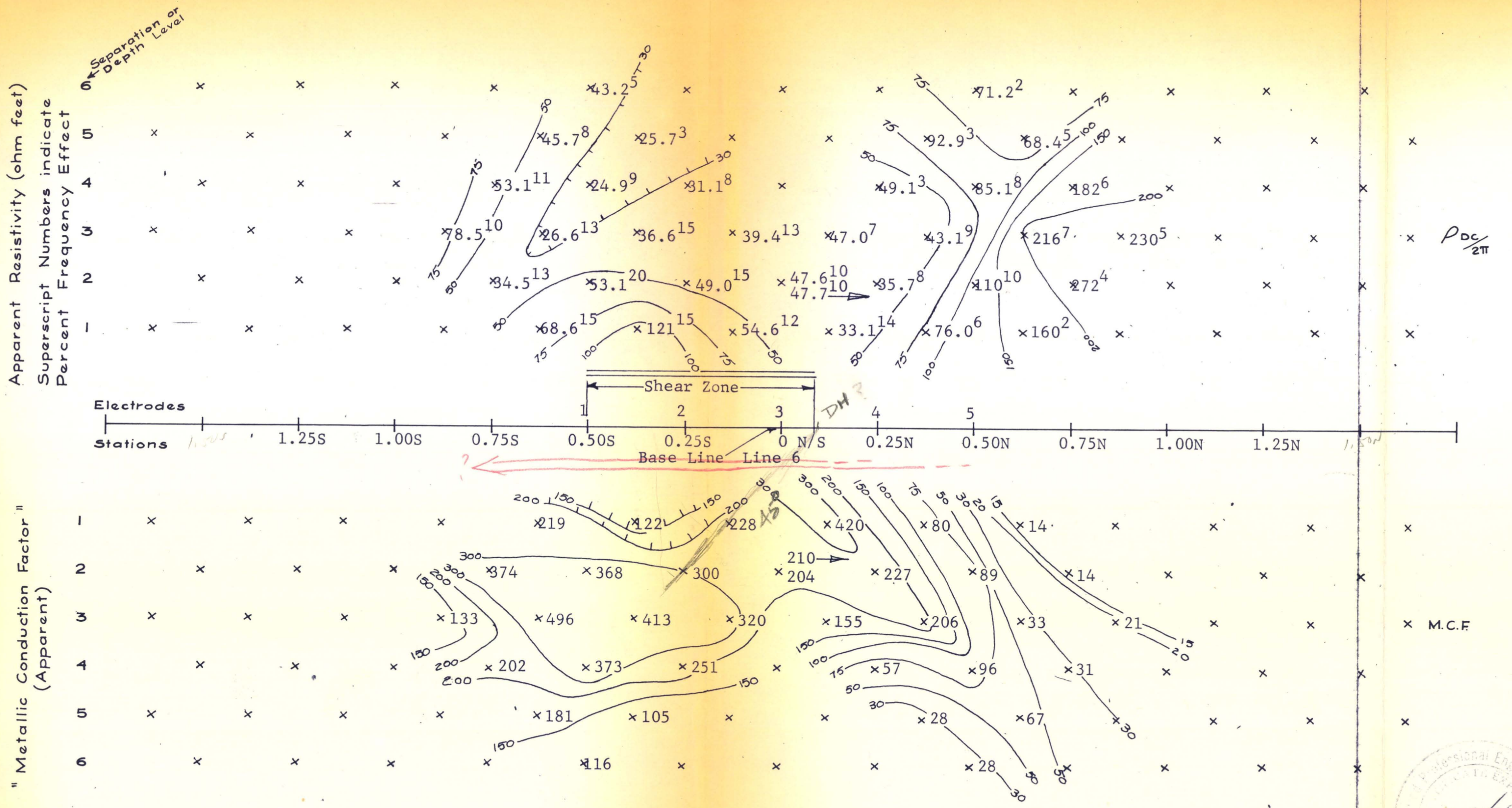
SCALE: 1" = 500' DATE: July, 1963

for

DENCO CORPORATION

ORIZABA MINE

Maricopa County, Arizona



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic

SECTIONAL DATA SHEET

LINE No. 6 Spread 1

INDUCED POLARIZATION SURVEY

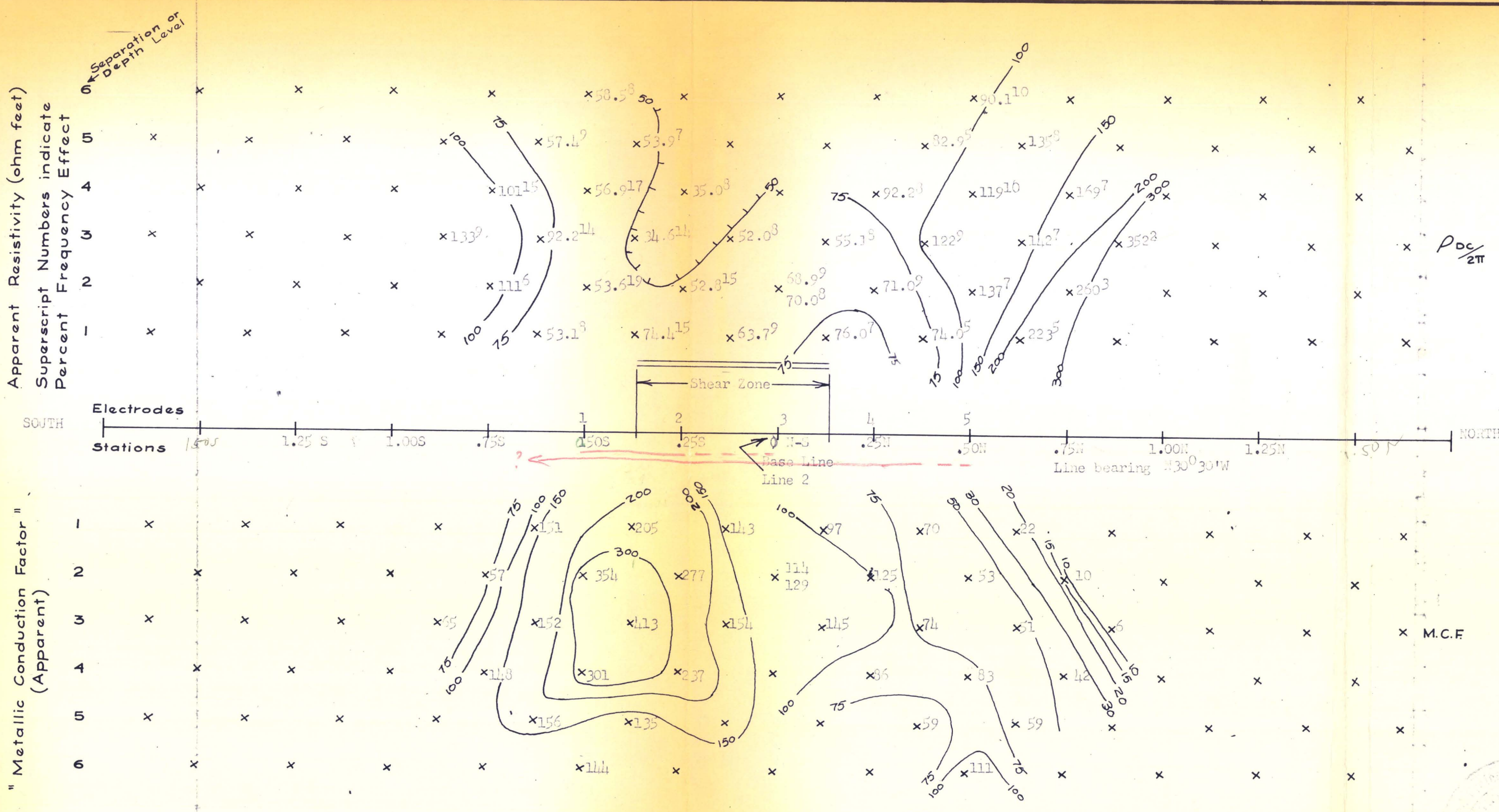
HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 250' DATE: July, 1963

for

DEMCO CORPORATION
ORIZABA MINE

Maricopa County, Arizona



LEGEND

- End of Line
- Station
- No Anomaly
- Very Weak
- Weak
- Moderate
- Strong

Contour interval: Logarithmic

SECTIONAL DATA SHEET

LINE No. 2, Spread 1

INDUCED POLARIZATION SURVEY

HEINRICHS GEOEXPLORATION COMPANY

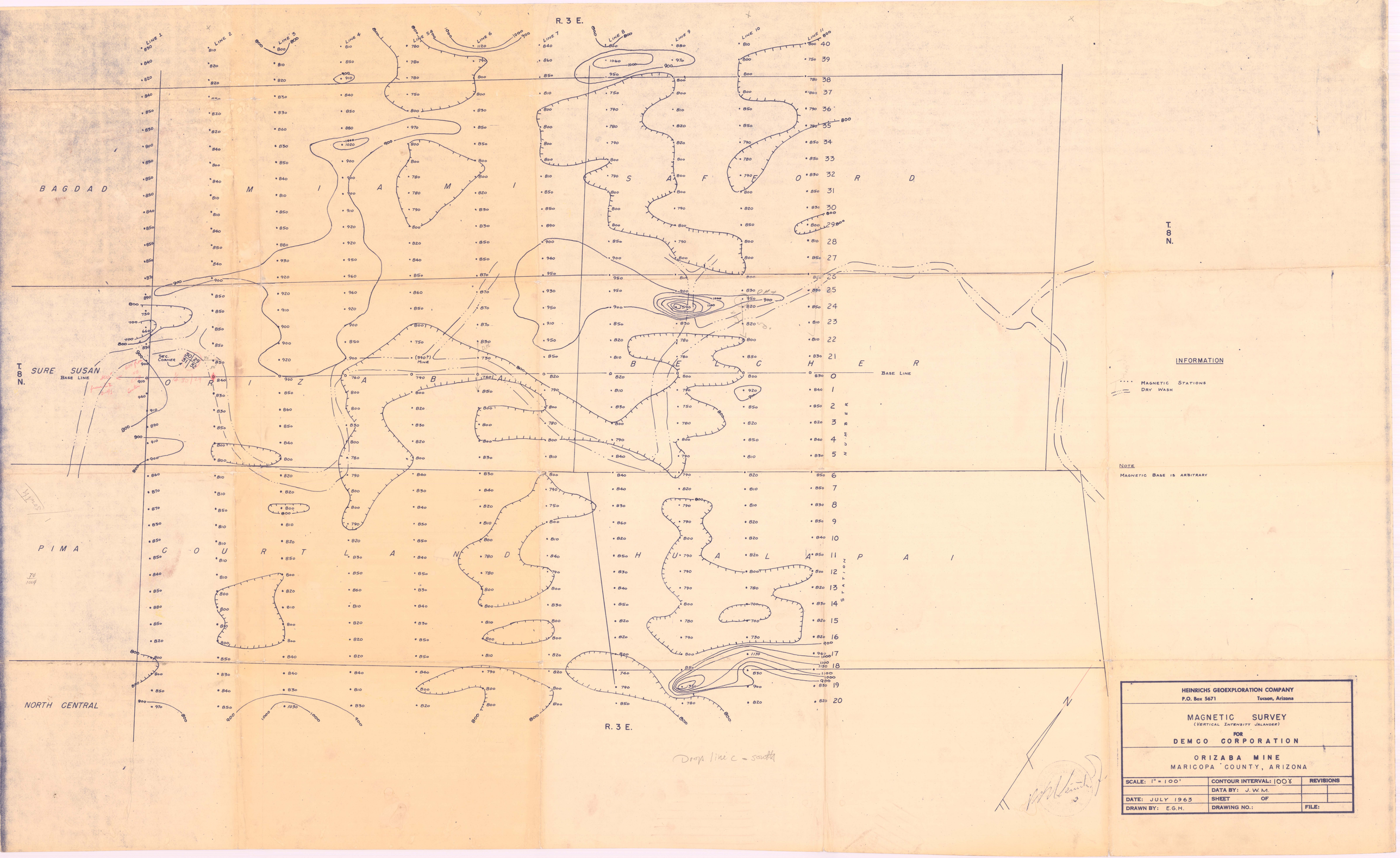
SCALE: 1" = 250' DATE: July, 1963

for

DENCO CORPORATION

ORIZABA LINE

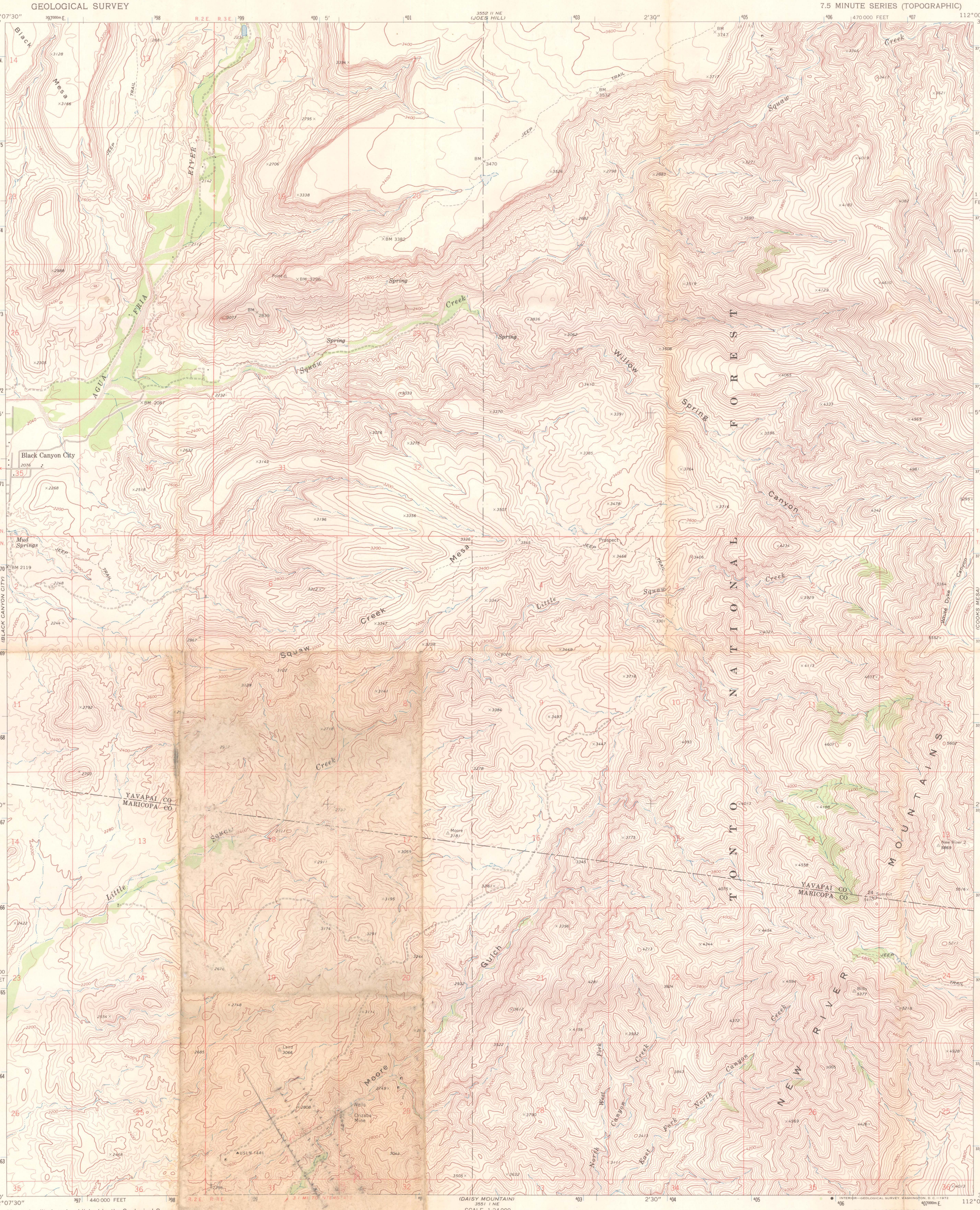
Maricopa County, Arizona



Drop line c - south

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SQUAW CREEK MESA QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1968. Field checked 1969

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

Where omitted, land lines have not been established

UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
0°36' 11 MILS
14° 249 MILS

SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ARIZONA
QUADRANGLE LOCATION

ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
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A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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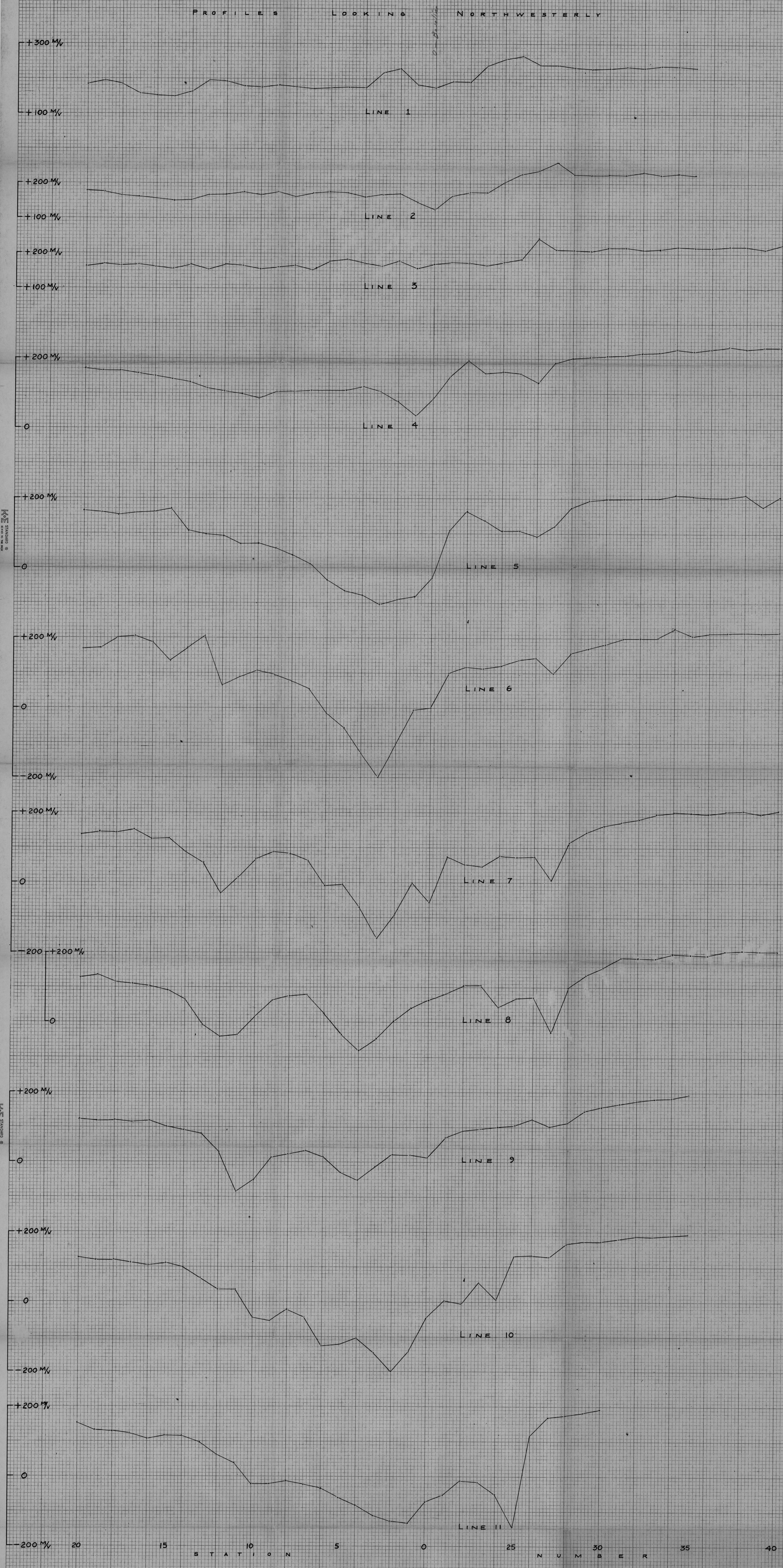
N3400—W11200/7.5
1969
AMS 3552 II SE—SERIES V898

764



ORIZABA MINE

SELF POTENTIAL PROFILES

for

DEMCO CORPORATION

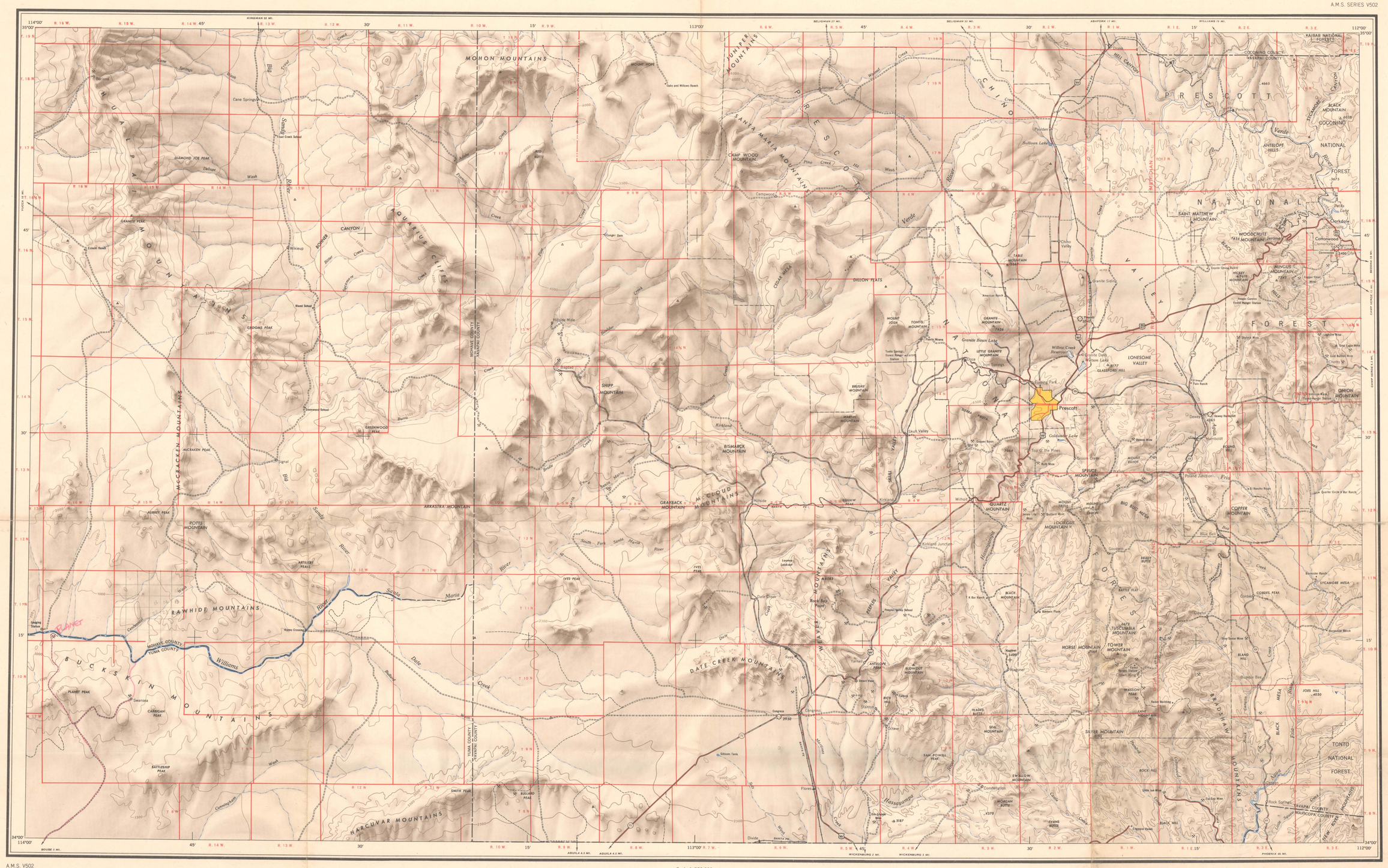
by

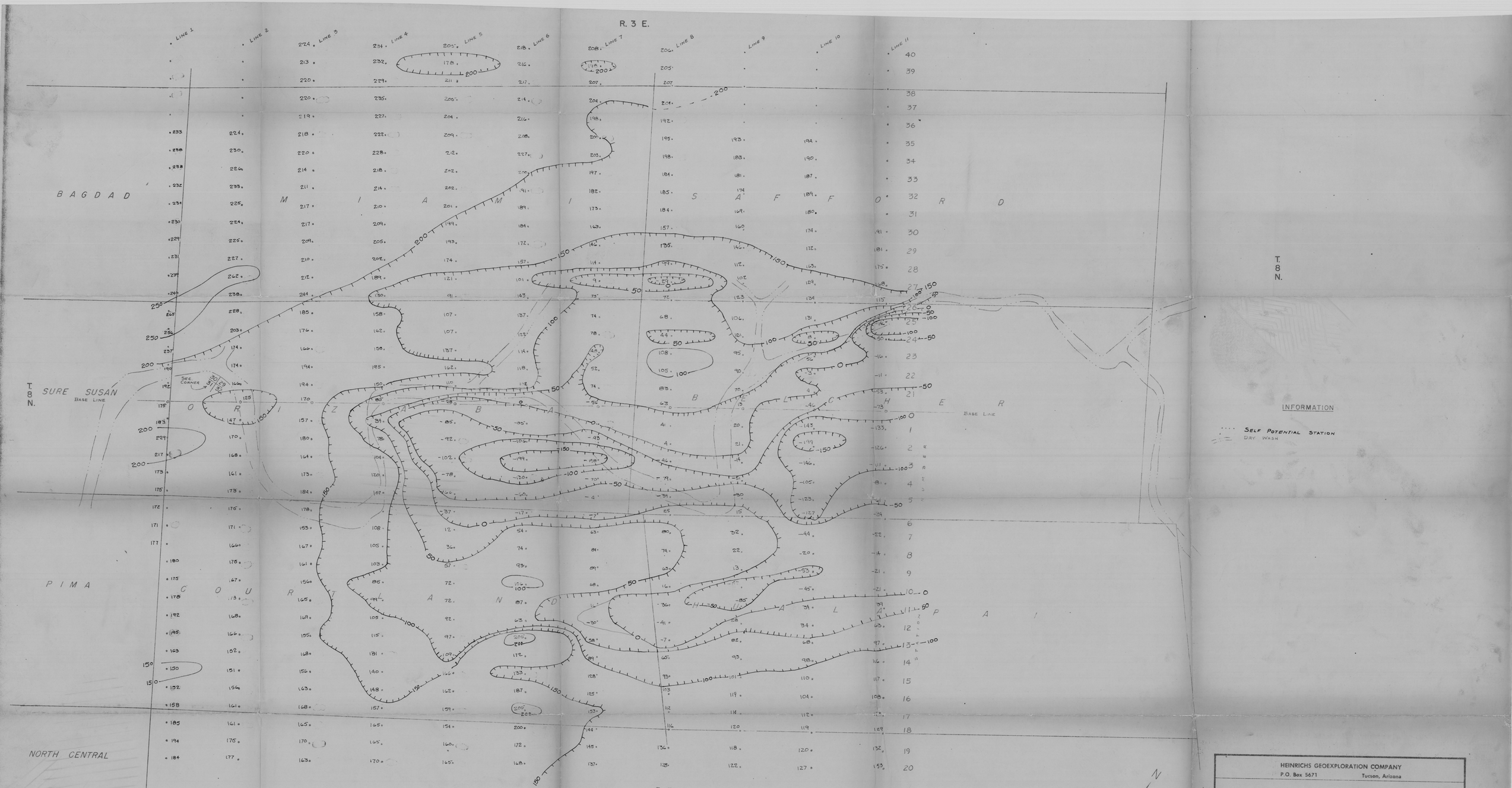
HEINRICHS GEOEXPLORATION COMPANY

Horizontal Scale: 1" = 100 feet
Vertical Scale: 1" = 100 mv

July 1963

PRESCOTT


MOHON MOUNTAINS
JUNIPER MOUNTAINS
PRESCOTT
NATIONAL
FOREST
Prescott
CHINO VALLEY
SANTA MARIA MOUNTAINS
CAMP WOOD MOUNTAIN
DILLON FLATS
MOUNT IGUA
TONTO MOUNTAINS
GRANITE MOUNTAIN
LITTLE GRANITE MOUNTAIN
Granite Basin Lake
Willow Creek Reservoir
Watson Lake
LONESOME VALLEY
GLASSFORD HILL
Goldwater Lake
SAINT MATTHEW MOUNTAIN
WOODCHUTE MOUNTAIN
MINGUS MOUNTAIN
ONION MOUNTAIN
TABLE MOUNTAIN
BRISBY MOUNTAIN
MARTIN MOUNTAIN
SHIPP MOUNTAIN
BISMARCK MOUNTAIN
GRAYBACK MOUNTAIN
M'CLOUD MOUNTAINS
ARRASTRA MOUNTAIN
QUARTZ MOUNTAIN
LOCKCUT MOUNTAIN
COPPER MOUNTAIN
BIG BUG MESA
SPRUCE MOUNTAIN
Kirkland Junction
Kirkland Valley
Skull Valley
Poland Junction
Humboldt
Dewey
Mayer
Cordes Junction
Cordes Lakes
Bagdad
Congress
Yarnell
Stanton
Wickenburg
Hassayampa
Morristown
Wickenburg Mts.
DATE CREEK MOUNTAINS
BLOWOUT MOUNTAIN
ANTELOPE PEAK
TUSCUMBIA MOUNTAIN
TOWER MOUNTAIN
HORSE MOUNTAIN
SILVER MOUNTAIN
SAM POWELL PEAK
SWALLOW MOUNTAIN
MORGAN BUTTE
EVANS BUTTE
WADES BUTTE
SEAL MOUNTAIN
ROCK HILL
BLACK HILL
BLACK MESA
TONTO NATIONAL FOREST
ARAGOSHA MOUNTAINS
Rock Springs
YAVAPAI COUNTY
MARICOPA COUNTY
HARQUAHALA MOUNTAINS
HARCUVAR MOUNTAINS
BUCKSKIN MOUNTAINS
RAWHIDE MOUNTAINS
Alamo Crossing
Wickenburg
Vulture City
Date Creek
Williams
Santa Maria River
Verde River
Hassayampa River
Agua Fria River
Big Bug Creek
Granite Creek
Lynx Creek
Walnut Creek
Sycamore Creek
Chino Valley
Paulden
Sullivan Lake
Prescott Valley
Dewey-Humboldt
Mayer
Cordes Junction
Congress
Yarnell
Wickenburg
Morristown
Kirkland
Skull Valley
Bagdad
Hillside
Chino Valley
Paulden



HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5671 Tucson, Arizona

SELF POTENTIAL SURVEY
FOR
DEMCO CORPORATION

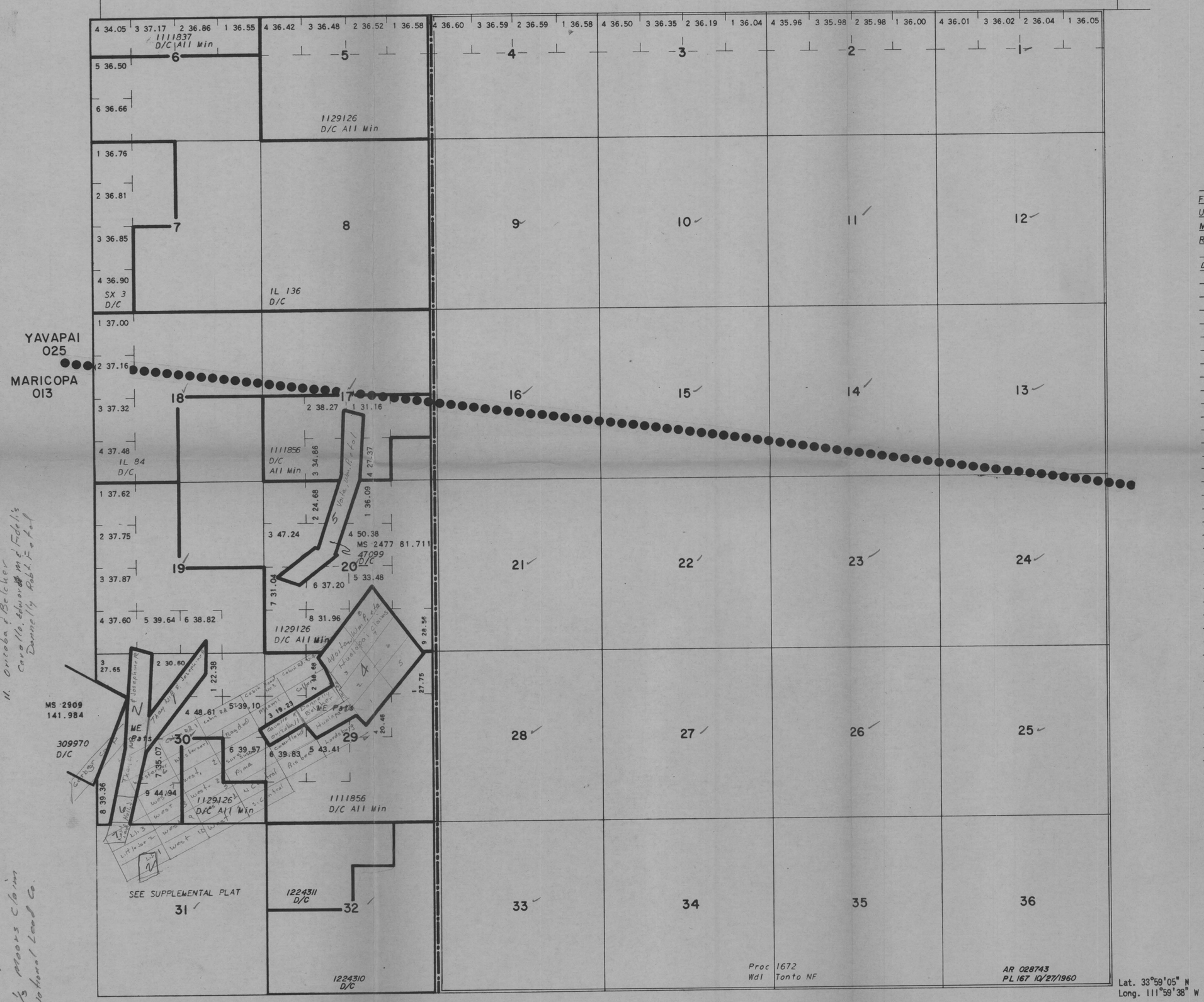
ORIZABA MINE
MARICOPA COUNTY, ARIZONA

SCALE: 1" = 100'	CONTOUR INTERVAL: 50 m.v.	REVISIONS
	DATA BY: J.W.M.	
DATE: JULY 1963	SHEET OF	
DRAWN BY: E.G.H.	DRAWING NO.:	FILE:

TOWNSHIP 8 NORTH RANGE 3 EAST OF THE GILA AND SALT RIVER MERIDIAN, ARIZONA

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MARICOPA / YAVAPAI COUNTY



SCALE
10 5 0 10 20 30 60
30 chains to the inch

1. Great Scott 1 & 2 Thayer W.B & Josephine Rafall
2. Koons 1 & 2, Norman, Koons Mill site Thayer W.B & Josephine R et al
3. Balsa, Greenhill 1, 2, & 3, Luty, Commercial 1 & 2 Gerber Corporation
4. Vorta Wm Pehl Maricopa 1-8, 22, 23
5. Scenra, Roy, Leland, Hillside Vorta Wm P et al
6. N ½ Moors Claim Neill, James Swetman
7. S ½ Moors Claim National Land Co.
11. Oviedo & Belcher Cavallo, Edwards M & Fabio's Donnelly Robt E et al

INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

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DIST. NO. 2

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BUREAU OF LAND MANAGEMENT
PHOENIX, ARIZONA
COPY ISSUED BY

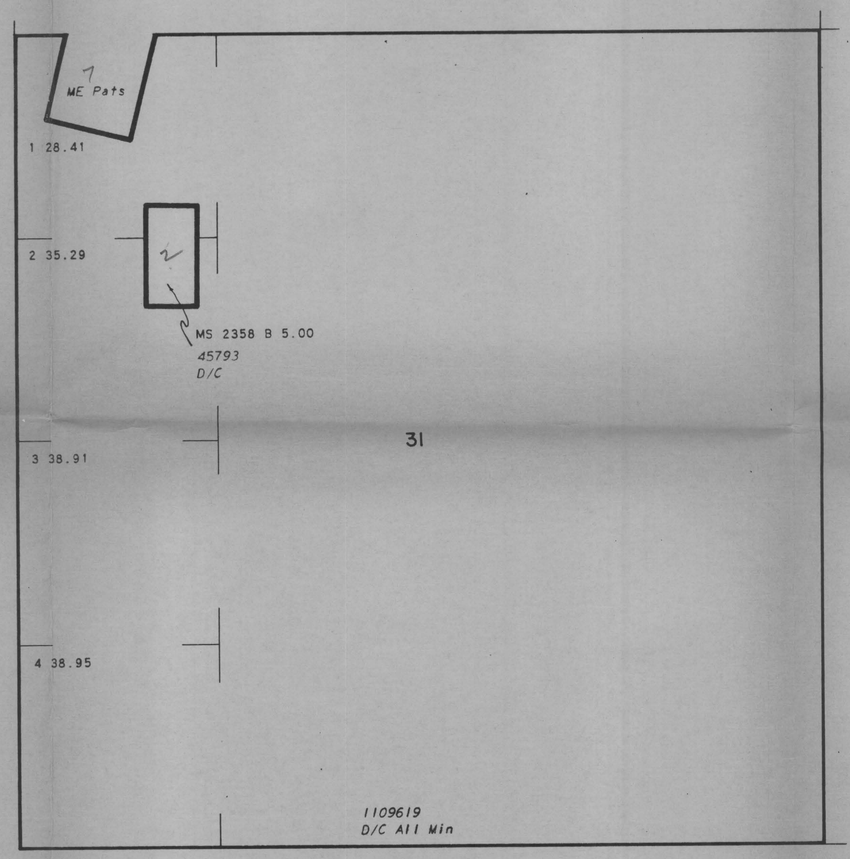
T. 8 N.
R. 3 E.

TOWNSHIP 8 NORTH RANGE 3 EAST OF THE GILA AND SALT RIVER MERIDIAN, ARIZONA

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

MTP
SUPPL Sec 31

30



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INDEX TO SEGREGATED TRACTS				
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DIST. NO. 2

CURRENT TO	BY

1970 MAR 23 AM 10 20

BUREAU OF LAND MANAGEMENT
PHOENIX, ARIZONA
DOCUMENT TRACKING BY

SCALE

5 0 5 10 20

10 chains to the inch

T. 8N
R. 3E

TOWNSHIP 8 NORTH RANGE 2 EAST OF THE GILA AND SALT RIVER MERIDIAN, ARIZONA

MARICOPA / YAVAPAI COUNTY

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES

Lat. 33°59'05" N
Long. 112°05'54" W

INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

DIST. NO. 2

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BUREAU OF LAND MANAGEMENT
PHOENIX, ARIZONA
CERTIFIED BY

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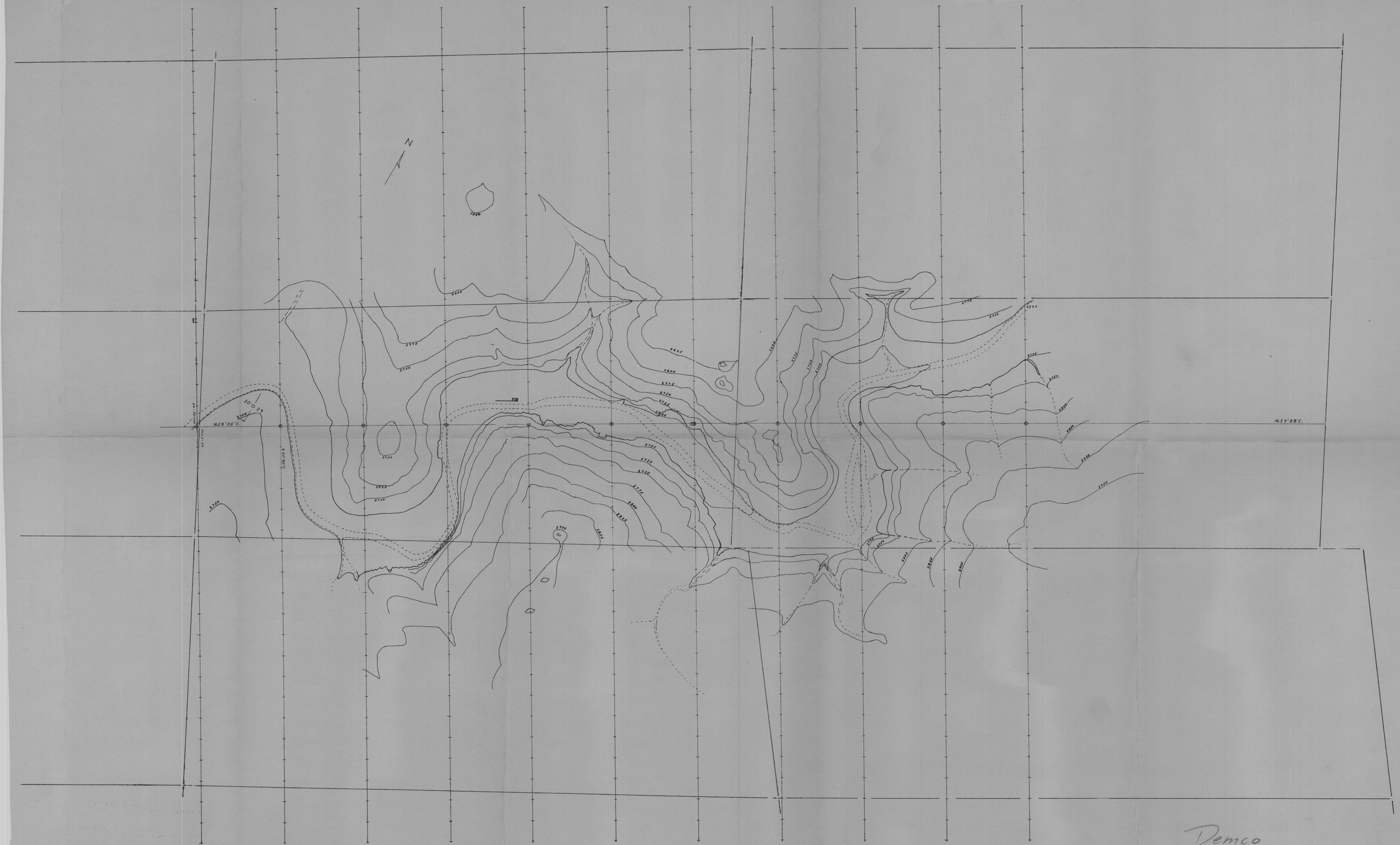
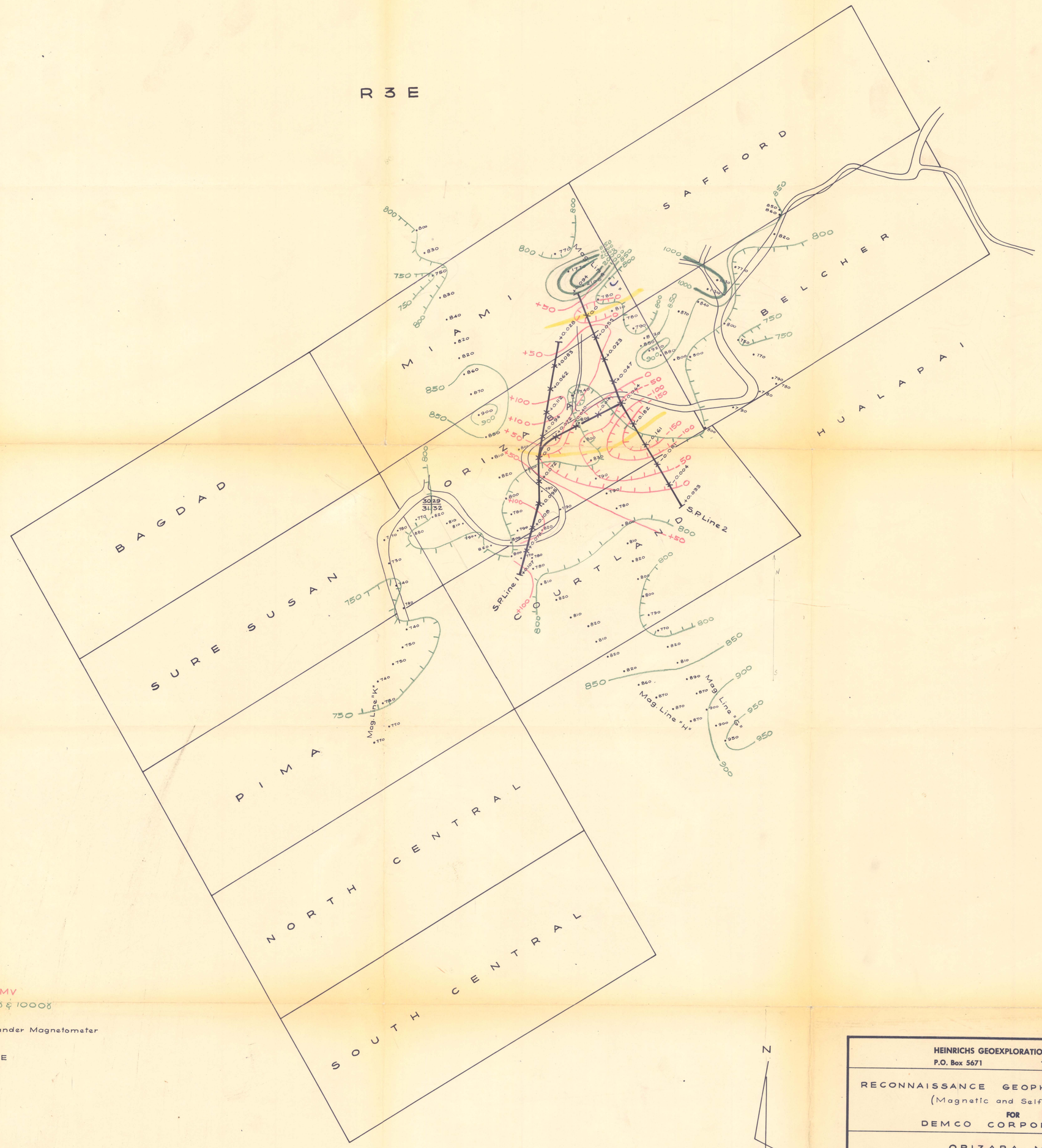
T. 8N
R. 2E



Demco



S.P. Contour Interval: 50 MV
MAG. Contour Interval: 50γ & 1000γ

..... MAGNETIC STATIONS
Vertical Intensity by Jalander Magnetometer

SELF POTENTIAL LINE
Stations 100 feet apart

HEINRICHS GEOEXPLORATION COMPANY
P.O. Box 5671 Tucson, Arizona

RECONNAISSANCE GEOPHYSICAL SURVEY
(Magnetic and Self Potential)
FOR
DEMCO CORPORATION

ORIZABA MINE
MARICOPA COUNTY, ARIZONA

SCALE: 1" = 200'	CONTOUR INTERVAL: MAG: 50γ & 1000γ; S.P.: 50 MV	REVISIONS
	DATA BY: J. W. M.	
DATE: MAY 1963	SHEET OF	
DRAWN BY: i. b.	DRAWING NO.:	FILE:

ORIZABA MINE

MAGNETIC PROFILES
(Vertical Intensity)

for

DEMCO CORPORATION

by

HEINRICHS GEOEXPLORATION COMPANY

Horizontal Scale: 1" = 100 feet
Vertical Scale: 1" = 200 gammas

July 1963

RECONNAISSANCE GEOPHYSICAL SURVEY
(Magnetic and Self Potential)

ORIZABA MINE AREA
Sections 29, 30, 31, 32, T 8 N, R 3 E
Maricopa County, Arizona

COPY

for
DEMCO CORPORATION

May 1963

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

INTRODUCTION

A group of claims on and around the Orizaba Mine lies in Sections 29, 30, 31, 32, T 8 N, R 3 E, Maricopa County, Arizona and is owned by the Demco Corporation of Phoenix, Arizona. There has been past production of copper contained in fairly massive sulfides found in steeply dipping shears in schist. The present owners, before re-opening the mine, wished to learn what exploration aids might be available from geophysical surveys. On May 24, 1963 Mr. J. W. Marlatt of Heinrichs Geoexploration Co. visited the property in the company of Messers Dannelly, Elliston, and Meacham, principals of Demco Corp., and ran some reconnaissance test magnetic and self potential lines over the center of the property.

CONCLUSIONS AND RECOMMENDATIONS

At the time the readings were taken it was felt that there was no magnetic correlation with known ore. One small zone of magnetite was found but with no apparent economic mineral association. However, on studying the plotted results it was noticed that there is a possible magnetic low along the known sulfide zones.

Self potential readings gave satisfactory results with a maximum deviation of minus 294 millivolts. This is a clear indication that oxidizing sulfides are present.

COPY

Geophysics can play a very useful role in helping to determine the extent of the mineralized area. A complete program is outlined below but this could be modified to some extent according to the wishes or budget of the client.

1. Surveying of lines. Considering the known mineral zone to have a strike length of some 2,000 ft. and a width more or less of 200 ft., lay out surveyed lines to cross normal to the strike with the lines 200 feet apart and stations at approximately each 50 ft., and the lines 1,000 ft. long on each side of a common base line down the strike.

2. Run self potential and magnetic surveys over these surveyed stations. These done simultaneously would take 5 to 6 days for a two man crew.

3. Run three equally spaced induced polarization surveys along the surveyed lines--one across the center of the zone possibly on a double density electrode spacing of 250 ft. and 500 ft. dipoles, and the other two at 800 ft. on either side of the first using the electrode spacing found to be optimum from the first line. This will require a three man crew for approximately four days, possibly three if it can be done at the same time the S. P. is done.

The combined results of the above mentioned geophysical evaluations will outline in detail the sulfide zone both laterally and at depth as well as give valuable data on the characteristics of the resistivity and magnetics.

COPY

METHODS

1. Magnetics. A Jalander magnetometer was used. This reads the vertical component of the magnetic field. As we are concerned with only local anomalism the earth's total field is ignored, a base is established in the area and given an arbitrary value and the resultant readings are variations from this point. On this reconnaissance, readings were taken at somewhat random stations, roughly 100 ft. apart, and plotted on a map as traversed. The basic idea was to test known spots of mineralization as well as areas outside the mineral zone to obtain contrasts. The readings obtained have been roughly contoured on the accompanying map to show magnetic trends.

2. Self potential. Two porous pot electrodes are used as two terminals of a battery. Potential difference between two points on the ground are measured on a potentiometer hooked to the two electrodes. Any given electrode spacing may be used--on this evaluation 100 ft. spacings were used and base points at which to start were arbitrarily selected, on the sulfide trend. Air and groundwater weathering acting on sulfides produces a chemical reaction similar to a battery and it is this characteristic that is measured.

3. Induced polarization. A regulated current is applied to the ground at electrodes placed at intervals. A receiver records the current at several places along the line. Interference with the passage of this current through the ground by metallic

particles (as well as some other factors such as graphite and clay particles) causes a change in the current characteristics "polarization", and it is the recording computation and interpretation of these factors that comprise an I. P. survey and determines if sulfides are present and order of magnitude as to percent and extent.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

J. W. Marlatt

J. W. Marlatt
Geologist

Walter E. Heinrichs, Jr.
Registered Engineer

P. O. Box 5671
Tucson, Arizona

June 3, 1963

COPY

RECONNAISSANCE GEOPHYSICAL SURVEY
(Magnetic and Self Potential)

ORIZABA MINE AREA
Sections 29, 30, 31, 32, T 8 N, R 3 E
Maricopa County, Arizona

for
DEMCO CORPORATION

May 1963

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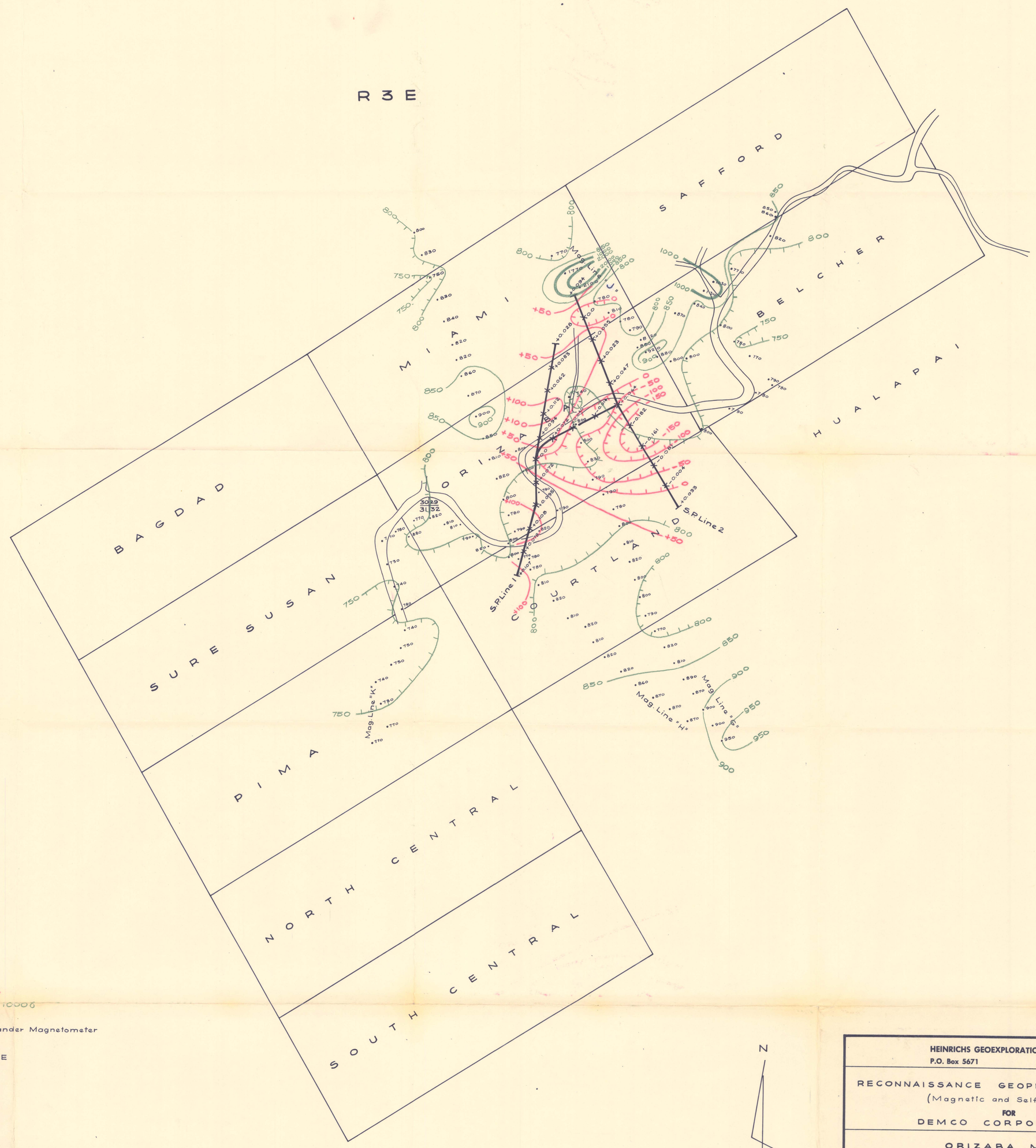

