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

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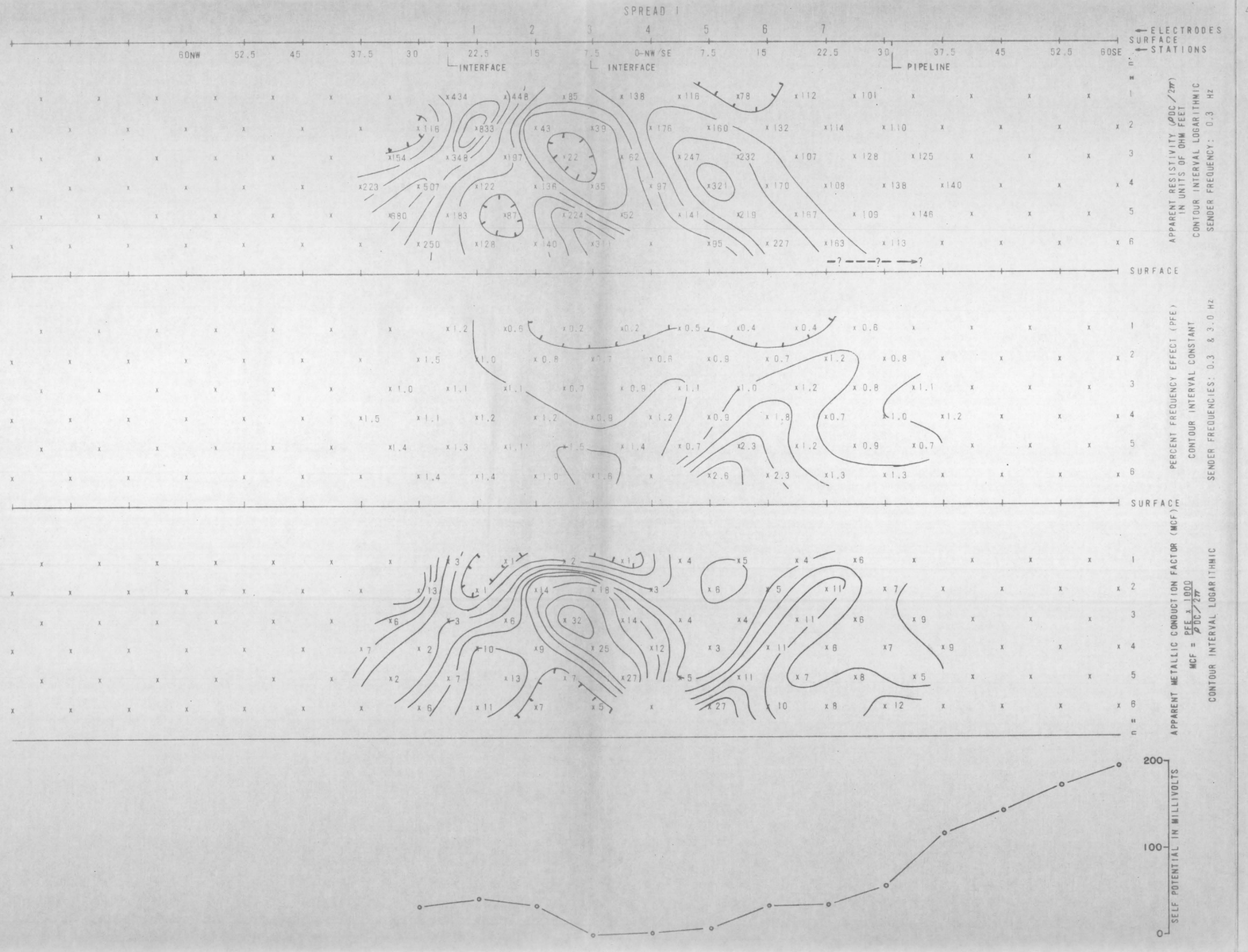
LINE NO.
3
SPREAD(S)
1

File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS



RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

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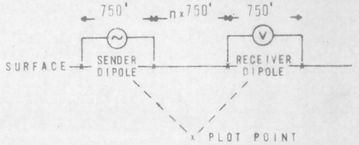
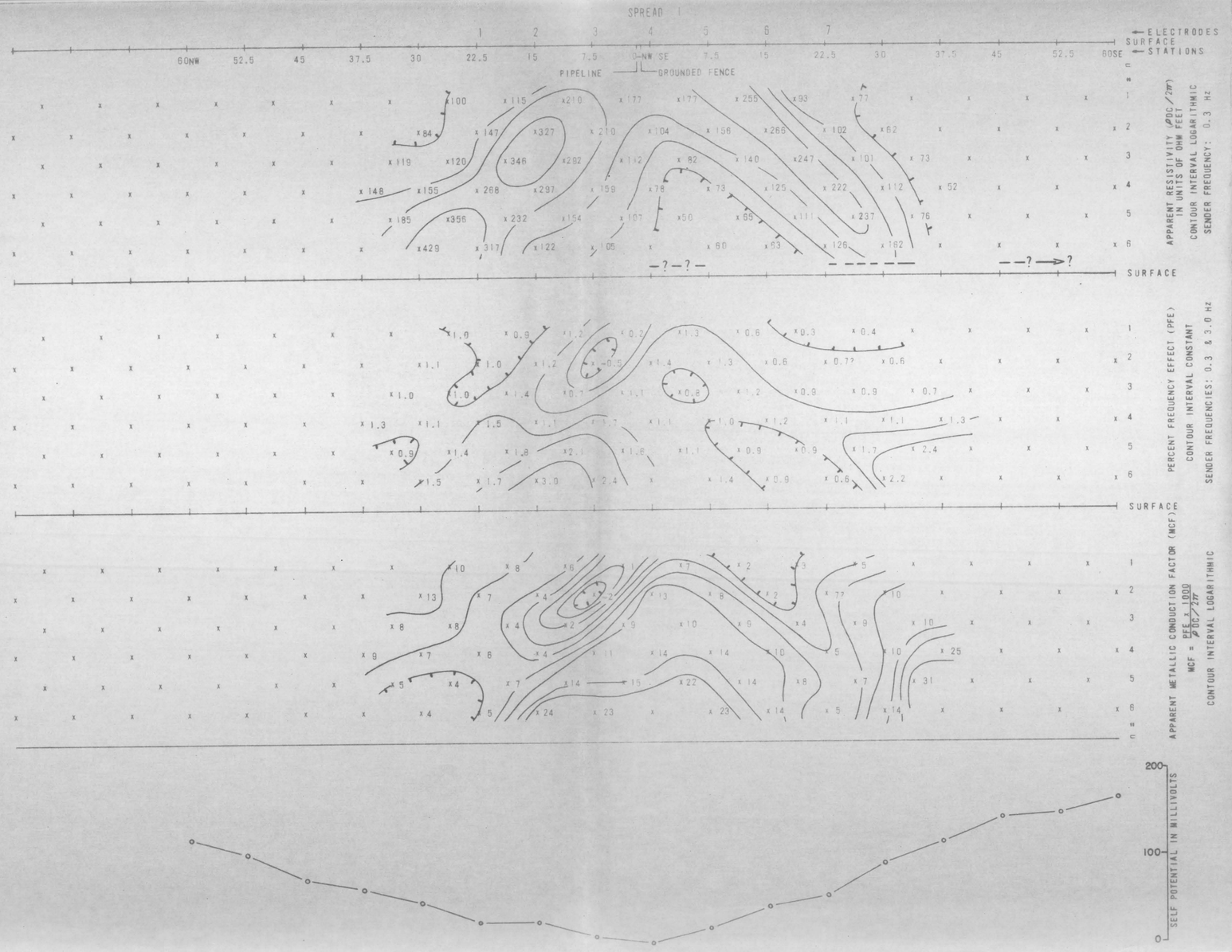


AREA
EMPIRE MOUNTAINS

LOOKING
N 45° E

DATE
APRIL 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



463-69

LINE NO
2
SPREAD(S)
1

File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

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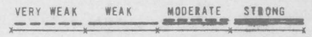

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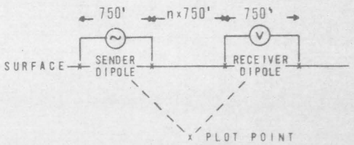

AREA
EMPIRE MOUNTAINS

LOOKING
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DATE
APRIL 1970

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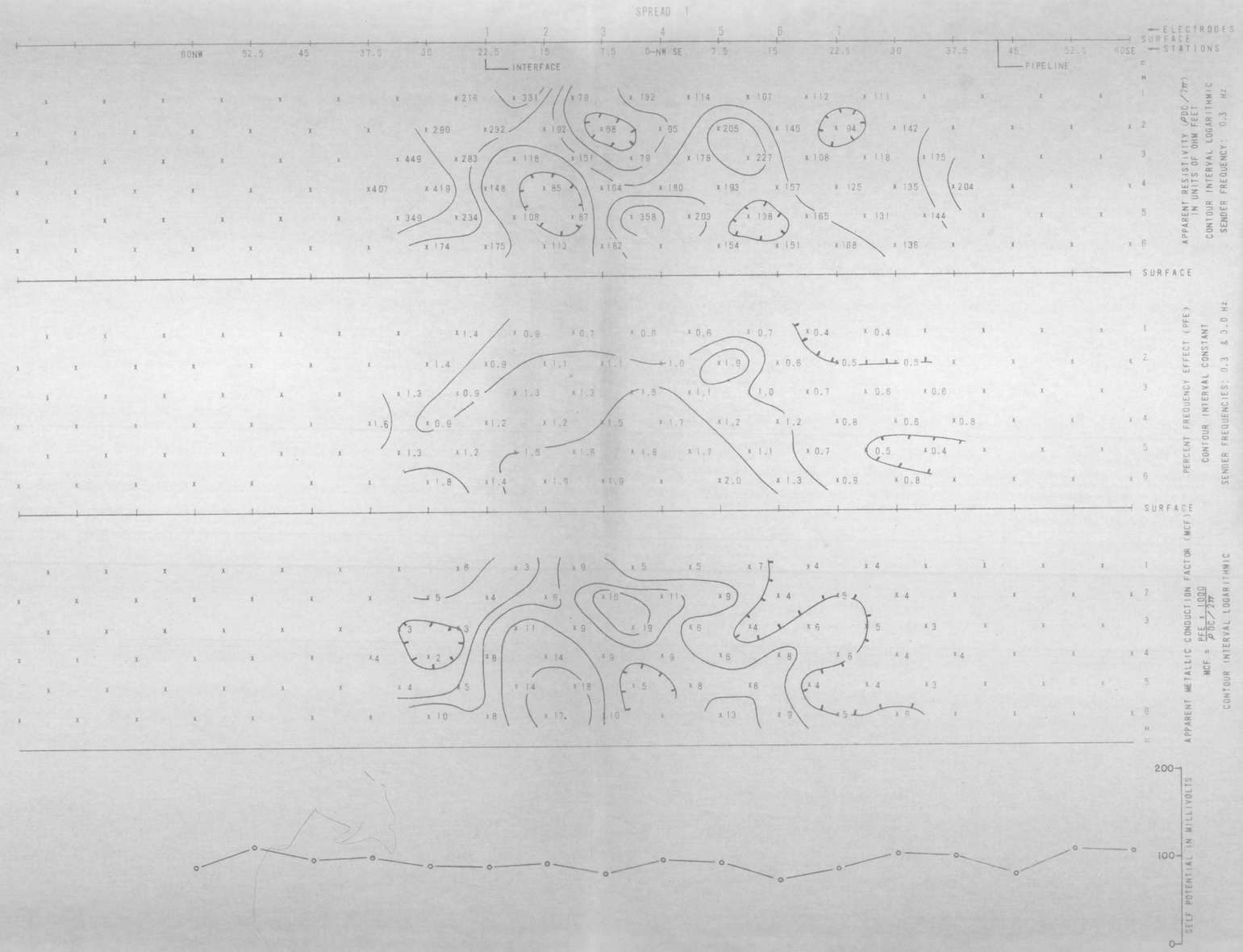

463-69

LINE NO.

SPREAD(S)

File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

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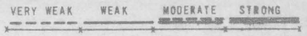

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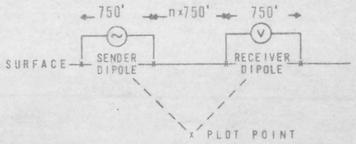

AREA
EMPIRE MOUNTAINS

LOOKING
N 50° E

DATE
APRIL 1970

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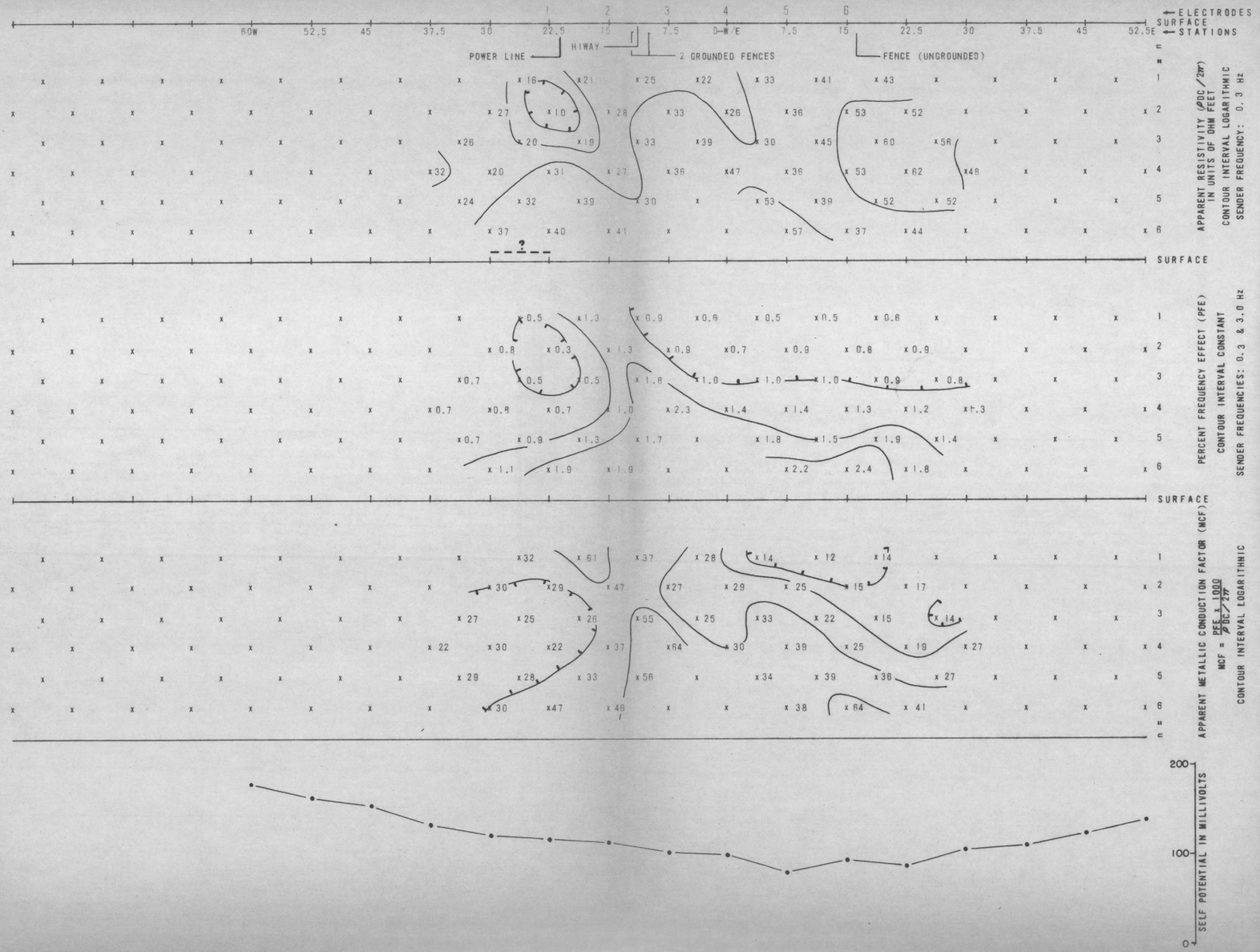

463-70

LINE NO.
22
SPREAD(S)
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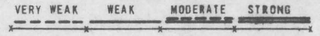
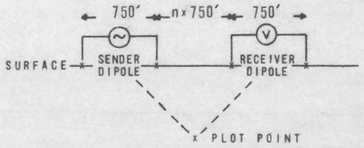
RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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NORTH

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OCT 1970

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U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
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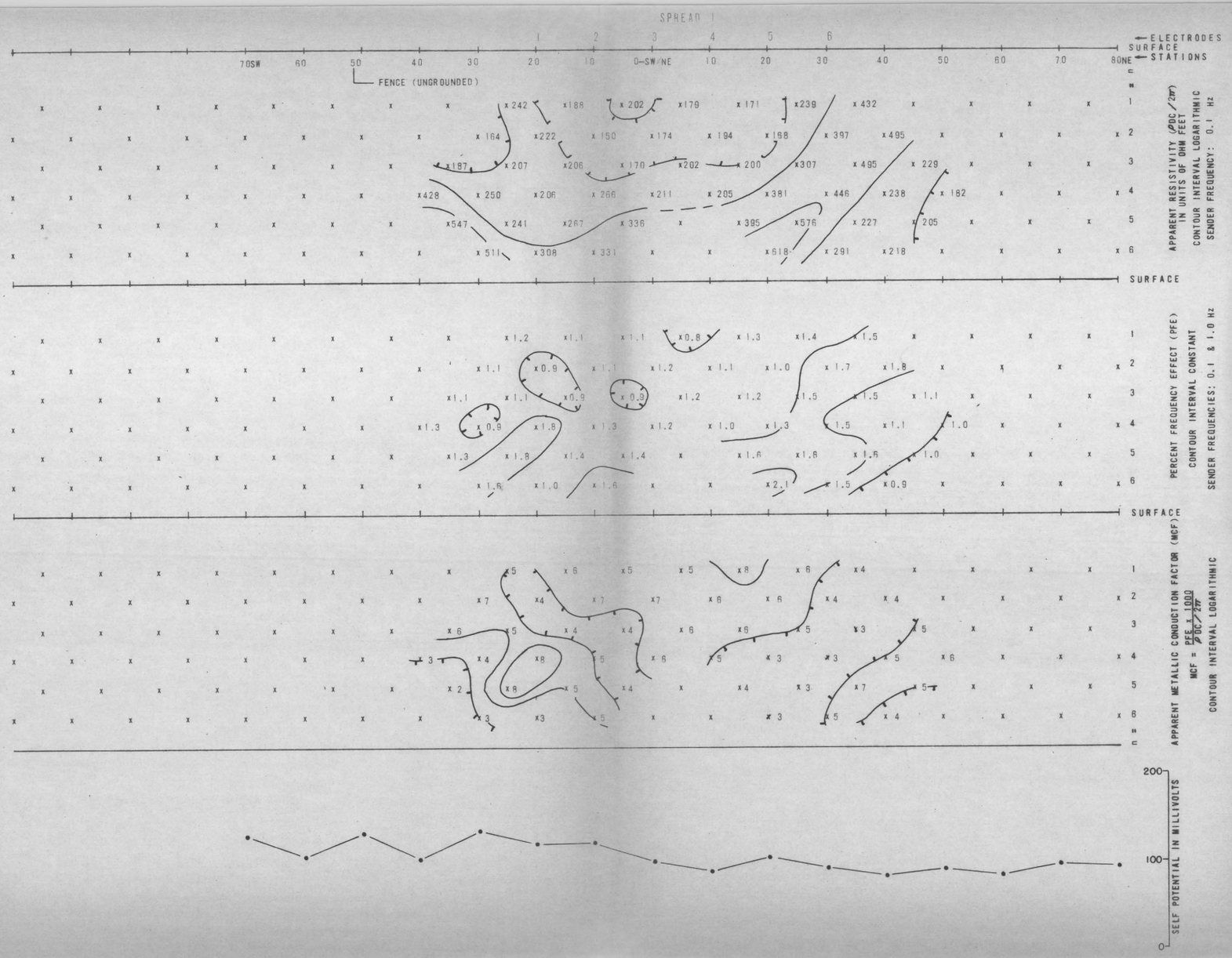

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LINE NO. 21
SPREAD(S) 1

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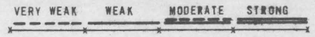
RELATIVE ANOMALY STRENGTH



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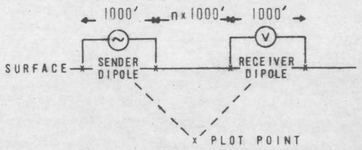

