6000 0149 (0890)

Cu Hill

#34

# A GEOPHYSICAL REPORT ON INDUCED POLARIZATION SURVEYS CALICO PROSPECT AND COPPER HILL PROSPECT WALKER INDIAN RESERVATION, NEVADA

For

OCCIDENTAL MINERALS CORPORATION

By

W.A. FINNEY, B. Sc.

5-69

REPORT ON

INDUCED POLARIZATION (I.P.) SURVEYS

CALICO PROSPECT AND COPPER HILL PROSPECT

WALKER INDIAN RESERVATION, NEVADA



FOR



OCCIDENTAL MINERALS CORPORATION

BY

HUNTEC
A Division of Kenting Exploration Services Ltd.

CALGARY, ALBERTA

MAY, 1969

TABLE OF CONTENTS



ACCOMPANYING MAPS

ACCOMPANYING MAPS (Continued)



Copper Hill Prospect

# INTRODUCTION

## General

This report contains the results of Induced Polarization (I.P.) surveys carried out by Huntec, A Division of Kenting Exploration Services Limited for Occidental Minerals Corporation over two properties, Calico and Copper Hill, on the Walker Indian Reservation, Nevada.

The field work was performed between June 6 - July 22, 1968, November 24, 1968 - February 27, 1969, using a four man crew and a supervising Geophysicist. The project was managed from Calgary, Alberta, by Mr. W. Finney.

Previous geophysical work on the Calico prospect consisted of airborne magnetic surveys at 500 ft. and 2000 ft. elevations, ground magnetic surveys and an Induced Polarization survey (McPhar Geophysics). The magnetic surveys outlined a significant NW-SE trending anomaly which on drilling had revealed considerable quantities of magnetite and pyrrhotite mineralization. Associated chalcopyrite content was low and the entire deposit is not quite ore grade.

The aim of the present I.P. survey was to investigate the possibility of sulphide mineralization extending beyond the limits of the magnetic anomaly which might indicate some degree of mineral zoning, "iron to copper," and consequently upgrade the economic potential of the prospect.

The survey at Copper Hill was designed to supplement a previous I.P. survey (McPhar Geophysics) with a view to testing the continuity of the I.P. response with depth.

The Properties

The Calico area is located about five miles north-east of Schurz, which is about 80 miles by road from Reno, in a south-easterly direction. Copper Hill is located about 16 miles south-east of Schurz.

Both properties are connected to Highway 95 by dirt or gravel roads. Most parts of the properties are accessible by 4 x 4 wheel drive vehicle, but parts of the Calico prospect were accessible only on foot.

The main magnetic feature at the Calico prospect is known from limited drilling results to consist of a large irregular magnetite-pyrrhotite body, the top surface of which appears to be dipping in a south-easterly direction. The body is overlain by a sequence of andesitic volcanics varying in thickness from 1250 ft. at the north end (Line 4500NW) to 2050 ft. at the south end (Line 1500NW). Continuity of the body is not known between these locations, but the magnetic results would suggest this is the case.

The volcanics outcrop in a group of low hills traversed by canyons and gullies. Recent sediments of unknown thickness overlap the volcanics on the western and south-western sides. Deep weathering characterizes the entire region and fresh outcrops are rare.

Base metal mineralization exists in several localities at the Copper Hill prospect. The I.P. survey by McPhar indicated several definite anomalies which can be attributed to sulphide mineralization, but local concentrations of graphite appear to be contributing to some of the I.P. effect. The main anomalous zone as determined in the earlier survey occurs over rocks described as quartz-monzonite and diorite intrusives. The present survey lines is approximately 2000 ft. to the north, where surface rocks are mainly Tertiary volcanics.

## SURVEY SPECIFICATIONS

### The Equipment

In the initial phase of the survey at Calico a 7.5 kw pulse-type Induced Polarization system, manufactured by Huntec, Toronto, was used. In the later phase of the Calico work, and in all of the Copper Hill work, a 10 kw pulse-type unit was used.

The following specifications apply:

### Initial survey

Calico Prospect - Lines 1500NW, 3000NW, 4400NW.

| | |
|---|---|
| Type of current | Direct Current broken at periodic intervals. |
| Period | 1.5 seconds "current on" and 0.6 seconds "current off". Alternate pulses have reverse polarity. |
| Delay time | 60 milliseconds |
| Integrating time | 400 milliseconds |
| Maximum Power available | 7.5 kw |
| Maximum current available | 10 amps. |

### Final survey

Calico Prospect - Lines 0, 1500NW, 4400NW, 10E, 10W

| | |
|---|---|
| Type of current | Direct Current broken at periodic intervals. |
| Period | 2.0 seconds "current on" and 1.5 seconds "current off". Alternate pulses have reverse polarity. |
| Delay time | 500 milliseconds |
| Integrating time | 400 milliseconds |

| | |
|---|---|
| Maximum power available | 10 kw |
| Maximum current available | 20 amps. |

Measurements taken in the field were:

1. The current flowing through the current electrodes, $C_1$ and $C_2$.
2. Primary voltage, $V_p$, between the potential electrodes during "current on" time.
3. Chargeability $M_a$ where $M_a = \frac{V_s}{V_p} \times 400$ in milliseconds and $V_s$ being the secondary voltage. i.e. the voltage between the potential electrodes during "current off" time.

In the initial survey, $M_a$ was calculated by the field crew after measurement of $V_p$ and $V_s$. In the final survey, a Huntec Mark 2 I.P. receiver was used which calculates the $M_a$ automatically each cycle and displays the running average on a digital counter.

The apparent resistivity $\rho_a$ is calculated by dividing $V_p$ by the current, and multiplying by a factor appropriate to the geometry of the electrode array being used.

Electrode Array

The electrode configuration used throughout the survey was the in-line Dipole-Dipole array. In this array, current is applied to the ground through two current electrodes at a distance "a" apart. The separation, na, between the nearest current and potential electrodes was varied, as a multiple of "a" (i.e. integral values of n). For this survey, n values of 1 to 5 were used with a Dipole length "a" of 1000 feet. The results of each set-up are plotted at the mid point of the array.

Depth penetration is largely a function of electrode separation. The in-line Dipole-Dipole array was used in this area becasue, for a given separation, there is less electromagnetic coupling between the current and potential circuits, in area of low resistivity, than there is with other configurations.

## RESULTS AND INTERPRETATION

### Presentation

The results of the initial survey at Calico are presented as profiles of apparent chargeability and apparent resistivity, in milliseconds and ohm-meters respectively, in Drawing No. 2. Interpreted causative bodies are shown in section below the profiles at the same vertical and horizontal scales. A plan view of the interpreted bodies is also shown on this Drawing and referred to as "Interpretation Map".

The results of the second survey at Calico are shown in Drawing Nos. 3 to 7, as pseudo-sections of apparent chargeability and apparent resistivity as well as profiles of the same quantities. Interpreted causative bodies, in section form, are shown below the profiles at the same horizontal and vertical scales. A Plan Map showing the positions of these bodies relative to the outline of the ground magnetic anomaly (1000 gamma contour) is also presented in Drawing No. 1.

The results of the survey over the Copper Hill prospect are shown in Drawing No. 9 in pseudo-section form only with interpreted bodies outlined as before. Drawing No. 8 is a plan view of the interpreted body and also shows the position of the Huntec survey line relative to the McPhar survey lines, as well as the outline of the McPhar interpreted body.

