GEOPHYSICAL SURVEYS
INDUCED POLARIZATION AND RESISTIVITY
BAY PROPERTY
(BAY 1, 2, 5-7, 11-16)
NTS 82M/4

JULY 22, 1988. G.A. HENDRICKSON, P.GEOPH.

Red copy

NTS copy.

GEOPHYSICAL SURVEYS

INDUCED POLARIZATION AND RESISTIVITY

BAY PROPERTY
(BAY 1, 2, 5-7, 11-16)

KAMLOOPS MINING DIVISION,

BRITISH COLUMBIA

NTS 82M/4

51° 06'N, 119° 47'W.

Owners: COMINCO LTD. and
WESTMIN RESOURCES LIMITED

Operator: KIDD CREEK MINES LTD.

JULY 22, 1988.

G.A. HENDRICKSON, P.GEOPH.

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INTRODUCTION

On behalf of Kidd Creek Mines Ltd., a division of Falconbridge Limited, Delta Geoscience Ltd. conducted an induced polarization and resistivity survey on the Bay property. This property is located in the Adams Plateau area of south central B.C., approximately 65 kms. northeast of Kamloops (Fig. #1). The nearest settlement is Barriere, approximately 26 km. west of the survey area. The Bay project is a joint venture between Kidd Creek Mines Ltd., Cominco Ltd., and Westmin Resources Ltd.

The geology of the survey area is described in preliminary map #56 produced by the B.C. Ministry of Energy, Mines and Petroleum Resources. This map shows the survey area to be underlain by rocks of the Eagle Bay formation. The rocks are described as being "medium to dark green calcarious chlorite schist and fragmented schist derived largely from mafic to intermediate volcanic rocks; lesser amounts of limestone and dolostone, minor amounts of quartzite, grey phyllite and sericite quartz phyllite." General geology and the location of the Bay claim group is shown on Fig. #2.

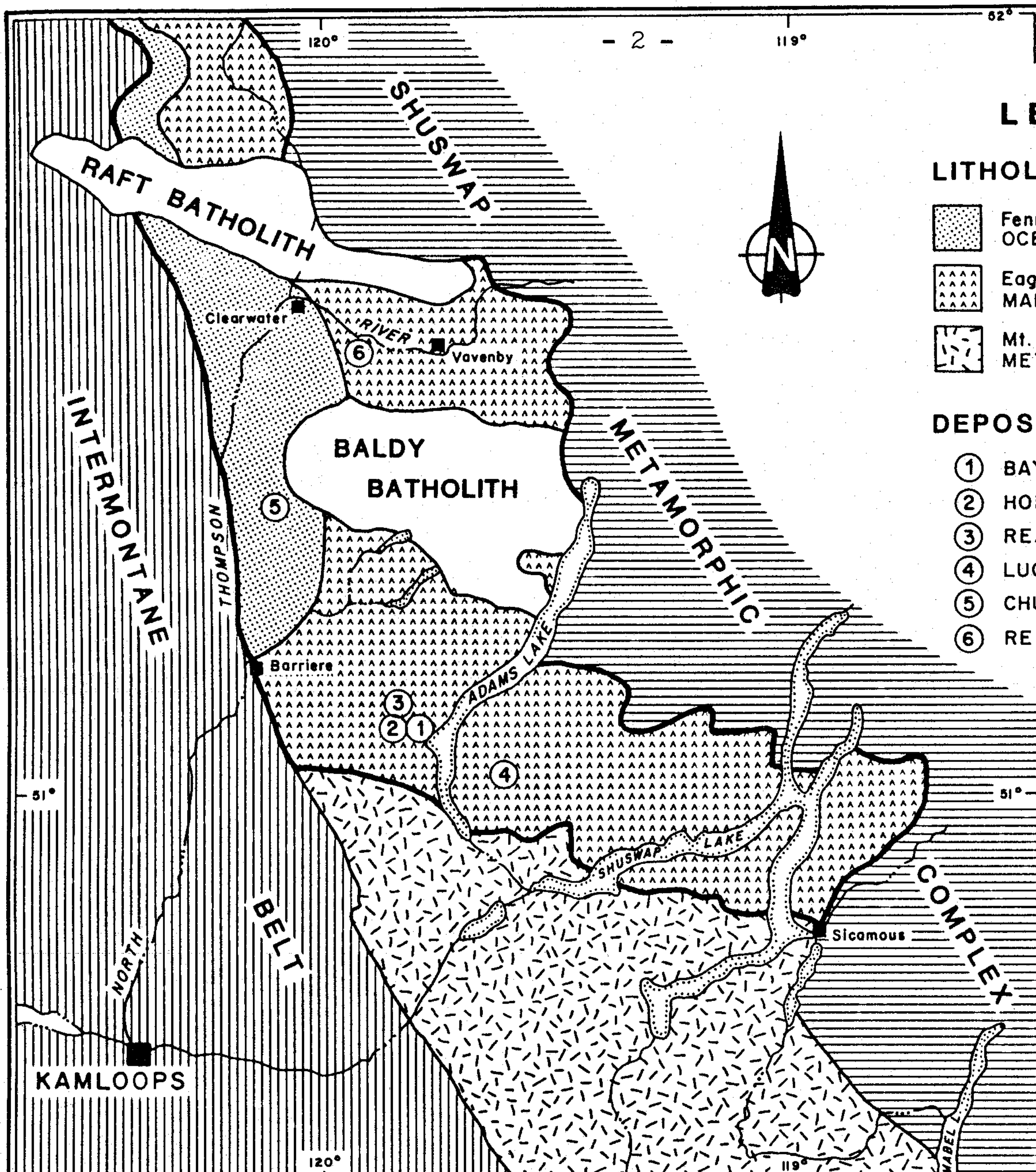
The exploration target is volcanogenic massive sulphide deposits.