AREA
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U.S.A.
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Tucson, Arizona 85703
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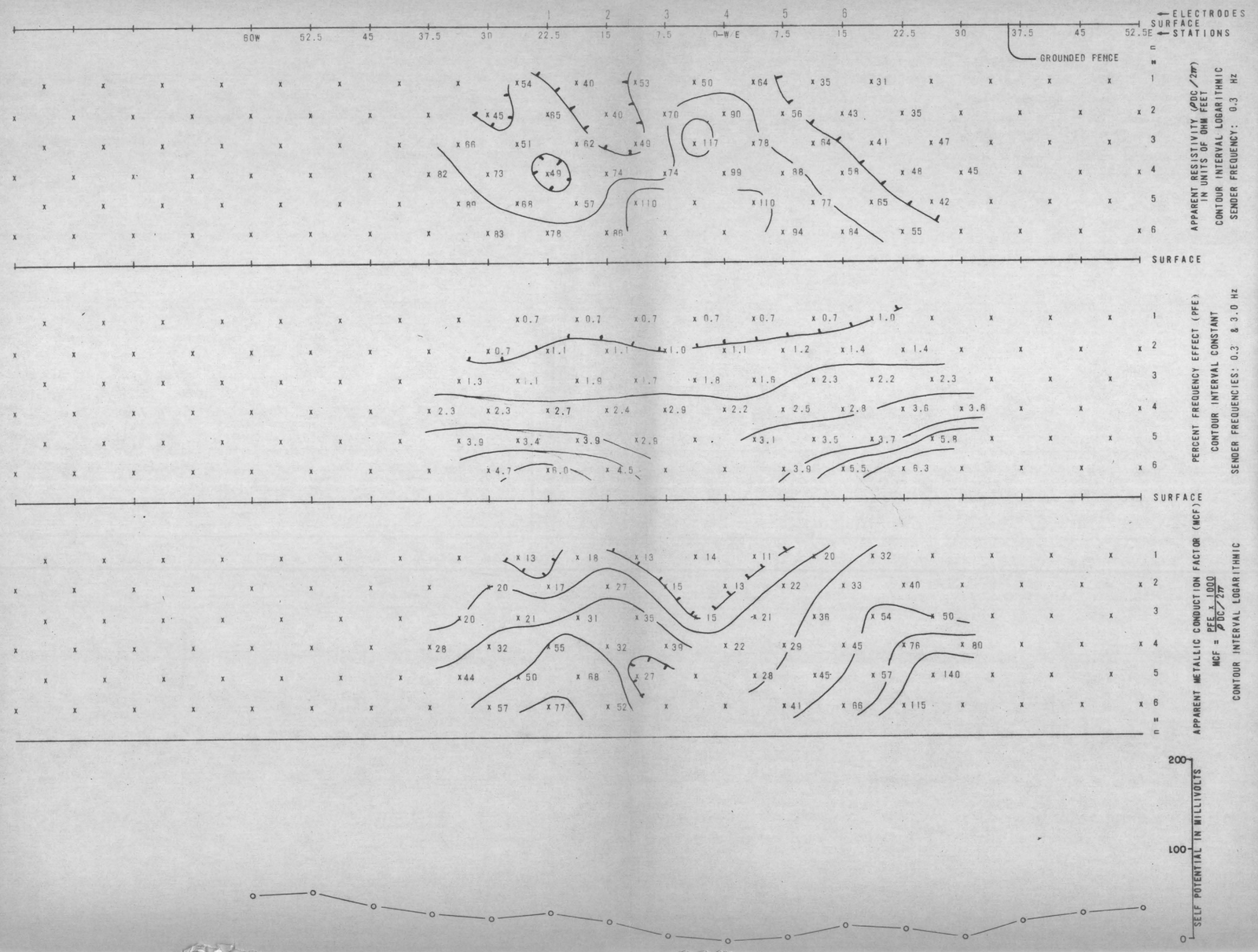

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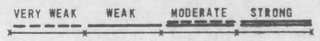
RELATIVE ANOMALY STRENGTH



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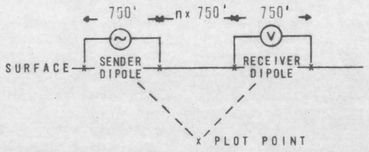

AREA
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OCT 1970

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U.S.A.
Post Office Box 5964
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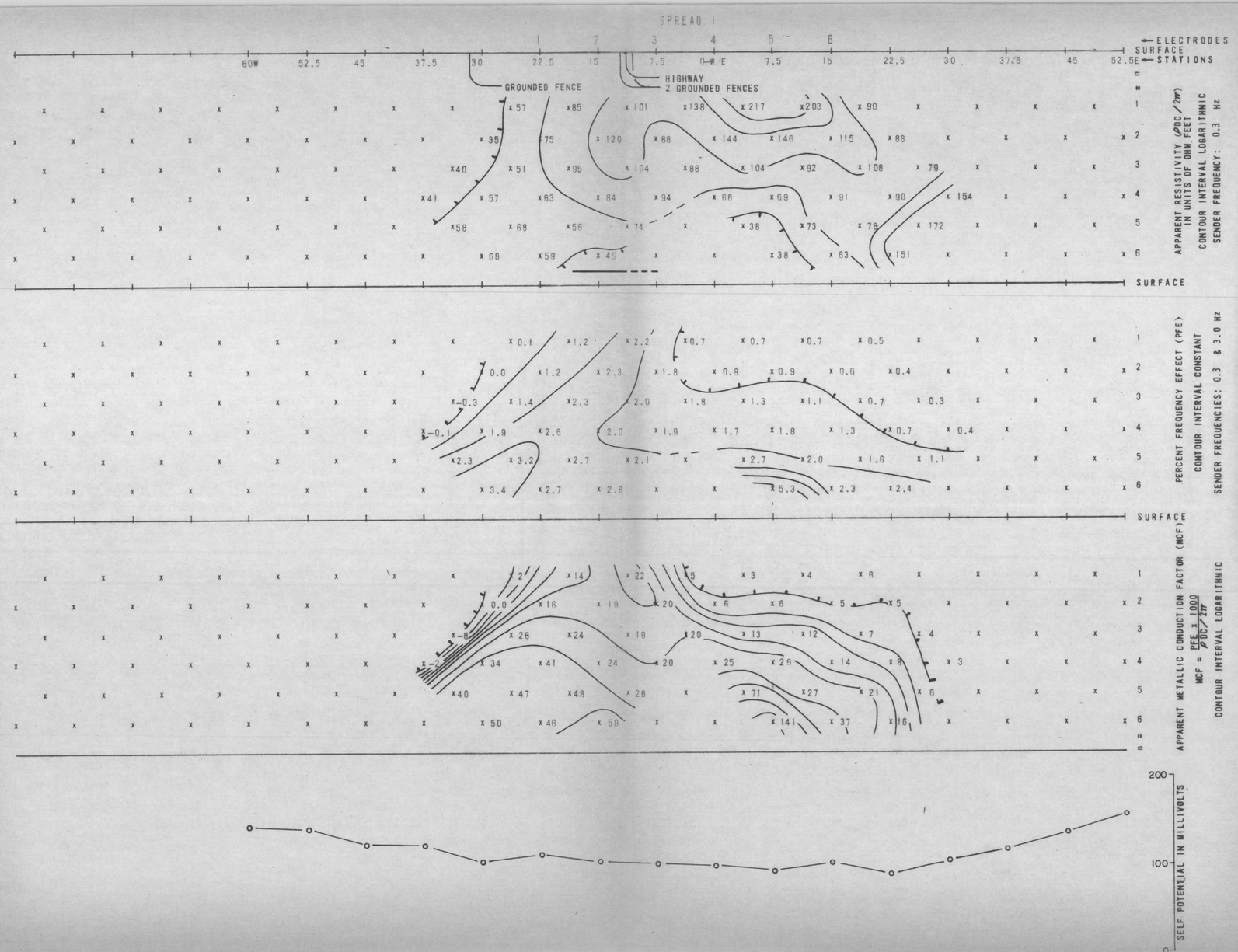

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LINE NO. 19

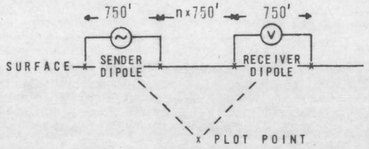
SPREAD(S) 1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
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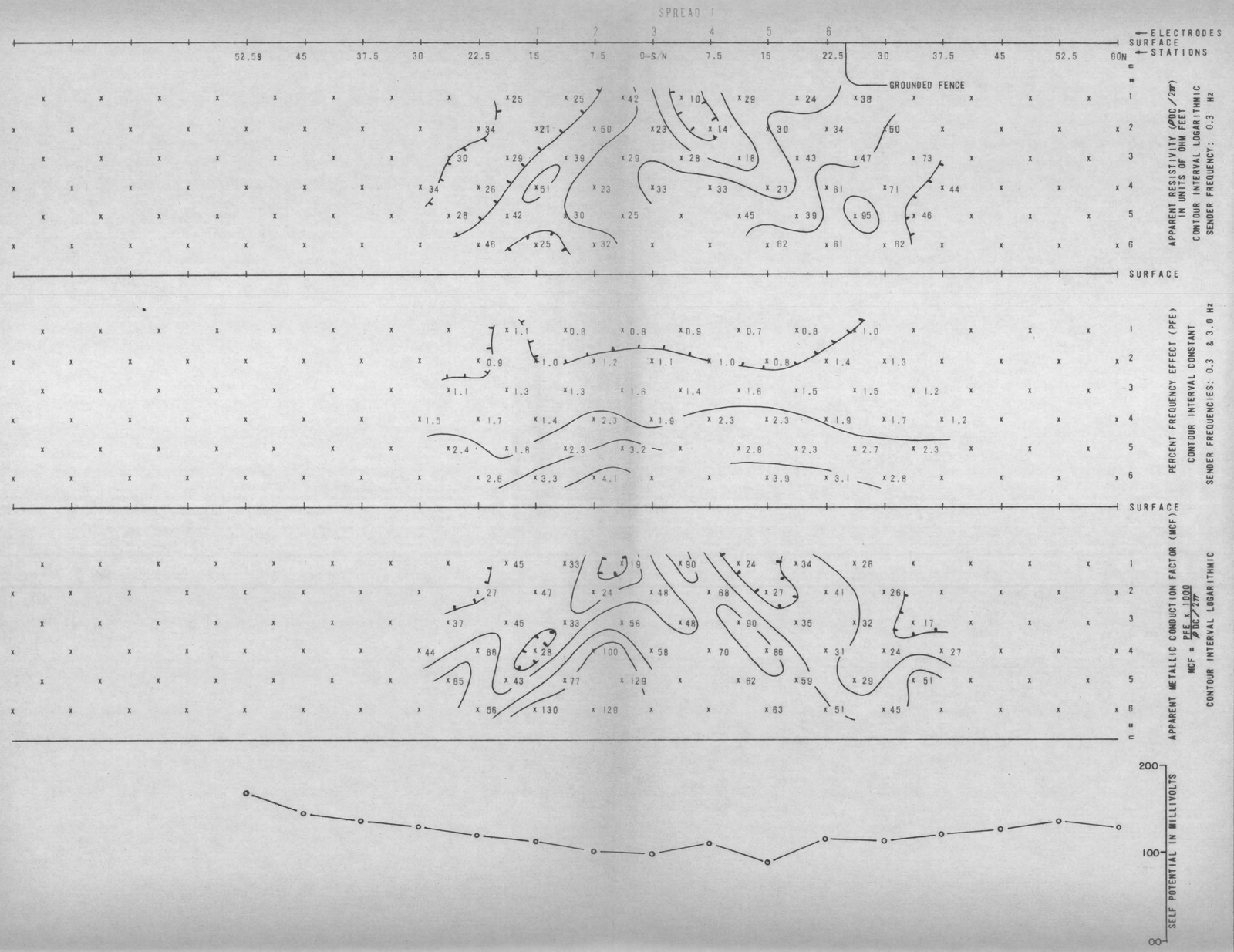


463-70

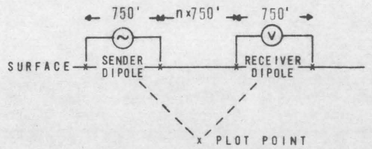
LINE NO.
18
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



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DATE
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39 Hume Street
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U.S.A.
Post Office Box 5964
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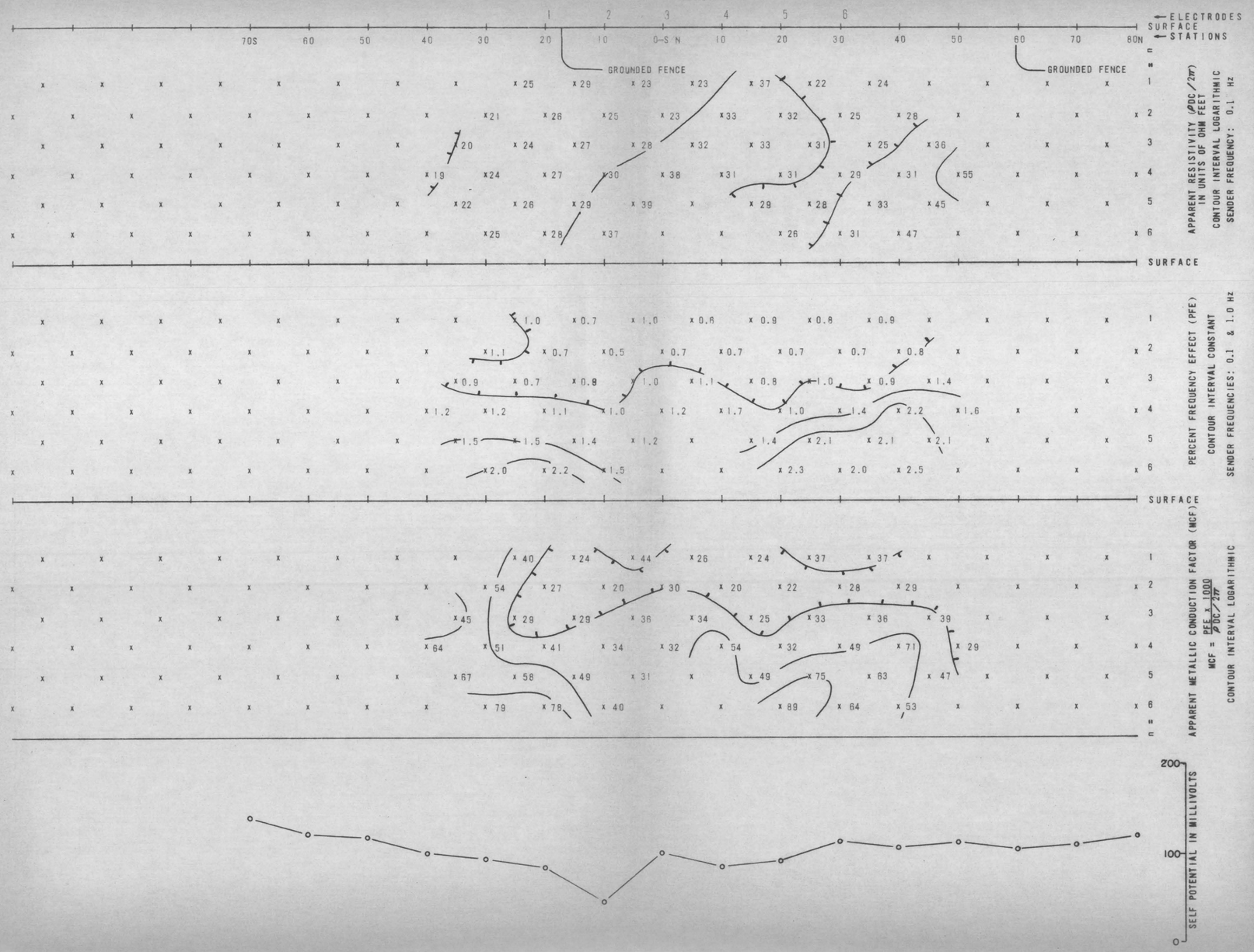
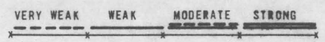
LINE NO. 17
SPREAD(S) 1

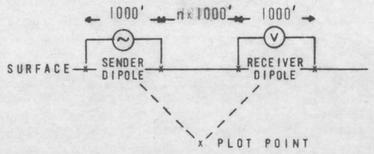
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS



RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

LOOKING
WEST

DATE
OCT 1970

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AUSTRALIA
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39 Hume Street
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Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
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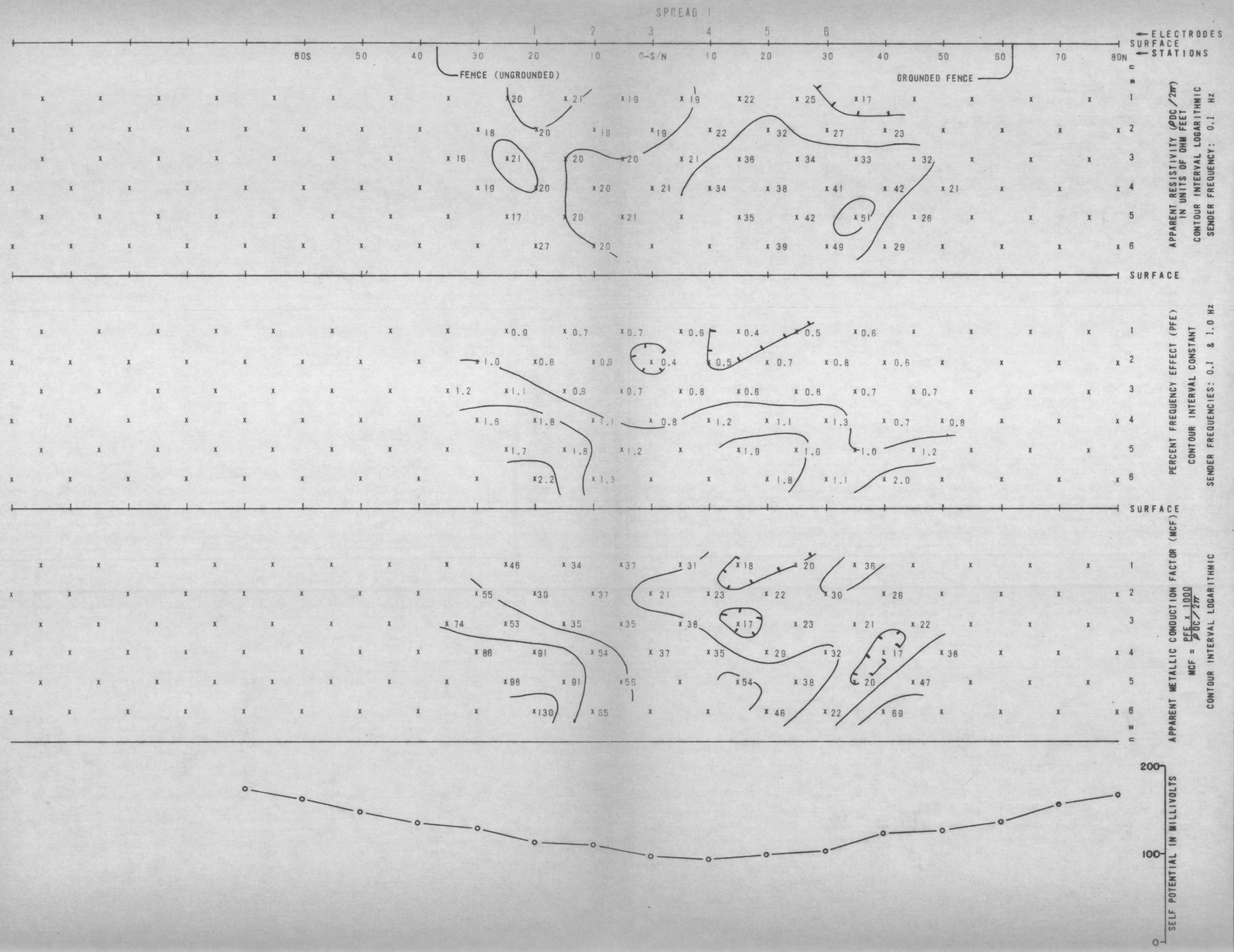


463-70

LINE NO. 16

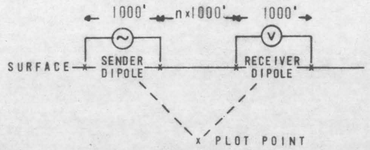
SPREAD(S) 1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



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EMPIRE MOUNTAINS

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DATE

OCT 1970

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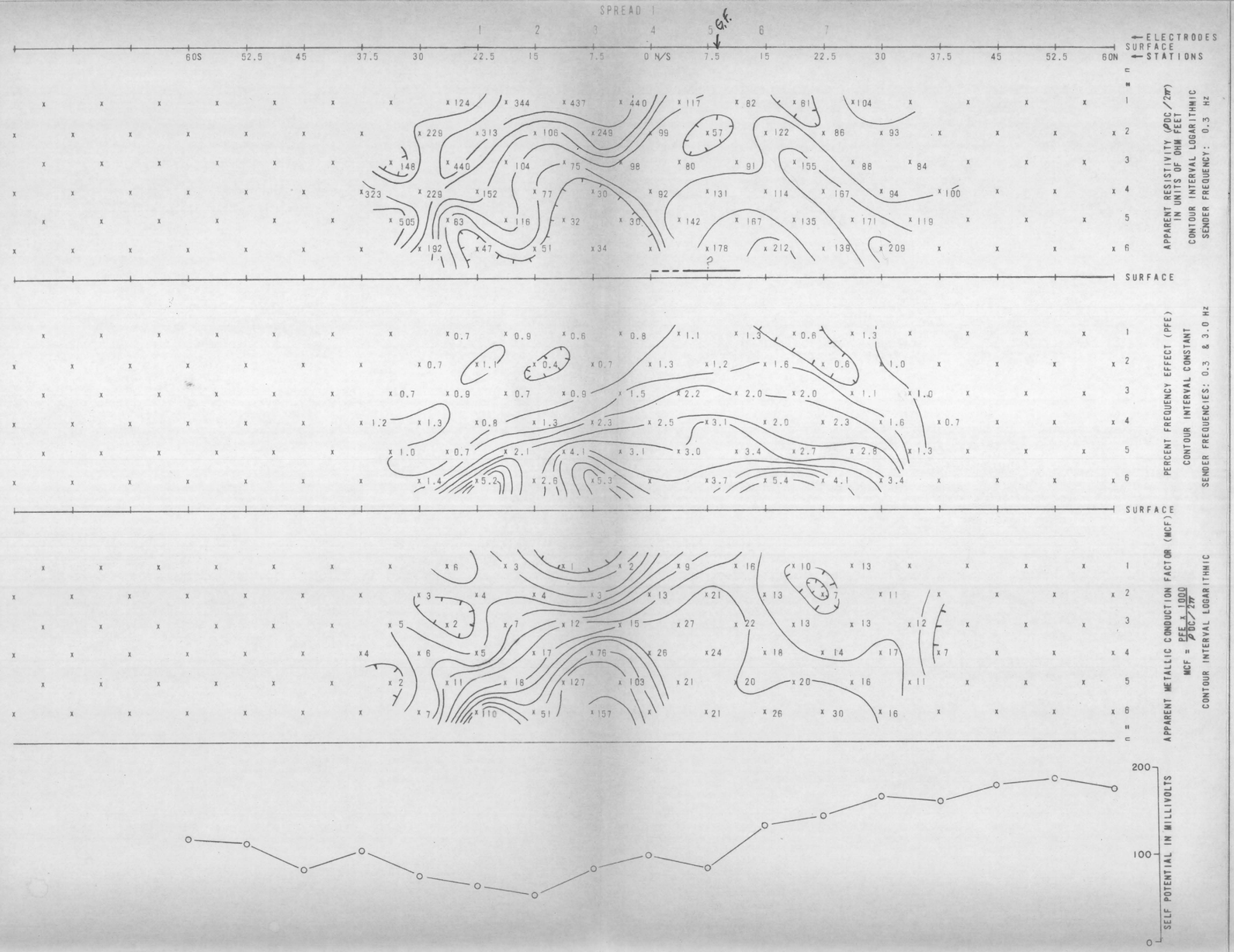