### Interpretation

Initial Survey Three lines, 4400NW, 3000NW, 1500NW, were read across the main magnetic feature from stations 6 + 500SW to 6 + 500NE. A delay time (elapsed time after current cut-off before secondary voltage integration commences) of 60 milliseconds was used. As the apparent resistivities in this area are extremely low, less than 10 ohm-meters in

many cases, electromagnetic coupling effects are probably appreciable.

Electromagnetic effects increase with larger electrode separations and higher conductivity (i.e. larger n and lower $\rho_a$). Consequently, some of the apparent chargeability values on the n = 2 separation, and most of the values on the n = 3 separation, are considered suspect. These are shown as dashed profiles in Drawing No. 2. Electromagnetic coupling does not affect the resistivity readings in the same way, as these measurements are taken during "steady state" conditions in the "current on" cycle. These results are therefore considered to be reliable.

The interpreted causative bodies, deduced mainly from the apparent chargeability results, are indicated beneath the profiles. Two separate bodies are considered as the source of the anomaly pattern on Lines 1500NW and 3000NW. The anomalies on both these lines on the n = 1 and n = 2 profiles are weak and indistinct. This is particularly true of Line 3000NW and the anomaly pattern going from the n = 1 to n = 2 profile is not entirely consistent, which makes the interpretation here not very positive.

The results on Line 4400NW are clearly more conclusive and probably reflect greater sulphide/magnetite content as well as a shallower source. The peak of the anomalies on n = 1 and n = 2 profiles suggest the main shallow body lies between 0 + 000 and 1 + 000SW, which appears to be somewhat south-west of the shallow mineralization as determined by the drilling. A deeper extension to the north-east is inferred from the data. Another possibility is a narrower, more strongly mineralized source, centered on station 0 + 000, dipping steeply to the north-east. This is inconclusive because the south-western part of the n = 3 profile was not completed with reliable data as the decreased resistivity in this region introduced too severe electromagnetic coupling.

The resistivity results do not assist to any great degree in elucidating the geological picture. The data are considered to be influenced most strongly by the near surface material. The distinction between the highly conductive sediments to the south-west and the lesser conductive volcanics to the north-east is evident on all three lines. However, the interpreted mineralized bodies do not reflect any higher conductivity characteristics which would be expected from the nature of the mineralization as determined by the drilling. This can be explained by the fact that, of the total volume of material sampled, the mineralized body constitutes only a small proportion. This is particularly true of the readings taken with large electrode separations. A more likely explanation is that the extreme high conductivity of the near surface material masks the effect of the mineralization at depth, even though it is massive; or nearly so, physically speaking at any rate.

The only exception to the lack of distinguishing features in the resistivity data, are the anomalous low readings centered on station 0 + 500SW on Line 4400NW. The increased conductivity here probably reflects, to a certain degree, the presence of the shallower mineralized body.

Final Survey Lines 0, 10W and 10E, located as per Drawing No. 1, were read across the south-east end of the main anomaly and across the "tail" or Little Calico anomaly. This work was completed using the Huntec Mark 2 receiver with a delay time of 500 milliseconds. In addition, Lines 1500NW and 4400NW were re-run using the longer delay time.

The I.P. effect as determined on Lines 0, 10W and 10E is very weak and no strong anomalies were outlined. A minor anomaly centered on 5 + 200N on Line 10E is the only feature on these three lines which might indicate a weakly mineralized body. The anomaly

appears only on the wider electrode separations and the top of the body is probably at least 2000 ft. below surface. The high readings occur at one station only on each of the n = 3, n = 4 profiles which, in itself, throws considerable doubt on the existence of this body. It is concluded therefore, that there is indefinite evidence of a mineralized source and, even if the most optomistic approach is adopted, the body is probably either too small or too weakly mineralized to warrant testing by deep drilling etc.

The data on Line 0 is devoid of all indication of I.P. material either shallow or deep. This result conflicts strongly with the interpretation of geophysical data on the lines further to the north, which suggests the mineralized body trends south-east across Line 0.

Two reasons are advanced to account for the lack of I.P. response:

a) The I.P. body is cut-off between Line 1500NW and Line 0 and does not continue through. This is not supported by the magnetic data which suggests the cut-off point is much further to the south-east. Also, there is no geologic evidence of major faulting in this region.

b) The depth penetration, even with the widest electrode separation, is not as great as would theoretically be expected. This might be possible as the surface conductivity in this region is probably considerably higher than at depth. The "channeling effect" of the upper layer could restrict the total depth penetration in this case.

The re-run of Line 4400NW produced a similar anomaly pattern to the initial survey. The resistivity data is almost identical and is again dominated by the contact between the sediments and volcanics.

The south-west flank of the chargeability anomalies is more sharply terminated than previously, which is probably due to the elimination of major E-M coupling effects apparent on the early data. The amplitude of the anomalies in the later work is greatly reduced which is

a result of the increased time delay used. The peak of the n = 2 anomaly and the centre of the n = 3 high are displaced to the north-east in the later survey, in comparison with the early work. No clear explanation for this is apparent except that, as E-M coupling is greatest to the south-west (associated with low resistivities), the anomaly is biased to the south-west which in turn has the effect of "dragging" the peak in that direction.

A single steeply dipping body as indicated in Drawing No. 3, is interpreted as the source of the anomaly. The splitting of the n = 3 peak suggests a "two body" source in that the top of the main body is isolated from the deeper sections by an interval of lower grade. This gives the effect of a body of limited dimensions at shallow depths with another body at great depths. The increased amplitude on the n = 4 profiles, suggests increased grade with depth (i.e. in the 2500 - 3500 ft. range) or a larger volume of material. The breadth of the anomaly indicates a larger body with depth rather than increased grade is more likely, but there is no positive way of making this distinction.

The re-run of Line 1500NW did not produce a response as strong as might be expected from the mineralization determined by earlier drilling. However, a weak but distinct anomaly exists between station 0 + 500NE and 2 + 500NE, with the strongest response on the widest electrode separation at station 2 + 500NE. Equally strong anomalies occur at the south-west end of the line, but poor repeatability and some cross-check readings using shorter delay times, all indicate E-M coupling effects are present, and these anomalies probably do not represent the true I.P. effect.

A single body is interpreted as the source of the I.P. anomaly centered on 1 + 500NE. An increase in mineralization with depth is inferred from the increased amplitude

on the n = 4 profile. One diamond drill hole at station I + 800NE is recommended to test the anomaly. Total drilling depth of at least 4000 ft. is proposed to test the suspected increase in grade with depth. The top of the body is estimated at 1800 ft. below surface as the anomalous values first appear on the n = 2 profiles, but the accuracy of estimating depths, to the top of a body of limited size, is not very great and this figure could be modified considerably. It is unlikely, though, that the depth is much less than 1800 ft.

Future I.P. work in this locality will always be relatively slow and difficult. Using large dipoles with separations up to n = 4 will put a limit on the apparent resistivity of approximately 10 ohm-meters, below which E-M coupling effects are excessive even with a time delay of 0.5 seconds.

An additional limiting factor in considering large arrays, is the signal to noise ratio. Noise is introduced as tellurics and spherics. The Huntec Mark 2 receiver by consequence of its ability to average over a very large number of readings can overcome most of the external noise, but it was noticed that on several occasions readings had to be repeated due to the introduction of one or two large noise pulses during the averaging sequence. The noise pulses (sometimes even only one) were sufficiently large in amplitude to "swamp" the true readings and the entire procedure had to be restarted. It is concluded therefore, that the signal must be enhanced considerably if reasonable production, with accuracy, it to be achieved, i.e. larger transmitters with capability of 30 amps regularly applied between current electrodes are necessary. Such power units are not available on a commercial basis, but do exist with some of the larger mining companies in the south-west U.S.A.