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Stations 100 feet apart

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SCALE: 1" = 200'	CONTOUR INTERVAL:	REVISIONS
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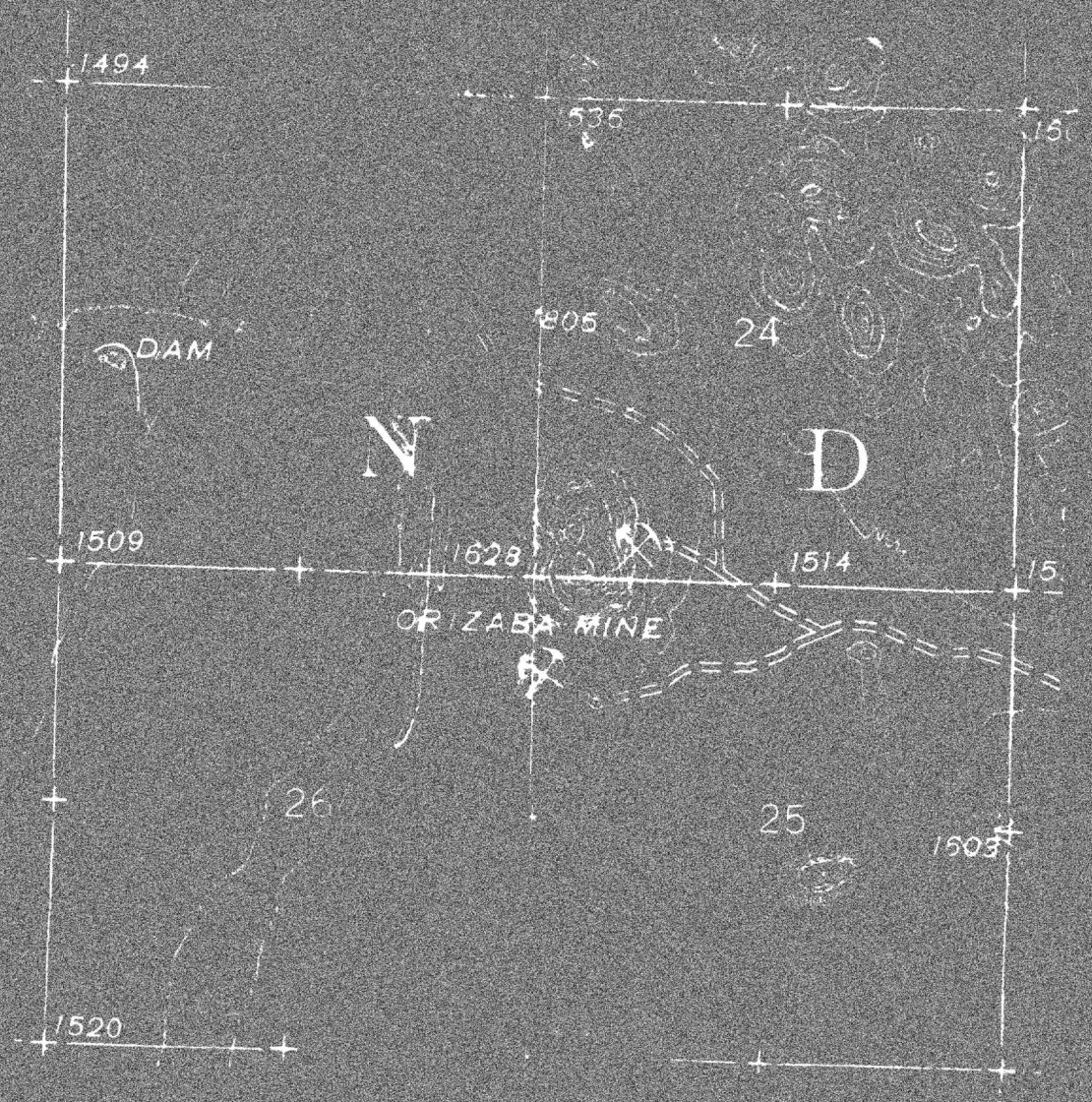
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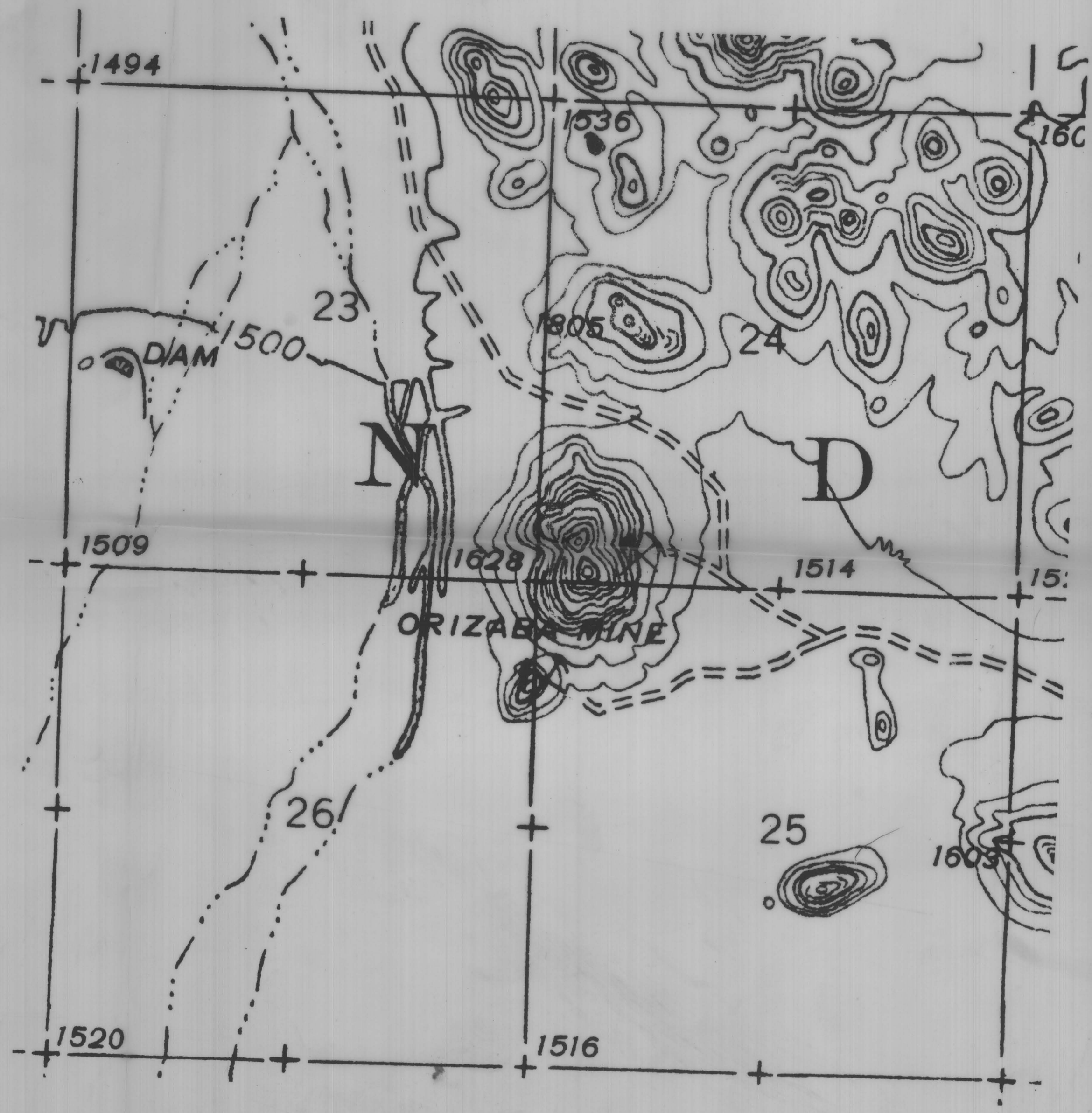
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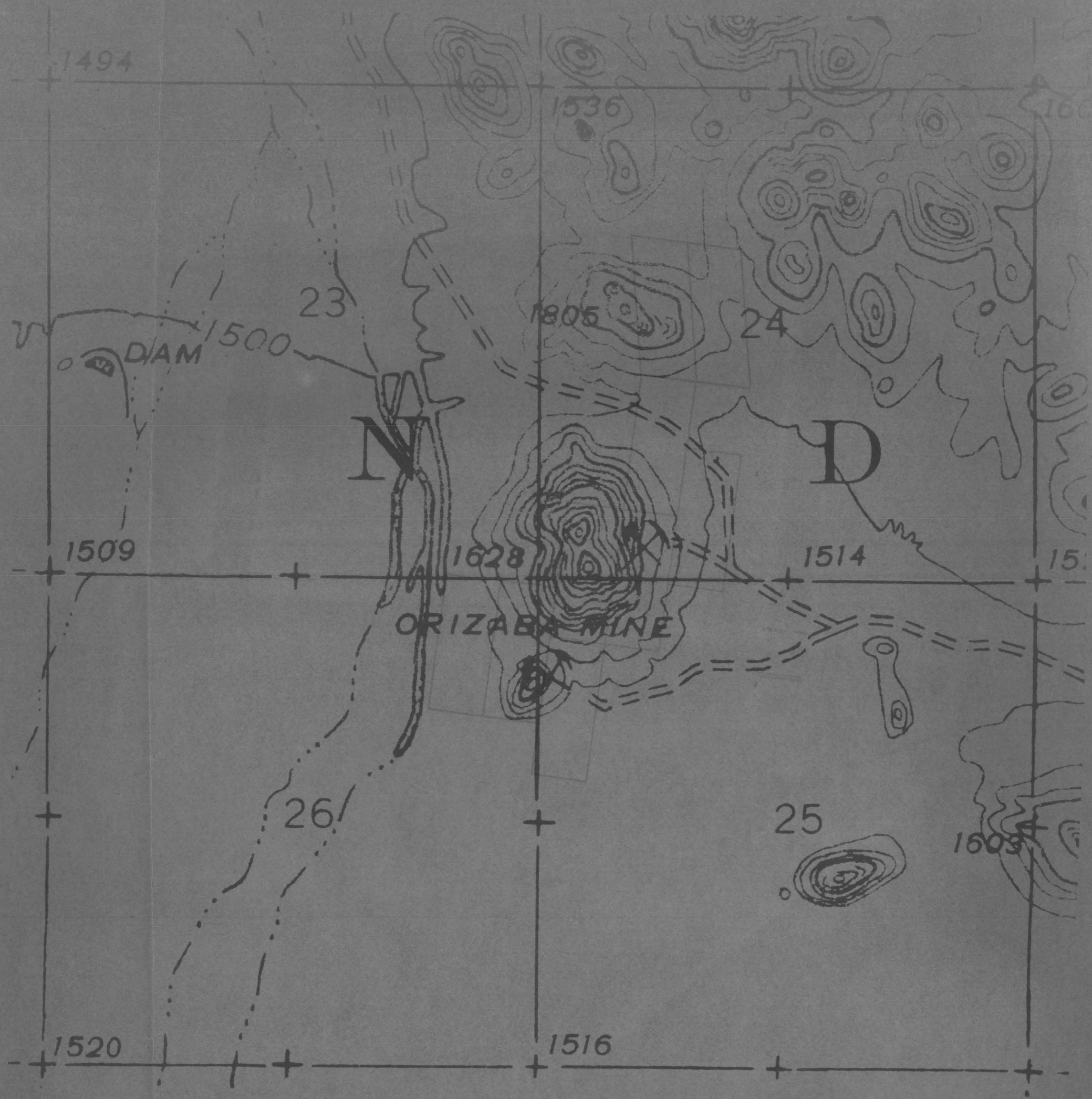
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BEFORE FIELD COMPLETION

This is a copy of a U. S. Geological Survey manuscript compiled by photogrammetric methods. It does not include information to be obtained during field completion surveys.

N 24 00 00 W 112 00 00
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Contour edge joined by Oxley 2/10/70 wjh

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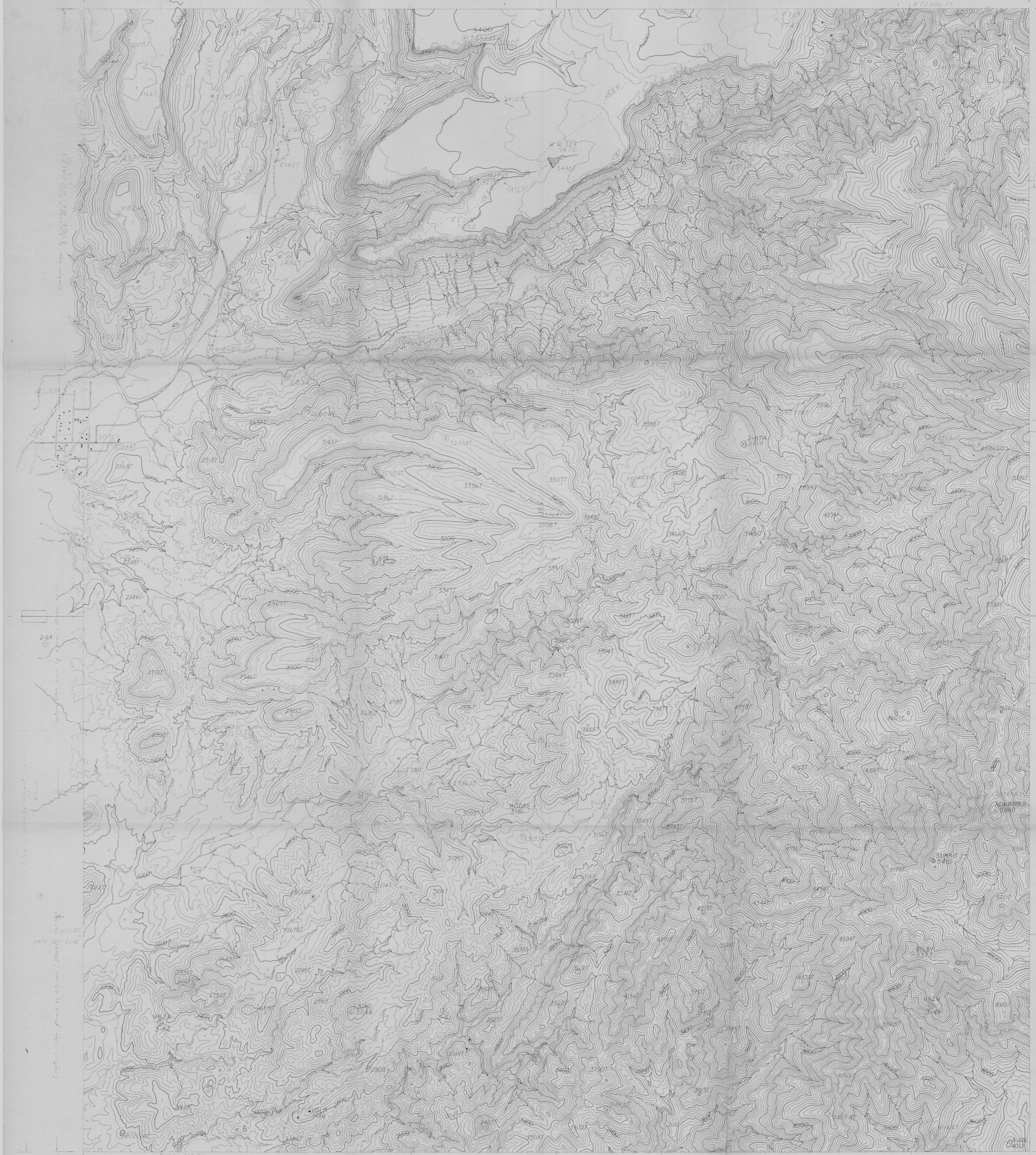

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Contour edge joined by Oxley 2/10/70 wjh

Contour edge joined by Starkel 1-27-70 wjh

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CONTOUR EDGE JOINED BY E. ALBERTSON, 1-23-70

BASE & WOODLAND EDGE JOINED BY E. ALBERTSON, 1-23-70

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Contour Edge Joined by Starkel 1-27-70 wjh

Edge Joined by Starkel 1-27-70
&
Kitrina

10/64

TIE N EDGE of DAILY

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BUMBLEBEE SE, ARIZ
N 24 00 00 W 112 00 00
SCALE 1 : 24 000 / 7.5 C.I. 40'
CONGRESS PROJ

BEFORE FIELD COMPLETION

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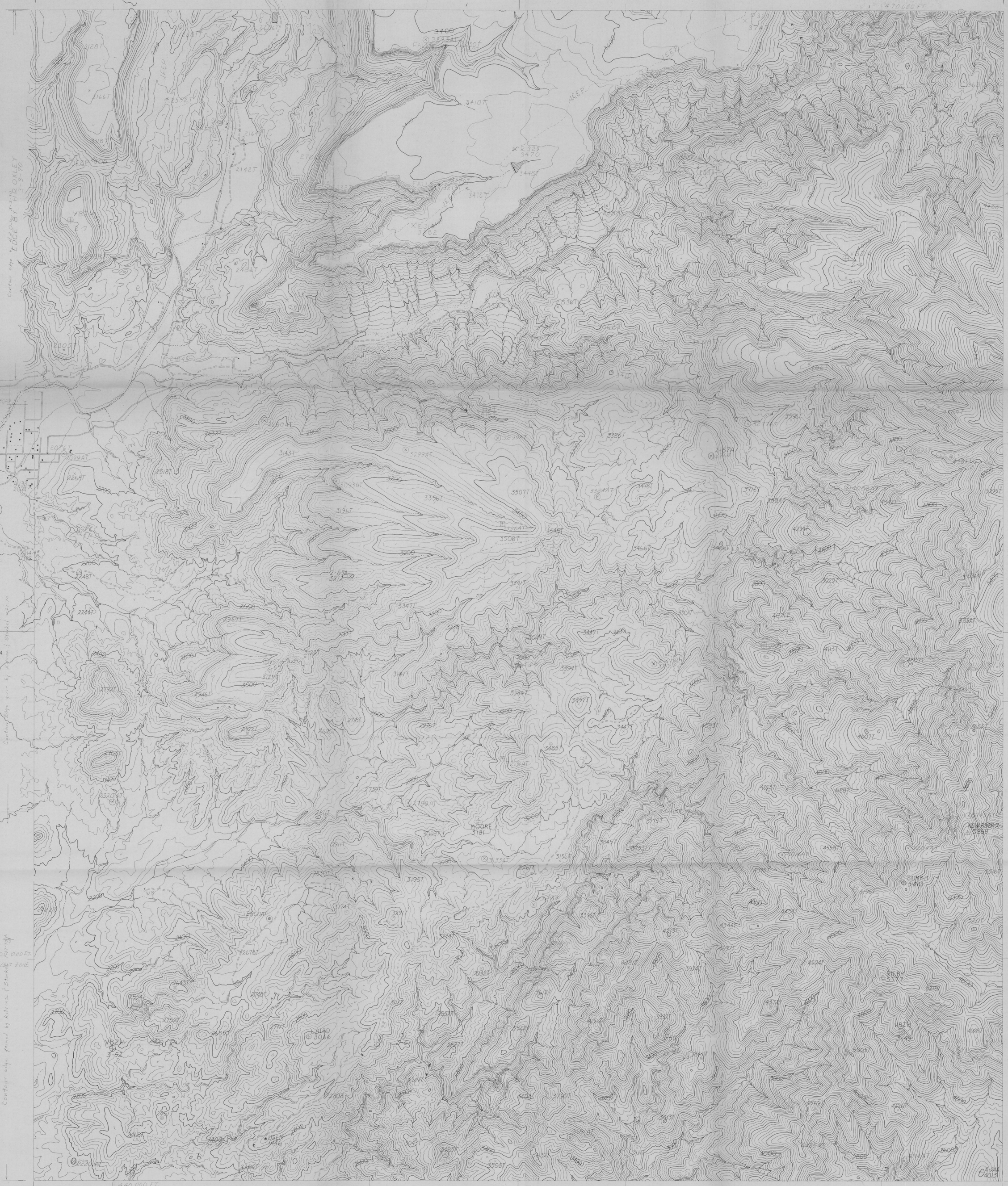

CONTOUR EDGE JOINED BY E. ALBERTSON, 1-23-70

BASE & WOODLAND EDGE JOINED BY E. ALBERTSON, 1-23-70

Contour Edge Joined by Starkel 1-27-70

Edge Joined by Starkel 1-27-70 & Kitrina

THE N EDGE OF DAILY

BUMBLEBEE SE, ARIZ
N 24 00 00 W 112 00 00
SCALE 1:24 000 / 7.5 C.I. 40'
CONGRESS PROJ.

Geophysical Investigations

Orizaba Mine Vicinity
Maricopa County, Ariz.

for
Demco Corporation

July 1963

GEOPHYSICAL INVESTIGATIONS

Magnetic, Self Potential and Induced Polarization

ORIZABA MINE VICINITY

Maricopa County, Arizona

COPY

for

DEMCO CORPORATION

July 1963

by
HEINRICHS GEOEXPLORATION COMPANY
P. O. Box 5671 Tucson, Arizona

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Maps	In Pocket
Magnetic Profiles	
Magnetic Contour Plan	
Self Potential Profiles	
Self Potential Contour Plan	

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INTRODUCTION

Subsequent to a reconnaissance survey in May 1963 of the Orizaba Mine area, Sections 29, 30, 31,32, T 8 N, R 3 E, Maricopa County, Arizona for Messers Dannelley, Ellison and Meacham of the Demco Corporation, Phoenix, Arizona owners of the property, Heinrichs Geoexploration Company of Tucson, Arizona in late June and early July of 1963 completed field investigations by three geophysical methods on part of the mineralized zone and it's enclosing environment. This report summarizes the methods used with conclusions and recommendations drawn therefrom.

CONCLUSIONS

The geophysical techniques employed have delineated a zone of strong sulfide mineralization striking approximately N 30° E. The effects of this zone are strong across a variable width of 200 to 600 feet with sharp boundaries on the northwest and southeast sides. Geologically it is known to be a shear zone, but as would be expected, geophysically it shows as a dike or vein like feature. At least three mineralized shears in the zone are known from surface geologic mapping, and also pretty well reflected in the self potential results, although the fifty foot station spacing would have an integrating effect for several

separate and narrow bodies. The induced polarization dipole spacing used would tend to integrate all such in a narrow zone into one. In other words, there could well be narrow bodies of highly massive sulfide separated by bodies of rock carrying much lower sulfide content and the geophysical data could tend to integrate it as a homogeneous mass of intermediate sulfide content. It is not cut off either to the northeast or southwest although the evidence indicates it may be either just about closed off to the southwest or has become suddenly deeper either due to faulting or plunge. A high sulfide content is indicated though there is no known method which can discriminate the amount of economic minerals present, if any, in sulfide environments. There is no depth cutoff determination from the work done. The self potential readings do not penetrate below the zone of presently active oxidation. The 250 foot dipole spacing used on all the induced polarization lines indicate sulfides to the maximum depth of penetration, or possibly about 400 feet. Line six was also run on a 500 foot dipole separation and shows sulfide still present at maximum depth of penetration, or about 800 feet.

The amount of apparent sulfide, in conjunction with some small past production and reported copper values indicate good potential for a mine.

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RECOMMENDATIONS

1. The necessary step of getting control of more land should be initiated immediately. This should involve not only more to the east, but also more laterally to allow for dump, mill, office and general mining activity repair and storage facilities, etc. Excess land holdings can always be reduced, while the opposite of always being able to get more is not true. For lateral land control, a suggestion is that the claims should cover at least one half mile on each side of the mineral zone. A rapid investigation should be made along strike to determine it's possible extent. This can be done in a three fold manner--fly over the area to get a panoramic view of formations and alteration, then ground check the observed geology, and finally some reconnaissance geophysics near the apparent limits. Possibly the land presently held covers the southwestern extremity, but the northeastern extremity is critical and any available land in that direction should be the first brought into the holdings.

2. Geologic study and field investigations should be initiated to attempt to learn the mineralizing source. If there is a mineralized intrusive anywhere in the district it could be of far greater importance than the shear zone presently being evaluated.

3. Drilling will, of course, eventually be necessary. Enough information is now at hand to select some drill targets

and drilling could proceed while other geologic investigations and land acquisitions are in progress, or, on the other hand, it can be held in abeyance. One obvious drill site is near the old mine, as it has had production and there are strong geophysical indications of sulfide there. If a map of the old underground workings is available, a site can be selected from which both a vertical hole into reported mineralization can be drilled as well as an angle hole southerly to pass into the hill in the vicinity of Line 6 at depth below stations 2, 3 and 4.

Another drill site would be in the creek near Lines 10 and 11 with an angle hole southerly to pass at depth into the hill on the south side of the above lines. Rather than trying to intersect the zones normal to the dip, initial holes should be about a 45° angle to gain depth rapidly. Drillers should be prepared to stay with any depth hole up to a first maximum of 1,000 feet vertically, or until the shear zone has been definitely penetrated in angle holes. Drill holes should collar NX and this size held as long as practical before necessary reductions, if such should occur. Provision should be made to catch, dry and save sludge as a precaution against poor core recovery as well as for spot assay checking against core sampling. Unless cost was to be considerably less, churn drilling is not recommended.

4. Eventually, if things look encouraging from the initial drilling, do more geophysical surveys over possible extensions.

For detail, S. P. and I. P. are adequate, but a close check should be kept to see if any possible magnetic associations occur in other parts of the district. An occasional single magnetic profile will be adequate for this.

INTERPRETATION

1. Magnetics. This method gave rather disappointing and inconclusive results. There is magnetic variation in the area, but its relation to known mineralization and ore occurrences was not demonstrated. Possibly a survey with an instrument of higher sensitivity might give more satisfactory results but its use is not recommended at this time because of the possibility and/or probability that the only magnetic minerals associated with the sulfides are random small scatterings and pockets of pyrrhotite and magnetite which in some cases are fresh and unaltered and in other cases leached and altered resulting in a picture of erratic highs and lows causing confusion in the interpretation. In a broad sense, there is a magnetic low over the exposed and altered surface of the shear zone with a weak high paralleling it to the north where little or no mineralization is exposed. In as much as the shear zone and apparent zone of interest dips steeply to the north, this magnetic high could possibly be an expression of the sulfide zone at depth, greater than any depth of alteration and oxidation and with any contained magnetic minerals also unaltered. However, since

diorite is exposed to the north as well as other schist layers containing, in places, outcrops of magnetite, it is more probable that the magnetics are reflecting this rather than the first hypothesis above.

2. Self Potential: This method gave very satisfactory results always keeping in mind that its use is limited to oxidizing sulfides. A zone of self potential low with sharp boundaries was outlined. This zone is cut off to the north, west and south but quite open to the east. A range of greater than 450 millivolts was read with a zone of apparent strong interest centered on and around the exposed surface of the shear zone. Self potential results would indicate that either the sulfides are cut off to the west in the vicinity of Line 4 or that north-south faulting has resulted in the ground lying west of here being down-dropped below the zone of active oxidation. To the east, there is no indication that the sulfide zone is decreasing in any fashion - width, depth, intensity of oxidation.

The greatest intensity of self potential so far found is on Lines 6 and 10, in each case on a hill with some of the best exposed geology and in the case of Line 6 quite near the old mine workings. There are several parallel zones, the strongest and widest being the center one. The zone to the north is narrow. The one to the south merges to the east with the center one. Strictly from the self potential data, the inference must be

drawn that there are a series of larger and more massive sulfide zones interconnected by weaker sulfide zones. However, it is possible that due to variable shearing intensity and/or associated ground-water conditions, oxidation is more active in some spots than in others.

3. Induced Polarization: This method also gave very satisfactory results with the plots of the data showing almost classic or text book curves for this type of deposit. All four lines showed strong anomalism centered on the shear zone and self potential low, with the exception of Line 2, the most westerly line run, which is the only one that does not have a corresponding self potential anomaly, thus suggesting the possibility of non-oxidizing and/or deeper sulfide.

The anomalism increases in intensity to the northeast but the width remains relatively constant, namely 500 to 600 feet. This width is an integrated value since the I. P. spread technique used was not designed for defining a series of closely spaced narrow sulfide zones.

This anomalism must be classified as strong, even on Line 2 where the effects are the weakest. These effects are undoubtedly due to sulfide mineralization becoming increased to the northeast to Line 14 where they are strongest.

Confining the zone of anomalism is a resistivity low which adds to the interest of the induced polarization results. This

COPY

resistivity low is probably the result of the alteration of the rocks in the shear zone during mineralization, the presence of the sulfides themselves and their subsequent oxidation to soluable and highly conductive materials. Just as the I. P. effects increased to the northeast, this resistivity low becomes lower to the northeast making the ground northeast of Line 14 very interesting.

A steep north dip is indicated on these lines. However, the dip of a nearly vertical feature is very difficult to detect with the induced polarization spread technique used. The area of strongest response in the mineralized zone itself appears to hug the foot wall of the shear on all five lines.

On all of the spreads, there is no indication of a bottoming out of sulfides or even a reduction in percentage.

TECHNIQUES AND PROCEDURES

Upon the recommendation of GEDEX, Demco surveyed a grid of eleven lines, each 200 feet apart, and stations on 50 foot spacings, to form a square 2,000 ft. by 2,000 ft. with a center base line along the strike of the mineralization. These stations were occupied and readings taken using a Jalander vertical intensity magnetometer reading to 10 gamma accuracy. Most readings were taken during the warmer middle hours of the day to minimize temperature and diurnal drift. Corrected readings were

plotted in both profile and contour form and are appended to this report. The measured gamma quantities are local variations in magnetic polarization and susceptibility of the immediate geologic environment and an arbitrary base level is assumed without regard to the total earth's field. In interpretation procedures either magnetic highs or lows or even slope intervals may be significant.

Self potential readings were taken at most of the same stations of the grid. The field operation was accomplished by a man reading a Leeds-Northrup millivolt potentiometer set at the center of each line and hooked by wires to two porous pot electrodes, one stationary by the meter and one moved from station to station along the line. Ground water and oxygen in contact with sulfide minerals set in force a chemical oxidation process that produces an electrical current, often likened to a battery. Porous pots set into the ground act as battery terminals, and the potentiometer reads the minute voltages being generated in the ground. The readings obtained were also plotted both in profiles and contour plan and appended. Generally, the more negative the values, the more active the zone.

Induced Polarization surveys utilizing a co-linear dipole-dipole or Eltran electrode configuration were made over four lines 2, 6 and 10 of the surveyed grid, and the equivalent of 14 if the grid were to be extended to the east. Briefly, the

technique consists of a sender operator sending monitored and controlled current at two different frequencies into the ground from a portable generator through wires to equally spaced electrodes. A receiver operator measures the voltage received at intervals along the line. Depth and lateral penetration of the current are a function of the equally spaced electrodes and receiver positions. In this case, where the zone to be investigated is a relatively narrow and steeply dipping feature, the short 250 foot interval, or dipole spacing, was used on all lines to obtain optimum interpretable data and degree of resolution. On Line 6 a second profile was run using 500 ft. dipoles to see the results of greater depth penetration notwithstanding consequent loss of detail due to integration effects of greater volumes of surrounding earth in relation to the quantity contained in the zone of interest.

Frequency domain equipment, as differentiated from some which operates in the time domain (pulse polarization) was used. Apparent resistivities were measured at 0.05 and 3.0 cycles per second on a dipole-dipole electrode configuration so as to obtain the three quantities, direct current resistivity (rho DC over 2pi) percent frequency effect (PFE), and an arbitrary term called "metallic conduction" factor (MCF), necessary for interpretation. The percent frequency effect is simply the percentage difference in apparent resistivity between the lower and the higher frequency

of measurement. The MCF is obtained by multiplying the PFE by 1,000 and dividing by the DC resistivity.

These values are plotted on sectional data sheets with the following conventions: the plotting points are established by the intersection of a diagonal from the center of the receiving dipole in order to give a two-dimensional effect. The resistivities are plotted on the upper half of the data sheets with the PFE values as superscripts. The MCF values are plotted on the lower half. Both the resistivities and the MCF values are contoured schematically on a logarithmic interval as an interpretational aid.

The principle upon which the induced polarization method operates is that metallic (electronic) conductors embedded in an electrolytic conducting medium behave as capacitors and therefore offer less impedance to an alternating current than to a direct one, thereby giving a frequency dependent resistivity. Most materials exhibiting a metallic luster give a frequency effect, including the metallic sulfides, magnetite and graphite. In addition to metallic materials, certain clay minerals exhibit the effect slightly.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

J. W. Marlatt

C. S. Ludwig

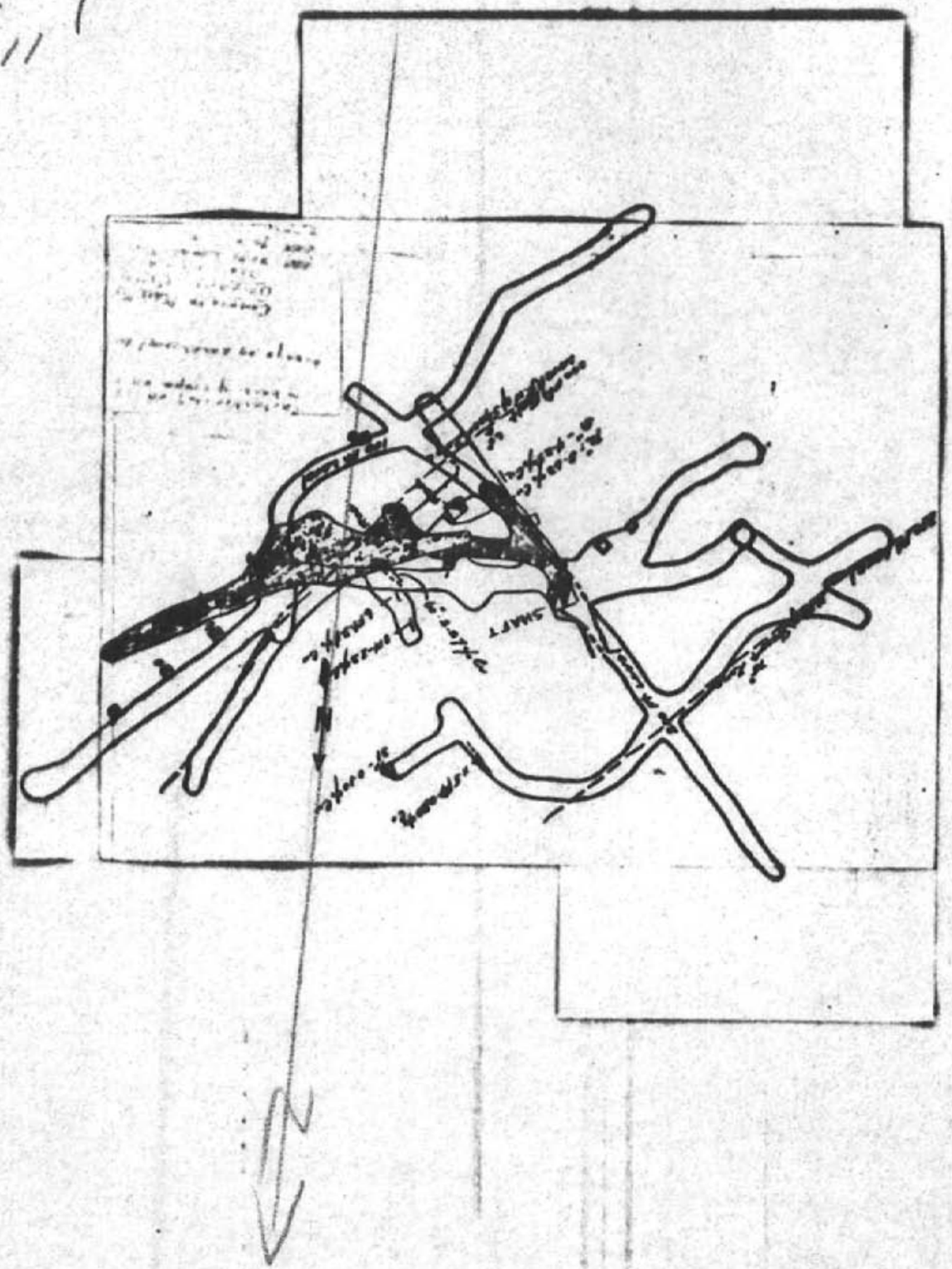
Walter E. Heinrichs, Jr.