463-70

LINE NO.
15
SPREAD(S)
1

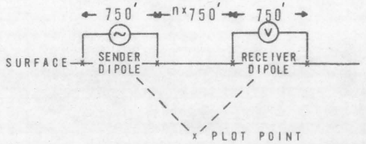
file

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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DATE
SEPTEMBER 1970

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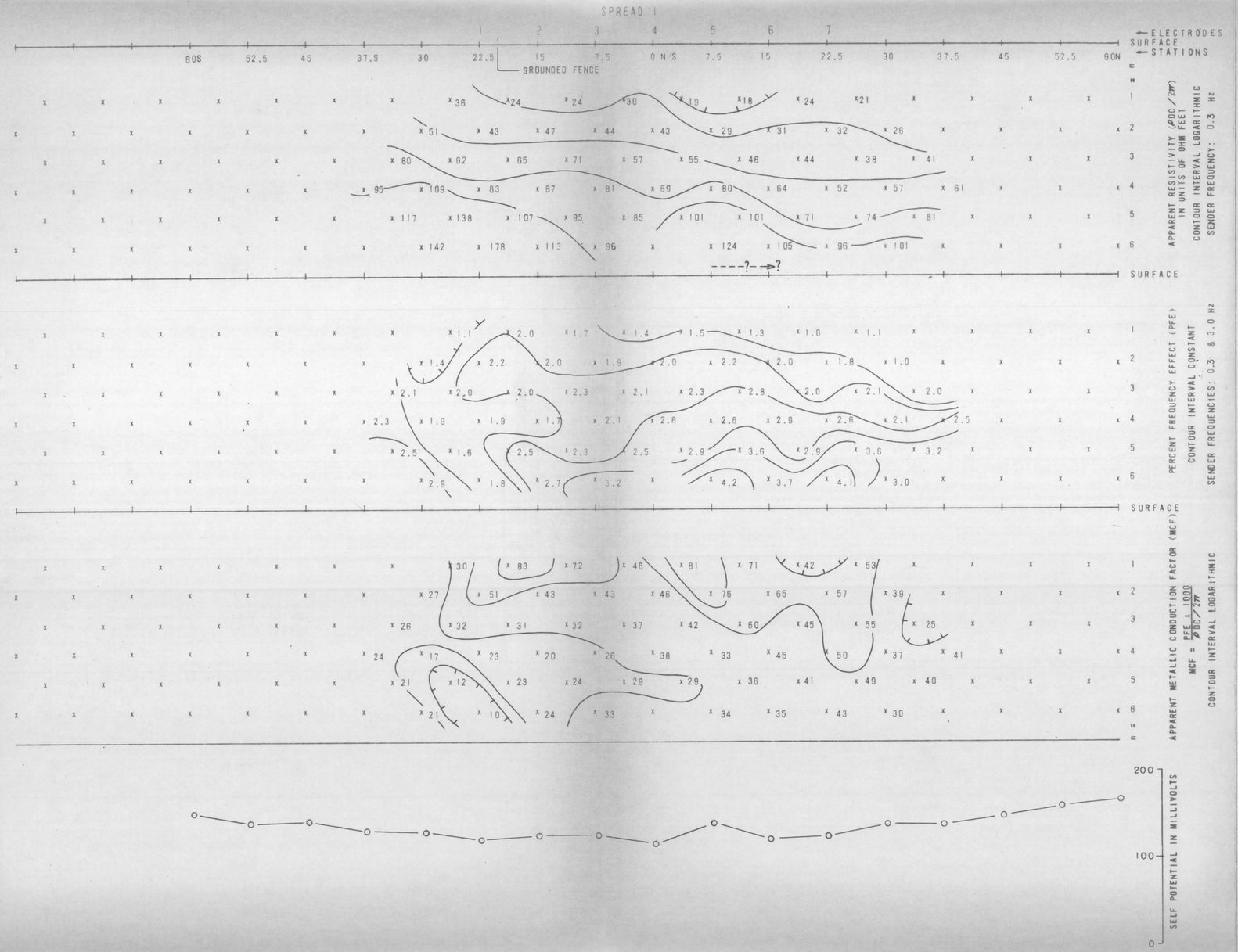


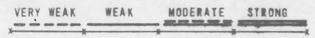
463-70

LINE NO.
14
SPREAD(S)
1

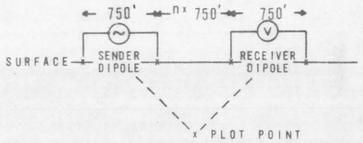
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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EMPIRE MOUNTAINS

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DATE

SEPTEMBER 1970

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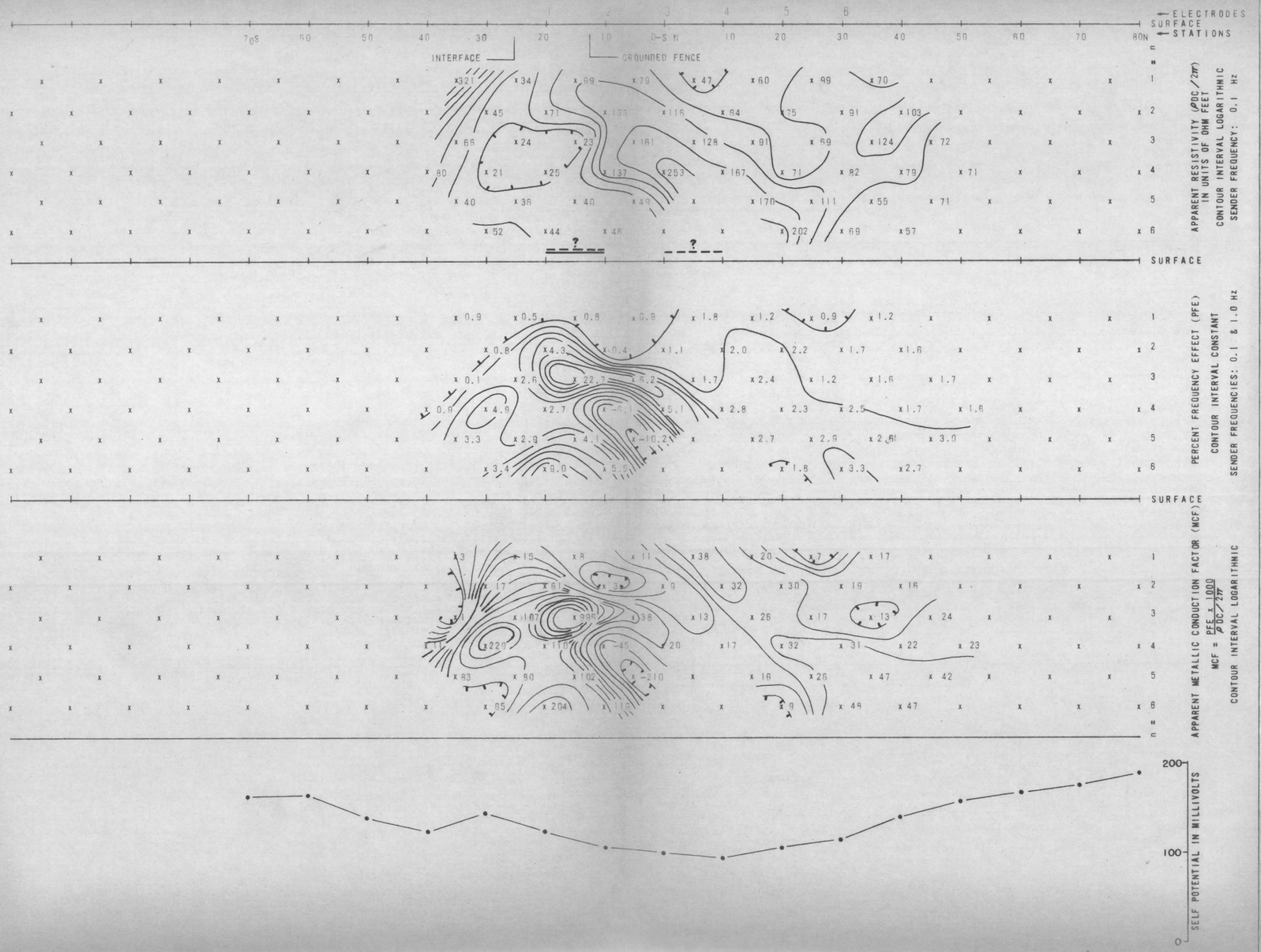


LINE NO.
13
SPREAD(S)
1

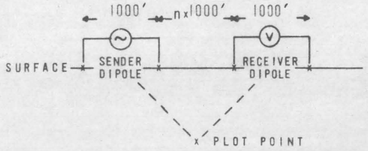
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
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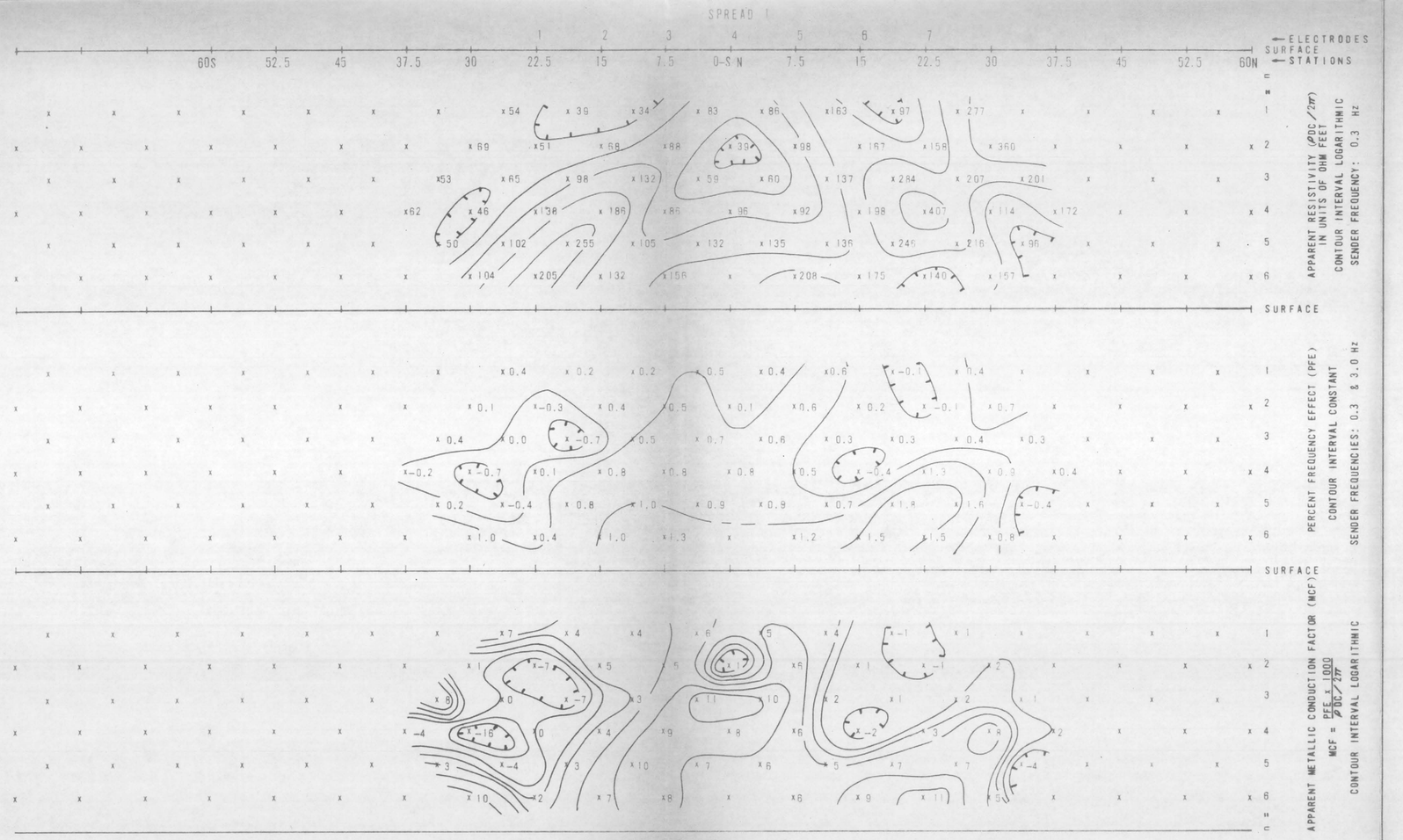

463-69

LINE NO.
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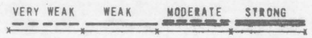
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



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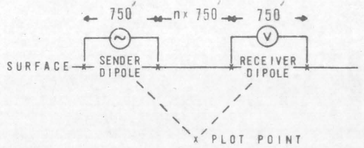

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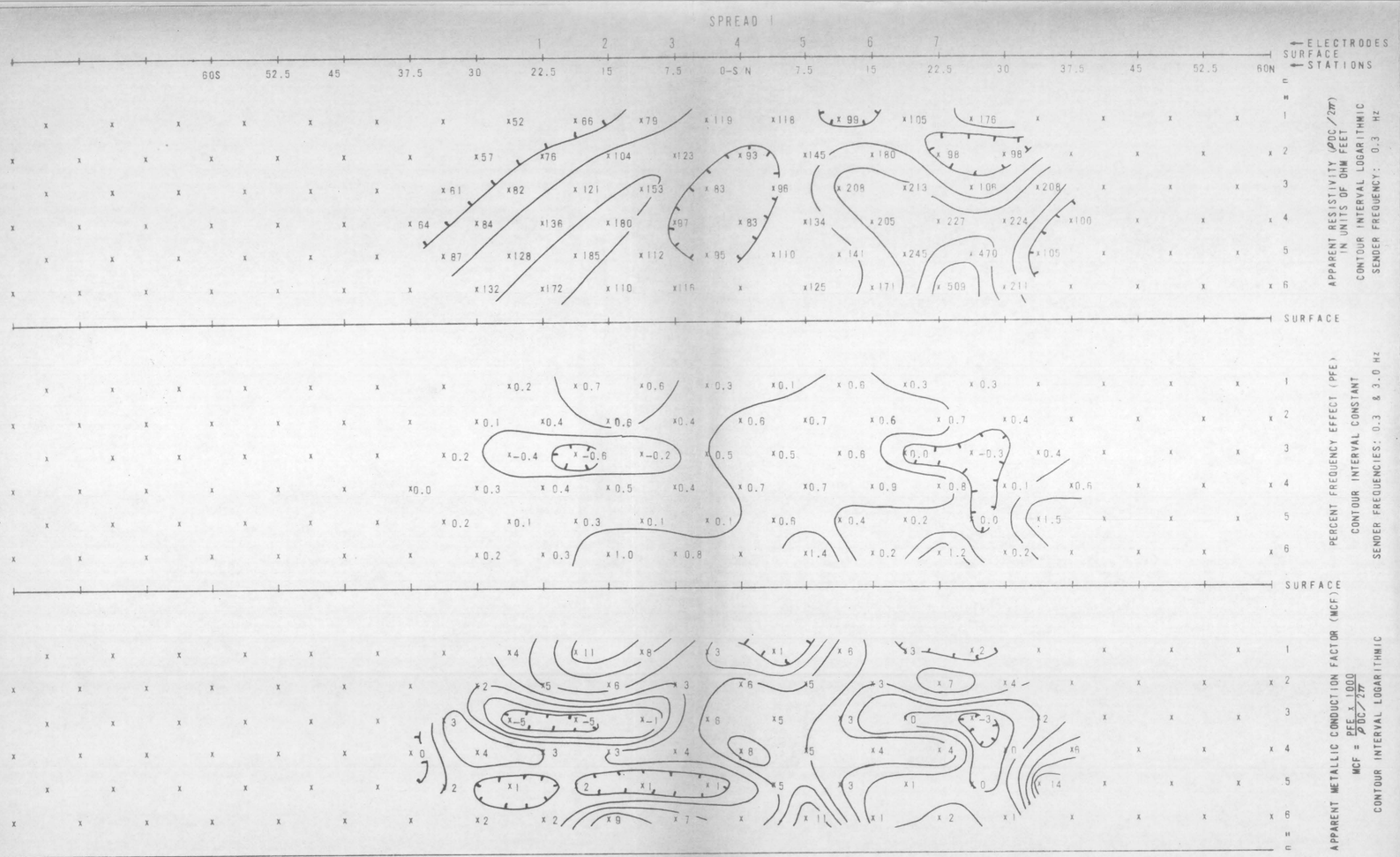


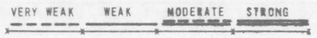
463-69

LINE NO.
12
SPREAD(S)
1

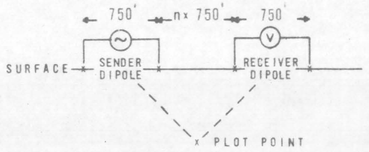
File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

LOOKING
WEST

DATE
JULY 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
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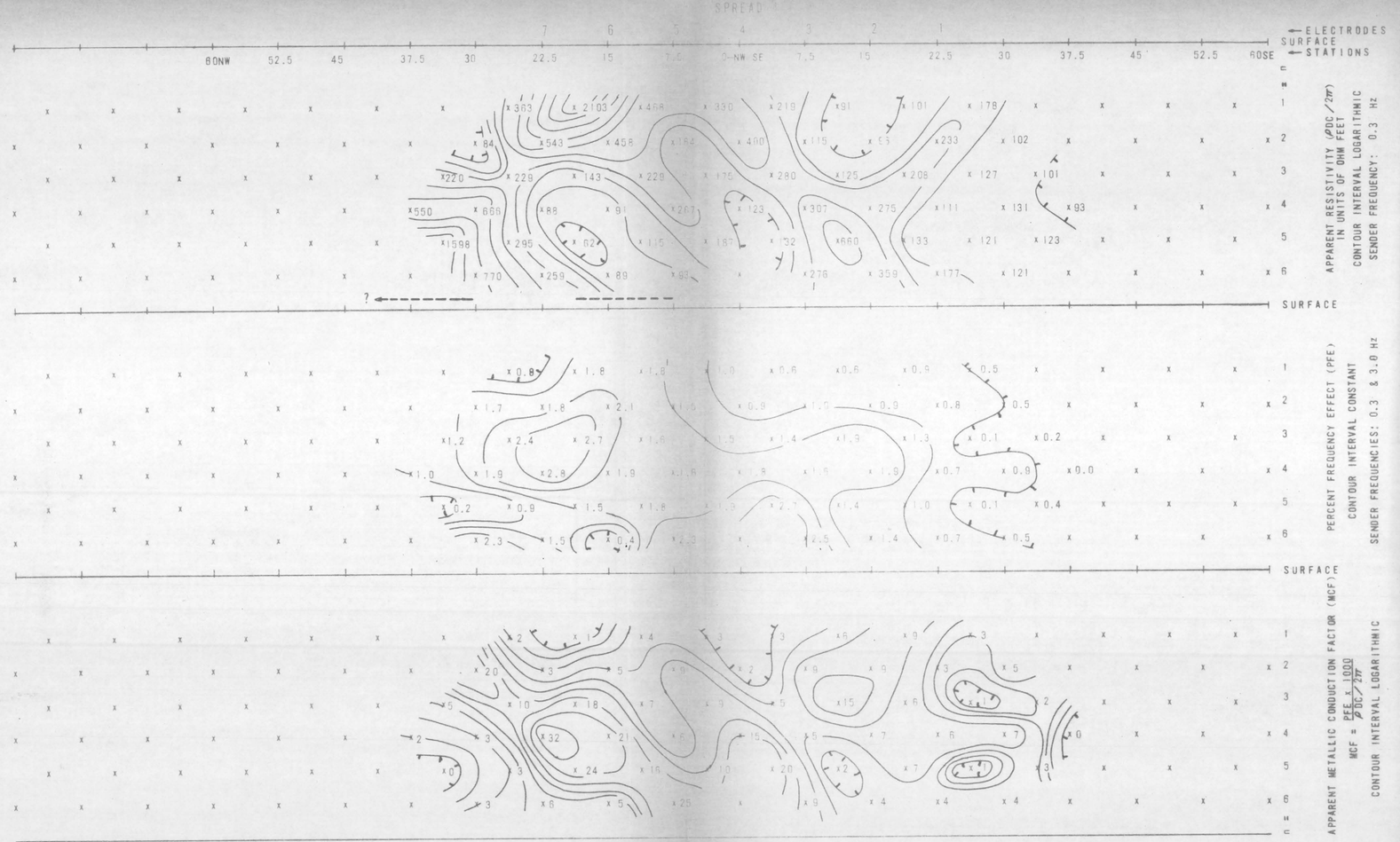