The induced polarization/resistivity survey was a follow-up to last year's ground electromagnetic surveys. The purpose of the induced polarization survey was to further evaluate several electromagnetic responses which occur in the areas of most promising geology. Several of these weak conductors were interpreted to be due to argillite horizons and it was hoped that the I.P. survey could help discriminate targets prior to trenching.

Approximately 23 kms. of grid lines were surveyed during the period May 16 to 28, 1988.

Steve Enns, a senior geologist for Falconbridge Limited, was the client representative. Grant Hendrickson, the senior geophysicist for Delta Geoscience Ltd., supervised the survey.

Room and board for the crew was obtained at the fishing camp located on the west end of Johnson Lake, which is situated near the north side of the survey area.



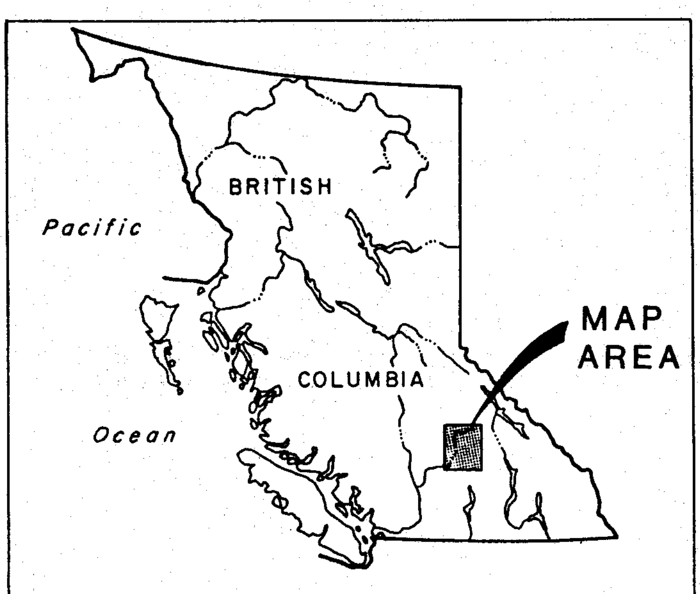
LEGEND

LITHOLOGY

- Fennel Formation: OCEANIC BASALTS
- Eagle Bay Group: MAFIC & FELSIC VOLCANICS
- Mt. Ida Group: METAMORPHIC COMPLEX

