REPORT ON INDUCED POLARIZATION SURVEY JOINT PROJECT FOR NORTHWEST VENTURES LTD., CONSOLIDATED PRUDENTIAL MINES MIDLAND PETROLEUMS LTD., KAMLOOPS COPPER CONSOLIDATED

Sun & Mike Claim Group, southwest of Williams Lake, BC Latitude 51° 37'N, Longitude 123° 14'W 920/11E ¢W

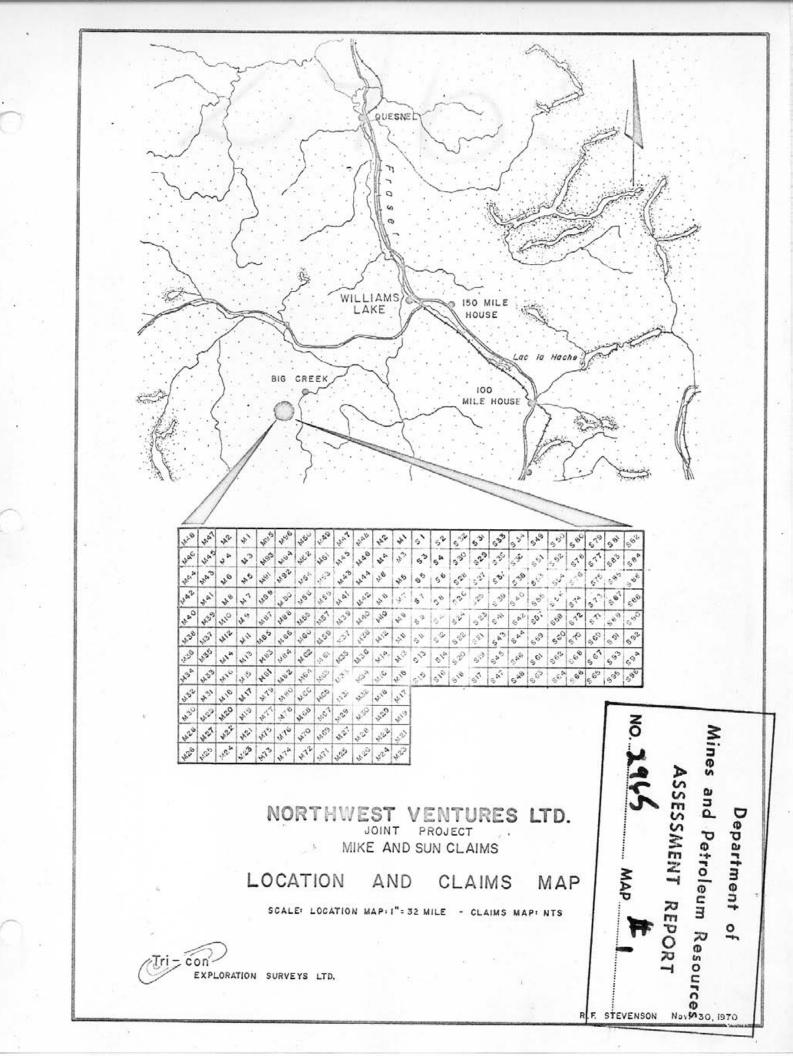
AUTHOR: G. E. White

P. ENGINEER: W. G. Stevenson

DATE OF WORK: October 4 - November 1, 1970

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Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 2965 MAP



### CONTENTS

Introduction		1		
Location and Access		1		
Property				
Survey Specifications				
	Survey Grid Induced Polarization Survey Data Presentation			
Discussion of Results				
Conclusions				
Recommendations				
Statement of Qualifications Glen E. White				
Certificate Glen E. White				
Instrument Specifications - Induced Polarization Unit				
Certificate W. G. Stevenson P. Eng				

### ILLUSTRATIONS

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All Figure 1		Location	and Claim Ma	ıp
/ <sup>1</sup> Figure 2		Induced	Polarization	Detail
Figure 5	-2	Induced	Polarization	Chargeability
Figure 5	-3	Induced	Polarization	Resistivity

PAGE

### INTRODUCTION

During the summer of 1970, Tri-Con Exploration Surveys Ltd. on behalf of Northwest Ventures Ltd., Consolidated Prudential Mines Ltd., Midland Petroleums Ltd. (N.P.L.), and Kamloops Copper Consolidated Ltd., conducted a program of soil sampling and ground magnetometer surveying over the Mike and Sun Claim Groups, Clinton Mining Division, Province of British Columbia. As a result of this work six areas of interest were delineated and recommended to be surveyed by the induced polarization method.