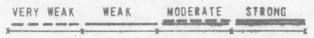
463-69

LINE NO.
10
SPREAD(S)
1

File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



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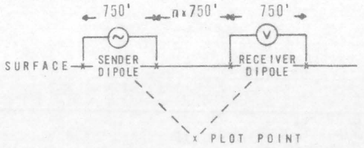

AREA
EMPIRE MOUNTAINS
LOOKING
N 60 E
DATE
JULY 1970

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(SYDNEY)
39 Hume Street
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Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
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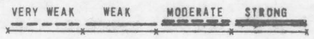
463-70

LINE NO.
9E-3
SPREAD(S)
I

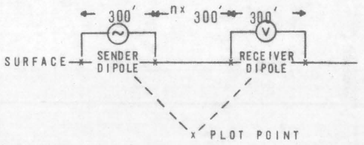
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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EMPIRE MOUNTAINS

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N 58° E

DATE

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AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
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U.S.A.
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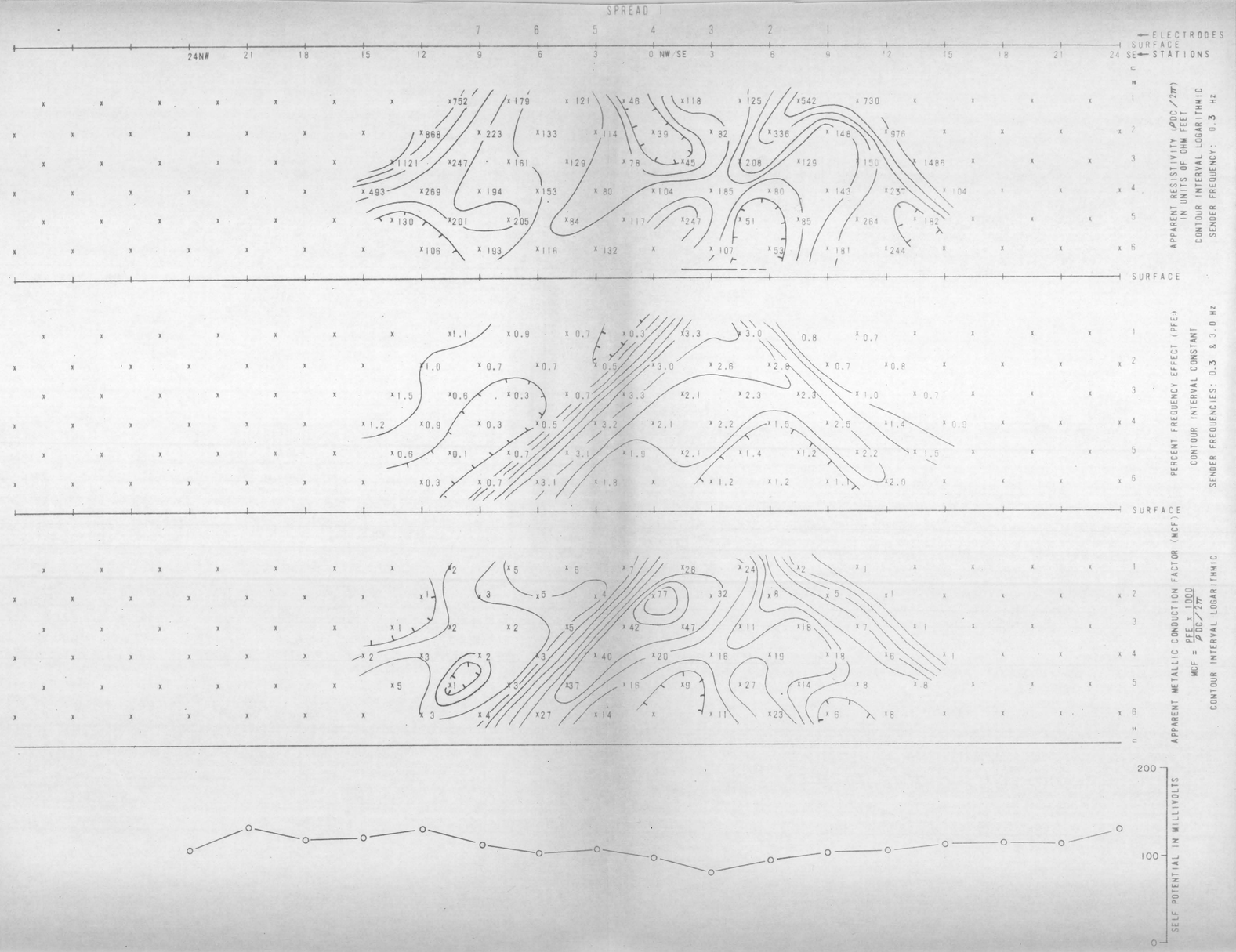
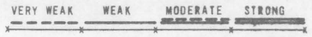


463-70

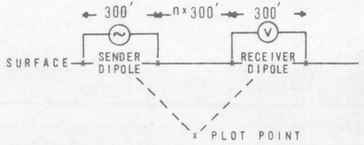
LINE NO.
9 E-2
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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DATE

SEPTEMBER 1970

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39 Hume Street
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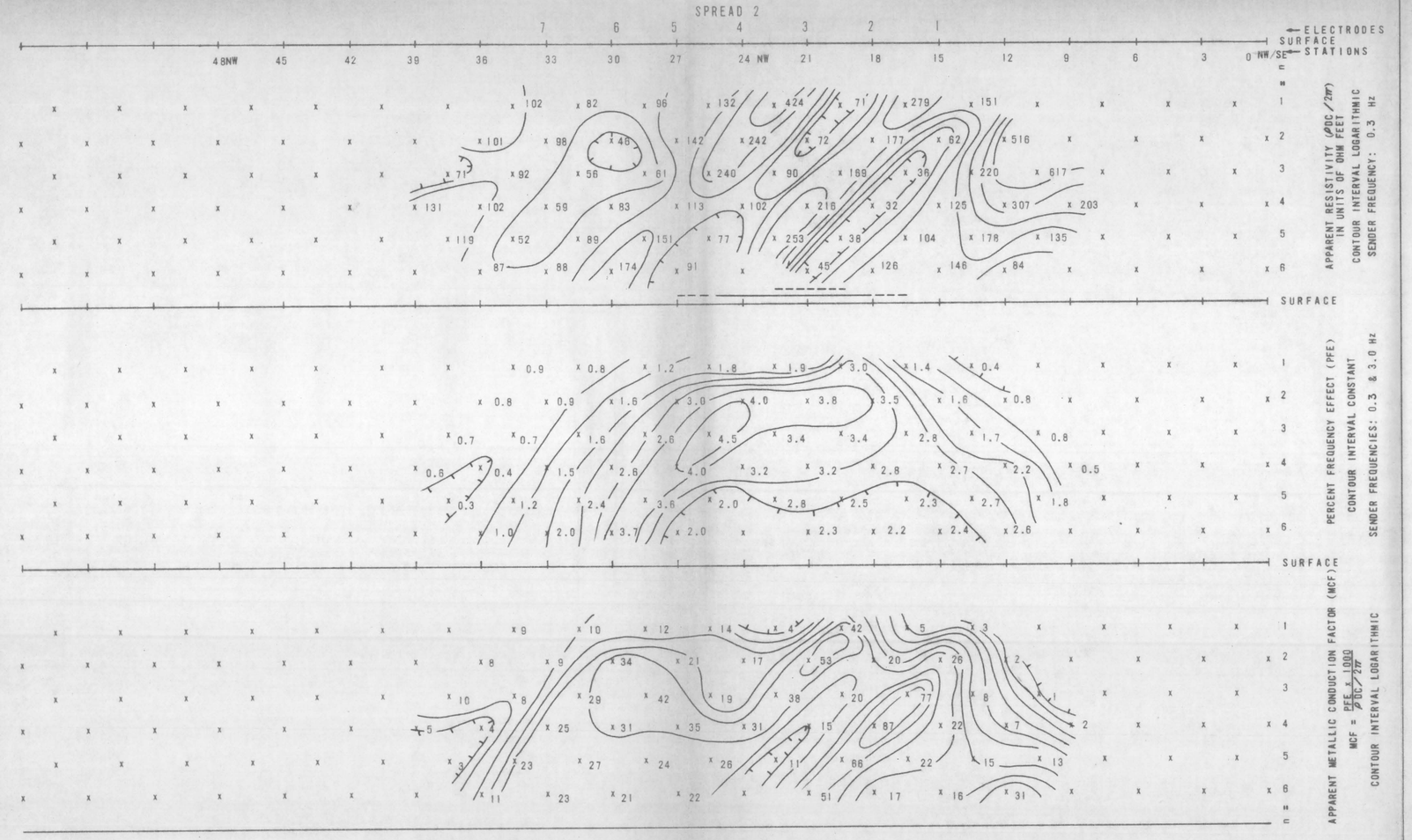


463-70

LINE NO.
9
SPREAD(S)
2

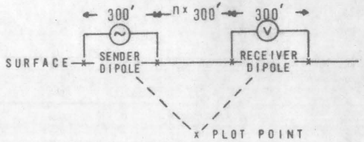
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA

EMPIRE MOUNTAINS

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N 58°E

DATE
SEPTEMBER 1970

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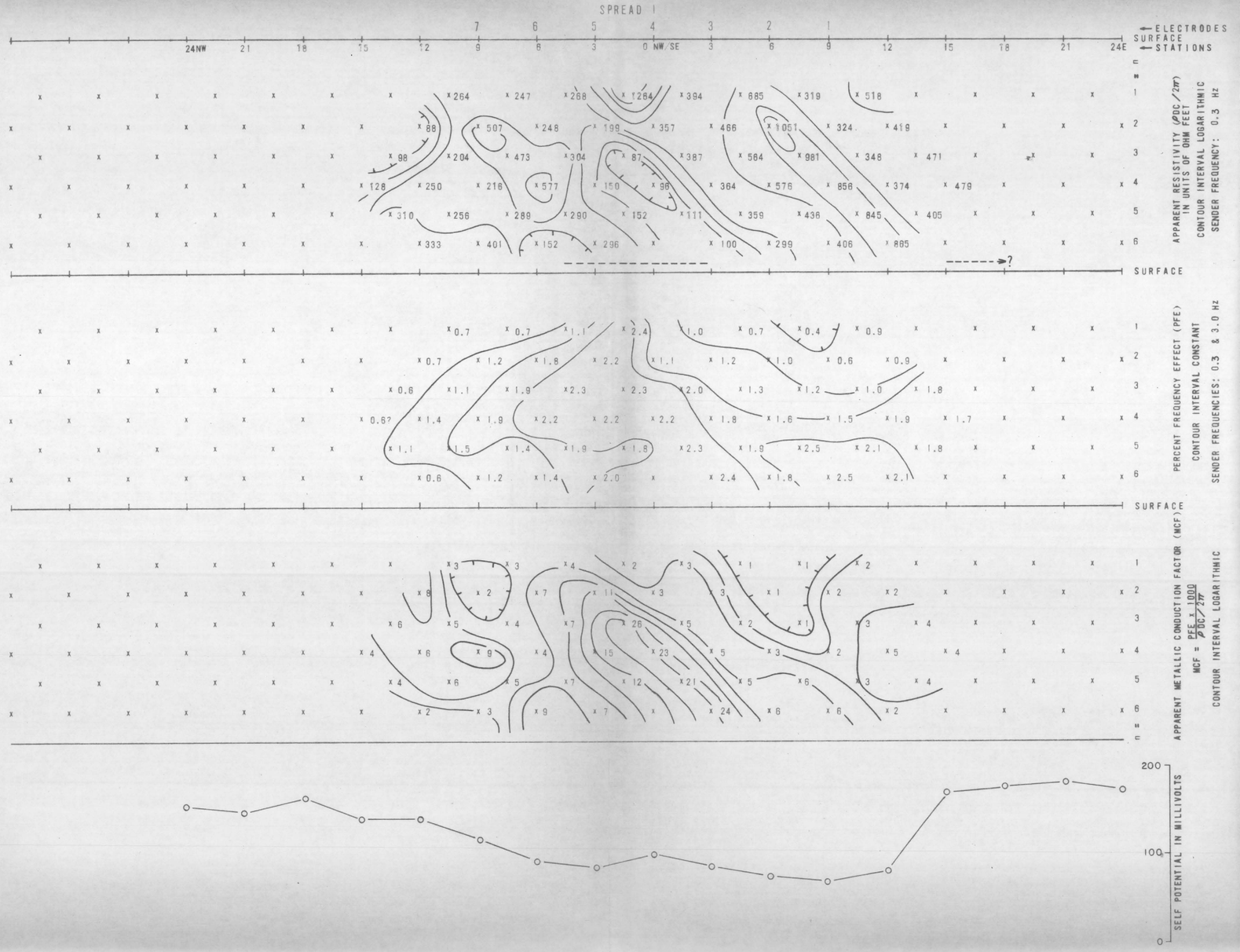
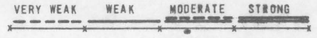


463-70

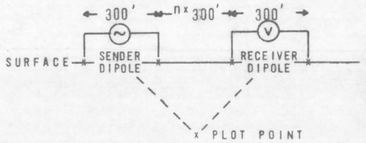
LINE NO.
9W
SPREAD(S)-
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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EMPIRE MOUNTAINS
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DATE
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U.S.A.
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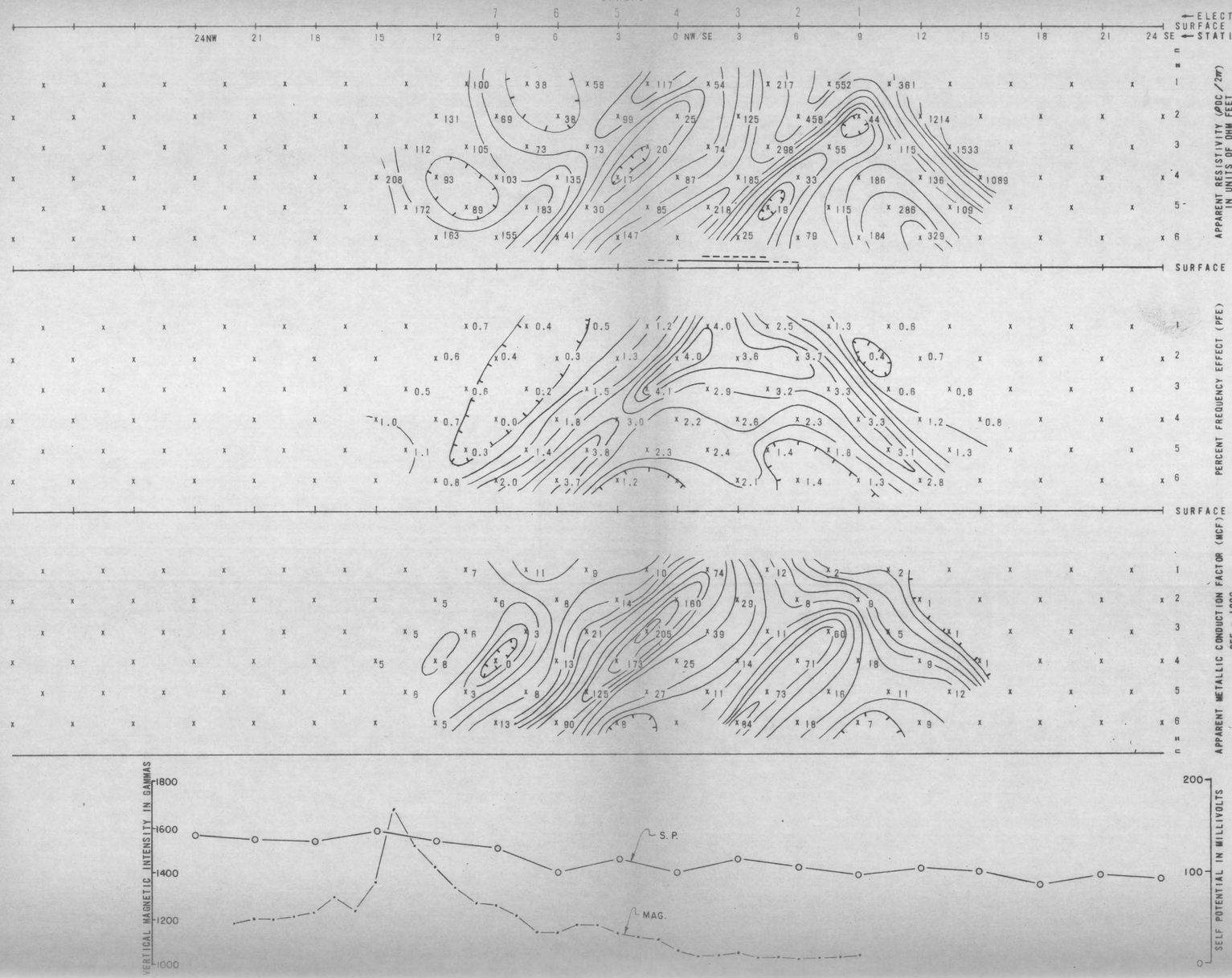


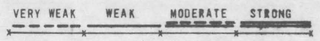
463-70

LINE NO.
9E
SPREAD(S)
1

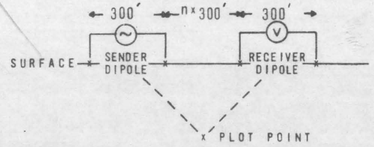
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
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39 Hume Street
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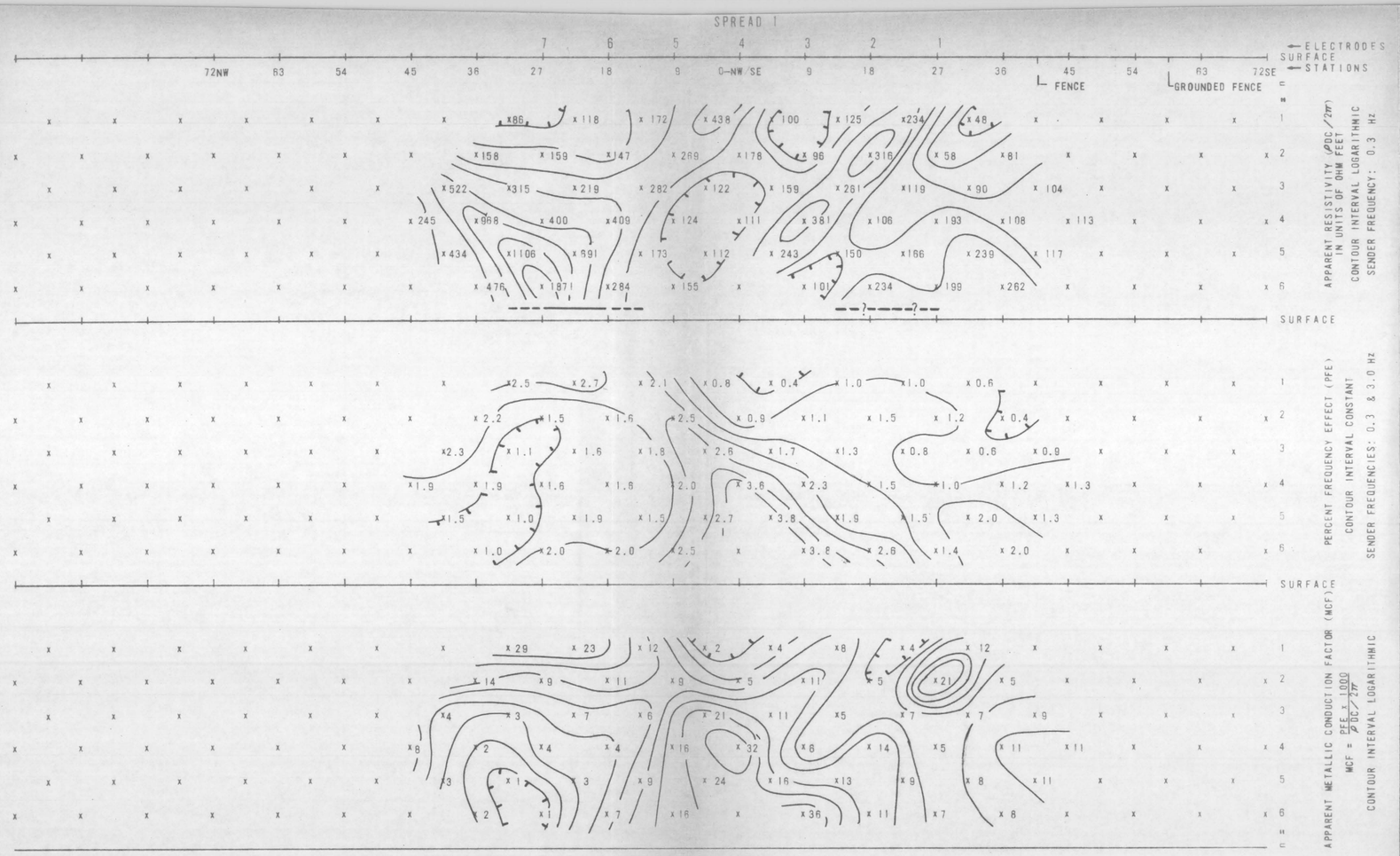
LINE NO.
9
SPREAD(S)
1
File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS



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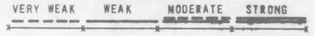
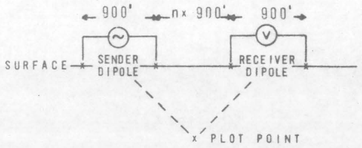


DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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DATE
MAY 1970