The writer is of the opinion that I.P. work in this area should be restricted to periods when spheric interference is likely to be at a minimum. This probably rules out the summer months. Large spheric pulses are easily recognizable, but the accumulated effect of minor interference is largely an unknown quantity. During the summer months, when

thunderstorms and similar spheric electric effects are more prominent, large periods of "down time" would have to be expected, and the determination of tolerable quiet conditions in itself would always be a difficult decision.

Copper Hill Prospect

Drawing No. 8 summarizes the previous I.P. survey on this property and shows the position of the single line (Line H) run by Huntec in the present survey. The results on Line H are shown on Drawing No. 9 and two causative bodies are interpreted as the source of the I.P. pattern.

The near surface body is characterized by its low conductivity which contributes strongly to the Chevron pattern of the resistivity data. A different rock type in the region 0 to 10W, such as a silicified zone, is interpreted as the source of the resistivity anomaly.

The chargeability results are largely symmetical about station 0. If the line is directly over the I.P. body, then the top of the body is interpreted as approximately 1500 ft. below surface. However, from Drawning No. 8, it is clear that a large part of the anomaly pattern could be reflecting the side effect from the near surface I.P. feature determined by McPhar Geophysics. This is also symmetrically placed, in a lateral sense, relative to station 0.

At present, there is no clear way of resolving the two possibilities. An I.P. line parallel to Line H across the "McPhar feature" would help to distinguish between a deep body or a shallow one. If the body is deep then from the amplitude of the response, it is quite possible that it is of relatively high grade as regards percentage by volume of I.P. material.

# SUMMARY

## Calico Prospect

1. The I.P. survey of Calico prospect consisted of four SW-NE lines across the main magnetic anomaly and two lines approximately N-S across the weaker magnetic "tail".

2. No anomalies were detected on Line 0, 10W, 10E.

3. Strong anomalous readings were detected on Line 4400NW and can be correlated fairly well with the known drilling data.

4. An anomaly on Line 1500NW was interpreted as coming from a deep source (2000 ft. to the top) with a possible enriched zone at greater depths.

5. One deep diamond drill hole located at 1 + 800NE on Line 1500NW is recommended to test the causative body.

Copper Hill Prospect

1. The I.P. survey of the Copper Hill prospect consisted of one long E-W line close to a known mineralized occurrence previously tested to shallow depths by the I.P. method.

2. The symmetrical apparent chargeability pattern is indicative of a deep source or possible side effects of the shallow mineralization known to the south.

3. No diamond drilling is recommended. An E-W I.P. line directly across the near surface anomaly (as determined by McPhar Geophysics) would remove the ambiguity in Point 2.

Respectfully submitted,

HUNTEC DIVISION

W. A. Finney

W. A. FINNEY, B.Sc.

6000 01499 (0890)

L-17250NW
L-14250NW
L-13250NW
L-11250NW
L-9250NW
L-7250NW
L-1000NE
ROAD
T14N
T15N
R26E
R29E
1000
MAGNETIC ANOMALY
CA-6
CA-4
CA-3
CA-5
CA-2
CA-8
5
4
3
2
1
L-4400NW
L-3000NW
L-1500NW
L-0
B/L-0
1000
L-10W
L-10E
L-1500NW
L-3000NW
L-4400NW
N

## LEGEND

1000 — 1000γ CONTOUR FOR GROUND MAGNETIC SURVEY

CA-1 — DRILL HOLE. (EXISTING)

CA-1 — INTERCEPTED MINERAL.

— SECTION CORNER.

WEAKER — STRONGER — Surface Extent — Depth Extent — INTERPRETED CAUSATIVE SECTION.

D.D.H. No1 — RECOMMENDED HUNTEC D.D. Hole.

**OCCIDENTAL MINERAL CORPORATION.**

CALICO PROPERTY, SCHURZ, NEVADA - U.S.A.

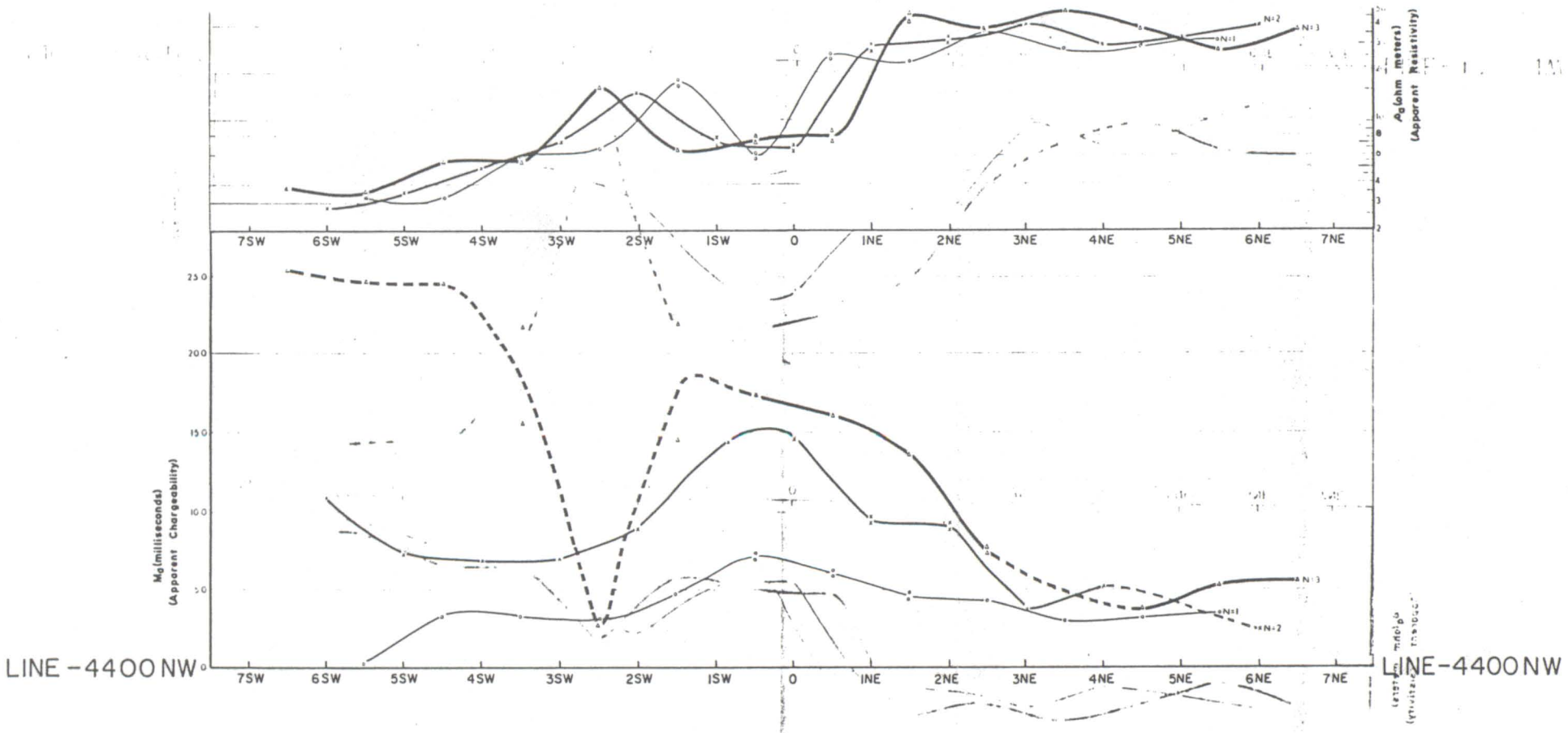
I.P. SURVEY PLAN MAP WITH INTERPRETATION.