This report describes the induced polarization survey which was completed between October 4, 1970 and November 1, 1970, and discusses the results obtained.

### LOCATION AND ACCESS

The area surveyed as discussed in this report is centered at Latitude 51° 37' North and Longitude 123° 14' West some 80 miles southwest of the village of Williams Lake, B.C. N.T.S. 92 0

Access to the claim group is along Highway 20 westward to Riske Creek, a distance of some 29 miles, and then southeast for 38 miles to Big Creek. The Night Hawke Lodge road is some 12 miles further southeast and is the access road to the property.

### THE PROPERTY

The Sun and Mike Claim Groups consist of some 240 contigious mining claims listed as follows:

Sun 1 - 96 Mike 1 - 96 Mike 1 - 48

### SURVEY SPECIFICATIONS

### Survey Grid

The areas surveyed consisted of six individual survey areas within the claim group. The induced polarization survey was conducted along the survey grid established for the geochemical and ground magnetometer surveys which consisted of north-south traverse lines turned off every 500 feet on the west side of the property, and every 700 feet on the east side from three east-west directed baselines. These three baselines were in turn controlled by a north-south baseline located in the center of the property.

### The Induced Polarization Survey

The induced polarization survey was conducted with a Hewitt 1KW I.P. transient pulse type unit deployed in the Wenner electrode configuration with an "a" spacing and traverse interval of 200 feet. In the pulse (also known as time domain) method a steady direct current is impressed into the ground for a few seconds, abruptly terminated for a short time (usually equal to the length of pulse time) and then a steady current is impressed in the reverse direction for a few seconds and then abruptly terminated for a few seconds. This is one cycle which can be repeated. A fraction of a second after each cessation of the current pulse the decay voltage is integrated and measured. The current and total integrated primary voltage and total integrated decay voltage are then recorded for the given number of cycles. From these three measurements the chargeability in millivolts/volt and apparent resistivity in ohm-feet are calculated. The values calculated are then plotted at the center position of the array for a given set of readings.

### DATA PRESENTATION

The induced polarization data has been plotted on the interpretation map of the previous surveys at a horizontal scale of 1"=800 feet as follows:

Figure 5-2 Induced polarization-chargeability-contoured at 3, 6, 9 and 12 mv/v levels.

Figure 5-3 Induced polarization-resistivity-contoured at 200, 300, 400, 500, 700 and 900 ohm-feet levels.

### DISCUSSION OF RESULTS

In general the resistivity data in the six survey areas showed moderate variations in resistivity indicative of changes in the conductivity of the overburden and in the overburden to bedrock depth. The induced polarization chargeability data varied from a background of 1.5 millivolts per volt to a high of some 16.6 mv/v. The induced polarization data has been correlated with the previously obtained magnetometer and geochemical data. Each area is discussed individually as follows:

### Area No. 1

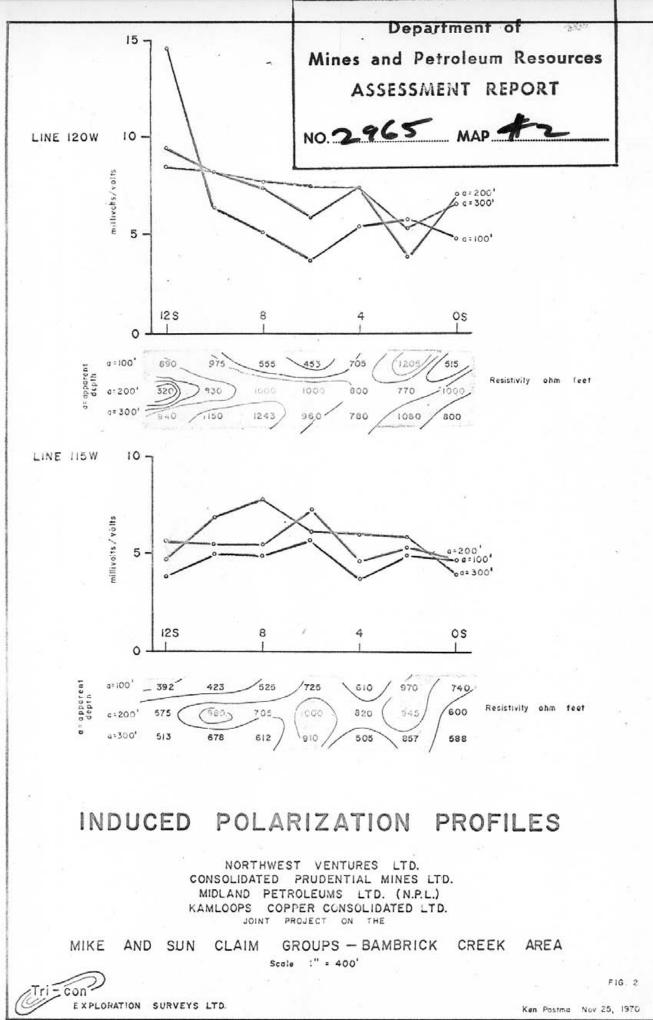
Two small areas of anomalous chargeability were located. The first is situated near 105W - 70N in a magnetic low area, and the second near 115W - 56N in an area of moderate magnetic intensity. The later chargeability anomaly is also located in an area of low resistivity possibly indicative of deeper overburden conditions. Both chargeability anomalies parallel and occur just upslope on a gentle incline from previously located copper geochemical values.

### Area No. 2

The high chargeability values located in this area lie primarily in a low magnetic intensity area near a steep magnetic gradient. This steep magnetic gradient is interpreted as reflecting a geological contact between a series of basic volcanic rocks (high magnetic values) and granitic rocks (low magnetic values). The principal chargeability anomaly appears to partially flank the magnetic gradient and is in turn flanked by weak geochemical values.

A small amount of detail induced polarization surveying completed with 100 and 300 foot "a" spacings on lines 115W and 120W is shown in figure 2. The detail on both lines was completed in an area of higher chargeability thus the background of each line is slightly anomalous with respect to the overall chargeability background of the property. The chargeability data on line 120W shows a definite increase in chargeability towards 12S on all three "a" spacings.

The 100 and 200 foot chargeability data on line 115W shows a small but definite peak at 6S while the 300 foot array data indicates a peak at 8S.



### Area No. 3

Correlation of the chargeability and magnetic intensity data indicates that the chargeability highs lie in an area of low magnetic intensity. The geochemical data on the western side of this survey area indicates that weak copper and zinc values may flank the small induced polarization anomalies. Both the induced polarization and geochemical data appear to be weakly biased in a NE-SW direction parallel to previously interpreted magnetic linears.

### Area No. 4

This survey area is located in a broad area of low magnetic intensity previously interpreted as an area of granitic material. The anomalous chargeability values show definite intersecting NE-SW and NW-SE trends which have not been fully defined. Good correlation is obtained with the geochemical data which also shows weak NE-SW and NW-SE copper and zinc trends.

### Area No. 5

This area contains several small coincident copper and zinc geochemical anomalies, however, no apparently significant induced polarization anomalies were located.

### Area No. 6

The high chargeability values located in this survey area lie on a magnetic plateau of moderate magnetic intensity surrounded by magnetic low areas. Correlation of the induced polarization and geochemical data indicates a direct correlation of the high chargeability values with anomalous geochemical values of copper and zinc. This induced polarization anomaly has not been fully defined by the induced polarization method.

### CONCLUSION

Six areas of interest were designated as a result of previous geochemical and ground magnetometer surveys. The induced polarization survey,

-4-

conducted on each of these areas, and discussed in this report, indicated that Areas No. 2, 4 and 6 are of primary interest, Areas No. 1 and 3 are of secondary interest, and in Area No. 5 only weak induced polarization responses were detected. In general the induced polarization responses and the weak geochemical responses appear to be slightly biased in a NE-SW or a NW-SE direction which may possibly indicate a structural control of the causitive bodies.

### RECOMMENDATIONS

1. Additional induced polarization surveying to define the located chargeability anomalies, in particular areas No. 4 and 6.

2. A small amount of refraction hammer seismic surveying to evaluate overburden depths.

3. A program of reconnaissance diamond drilling to test the causitive bodies for sulphide mineralization of economic interest, particularly in areas No. 2, 4 and 6.

> Respectfully submitted TRI-CON EXPLORATION SURVEYS LTD.