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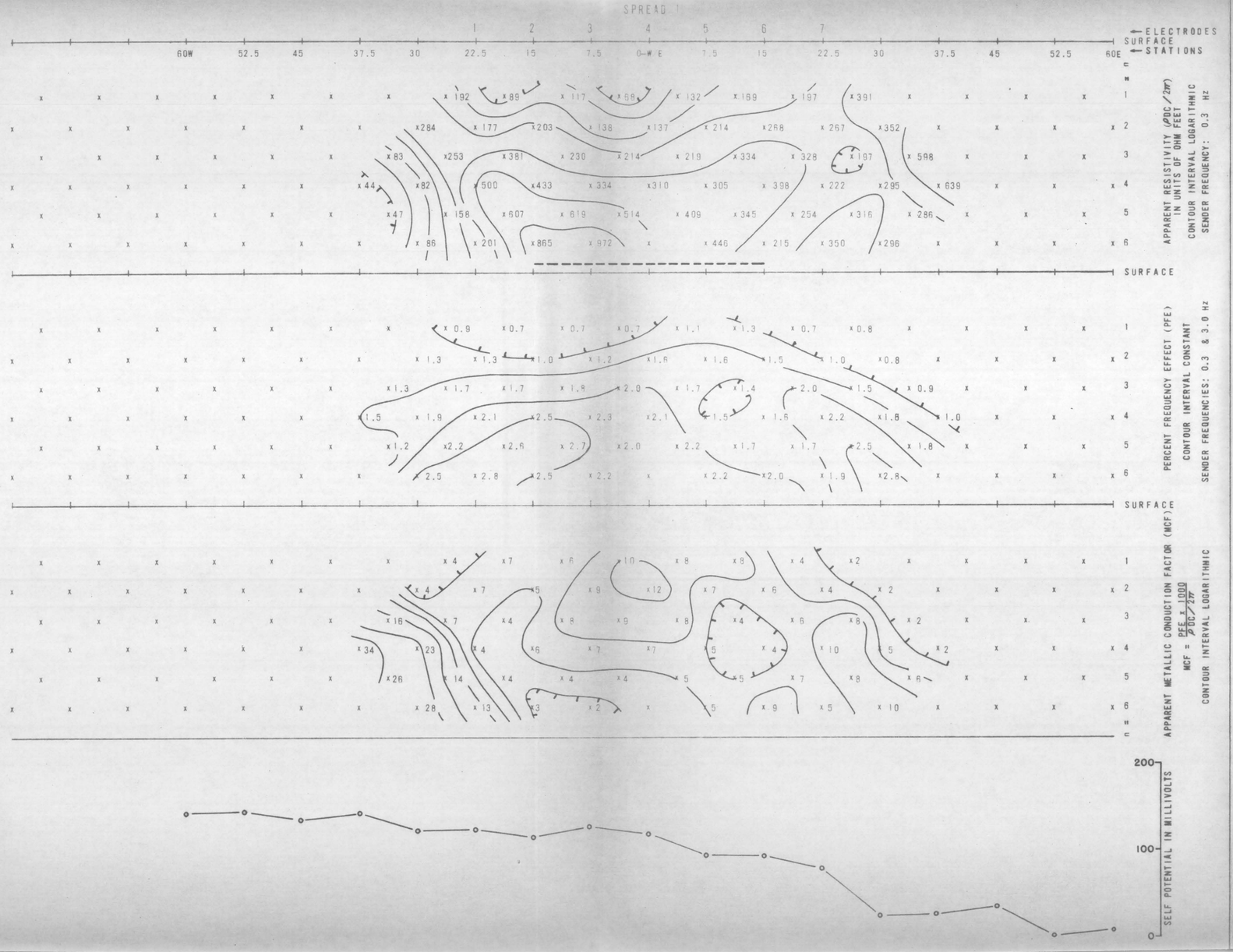


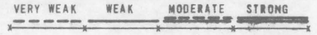
463-69

LINE NO.
8
SPREAD(S)
1

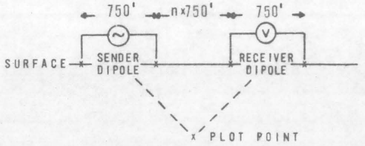
File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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DATE
MAY 1970

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39 Hume Street
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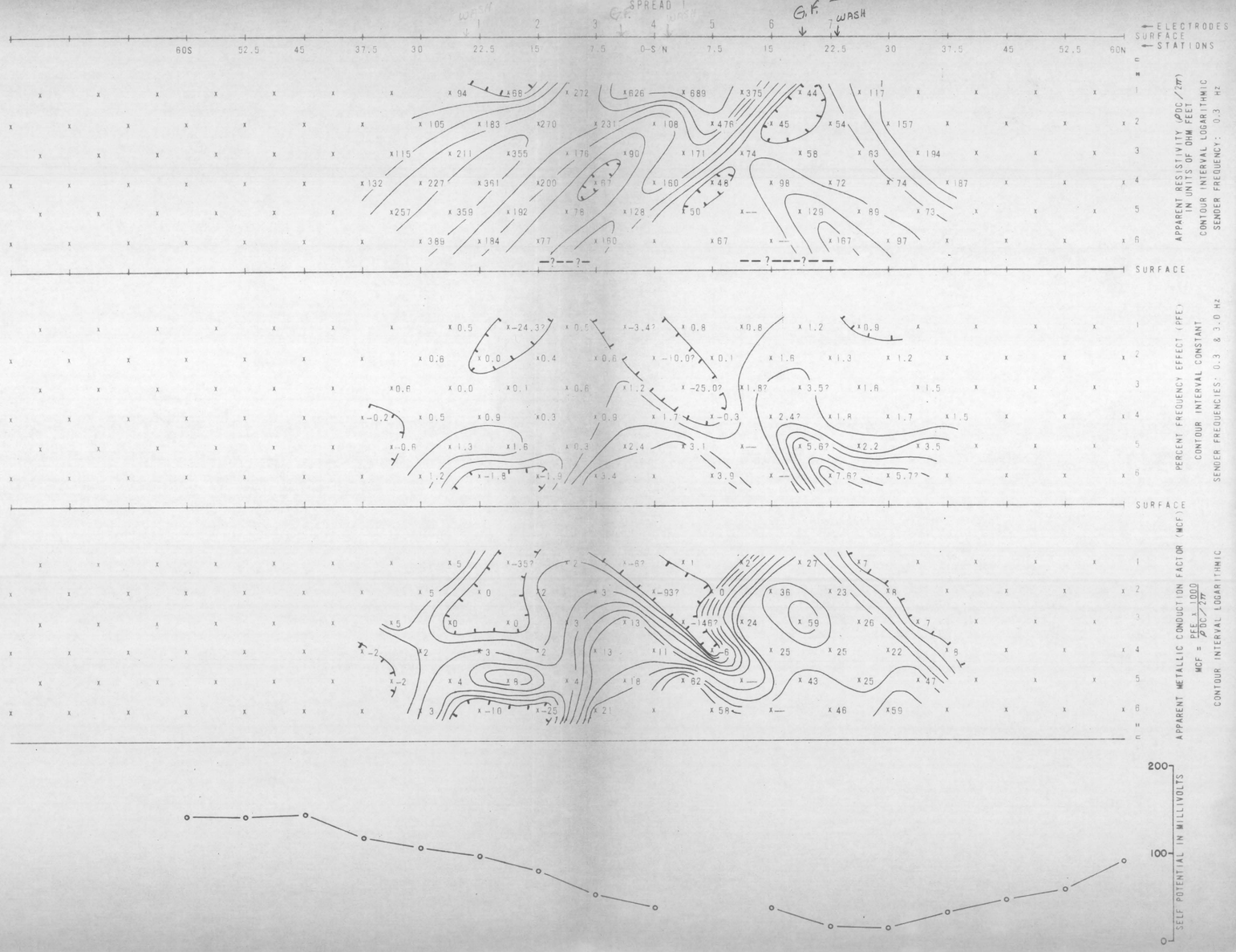
LINE NO. 7

SPREAD(S) 1

File



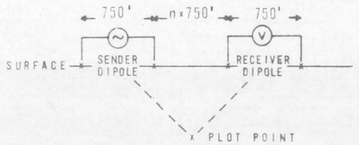
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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39 Hume Street
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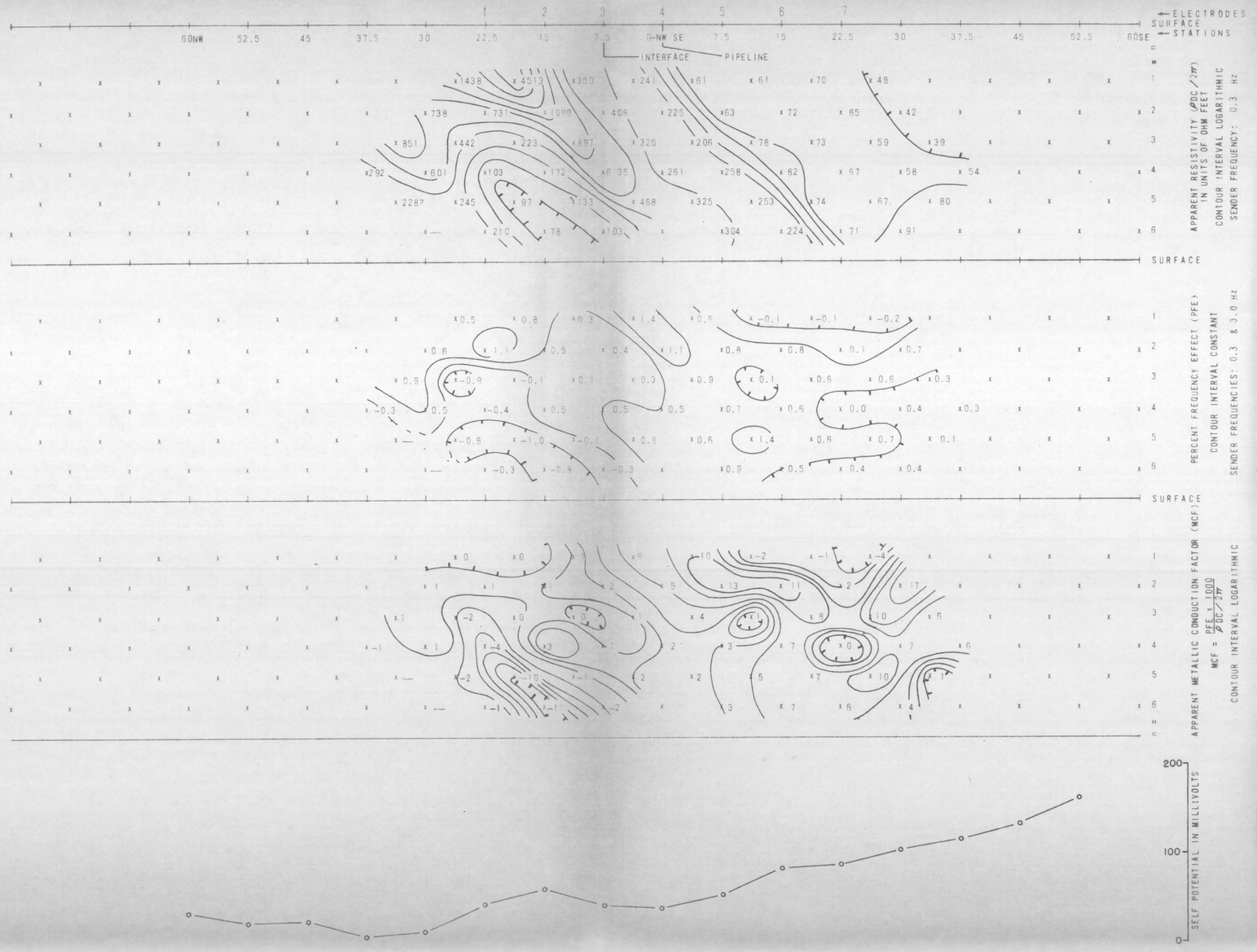


463-69

LINE NO.
6
SPREAD(S)
1

File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET

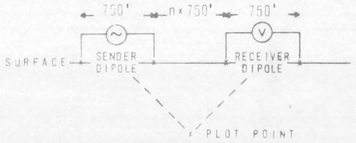
for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



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DATE

MAY 1970

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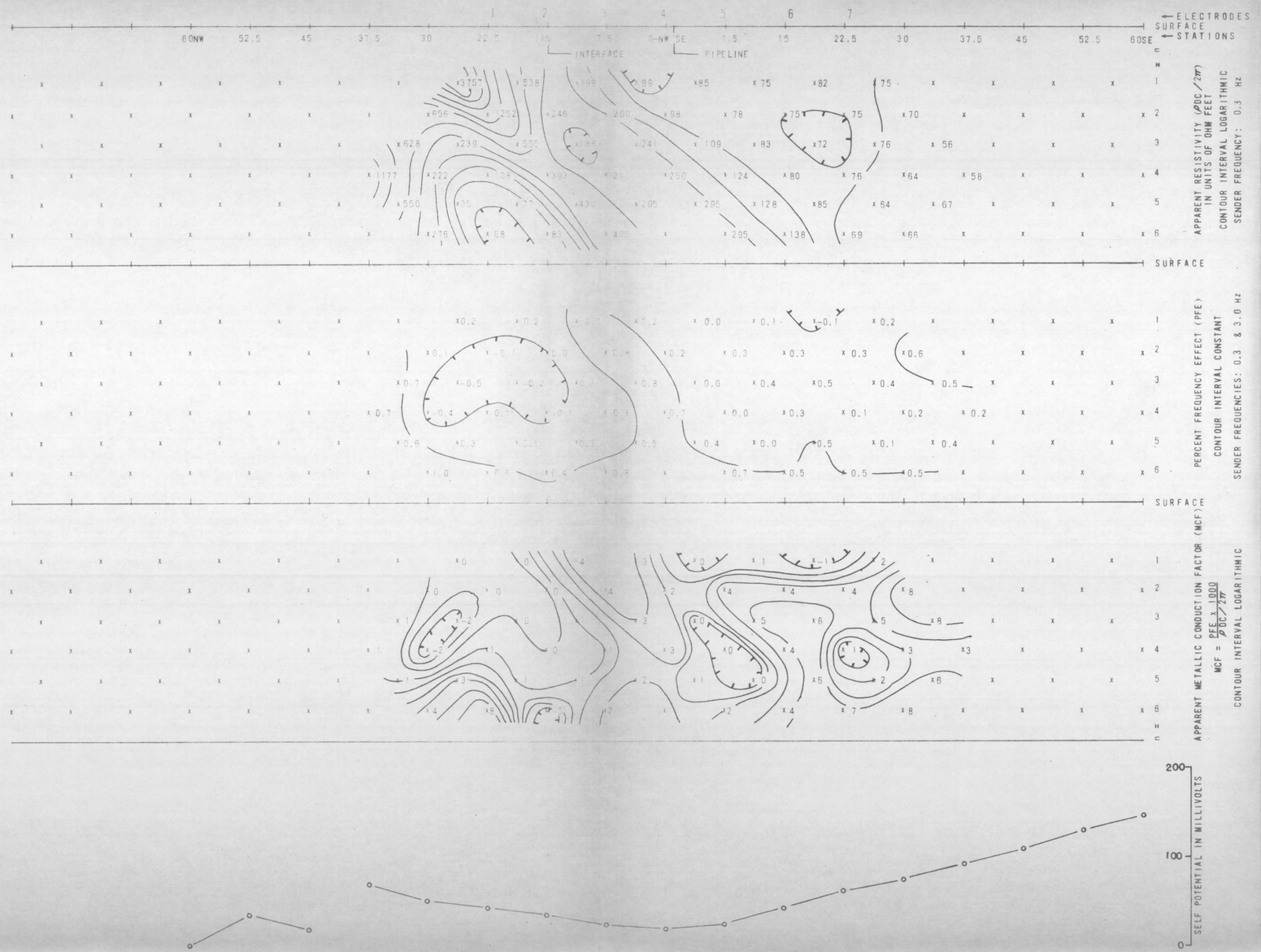


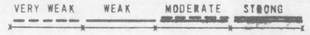
463-69

LINE NO.
5
SPREAD(S)
1

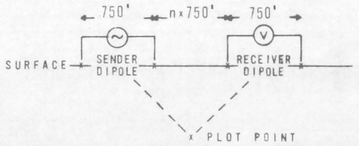
File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



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MAY 1970

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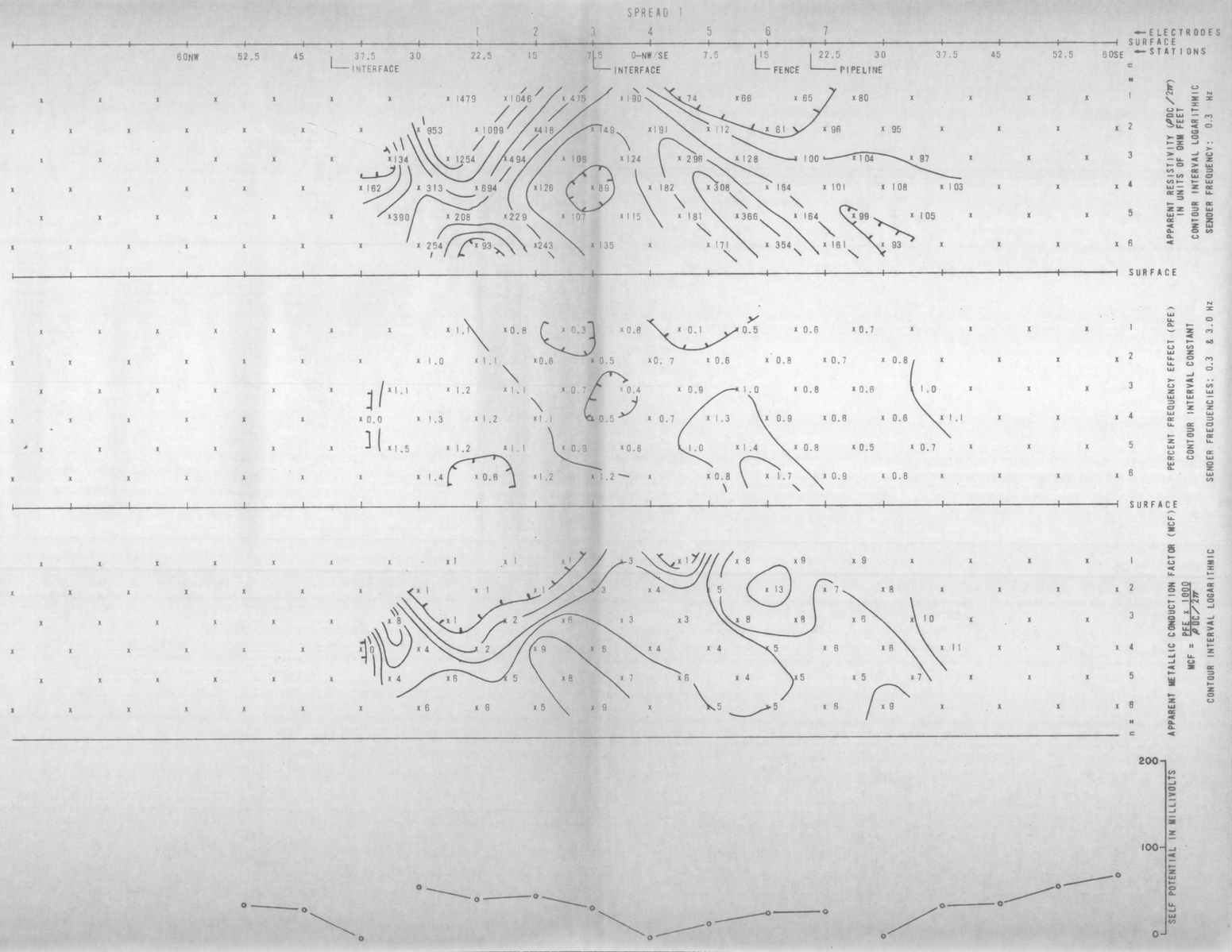

463-69

LINE NO.
4
SPREAD(S)
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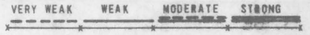
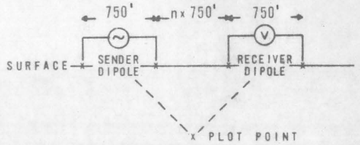
File

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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DATE
MAY 1970