To accompany report by: W. A. Finney
W.A. Finney, B.Sc., Geophysicist.

HUNTEC LIMITED. CALGARY - CANADA.

| | |
|---|---|
| SCALE: 1 inch = 1,000 Feet. | #34 |
| DRAWN: M.C. | |
| DATE: January, 1969. | |
| JOB № P.H. 902/1 | DWG. № - 902/1-1. |

6000 0149b (0890)




OCCIDENTAL MINERAL CORP.
WALKER-MARTEL MINING CO.
CALICO PROPERTY, SCHURZ, NEVADA - USA

INDUCED POLARIZATION SURVEY

To accompany report by: W A Finney

W A Finney, B Sc, Geophysicist

HUNTEC LIMITED. CALGARY-CANADA

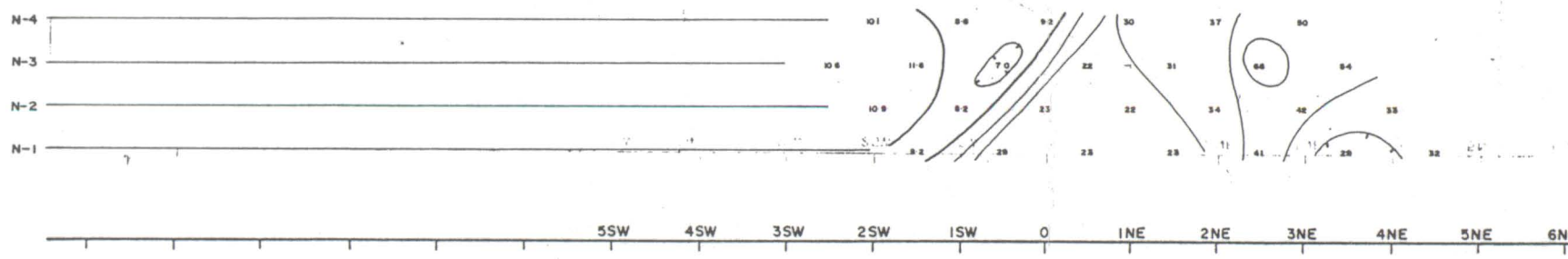
| | |
|---|---|
| SCALE: as shown above | #34 |
| DRAWN: PS | |
| DATE: September 1968 | |
| JOB No: [illegible] | DWG. No -902/1-2 |

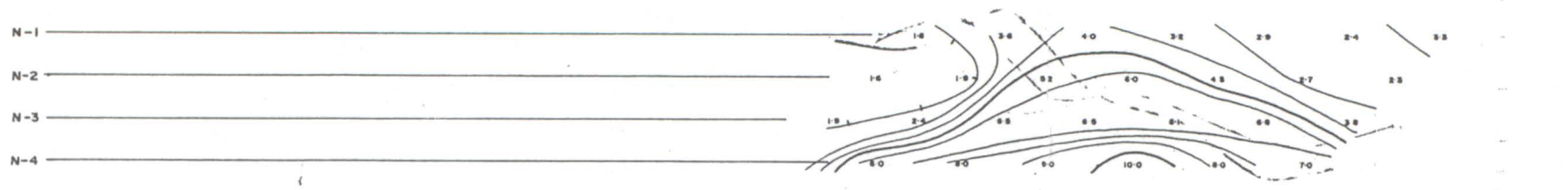
ON 1.5 secs
OFF 0.6 secs
DELAY 0.06 secs
INTEGRATE 0.4 secs

6000 0149c (0890)

$\rho_a$ (ohm meters)
(Apparent Resistivity)

CONTOURS AT LOGARITHMIC INTERVALS
OF: 150, 200, 300, 400, 600, 800, 1000 ETC.




$M_a$ (milliseconds)
(Apparent Chargeability)

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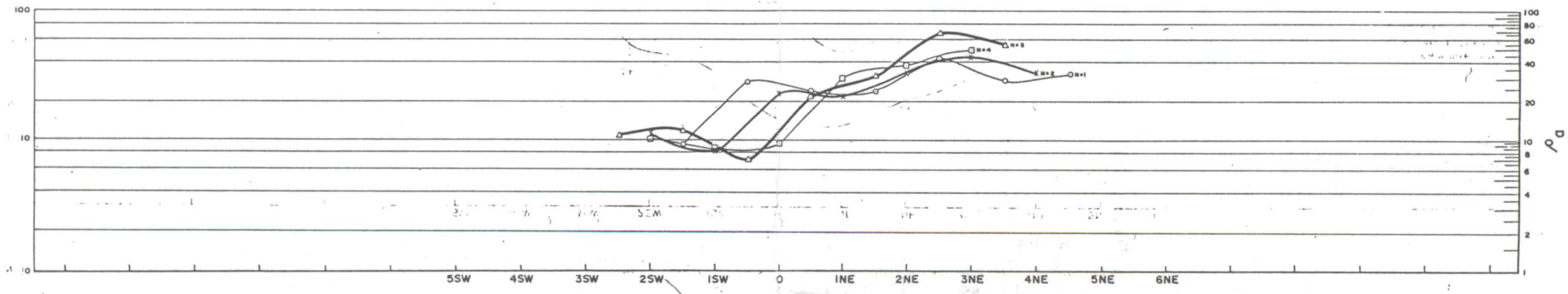


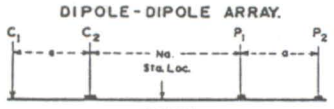




Horizontal Scale: 1 inch = 1000 feet.

Vertical Scales:
Chargeability – 1 inch = 2·0 milliseconds.
Resistivity – 2 inches = 1 logarithmic cycle (ohm-meters)

DIPOLE-DIPOLE ARRAY.




LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

| | |
|---|---|
| ON | 2·0 secs |
| OFF | 1·5 secs |
| DELAY | 0·5 secs |
| INTEGRATE | 0·4 secs |

OCCIDENTAL MINERAL CORPORATION.

CALICO PROPERTY, SCHURZ, NEVADA – U.S.A.

INDUCED POLARIZATION SURVEY.

To accompany report by: W. A. Finney
W.A. Finney, BSc, Geophysicist.

HUNTEC LIMITED. CALGARY-CANADA.

| | |
|---|---|
| SCALE: | 1 inch = 1000 feet |
| DRAWN: | M C |
| DATE: | February, 1969. |
| JOB Nº | P.H. 902/1 |

LINE-4400 N.W.