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Glen E. White, B.Sc. Chief Geophysicist

### STATEMENT OF QUALIFICATIONS

Name:

WHITE, Glen E.

Profession: Geophysicist

Education:

B.Sc. Geophysics - Geology University of British Columbia

Professional Associations:

Associate member of Society of Exploration Geophysicists. Active member B.C. Society of Mining Geophysicists

Experience:

Pre-Graduate experience in Geology-Geochemistry-Geophysics with Anaconda American Brass.

Two years Mining Geophysicist with Sulmac Explorations Ltd. and Airborne Geophysics with Spartan Air Services Ltd.

One year Mining Geophysicist and technical Sales Manager in the Pacific north-west for W. P. McGill and Associates.

Two years Mining Geophysicist and supervisor Airborne and Ground Geophysical Divisions, with Geo-X Surveys Ltd.

Presently Chief Geophysicist Tri-Con Exploration Surveys Ltd.

Active experience in all Geologic provinces of Canada.

### CERTIFICATION

TO WHOM IT MAY CONCERN:

I, GLEN ELMO WHITE, of the City of Richmond in the Province of British Columbia, hereby certify:

- That I am a Geophysicist and reside at 112 641 Gilbert Road, Richmond, B.C.
- 2. That I studied Geophysics and Geology and graduated from the Univeristy of British Columbia with the degree of Bachelor of Science.
- 3. That I have been engaged in Mining Exploration for eight years.
- 4. That I do not have, nor do I expect to receive, either directly or indirectly, any interest in the property, or in the securities of Northwest Ventures Ltd., Consolidated Prudential Mines Ltd., Midland Petroleums Ltd. (N.P.L.), Kamloops Copper Consolidated Ltd.
- 5. That this report is based on information derived from an induced polarization survey and previous ground magnetometer and geochemical soil sampling surveys carried out by Tri-Con Exploration Surveys Ltd.

Dated this 25th day of November 19 70.

G. Z. White, B.Sc. Chief Geophysicist

### APPENDIX

-8-

### Instrument Specification

### INDUCED POLARIZATION

- A Instrument
  - (a) Type Transient Pulse Prospecting Equipment
  - (b) Make Hewitt Enterprises 200
  - (c) Size 13<sup>1</sup>/<sub>4</sub>"W x 15<sup>1</sup>/<sub>2</sub>"L x 9<sup>1</sup>/<sub>2</sub>" Deep

### B Specifications

- (a) Transmitter
  - (i) 1,000 Watt nickle cadnium battery supply
  - (ii) operation mode 2 seconds on, 2 seconds off, 2 seconds reverse

4 seconds on, 4 seconds off, 4 seconds reverse (iii) Cycles .5, 1, 2, 0, 4. selected on switch.

- (iv) Timing solid state logic circuitry
- (v) Current Ranges 10, 50, 100, 500, 1,000, 5,000, milliampere

(b) Receiver

- (i) Solid State
- (ii) dV and I.P. solid state memory storage.
- (iii) dV ranges 10, 50, 100, 1,000, 1,500 millivolts
- (iv) I.P. ranges .1, .5, 1.0, 5, 10, 15, millivolts

(v) Self-potential-direct dial reading from polartometer

- (vi) A.C. filtering-low pass active filter
- (vii) Transient delay period .4 seconds
- (viii) Integrating period 1.2 seconds

(ix) Power supply-four 9 volt transistor radio batteries.

C Survey Procedure

(i) Wenner, pole-dipole or schlumberger array

- D Data Presentation
  - (i) chargeability percent chargeability in milliseconds or millivolts

volt

(ii) Resistivity - ohmn - feet

(iii) Self-potential-millivolts often not used

CERTIFICATE

I, William G. Stevenson, DO HEREBY CERTIFY:

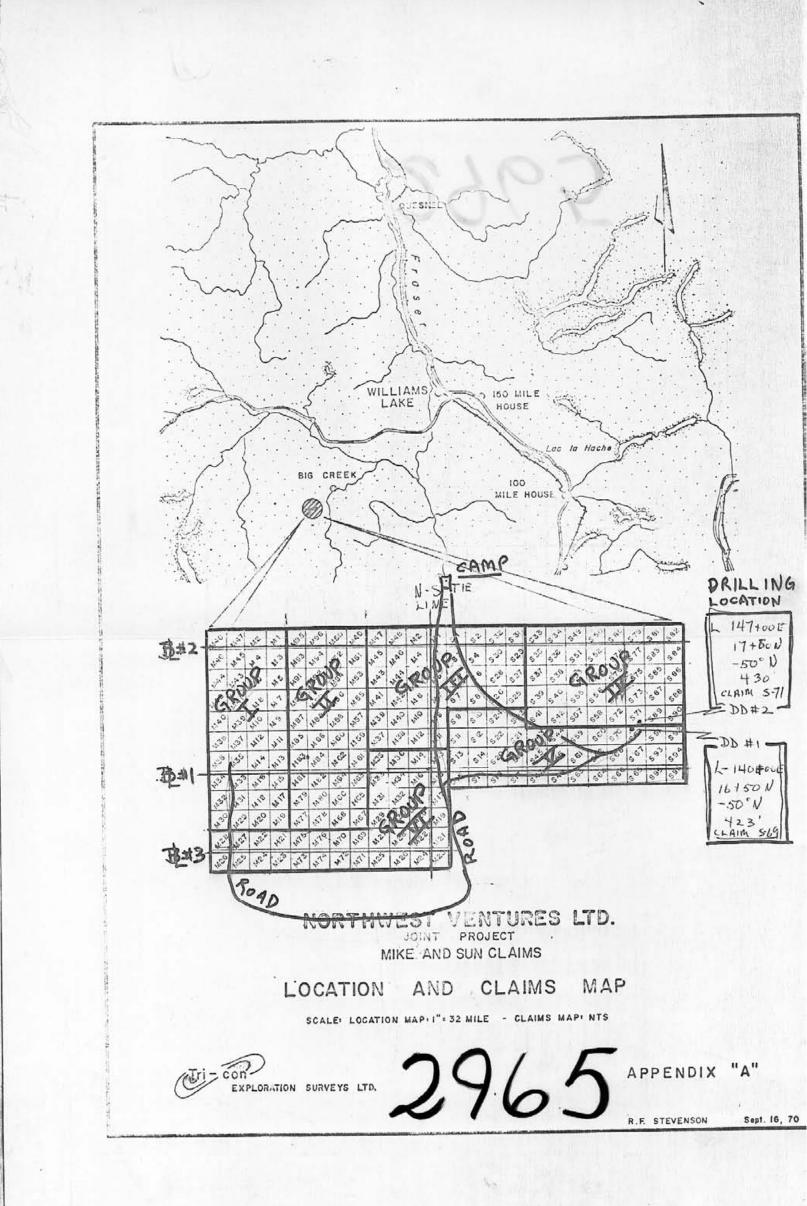
- That I am a Consulting Geological Engineer with offices at Suite 209 Stock Exchange Building, 475 Howe Street, Vancouver 1, B.C.
- That I am a graduate of the University of Utah 1946, with a B.Sc. Degree.
- That I am a registered Professional Engineer in the Association in British Columbia.
- That I have practised my profession for 22 years.
- That I have no direct, indirect or contingent interest in the Sun or Mike Mineral Claims or in the securities of Northwest Ventures Ltd., Consolidated Prudential Mines Ltd., Midland Petroleums Ltd. (N.P.L.), Kamloops Copper Consolidated Ltd., nor do I intend to receive any such interest.
- That I have reviewed a geophysical report dated November 25, 1970 based on work conducted by Tri-Con Exploration Surveys Ltd. under the supervision of Glen E. White, B.Sc., Chief Geophysicist.

