

84-1083-12982

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

NTS: 82F/8 E

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

12,982

GEOPHYSICAL REPORT

ON

UTEM SURVEY ON THE

LEW CLAIMS

Fort Steele

~~GOLDEN~~ MINING DIVISION, B.C.

Latitude : 49°16'N

Longitude : 116°04'W

Work Performed by : Syd J. Visser and Jovan Silic
on August 9, 26 to 31, and
September 1 and 11, 1984

Claim Owner & Operator : COMINCO LTD.

OCTOBER 1984

SYD J. VISSER

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GEOPHYSICAL REPORT
ON
UTEM SURVEY ON THE
LEW CLAIMS

INTRODUCTION

The Lewis Creek claims are located about 35 km southwest of Cranbrook, B.C. (see Plate 271-84-1). The access to the grid is along Highway 3 from Cranbrook and then along the Lumberton Road, the Moyie River Road, and the Lewis Creek Road.

The Lewis Creek claims were staked in 1980 by Cominco Ltd. They are underlain by the clastic sediments of the Middle and Lower Aldridge Formation of Proterozoic age. These rocks have been intruded by the Moyie gabbros. The sediments of the Aldridge Formation are known to host the Sullivan orebody near Kimberley, B.C.

This report describes a UTEM electromagnetic survey which had the objective of locating electrical anomalies which may be caused by economic mineralization.

LIST OF CLAIMS

Cominco Interest - 100%

The claims listed below are covered or partly covered by the grid:-

| <u>Name</u> | <u># of Units</u> | <u>Record Number</u> | <u>Assessment Work Due</u> |
|-------------|-----------------------|--------------------------|--------------------------------|
| LEW 1 | 16 | 906 | May 5, 1985 |
| LEW 2 | 16 | 907 | May 5, 1985 |

DESCRIPTION OF UTEM SYSTEM

UTEM is an acronym for "University of Toronto ElectroMagnetometer". The system was developed by Dr. Y. Lamontagne (1975) while he was a graduate student of that University.

The field procedure consists of first laying out a large loop of single strand insulated wire and energizing it with current from a transmitter which is powered by a 1.7 kW motor generator. Survey lines are generally oriented perpendicular to one side of the loop and surveying can be performed both inside and outside the loop. The field procedure is similar to Turam, a better known electromagnetic surveying method.

The transmitter loop is energized with a precise triangular current waveform at a carefully controlled frequency (30.974 Hz for this survey). The receiver system includes a sensor coil and backpack portable receiver module which has a digital recording facility on cassette magnetic tape. The time synchronization between transmitter and receiver is achieved through quartz crystal clocks in both units which must be accurate to about one second in 50 years.

The receiver sensor coil measures the vertical magnetic component of the electromagnetic field and responds to its time derivative. Since the transmitter current waveform is triangular, the receiver coil will sense a perfect square wave in the absence of geologic conductors. Deviations from a perfect square wave are caused by electrical conductors which may be geologic or cultural in origin. The receiver stacks any pre-set number of cycles in order to increase the signal to noise ratio.

The UTEM receiver gathers and records 9 channels of data at each station. The higher number channels (7-8-9) correspond to short time or high frequency while the lower number channels (1-2-3) correspond to long time or low frequency. Therefore, poor or weak conductors will respond on channels 9, 8, 7 and 6. Progressively better conductors will give responses on progressively lower number channels as well. For example, massive, highly conducting sulphides or graphite will produce a response on all nine channels.

It was mentioned above that the UTEM receiver records data digitally on a cassette. This tape is played back into a computer at the base camp. The computer processes the data and controls the plotting on an 11" x 15" graphics plotter. Data are portrayed on data sections (D.S.) as profiles of each of the nine channels, one section for each survey line.

FIELD WORK

The UTEM survey described in this report covers an area of about 2,600 m x 1,500 m. A line spacing of 500 metres with station spacing of 50 metres was used for the majority of the grid.

A total of 9.8 km of lines were surveyed for a total of 196 stations. The vertical component (Hz) was acquired at every station. Nine channels of information were acquired and plotted at each station for a total of 1,764 readings.

All surveying was done in the period of August 9, 26 to 31, and September 1 and 11, 1984 from a camp located on the grid.

DATA PRESENTATION

The results of the survey are presented in one location map, one compilation map and 8 data sections.

The maps are listed as follows:-

| | |
|---------------------------------|--|
| Plate 271-84-1 (in envelope) | Location Map Scale 1:50:000 |
| Plate 271-84-2 (in envelope) | UTEM Compilation Sheet Scale 1:20,000 |

Legends for both the UTEM compilation map and the data sections are also attached.

The data sections are arranged in order of loop number (Loop 100, 101)).