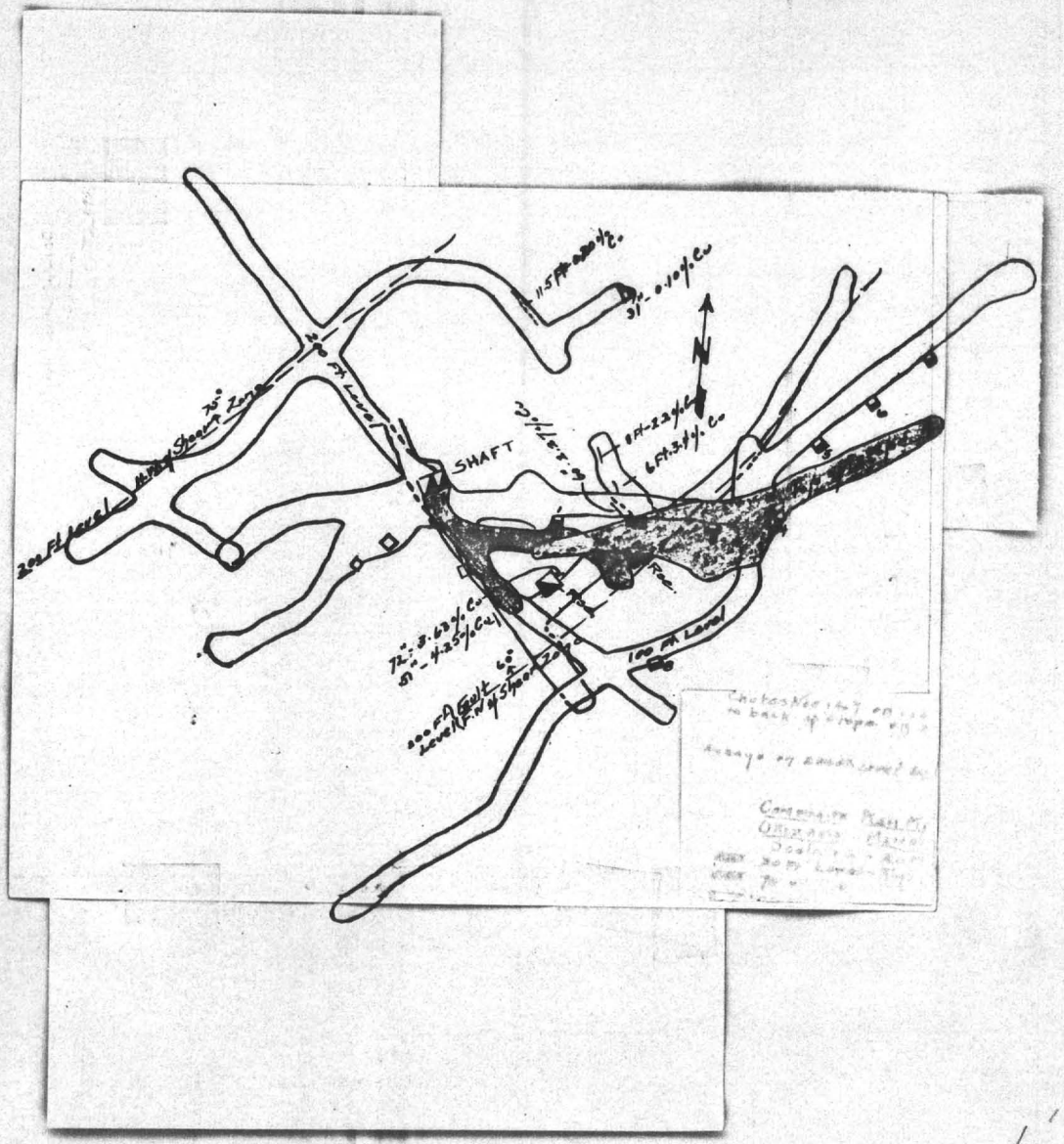
Registered Professional Engineer
CERTIFICATE EXPIRES DEC. 31, 1963
WALTER E. HEINRICHS
ARIZONA, U.S.A.

July 12, 1963

COPY

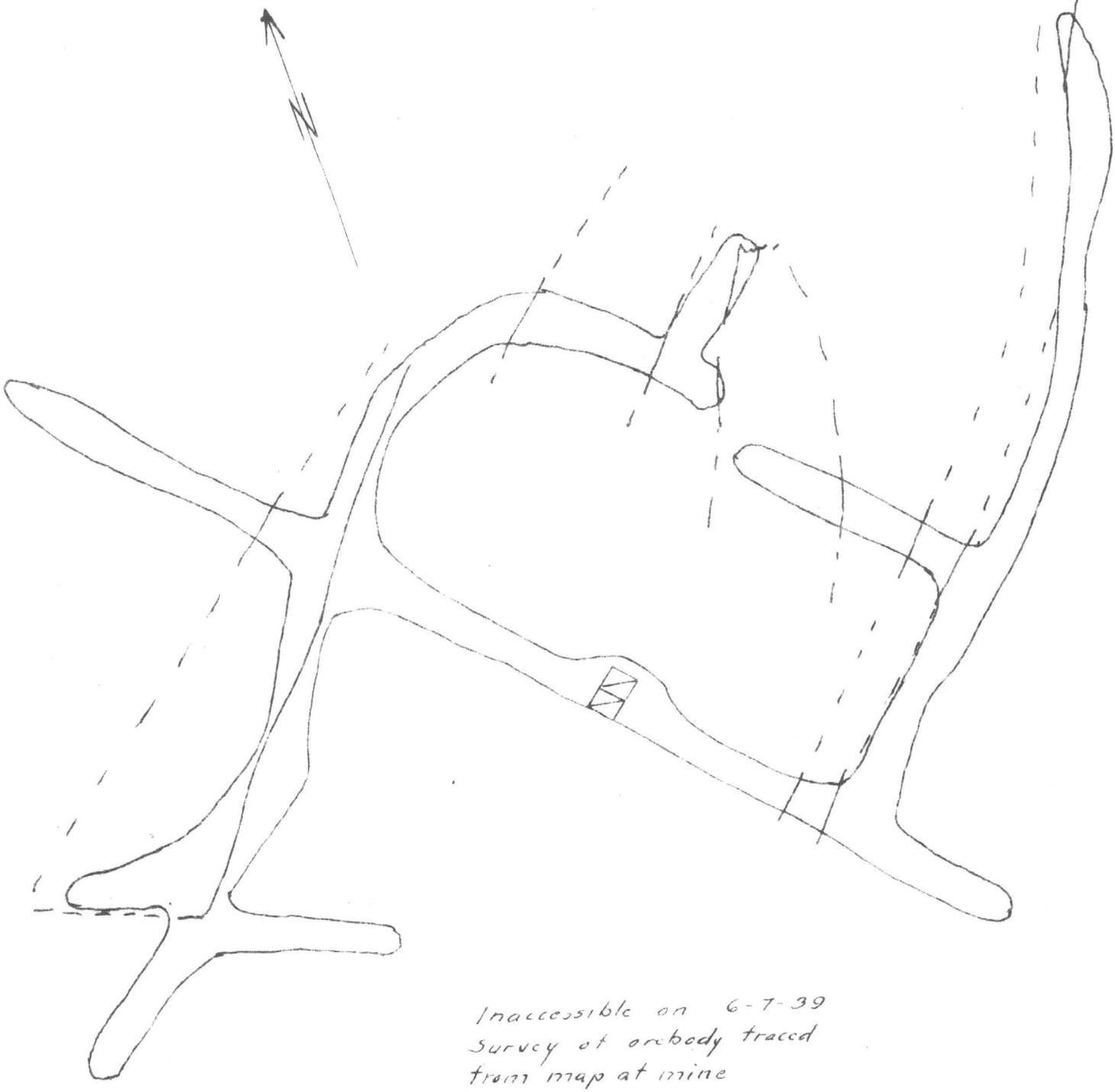
1" = 100'





1" = 44.4'

200 Level
1" = 20'

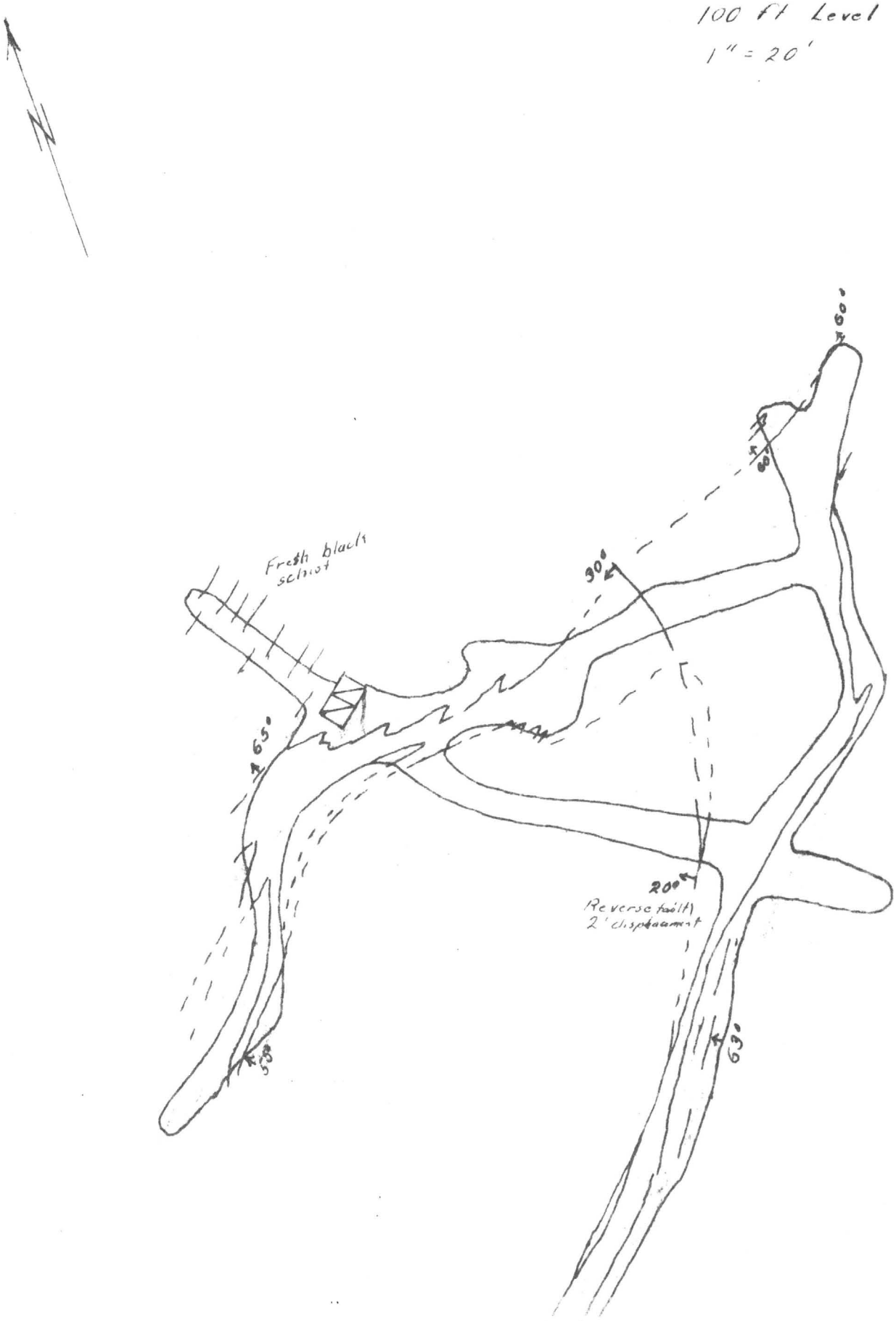


Inaccessible on 6-7-39
Survey of orebody traced
from map at mine

Copy given to E.O.L.
14 Jan 1966

100 ft Level

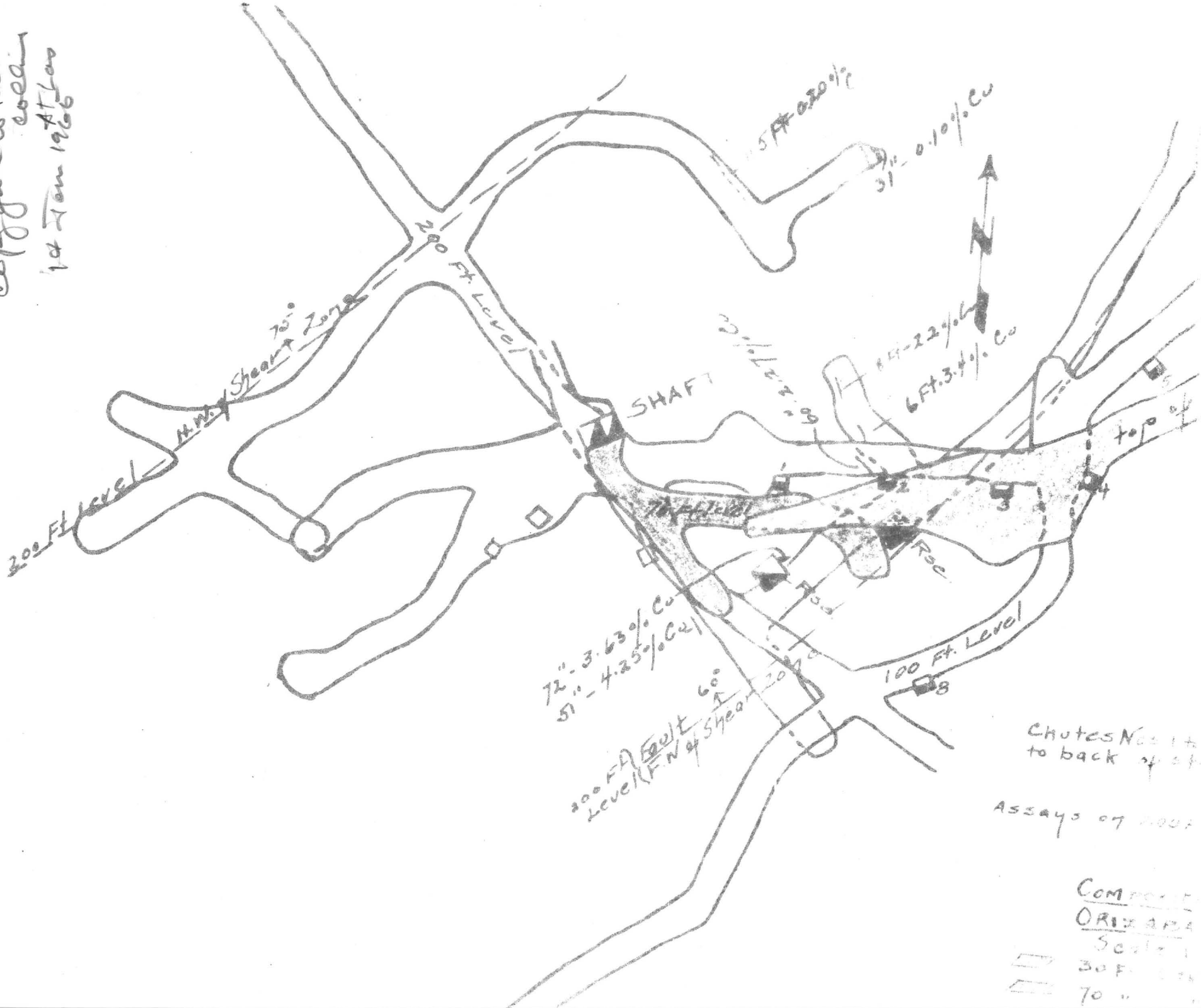
1" = 20'



Copyright to E. Bacon

Water 66

Copy of Map to Bob Cordain
At Lake
1st Jan 1966



HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA, 85703. P.O. BOX 5671. PHONE: (AREA CODE 602) 623-0578

January 18, 1965

Mr. Fred Elliston
Demco Corporation
3433 N. 35th Ave.
Phoenix, Arizona

Dear Mr. Elliston:

This is pursuant to our verbal agreement of 14 January 1965 between Fred Elliston of DEMCO Corp. and E. Grover Heinrichs and John W. Langs of Heinrichs Geoexploration Company that Heinrichs Geoexploration Company will serve as agent for Fred Elliston, DEMCO, et. al., in regard to representing their interest in the Orizaba Mine and area and related claims, located approximately in Sections 20, 29, 30, 31, and 32, T 8 N, R 3 E, Maricopa County, Arizona.

We hereby refer Bill Collins, District Geologist of Atlas Corporation, who is interested in examining the property, and may be getting in touch with you.

Very truly yours,

HEINRICHS GEOEXPLORATION COMPANY

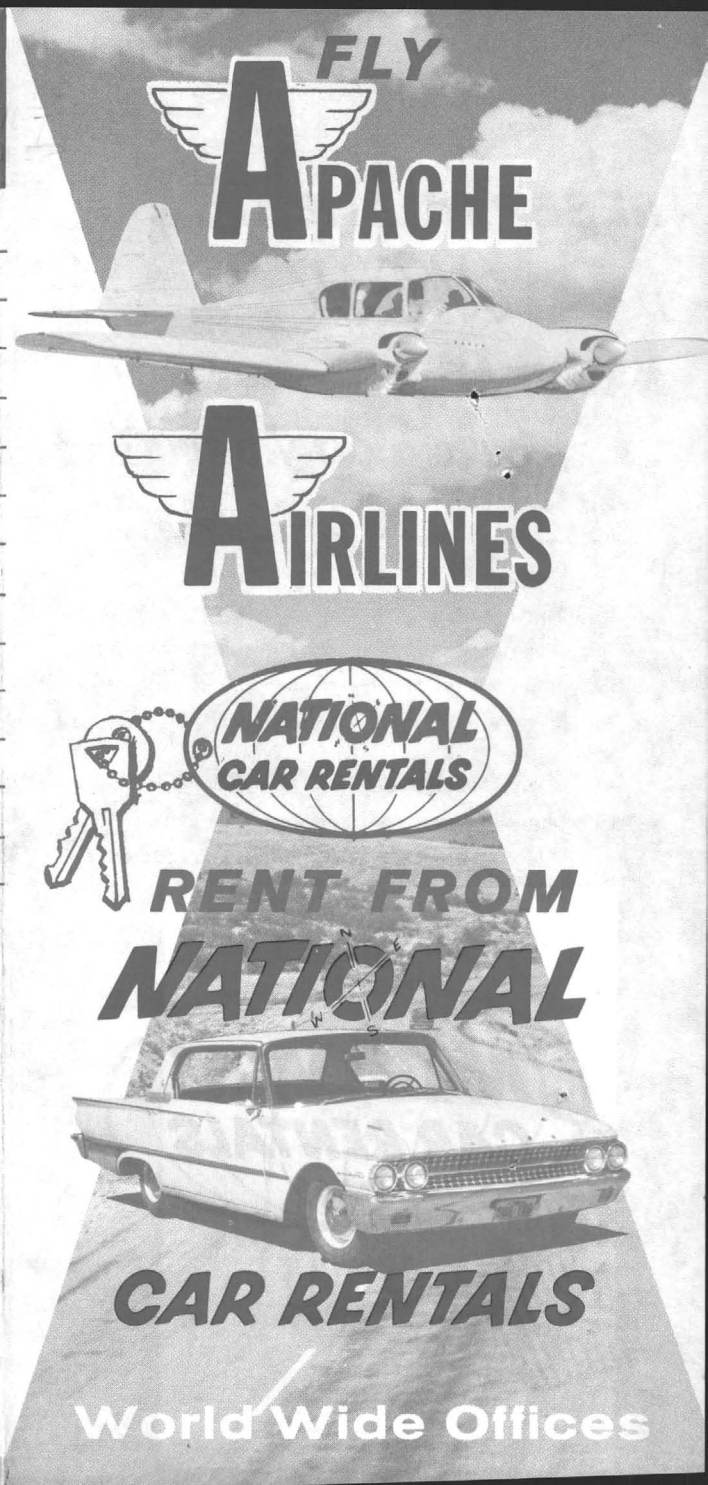
John W. Langs

pr

APPOINTMENTS

PLACE	DATE/TIME

NOTES



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3314 Form

Passenger Receipt

(Not Good For Passage)

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ONE WAY ONLY

(Either Direction)

Nº 3677

Apache Airlines

Pass Name J. W. MARLATT

GTR # 98 lbs baggage

FARE $10.00

TAX .50

TOTAL $10.50

charged to office

Form of Payment

CASH	CHECK	ATP

Agent

Sold Subject to Traffic Regulation

Job. D. Amrell

ALL

APACHE AIRLINE

FLIGHTS OPERATE ON LOCAL TIME

Airport Check-in	Time
Airport Check-in	Time
Airport Check-in	Time

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From	Tucson	Phoenix	Ft. Huachuca
Tucson	—	$10.00	$8.00
Phoenix	$10.00	—	$18.00
Ft. Huachuca	8.00	18.00	—

Plus 10% Federal Tax

6 c State

~~208 WASHINGTON~~ STREET
BOSTON

5/15/70

Dear Walter,

We do not have the papers Russell mentions, so I assume you have them.

Would you please return them; no doubt keeping a copy.

Yours in haste

Quincy

Russell Associates WESTERN DIVISION

Consultants - Contractors - Exploration - Engineers - Geologists

4426 EAST 14TH STREET
TUCSON, ARIZONA 85711
PH. 602 - 325-8902

RECEIVED
MAY 14 1970

H. L. T.
SECS
A C K.
DATE
BY

May 12,1970

Mr. Q.A.Shaw
Rm.322
60 State St.
Boston,Mass.
02109

Dear Mr. Shaw;

Recieved the pictures today, No notes though! Glad to know that you made it home.

The information that I gave to you and Walt Re the Orizaba has not been returned, I do need it.

The next time that you are in the area please let me know, I have an option on the Pacific Copper (ten patented claims) and own by right of location 36 adjoining claims, I will send to you a prim report as soon as it is ready.

Let me hear from you once in awhile.

Sincerely,

Jerry

G.A.Russell

30 So. Main St.
P. O. Box 1889

DUPLICATE

Jacobs Assay Office

Registered Assayers

PHONE Main 2-0813

Certificate No. 56368

Tucson, Arizona, Oct 30 1963

Sample Submitted by Mr. Heela Mining

SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore *	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Per cent Wet Assay	Per cent Wet Assay
DEM-1	0.03	$ 1.05	0 4/10	3 77/100	—	0 2/10	

Dump Sample heavy sulfide Grizaba Shaft

* Gold Figured $35.00 per oz. Troy

Charges $ 5.00

Very respectfully,

Ben Ochoa

Orizaba S.P. 6/25/63

Line 6 Sta. on 50'

South Sta.	Read.		Base	North Sta.	Read.
Base 2916	+0.005				
1 S	0.000		Base	0 N/S	+0.005
2 S	-0.160			1 N	+0.102
3 S	-0.199			2 N	+0.118
4 S	-0.130			3 N	+0.114
5 S	-0.060			4 N	+0.122
6 S	-0.017			5 N	+0.137
7 S	+0.054			6 N	+0.143
8 S	+0.074			7 N	+0.101
9 S	+0.093			8 N	+0.157
10 S	+0.106			9 N	+0.172
11 S	+0.087			10 N	+0.184
12 S	+0.063			11 N	+0.189
13 S	+0.205	?		12 N	+0.191
14 S	+0.172			13 N	+0.200
15 S	+0.133			14 N	+0.227
16 S	+0.187			15 N	+0.208
17 S	+0.205			16 N	+0.216
18 S	+0.200			17 N	+0.214
19 S	+0.172			18 N	+0.217
20 S	+0.168			19 N	+0.216
2 S	-0.156	Repeat		20 N	+0.218
1 S	-0.100	"		0 Base	+0.0044 Repeat
0 Base	+0.005	"			

All 30-40 mm to hi

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LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

West on Base Line

Sta	Read.
BL6	+0.0042
BL5	+0.016 & -0.046
BL4	+0.067 & - a/m.o
BL3	+0.183
BL2	+0.190
BL1	+0.140

6/26/63

East on Base line

Sta.	Read
BL6	+0.005
BL7	-0.072
BL8	+0.132
BL9	+0.026
BL10	-0.047
BL11	-0.093

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6/26/63

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LINE 5

NORTH

Sta	Read			
	+0.008	BL5 to BL6		
1N	+0.110		1S	-0.057
2N	+0.162		2S	-0.064
3N	+0.137		3S	-0.074
4N	+0.107		4S	-0.050
5N	+0.107		5S	-0.038
6N	+0.091		6S	-0.009
7N	+0.121		7S	+0.040
8N	+0.174		8S	+0.064
9N	+0.193		9S	+0.085
10N	+0.199		10S	+0.100
11N	+0.201		11S	+0.100
12N	+0.202		12S	+0.120
13N	+0.202		13S	+0.125
14N	+0.212		14S	+0.137
15N	+0.209		15S	+0.194
16N	+0.204		16S	+0.190
17N	+0.205		17S	+0.187
18N	+0.211		18S	+0.182
19N	+0.178		19S	+0.188
20N	+0.205		20S	+0.193
		BL5 to BL6		+0.028
		BL5 to BL4		+0.087
		BL3 to BL4		-0.084

40 mm too low

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LINE 3

North Stn	Read		South	
		BL3 to BL4 →		−0.084
1N	+0.004		1S	−0.013
2N	0.0		2S	+0.010
3N	−0.004		3S	−0.006
4N	+0.006		4S	+0.003
5N	+0.015		5S	+0.014
6N	+0.074		6S	+0.008
7N	+0.042		7S	−0.017
8N	+0.040		8S	−0.003
9N	+0.039		9S	−0.009
10N	+0.047		10S	−0.014
11N	+0.047		11S	−0.005
12N	+0.041		12S	−0.001
13N	+0.044		13S	−0.015
14N	+0.050		14S	−0.003
15N	+0.048		15S	−0.014
16N	+0.049		16S	−0.007
17N	+0.050		17S	−0.002
18N	+0.050		18S	−0.005
19N	+0.043		19S	0.0
20N	+0.054		20S	−0.007
		BL3 to BL2 →		−0.038

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6/27

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BL-2

Between pots at base = +0.005

BL2 to BL3 = +0.047

Sta.	Read		
1S	+0.022	1N	+0.041
2S	+0.045	2N	+0.049
3S	+0.043	3N	+0.049
4S	+0.036	4N	+0.088
5S	+0.048	5N	+0.103
6S	+0.050	6N	+0.113
7S	+0.046	7N	+0.137
8S	+0.041	8N	+0.102
9S	+0.050	9N	+0.100
10S	+0.042	10N	+0.099
11S	+0.048	11N	+0.100
12S	+0.043	12N	+0.108
13S	+0.041	13N	+0.101
14S	+0.027	14N	+0.105
15S	+0.026	15N	+0.099
16S	+0.031	16N	
17S	+0.036	17N	
18S	+0.040	18N	
19S	+0.050	19N	
20S	+0.052	20N	

BL2 → BL1 + 0.046

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6/27

BL-1

North

Stei Road

1N	+0.017		1S	+0.008
2N	+0.015		2S	+0.054
3N	+0.062		3S	+0.042
4N	+0.081	10' so. Sa. Fonde.	4S	-0.002
5N	+0.090		5S	0.0
6N	+0.065		6S	-0.003
7N	+0.064		7S	-0.004
8N	+0.056		8S	+0.002
9N	+0.054		9S	+0.005
10N	+0.055		10S	0.0
11N	+0.059		11S	+0.003
12N	+0.057		12S	+0.017
13N	+0.063		13S	+0.020
14N	+0.063		14S	-0.012
15N	+0.058		15S	-0.025
16N			16S	-0.023
17N			17S	-0.017
18N			18S	+0.010
19N			19S	+0.019
20N			20S	+0.009

South

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LINE L
BL4

6-27

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BL4 → BL6 -0.085

Sta	Read	Sta	Read
15	-0.051	1N	+0.065
25	-0.007	2N	+0.110
35	+0.019	3N	+0.073
45	+0.035	4N	+0.077
55	+0.022	5N	+0.073
65	NONE	6N	+0.045
75	+0.021	7N	+0.104
85	+0.020	8N	+0.117
95	+0.018	9N	+0.120
105	0.0	10N	+0.124
115	+0.014	11N	+0.125
125	+0.020	12N	+0.129
135	+0.030	13N	+0.133
145	+0.046	14N	+0.143
155	+0.055	15N	+0.137
165	+0.063	16N	+0.142
175	+0.072	17N	+0.150
185	+0.080	18N	+0.144
195	+0.080	19N	+0.147
205	+0.085	20N	+0.147

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LINE 7

Stat 7-1S

6-28-63

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7-1S → BL 6(0) → 0.0 mv

North Stg	Read	South	
BL-0	-0.056		
1N	+0.074		
2N	+0.052	2S	-0.093
3N	+0.048	3S	-0.158
4N	+0.078	4S	-0.070
5N	+0.074	5S	-0.004
6N	+0.075	6S	-0.007
7N	+0.009	7S	+0.063
8N	+0.114	8S	+0.084
9N	+0.146	9S	+0.089
10N	+0.163	10S	+0.068
11N	+0.173	11S	+0.016
12N	+0.182	12S	-0.030
13N	+0.197	13S	+0.058
14N	+0.203	14S	+0.089
15N	+0.200	15S	+0.128
16N	+0.198	16S	+0.125
17N	+0.204	17S	+0.153
18N	+0.207	18S	+0.144
19N	+0.198	19S	+0.145
20N	+0.208	20S	+0.137

Line 7 (1S) → Line 8 BL-0 +0.063

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Line 8

Set at BL 8-0

6/28/63

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North		South	
Sta	Read		
1N	+0.020	1S	-0.022
2N	+0.042	2S	-0.059
3N	+0.045	3S	-0.109
4N	-0.019	4S	-0.142
5N	+0.005	5S	-0.097
6N	+0.009	6S	-0.038
7N	-0.092	7S	+0.017
8N	+0.036	8S	+0.011
9N	+0.078	9S	0.0
10N	+0.094	10S	-0.047
11N	+0.121	11S	-0.099
12N	+0.122	12S	-0.104
13N	+0.121	13S	-0.070
14N	+0.135	14S	+0.002
15N	+0.132	15S	+0.030
16N	+0.129	16S	+0.040
17N	+0.141	17S	+0.049
18N	+0.144	18S	+0.053
19N	+0.142	19S	+0.073
20N	+0.143	20S	+0.065

BL 8 → BL9 -0.050

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LINE 9

6/28

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South		North	
Sta	Read	Sta	Read
1S	+0.007	1N	+0.057
2S	+0.008	2N	+0.077
3S	-0.027	3N	+0.082
4S	-0.064	4N	+0.088
5S	-0.043	5N	+0.093
6S	+0.002	6N	+0.110
7S	+0.019	7N	+0.089
8S	+0.009	8N	+0.099
9S	0.0	9N	+0.133
10S	-0.065	10N	+0.147
11S	-0.098	11N	+0.156
12S	+0.015	12N	+0.161
13S	+0.069	13N	+0.168
14S	+0.080	14N	+0.170
15S	+0.088	15N	+0.180
16S	+0.106	16N	
17S	+0.101	17N	
18S	+0.107	18N	
19S	+0.105	19N	
20S	+0.109	20N	

BL9 → BL10 −0.059

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6/28

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LINE 10

South

Sta	Read
1S	-0.097
2S	-0.153
3S	-0.100
4S	-0.069
5S	-0.077
6S	-0.081
7S	+0.002
8S	+0.026
9S	-0.007
10S	+0.001
11S	+0.080
12S	+0.080
13S	+0.114
14S	+0.144
15S	+0.156
16S	+0.150
17S	+0.158
18S	+0.165
19S	+0.166
20S	+0.173

6/29

1S	-0.090

6/29/63

North

1N	+0.050
2N	+0.043
3N	+0.102
4N	+0.054
5N	+0.177
6N	+0.180
7N	+0.175
8N	+0.209
9N	+0.218
10N	+0.220
11N	+0.226
12N	+0.235
13N	+0.233
14N	+0.236
15N	+0.240

BL10 → 11-1/S -0.087

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Line 11
Set up at 1S

6/29

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South

Sta	Read
2S	+0.007
3S	+0.021
4S	+0.052
5S	+0.072
6S	+0.099
7S	+0.111
8S	+0.119
9S	+0.112
10S	+0.112
11S	+0.172
12S	+0.196
13S	+0.230
14S	+0.249
15S	+0.250
16S	+0.241
17S	+0.256
18S	+0.262
19S	+0.265
20S	+0.286

NORTH

0 M/S	+0.060
1N	+0.080
2N	+0.122
3N	+0.117
4N	+0.083
5N	-0.013
6N	+0.228
7N	+0.301
8N	+0.308
9N	+0.314
10N	+0.324
11N	
12N	
13N	
14N	
15N	

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LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

5/24/63

Hand Mag. Survey
Jalander Mag.