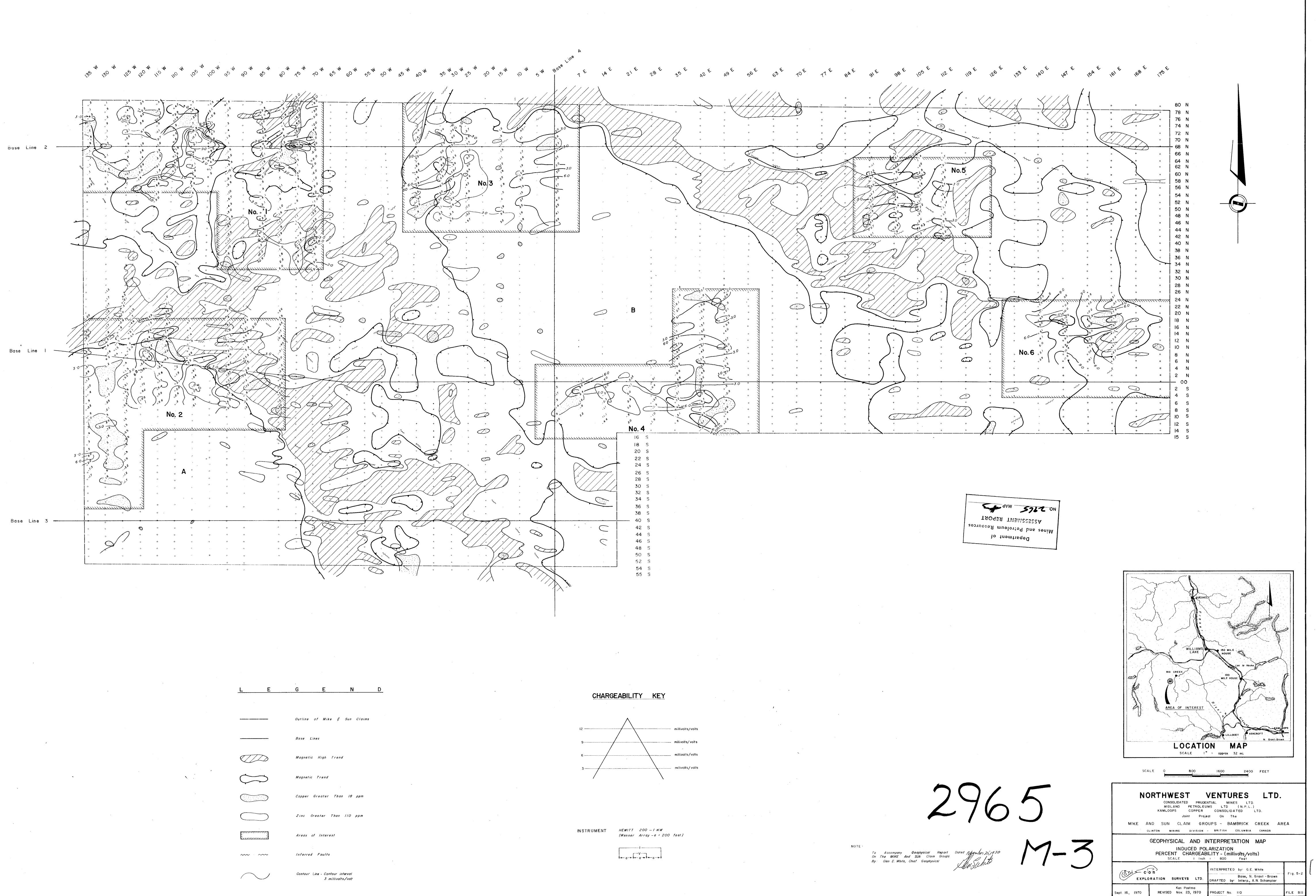
DATED at Vancouver, British Columbia, this 26 th day of Maconhold, 1910

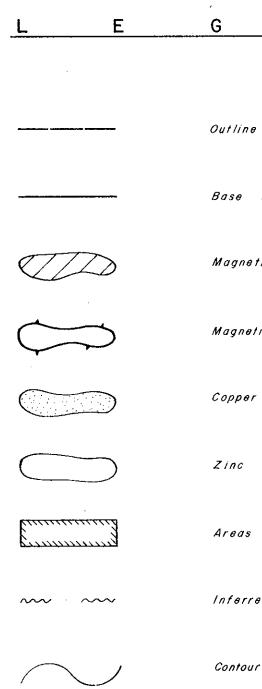
W. G. STEVENSON & ASSOCIATES LIMITED Consulting Geologists