In order to reduce the field data, the theoretical primary field of the loop must be computed at each station. The normalization of the data is as follows:-

a) For Channel 1:

$$\% \text{ Ch.1 anomaly} = \frac{\text{Ch.1} - P}{P} \times 100\%$$

where P is the primary field from the loop at the station and Ch.1 is the observed amplitude of Channel 1

b) For remaining channels (n = 2 to 9)

$$\% \text{ Ch.n anomaly} = \frac{(\text{Ch.n} - \text{Ch.1})}{\text{Ch.1}} \times 100\%$$

where Ch.n is the observed amplitude of Channel n (2 to 8)

INTERPRETATION


All the field results are displayed in the data sections on 8 diagrams, with a compilation of all relative points on Plate 271-84-2. The transmitter loops are positions on the east side of the lines as shown on Plate 271-84-2.

A few weak crossover type anomalies, down to Channel 7, were observed in the data (D.S. 3 and 6), and are probably due to a change in local geology or overburden thickness. No strong crossover type anomalies indicating a mineralized conductive zone, were noted in the data.

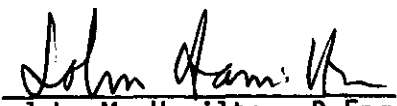
CONCLUSIONS

A few weak (Ch 7) anomalies indicating a change in geology or overburden thickness were observed. The UTEM survey described in this report, indicates no further work is warranted on this grid.


Report by:


Syd J. Visser, B.Sc.
Geophysicist
Cominco Ltd.

Endorsed by:


John M. Hamilton, P.Eng.
Assistant Manager
Exploration,
Western District
Cominco Ltd.

Approved for
Release:


G. Harden
Manager, Exploration
Western District
Cominco Ltd.

DISTRIBUTION:

| | |
|----------------------|-----|
| Mining Recorder | (2) |
| Kootenay Exploration | (2) |
| Western District | (1) |
| Geophysics | (1) |

REFERENCES

Lamontagne, Y., 1975

Applications of Wideband, Time Domain EM
Measurements in Mineral Exploration: Doctoral
Thesis, University of Toronto

APPENDIX I

LEGEND

UTEM DATA SECTIONS

ORDINATE: Amplitude scale is given in %

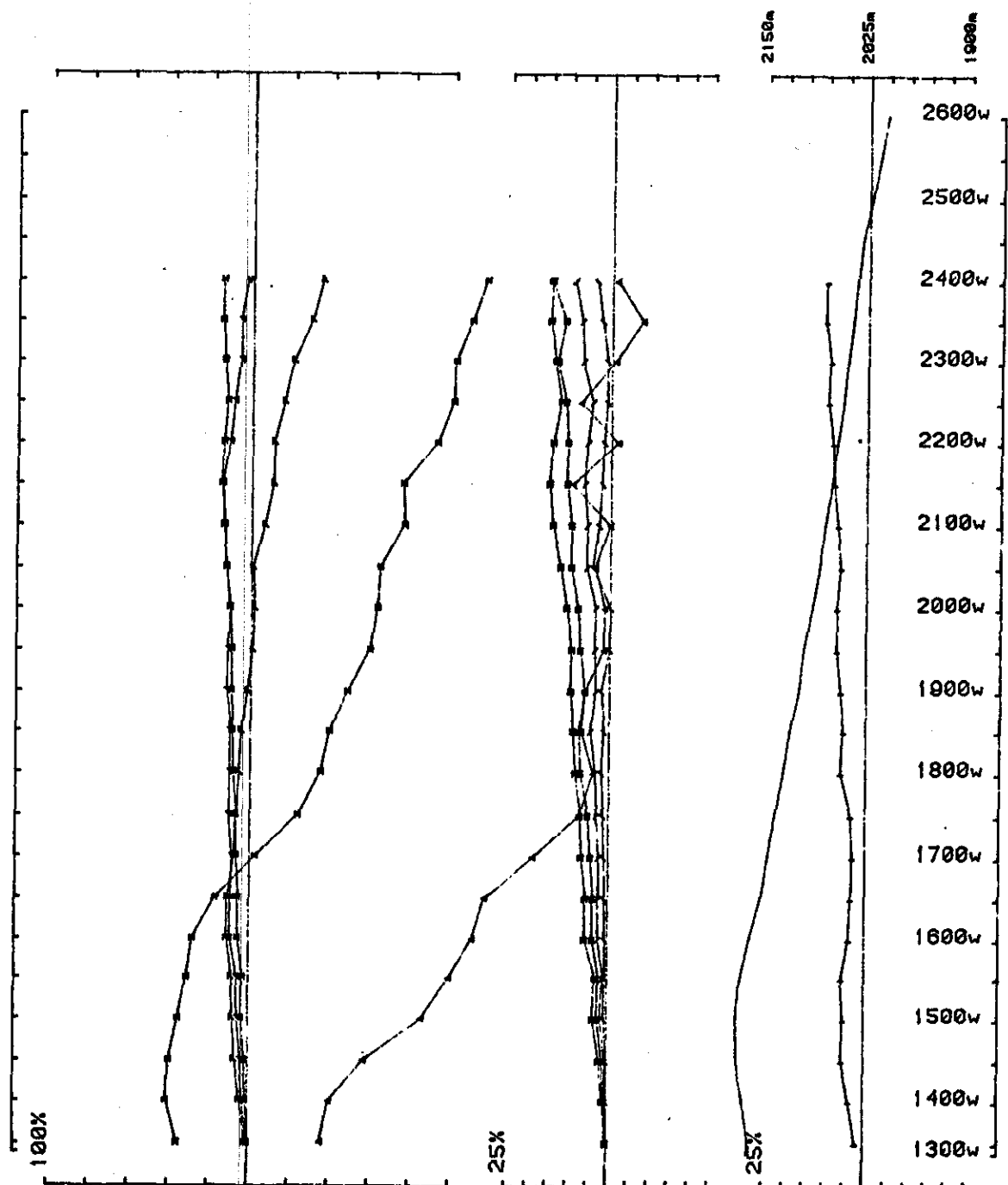
ABSCISSA: Station or Picket Numbers in Hundreds of Meters