Oriziba Mine & vic.
Maricopa co., Ariz.

Inst. J.W.M.
Note keeper Fred Ellston
Location plotter Bob Dannelley

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LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

Sta	Scale	Read	Con.	Time	Info	
Basel	+1	81	810	8:40	G8B	
"	"	80	800	8:45		740
11+00S	"	86	860			800
STA 12		85	850	8:50		800
Sta 13		88	880			830
14		84	840			790
15		84	840			790
16		83	830			780
17		85	850	9:05		800
18		85	850			810
19		86	860			820
20		84	840			800
21		84	840			800
22		82	820			790
23		80	800			770
24		85	850			820
25		84	840			810
26		92	920			890
27		90	900			870
28		93	930			900
29		93	930			900
30		140 98	980	9:25		950
H 1		90	900	9:35		870
H 2		89	890			870
3		89	890			870
4		88	880			860
5		84	840			820
6		84	840			820
7		82	820			810
8		83	830			820
9		82	820			810

ORIGINAL COPR. 1919 BY J. C. PARKER

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

Line "G" S 30 E

Elv - 2910'

LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

Sta	Scale	Read	Corr	Time
10	+1	82	820	10:00
11		81	810	
12		78	780	
13		78	780	
14		77	770	
15		80	800	
16		80	800	
17		79	790	
18		78	780	
19		80	800	
20		82	820	
21		81	810	
22		85	850	
23		90	900	
24		87	870	
25		86	860	
26		82	820	
27		82	820	
28		84	840	
29		83	830	
30		75	750	
31		83	830	10:30
32		80	800	10:45
1		77	770	
2	↓	170	1770	
3	+2	70	2100	
4	+1	78	780	
5		81	810	
6		78	780	
7		79	790	
8	↓	82	820	11:05

No Diurnal Corr.

ORIGINAL COPR. 1910 BY A. G. PARKER

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

Base. 1 74 10:10

20' no of Sta 3

near Sta 9

℄ Line

LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

Sta	Scale	Read	Cor	Time
9	+1	85	850	
10		92	920	
11		88	880	
12		80	800	
13		80	800	
14		87	870	
15		91	910	
16		84	840	
17		131	1310	
18		103	1030	
19		77	770	
20		82	820	
21		86	860	
22		85	850	
23		80	800	
24		75	750	
25		77	770	
26		79	790	
27		78	780	
28		78	780	
29		79	790	
30		80	800	
31		79	790	11:15
32		80	800	
33		79	790	
34		80	800	
35		77	770	
36		76	760	
37		78	780	
38		82	820	
39		78	780	

No drawal corr.

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

ORIGINAL COPR. 1919 BY L. G. PARKER

@ G12 D

2775-3
2775-4
2724-
2734
2732
2728
2725
2725-1
20' No. of 2725-1
40' N/N of Cactus sta
Brown Sandy. in Creek
Sta G12L
20' So of G12 I
30' So of G12 J

SE Cor of Orig

LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

Sta.	scale	Read	Cor.		
40	+1	77	770		
41		78	780		
K 1		80	800	12:50	
K 2		80	800		
K 3		79	790		
H 17		79	790	12:55	
K 4		82	820		
" 5		79	790		
6		81	810		
7		81	810		
8		82	820		
9		77	770		
10		88	880		
11		81	810		
12		75	750		
13		78	780		
14		78	780		
15		77	770		
16		73	730		
17		74	740		
18		78	780		
19		74	740		
20		75	750		
21		75	750		
22		74	740		
23		73	730		
24		77	770		
25		77	770		

No adjusted cor.

TR. MKS. REG. U.S. PAT. OFF.

ORIGINAL COPR. 1910 BY J. G. PARKER

Base – 74 11:55
" 74 12:50

Line K
Sta 6 6C
" 6 6

Sure Susan Location

in creek below Smelter 400'
Red flag on road below Smelter
100' below above
200' " "
300' " "
400' " " opp. Conc Foundation
500'
600'
700'
800' " " opp Conc Foundation
turn in road
turn in road
100' below turn in road

LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

5/24/63

Self Potential Survey

Orizaba Mine & vic.
Maricopa Co., Ariz.

J.W.M.
Pottman & location
Fred Elliston
Bob Dannelly.

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

ORIGINAL COPR. 1950 BY J. C. PARKER

LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

First line
Near GCD

Base pot 0+00 on edge of road
Field pot switch on +. Field
pot wire on +

1+00 S — +0.072 mv.
2+00 S — +0.095 mv
3+00 S — +0.108
4+00 S — +0.078
5+00 S — +0.107

1+00 N — +0.094
2+00 N — +0.112
3+00 N — +.062
4+00 N — +.083
5+00 N — +.028

TR. MK. REG. U.S. PAT. OFF.
ORIGINAL COPR. 1919 BY J. O. PARKER
LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

S.P. Line 2

Base pot 0+00

1+00 S	− 0.118
2+00 S	− 0.097
3+00 S	− 0.017
4+00 S	+ 0.060
5+00 S	+ 0.097
1+00 N	+ 0.117
2+00 N	+ 0.111
3+00 N	+ 0.087
4+00 N	+ 0.119
5+00 N	+ 0.064
	+ 0.158

0+10 N in creek Sta 698

Going west from 0+00 on line 2 to 0+00 on line 1

1+00 W	+0.050
2+00 W	+0.024
3+00 W	+0.136
3+70 W = 0+00, 1st line	+.064

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ORIGINAL COPR. 1910 BY A. O. PARKER
LEFAX PHILADELPHIA 7, PA., MADE IN U.S.A.

(1)

ORIZABA Mine 6/25/63
For DEMCO
J. Lander MAG

	STA	SCALE	Read	CONV	Time	INFO
BASE A	A	+1	+86		11:25	
	A		+86		11:55	
BL #1.	0		+91		12:07	
	1		+94			
	2		+91			
	3		+89			
	4		+91			
	5		+90			
	6		+86			
	7		+87			
	8		+87			
	9		+83			
	10		+85		12:17	
	11		+85			
	12		+84			
	13		+85			
	14		+88			
	15		+85			
	16		+82			
	17		+80			
	18		+80			
	19		+85			
	20		+97		12:27	
BL #2	20		+85		12:30	
	19		+84			
	18		+83			
	17		+85			
	16		+80			
	15		+81			

Cont'd

6/25/63

(2)

Cont'd	STA	Scale	Read	Conv.	Time	Info
BL #2	14	+1	+80			
	13		+80			
	12		+81			
	11		+81			
	10		+81		12.21	
	9		+81			
	8		+85			
	7		+81			
	6		+81			
	5		+80			
	4		+80			
	3		+85			
	2		+83			
	1		+83			
BL #2	0		+84		12:50	
BL #1	0		+90		12:54	
BL #1	0		+90		1:09	
BL #1	21		+90			
	22		+83			
	23		+66			Slop.
	24		+75			+2=120
	25		+89			0.5
	26		+87			bin
	27		+85			
	28		+85			
	29		+85			
	30		+84		1:21	
	31		+85			
	32		+85			

cont'd

(3)

6/25/63

Cont'd	Sta	Scale	Read	Conv	Time	Info
BL #1	33	+1	+85			
	34		+80			
	35		+83			
	36		+85			
	37		+84			Div. contact
	38		+82			
	39		+84			
	40		+83		1:32	
BL 2	40		+81		1:36	
"	40		+81		1:52	
	38		+82			
	38		+82			
	37		+83			
	36		+82			
	35		+82			
	34		+84			
	33		+80			
	32		+84			
	31		+81			
	30		+81		2:02	
	29		+84			
	28		+85			
	27		+84			
	26		+90			Alluvium
	25		+85			"
	24		+85			"
	23		+85			Creek
	22		+85			"
	21		+85			
BL #2	0		+84		2:15	
"	0		+84		2:28	

(4)

6/25/63

	Sta	Scale	Read	Corr	Time	Info.
BL #3	0	+1	+90		2:34	
"	1		+85			
	2		+86			
	3		+85			
	4		+84			
	5		+80			
	6		+82			
	7		82			
	8		+80			
	9		+81			
	10		+82		2:48	
	11		+85			
	12		+80			
	13		+82			
	14		+81			
	15		+80			
	16		+80			
	17		+84			6' Fe. rebar
	18		+84.			
	19		+83			Form chng.
	20		+103		3:03	
BL. #4	20		+83		3:09	
	19		+81			
	18		+84			
	17		+82			16
	16		+82			
	15		+82			
	14		+81			
	13		+86			
	12		+85			

cont'd

(5)

6/25/63

	Sta	Scale	Read	Conv.	Time	Info.
BL #4	11	+1	+83			
	10		+82			6' Fe very heavy Fe.
	9		+79			
	8		+80			
	7		+80			
	6		+79?		Near →	No Sta Blurry
	5		+78			
	4		+80			
	3		+83			
	2		+80			
	1	-1	-130			Iron Pipe 10' west
	1	+1	+80			
BL-#4	0		+76		3:55	
Base A	A.		+86		4:12	
Base A	A.		+85		4:35	
BL #3	0		+91		4:38	
	21		+92			
	22		+90			
	23		+90			
	24		+91			
	25		+92			
	26		+92			
	27		+93			
	28		+88			
	29		+85			
	30		+85		4:45	
	31		+81			
	32		+84			
	33		+85			
	34		+83			

Cont'd

(E)

6/25/63

Cont'd.	Sta.	Scale	Read	Corr.	Time	Info.
BL #3	35		+86			
	36.		+83			
	37		+83			
	38		+82			
	39		+81			diorite contact
	40		+80		4:54	Grano Diorite
BL-#4	40		+81		4:59	Grano diorite
	39		+85			"
	38		+91			"
	37		+84			Diorite
	36		+85			Schist
	35		+88			"
	34		+102		No 2.	Sil. Dike
	33		+90			
	32		+90			
	31		+90		First No 1.	Large Sil Dike
	30		+91			
	29		+92		5:23	
	28		+92			
	27		+95			good struct.
	26		+96			
	25		+96			
	24		+92			
	23		+90			
	22		+85			
	21		+105		edge of old dump.	
	21-A		+90		10 ft.	E.
BL #4 Base	0		+91		5:33	
	A.		+86		5:36	

?? BL 3 probably ??

(7)

6/26/63

	Sta.	Scale	Read	Conv.	Time	Info.
Base A	A	+1	80		9:37	
	0		82		11:00	
	1		81			
	2		83			
	3		80			
	4		79			
BL-8	5		84		9:43	Start Line
8	6		84			
	7		84			
	8		83			
	9		86			
	10		82		9:48	
	11		85			
	12		83			
	13		84			
	14		85			
	15		82			
	16		82			
	17		80			
	18		74			
	19		79			
	20		85		10:07	Brown sch 10ft.
BL-9	20		78		10:12	S=75
9	19		135			Fake Dike
	18		85		01:18	S.J. Dike
	17		80			
	16		79			
	15		78			
	14		80			
	13		79			

cont'd

(8)

6/26/63

Cont.	Stg	Scale	Read	Conv.	Time	Info
BL-9	12	±1	79			
	11		79			qtz - Silste Dike
	10		80		10:18	
	9		79			
	8		79			
	7		82			
	6		79			
	5		79			
	4		80			
	3		78			
	2		75			
	1		79			
BL-9.	0		80		10:31	
Basch	A		80		10:52	
BL-8	21		81		11:01	
	22		82			
	23		85			
	24		90			F.W. N. Ortiz
	25		95			
	26		95			
	27		90			→ H.W. N. Ortiz
	28		85			
	29		80			
	30		80		11:08	
	31		80			
	32		79			
	33		80			
	34		79			
	35		78			
	36		79			No 2. Sil [illegible] outcrop

Cont'd

(9)

6/26/13

	Sta	Scale	Read	Conv.	Time	Info
BL-8	37	+1	75			
	38		95		30' S. of #8 Sil. Out	
	39		106		20' N. of	↑
	40		80		11:19	Diorite contact
BL-9	40	+1	88		11:21	
	39		97			
	38		80			
	37		80			
	36		81			
	35		82			
	34		82			
	33		80			
	32		80			
	31		80			
	30		79		11:38	
	29		82			
	28		79			
	27		80			
	26		81			
	25		90			
	24	+1	159		Creek	Fe
	24-A	+2	53			
	23	+1	83			
	22		78			
	21		78		Oriz. 15 10'	H.W. N.
BL-9	0		80			
BaseA	A		79		11:58	

(10)

6/26/63

	Sta	Scale	Read	Conv.	Time	Info
Base A	A	+1	80		1:14	
BL-10	0	+1	80		1:27	
	1		92		Heavy	Gossom
	2		85		Med.	"
	3		82		Light	"
	4		85		Med.	"
	5		81			
	6		82			
	7		81			
	8		81			
	9		82			
	10		82		1:44	
	11		82			
	12		80			
	13		78			
	14		70		Brown	Sandy
	15		70		"	"
	16		73		Fe & Sil Dike	
	17		117		Green Chl.	
	18		83		Dike Lays 20'S. Sil Fe	
	19		90			
	20		82		2:07	
BL-11	20		82		2:10	
	19		83		Dike Lays 20 N. Sil. Fe.	
	18		115		Dike Lays 20'S Sil. Fe	
	17		96			
	16		82			
	15		82			
	14		83		Brown	Sandy
	13		82		"	"

(11)

6/26/63

	Sta	Scale	Read	Comm.	Time	Info
BL-11	12	+1	80			Brown Sand
	11		85		40-50' wide	Diz. Fel. Sch. Dike
	10		84		2:20	
	9		85			
	8		83			
	7		85			
	6		85		Diz. Fel. Dik. S. Oxid. Veins	
	5		83			
	4		84			
	3		82			
	2		85			
	1		84			
BL-11	0	+1	83		2:32	
BL-10	0	+1	81		2:36	
BL-10	21		85			
	22		80			
	23		82			
	24		82			
	24½		95		Heavy Fe. Creek	
	25		83			
	26		80			
	27		80			
	28		80			
	29		95			
	30		82		3:12	
	31		80			
	32		79		Diorite Still	
	33		78		Diorite	
	34		79		Schist	
	35		85			

Cont'd

(2)

6/26/63

	Sta	Scale	Read	Conv.	Time	Info
BL-10	36	+1	85			
	37		80			
	38		80			
	39		80			
	40		81		3:21	Diorite
BL-11	40	+1	80		3:34	Schist
	39		75			
	38		78			
	37		80			
	36		79			
	35		79			
	34		85			
	33		85			Diorite Sch
	32		83			Diorite Sill
	31		85			
	30		83		3:42	
	29		80			
	28		81			
	27		85			
	26		85			Heavy Fe in Crack
	25		83			
	24		85			
	23		81			
	22		81			
	21		83			
Base A			79			

(13)

6/27/63

	Sta	Scale	Read	Comm	Time	Info
Basch.	A	+1	80		9:35	
BL-5	0		79		9:40	
	1		80			
	2		82			
	3		83			
	4		82			
	5		80			
	6		84			
	7		83			
	8		84			
	9		85			
	10		85		9:46	
	11		84			
	12		85		Sil Dike Leys N.	
	13		83			
	14		84		Brown Sandy	
	15		83		"	"
	16		85		"	"
	17		85		"	"
	18		84		"	"
	19		80		Fe Dike 25' N. 3' wide	
	20		82		Cent Sch	
					9:52	
B						
BL-6	20		80		9.55	Cent. Sch.
	19		80			"
	18		79			"
	17		81			"
	16		80		Brown Sandy	
	15		81		8' Fe. Dike, 8 ft. Shape	
	14		80			

Cont'd

(14)

6/27/63

	STA	Scale	Read	Corr	Time	Info
					Brown	Sandy
BL-6	13	+1	80			
	12		78			6' Fe Dike
	11		78			dk sch
	10		80		10:03	
	9		81			
	8		82			
	7		84			
	6		83			FW. S. of Z.
	5		83			Cu. Showing
	4		80			"
	3		80			"
	2		80			"
	1		85			Heavy Gossan
	0		76		10:16	
Base A	A		81		10:34	
SL-5	21	+1	+39		near old shaft	
	22		75			
	23		80			
	24		85			
	25		86			
	26		85			
	27		84		HW. North Orizaba	
	28		82			
	29		80			
	30		79		10:43	
	31		78			
	32		78		1-ST Sill Dike Lays 7'	N.
	33		80		Diabase sch	
	34		80		Diorite sill	

(15)

6/27/63

	Sta	Scale	Read	Conv.	Time	Info
BL-5	35	+1	97			2nd Sil. Dik. Lays 30' S.
	36		80			Chl. Sch.
	37		75			#3 Dik. Ca. Shows
	38		78			Diorite
	39		78			Dio.
	40		78		11:08	Gneiss Diorite Fe. Sch.
BL-6	40		112		11:12	Dik-10N.
	10+10' N.	1+1	210			+2=80
	39		79			
	38		80			
	37		80			#3. Dik. Lays 25' N. Ca. Shows
	36		83			
	35		85			#2 Dik. Sil. Ore.
	34		85			
	33		80			#1 Sil. Ore Dike
	32		80			Diorite Sill
	31		82			Dio. Sch.
	30		83		11:34	Schist
	29		83			
	28		85			
	27		85			
	26		87			
	25		87			
	24		87			
	23		87			Mineral Structure
	22		83			"
	21		73			"
BL-6	0		76		11:50	
BASCA	A.		80		11:51	

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6/28/63

	Sta.	Scale	Read	Corr.	Time	Info
Base A.	A	+1	85		8:30	
BL-7	0		82		8:32	
	21		85			
	22		95			
	23		91			
	24		95			
	25		93			Sch
	26		95			Diorite
	27		94			Sill white Sch 0+2.2'
	28		91			
	29		89			
	30		85		8:47	
	31		85			
	32		81			
	33		80			Diorite Sill
	34		80			Sil Dike #2
	35		80			
	36		90			
	37		81			#3 0+2 sch Cu. Dike 15'S.
	38		85			Dia. sch
	39		86			" "
	40		84		9:15	Diorite
BL-7	0		82		9:25	
	1		79		9:27	
	2		80			
	3		78			
	4		80			
	5		81			
	6		80			
	7		79			F.W. S. 0+12

(17)

6/28/63

	Sta.	Scale	Read	Corr	Time	Info
BL-7	8	+1	75		Non. Chl.	Min. Sch.
	9		80			
	10		81		9:43	Rec Dia Sill
	11		84		Brown	Sch. Sandy
	12		79		"	"
	13		80		"	"
	14		83		"	"
	15		80		"	"
	16		80		"	"
	17		82		Altered	Chlr. Sch.
	18		82		Altered	Sch. Carb.
	19		80			
	20		80		10:07 Dense	Chl.
BL-8	20	+1	81		10:10	Chl.
	19		79			
	18		75			
	17		79		Brown	Sandy
	16		81		"	"
	15		82		"	"
	14		83		"	"
	13		82			
	12		80			
	11		80		Diorite	Sill
	10		80		Dense	Chl.
	9		80		"	"
	8		81			
	7		81			
	6		82		FW.	S. Oriz
	5		79			
	4		79		10:37	
BL-7	0		79		10.39	
BesCA	4		81		10:45	

(18)

6/29/63

Line	STA	SCALE	Read	conv	Info	
11	18	+1	112		BL10	84
10	20		85			
9	18		91			
8	16		85			
7	15		89			
6	16		81			
5	19		81			
4	19		80			
3	20		107			
2	17		85			
1	16		84			
1	13		85			
1	11		81			
2	13		80			
3	13		82			
4	12		80?			
5	7		81			
6	9		79			
6	10		79			
7	10		80			
8	9		79			
9	9		80			
10	3		76			
11	0+1		81		BL10	82
BL	9		84			
9	2		90			
8	5		91			
7	1		79			
BL	6		80			
5	22		73			

INDUCED POLARIZATION - RECEIVER NOTES PA

Project: Deanco N30.8W Line: 1 - Spr. 1 - 5½ Int.Cal ate: 2/2/67

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Rec.	0.25-0.55 →		0.50-0.75 →			0.25-1.05 →				1.00-1.28 →		
~~Time~~ mac	100	70	300	30	10	100	30	10	3	30	10	3
DC-1	44.6 44.7	10.3 10.4	101 101	9.4 10.4	3.10 3.45	56.0 54.0	11.2 10.7	2.97 3.20	1.32 1.29	7.0 7.4	2.27	1.05
DC-2	45.9 45.9	9.3 9.3	100 100	10.8 9.6	3.45 2.96	58.0 55.7	10.7 11.3	3.20 2.88	1.29 1.30	7.4 6.9	2.13	1.02
Σ	90.6 90.6	19.6 19.7	201 201	20.2 20.4	6.55 6.51	114.0 113.7	21.9 22.0	6.17 6.08	2.62 2.59	14.4 14.3	4.40	2.07
DC-3	45.9	9.3	100	9.6 10.8	2.96 3.61	55.7 58.1	11.3 10.7	2.88 2.82	1.30 1.22	6.9 7.5	2.13	1.02
Dc-4	44.7	10.4	101	10.8 9.5	3.61 2.88	58.1 55.7	10.7 11.3	3.10 3.20	1.22 1.28	7.5 6.8	2.27	1.05
Σ	90.6	19.7	201	20.3 20.3	6.57 6.49	113.8	22.0 22.0	5.98 6.02	2.52 2.60	14.4 14.3	4.40	2.07
DC-AV	90.6	19.70	201	20.3	6.53	113.8	22.0	6.06	2.58	14.3	4.40	2.07
AC-1	40.1	8.95	87.0	8.80	2.88	49.0	9.15	2.61	1.19	6.3	1.93	.94
AC-2	40.0	8.90	87.0	8.80	2.88	49.4	9.13	2.62	1.19	6.3	1.93	.94
Σ	80.1	17.85	174	17.6	5.76	98.4	18.3	5.23	2.38	12.6	3.86	1.88
S. P.	+26.9	→	+43.0 →			+30.1 →				+16.0 →		
AC-N	.12	→	.17 →			.19 →				.17 →		
I.C.	52.0	→	52.0 →			52.0 →						

INDUCED POLARIZATION - RECEIVER NOTES PAGE 2

Project: Demco Line: 1-5 pr. 1-5½ Int.Cal Date: 7/2/63

Send	4-5	1-2	2-3	3-4	4-5		CAL	→	→	→	→	→
Rec.	→	1.25-1.55	→	→	→		1-2	→	→	→	→	→
Time ~~Rec~~	3	30	10	3	3		100	300	100	300		
DC-1	.58 .70	6.8 6.2	2.33 2.10	1.09 1.14	.62 .60		52.3	51.5	63.3	62		
DC-2	.70 .55	6.2 6.8	2.06 2.33	1.14 1.03	.64 .65		52.3	51.5	63.3	62		
Σ	1.26 1.25	13.0 13.0	4.39 4.43	2.23 2.17	1.30 1.25		104.6	103	126.6	124		
DC-3	.55 .60	6.8	2.20 2.26	1.03 1.09	.66 .68		52.3	51.5	63.3	62		
Dc-4	.60 .65	6.2	2.26 2.10	1.09 1.10	.62 .61		52.3	51.5	63.3	62		
Σ	1.25 1.25	13.0	4.46 4.36	2.12 2.19	1.25 1.29		104.6	103	126.6	124		
DC-AV	1.22	13.0	4.41	2.17	1.28		104.6	103	126.6	124		
AC-1	.59	5.90	1.98	.99	.61		51.8	51.5	61.8	61.5		
AC-2	.59	5.60	1.98	1.00	.60		51.8	51.5	61.7	61.5		
Σ	1.18	11.7	3.96	1.99	1.21		103.6	103	123.5	123		
S. P.	→	-0.6	→	→	→							
AC-N	→	.25	→	→	→							
I.C.	→											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 3

Project: DEMCO Line: 1 - Sp. 1 - N½ Int.Cal Date: 7/2/63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Rec.	0.25-0.50N →		0.50-0.75N →			0.75-1.0N →				1.00-1.25N →		
Time	100	30	300	30	10	300	30	10	10	100	30	10
DC-1	27.7	9.9	63	7.1	3.98	133	22.7	3.60	2.01	55.8	17.6	3.60
DC-2	27.3	9.9	63	7.1	3.82	133	23.0	3.56	2.06	56.5	18.3	3.46
Σ	55.0	19.8	126	14.8	7.80	266	45.7	7.16	4.07	112.3	35.9	7.06
DC-3	27.3	9.9	63	7.1	3.82	133	23.0	3.56	2.06	56.0	18.3	3.46
Dc-4	27.7	9.9	63	7.1	3.98	133	22.7	3.60	2.01	56.5	17.6	3.60
Σ	55.0	19.8	126	14.8	7.80	266	45.7	7.16	4.07	112.5	35.9	7.06
DC-AV	55.0	19.8	126	14.8	7.80	266	45.7	7.16	4.07	112.4	35.9	7.06
AC-1	24.0	8.95	59.0	6.8	3.63	128	20.7	3.27	1.98	53.9	16.6	3.24
AC-2	24.0	8.95	59.0	6.8	3.59	130	20.7	3.27	1.96	53.9	16.7	3.24
Σ	48.0	17.9	118	13.6	7.22	258	41.4	6.54	3.94	107.8	33.3	6.48
S. P.	+72.9 →		+22.3 →			+14.7 →				-4.1 →		
AC-N	High on 3 range .35 →					.20 →				.40 →		
I.C.	52.0 →											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 4