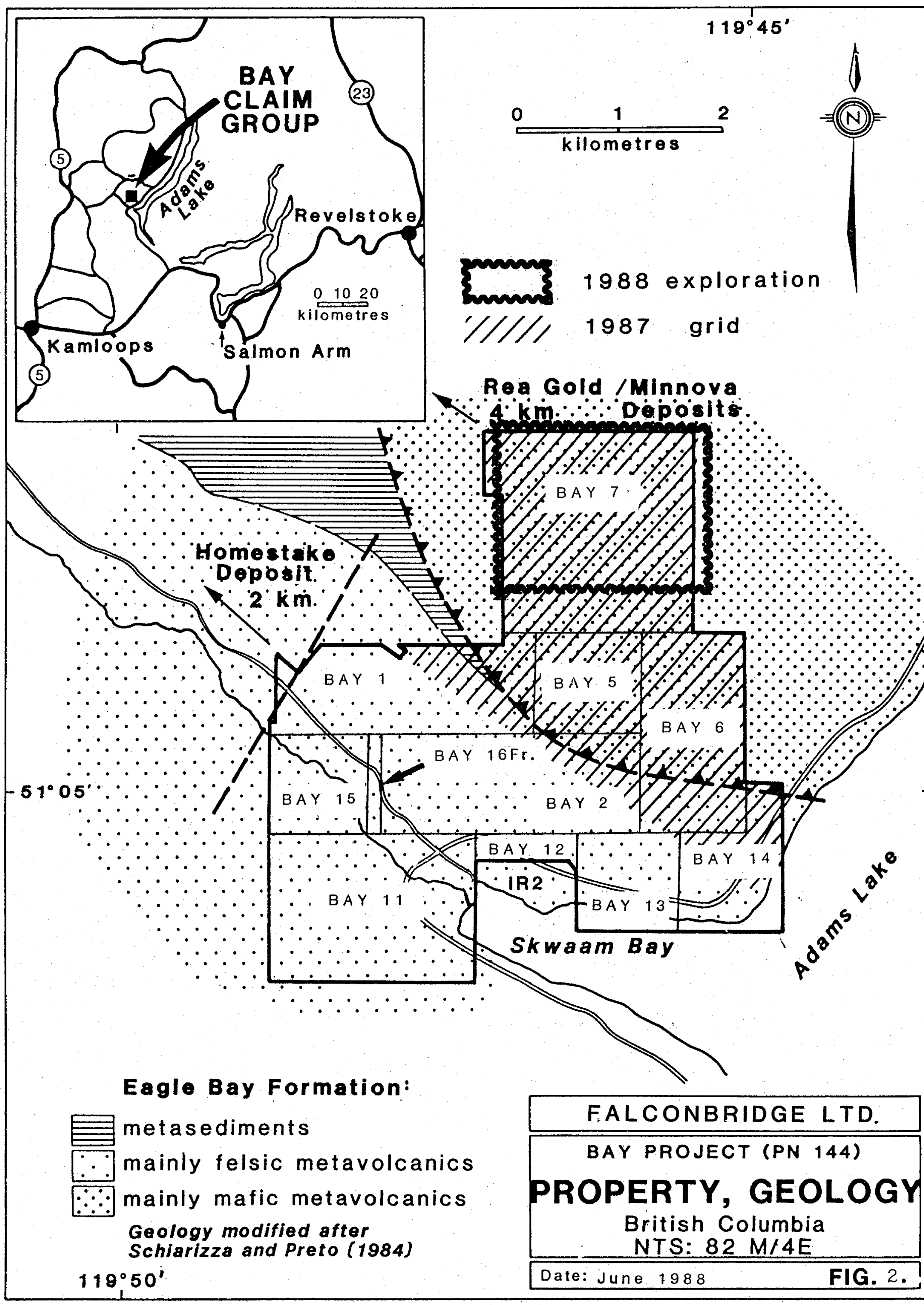
DEPOSITS/SHOWINGS

1. BAY PROJECT
2. HOMESTAKE
3. REA / SAMATOSUM
4. LUCKY COON
5. CHU CHUA
6. REXSPAR



KEY MAP

FALCONBRIDGE LIMITED	
ADAMS PLATEAU	
LOCATION MAP	
PROJ. 144	
WORK BY: JB	DRAWN BY: VJG
DATE: May 1988	
km 0 10 20 30 40 50 km	
1 : 1,000,000	
	Figure: 1.


119°45'
BAY
CLAIM
GROUP
Adams
Lake
Revelstoke
Kamloops
Salmon Arm
0 10 20
kilometres
0 1 2
kilometres
N
1988 exploration
1987 grid
Rea Gold /Minnova
4 km Deposits
BAY 7
Homestake
Deposit
2 km
BAY 1
BAY 5
BAY 6
BAY 16Fr.
BAY 15
BAY 2
51°05'
BAY 12
BAY 14
IR2
BAY 13
BAY 11
Skwaam Bay
Adams Lake
Eagle Bay Formation:
metasediments
mainly felsic metavolcanics
mainly mafic metavolcanics
Geology modified after
Schiarizza and Preto (1984)
119°50'
FALCONBRIDGE LTD.
BAY PROJECT (PN 144)
PROPERTY, GEOLOGY
British Columbia
NTS: 82 M/4E
Date: June 1988
FIG. 2.

PERSONNEL - Delta Geoscience Ltd.

Robert Wilson-Smith	- Geophysicist/Crew Chief
Rick Ofner	- Junior Geophysicist
Greg Martin	- Technician
Kevin Tokarsky	- Technician
Grant Hendrickson	- Senior Geophysicist/Supervisor

EQUIPMENT

1 - B.R.G.M. IP-2 Induced Polarization Receiver
1 - Huntec Lopo I.P. Transmitter
4 - Motorola Portable V.H.F. Radios
1 - Toshiba 1200 Field Computer
1 - Hewlett Packard Quietjet Printer
1 - 4x4 Toyota 4-Runner Truck

DATA PRESENTATION

Data is presented as follows:

a) Contoured plans of Resistivity and Chargeability.

b) Stacked Profile Plans of Resistivity and Chargeability.

c) Posted Data Plans of Resistivity and Chargeability.

The maps are all at a scale of 1:5000.

SURVEY PROCEDURE

Lines 4400W thru to 2800W of the Bay grid received Induced Polarization coverage from approximately 2600N to 4400N, depending on the location of the claim boundary.

The Schlumberger electrode array configuration was chosen for this survey. Current electrode separation, AB, was set at 240 metres. Potential electrode separation, MN, was set at 40 metres. This array gives excellent horizontal resolution with the prime depth of investigation focused at the 30 to 50 metre depth range. The array also gives better signal to noise response, when compared to other arrays for the same depth of investigation - an important consideration when using a battery-powered 250 watt portable transmitter. Some general information on dip is also obtained by using the Schlumberger array. The mobility of this array in rough terrain and thick bush allows for cost effective surveying.

The IP-2 receiver and Lopo transmitter were used with a pulse duration of 2 seconds. The 2 second pulse time allowed us to measure four decay curve windows of 120, 220, 420 and 820 millisecond widths, with an initial delay time of 160 millisecond. The third window was chosen for display, since the data is within 12% of the Newmont standard decay curve.

At some point in the future, analysing the data from the other windows may prove useful to further discriminate the source of the chargeability.

Signal to noise response was excellent for this survey, since good electrode contacts made it easy to keep the primary voltage above 50 millivolts. Noise problems generally arise when the primary voltage drops below 10 millivolts.

DISCUSSION OF THE DATA

The data from this shallow I.P. survey can be used to confidently extend the geological mapping from areas of outcrop to areas of thick overburden cover. The areas of outcrop and recent trenching should be used to calibrate the geophysical results and to continually improve the interpretation.

The resistivity data indicates that we should expect several thin argillite horizons (modest resistivity lows) intercalated within the volcanics. This fact is in general agreement with the previous year's V.L.F. results.

The chargeability data has shown us where to expect concentrations of sulphide mineralization. However, it is quite possible that the chargeability is responding to various uninteresting combinations of graphite and iron sulphides.

The chargeability data also suggests several of the weak conductive horizons previously mapped are devoid of sulphide mineralization, thus are likely fault structures and/or weakly conductive sedimentary horizons. The correlation of high chargeability readings with modest low resistivity in certain areas represents interesting targets, some of which were not revealed by last year's E.M. surveys. This correlation seems to occur locally along the strike of the low resistivity (argillite/altered felsic tuff?) horizons.