| SYMBOL | CHANNEL | MEAN DELAY TIME | |
|--------|---------|-----------------|---------|
| | | 15 Hz | 30 Hz |
| | 1 | 25.6 ms | 12.8 ms |
| / | 2 | 12.8 | 6.4 |
| \ | 3 | 6.4 | 3.2 |
| □ | 4 | 3.2 | 1.6 |
| Σ | 5 | 1.6 | 0.8 |
| △ | 6 | 0.8 | 0.4 |
| 7 | 7 | 0.4 | 0.2 |
| X | 8 | 0.2 | 0.1 |
| △ | 9 | 0.1 | 0.05 |
| ◇ | 10 | 0.05 | 0.025 |

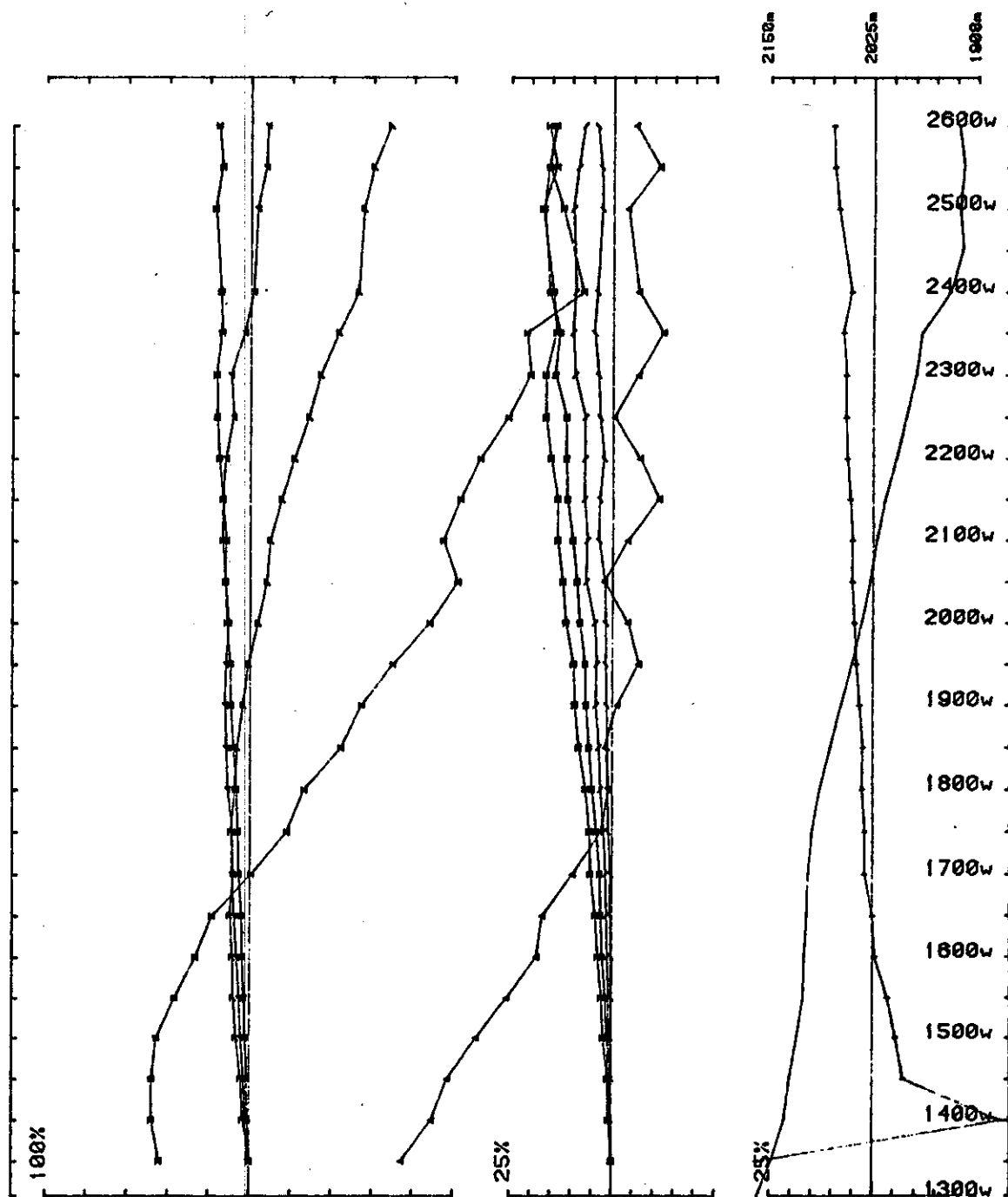
A P P E N D I X I I

DATA SECTIONS

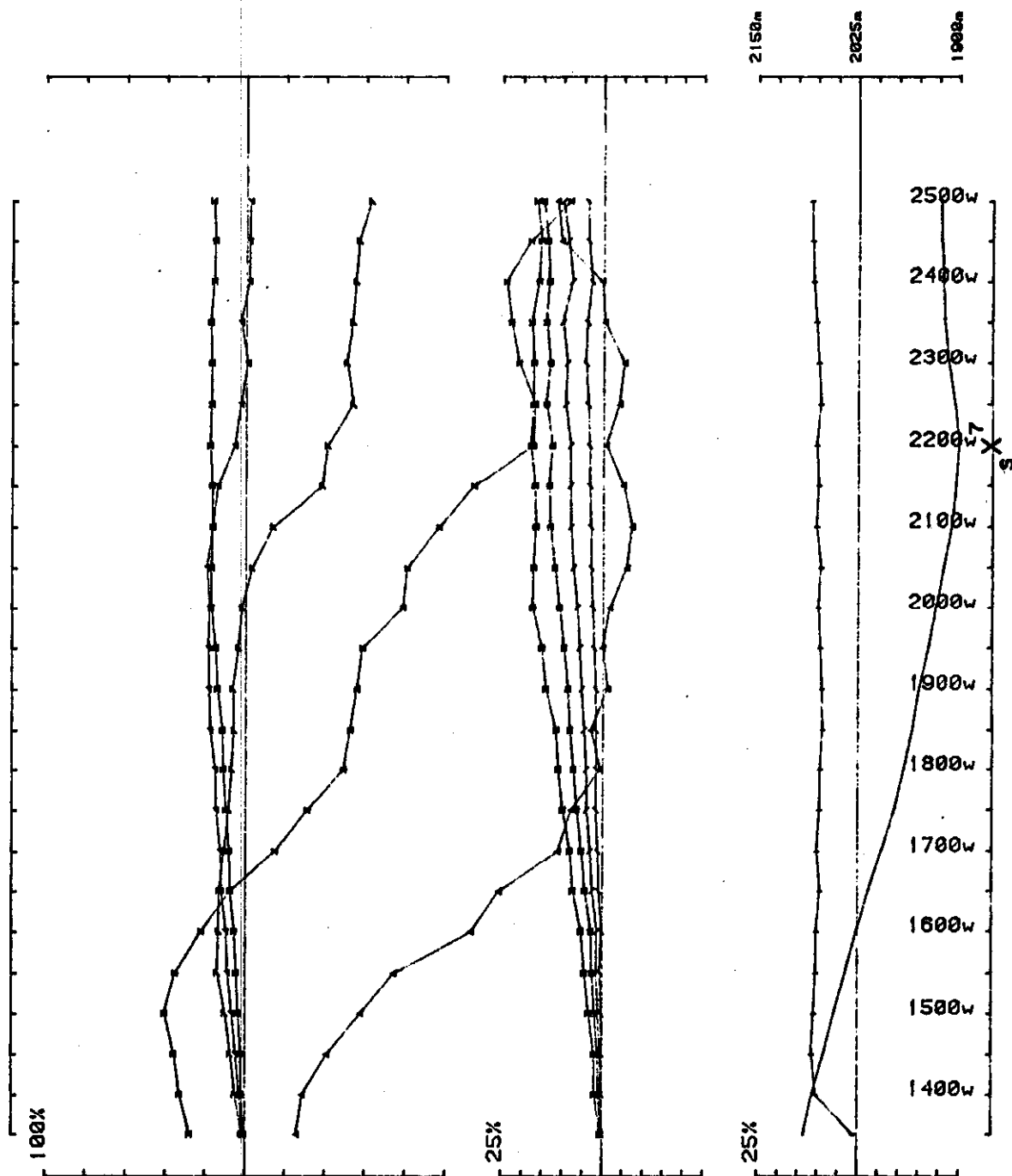
D.S. 1 - 8



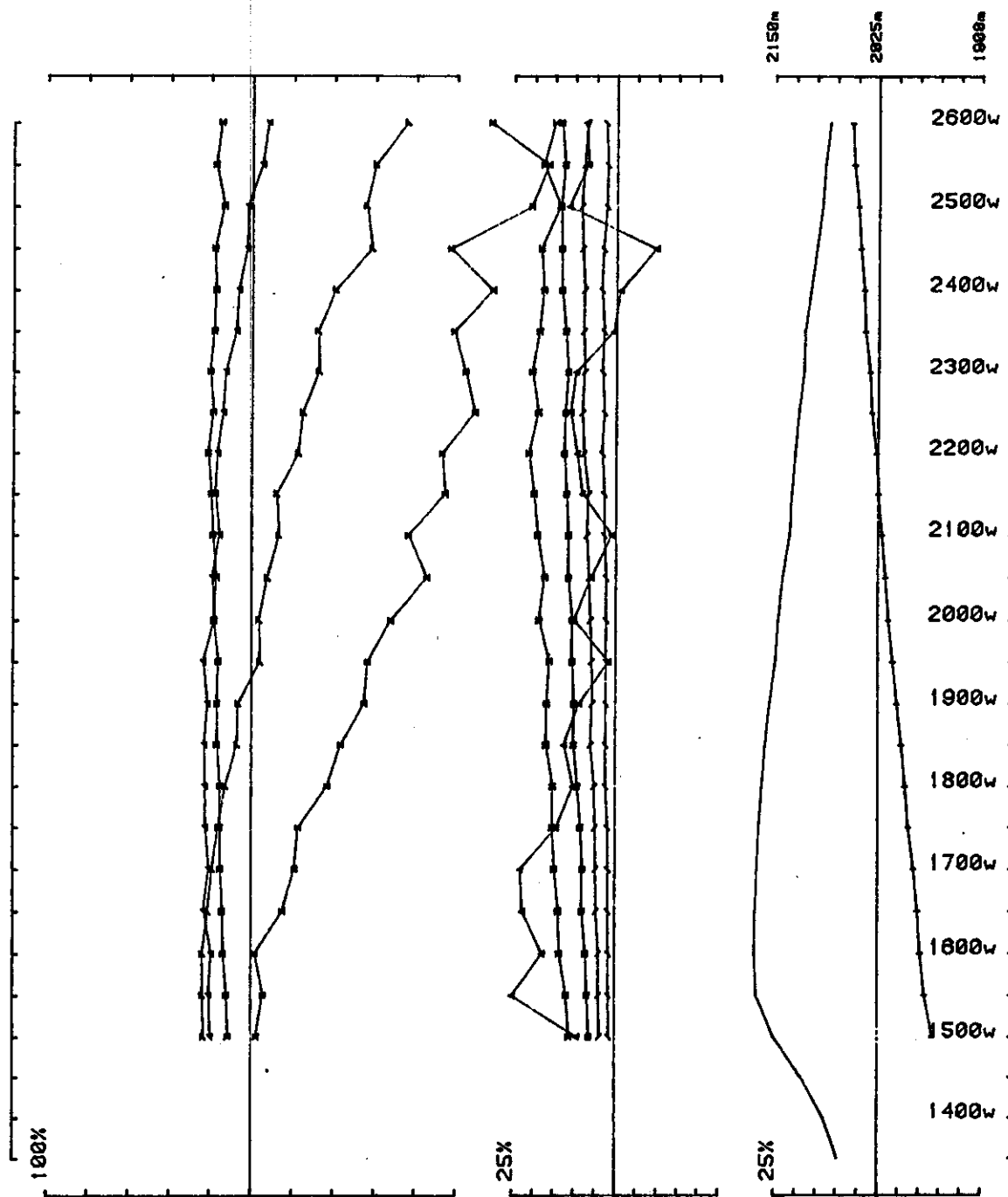
Area Low South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 100 Line 2000s component Hz secondary Ch 1 normalized Ch 1 reduced