Project: Demco Line: 1-Spur 1-N½ Int.Cal Date: 7/2/63

Send	1-2	4-5	3-4	2-3	1-2		CAL	→		→		
Rec.	→	1.25-1.50N	→		→		2-3	→		→		
Time	10	30	30	3	3		100	300	100	300		
DC-1	2.23	19.4	8.1	1.69 1.73	1.10		52.3	51.0	62.5	62		
DC-2	2.17	18.8	7.0	1.54 1.57	1.02		52.3	51.0	62.6	62		
Σ	4.40	38.2	15.1	3.23 3.24	2.12		104.6	102	125.1	124		
DC-3	2.17	19.4	7.0	1.54	1.02 1.08		52.3	51.0	62.5	62		
Dc-4	2.23	18.8	8.1	1.71	1.08 1.03		52.3	51.0	62.6	62		
Σ	4.40	38.2	15.1	3.25	2.18		104.6	102	125.1	124		
DC-AV	4.40	38.2	15.1	3.24	2.11		104.6	102	125.1	124		
AC-1	2.15	18.1	7.1	1.53	1.03		51.8	51.0	61.7	61.8		
AC-2	2.11	18.1	7.1	1.55	1.03		51.8	51.0	61.7	61.5		
Σ	4.26	36.2	14.2	3.08	2.06		103.6	102	123.4	123.3		
S. P.	→	+12.9	→		→							
AC-N	→	0.3	→		→							
I.C.	→	52.0	→		→							

INDUCED POLARIZATION - RECEIVER NOTES

PAGE 5

Project: Demco Line: 1-Spr. 2-5½ Int.Cal _____ Date: 7/3/67

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Rec.	0.5-1.05	→	1.0-1.55	→	→	1.5-2.05	→	→	→	2.0-2.55	→	→
~~Time~~ Range	100	10	30	10	3	300	30	10	3	30	3	3
DC-1	22.0 21.8	4.66 4.78	20.8 21.2	4.46 4.56	1.60 1.43	63.0	12.2 11.4	3.35 3.40	1.47 1.30	6.2 7.1	2.11 1.65	.51 .79 .60 .81
DC-2	24.0 24.4	4.55 4.51	21.2 20.3	4.56 4.43	1.43 1.63	62.0	11.4 12.1	3.40 3.18	1.38 1.50	7.1 6.2	1.58 2.06	.72 .48 .60 .50
Σ	46.0 46.2	9.21 9.29	42.3 41.8	9.02 9.00	3.03 3.13	125	23.6 23.5	6.75 6.58	2.85 2.80	13.3 13.3	3.69 3.71	1.25 1.27 1.20 1.31
DC-3	24.0	4.55 4.51	20.3 21.4	4.43 4.25	1.67 1.39	62.0	12.1	3.18 3.57	1.47 1.52	6.2	2.08 1.60	.64 .60
Dc-4	21.8	4.78 4.63	21.4 20.2	4.68 4.78	1.39 1.69	63.0	11.5	3.57 3.20	1.40 1.28	7.1	1.59 2.08	.67 .52
Σ	45.8	9.33 9.34	41.6 41.6	9.41 9.07	3.06 3.08	125	23.6	6.75 6.77	2.87 2.80	13.3	3.67 3.68	1.36 1.32
DC-AV	46.0	9.29	41.7	9.04	3.07	125.0	23.6	6.71	2.83	13.3	3.69	1.29
AC-1	20.3	4.24	18.3	4.03	1.43	62.0	10.4	3.00	1.32	6.50	1.72	.61
AC-2	20.3	4.26	18.3	4.04	1.43	61.5	10.4	3.00	1.32	6.50	1.71	.62
Σ	40.6	8.50	36.6	8.07	2.86	123.5	20.8	6.00	2.64	13.0	3.43	1.23
S. P.	+74.4	→	+20.2	→	→	+11.4	→	→	→	-6.4	→	→
AC-N	.08	→	.10	→	→	.20	→	→	→	.08	→	→
I.C.	52.0	→	→	→	→	→	→	→	→	→	→	→

INDUCED POLARIZATION - RECEIVER NOTES PAGE 6

Project: Demco Line: 1 - Spr, 2 - 5½ Int.Cal _____ Date: 7/3/67

Send	4-5	1-2	2-3	3-4	4-5		CAL					
Rec.	→	2.5-3.05	→	→	→		1-2	→	→	→	→	→
Range Time	3	30	10	3	3		100	300	100	300		
DC-1	.33 .32	6.8	2.06 2.18	.92 .93 1.07 .93	.43 .52 .52 .58		52.6	52	63.7	62.5		
DC-2	.29 .29	6.9	2.30 2.05	.91 .91 .85 .93	.49 .40 .04 .40		52.6	52	63.5	62.5		
Σ	.63 .61	13.7	4.36 4.36	1.83 1.84 1.92 1.90	.92 .92 .96 .98		105.4	104	127.2	125		
DC-3	.20 .23	6.8	2.15 2.15	1.00 .93 .93 .90	.57 .52 .50 .48		52.6	52	63.5	62.5		
Dc-4	.34 .28	6.9	2.15 2.15	.90 .96 .96 .98	.45 .48 .46 .42		52.6	52	63.7	62.5		
Σ	.62	13.7	4.30 4.30	1.88 1.89 1.88 1.88	.96 1.00 .96 .96		105.4	104	127.2	125		
DC-AV	.615	13.7	4.30	1.88	.96		105.4	104	127.2	125		
AC-1	.31	6.6	1.97	0.90	0.47		52.4	51.5	62.7	62.0		
AC-2	.30	6.6	2.00	0.91	0.47		52.4	52.0	62.8	62.5		
Σ	.610	13.2	3.97	1.81	.94		104.8	103.5	125.5	124.5		
S. P.	→	+13.1	→	→	→							
AC-N	→	0.16	→	→	→							
I. C.	→	52.0	→	→	→							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 7

Project: Demco Line: L-Spr.2 -N ½ Int.Cal Date: 7/3/83

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Rec.	.05-1.00	→	1.0-1.50	→	→	1.5-2.00	→	→	→	2.0-2.5 N	→	
~~Time~~ Range	100	10	300	30	10	300	100	10	3	100	100	10
DC-1	22.0	4.60 4.60	132	12.2 12.1	2.42 3.23	117	43.1 42.6	5.03 5.00	1.42 1.33	45.8	24.2	3.35
DC-2	22.0	4.68 4.60	129	10.0 9.9	3.13 2.18	118	42.3 42.9	5.12 5.12	1.48 1.52	45.8	23.9	3.60
Σ	44.0	9.28 9.28	261	22.2 22.0	5.59 5.41	235	85.4 85.5	10.15 10.15	2.90 2.85	91.6	48.1	6.95
DC-3	22.0	4.60 4.65	132	9.9 10.0	2.05 3.55	118	42.3	5.12	1.48 1.52	45.8	23.9	3.60
Dc-4	22.0	4.65 4.60	129	12.1 12.2	3.40 1.92	117	42.6	5.03	1.33 1.36	45.8	24.2	3.35
Σ	44.0	9.25 9.25	261	22.0 22.2	5.45 5.47	235	84.9	10.15	2.81 2.88	91.6	48.1	6.95
DC-AV	44.0	9.27	261	22.1	5.44	235	85.3	10.15	2.86	91.6	48.1	6.95
AC-1	20.2	4.23	125	10.1	2.60	113	40.3	4.67	1.33	45.4	23.2	3.24
AC-2	20.2	4.24	125	10.1	2.60	113	40.5	4.69	1.35	45.4	23.2	3.26
Σ	40.4	8.47	250	20.2	5.20	226	80.8	9.36	2.68	90.8	46.4	6.50
S. P.	+29.0	→	+11.3	→	→	+1.7	→	→	→	+9.7	→	
AC-N	.10	→	.08	→	→	.10	→	→	→	.10	→	→
I.C.	52.0	→	→	→	→	→	→	→	→	→	→	

INDUCED POLARIZATION - RECEIVER NOTES PAGE 8

Project: Demco Line: 1-Spr. 2-N½ Int.Cal Date: 7/3/63

Send	1-2	4-5	3-4	2-3	1-2							
Rec.	→	2.5-30V	→									
Time	3	30	30	10	3							
DC-1	1.08 1.07	18.7	12.8	2.39	.78 .71 .69 .91							
DC-2	1.11 1.12	18.2	13.2	2.24	.83 .89 .74 .72							
Σ	2.19 2.19	36.9	26.0	4.63	1.65 1.60 1.63 1.63							
DC-3	1.11	18.7	13.2	2.24	.77 .90							
Dc-4	1.06	18.2	12.8	2.39	.88 .53							
Σ	2.17	36.9	26.0	4.63	1.65 1.63							
DC-AV	2.18	36.9	26.0	4.63	1.64							
AC-1	1.01	17.9	12.3	2.17	.77							
AC-2	1.02	18.0	12.3	2.17	.77							
Σ	2.03	35.9	24.6	4.34	1.54							
S. P.	→	+8.3	→									
AC-N	→	.08	→									
I.G	→	52.0	→									

INDUCED POLARIZATION - RECEIVER NOTES PAGE 9

Project: Demco Line: 2-Spr.1-Stn Int.Cal Date: 7/4/63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Rec.	0.25-0.5	5 →	0.50-0	75 →		0.75-1.025			→	1.00-1.25		
~~Time~~ Range	30	10	10	10	3	100	10	10	3	30	3	3
DC-1	21.6 21.4	4.26 4.31	4.25 4.40	2.60 3.00	1.23 1.08	47.3	3.30 3.15	2.46 2.57	1.34 1.15	12.5 13.6	13.2 13.0	1.27 1.15
DC-2	21.2 21.1	3.95 3.97	4.40 4.26	3.00 2.52	1.08 1.17	46.0	3.18 3.25	2.57 2.52	1.15 1.27	13.6 12.3	13.3 14.0	1.12 1.20
Σ	42.5 42.5	8.21 8.28	8.66 8.66	5.60 5.52	2.31 2.45	93.3	6.48 6.46	5.03 5.09	2.53 2.75	26.1 25.9	2.65 2.70	2.39 2.35
DC-3	21.2	2.97	4.26	2.52 2.18	1.01 1.29	46.0	3.28	2.52	1.23 1.24	12.3 13.4	14.6 1.13	1.17 1.26
Dc-4	21.4	4.20	4.40	3.18 2.36	1.30 1.06	47.1	3.20	2.44	1.19 1.16	13.4 12.2	14.0 14.7	1.20 1.10
Σ	42.6	8.17	8.66	5.70 5.54	2.35 2.35	93.1	6.48	4.96	2.46 2.40	25.7 25.6	2.56 2.60	2.32 2.32
DC-AV	42.6	8.24	8.67	5.58	2.35	93.2	6.47	5.03	2.46	25.8	2.63	2.37
AC-1	18.2	3.44	3.76	2.37	1.00	44.1	2.79	2.20	1.07	12.2	1.18	1.07
AC-2	18.2	3.45	3.78	2.37	1.00	44.3	2.79	2.18	1.07	12.2	1.19	1.06
Σ	36.4	6.89	7.54	4.74	2.00	88.4	5.58	4.38	2.14	24.4	2.37	2.13
S. P.	+16.1	→	+23.4	→		+14.3			→	+8.3		
AC-N	.07	→	.08	→		.09			→	.09		
I.C.	52.1	→										

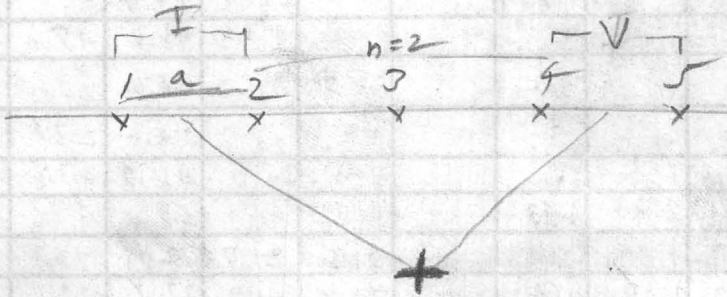
INDUCED POLARIZATION - RECEIVER NOTES

PAGE 10

Project: Demco Line: 2-Sor. 1 Int.Cal Date: 7/4/63

Send	4-5	1-2	2-3	3-4	4-5		CA2					
Rec.	→	1.25-1.525	→	→	→		1-2					
~~Range~~ Time	3	30	3	3	3		30	100	30	100		
DC-1	.82 .80 .72 .67	9.0 9.0	1.20 1.13 1.02 1.14	1.06 1.25 1.19 1.32	.62 .81 .70 1.00		22.3	22.0	24.0	23.8		
DC-2	.63 .69 .66 .77	9.0 9.2	1.10 1.08 1.22 1.09	1.19 .93 1.00 .67	.52 .60 .78 .94		22.6	22.0	24.0	23.8		
Σ	1.45 1.39 1.38 1.44	18.0 18.2	2.30 2.21 2.24 2.23	2.25 2.21 2.19 2.19	1.44 1.41 1.47 1.48		44.9	44.0	48.0	47.6		
DC-3	.77 .77 .78 .63	9.2 9.0	1.12 1.17	1.00 1.11	.53 .78		22.3	22.0	24.0	23.8		
Dc-4	.58 .63 .55 .73	9.0 9.2	1.03 1.00	1.16 .94	.69 .62		22.6	22.0	24.0	23.8		
Σ	1.35 1.40 1.33 1.36	18.2 18.2	2.15 2.17	2.19 2.14	1.42 1.40		44.9	44.0	48.0	47.6		
DC-AV	1.39	18.1	2.21	2.20	1.43		44.9	44.0	48.0	47.6		
AC-1	.63	8.5	1.02	1.00	.64		21.5	21.7	22.8	23.4		
AC-2	.63	8.7	1.02	1.00	.64		21.4	21.9	22.8	23.6		
Σ	1.26	17.2	2.04	2.00	1.28		42.9	43.6	45.6	47.0		
S. P.	→	+7.8	→	→	→							
AC-N	→	.10	→	→	→							
I. C.	→	52.3	→	→	→							

$$\boxed{\rho = \frac{V}{I} \cdot \frac{a\, n(n+1)(n+2)}{2} \; \Omega_{cal}}$$



INDUCED POLARIZATION - RECEIVER NOTES PAGE 11

Project: Demco Line: 2-Spr. 1-N½ Int.Cal Date: 7/14/67

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Rec.	.25-.5N →	.5-.25N →				.75-1.0N →				1.00-1.25N →		
~~Time~~ Range	20	10	100	10	3	100	10	3	3	100	10	3
DC-1	9.9 10.2	2.20 1.95	20.9 22.0	2.24 2.22	.97 1.12	52.0 51.7	4.35 4.27	.64 .60 .48 .51	.59 .60 .44 .53	20.8 21.4	2.05 2.38	.52 .57
DC-2	10.2 9.9	1.95 2.24	22.0 21.1	2.22 2.24	1.06 .99	51.7 51.8	4.27 4.25	.52 .49 .73 .65	.32 .22 .30 .30	21.4 20.8	2.38 2.03	.42 .38
Σ	20.1 20.1	4.15 4.19	42.9 43.1	4.46 4.46	1.99 2.03	103.7 103.5	8.58 8.48	1.21 1.29 1.21 1.36	.91 .85 .78 .83	42.2 42.2	4.43 4.41	.94 .95
DC-3	9.9	1.78 2.04	21.1	2.10	1.02 .96	51.8	4.25 4.30	.61 .52	.58 .55 .57 .60	20.8	2.03	.51 .57
Dc-4	10.2	2.42 2.10	22.0	2.36	.95 1.02	51.4	4.20 4.20	.47 .63	.24 .25 .30 .25	21.4	2.39	.43 .37
Σ	20.1	4.20 4.14	43.1	4.46	1.97 1.98	103.2	8.40 8.50	1.28 1.35	.53 .50 .55 .55	42.2	4.42	.94 .94
DC-AV	20.1	4.17	43.0	4.46	1.99	103.5	8.50	1.28	.84	42.2	4.42	.94
AC-1	8.5	1.77	19.0	1.97	0.90	46.5	3.66	.60	.40	19.2	1.97	.44
AC-2	8.5	1.77	19.0	1.97	0.90	46.7	3.72	.60	.39	19.3	1.97	.44
Σ	17.0	3.54	38.0	3.94	1.80	93.2	7.38	1.20	.79	38.5	3.94	.88
S. P.	+211.1 →		+548 →			+14.3 →				+14.2 →		
AC-N	.12 →		.17 →			.20 →				.10 →		
I.C.	52.1 →											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 12

Project: Demco Line: 2-Spr. 1-N4 Int.Cal Date: 7/4/67

Send	1-2	4-5	3-4	2-3	1-2							
Rec.	→	1.25-1.10 N			→							
Time	3	30	3	3	3							
DC-1	.24 .29 .27 .31	10.2 11.2	1.28 1.36	.23 .32 .26 .28	.19 .16 .16 .10							
DC-2	.28 .28 .30 .23	11.2 10.0	1.35 1.29	.45 .35 .24 .38	.24 .10 .30 .37							
Σ	.56 .57 .57 .54	21.4 21.2	2.63 2.65	.68 .67 .60 .66	.47 .46 .46 .47							
DC-3	.28 .23	10.0 11.2	1.29 1.32	.34 .30 .29 .28	.31 .26 .12 .21							
Dc-4	.28 .27	11.2 9.9	1.35 1.28	.32 .37 .33 .38	.14 .21 .24 .22							
Σ	.55 .50	21.2 21.1	2.64 2.58	.66 .67 .62 .66	.25 .47 .36 .43							
DC-AV	.54	21.2	2.62	.64	.46							
AC-1	.28	9.9	1.20	.33	.21							
AC-2	.25	10.0	1.20	.32	.24							
Σ	.50	19.9	2.40	.65	.45							
S. P.	→	+0.6	→	→	→							
AC-N	→	.18	→	→	→							
F.C.	→	52.3	→	→	→							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 13

Project: Demco Line: 3-Spr.2-N½ Int.Cal Date: 7/5/63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Rec.	0.25-0.50N →		0.50-0.75N →			0.75-1.00N →				1.00-1.2N		
Time Rem de	30	3	300	10	3	300	30	3	3	100	30	3
DC-1	15.8 16.9	1.06 1.03 .91 1.08	107	3.39 3.21	41 .68 .32 .47	129	17.3	1.40 1.33	.23 .22	41.7	(6.)	.90 .83
DC-2	16.8 15.4	.89 1.03 1.08 .90	107	3.21 7.38	.53 .20 .52 .51	140	16.9	1.33 1.40	.22 .23	41.9	7.0	.82 .90
Σ	32.3 32.3	1.95 2.06 1.79 1.98	214	6.60 6.59	.94 .91 .84 .49	269	34.2	2.73 2.73	.45 .45	83.6	13.7	1.73 1.73
DC-3	15.6 15.3	1.11 .90 .82 1.21	107	3.38	.42 .35 .60 .70	140	16.9	1.33 1.89	.27 .24	41.9	7.0	.93 .94
Dc-4	16.9 17.0	.84 1.16 1.2 .62	107	3.22	.42 .57 .23 .60	129	17.3	1.39 1.39	.25 .22	41.7	6.7	.96 .22
Σ	32.3 32.3	1.95 2.06 2.04 2.03	214	6.60	.84 .94 .83 .90	269	34.2	2.72 2.68	.45 .46	83.6	13.7	1.69 1.66
DC-AV	32.4	2.06	214	6.60	.88	269	34.2	2.71	.455	83.6	13.7	1.70
AC-1	14.1	.88	98	2.97	0.41	120	15.6	1.22	.22	37.4	6.1	.79
AC-2	14.1	.88	98	2.97	0.41	120	15.6	1.22	.22	37.4	6.2	.79
Σ	28.2	1.76	196	5.94	0.82	240	31.2	2.44	.44	74.8	12.3	1.58
S. P.	+131.0 →		+31.5 →			+11.0 →				+20.4 →		
AC-N	.06 →		.12 →			.08 →				.10 →		
I.C.	52.2 →											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 14

Project: Demco Line: 3 - Sp. 1 - N½ Int.Cal _____ Date: 7/5/63

Send	1-2	4-5	3-4	2-3	1-2		C+L					
Rec.	→	1.25-1.50 N			→		4-5					
~~Range~~ Time	3	100	10	3	3		100	300	100	300		
DC-1	.16 .11	22.6 23.2	4.24 4.40	.61 .54	.12 .13		52.3	51.5	63.5	62.5		
DC-2	.14 .19	21.3 21.2	4.37 4.22	.54 .61	.13 .12		52.3	51.5	63.1	62.5		
Σ	.30 .30	43.9 44.4	8.61 8.62	1.15 1.15	.25 .26		104.6	103	126.6	125		
DC-3	.16 .14	21.3 21.3	4.37	.61 .54	.13 .11		52.3	51.5	63.1	62.5		
Dc-4	.14 .16	23.2 23.2	4.22	.54 .61	.12 .15		52.3	51.5	63.5	62.5		
Σ	.30 .30	44.5 44.5	8.59	1.15 1.15	.25 .26		104.6	103	126.6	125		
DC-AV	.30	44.3	8.64	1.15	.255		104.6	103	126.6	125		
AC-1	.16	19.9	3.84	.53	.12		52.0	51.5	61.9	62.0		
AC-2	.14	20.0	3.86	.53	.12		51.7	51.5	61.9	62.0		
Σ	.29	39.9	7.70	1.06	.240		103.7	103	123.8	124		
S. P.	→	+14.7	→		→							
AC-N	→	.08	→		→							
t.c.	→	52.2	→		→							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 15

Project: Demco Line: J-Spr. 1-5½ Int.Cal Date: 7/8/83

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Rec.	.25-.55	→	.5-.755	→		.25-1.05	→		→	1.0-1.4		
Time	30	10	300	30	10	300	100	10	3	30	30	10
DC-1	16.2 16.3	22.6 26.1	148	8.2 8.1	2.00 2.03	61	44.0	5.48 5.90	1.85 1.97	15.0	15.10	3.15 3.05
DC-2	15.8 15.7	26.1 23.4	149	7.9 7.8	2.05 2.00	58	43.0	6.08 6.05	1.97 1.80	15.3	15.6	2.85 2.70
Σ	32.0 32.0	48.2 49.5	297	16.1	4.05 4.03	119	87.0	11.56 11.95	3.82 3.77	30.3	30.6	5.85 5.90
DC-3	15.8	23.4 26.0	149	7.9 7.8	1.85 2.10	58	43.0	6.05	1.80 1.99	15.3	15.6	2.70
Dc-4	16.3	26.0 22.2	148	8.1 8.2	2.20 1.85	61	44.0	5.90	2.00 1.80	15.0	15.0	2.05
Σ	32.1	48.4 48.2	297	16.0 16.0	4.05 4.05	119	87.0	11.95	3.59	30.3	30.6	5.75
DC-AV	32.0	49.0	297	16.0	4.02	119	87.0	11.42	3.80	30.3	30.6	5.83
AC-1	13.6	2.00	139	7.0	1.72	57	41.0	5.05	1.68	14.2	14.3	2.63
AC-2	13.6	2.00	140	7.0	1.74	57	41.0	5.05	1.68	14.3	14.3	2.63
Σ	27.2	4.00	279	14.0	3.46	114	82.0	10.10	3.36	28.6	28.6	5.26
S. P.	+11.6	→	+5.5	→	→	+26.3	→	→	→	+10.8	→	→
AC-N	.04	→	.09	→	→	.12	→	→	→	.13	→	→
I.C.	52.2	→	52.2	→	→							

INDUCED POLARIZATION - RECEIVER NOTES PAGE 16

Project: Demco Line: 3-Spr. 1-5 1/2 Int.Cal Date: 7/5/67

Send	4-5	1-2	2-3	3-4	4-5							
Rec.	→	1.25-1.50s	→		→							
Time	3	10	10	3	3							
DC-1	1.28 1.40	4.18 4.45	5.60	1.67 1.63	1.97 1.13							
DC-2	1.34 1.28	4.48 4.18	5.50	1.63 1.63	1.08 1.07							
Σ	2.62 2.68	8.66 8.63	11.10	3.26	2.15 2.16							
DC-3	1.31 1.33	4.17 4.18	5.50	1.63	1.00							
Dc-4	1.35 1.35	4.43 4.48	5.60	1.63	1.13							
Σ	2.66 2.68	8.60 8.66	11.10	3.26	2.13							
DC-AV	2.65	8.64	11.10	3.26	2.15							
AC-1	1.21	4.15	5.20	1.53	1.05							
AC-2	1.21	4.15	5.20	1.53	1.05							
Σ	2.42	8.30	10.40	3.06	2.10							
S. P.	→	+24.7	→		→							
AC-N	→	.20	→		→							
I.L.	→											

INDUCED POLARIZATION - RECEIVER NOTES PAGE 17

Project: Demco Line: 4-Spr. 1-5½ Int.Cal Date: 7/6/67

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Rec.	0.25-0.05 →		0.50-0.255 →			0.75-1.005 →				1.00-1.255		
Range												
Time	300	30	300	30	10	100	30	10	3	100	30	10
DC-1	61.0	17.0 16.8	73	13.1 13.1	5.16 5.10	52.1	13.2 13.1	3.40 3.40	1.61 1.77 1.52 1.63	28.0 26.2	9.4 9.1	2.57 2.80
DC-2	64.0	16.8 17.0	73	13.0 12.9	5.10 5.00	52.0	13.1 13.3	3.40 3.40	1.65 1.68 1.85 1.85	26.5 26.5	8.9 8.9	2.90 2.65
Σ	125.0	33.8 33.8	146	26.1 26.0	10.28 10.10	104.1	26.3 26.4	6.80 6.80	3.46 3.61 3.47 3.47	54.5 54.7	18.3 18.0	5.47 5.55
DC-3	64.0	17.0 16.7	73	13.0 12.9	5.00 5.30	52.0	13.1	3.40 3.38	1.55 1.65 1.92 1.67	27.0	8.9 8.9	2.77 2.99
Dc-4	61.0	16.7 17.1	73	12.9 12.8	5.29 4.65	52.1	13.1	3.38 3.33	1.77 1.69 1.43 1.67	28.0	9.1 8.9	2.98 2.60
Σ	125.0	33.8 33.8	146	25.9 25.7	10.29 10.15	104.1	26.2	6.71 6.71	3.32 3.54 2.35 2.45	55.0	18.0 17.8	5.75 5.55
DC-AV	125.0	33.8	146	25.9	10.20	104.1	26.3	6.77	3.43	54.7	18.0	5.58
AC-1	57.0	15.4	63.0	11.2	4.68	48.0	11.0	2.94	1.57	25.7	7.8	2.37
AC-2	57.0	15.5	63.0	11.3	4.70	48.0	11.0	2.95	1.58	25.5	7.9	2.37
Σ	114.0	30.9	126.0	22.5	9.38	96.0	22.0	5.89	3.15	51.2	15.7	4.74
S. P.	+3.5 →		-18.4 →			+28.7 →				+7.4		
AC-N	.08 →		.08 →			.05 →				.08		
I.C.	522 →		→			→				52.6		

INDUCED POLARIZATION - RECEIVER NOTES PAGE 18

Project: Demco Line: 4-for. 1 - 5½ Int.Cal Date: 7/6/63

Send	4-5	1-2	2-3	3-4	4-5		AL					
Rec.		1.25-1.505					1-2					
~~Time~~ Range	3	30	10	3	3		100	300	100	300		
DC-1	1.45 1.53	12.2 12.7	4.85 4.95	1.64 1.67	1.03 1.11		52.9	52	64.0	62		
DC-2	1.52 1.48	12.7 12.2	4.94 4.90	1.53 1.57	.92 .92		52.9	52	63.7	62		
Σ	2.97 3.01	25.9 25.9	9.83 9.85	3.17 3.24	2.05 2.03		105.8	104	127.7	124		
DC-3	1.56 1.62	12.7 12.7	4.77	1.57 1.61	1.06 .98		52.9	52	64.0	62		
Dc-4	1.50 1.41	13.6 13.7	4.82	1.68 1.59	.96 1.10		52.9	52	63.7	62		
Σ	3.06 3.03	26.3 26.0	9.53	3.25 3.20	2.06 2.08		105.8	104	127.7	124		
DC-AV	3.02	26.0	9.84	3.22	2.05		105.8	104	127.7	124		
AC-1	1.39	11.9	4.24	1.46	.94		52.3	52.0	62.0	61.5		
AC-2	1.41	11.9	4.26	1.48	.94		52.1	52.0	62.2	61.5		
Σ	2.80	23.8	8.50	2.94	1.88		104.8	104	124.2	~~123~~ 123		
S. P.	→	+ 7.8	→									
AC-N	→	.07	→									
Σ.C.	→	52.6	→									

INDUCED POLARIZATION - RECEIVER NOTES PAGE 19

Project: Demco Line: 4 Spr. 1-U½ Int.Cal Date: 7/6/63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Rec.	.25-.50N →		150-.25N →		→	.25-1.00N →			→	1.00-1.25N		
Time	300	30	300	30	10	1000	100	30	10	300	30	30
DC-1	74	17.3 17.1	72	17.1	5.40 5.40	21.9	34.8	12.0	4.65 4.20	63	13.9	5.8
DC-2	75	17.0 17.3	73	17.7	5.40 5.40	21.8	32.7	11.8	4.34 4.58	65	13.9	5.9
Σ	149	34.3 34.4	145	34.8	10.80 10.80	43.7	67.5	23.8	8.99 8.98	128	27.8	11.7
DC-3	74	17.0	73	17.7	5.40	21.8	32.7	11.8	4.55 4.55	65	13.9	5.9
Dc-4	75	17.2	72	17.1	5.40	21.9	34.4	12.2	4.50 4.20	63	13.9	5.8
Σ	149	34.2	145	34.8	10.80	43.7	67.1	24.0	9.05 9.05	128	27.8	11.7
DC-AV	149	34.3	145	34.8	10.80	437	67.4	23.9	9.04	128	27.8	11.7
AC-1	69.0	15.8	69.0	15.9	4.97	207	31.2	10.9	4.17	62	12.9	5.3
AC-2	69.0	15.8	68.0	15.9	4.97	207	31.2	10.9	4.17	62	12.9	5.3
Σ	138	31.6	137	31.8	9.94	414	62.4	21.8	8.34	124	25.8	10.6
S. P.	+13.4 →		-11.3 →		→	+146 →			→	-3.8		
AC-N	.08 →		.16 →		→	.11 →			→	.09		
F. C.	525 →									(2)		