The high resistivity areas could be due to more massive volcanic flow rocks, conformable intrusives or possibly limestone horizons. The generally high resistivity encountered over the grid suggests the overburden thickness is minimal, thus the trenching program will likely be successful.

Several structural implications are shown in the data. The most prominent is the apparent large N30E fault structure crossing the grid at approximately 3700W. This fault zone appears to be quite wide (200m) with substantial lateral movement. Another notable feature is the apparent strike change of the rocks from southeast to east, as you move to grid north.

The plans of stacked chargeability and resistivity profiles should also be used to correlate and evaluate apparent sulphide anomalies, since these profiles are the actual data unaffected by any contouring bias.

Profile shape is primarily determined by the depth and dip of the sulphide horizons. Profiles will become more dish-shaped (attenuated and spread out), as the chargeable body gets deeper. Asymmetry of the profiles reflect the dip. (Response will drop off more slowly on the downdip side.)

CONCLUSION AND RECOMMENDATIONS

The chargeability anomalies outlined by this survey are interesting targets. These anomalies deserve trenching and/or drilling when considered in the context of their geologic setting. The reader should bear in mind that this I.P. survey would not have investigated the area below the 60 metre depth. The prime depth of investigation is in the 35 metre depth range.

The modest resistivity lows that correspond to the chargeability anomalies may be indicative of altered felsic tuffs and/or argillite horizons.

The I.P. survey has helped to discriminate the numerous E.M. conductors and has clearly defined a major cross cutting structure.

If trenching of these anomalies reveals that the geologic environment is ideal, then consideration should be given to geophysical surveys with a much greater depth of investigation.

Grant A. Hendrickson, P.Geoph.

REFERENCES

Bhattacharya, B.B., and Dutta, I., 1982: Depth of Investigation Studies for Gradient Arrays over Homogeneous Isotropic Half-Space: Geophysics, Vol.47, 1198-1203.

Coggon, J.H., 1973: A Comparison of I.P. Electrode Arrays: Geophysics, Vol.38, 737-761.

Hendrickson, G.A., 1987: Geophysical Surveys on the Bay Property (Bay 1, 2, 5-7, 11-16).

Malmqvist, L., 1978: Some Applications of IP-Technique for Different Geophysical Prospecting Purposes: Geophysical Prospecting 26, 97-121.

STATEMENT OF QUALIFICATION

Grant A. Hendrickson

- B.Science, U.B.C. 1971, Geophysics option.

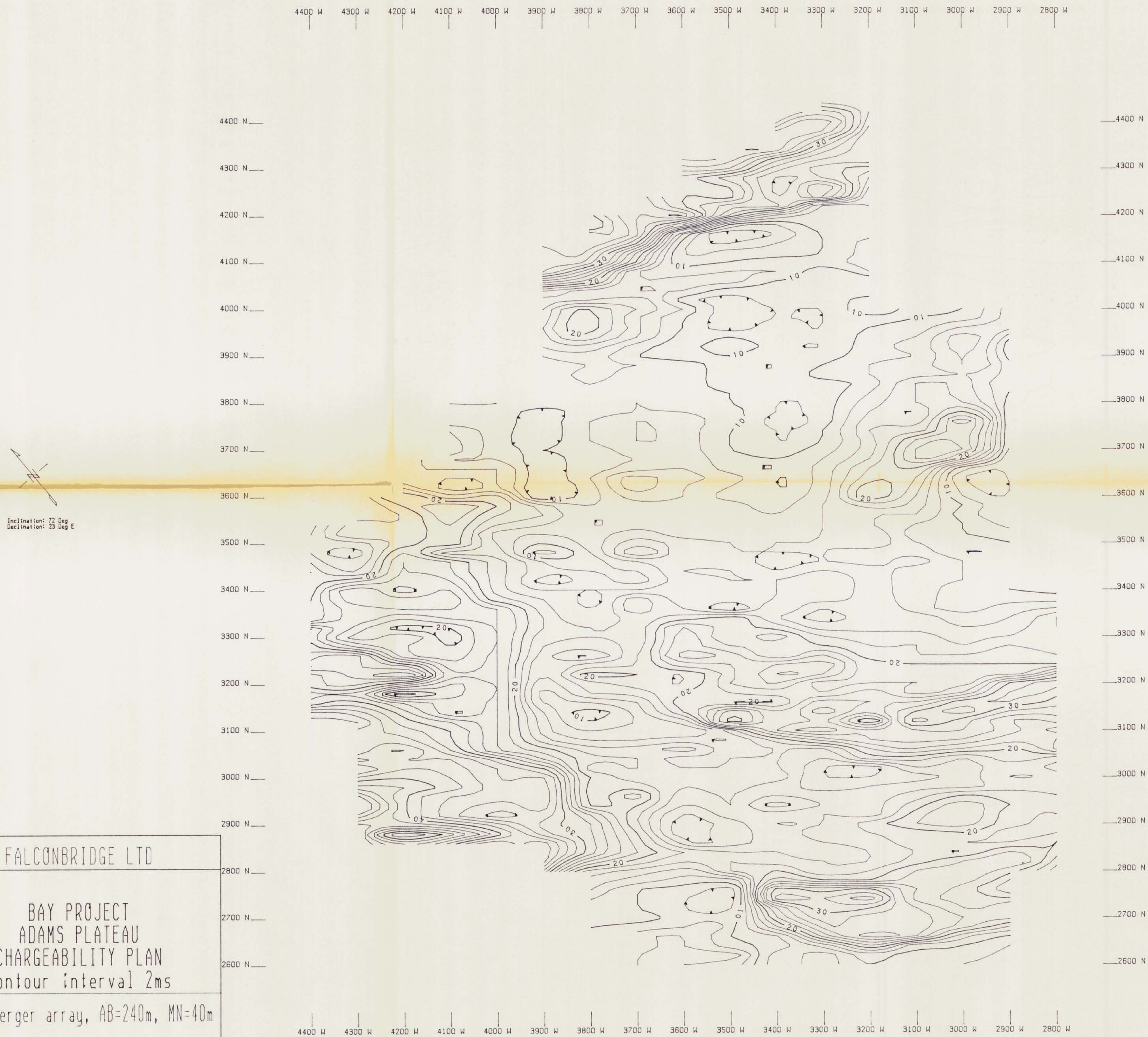
- For the past 17 years, I have been actively involved in mineral exploration projects throughout Canada and the United States.