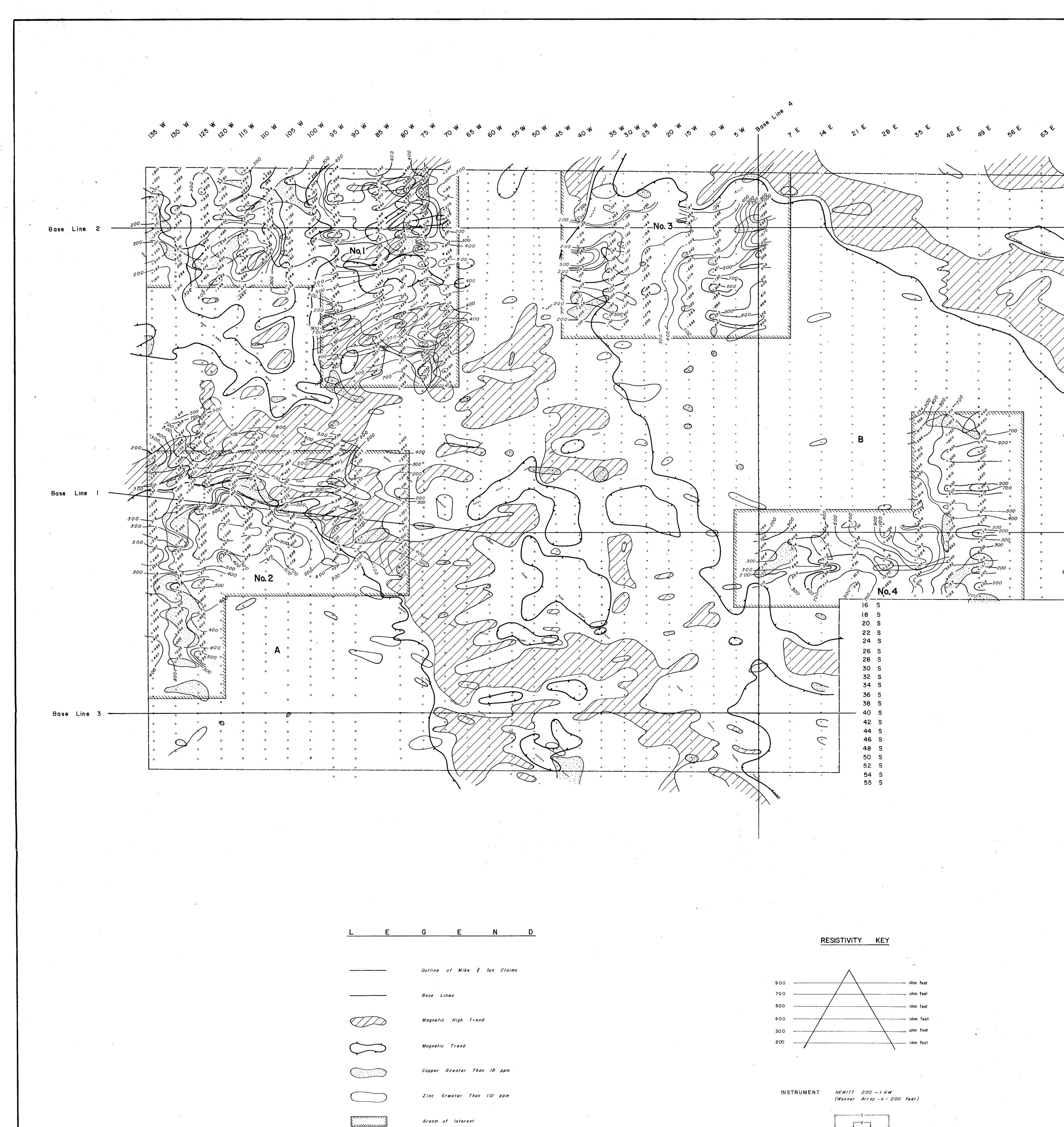
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# $\bigcirc$ • E G E N D Outline of Mike & Sun Claims Base Lines Magnetic High Trend Magnetic Trend Copper Gireater Than 18 ppm Zinc Greater Than 110 ppm

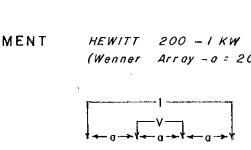
# Areast of Interest

## Inferred Faults

# Contour Line - Contoured at - 200,3010,400,500,

700, 900 and 1100 ohm feet.

900 -----700 ------500 -----400 -----300 -----200 \_\_\_\_\_ . INSTRUMENT HEWITT 200 - I KW (Wenner Array – a = 200 feet)



RESISTIVITY KEY

32 S 34 S 36 S 38 S 40 S  $\widehat{}$ 42 S 44 S 46 S 48 S 50 S 52 S 54 S 55 S \_\_\_\_\_

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18

20 S 22 S 24 S

26 S 28 S 30 S