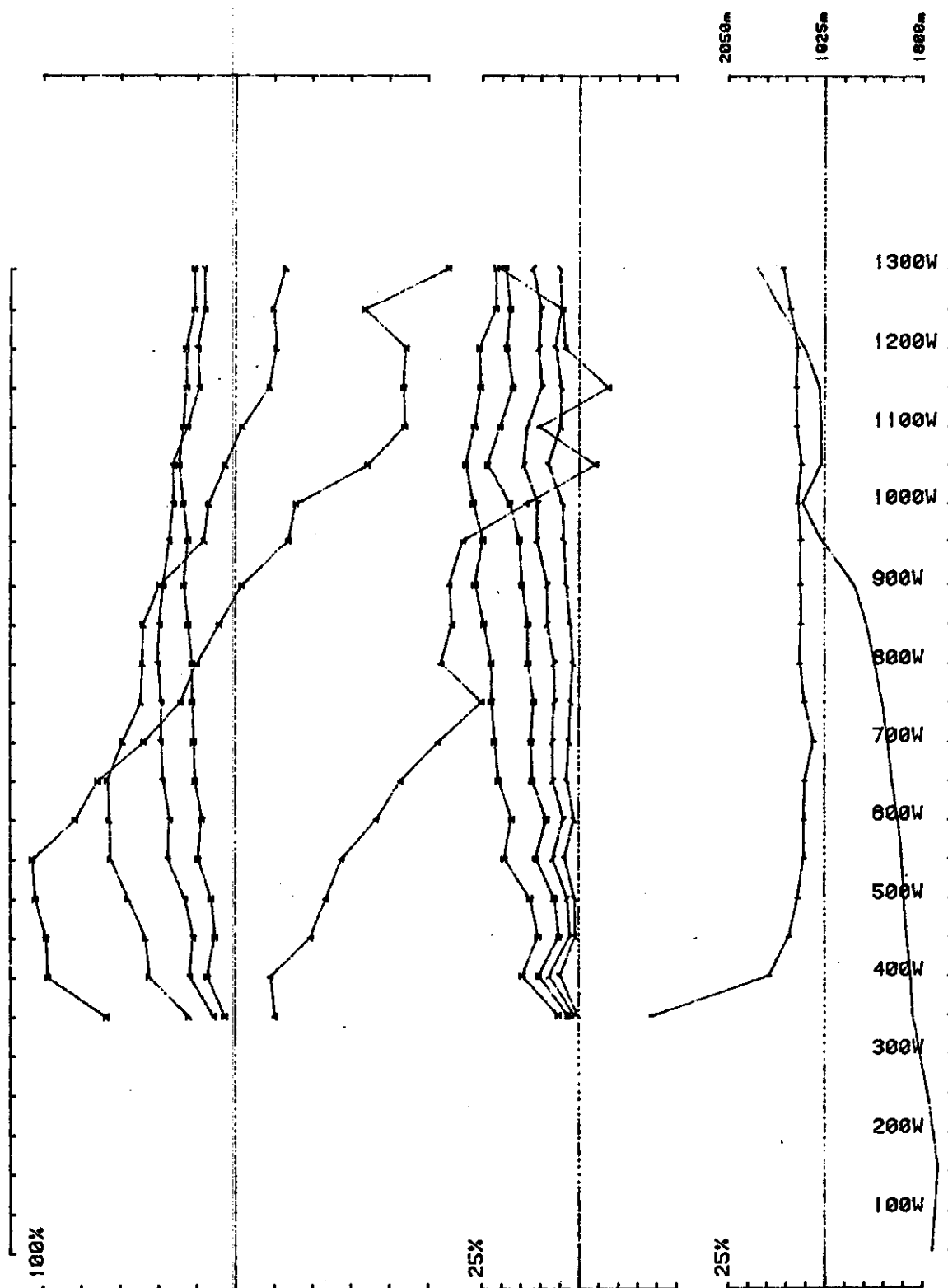
Area Lew South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 100 Line 2500s component Hz secondary Ch 1 normalized Ch 1 reduced