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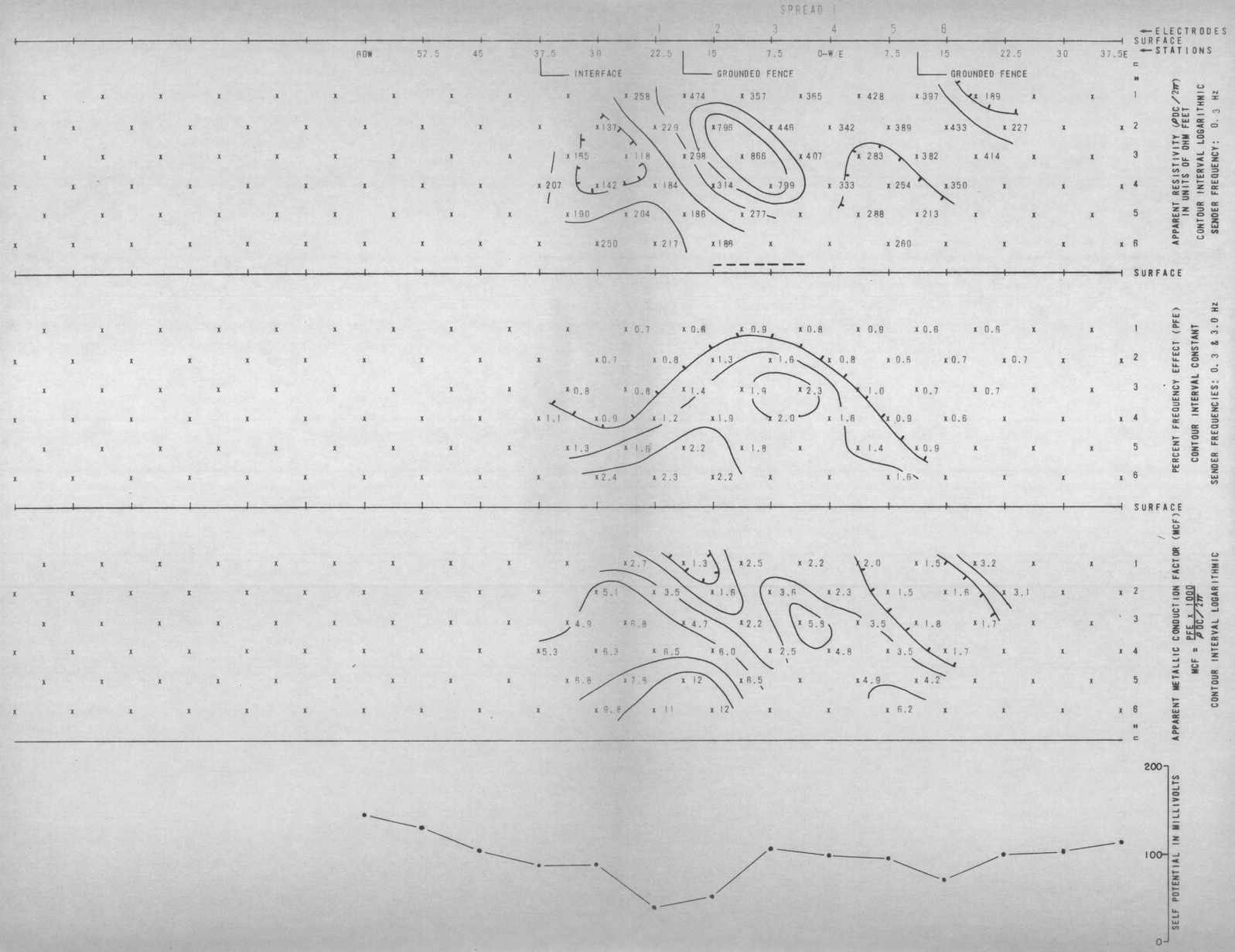
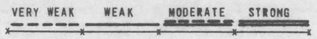


463-70

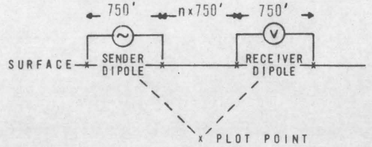
LINE NO.
25
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

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NORTH

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OCT 1970

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GEOEXPLORATION COMPANY
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AUSTRALIA
(SYDNEY)
39 Hume Street
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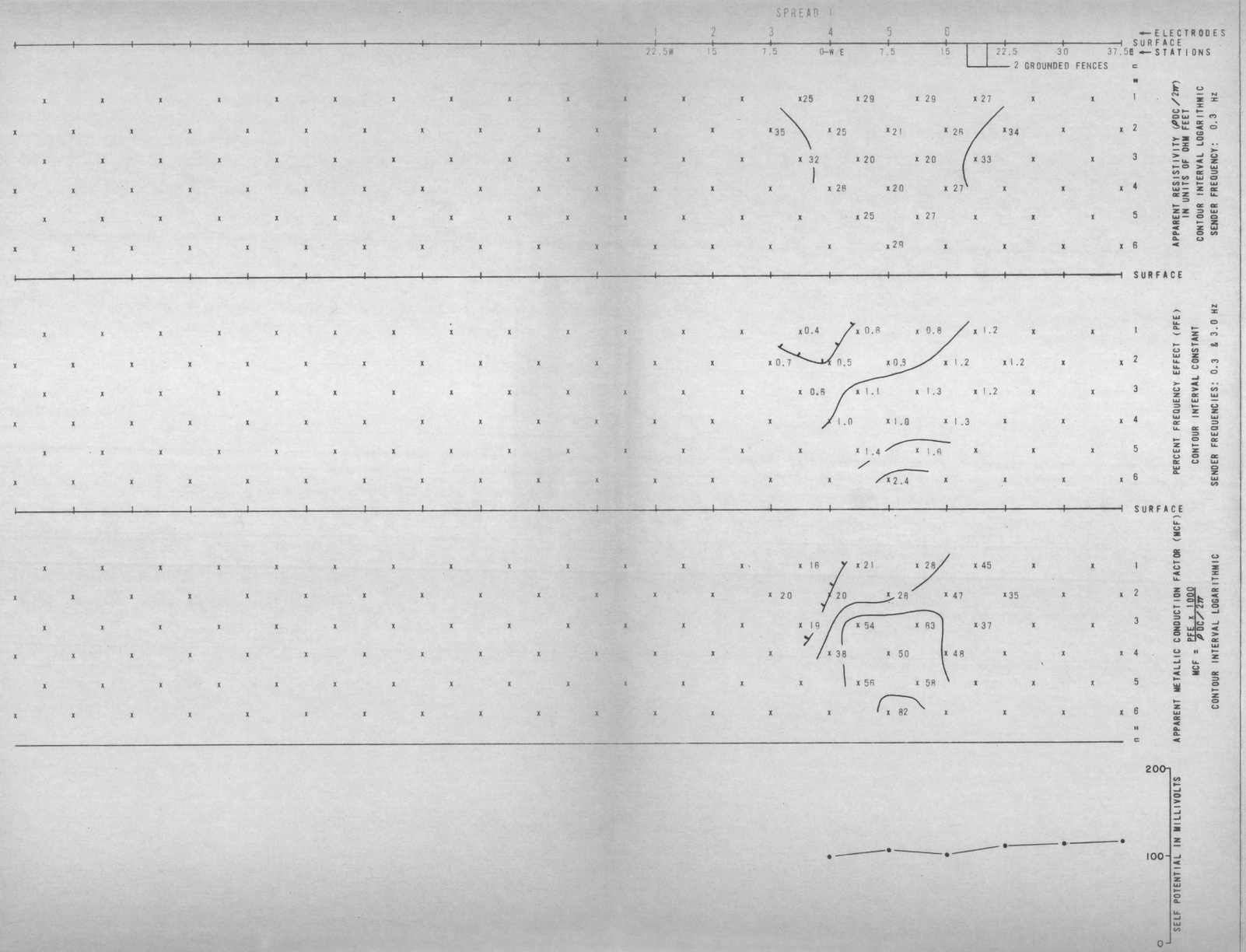


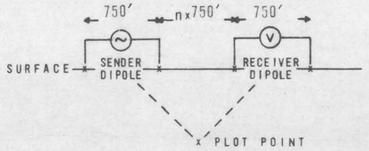
463-70

LINE NO.
24
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

DIPOLE DIPOLE ELECTRODE ARRAY

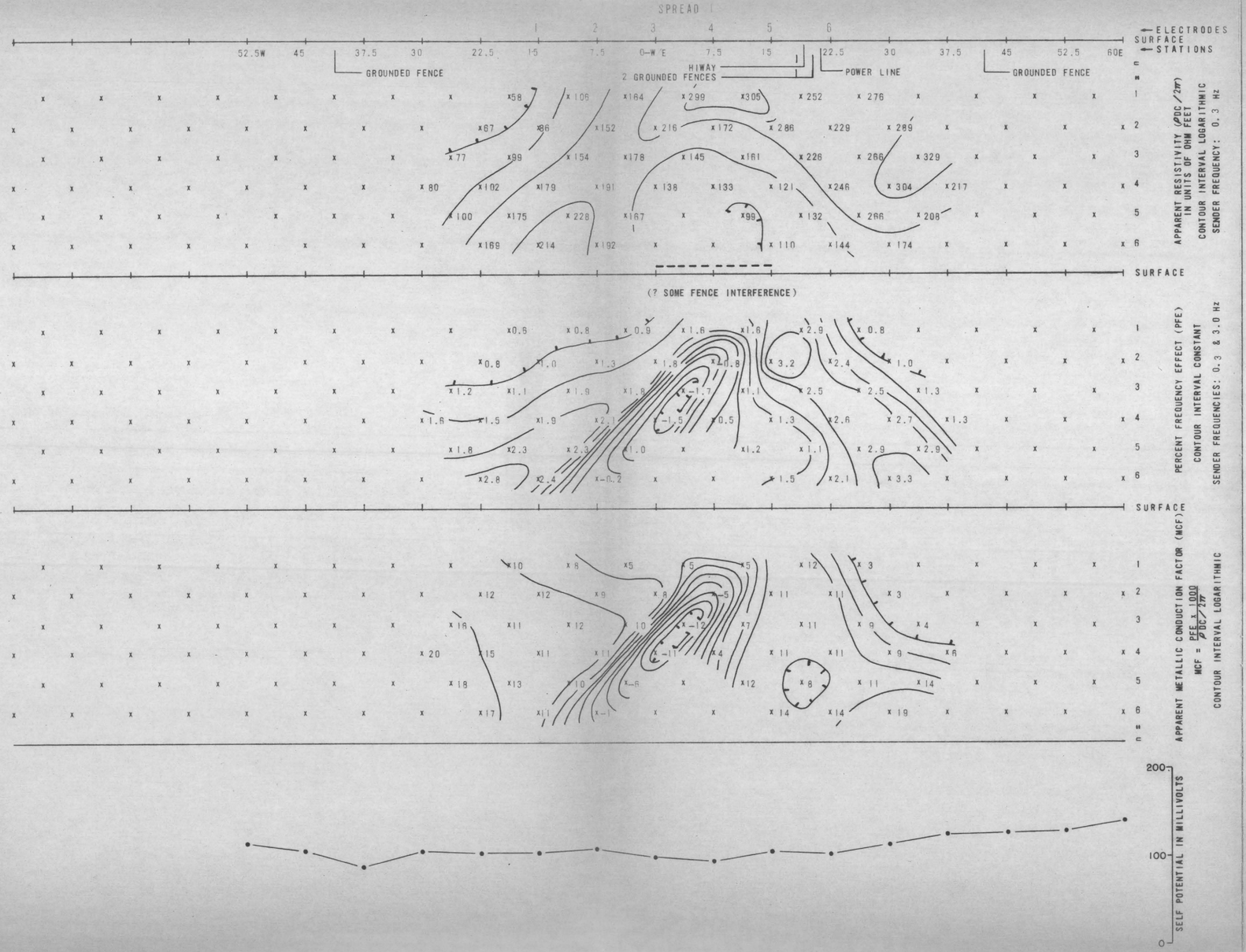


AREA
EMPIRE MOUNTAINS

LOOKING
NORTH

DATE
OCT 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



483-70

LINE NO.
23
SPREAD(S)
I

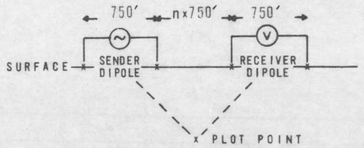
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY

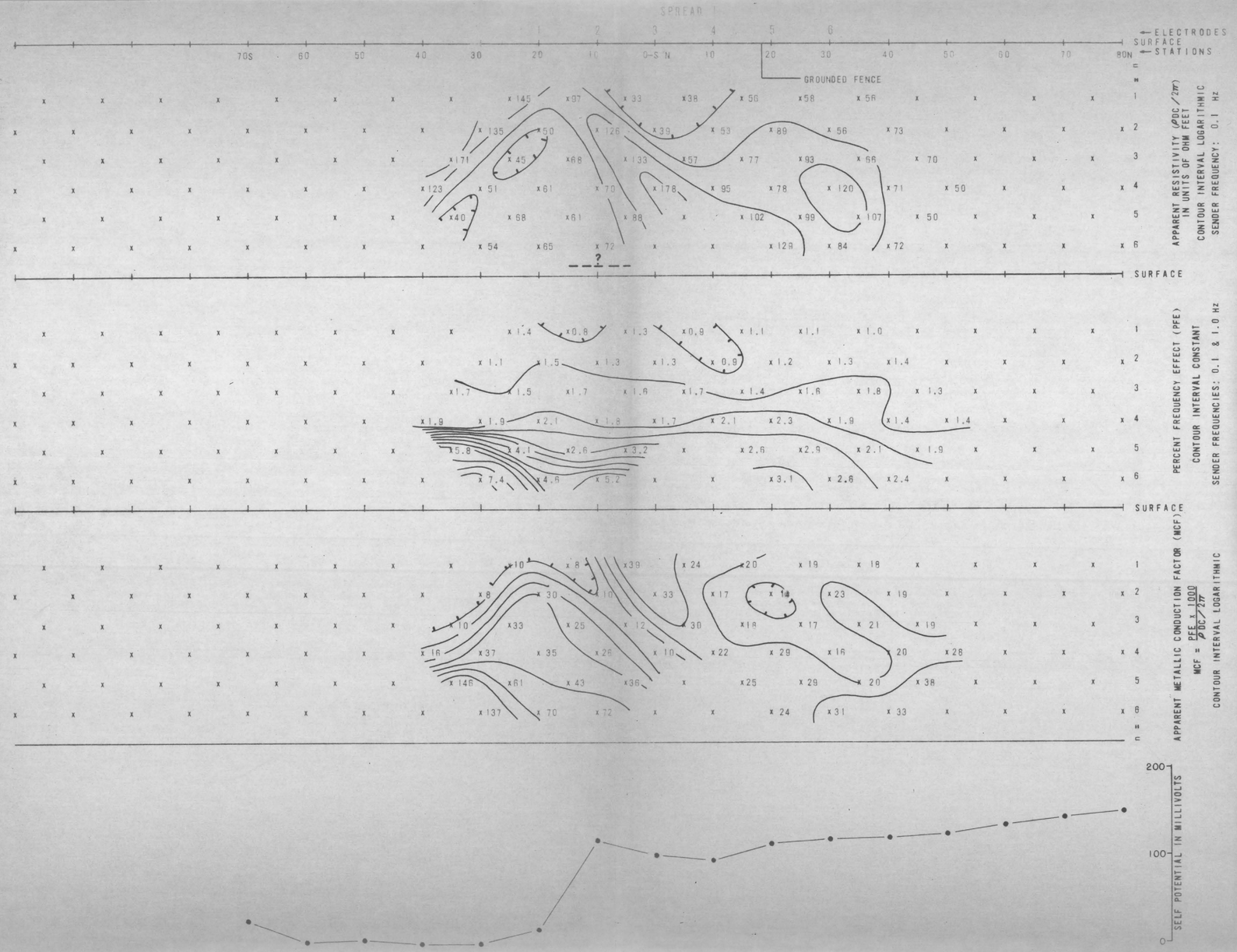


AREA
EMPIRE MOUNTAINS

LOOKING
NORTH

DATE
OCT 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

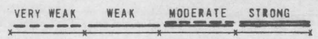


463-20

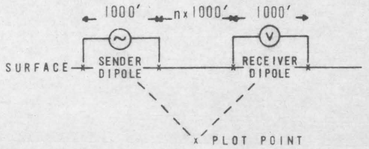
LINE NO
28
SPREAD(S)
1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

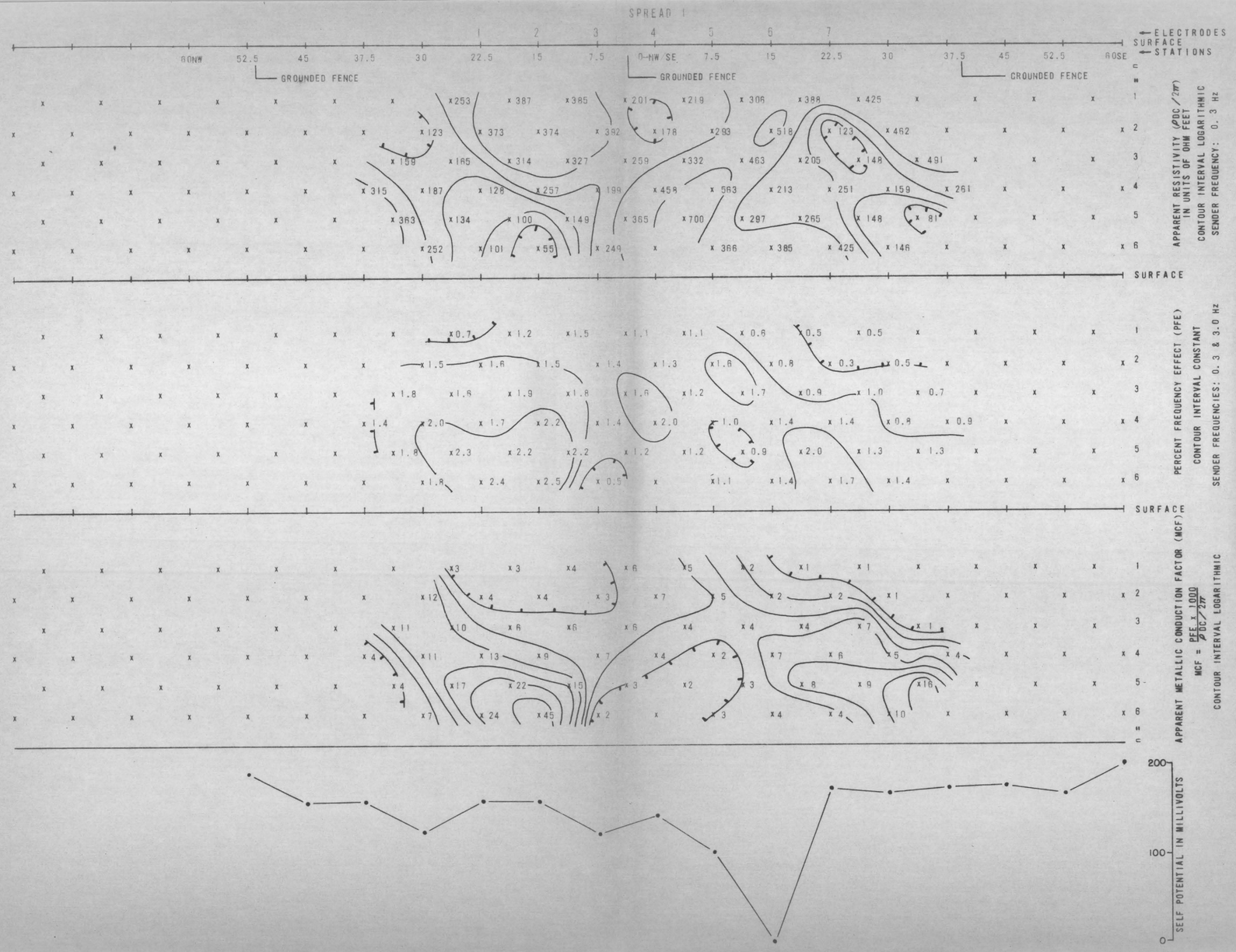
LOOKING
WEST

DATE
NOV 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS

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

U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson



463-70

LINE NO.
27
SPREAD(S)
1

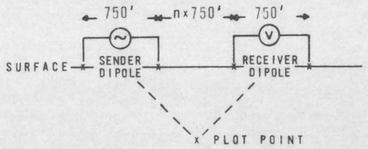
INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for

MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

DIPOLE DIPOLE ELECTRODE ARRAY



AREA
EMPIRE MOUNTAINS

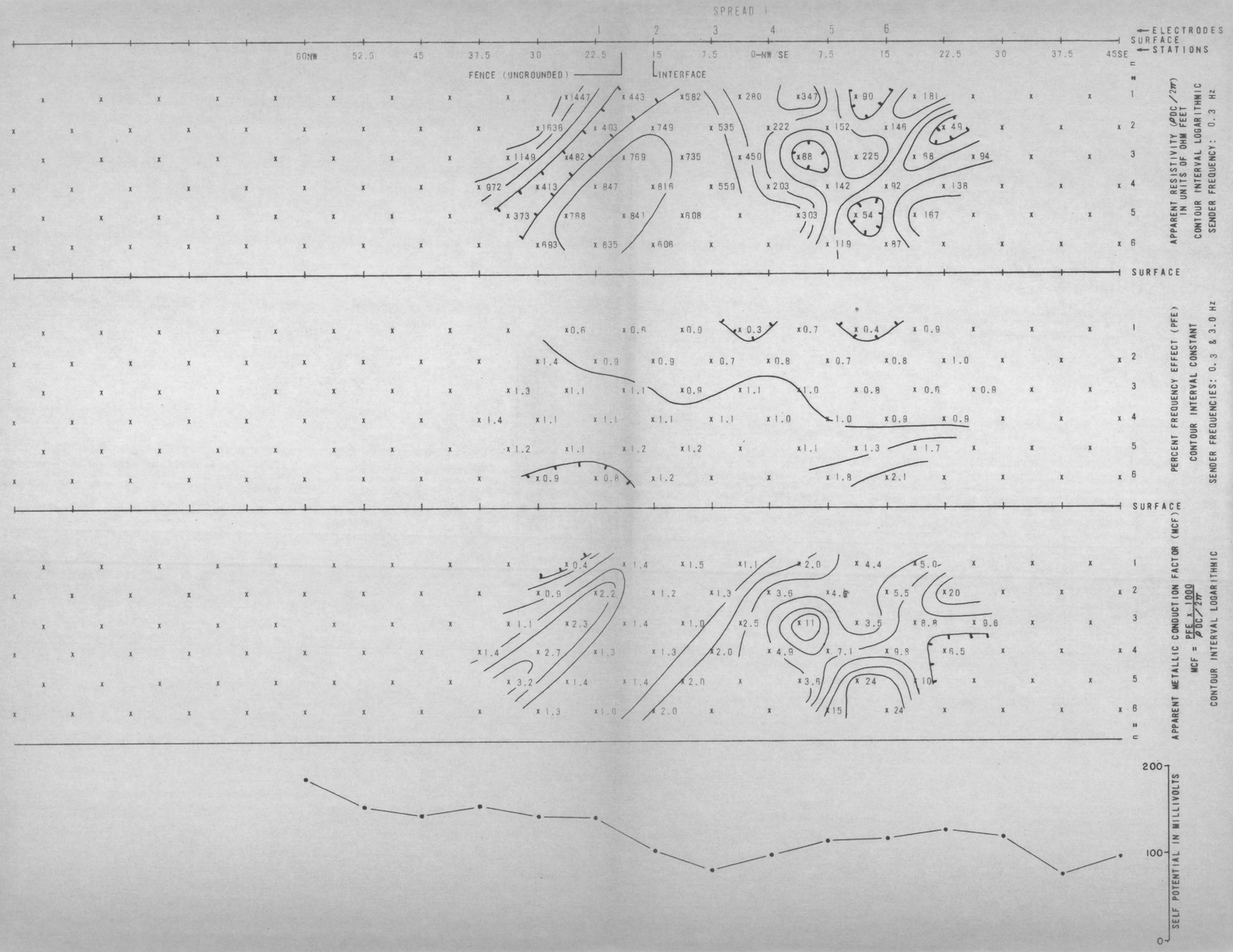
LOOKING
N 45° E

DATE
NOV 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS

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

U.S.A.
Post Office Box 6964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson

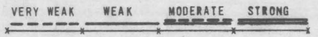


463-70

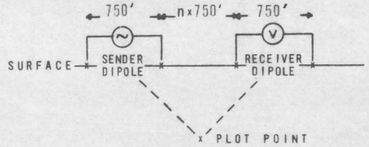
LINE NO. 26
SPREAD(S) 1

INDUCED POLARIZATION TRAVERSE SECTIONAL DATA SHEET for MIAMI COPPER OPERATIONS

RELATIVE ANOMALY STRENGTH



DIPOLE DIPOLE ELECTRODE ARRAY

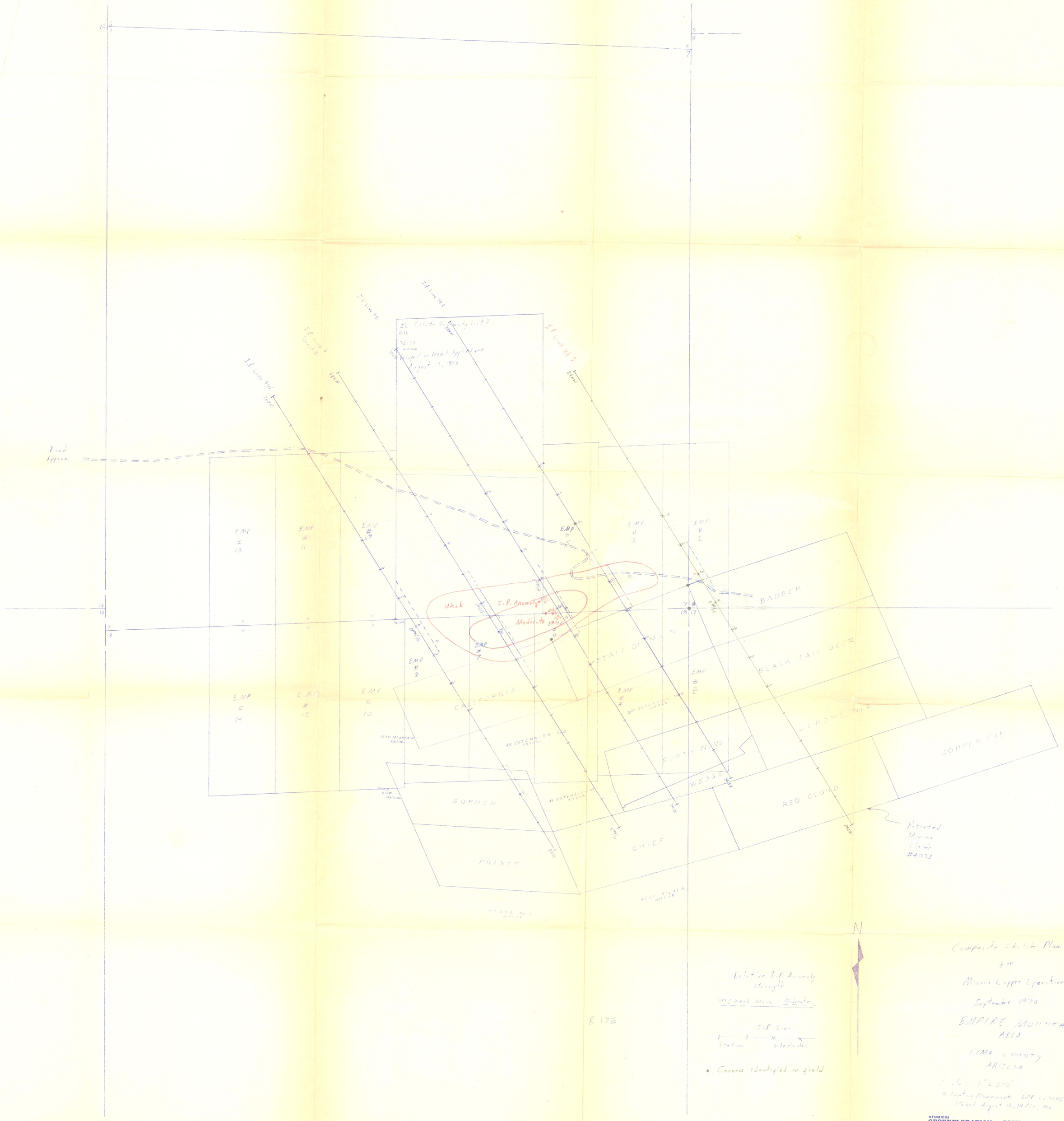


AREA
EMPIRE MOUNTAINS

LOOKING
N 51° E

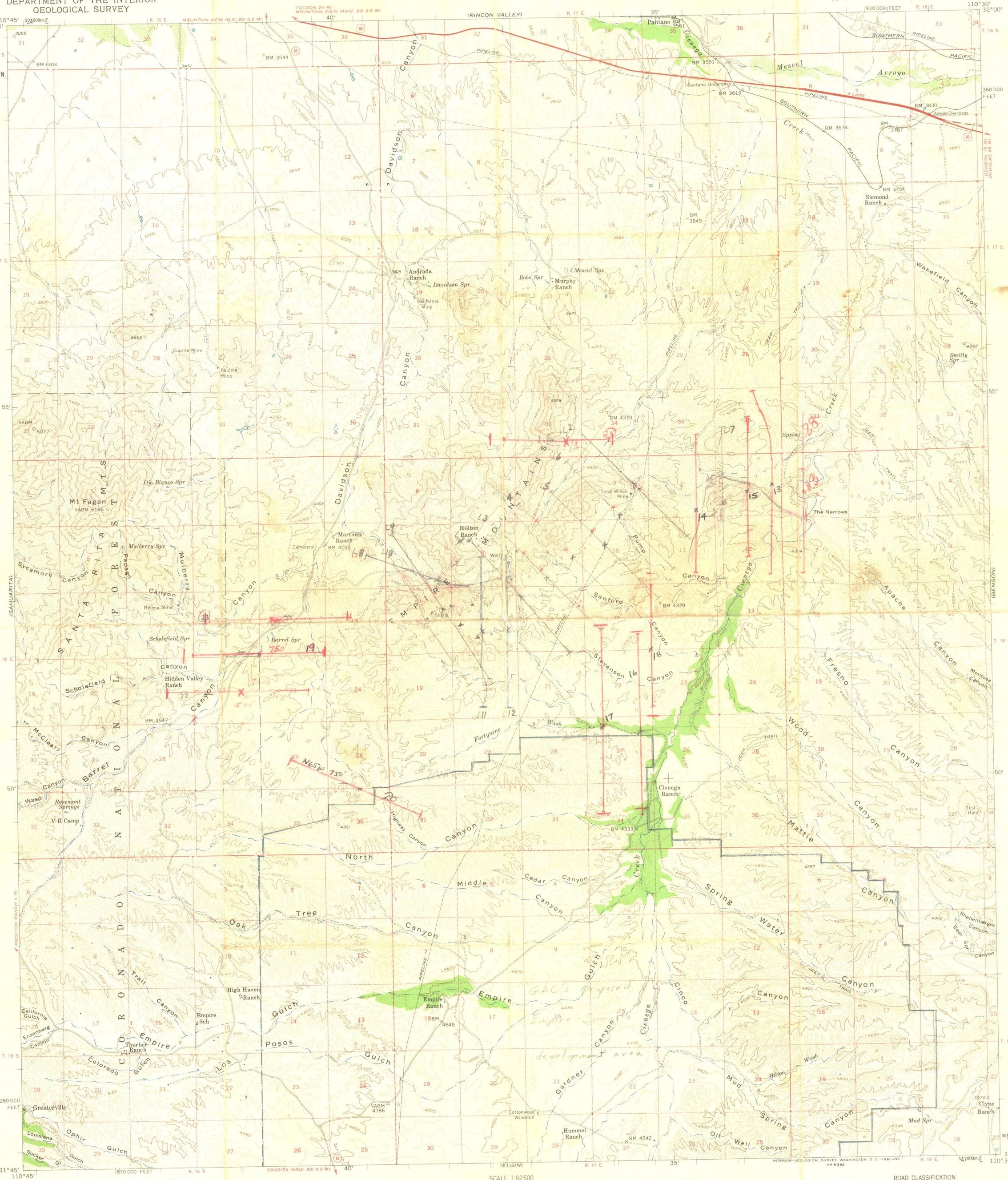
DATE
OCT 1970

HEINRICHS
GEOEXPLORATION COMPANY
GEOPHYSICAL ENGINEERS
AUSTRALIA
(SYDNEY)
39 Hume Street
Crows Nest, NSW
Phone: 439-1793
U.S.A.
Post Office Box 5964
Tucson, Arizona 85703
Phone: (602) 623-0578
Cable: GEOEX, Tucson


I.P. Line 9E2
I.P. Line 9E
I.P. Line 9
Spread 2
I.P. Line 9W
I.P. Line 9E3
I.P. (State Inventory list)
211
76.77 acres
Prospect on Patented Application
August 19, 1970
Road Approx.
EMP # 13
EMP # 11
EMP # 9
EMP # 5
EMP # 3
EMP # 1
Weak
I.P. Anomaly
Moderate
EMP # 7
EMP # 8
EMP # 10
EMP # 12
EMP # 14
EMP # 4
EMP # 2
STATE OF MAIN
BADGER
BLACK TAIL DEER
CALIFORNIA
JEROME No 2
COPPER TOP
FORTY NINE
WEDGE
RED CLOUD
GOPHER
PRINCE
CHIEF
Patented Mining Claims #4033
R 16E
R 17E
T 18 S
N
Relative I.P. Anomaly Strength
Very weak Weak Moderate
I.P. Line
Station
Elevation
• Corners identified in field
Composite Sketch Plan
for
Miami Copper Operations
September 1970
EMPIRE MOUNTAINS AREA
PIMA COUNTY, ARIZONA
Scale: 1" = 300'
Location Monuments EMP CLAIMS
Staked August 16, 19 & 20, 1970
HEINRICHS GEOEXPLORATION COMPANY
POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703
Phone: 602/623-0578
Cable: GEOEX, Tucson
geophysical engineers
vancouver
sydney

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

EMPIRE MOUNTAINS QUADRANGLE
ARIZONA—PIMA CO.
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS and USCE

Topography from aerial photographs by ER-55 plotter
Aerial photographs taken 1955. Field check 1958

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

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

13°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1958

SCALE 1:62 500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

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

ARIZONA
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

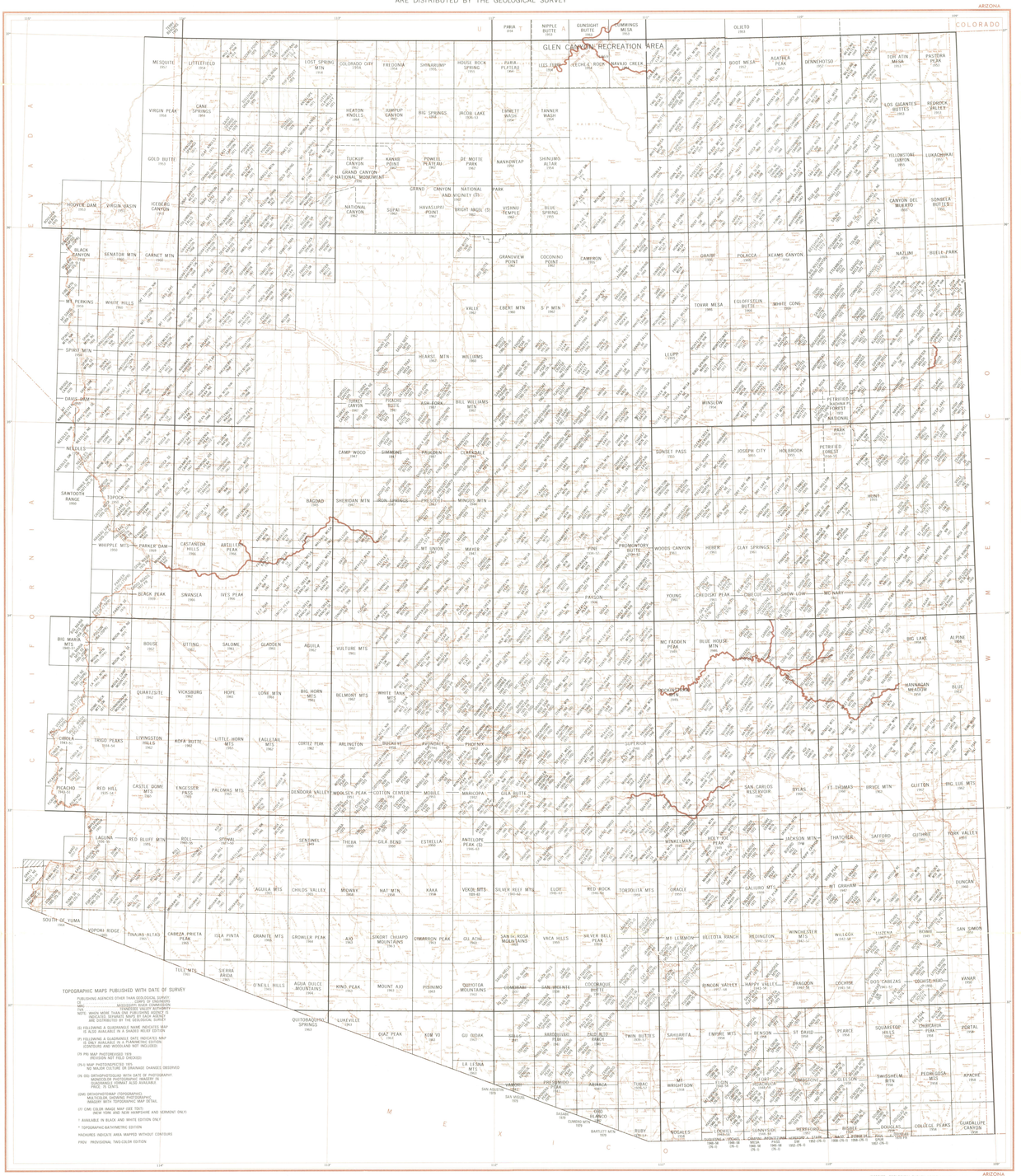
EMPIRE MOUNTAINS, ARIZ.
N3145—W11030/15
1958

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1961—NS
MR 6392

INDEX TO TOPOGRAPHIC MAPS OF ARIZONA

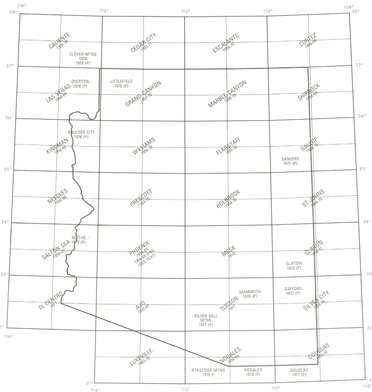
ORDER MAPS BY NAMES PRINTED IN BLACK AND 31' SERIES DESIGNATION

ALL MAPS SHOWN ON THIS INDEX ARE DISTRIBUTED BY THE GEOLOGICAL SURVEY



THE NUMBER OF PUBLISHED MAPS SHOWN ON THIS INDEX IS 1388

FEBRUARY 1980



MAPS OF THE SAME AREA AT 7 SCALES WHEREVER THE SAME AREA IS SHOWN ON PUBLISHED MAPS COVERING THE SAME AREA, AN ORDER SHOULD ALSO INCLUDE THE 7.5' QUADRANGLE (7') SUPERIOR (P) SUPERIOR

WYMAN-GEOLOGICAL SURVEY-RESTON, VIRGINIA—1981

ADDITIONAL INFORMATION CONCERNING THE PROGRESS OF MAPPING IN ARIZONA MAY BE OBTAINED FROM THE TOPOGRAPHIC DIVISION, U.S. GEOLOGICAL SURVEY, 345 MIDDLEFIELD ROAD, MENLO PARK, CALIFORNIA 94025 OR THE NATIONAL CARTOGRAPHIC INFORMATION CENTER, U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA, 22092.

ARIZONA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ARIZONA

INDEX TO TOPOGRAPHIC MAPS OF ARIZONA

RECEIVED
JUN 18 1981
BOX 5964
TUCSON, AZ. 85703

The Geological Survey is making a series of standard topographic maps to cover the United States, Puerto Rico, Guam, American Samoa, and the Virgin Islands. Under the plan adopted, the unit of survey is a quadrangle bounded by parallels of latitude and meridians of longitude. Quadrangles covering 7½ minutes of latitude and longitude are published at the scale of 1:24,000 (1 inch=2,000 feet). Quadrangles covering 15 minutes of latitude and longitude are published at the scale of 1:62,500 (1 inch=approximately 1 mile). A few special maps are published at other scales, as listed in this index under special headings.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining published quadrangle maps. The maps are printed in five colors. The man-made features and names are printed in black; water features and names are blue; road classifications, urban areas, and U. S. land lines are red; woodland areas are shown in green; and contour lines and values are printed in brown. The contour interval differs with the scale of the map and the relief of the area mapped. On photorevised maps the areas of change are shown in purple. A booklet describing topographic maps and symbols is available free upon request. The extent of map coverage is shown on the index map, on which the mapped areas are outlined in black. Quadrangles for which published maps are available have the quadrangle name, publishing agency (if other than the Geological Survey), and the date or dates of survey also printed in black. A list of special maps and sheets is given on the following pages. Further information concerning maps may be obtained from the National Cartographic Information Center, Geological Survey, 507 National Center, Reston, Virginia 22092.

MAP SELECTION. A map should be ordered by name, series, and State in which it is located. In many instances, an area is covered by two maps which carry the same name, but are published at different scales. Where this occurs, it is especially important that the map order include the series designation, such as 7½-minute, 15-minute, or 1:250,000. The Geological Survey does not supply mounted maps.

An order form is included with each index, but maps may be ordered without a form. The name, address, and ZIP code of the purchaser should be typed or printed on all orders, and the maps desired should be listed alphabetically.

MAP PRICES AND SHIPMENT. Standard quadrangle maps published in the 7½ or 15-minute series are priced at $1.25 a copy. Prices of other maps listed in this index are indicated in the descriptive text. On an order amounting to $300 or more at the list price, 30% discount is allowed. No other discount is applicable. Prepayment is required and must accompany each order. Payment may be made by money order or check payable to the Geological Survey. Prices include surface transportation for shipments within the 50 States, to United States possessions, and to Canada and Mexico. If special transportation is requested, the entire cost must be paid by the purchaser. For shipments to other countries by surface transportation, a surcharge of 25% of the net amount of the order must be included in the payment. At the purchaser's request, maps will be shipped by air. The entire cost of such transportation must be included in the payment, but the 25% surcharge is waived.

WHERE TO ORDER MAPS. Maps of areas east of the Mississippi River, including Minnesota, Puerto Rico and the Virgin Islands of the United States should be ordered from the *Branch of Distribution, U. S. Geological Survey, 1200 South Eads Street, Arlington, Virginia 22202.*

Maps of areas west of the Mississippi River, including Alaska, Hawaii, Louisiana, American Samoa, and Guam should be ordered from the *Branch of Distribution, U. S. Geological Survey, Box 25286 Federal Center, Denver, Colorado 80225.*

FEBRUARY 1980
33–24,000

SPECIAL MAPS AND SHEETS

[Measurements are approximate]

Arizona (State). This map shows counties, location and names of all cities and towns and most of the smaller settlements, railroads, and township and range lines (in black); rivers, many of the smaller streams, and other water features (in blue). It does not show contours. Scale, 1:500,000, or about 8 miles to 1 inch. Size, 47 by 57 inches. 1974. Price, $1.50. Also published in black and white at the scale of 1:1,000,000, or about 16 miles to 1 inch. Size, 24 by 29 inches. Price, $1.50.

Arizona (Topographic). This map is an overprint of the 1:500,000-scale base map described directly above, and in addition, shows highways in purple and contours in brown. National parks and monuments, recreational areas, national forests, and Indian reservations are indicated by color patterns. Contour interval 500 feet. Price, $2.

Arizona (Relief). This map is overprinted on a modified base map which shows the State capital, county seats, county names and boundaries and other cities and towns (in black), and the water features (in blue). The physical features of this map are brought out by shaded-relief in color. It does not show contours. Scale, 1:500,000. Size, 47 by 57 inches. Price, $2.

Black Creek, Ariz. Plan and profile of Black Creek from mouth to mile 20. Scale, 1:24,000. Contour interval on land, 10 feet; on river surface, 2 feet. Vertical scale of profile, 20 feet to 1 inch. Size, 22 by 28 inches. 2 sheets (1 plan, 1 profile). 1937. Price, $1 a sheet.

Bright Angel, Ariz. This map shows part of the Grand Canyon. A brief geologic history of the area is given on the back of the map. Limiting parallels, 36° and 36°15′. Limiting meridians, 112° and 112°15′. Scale, 1:62,500, or about one mile to 1 inch. Contour interval, 80 feet. Size, 17 by 21 inches. 1962. Also published in a shaded-relief edition. Price, either contour or relief edition, $1.25.