#34

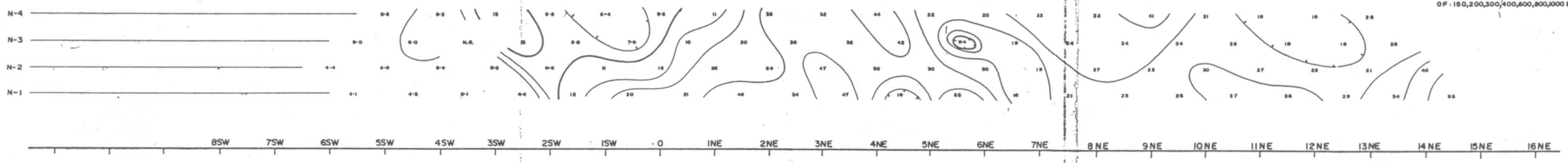
DWG. Nº -902/1-3

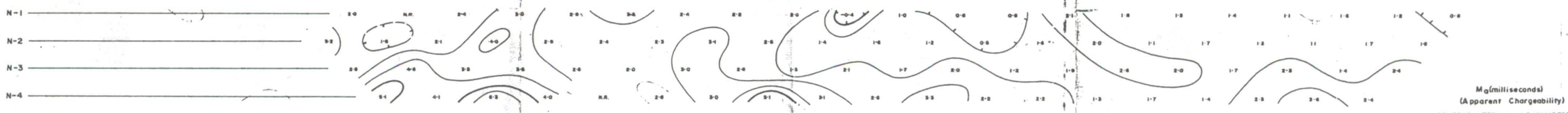
(0890)

6000 0149d (0890)

$\rho_a$ (ohm meters)
(Apparent Resistivity)

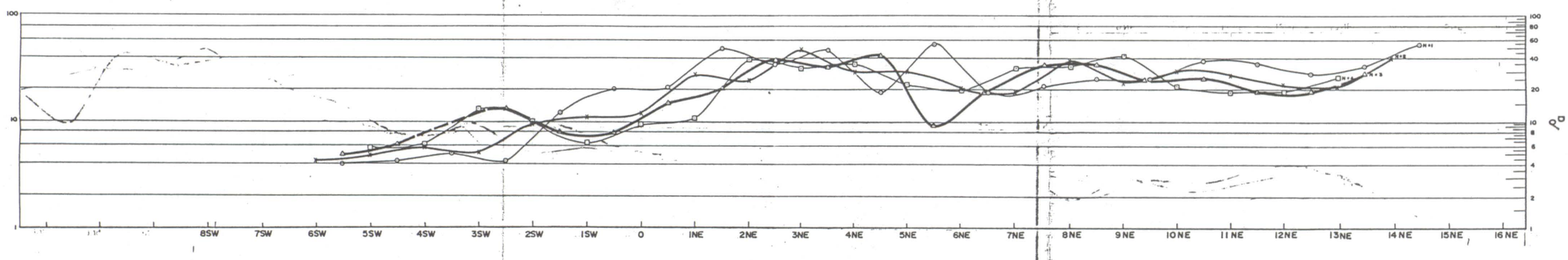
CONTOURS AT LOGARITHMIC INTERVALS OF: 150, 200, 300, 400, 500, 800, 1000 ETC.

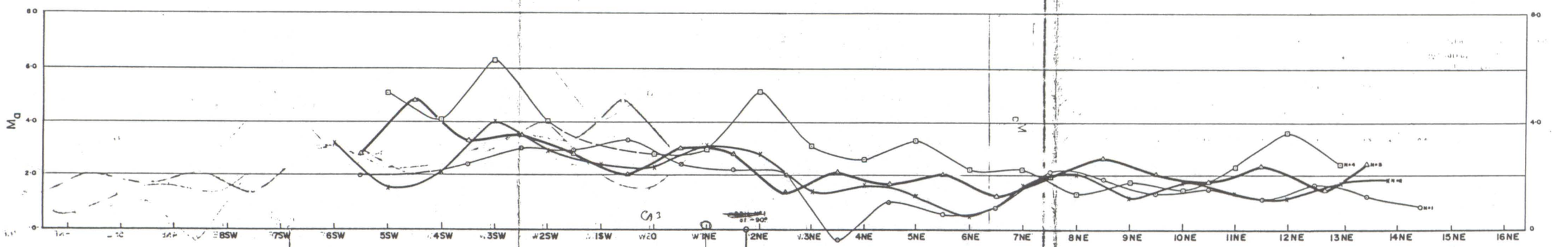



$M_a$ (milliseconds)
(Apparent Chargeability)

CONTOUR INTERVAL = 1·0 MILLISECONDS.




HIGH $M_a$ INTERPRETED AS DUE TO E.M. COUPLING, PARTICULARLY N=3 & N=4.

CONE OF POSSIBLE ENRICHMENT AT 3500' BELOW SURFACE.

DIPOLE-DIPOLE ARRAY.


LEGEND

WEAKER | STRONGER

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

Horizontal Scale: 1 inch = 1,000 feet.

Vertical Scales:
Chargeability - 1 inch = 2·0 milliseconds.
Resistivity - 2 inches = 1 logarithmic cycle (ohm-meters)

| | |
|---|---|
| ON | 2·0 secs. |
| OFF | 1·5 secs. |
| DELAY | 0·5 secs. |
| INTEGRATE | 0·4 secs. |

OCCIDENTAL MINERAL CORPORATION.

CALICO PROPERTY, SCHURZ, NEVADA - U.S.A.

INDUCED POLARIZATION SURVEY.

To accompany report by: W. A. Finney
W.A. Finney, BSc., Geophysicist.

HUNTEC LIMITED. CALGARY-CANADA.

| | |
|---|---|
| SCALE: | 1 inch = 1,000 feet. |
| DRAWN: | M.C. |
| DATE: | December, 1968. |
| JOB Nº | P.H. 902/1. |

LINE - 1500 N.W.

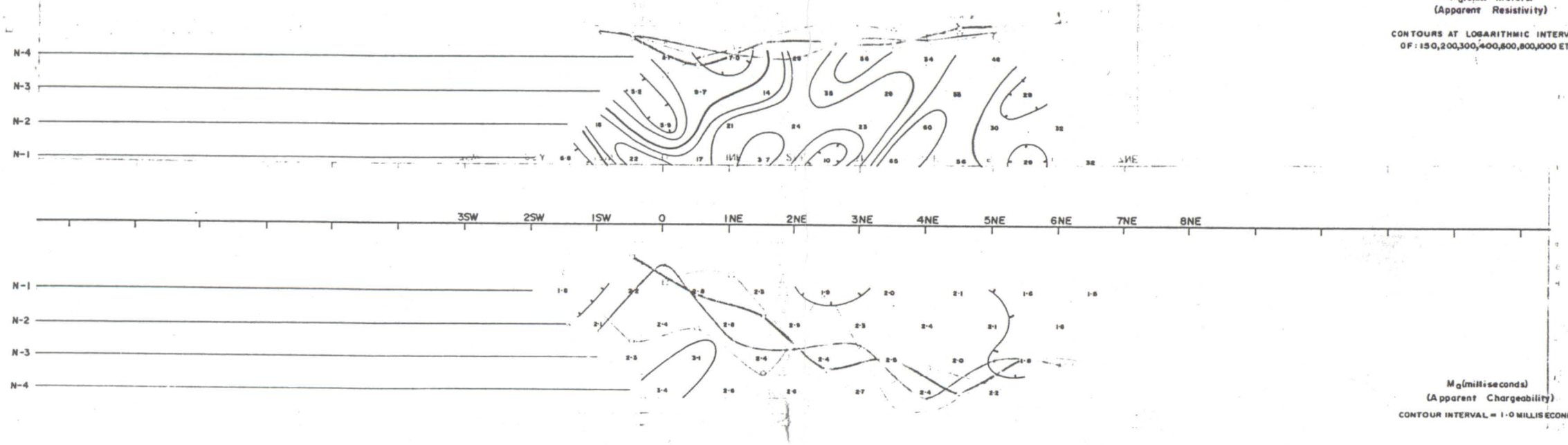
#34

Dwg. Nº -902/1-4.