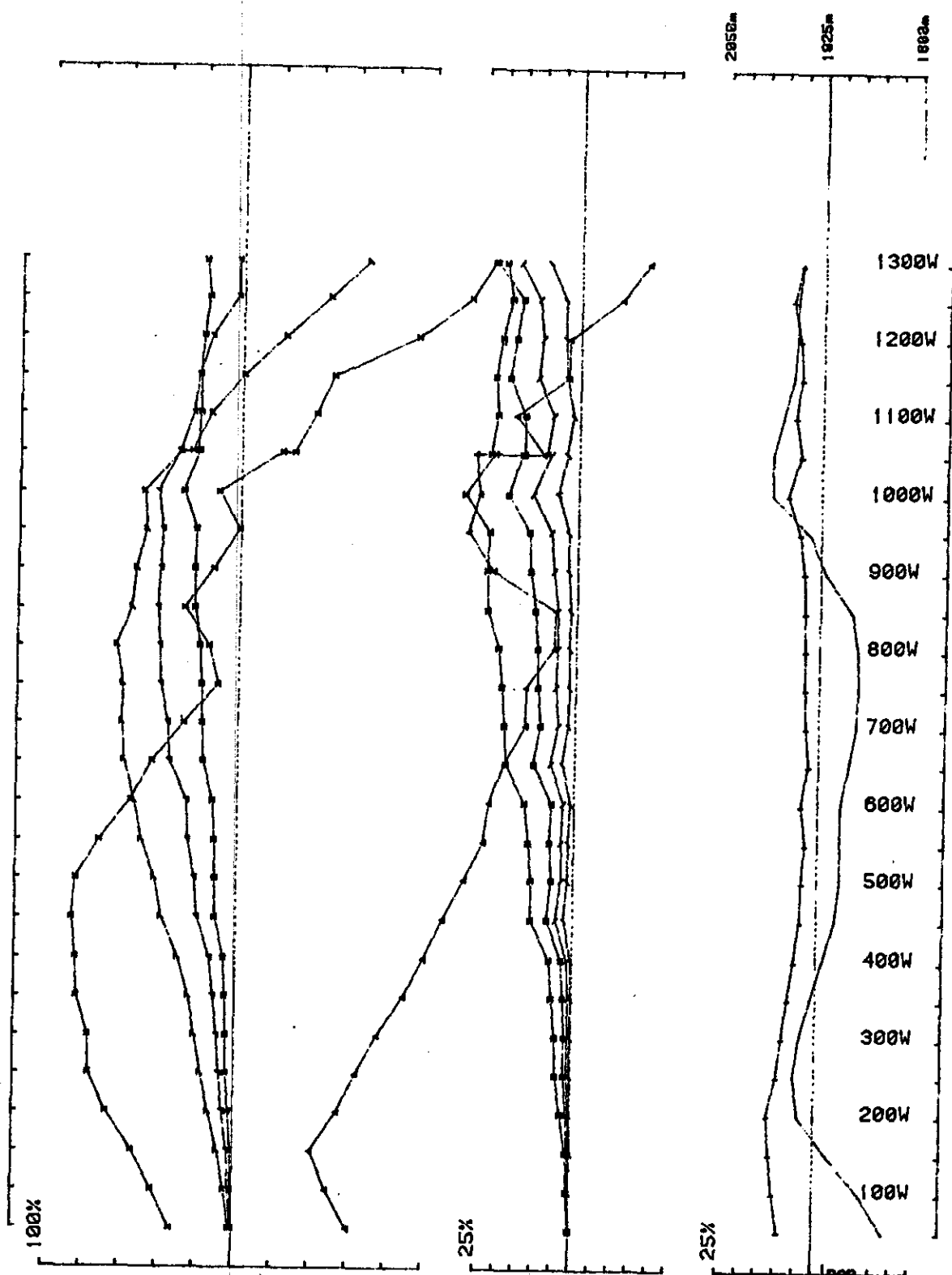
Area Lew South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 100 Line 3000s component Hz secondary Ch 1 normalized Ch 1 reduced