INDUCED POLARIZATION - RECEIVER NOTES PAGE 20

Project: Demco Line: 4-Spr. 1-N½ Int.Cal Date: 7/6/63

Send	1-2	4-5	3-4	2-3	1-2							
Rec.	→	1.25-150N			→							
~~Time~~ Range	10	100	30	10	3							
DC-1	2.65 2.45	34.7	8.8	3.58 4.00	1.48							
DC-2	2.20 2.10	34.3	7.8	4.02 3.58	1.68							
Σ	4.85 4.55	69.0	16.6	8.60 7.58	3.16							
DC-3	2.20 2.10	34.3	7.8	3.55	1.68							
Dc-4	2.45 2.40	34.7	8.8	4.02	1.48							
Σ	4.65 4.50	69.0	16.6	7.57	3.16							
DC-AV	4.64	69.0	16.6	7.58	3.16							
AC-1	2.20	33.6	7.7	3.48	1.43							
AC-2	2.20	33.7	7.7	3.50	1.43							
Σ	4.40	67.3	15.4	6.98	2.86							
S. P.	→	+4.7										
AC-N	→	.10	→	→	→							
I.C.	→	52.7	→	→	→							

INDUCED POLARIZATION SENDER NOTES

Project: PEMGO Line: I Spr 1 5½ Date: 7/2/63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Receive	→		→			→						
Time	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6
Range	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Current	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Send	4-5	1-2	2-3	3-4	4-5		CAL					
Receive	→				→		1-2					
Time	2x6	2x6	2x6	2x6	2x6		2x5	2x6				
Range	1.0	1.0	1.0	1.0	1.0		.75	1.0				
Current	1200	1200	1200	1200	1200		1000	1200				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 1 spr 1 N½ Date: 7/2/63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Receive	→			→			→					
Time	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6
Range	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Current	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Send	1-2	4-5	3-4	2-3	1-2		CAL					
Receive	→						2-3					
Time	2x6	2x6	2x6	2x6	2x6		2x5	2x6				
Range	1.0	1.0	1.0	1.0	1.0		1.0	1.0				
Current	1200	1200	1200	1200	1200		1000	1200				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 1 Spr 2 Sr½ Date: 7/3/63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Receive	→	→	→	→	→	→	→	→	→	→	→	→
Time	2x8	2x8	2x7	2x7	2x7	2x7	2x7	2x8	2x8	2x7	2x7	2x8
Range	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Current	1600	1600	1400	1600	1600	1400	1400	1600	1600	1400	1400	1600
Send	4-5	1-2	2-3	3-4	4-5		CAL					
Receive	→	→	→	→	→		1-2					
Time	2x8	2x7	2x7	2x8	2x8		2x5	2x6				
Range	1.50	1.50	1.50	1.50	1.50		1.0	1.0				
Current	1600	1400	1400	1400	1600		1000	1200				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 1 sp x 2 Date: 7-3-63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Receive	→		→			→			→			
Time	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8
Range	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Current	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Send	1-2	4-5	3-4	2-3	1-2							
Receive	→			→								
Time	2x8	2x8	2x8	2x8	2x8							
Range	1.50	1.50	1.50	1.50	1.50							
Current	1600	1600	1600	1600	1600							

5

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 2 Spr 1 5½ Date: 7-4-63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Receive	→				→				→			
Time	2x5	2x5	1x4	2x5	2x5	1x4	1x4	2x5	2x5	1x4	1x4	2x5
Range	.75	.75	.30	.75	.75	.30	.30	.75	.75	.30	.30	.75
Current	1000	1000	400	1000	1000	400	400	1000	1000	400	400	1000
Send	4-5	1-2	2-3	3-4	4-5		1-2					
Receive	→				→		CAL					
Time	2x5	1x4	1x4	2x5	2x5		2x2	1x420				
Range	.75	.30	.30	.75	.75		.50	.50				
Current	1000	400	400	1000	1000		400	420				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 2 spr 1 N½ Date: 7-4-63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Receive	→		→		→		→		→		→	
Time	1x5	1x5	2x5	1x4	1x4	2x5	2x5	1x4	1x5	2x5	2x5	1x5
Range	.50	.50	.75	.50	.50	.75	.75	.50	.50	.75	.75	.50
Current	500	500	1000	400	400	1000	1000	400	500	1000	1000	500
Send	1-2	4-5	3-4	2-3	1-2		CAL					
Receive	→		→		→		4-5					
Time	1x5	2x5	2x5	1x5	1x5							
Range	.50	.75	.75	.50	.50							
Current	500	1000	1000	500	500							

126
109
235
59

7

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 3 Spr I N½ Date: 7-5-63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Receive	→			→			→					
Time	2x5	2x4	2x9	2x5	2x4	2x9	2x9	2x5	2x4	2x9	2x9	2x5
Range	.50	.50	1.50	.50	.50	1.50	1.50	.50	.50	1.50	1.50	.50
Current	1000	800	1800	1000	800	1800	1800	1000	800	1800	1800	1000
Send	1-2	4-5	3-4	2-3	1-2		CAL					
Receive	→				→		4-5					
Time	2x4	2x9	2x9	2x5	2x4		2x5	2x6				
Range	.50	1.50	1.50	.50	.50		.50	.50				
Current	800	1800	1800	1000	800		1000	1200				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 3 Spr 2 5½ Date: 7-5-63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Receive	→		→		→	→			→			
Time	2x9	2x9	2x5	2x9	2x9	2x4	2x5	2x9	2x9	2x4	2x5	2x9
Range	1.50	1.50	.50	1.50	1.50	.50	.50	1.50	1.50	.50	.50	1.50
Current	1800	1800	1000	1800	1800	800	1000	1800	1800	800	1000	1800
Send	4-5	1-2	2-3	3-4	4-5		CAL					
Receive	→				→		1-2					
Time	2x9	2x9	2x5	2x9	2x9							
Range	1.50	1.50	.50	1.50	1.50							
Current	1800	800	1000	1800	1800							

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 4sp x 25'/2 Date: 7-6-63

Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
Receive	→		→		→	→			→	→		
Time	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7
Range	1.50	1.50	1.50	1.50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Current	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
Send	4-5	1-2	2-3	3-4	4-5		CAL					
Receive	→	→			→		1-2					
Time	2x7	2x7	2x7	2x7	2x7		2x5	2x6				
Range	1.0	1.0	1.0	1.0	1.0		.50	.50				
Current	1400	1400	1400	1400	1400		1000	1200				

INDUCED POLARIZATION SENDER NOTES

Project: DEMCO Line: 4 spr 1 N½ Date: 7-6-63

Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
Receive	→				→				→			
Time	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7	2x7
Range	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Current	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
Send	1-2	4-5	3-4	2-3	1-2							
Receive	→				→							
Time	2x7	2x7	2x7	2x7	2x7							
Range	1.0	1.0	1.0	1.0	1.0							
Current	1400	1400	1400	1400	1400							

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INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 1

Project Demco Line 1-Spr. 1-S2 Field date 7/2/63 Data page _____ Comp. date 7/2/63 . Comp by C.S.L.

(A) Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
(B) Receive	0.25-0.50S	→	0.50-0.75S	→	→	0.75-1.00	→	→	→	1.00-1.25S	→	
(C) n separation	1	2	1	2	3	1	2	3	4	2	3	4
(D) I	1200	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	90.6	19.70	201	20.3	6.53	113.8	22.0	6.06	2.58	14.3	4.40	2.07
(F) DCcal USED	.964	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	54.6	47.6	121	49.0	39.4	68.6	53.1	36.6	31.1	34.5	26.6	24.9
(I) Vac Σ	80.1	17.85	174	17.6	5.26	98.4	18.3	5.23	2.38	12.6	3.86	1.88
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.994	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.124	1.097	1.148	1.147	1.126	1.150	1.195	1.151	1.078	1.129	1.132	1.093
(N) PFE=(M-1)(10^2)	12	10	15	15	13	15	20	15	8	13	13	9
(O) MCF=(M-1)(10^5)/H	228	204	122	300	320	219	368	413	251	374	496	373

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

(A) Send	4-5	1-2	2-3	3-4	4-5		CA2	→	→	→		
(B) Receive	→	1.25-1.50S	→	→	→		1-2	→	→	→		
(C) n separation	5	3	4	5	6		52	17	62	21		
(D) I	→	→	→	→	→		1000	1000	1200	1200		
(E) Vdc (avg)	1.22	13.0	4.41	2.17	1.28		104.6	103	126.6	124		
(F) DCcal	→	→	→	→	→		.957	.971	.949	.968		
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42			~.964				
(H) ρ dc=ExFxGx10^3/D	25.7	78.5	53.1	45.7	43.2							
(I) Vac Σ	1.18	11.7	3.96	1.99	1.21		103.6	103	123.5	123		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→		.991	1.000	.976	.992		
(M) ρdc/ρac =ExL/K	1.027	1.104	1.107	1.083	1.050							
(N) PFE=(M-1)(10^2)	3	10	11	8	5			~.94				
(O) MCF=(M-1)(10^5)/H	105	137	202	181	116							

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 2

Project Demco Line 1-Spr.1-N Field date 7/2/63 Data page _____ Comp. date 7/2/63. Comp by C.S.L.

(A) Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
(B) Receive	0.25-0.50N	→	0.50-0.75N	→	→	0.25-1.00N	→	→	→	1.00-1.25N	→	
(C) n separation	1	2	1	2	3	1	2	3	4	2	3	4
(D) I	1200											
(E) Vdc (avg)	55.0	19.8	126	14.8	7.80	266	45.7	7.16	4.07	112.4	35.9	7.06
(F) DCcal USED	.964											
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	33.1	47.7	76.0	35.7	47.0	160	110	43.1	49.1	272	216	85.1
(I) Vac Σ	48.0	17.9	118	13.6	7.22	258	41.4	6.54	3.94	107.8	33.3	6.48
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.994											
(M) ρ dc/ρac=ExL/K	1.139	1.100	1.061	1.081	1.073	1.023	1.098	1.089	1.028	1.038	1.071	1.082
(N) PFE=(M-1)(10^2)	14	10	6	8	7	2	10	9	3	4	7	8
(O) MCF=(M-1)(10^5)/H	420	210	80	227	155	14	89	206	57	14	33	96

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

(A) Send	1-2	4-5	3-4	2-3	1-2		CAL	→	→	→		
(B) Receive	→	1.25-1.50N	→	→	→		2-3	→	→	→		
(C) n separation	5	3	4	5	6		1000	1000	1200	1200		
(D) I	→	→	→	→	→		104.6	102	125.1	124		
(E) Vdc (avg)	4.40	38.2	15.1	3.24	2.11		.957	.980	.959	.968		
(F) DCcal	→	→	→	→	→			~ .964				
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42							
(H) ρ dc=ExFxGx10^3/D	92.9	230	182	68.4	71.2							
(I) Vac Σ	4.26	36.2	14.2	3.08	2.06		103.6	102	123.4	123.3		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→		.991	1.000	.986	.996		
(M) ρdc/ρac =ExL/K	1.026	1.049	1.057	1.046	1.020							
(N) PFE=(M-1)(10^2)	3	5	6	5	2			~ .994				
(O) MCF=(M-1)(10^5)/H	28	21	31	67	28							

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INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 7

Project Demo Line 1 - Spr. 2-5½ Field date 7/3/67 Data page _____ Comp. date 7/3/67. Comp by C.S.L.

(A) Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
(B) Receive	0.5-1.05	→	1.0-1.55	→	→	1.5-2.05	→	→	→	2.0-2.5	→	
(C) n separation		58										
(D) I	1600	1600	1400	1600	1600	1400	1400	1600	1600	1400	1400	1600
(E) Vdc (avg)	46.0	9.29	41.7	9.04	3.07	125.0	23.6	6.71	2.83	13.3	3.69	1.29
(F) DCcal USED	.954											
(G) Kn x 10^{-3}	1.5	6	1.5	6	15	1.5	6	15	30	6	15	30
(H) ρ dc=ExFxGx10^3/D	41.1	33.2	42.7	32.4	27.4	127	96.5	59.9	50.6	54.4	37.7	23.1
(I) Vac Σ	40.6	8.50	36.6	8.07	2.86	123.5	20.8	6.00	2.64	13.0	3.43	1.23
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995	→	.990	.995	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.128	1.088	1.129	1.113	1.069	1.007	1.129	1.112	1.067	1.017	1.070	1.043
(N) PFE=(M-1)(10^2)	13	9	13	11	7	1	13	11	7	2	7	4
(O) MCF=(M-1)(10^5)/H	312	265	302	349	252	6	134	187	132	31	185	186

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

(A) Send	4-5	1-2	2-3	3-4	4-5		CAL					
(B) Receive	→	2.5-3.05	→	→	→		1-2					
(C) n separation							52	17	63	21		
(D) I	1600	1400	1400	1600	1600		1000	1000	1200	1200		
(E) Vdc (avg)	.615	13.3	4.30	1.88	.96		105.4	104	122.2	125		
(F) DCcal	→	→	→	→	→		.949	.962	.949	.960		
(G) Kn x 10^{-3}	52.5	15	30	52.5	84			.954				
(H) ρ dc=ExFxGx10^3/D	19.3	140	87.9	58.9	48.1							
(I) Vac Σ	.610	13.2	3.97	1.81	.94		104.8	103.5	125.5	124.5		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→		.994	.995	.986	.996		
(M) ρdc/ρac =ExL/K	1.001	1.032	1.078	1.033	1.016							
(N) PFE=(M-1)(10^2)	0	3	8	3	2							
(O) MCF=(M-1)(10^5)/H	5	23	89	56	33							

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INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 4

Project Demco Line 1 - Spr. 2 - N½ Field date 7/3/63 Data page _____ Comp. date 7/3/63. Comp by C.S.L.

(A) Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
(B) Receive	0.5-1.0N	→	1.0-1.5N	→	→	1.5-2.0N	→	→	→	2.0-2.5N	→	
(C) n separation												
(D) I	1600	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	44.0	9.27	261	22.1	5.48	235	85.3	10.15	2.86	91.6	48.1	6.95
(F) DCcal USED	.954	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	1.5	6	1.5	6	15	1.5	6	15	30	6	15	30
(H) ρ dc=ExFxGx10^3/D	39.4	33.2	234	79.1	49.0	210	306	90.9	51.1	328	431	124
(I) Vac Σ	40.4	8.47	250	20.2	5.20	226	80.8	9.36	2.68	90.8	46.4	6.50
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.082	1.089	1.039	1.089	1.050	1.033	1.050	1.078	1.061	1.003	1.032	1.062
(N) PFE=(M-1)(10^2)	8	9	4	9	5	3	5	8	6	0	3	6
(O) MCF=(M-1)(10^5)/H	208	268	17	112	102	16	16	86	119	1	7	50

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

(A) Send	1-2	4-5	3-4	2-3	1-2							
(B) Receive	→	2.5-3.0N	→	→	→							
(C) n separation												
(D) I	→	→	→	→	→							
(E) Vdc (avg)	2.18	36.9	26.0	4.63	1.64							
(F) DCcal	→	→	→	→	→							
(G) Kn x 10^{-3}	52.5	15	30	52.5	84							
(H) ρ dc=ExFxGx10^3/D	68.3	33.0	465	145	82.2							
(I) Vac Σ	2.03	35.9	24.6	4.34	1.54							
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	.990	.995	→	→							
(M) ρdc/ρac =ExL/K	1.069	1.018	1.051	1.061	1.060							
(N) PFE=(M-1)(10^2)	7	2	5	6	6							
(O) MCF=(M-1)(10^5)/H	101	5	11	42	73							

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INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 5

Project Demco - Orizaba Line 2 - Spr. 1 5½ Field date 7/4/63 Data page _____ Comp. date 7/4/63 Comp by C.S.L.

(A) Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
(B) Receive	0.25-0.50	→	0.50-0.75	→	→	0.75-1.00	→	→	→	1.00-1.25	→	→
(C) n separation												
(D) I	1000	1000	400	1000	1000	400	400	1000	1000	400	400	1000
(E) Vdc (avg)	42.6	8.24	8.67	5.58	2.35	93.2	6.47	5.03	2.46	25.8	2.63	2.37
(F) DCcal USED	.960											
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	30.6	23.7	15.6	16.1	16.9	168	46.6	35.2	35.4	185	47.4	34.2
(I) Vac Σ	36.4	6.89	7.54	4.74	2.00	88.4	5.58	4.38	2.14	24.4	2.37	2.13
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	.970	.992										
(M) ρ dc/ρac=ExL/K	1.134	1.183	1.139	1.165	1.163	1.044	1.149	1.138	1.137	1.048	1.099	1.100
(N) PFE=(M-1)(10^2)	14	18	14	17	16	4	15	14	14	5	10	10
(O) MCF=(M-1)(10^5)/H	442	772	891	1025	965	26	320	393	387	26	209	293

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

(A) Send	4-5	1-2	2-3	3-4	4-5		CAL					
(B) Receive	→	1.25-1.50	→	→	→		1-2					
(C) n separation							72	22	76	24		
(D) I	1000	400	400	1000	1000		400	400	420	420		
(E) Vdc (avg)	1.39	18.1	2.21	2.20	1.43		44.9	44.0	48.0	47.6		
(F) DCcal	→			→			.890	.909	.875	.884	??	
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42			USED	.960			
(H) ρ dc=ExFxGx10^3/D	35.0	326	79.6	55.5	57.6							
(I) Vac Σ	1.26	17.2	2.04	2.00	1.28		42.9	43.6	45.6	47.0		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→				→		.956	.992	.950	.990		
(M) ρdc/ρac =ExL/K	1.091	1.043	1.071	1.089	1.104							
(N) PFE=(M-1)(10^2)	9	4	7	9	10							
(O) MCF=(M-1)(10^5)/H	260	13	89	160	181							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 6

Project Demco-Orizaba Line 2-Spr. 1-N½ Field date 7/4/63 Data page _____ Comp. date 7/4/63. Comp by C.S.L.

(A) Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
(B) Receive	.25-.50N	→	.50-.75N	→	→	.75-1.00N	→	→	→	1.00-1.25N	→	
(C) n separation												
(D) I	500	500	1000	400	400	1000	1000	400	500	1000	1000	500
(E) Vdc (avg)	20.1	4.17	43.0	4.46	1.99	103.5	8.50	1.28	.84	42.2	4.42	.94
(F) DCcal USED	.960	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	29.0	24.0	31.0	32.1	35.8	74.5	24.5	23.0	24.2	122	31.8	27.0
(I) Vac Σ	17.0	3.54	38.0	3.94	1.80	93.2	7.38	1.20	.79	38.5	3.94	.88
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.990	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.170	1.169	1.120	1.121	1.095	1.100	1.140	1.055	1.051	1.085	1.110	1.058
(N) PFE=(M-1)(10^2)	17	17	12	12	10	10	14	6	5	7	11	6
(O) MCF=(M-1)(10^5)/H	585	705	387	377	265	134	572	239	210	70	346	215

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

(A) Send	1-2	4-5	3-4	2-3	1-2							
(B) Receive	→	1.25-1.50N	→	→	→							
(C) n separation												
(D) I	500	1000	1000	500	500							
(E) Vdc (avg)	.54	21.2	2.62	.66	.46							
(F) DCcal	→	→	→	→	→							
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42							
(H) ρ dc=ExFxGx10^3/D	27.2	153	37.8	33.4	37.2							
(I) Vac Σ	.50	19.9	2.40	.65	.45							
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→							
(M) ρdc/ρac =ExL/K	1.069	1.053	1.080	1.005	1.012							
(N) PFE=(M-1)(10^2)	7	5	8	1	1							
(O) MCF=(M-1)(10^5)/H	254	35	212	15	32							

HEINRICHS GEOEXPLORATION COMPANY

INDUCED POLARIZATION SURVEY COMPUTATION SHEET

Page 7

Project Demco Line 3-Spr. 1-N Field date 7/5/62 Data page _____ Comp. date 7/5/62. Comp by C.S.L.

(A) Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
(B) Receive	0.25-0.50N	→	0.50-0.75N	→	→	0.75-1.00N	→	→	→	1.00-1.25N	→	
(C) n separation												
(D) I	1000	800	1800	1000	800	1800	1800	1000	800	1800	1800	1000
(E) Vdc (avg)	32.4	2.06	214	6.60	.88	269	34.2	2.71	.455	83.6	13.7	1.70
(F) DCcal USED	.960											
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	23.3	7.4	85.5	19.0	7.9	107	54.8	19.5	8.1	132	54.7	24.5
(I) Vac Σ	28.2	1.76	196	5.94	0.82	240	31.2	2.44	.44	74.8	12.3	1.58
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995											
(M) ρ dc/ρac=ExL/K	1.141	1.170	1.087	1.106	1.069	1.114	1.090	1.105	1.029	1.111	1.109	1.070
(N) PFE=(M-1)(10^2)	14	17	9	11	7	11	9	11	3	11	11	7
(O) MCF=(M-1)(10^5)/H	605	2300	102	558	873	106	164	539	358	84	199	286

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

(A) Send	1-2	4-5	3-4	2-3	1-2		CAL	→	→	→		
(B) Receive	→	1.25-1.50N	→		→		4-5	→	→	→		
(C) n separation												
(D) I	800	1800	1800	1000	800		1000	1000	1200	1200		
(E) Vdc (avg)	.30	44.3	8.64	1.15	.255		104.6	103	126.6	125		
(F) DCcal	→	→	→		→		.958	.968	.949	.960		
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42			.960				
(H) ρ dc=ExFxGx10^3/D	9.5	177	69.0	29.0	12.8							
(I) Vac Σ	.29	39.9	7.70	1.06	.240		103.7	103	123.8	124		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→		.992	1.000	.979	.992		
(M) ρdc/ρac =ExL/K	1.029	1.104	1.118	1.080	1.056							
(N) PFE=(M-1)(10^2)	3	10	12	8	6				.995			
(O) MCF=(M-1)(10^5)/H	305	59	171	276	437							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

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Project Demo Line 3-Spr. L-3 Field date 7/5/63 Data page _____ Comp. date 7/5/63. Comp by C.S.L.

(A) Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
(B) Receive	0.25-0.50s	→	0.50-0.75s	→	→	0.25-1.00s	→	→	→	1.00-1.25s	→	
(C) n separation												
(D) I	1800	1800	1000	1800	1800	800	1000	1800	1800	800	1000	1800
(E) Vdc (avg)	32.0	4.90	297	16.0	4.02	119	87.0	11.49	3.80	30.3	30.6	5.83
(F) DCcal USED	.960	→										
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	12.8	7.8	214	25.6	16.1	107	250	45.6	30.4	109	220	46.7
(I) Vac Σ	27.2	4.00	279	14.0	3.46	114	82.0	10.10	3.36	28.6	28.6	5.26
(J) AC noise x 2												
(K) Vac(corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995	→										
(M) ρ dc/ρac=ExL/K	1.170	1.218	1.059	1.139	1.157	1.039	1.054	1.131	1.125	1.053	1.062	1.100
(N) PFE=(M-1)(10^2)	17	22	6	14	16	4	5	13	13	5	6	10
(O) MCF=(M-1)(10^5)/H	1328	2797	28	543	976	36	22	287	411	49	28	214

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

(A) Send	4-5	1-2	2-3	3-4	4-5							
(B) Receive	→	1.25-1.50s	→	→	→							
(C) n separation												
(D) I	1800	800	1000	1800	1800							
(E) Vdc (avg)	2.65	8.64	11.10	3.26	2.15							
(F) DCcal	→	→	→	→	→							
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42							
(H) ρ dc=ExFxGx10^3/D	37.1	77.7	160	45.6	48.1							
(I) Vac Σ	2.42	8.30	10.40	3.06	2.10							
(J) AC noise x 2												
(K) Vac (corr) $=\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→							
(M) ρdc/ρac =ExL/K	1.090	1.034	1.062	1.060	1.020							
(N) PFE=(M-1)(10^2)	9	3	6	6	2							
(O) MCF=(M-1)(10^5)/H	243	44	39	132	42							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

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Project Demco Line 4 - Spur 1-5 Field date 7/6/63 Data page _____ Comp. date 7/6/63 Comp by [illegible]

(A) Send	3-4	4-5	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4
(B) Receive	0.25-.50s	→	.5-.75s	→	→	.75-1.00s	→	→	→	1.00-1.25s	→	→
(C) n separation												
(D) I	1400	→	→	→	→	→	→	→	→	→	→	→
(E) Vdc (avg)	125	33.8	146	25.9	10.2	104.1	26.3	6.77	3.43	54.7	18.0	5.58
(F) DCcal USED	.953	→	→	→	→	→	→	→	→	→	→	→
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	1.5	3	7.5	15
(H) ρ dc=ExFxGx10^3/D	63.7	68.9	74.4	52.8	52.0	53.1	53.6	34.6	35.0	111	92.2	56.9
(I) Vac Σ	114.0	30.9	126.0	22.5	9.38	96.0	22.0	5.89	3.15	51.2	15.7	4.74
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995	→	→	→	→	→	→	→	→	→	→	→
(M) ρ dc/ρac=ExL/K	1.091	1.089	1.152	1.146	1.080	1.079	1.190	1.143	1.083	1.063	1.140	1.171
(N) PFE=(M-1)(10^2)	9	9	15	15	8	8	19	14	8	6	14	17
(O) MCF=(M-1)(10^5)/H	143	129	205	277	154	151	354	413	237	57	152	301

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

(A) Send	4-5	1-2	2-3	3-4	4-5		CAL	→	→	→		
(B) Receive	→	1.25-1.50s	→	→	→		1-2	→	→	→		
(C) n separation												
(D) I	→	→	→	→	→		1000	1000	1200	1200		
(E) Vdc (avg)	3.02	26.0	9.84	3.22	2.05		105.8	104.0	127.7	124.0		
(F) DCcal	→	→	→	→	→		.946	.961	.941 .953	.968		
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42							
(H) ρ dc=ExFxGx10^3/D	53.9	133	101	57.4	58.5							
(I) Vac Σ	2.80	23.8	8.50	2.94	1.88		104.8	104.	124.2	123		
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→	→	→	→	→		.991	1.000	.975	.997		
(M) ρdc/ρac =ExL/K	1.073	1.086	1.150	1.090	1.084							
(N) PFE=(M-1)(10^2)	7	9	15	9	8			.995				
(O) MCF=(M-1)(10^5)/H	135	65	148	156	144							

HEINRICHS GEOEXPLORATION COMPANY
INDUCED POLARIZATION SURVEY COMPUTATION SHEET

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Project Demco Line A-Spr. 1-N½ Field date 7/6/63 Data page _____ Comp. date 7/6/63 Comp by C.G.L.

(A) Send	2-3	1-2	3-4	2-3	1-2	4-5	3-4	2-3	1-2	4-5	3-4	2-3
(B) Receive	.25-.5N	→	.5-.25N		→	.75-1.00N			→	1.0-1.25N		
(C) n separation												
(D) I	1400											
(E) Vdc (avg)	149	34.3	145	34.8	10.80	437	67.4	23.9	9.04	128	27.8	11.7
(F) DCcal USED	.953											
(G) Kn x 10^{-3}	.75	3	.75	3	7.5	.75	3	7.5	15	3	7.5	15
(H) ρdc=ExFxGx10^3/D	76.0	70.0	74.0	71.0	55.1	223	137	122	92.2	260	142	119
(I) Vac Σ	138	31.6	137	31.8	9.94	414	62.4	21.8	8.34	124	25.8	10.6
(J) AC noise x 2												
(K) Vac(corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal. USED	.995											
(M) ρdc/ρac=ExL/K	1.074	1.080	1.052	1.089	1.080	1.050	1.073	1.090	1.079	1.027	1.072	1.099
(N) PFE=(M-1)(10^2)	7	8	5	9	8	5	7	9	8	3	7	10
(O) MCF=(M-1)(10^5)/H	97	114	70	125	145	224	53	74	86	10	51	83

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

(A) Send	1-2	4-5	3-4	2-3	1-2							
(B) Receive	→	1.25-1.5N			→							
(C) n separation												
(D) I	→											
(E) Vdc (avg)	4.64	69.0	16.6	7.58	3.16							
(F) DCcal	→											
(G) Kn x 10^{-3}	26.25	7.5	15	26.25	42							
(H) ρdc=ExFxGx10^3/D	82.9	352	169	135	90.1							
(I) Vac Σ	4.40	67.3	15.4	6.98	2.86							
(J) AC noise x 2												
(K) Vac (corr) = $\sqrt{I^2 - J^2}$												
(L) AC-DC cal.	→											
(M) ρdc/ρac =ExL/K	1.049	1.020	1.071	1.080	1.100							
(N) PFE=(M-1)(10^2)	5	2	7	8	10							
(O) MCF=(M-1)(10^5)/H	59	6	42	59	111							

AGREEMENT AND OPTION

This agreement is made this 14th day of February, 1964 by and between THE VALLEY NATIONAL BANK OF ARIZONA, acting as Trustee with respect to all the matters herein referred to, and WILLIAM P. VOITA, SR., herein called First Parties, and DEMCO CORPORATION, a corporation, Second Party.

Whereas First Parties, each as to an undivided one-half thereof, are the owners of patented mining claims described as follows:

Hualapai No. 1	Hualapai No. 6
Hualapai No. 2	Hualapai No. 7
Hualapai No. 3	Hualapai No. 8
Hualapai No. 4	Hualapai No. 22
Hualapai No. 5	Hualapai No. 23

all lying in Sections 20 and 29, Township 8 North, Range 3 East, Gila and Salt River Base and Meridian, Maricopa County, Arizona and more particularly described, located and referred to in Mineral Survey No. 2355 of the United States Land Office at Phoenix, Arizona, United States Patent to which was dated April 7, 1910, being Patent No. 123968; which said property will hereinafter be referred to collectively as "said property".

And whereas the parties desire that First Parties give and grant unto Second Party the right to explore the mineral resources of, and an option to purchase the said property upon the terms and conditions herein expressed:

Now therefore, in consideration of the sum of Two Thousand Dollars ($2,000.00) to them in hand paid by Second Party, First Parties do hereby give and grant unto Second Party the right at its option to purchase the said property at any time within twenty-six (26) months following the date of this instrument, for the sum of Thirty Three Thousand Dollars ($33,000.00).

And in further consideration of said payment presently made and the mutual undertakings of the parties it is further mutually agreed:

1. It is understood that Second Party desires to conduct prospecting and exploration work on said property during the option period, and to this end Second Party shall have exclusive possession of said property during said twenty-six month period with the privilege of prospecting, drilling, surveying, excavating, and sampling the same and constructing such roads and developing such water thereon as it may deem necessary for these purposes; and Second Party shall not be liable for damages to said premises by reason of any such operations carried on upon said property.