(6000 0149E 10890)

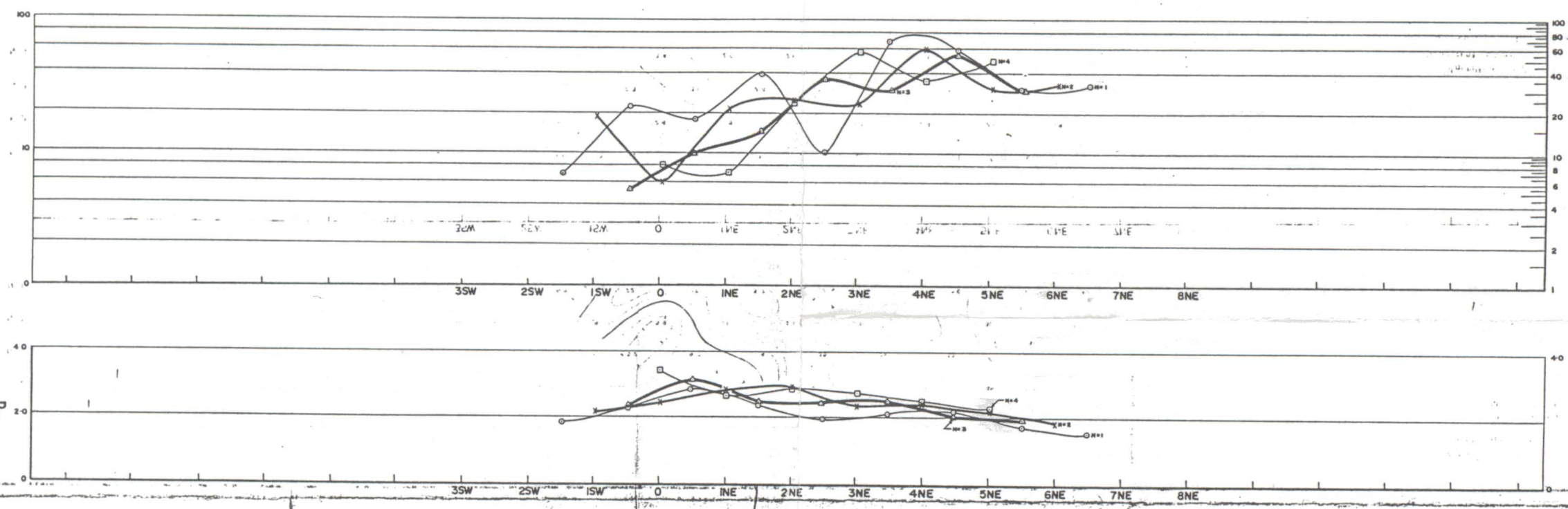
$\rho_a$ (ohm meters)
(Apparent Resistivity)

CONTOURS AT LOGARITHMIC INTERVALS
OF: 150, 200, 300, 400, 600, 800, 1000 ETC.

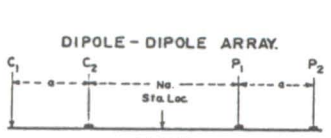



$M_a$ (milliseconds)
(Apparent Chargeability)

CONTOUR INTERVAL = 1·0 MILLISECONDS.




DIPOLE - DIPOLE ARRAY.




LEGEND

INTERPRETED CAUSATIVE BODY.

RECOMMENDED D.D. HOLE.

Horizontal Scale: 1 inch = 1,000 feet.

Vertical Scales:
Chargeability – 1 inch = 2·0 milliseconds.
Resistivity – 2 inches = 1 logarithmic cycle (ohm-meters)

| | |
|---|---|
| ON | 2·0 secs. |
| OFF | 1·5 secs. |
| DELAY | 0·5 secs. |
| INTEGRATE | 0·4 secs. |

OCCIDENTAL MINERAL CORPORATION.

CALICO PROPERTY, SCHURZ, NEVADA – U.S.A.

INDUCED POLARIZATION SURVEY.

To accompany report by: W. A. Finney
W. A. Finney, B.Sc., Geophysicist.

HUNTEC LIMITED. CALGARY – CANADA.

| | |
|---|---|
| SCALE: | 1 inch = 1,000 feet. |
| DRAWN: | M.C. |
| DATE: | December, 1968 |
| JOB No | P.H 902/1 |

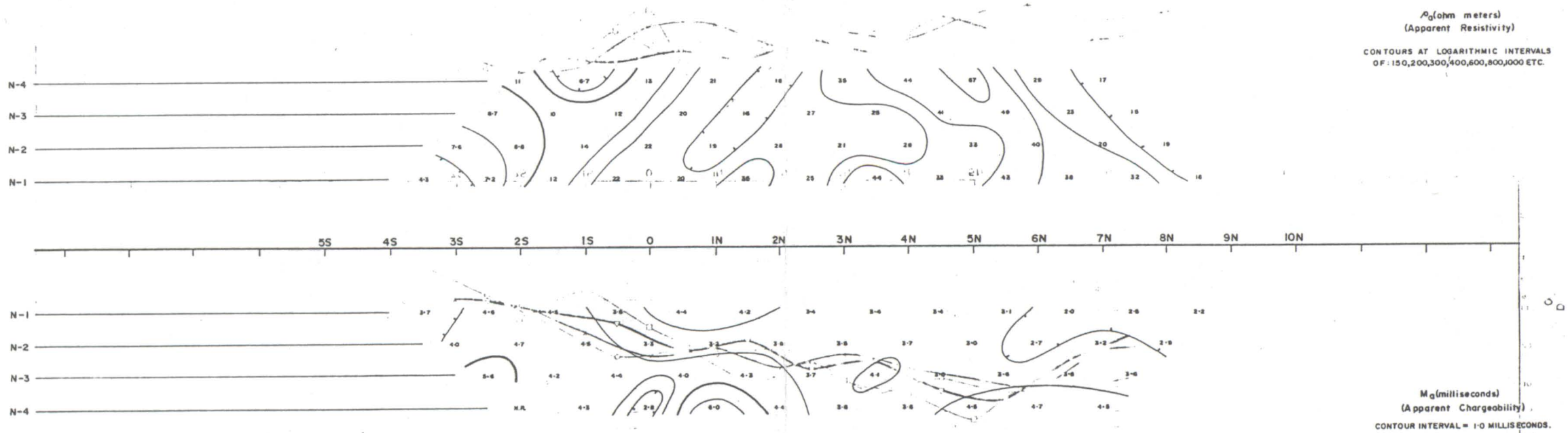
LINE – O.