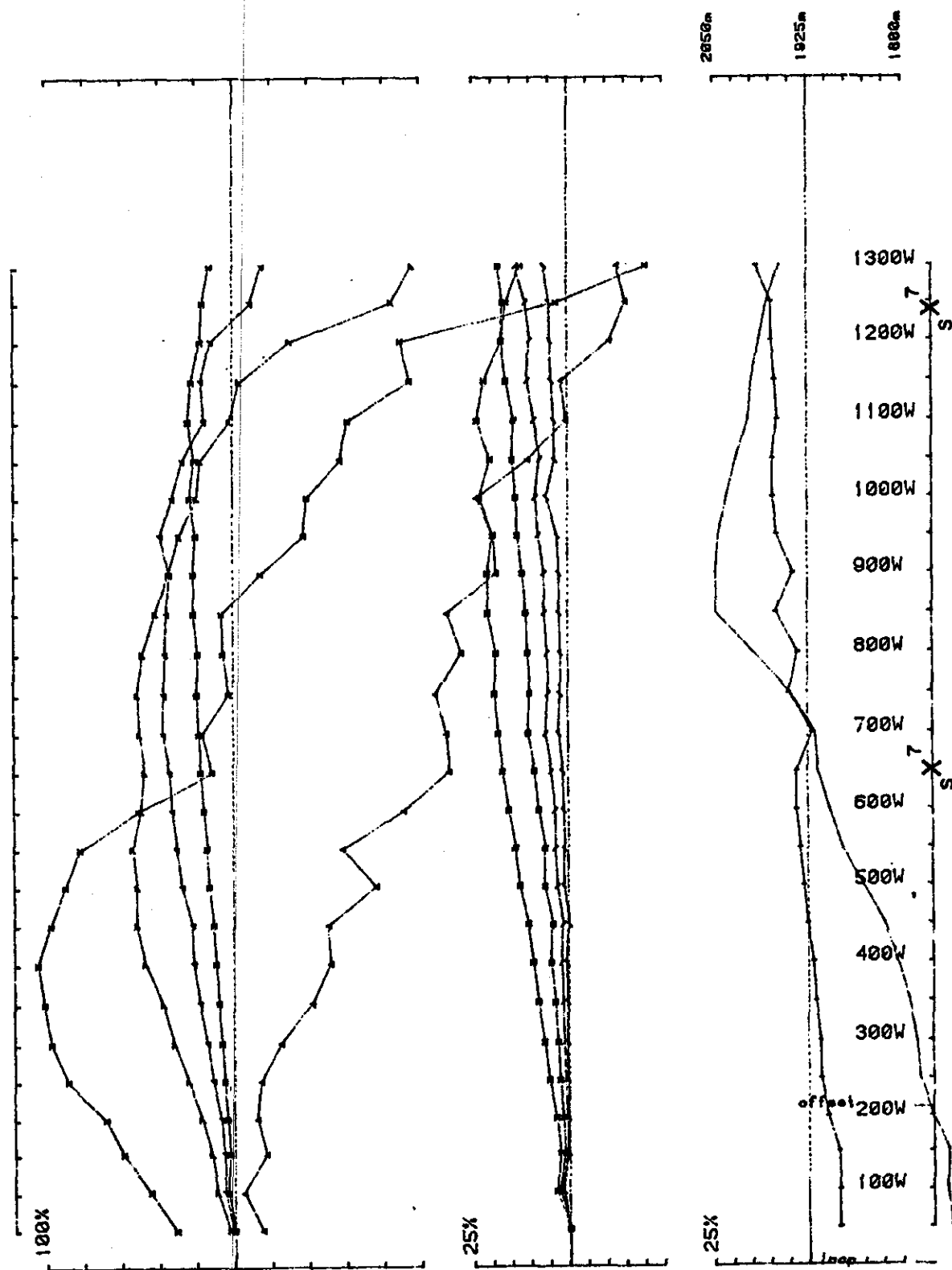
Area Lew South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 100 Line 3500s component Hz secondary Ch 1 normalized Ch 1 reduced