- I am a registered Professional Geophysicist with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

- I am an active member of the S.E.G., E.A.E.G., and B.C.G.S.

G. Hendrickson

Grant A. Hendrickson, P.Geoph.



FALCONBRIDGE LTD

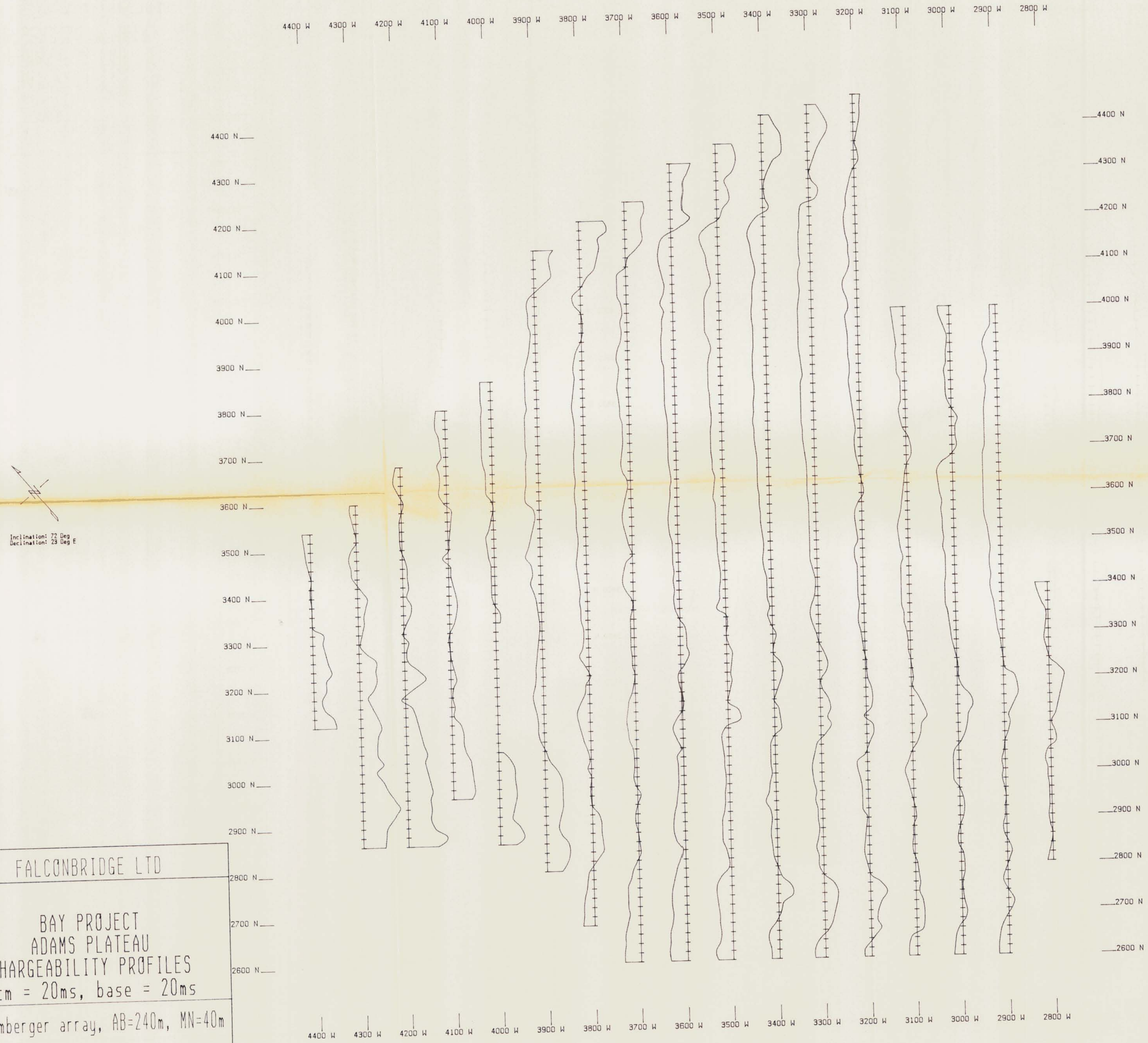
BAY PROJECT
ADAMS PLATEAU
CHARGEABILITY PLAN
contour interval 2ms

Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG 3A.