2. Second Party shall post and keep posted on said property at such places as are required by law notices that First Parties, and the said property, shall not be liable for labor and/or materials furnished by others upon said property.

3. Second Party shall not prior to exercising the option to purchase said property remove therefrom, nor sell from the same, any minerals of any character, except such as may be required for testing, analysis and assaying. This provision shall not apply to water, however.

4. Second Party shall have the right, prior to the end of said twenty-six month period and for thirty days thereafter, to remove any machinery, fixtures, tools or structures, placed by it upon the said property, excepting underground timbering, and if not so removed the same shall thereafter belong to First Parties.

5. Should Second Party desire to exercise the option herein extended, it shall, while said option is still in force, notify each of First Parties in writing of its desire so to do. Such notices may be delivered in person or may be mailed by registered mail to First Parties, and shall be timely if mailed and postmarked within said option period. Any such notice may be mailed to The Valley National Bank of

Arizona at its head office in Phoenix, Arizona, and to William P. Voita, Sr. at

6. Within ten days following the exercise of the said option by Second Party it shall deposit with a company doing a general title insurance business in the Phoenix, Arizona area the sum of Seven Thousand Three Hundred Dollars ($7,300.00) as earnest money and as a part of the purchase price of said property. The title company with which such deposit is to be made shall be mutually agreed upon and if not mutually agreed upon then Second Party may elect to deposit said sum with any such title insurance company.

7. Upon such deposit being made the parties will enter into and execute escrow instructions with said title insurance company for the sale and purchase of said property, each paying the charges of such title insurance company in accordance with custom, and shall enter into a formal contract for the sale of said property by First Parties to Second Party, which said agreement shall contain all the provisions in such agreements now in use, or approved, by such title insurance company, not, however, inconsistent with the following provisions which shall be included in such agreement:

(a) That the balance of Twenty Five Thousand Seven Hundred Dollars ($25,700.00) of the purchase price shall be paid in seven equal annual installments, the first to be made one year from the date of exercising said option by Second Party, and annually thereafter until said balance be paid; and Second Party shall pay annually in addition to said payments and at the times thereof interest at the rate of four per cent (4%) per annum computed on the unpaid balance of said purchase price from time to time. Second Party may, however, make extra payments or may pay the balance remaining at any time, without penalty.

(b) That Second Party shall pay all taxes assessed against said property after the date of said agreement and while it remains in force, and a prorated portion of the current taxes assessed for the year in which the agreement is made.

(c) That Second Party while not in default under said agreement may mine said property in like manner as the owner thereof, and may remove and sell minerals therefrom; but that until said property be fully paid for all mining shall be conducted in good miner-like fashion, in order to preserve the value thereof as a mine, and in accordance with all applicable mining laws and regulations.

(d) That in the event of default by Second Party in carrying out said agreement it shall forfeit all rights to said property, and to any payments theretofore made, and that this shall be the sole remedy of First Parties for such default.

(e) That First Parties shall furnish Second Party a policy of title insurance guaranteeing merchantable title to said property.

(f) That if at any time First Parties deem Second Party to be in default under said agreement they shall notify Second Party thereof in writing specifying the exact nature of such default, and Second Party shall have sixty days thereafter in which to correct said matters, and no action to forfeit Second Party's rights under said agreement by reason of such specified matters shall be taken in said sixty-day period. This paragraph shall not apply to the failure of Second Party to make payment of said purchase price nor to pay taxes on said property.

(g) That notices of non-liability of First Parties shall be posted and kept posted on said property, and that

Second Party shall hold First Parties harmless as to any liability, either for labor and materials furnished thereon, or for injuries to any person or persons or damage to the property of any person occurring thereon or by reason of operations of Second Party on said property.

(h) That the said agreement shall be binding upon the heirs, personal representatives and assigns of the parties.

IN WITNESS WHEREOF the parties have hereunto set their hands the day and year first above written.

THE VALLEY NATIONAL BANK OF ARIZONA,
As Trustee

BY_____
Trust Officer

_____
WILLIAM P. VOTTA, SR.
First Parties

DEMCO CORPORATION

BY_____
Second Party

STATE OF ARIZONA)
) ss
County of Maricopa)

On this _____ day of February, 1964 before me the undersigned notary public personally appeared _____, a _____ trust officer of The Valley National Bank of Arizona and acknowledged that he executed the foregoing instrument for and in behalf of said corporation for the purposes therein set forth, and that he was duly authorized so to do.

In witness whereof I have hereunto set my official seal this _____ day of February, 1964.

_____
Notary Public

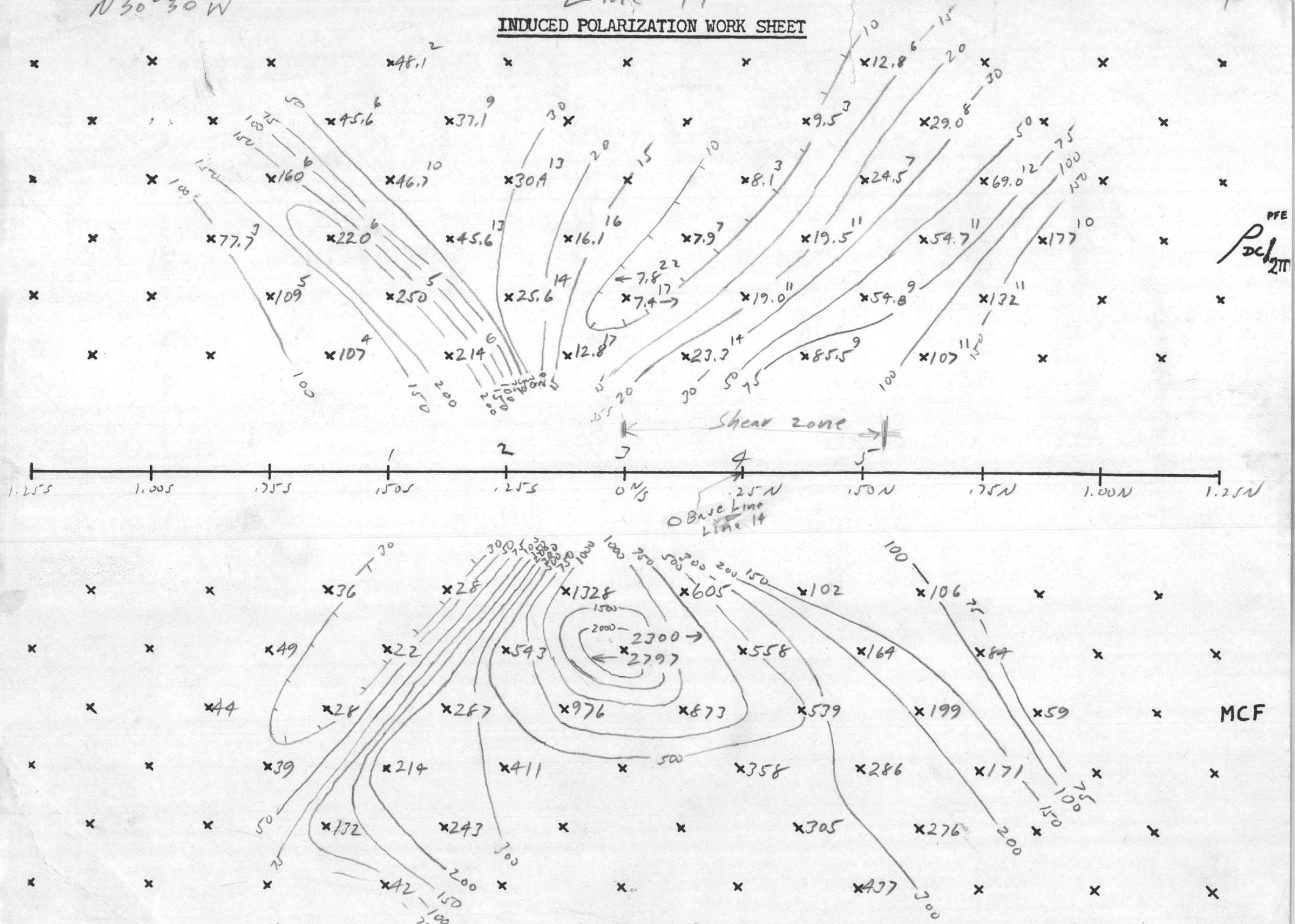
My commission expires:

N30°30'W

Line 14

4

INDUCED POLARIZATION WORK SHEET



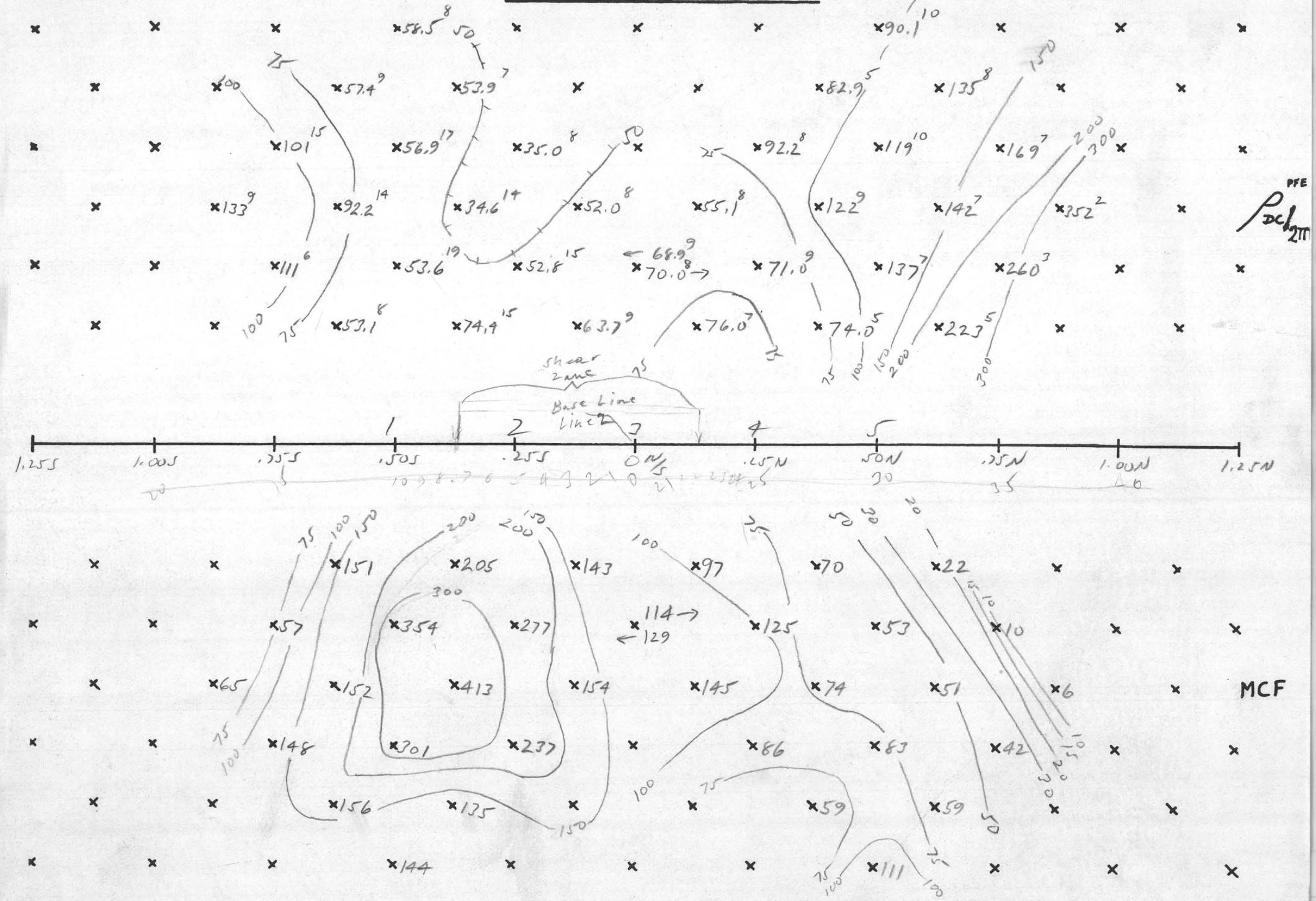
Area Demco - Drizabu - Line 14 - Spur 1 - N05½ Scale 1" = 250 Date 7/5/63

N 30°30'W

Line 2

5

INDUCED POLARIZATION WORK SHEET



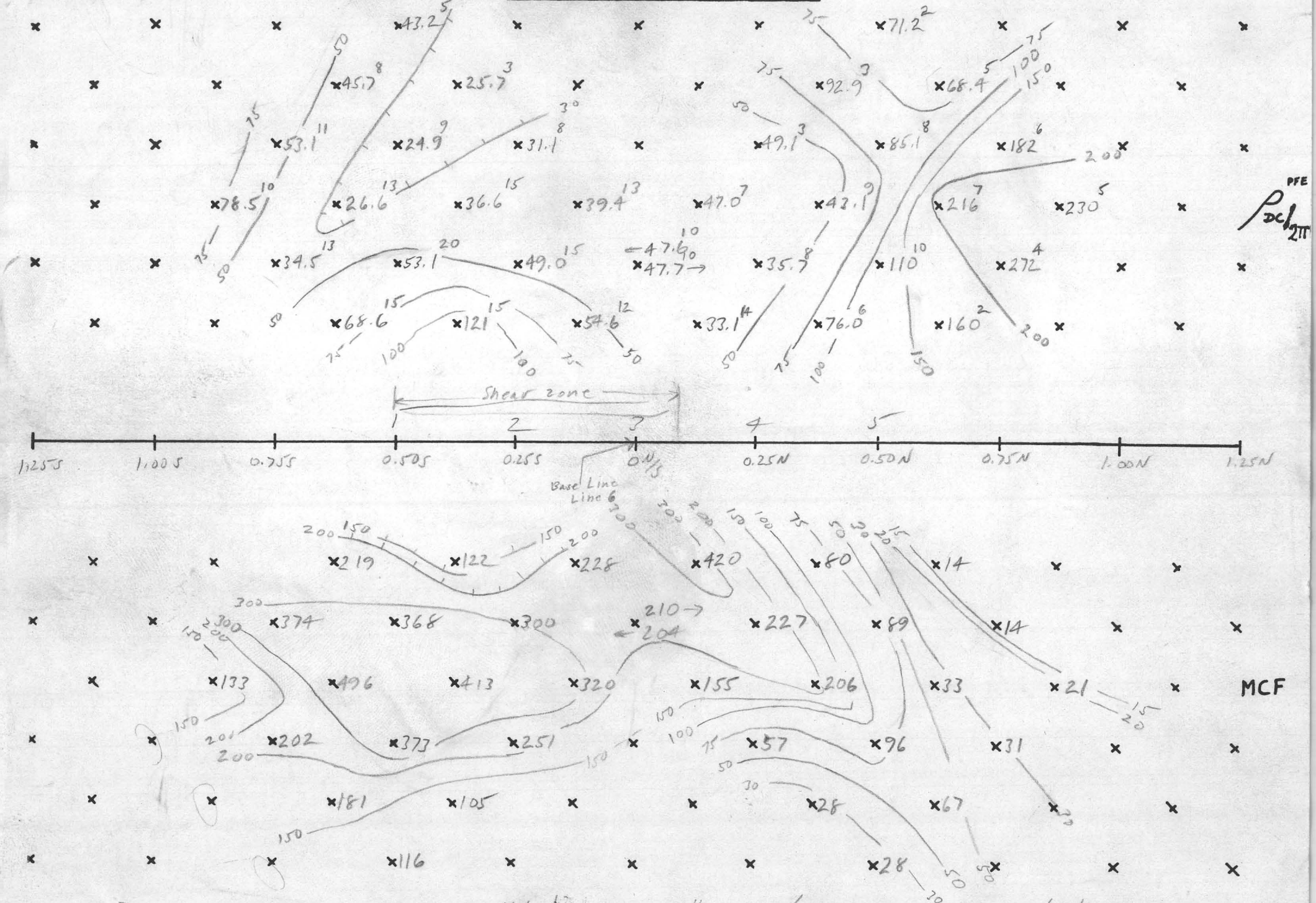
Area Demuro - Orizaba - Line 2 - Spr. 1 - N/S Scale 1" = 250' Date 7/6/63

N 30°30'W

Line 6 Spread 1 (a = 250')

1

INDUCED POLARIZATION WORK SHEET

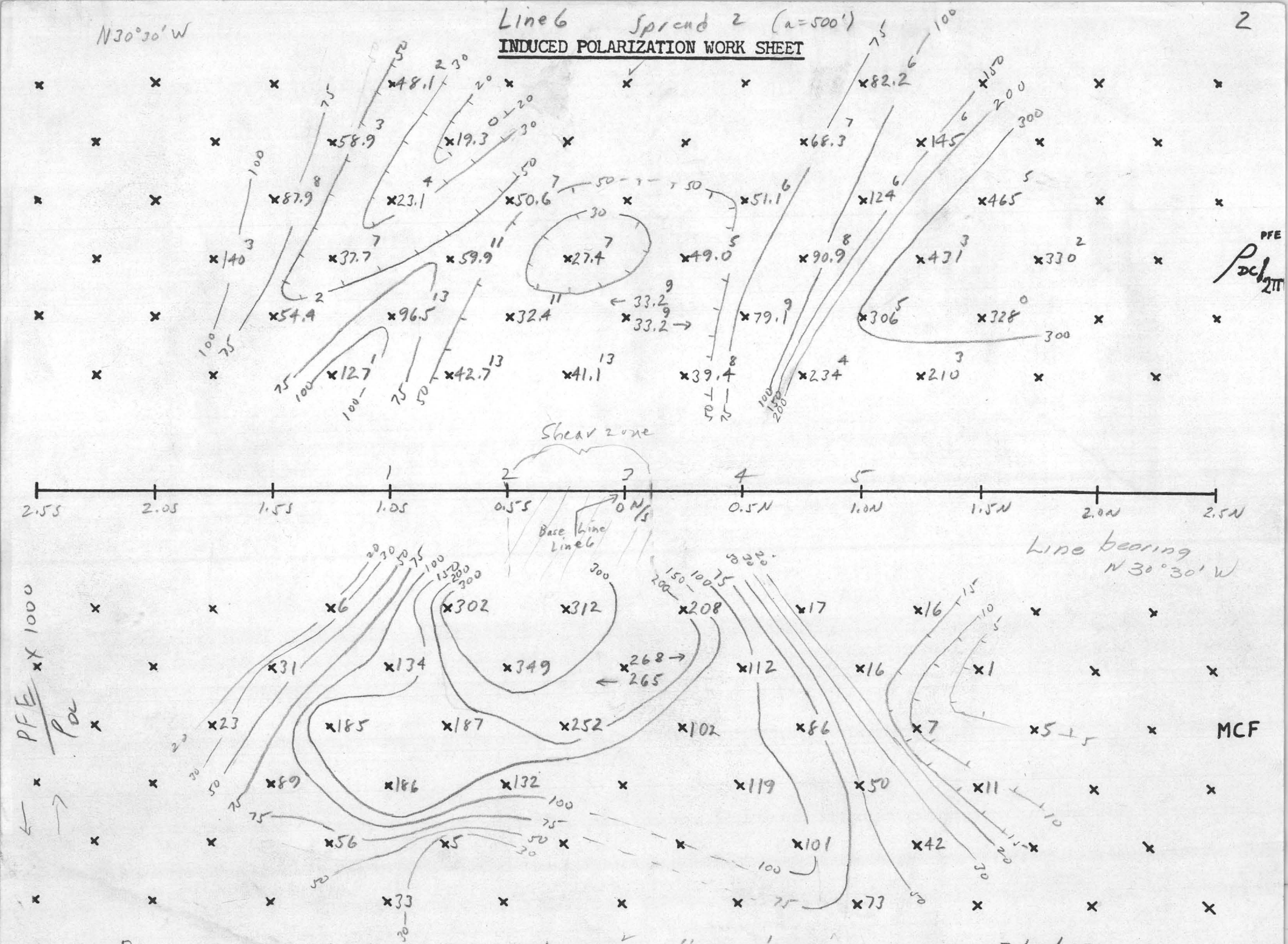


Area Demco - Orizaba - Line 6 - Spr. 1 - N45½ Scale 1" = 250' Date 7/2/63

N30°30'W

Line 6 Spread 2 (a=500')

INDUCED POLARIZATION WORK SHEET



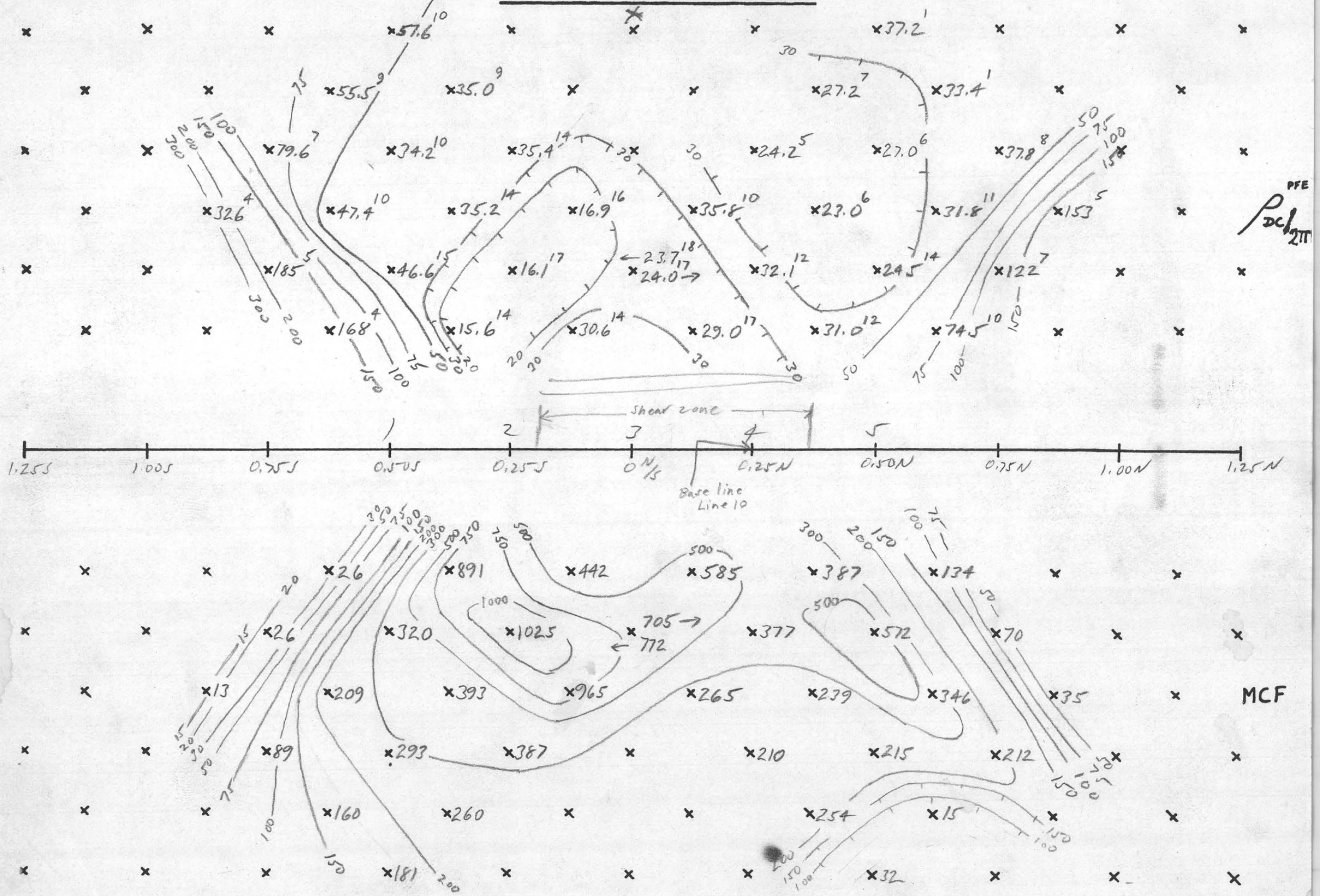
Area Demco - Orizaba - Line 6 - Spr. 2, N0S½ Scale 1" = 500' Date 7/3/67

Floyd
Smitty: Call
622 1683

N30°30'W

Line 10 - (a = 250')

INDUCED POLARIZATION WORK SHEET



Area Demco - Orizaba - Line 10 - Spr. 1 - N & S ½ Scale 1" = 250' Date 7/4/67

1	2	3	4	5	6	7	8	9	10	11
83	81	80	81	78	112	84	80	88	81	80
84	82	81	85	78	79	86	106	97	80	75
82	82	82	91	78	80	85	95	80	80	78
84	83	83	84	75	80	81	75	80	80	80
85	82	83	85	80	83	80	79	81	85	79
83	82	86	88	97	85	80	78	82	85	79
80	84	83	102	80	85	80	79	82	79	85
85	80	85	90	80	80	80	80	80	78	85
85	84	84	90	78	80	81	79	80	79	83
85	81	81	90	78	82	85	80	80	80	85
84	81	85	91	79	83	85	80	79	82	83
85	84	85	92	80	83	89	80	80	85	80
85	85	88	92	82	85	90	85	79	80	81
85	84	93	95	84	85	94	90	80	80	85
87	90	92	96	85	87	95	95	81	80	85
89	85	92	96	86	87	93	95	90	83	83
75	85	91	92	85	87	95	90	159	95 82	85
66	85	90	90	80	87	91	85	83	82	81
83	85	90	85	75 73	83	95	82	78	80	81
90	85	92	105 90	39	73	85	81	78	85	83
91 90	84 84	90 91	76	79	76 76 80	82 82 79	82	80 80 84	80 81	83
94	83	85	80	80	85	79 79	81	79	92	84 81
91	83	86	80	82	80	80	83	75 80	85 76	85
89	85	85	83	83	80	78	80	78	82	82
91	80	84	80	82	80	80	79 79	80	85	84
90	80	80	78	80	83	81	84 79 81	79	81	83
86	81	82	79	84	83	80	84 82	79	82	85
87	81	82	80	83 81	84	79	84 81	82	81	85
87	85	80	80	84	82	75	83 81	79	81	83
83	81	81	79	85	81 79	80	86 80 79	79 80	82	85
85	81	82	82	85	80 79	81 80	82 80	80	82	84
85 81	81	85	83	84	78	84	85 80	79	82	85
84	81	80	85 80	85	78	79	83 80	79	80	80
85 85	80 80	82 82	86	83	80	80	84 82	79	78	82
88	80	81	81	84	80	83	85 83	80	70	83
85	81	80	82	83	81	80 84	82 82	78	70	82
82 84	80	80	82	85	80 81	80	82 81	79	73	82
80	85 85	84	82	85	81	82	80 79 85	88	117	96
80	83	84	84	84	79	82	74 75	85 91	83	115 112
85	84	83	81 80	80 81	80	80	79 79	135	90	83
97	85	103 107	83	82	80	80	85 81	78	82 85	82

LEGEND

Definition: The intensity of symbols and degree of color is intended to represent the comparison of one area to another except where specifically classed or alteration obliterates the detail

Red	Heavy Gossan: along structural features	
Red	Medium to Heavy Gossan	
Brown	Schist: identifiable to have been mineralized	
Brown	Copper box work: identifiable	
Purple	Pyritic Cavities: associated with copper.	+ + + ++
Black	Back Iron residue	x x x x x x
Yellow	Silicification: massive	
Red. Yellow	Quartz: [redacted] Gossan bounded	
Red Yellow	Quartz: and Gossan mixed	
Green	Copper Oxide: showing on surface or in cuts	
Green	Probable Copper Oxide: at shallow depth.	P P P
Silver	Sericitic: Gouge association	

Patent claims

- o Orizaba
- o Belcher
- o Hualapi # 1-2-3-4-5-6-7-8-22-23

Unpatented claims

- ✓ North Central
- ✓ South Central
- July-Dec 69 Bisbee
- ✓ Lordsburg
- ✓ Bagdad
- ✓ Pima
- ✓ Miami
- ✓ Courtland
- ✓ Safford
- ✓ Sure Susan
- ✓ Cabin Road # 1-2-3-4
- ✓ Westernar # 1-2-3-4-5-6-7-8-9-10
- ✓ Little Joe # 1-2-3

Appendix C (Cont)

DUVAL CORPORATION
COPPER DIVISION — ESPERANZA PROPERTY
SAHUARITA, ARIZONA

CERTIFICATE OF ASSAY

11-27-64

Mountain Copper Co
DDH 54

BEAKER NOS.	MARKS, ETC.	SAMPLE GMS.	% Total Cu		Interval		Int
	EX 1920			.02	33	38	5
	1921			.02	38	43	5
	1922			.14	43	48	5
	1923			.04	48	53	5
	1924			.02	53	58	5
	1925			.02	163	168	5
	1926			.02	168	173	5
	1927			.02	173	175	2
	1928			.02	190	195	5
	1929			.02	195	200	5
	1930			.02	200	204	4
	1931			.02	230	235	5
	1932			.02	297	302	5

FORM 311 M.L.

MOUNTAIN COPPER MEMO

TO:	FROM:
H. S. Fowler	G. J. Swann
RE: Geochemical Survey Samples	DATE: September 13, 1963

RESULTS:

Sample No.	ppm Cu
21-6	1220
1+35'-6	110
23-6	80
7-6	10
22-6	30
12-6	0
11-6	120
14-6	120
9-6	50
5-6	100
25-6	170
3-6	80
16-6	70

REMARKS:

These results were obtained on the X-Ray Emmission Spectrometer, and two of the results were checked in the wet analysis labratory. The samples checked were #21-6 and #1+35'-6, the former checked perfectly, and the difference in results on the latter sample can be explained by the difficulty to determine copper values at this low level by wet analytical methods.

I am confident that the results obtained are correct in relation to one another, and with one good chemical check, I believe the actual copper content level is determined sufficiently well to indicate any anomalies.

I do not feel that these analysis warrant further work at the present time, with regard to improving the accuracy of the results.

cc: C. W. McClung
C. P. Matzinger