#34

DWG. No – 902/1 – 5

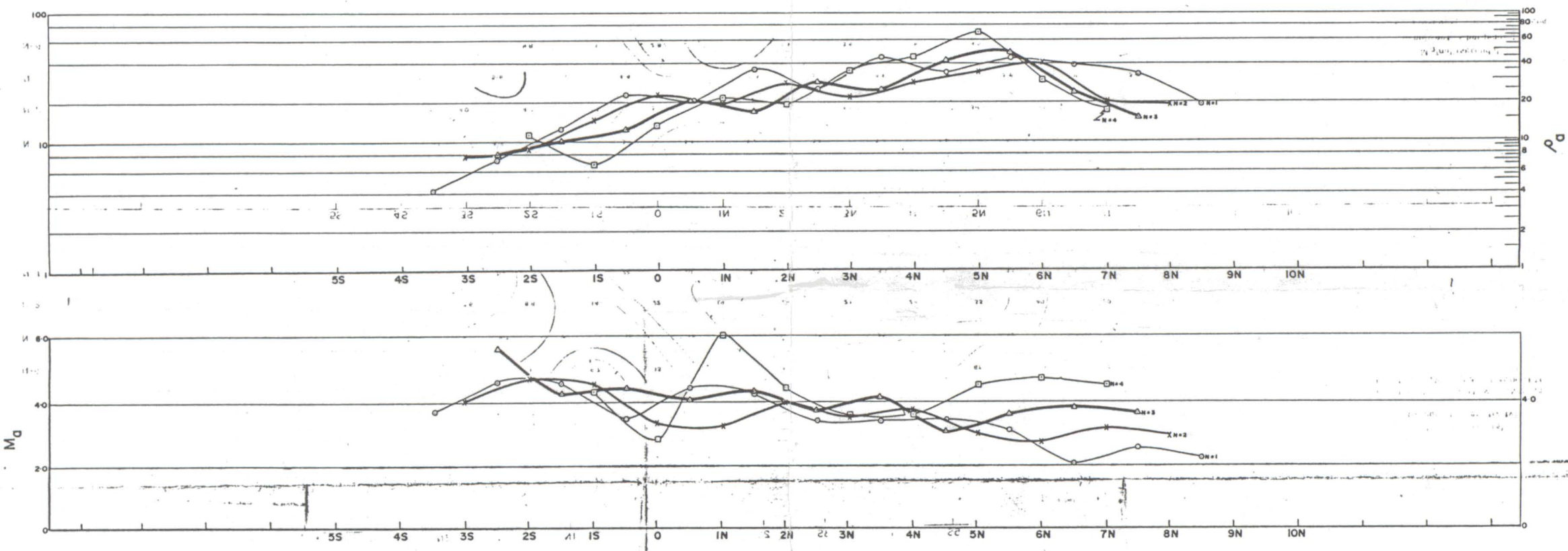
$\rho_a$ (ohm meters)
(Apparent Resistivity)

CONTOURS AT LOGARITHMIC INTERVALS
OF: 150, 200, 300, 400, 600, 800, 1000 ETC.

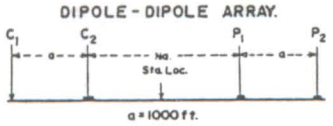



$M_a$ (milliseconds)
(Apparent Chargeability)

CONTOUR INTERVAL = 1·0 MILLISECONDS.




DIPOLE - DIPOLE ARRAY.




LEGEND

INTERPRETED CAUSATIVE BODY

RECOMMENDED D.D. HOLE.

Horizontal Scale: 1 inch = 1,000 feet.

Vertical Scales:
Chargeability – 1 inch = 2·0 milliseconds.
Resistivity – 2 inches = 1 logarithmic cycle (ohm-meters)

| | |
|---|---|
| ON | 2·0 secs. |
| OFF | 1·5 secs. |
| DELAY | 0·5 secs. |
| INTEGRATE | 0·4 secs. |

OCCIDENTAL MINERAL CORPORATION.

CALICO PROPERTY, SCHURZ, NEVADA – U.S.A.

INDUCED POLARIZATION SURVEY.

To accompany report by: W. A. Finney
W.A. Finney, BSc, Geophysicist.

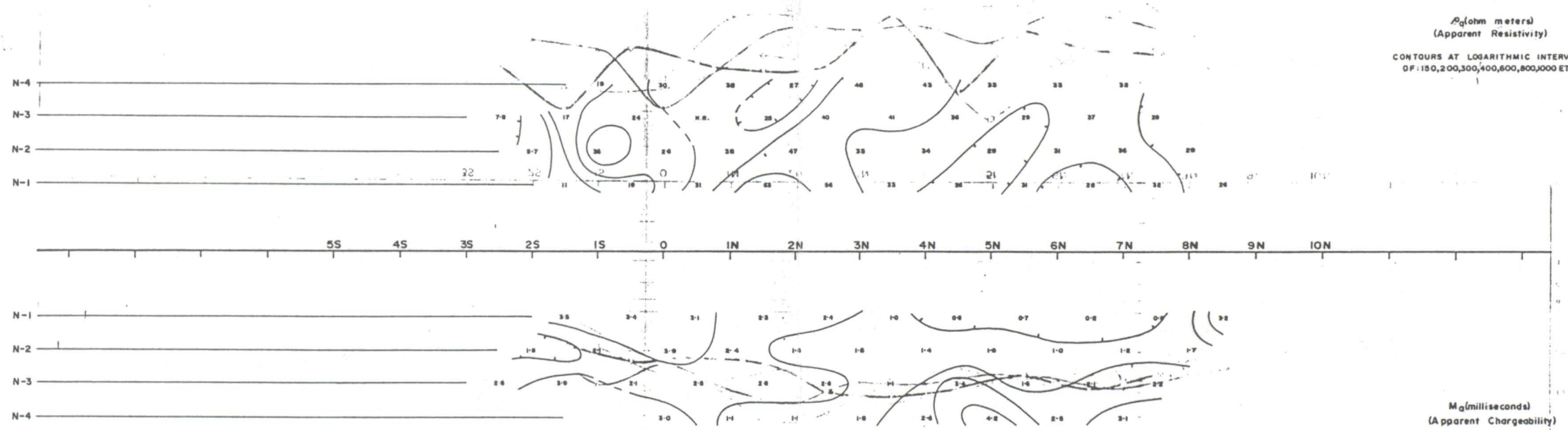
HUNTEC LIMITED. CALGARY-CANADA.

| | |
|---|---|
| SCALE: 1 inch = 1,000 feet. | LINE – 10W. |
| DRAWN: M.C. | |
| DATE: January, 1969. | |
| JOB Nº P.H. 902/1. | DWG. Nº –902/1–6. |

(6000 0149g(0890)

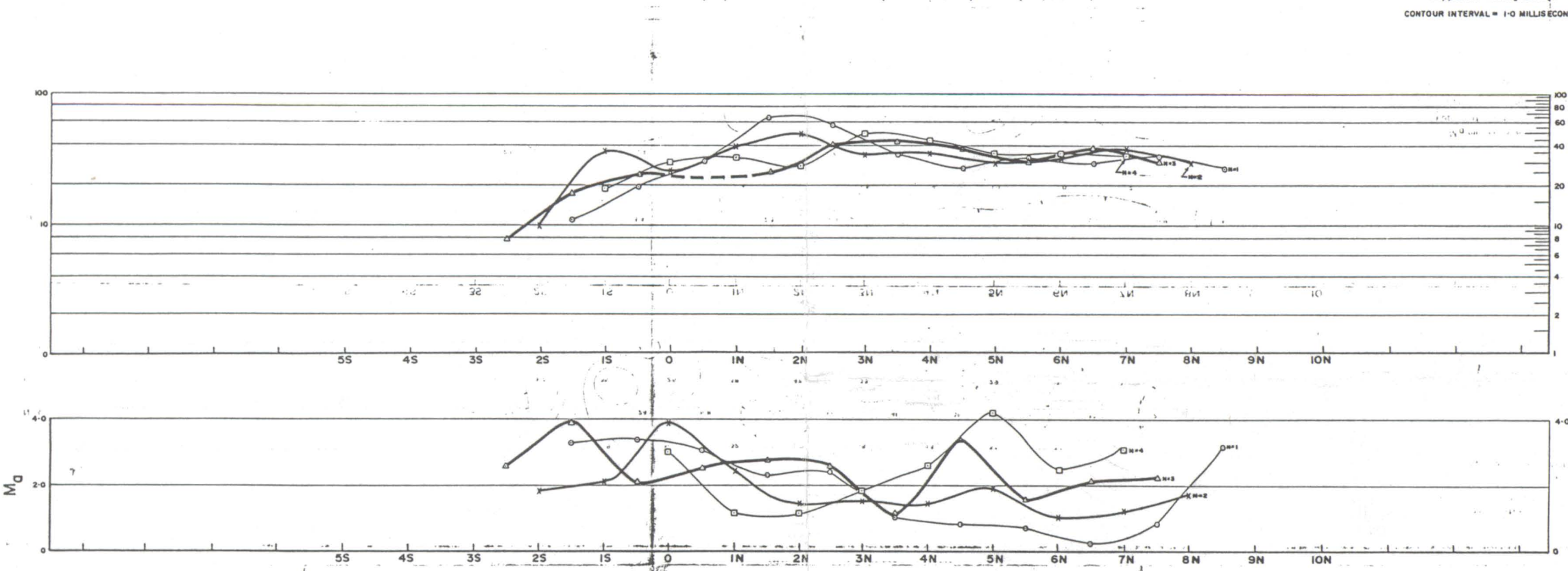
$\rho_a$(ohm meters)
(Apparent Resistivity)