FALCONBRIDGE LTD

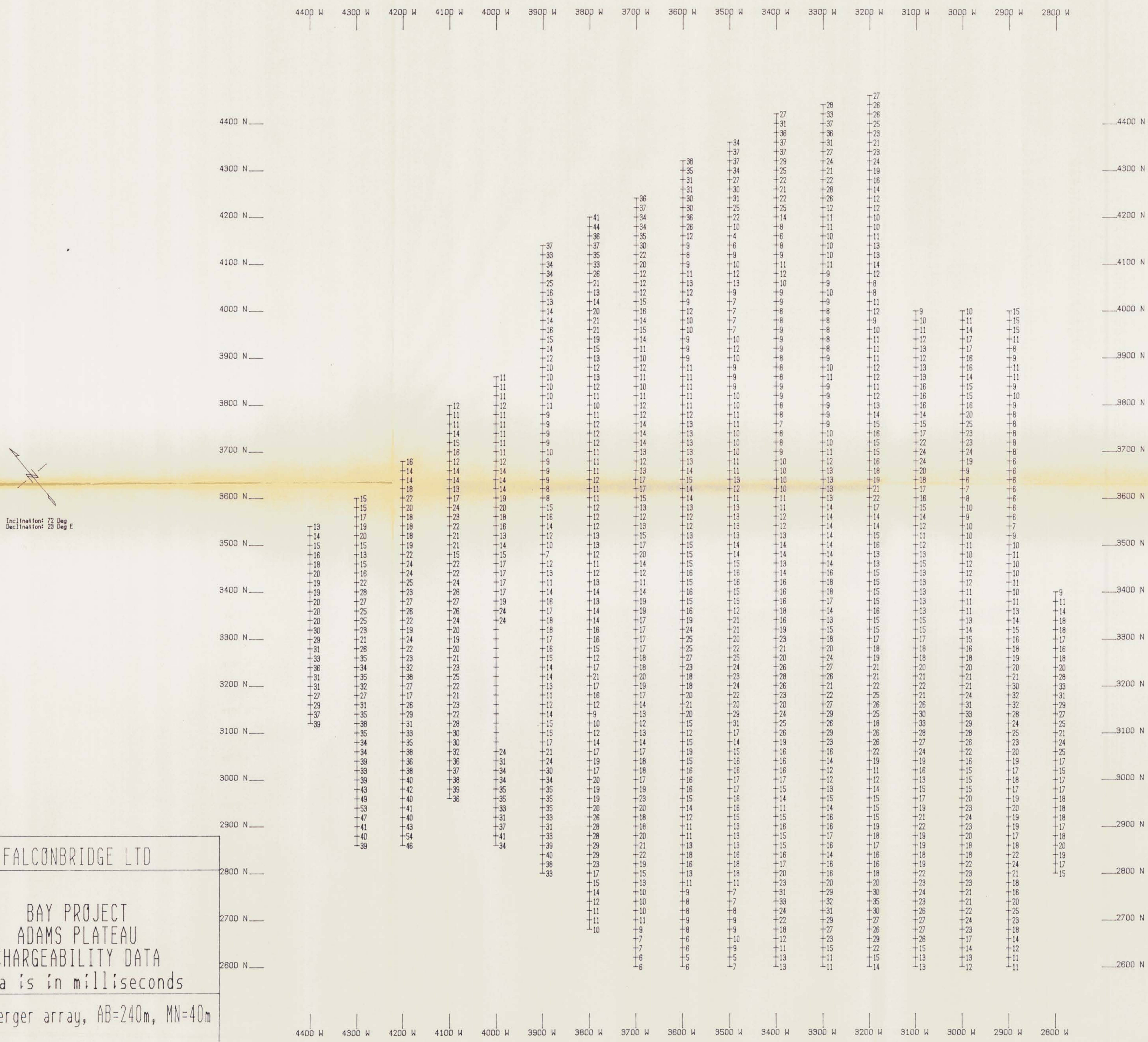
BAY PROJECT
ADAMS PLATEAU
CHARGEABILITY PROFILES
1cm = 20ms, base = 20ms

Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG. 3B



FALCONBRIDGE LTD

BAY PROJECT
ADAMS PLATEAU
CHARGEABILITY DATA

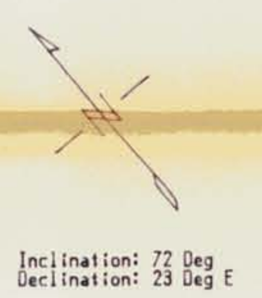
data is in milliseconds

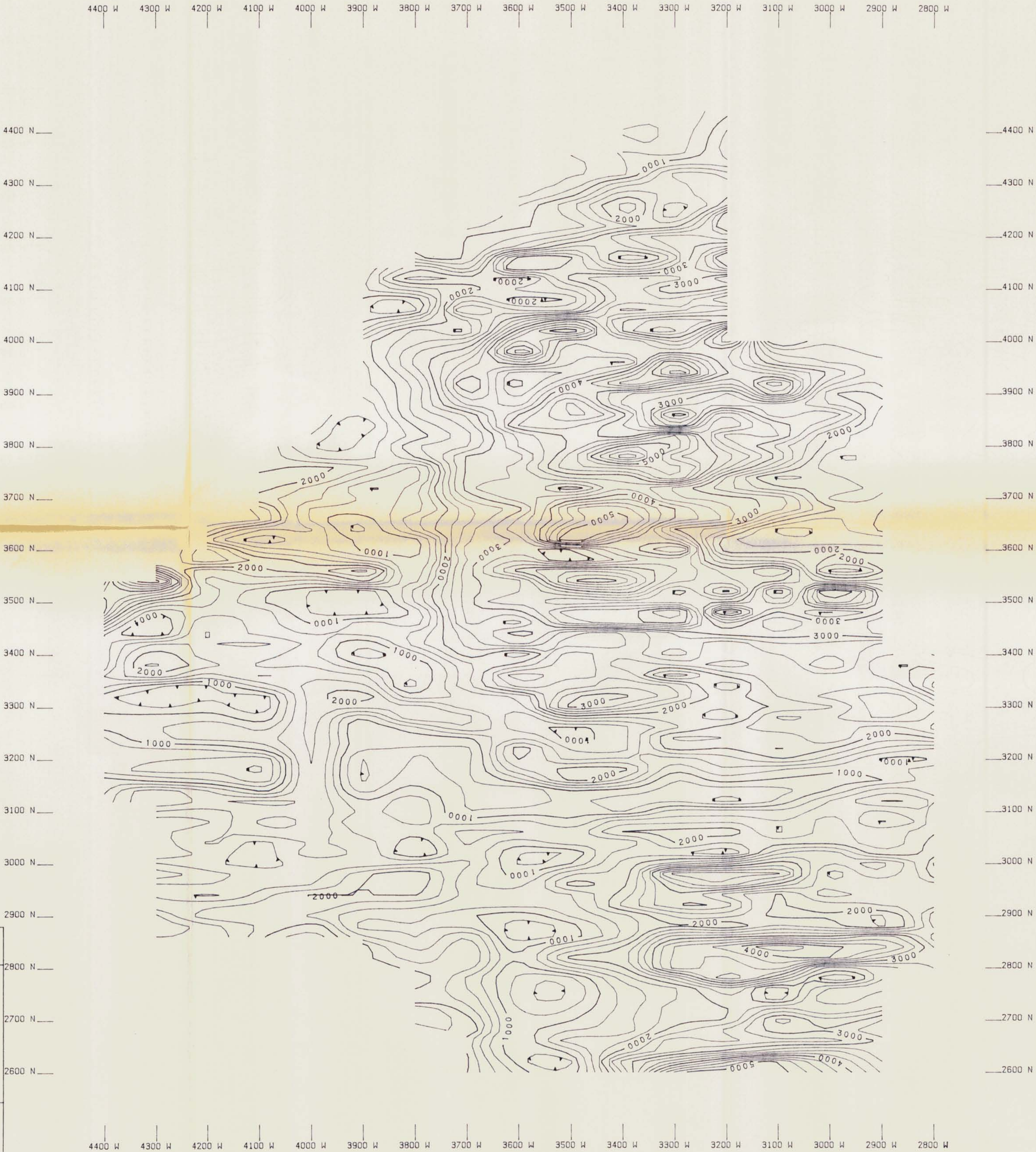
Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG. 3c.





FALCONBRIDGE LTD

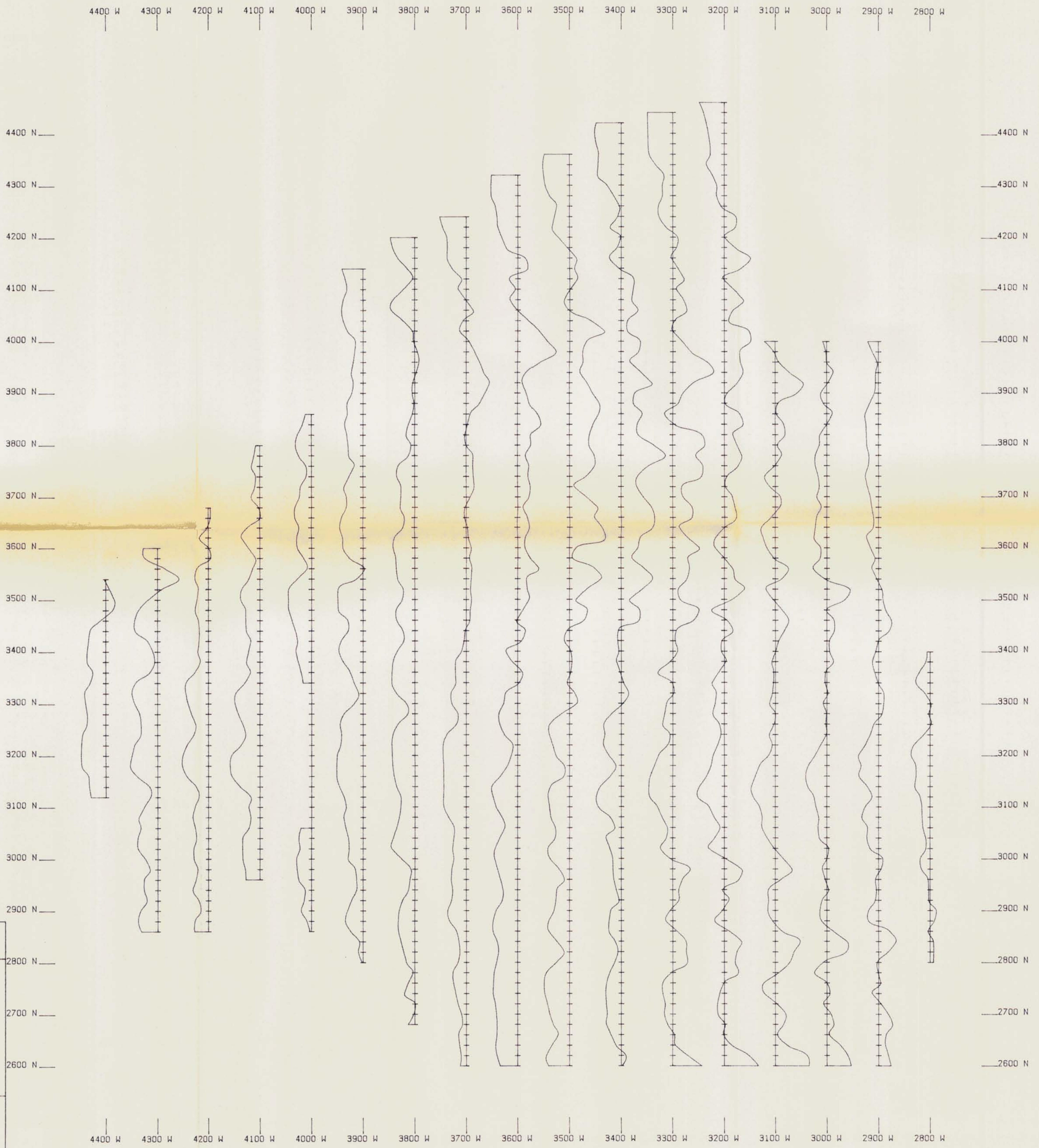
BAY PROJECT
ADAMS PLATEAU
RESISTIVITY PLAN
contour interval 250 ohm-m