Colorado and San Juan Rivers, Ariz.-Utah. Plan and profile of Colorado River, Lees Ferry, Ariz., to mouth of Green River, Utah; San Juan River, mouth to Chinle Creek, Utah; and certain tributaries. Scale, 1:31,680. Contour interval on land, 20 feet; on river surface, 5 feet. Vertical scale of profiles, 20 feet to 1 inch. Size, 21 by 27 inches. 22 sheets (16 plans, 6 profiles). 1921. Price, $1 a sheet.

Geodetic Control Diagrams. The Geological Survey and the National Geodetic Survey are cooperating in publishing diagrams which show the location of level and transit traverse lines, electronic distance measurements, and triangulation stations established by these and other Federal agencies. The work of the Geological Survey is shown in red, the National Geodetic Survey in black, and other Federal agencies in brown. These diagrams are printed on a blueline planimetric base of the 1:250,000-scale map series. They are intended primarily for professional use. The latest date of control information shown on the diagram is indicated below the sheet name. Price, $2 each. Available from the Branch of Distribution, U. S. Geological Survey, Federal Center, Denver, Colorado 80225.

Gila River, Ariz. Plan of Gila River from Buttes damsite to Coolidge Dam, and damsite. Scale, 1:31,680. Contour interval on land, 20 feet; on river surface, 5 feet. Size, 22 by 28 inches. 3 sheets. 1935. Price, $1 a sheet.

Gila River sheet (NI-12), 1:1,000,000 series. This map shows part of Arizona, New Mexico, and Mexico. The altitude of the land is shown by contour lines and tints. Limiting parallels, 32° and 36°. Limiting meridians, 108° and 114°. Scale, 1:1,000,000, or about 16 miles to 1 inch. Size, 26 by 27 inches. 1959. Price, $2.

Glen Canyon Recreation Area, Utah-Ariz. This map shows the recreation area and adjacent area. Limiting parallels, 36°45′ and 38°25′. Limiting meridians, 109°45′ and 111°45′. Scale, 1:250,000 or about 4 miles to 1 inch. Contour interval, 200 feet with supplemental contours at 100-foot intervals. Size, 32 by 36 inches. 1969. Price, $2.

Grand Canyon National Monument, Ariz. This map shows the monument and adjacent area. Limiting parallels, 36°09′ and 36°28′. Limiting meridians, 112°39′ and 113°11′. Scale, 1:48,000, or 4,000 feet to 1 inch. Contour interval, 50 feet. Size, 33 by 42 inches. 1936. Price, $2.

Grand Canyon National Park and vicinity, Ariz. This map shows the park and adjacent area. Limiting parallels, 36° and 36°28′. Limiting meridians, 111°45′ and 112°45′. Scale, 1:62,500, or about 1 mile to 1 inch. Contour interval 80 feet with 40 foot supplemental contours. Size, 38 by 60 inches. 1962. Price, $2. Also published in a shaded-relief edition. Price, $2.

Grand Canyon sheet (NJ-12), 1:1,000,000 series. This map shows part of Arizona, Colorado, New Mexico, and Utah. The altitude of the land is shown by contour lines and tints. Limiting parallels, 36° and 40°. Limiting meridians, 108° and 114°. Scale, 1:1,000,000, or about 16 miles to 1 inch. Size, 27 by 27 inches. 1959. Price, $2.

Los Angles sheet (NI-11) of the International Map of the World. This map shows part of Arizona, California, Nevada, and Mexico. The altitude of the land and the depth of the water are shown by contour lines and tints. Limiting parallels, 32° and 36°. Limiting meridians, 114° and 120°. Scale, 1:1,000,000, or about 16 miles to 1 inch. Size, 28 by 32 inches. 1947. Price, $2.

Mt. Whitney (NJ-11) of the International Map of the World. This map shows part of Arizona, California, Nevada, and Utah. The altitude of the land is shown by contour lines and gradient tints. Limiting parallels, 36° and 40°. Limiting meridians, 114° and 120°. Scale, 1:1,000,000, or about 16 miles to 1 inch. Size, 26 by 26 inches. 1966. Price, $2.

Petrified Forest National Park, Ariz. This map shows the park and adjacent area. Limiting parallels, 34°45′ and 35°10′15″. Limiting meridians, 109°40′ and 109°55′. Scale, 1:62,500, or about 1 mile to 1 inch. Contour interval, 25 feet. Size, 17 by 32 inches. 1910–55, limited revision 1967. Price, $2.

Phoenix Space Photo Map, Ariz. (2 Maps Available). These maps are experimental maps which combine space photo imagery with selected parts of a line map. A full line map with UTM grid is printed on the reverse side. Scale, 1:250,000, or about 4 miles to 1 inch. Size, 24 by 34 inches. 1972. Price. $2. each.

Salt River, Ariz. Plan and profile of salt River above Roosevelt Reservoir, Black River to Apache National Forest boundary, White River to mouth of Diamond Creek, East Fork of White River to Sevenmile Canyon, and Carrizo damsite. Scale, 1:31,680. Contour intervals on land, 20 and 25 feet; on river surface, 5 feet. Vertical scale of profiles, 40 feet to 1 inch. Size, 21 by 25 inches. 10 sheets (5 plans, 5 profiles). 1916–32. Price, $1 a sheet.

Set of 100 Topographic Maps Illustrating Specified Physiographic Features. These maps were selected to illustrate a wide variety of physiographic features within most of the 86 sections or subdivisions shown on the Physical Divisions Map of the United States. 1955. Price, $1.25

Set of 25 Topographic Maps Illustrating Specified Physiographic Features. These maps were selected from the set of 100 maps. They show physiographic features within most of the major physical division provinces. 1955. Price, $31.25.

An index map showing the name and location of the maps in each set and a key to aerial photoindexes of the photographs that are available from Federal agencies for these areas may be obtained on request to the Geological Survey.

Shaded-relief maps. Besides the regular topographic map, maps of the Antelope Peak and Bright Angle quadrangles have been published in an edition on which the relief is shown both by brown contour lines, as on the regular topographic map, and by shading in brown, which gives the map the appearance of a model of the surface with the light striking it from the northwest. Price, $1.25.

United States Series of Topographic Maps, Scale 1:100,000. Each of the maps in this series covers an area of approximately 4532.5 square kilometers (1750 square miles), depending upon the latitude. These maps are printed in 5 colors on paper measuring 29 by 42 inches. This all metric intermediate scale map series is prepared on a 30′ by 1° format. The contour interval ranges from 10 meters (32.8 feet) in relatively flat areas to 50 meters (164 feet) in mountainous regions. The date shown on the index is the date of the final edit of the map. Price, $2 each. An index to this series is available on request.

United States Series of Topographic Maps, Scale, 1:250,000. Each of the maps in this series covers an area of approximately 7,000 square miles, depending upon the latitude. These maps are printed in six colors on paper measuring about 22 by 32 inches. The contour interval ranges from 50 feet in relatively flat areas to 200 feet in mountainous regions. A single date under the name of a map indicates the year of preparation. Where two dates are shown, the second is the date of limited revision. Most of the maps are available with or without the woodland overprint. Price, $2 each. An index to this series, exclusive of Alaska, is available on request.

Williams River, Ariz. Plan and profile of Williams River above a point 8 miles above its mouth, Big Sandy River to mile 10, Santa Maria River, Kirkland Creek to Kirkland, and miscellaneous damsites. Scale, 1:31,680. Contour interval on land, 20 feet; on river surface, 5 feet. Vertical scale of profiles, 40 feet to 1 inch. Size, 21 by 27 inches. 9 sheets (4 plans, 4 profiles, 1 sheet showing damsites). 1934. Price, $1 a sheet.

NATIONAL PARKS AND MONUMENTS

[Additional information can be obtained from the National Park Service, Department of the Interior, Washington, D. C. 20240.]

Canyon De Chelly National Monument: Shown on the Buell Park, Canyon Del Muerto, Chinle 4 NE, Lukachukai, Nazlini, Sonsela Buttes, and Yellowstone Canyon quadrangle maps.

Casa Grande Ruins National Monument: Shown on the Blackwater and Coolidge quadrangle maps.

Chiricahua National Monument: Shown on the Chiricahua Peak and Cochise Head quadrangle maps.

Coronado National Memorial: Shown on the Hereford SW and Montezuma Pass quadrangle maps.

Glen Canyon Recreation Area, Utah-Ariz.: See "Special maps and sheets," page 2.

Grand Canyon National Monument: See "Special maps and sheets," page 2.

Grand Canyon National Park: See "Special maps and sheets," page 2.

Lake Meade National Recreation Area, Ariz.-Nev.: Shown on the Grand Canyon, Kingman, Las Vegas, and Williams 1:250,000-Scale maps.

Montezuma Castle National Monument: Shown on the Camp Verde quadrangle map.

Navajo National Monument: Shown on the Betatakin Ruin, Boot Mesa, Inscription House Ruin and Tall Mtn quadrangle maps.

Organ Pipe Cactus National Monument: Shown on the Agua Dulce Mountains, Diaz Peak, Kino Peak, Lukeville, Mount Ajo, and Quitobaquito Springs quadrangle maps.

Petrified Forest National Park: See Petrified Forest National Monument under "Special maps and sheets," page 2.

Pipe Spring National Monument: Shown on the Fredonia quadrangle map.

Saguaro National Monument: Shown on Avra, Brown Mountain, Happy Valley, and Rincon Valley quadrangle maps.

Sunset Crater National Monument: Shown on the Strawberry Crater, Sunset Crater East, Sunset Crater West, and O'Leary Peak quadrangle maps.

Tonto National Monument: Shown on the Theodore Roosevelt Dam and Windy Hill quadrangle maps.

Tumacacori National Monument: Shown on the Tubac quadrangle map.

Tuzigoot National Monument: Shown on the Clarkdale quadrangle map.

Walnut Canyon National Monument: Shown on the Flagstaff East quadrangle map.

Wupatki National Monument: Shown on the Roden Crater, SP Mountain, Strawberry Crater, Wupatki NE, Wupatki SE, and Wupatki SW quadrangle maps.

MAPS OF THE UNITED STATES

Base maps	Description	Size (inches)	Scale	Price
Map 2–A	Wall map showing State and county boundaries and names, State capitals, and county seats in black, water features in blue. State boundaries are accentuated by yellow overprint. A land tint background distinguishes the United States from adjoining countries. Insets show Alaska, Hawaii, and other outlying areas of the United States. Two sheets (each 41 x 54 inches). 1972.	54 x 80 assembled	1:2,500,000 (1 inch=approx. 40 miles)	(set) $3.00
Map 2–B	Same as above, without land tint background.			(set) $3.00
Map 3–A	Wall map showing State boundaries and names, State capitals and principal cities in black, water features in blue. State boundaries are accentuated by gray overprint. Major metropolitan areas shown in yellow. Also shown in black are boundaries of national forests, national parks and monuments, Indian reservations, and national wildlife refuges. Insets show Alaska, Guam, principal islands of Hawaii, American Samoa, Puerto Rico, Virgin Islands of the United States, and the Canal Zone. 1965.	42 x 65	1:3,168,000 (1 inch=50 miles)	$1.50
Map 5–A	State and county boundaries and names, water features in black. Insets show Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States. 1933.	27 x 41	1:5,000,000 (1 inch=approx. 80 miles)	$1.25
Map 5–B	State and county boundaries and names in black, water features in blue. Insets show Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States. 1933.	27 x 41	1:5,000,000 (1 inch=approx. 80 miles)	$1.25
Map 6–A	Wall map showing water features in blue, major metropolitan areas symbolized by a yellow tint within black circles, and railroads in black. State boundaries and boundaries of selected National Recreation areas are also in black. This map portrays Alaska and Hawaii in their proper size and position relative to the other 48 states. 1975.	39 x 58	1:6,000,000 (1 inch=approx. 95 miles)	$2.00
Map 7–A	State boundaries and principal cities in black, water features in blue. Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States are not shown. 1916.	20 x 30	1:7,000,000 (1 inch=approx. 110 miles)	$1.25
Map 10–A	State boundaries and boundaries of selected National Parks, Monuments, National Recreation areas, cities and railroads in black, water features in blue, highways in red, and major metropolitan areas symbolized by a yellow tint within black circles. This map portrays Alaska and Hawaii in their proper size and position relative to the other 48 states. 1975.	24 x 36	1:10,000,000 (1 inch=approx. 158 miles)	$1.50
Map 11–A	State boundaries and principal cities in black, water features in blue. Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States are not shown. 1906.	13½ x 20	1:11,875,000 (1 inch=approx. 187 miles)	.50
Map 16–A	State boundaries and principal cities in black, water features in blue. Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States are not shown. 1911.	9½ x 13	1:16,500,000 (1 inch=approx. 260 miles)	.25
Contour map				
Map 7–B	State boundaries and principal cities in black, water features in blue, contours in brown. Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States are not shown. 1916, with minor revisions 1974.	20 x 30	1:7,000,000 (1 inch=approx. 110 miles)	$1.25
Outline map				
Map 5–D	State boundaries and names only. Insets show Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United Sates. 1940.	27 x 41	1:5,000,000 (1 inch=approx. 80 miles)	$1.25
Physical divisions map				
Map 7–C	Physical divisions are outlined in red on the base map. Subdivisions and characteristics of each division are listed on the margin. Alaska, Hawaii, Canal Zone, Puerto Rico, and the Virgin Islands of the United States are not shown. 1946.	28 x 32	1:7,000,000 (1 inch=approx. 110 miles)	$1.25

STATUS INDEX MAPS

Maps showing the status of various phases of mapping and areas covered by aerial photography in the United States are available free on request to the U. S. Geological Survey, Reston, Virginia 22092. Scale, 1:5,000,000 (1 inch=about 80 miles). Size, 27 x 41 inches.

TOPOGRAPHIC MAPPING—STATUS AND PROGRESS OF OPERATIONS (7½- and 15-minute series). Shows the status of topographic mapping and progress of operations in the United States by the Geological Survey and other Federal agencies. General appraisal of the adequacy of these maps is indicated by color patterns. Published annually.

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STATUS OF AERIAL MOSAICS. Shows areas in the United States for which mosaics or photomaps have been prepared from aerial photographs, scale of negatives, dates of photography, and sources from which copies may be obtained.

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USGS National Center
Room 1C402
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Library, Northern Arizona University 86001
Phoenix:
Library & Archives, Third Floor Capitol 85004
Tempe:
Hayden Library, Arizona State University 85281
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Ganado:
The College of Ganado, Bookstore & Gift Shop
Glendale:
Popular Surplus Stores, 4315 W. Glendale Avenue
Trek, 6409 W. Glendale Avenue
Globe:
Gila County Office Supply, 286 North Broad Street
Southwest Parks & Monuments Association, 339 South Broad Street
Grand Canyon:
Grand Canyon National History Association
Green Valley:
Little Professor Book Center, 47 Green Valley Shopping Center, La Canada Drive
Valle Verde Topo Map Sales
Kearney:
Copper Basin News, 366 Alden Road
Lake Havasu City:
Milne's Mineral Jewelry, 32 S. Smoketree Avenue
Mesa:
Arizona Blueprinting, 246 West 1st Avenue
Backcountry Outfitters, 1840 W. Southern Avenue
Mesa Blueprint, 50 South MacDonald
Popular Surplus Stores, 30 West Main
Scott Blueprint, 751 E. Broadway
Oatman:
Little Brown Jug, Main Street
Page:
Jack's Sporting Goods, 30 7th Avenue
Payson:
Tonto Books N Things, 808 North Beeline
Phoenix:
Arizona Automobile Association, 748 East McDowell Road
Arizona Hiking Shack, 11645 N. Cave Creek Road
Arizona Map Shop & Gallery, 1315 N. Central Avenue
Astro Blueprint Co., 2401 North 24th Street
Copper State Sporting Hdqtrs., 412 West Hatcher
Desert-Mountain Sports, 4506 N. 16th Street
Gold Prospectors, 3342 West Bell Road
H & H Blueprint & Supply Co., 5042 N. 8th Street
Holubar/High Adventure, 3925 East Indian School Road
Phoenix Blueprint Co., 4141 North Seventh Street
Phoenix Mapping Corp., 1320 North 1st Street
The Trailhead, 5051 N. 35th Avenue
Prescott:
Base Camp, 142 N. Cortez Street
Quartsite:
Quartsite General Store
Safford:
Consolidated Title Co., 605 Main Street
Gila River Archery, 1431 Thatcher Boulevard
Sedona:
The Worm
Sierra Vista:
Treasure Hunter's Center, 106 North 5th Street
Sunsites:
The Village Book Store, 149 Frontage Road
Superior:
The Superior Sun, 467 Main
Tempe:
Holubar Mountaineering LTD, 234 W. Southern
Interoceanics, D.C.G., 3929 South Beck Avenue
Ski Haus Action Sports, 705 South Forest
Tucson:
Adco-Tucson Map Division, 2820 North First Avenue
Arizona Automobile Association, 228 West Drachman Street
Astro Blueprint Co., 4655 East Broadway
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Desert Trails, 230 W. Ajo Way
Haunted Bookshop Inc., 7225 N. Oracle Road
Jensen's Custom Ammunition Supply, 5146 East Pima
Reproduction Inc., 234 East Sixth Street
Ski Haus Action Sports, 2823 East Speedway
Sports Paradise, 6345 East Broadway
Summit Hut, 4044 E. Speedway
Summit Hut, 990 East University
Tucson Blueprint Co., 537 North Sixth Avenue
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Dale E. Joyce, 233 Center Street
Huth's Rock & Treasure Hunters, 128 N. Frontier
Yuma:
Navajo Center, Inc., 5720 E. Highway 80
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The Millers Wholesale Minerals, 10600 Interstate "8"

CALIFORNIA

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Lucas College Book Co., Inc., 2430 Bancroft Way
Covina:
Pack N Paddle Wilderness Sports, 1010 E. Arrow Highway
Fountain Valley:
The Mountain Trail, 896 Warner Avenue
Los Angeles:
Westwide Maps Co., 114 West Third Street
Lynwood:
Pacific Coast Map Service, 12021 Long Beach Boulevard
North Hollywood:
American Map Service, 13358 Sherman Way
Palm Desert:
Desert Map Store, Del Gagnon Co., 73–612 Highway 111
San Diego:
Map Centre, 2611 University Avenue
San Gabriel:
Mason Map Service, 553 West Las Tunas Drive
San Luis Obispo:
Granite Stairway Mountaineering, 871 Santa Rosa

NEVADA

Las Vegas:
Causey Engineering Service LTD., 1000 E. Charleston Blvd
Mercury Blueprint & Supply Co., 1425 South Main Street

NEW MEXICO

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Holman's, 401 Wyoming Boulevard, NE
Farmington:
San Juan Reproduction Co., 135 N. Airport Drive
Silver City:
Vic Topmiller, Jr., 1609 N. Gold

EXPLANATION

TERTIARY	Tdi diorite and diorite porphyry	RECENT	Qal. alluvium
	Trhy rhyolite and rhyolite porphyry	CRETACEOUS	Kcg. conglomerate
	Trtp Trachyte porphyry		Krss red sandstone & shale
CRETACEOUS	KTr Trachyte		Klcg. limestone conglomerate
			Kssh Sandstone + Shale
		PERMIAN	Csh Snyder Hill Formation
			Cmqtz quartzite
			Cmls blue limestone
			Cmsh limestone + Shale

AREAL GEOLOGY

LEAD MOUNTAIN AREA

PIMA COUNTY, ARIZONA

by C.O. Alexis, 1939

SCALE: 1" = 500'

CONTOUR INTERVAL 50 FEET

HEINRICHS GEOEXPLORATION CO.
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D.F

Geology
of the
Hilltano Mining District
Empire Mountains
Pima County, Arizona

D.F

Air Photo ref: U of A. Library
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49 EXT. NO. 2
49 EXT. NO. 3
49 EXT. NO. 1
49 PATENT
GOPHER
PRINCE
CHIEF
WEDGE
Cmqtz
Csh
Tdi
Trhy
Klcg
rhyolite dike intruded by green diorite on 80' level
rhyolite on 80' level
Chief incline
Chief adit
Incline
80 level
150' level
200' level
Prince shaft
N
EXPLANATION
IGNEOUS ROCKS
Tdi
diorite and diorite porphyry
Trhy
rhyolite porphyry
SEDIMENTARY ROCKS
Klcg.
limestone conglomerate
Csh.
Snyder Hill fm.
Cmqtz.
quartzite
AREAL GEOLOGY
LEAD MOUNTAIN AREA
PIMA COUNTY, ARIZONA
SCALE: 1" = 100'

EXPLANATION

TERTIARY	Tdi diorite and diorite porphyry	RECENT	Qal. alluvium
TERTIARY	Trhy rhyolite and rhyolite porphyry	CRETACEOUS	Kcg. conglomerate
TERTIARY	Ttrp Trachyte porphyry	CRETACEOUS	Krss red sandstone & shale
CRETACEOUS	KTr Trachyte	CRETACEOUS	Klcg. limestone conglomerate
CRETACEOUS		CRETACEOUS	Kssh Sandstone + Shale
PERMIAN		PERMIAN	Csh Snyder Hill Formation
PERMIAN		PERMIAN	Cmqtz quartzite
PERMIAN		PERMIAN	Cmls blue limestone
PERMIAN		PERMIAN	Cmsh limestone + Shale

T 18S, R 16, 17 E.

Note: Section Corner Locations are Approximate

AREAL GEOLOGY

LEAD MOUNTAIN AREA

PIMA COUNTY, ARIZONA

SCALE: 1" = 500'

CONTOUR INTERVAL 50 FEET

D.F

LEAD MOUNTAIN

GEOLOGY