CONTOURS AT LOGARITHMIC INTERVALS
OF: 150, 200, 300, 400, 600, 800, 1000 ETC.

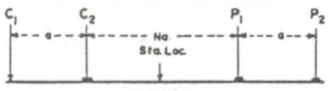



$M_a$(milliseconds)
(Apparent Chargeability)

CONTOUR INTERVAL = 1·0 MILLISECONDS.




DIPOLE - DIPOLE ARRAY.




LEGEND

INTERPRETED CAUSATIVE BODY.
WEAKLY MINERALIZED

RECOMMENDED D.D. HOLE.

| | |
|---|---|
| ON | 2·0 secs |
| OFF | 1·3 secs. |
| DELAY | 0·5 secs. |
| INTEGRATE | 0·4 secs |

Horizontal Scale: 1 inch = 1,000 feet.

Vertical Scales:
Chargeability – 1 inch = 2·0 milliseconds.
Resistivity – 2 inches = 1 logarithmic cycle (ohm-meters)

OCCIDENTAL MINERAL CORPORATION.

CALICO PROPERTY, SCHURZ, NEVADA - U.S.A.

INDUCED POLARIZATION SURVEY.

To accompany report by: W. A. Finney
W.A. Finney, B.Sc., Geophysicist.

HUNTEC LIMITED. CALGARY-CANADA.

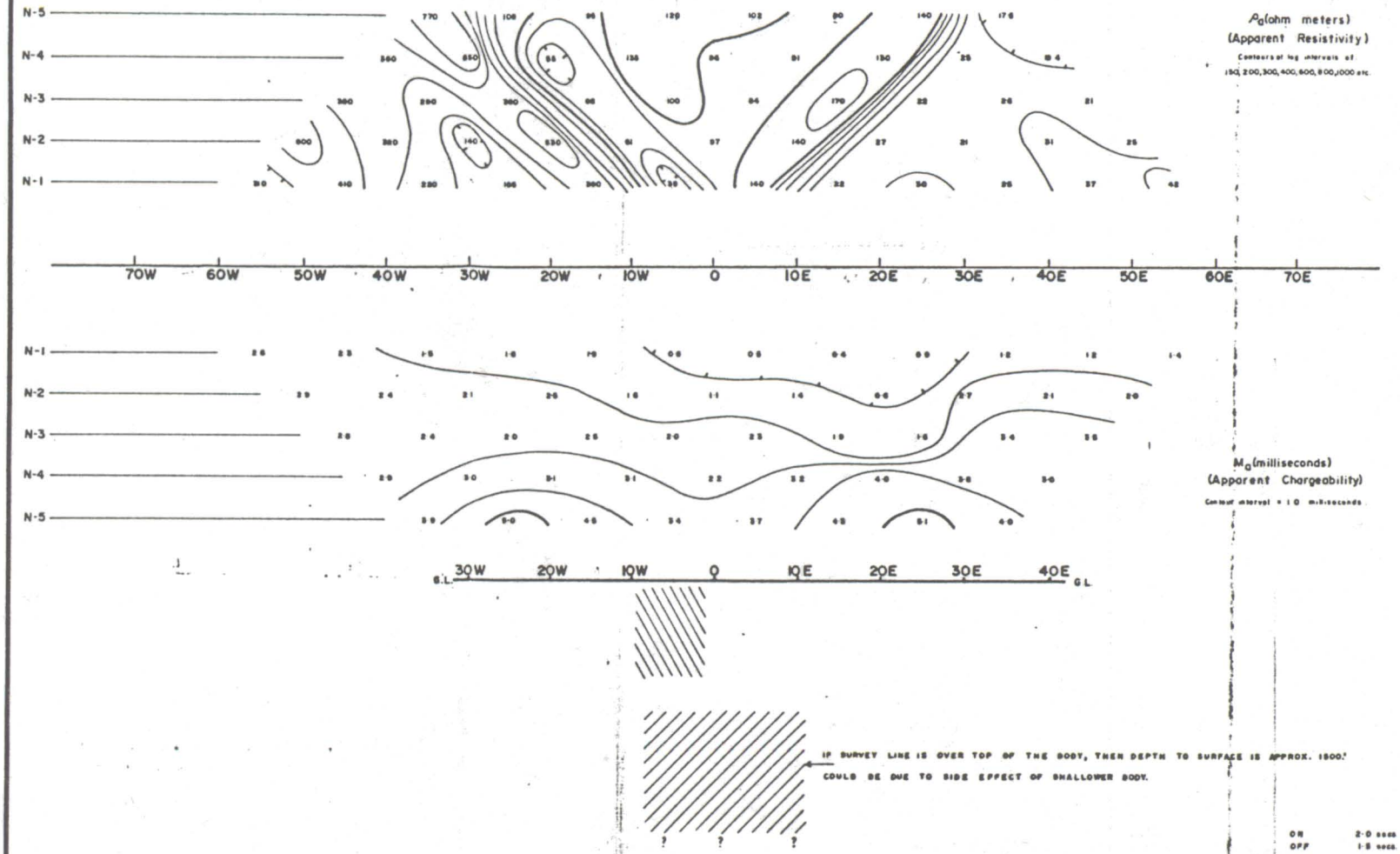
| | |
|---|---|
| SCALE: | 1 inch = 1,000 feet. |
| DRAWN: | M.C. |
| DATE: | January, 1969. |
| JOB No | P.H 902/1. |

LINE - 10E.

#34

DWG. No - 902/1- 7

6000 0149 H (0890)




INDUCED POLARIZATION SURVEY.

# DETAIL PROFILE: LINE - H.

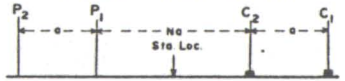
LEGEND

INTERPRETED CAUSATIVE BODY.

LOW CONDUCTIVITY ZONE.

RECOMMENDED D.D. HOLE.

DIPOLE-DIPOLE ARRAY.




## OCCIDENTAL MINERAL CORPORATION

COPPER HILL PROJECT, WALKER INDIAN RESERVATION, NEVADA-U.S.A.

Horizontal Scale: 1 inch = 1000 feet.

To accompany report by: W.A. Finney
W.A. Finney, B.Sc., Geophysicist.

HUNTEC LIMITED — Calgary, Canada — February, 1969.

#34

DWG. N° -902/1-9