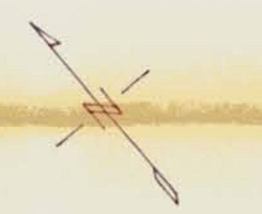
Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG 4A





Inclination: 72 Deg
Declination: 23 Deg E

FALCONBRIDGE LTD

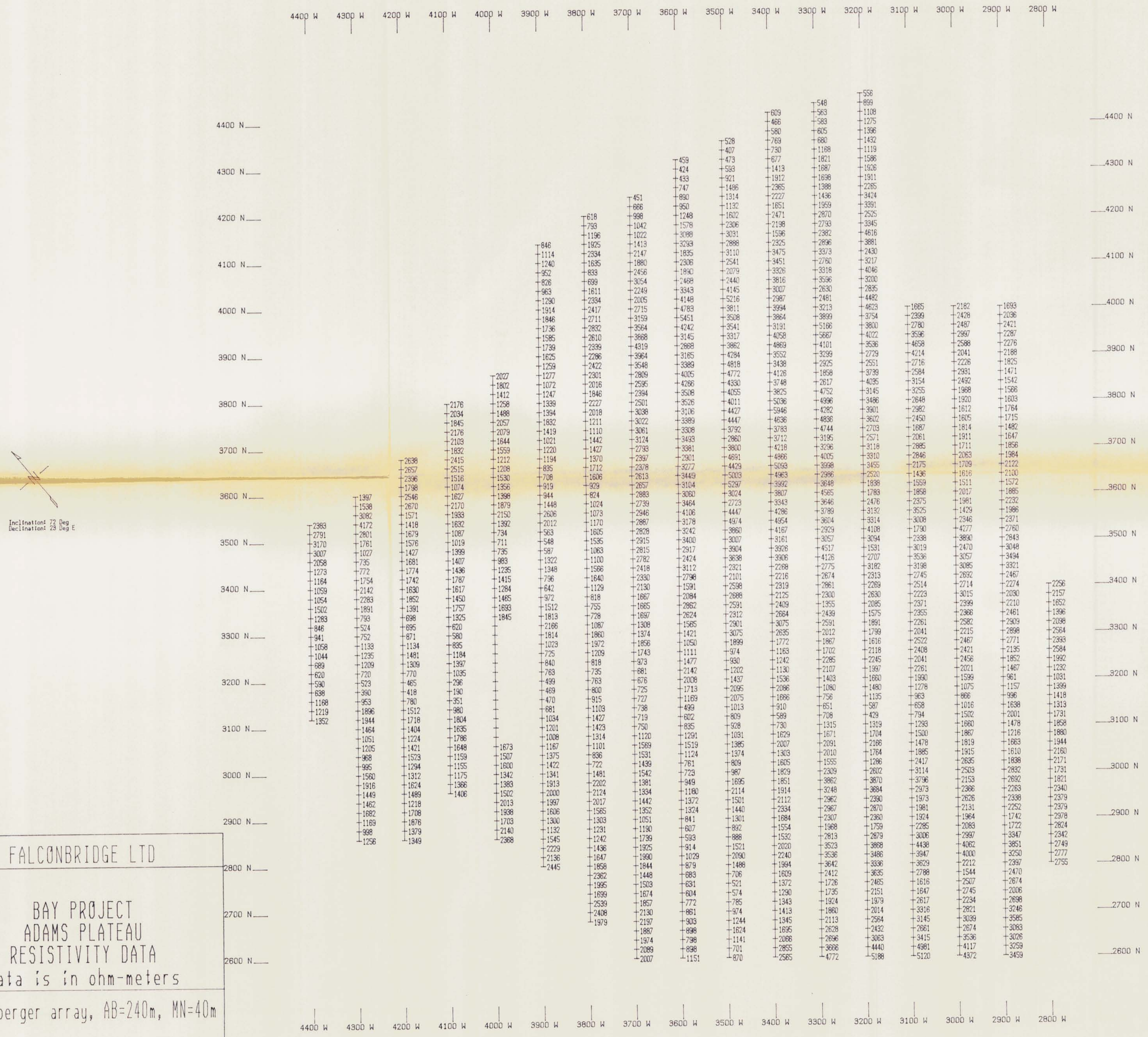
BAY PROJECT
ADAMS PLATEAU
RESISTIVITY PROFILES
1cm = 2000 ohm-m, base = 2500 ohm-m

Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG. 4B.



FALCONBRIDGE LTD

BAY PROJECT
ADAMS PLATEAU
RESISTIVITY DATA

data is in ohm-meters

Schlumberger array, AB=240m, MN=40m

SCALE 1:5000

DELTA GEOSCIENCE LTD

FIG. 4c.