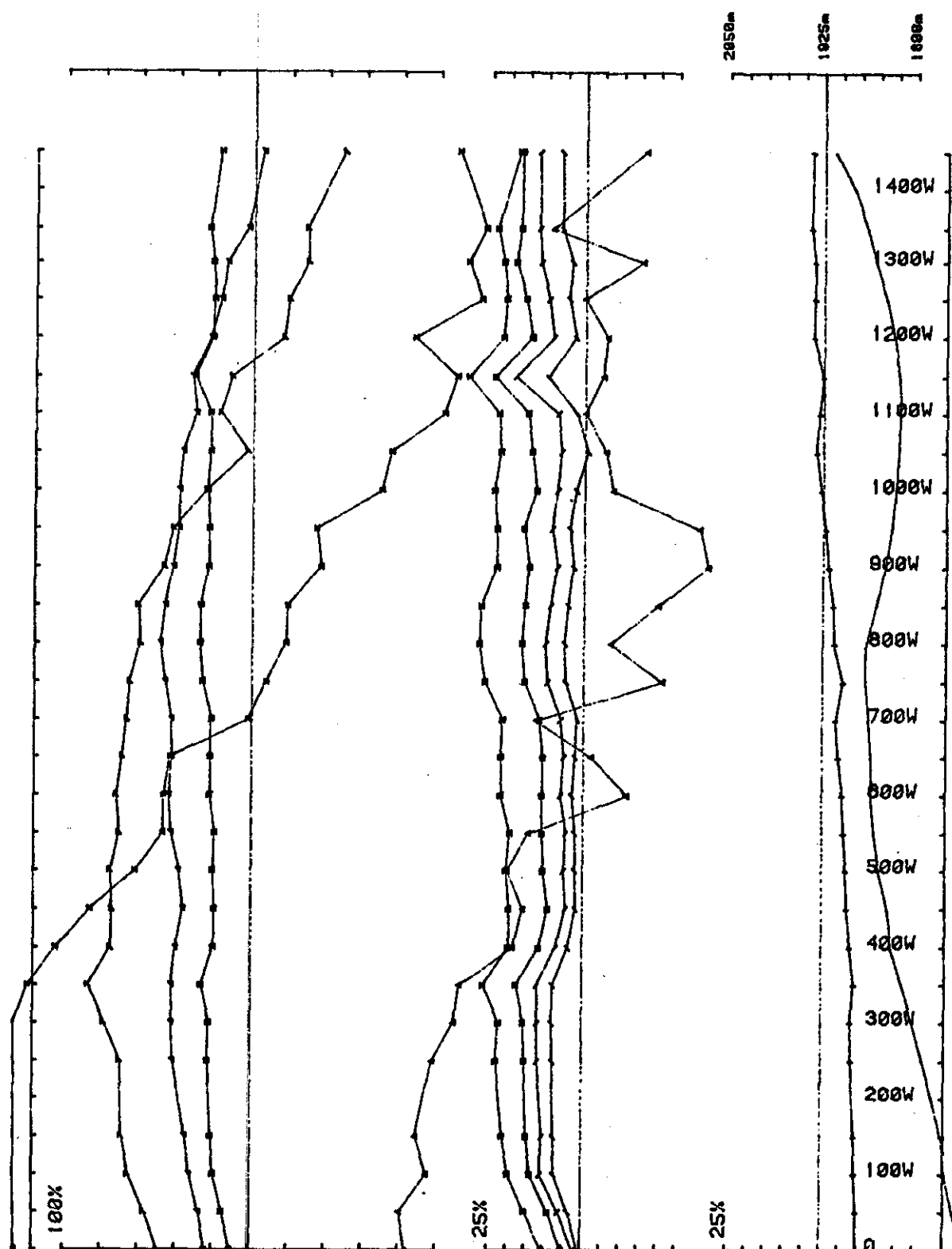
Area Lew South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 101 Line 2000S component Hz secondary Ch I normalized Ch I reduced



Area Lew South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 101 Line 2500S component HZ secondary Ch I normalized Ch I reduced



Area Low South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 101 Line 30005 component Hz secondary Ch 1 normalized Ch 1 reduced



Area Low South Cominco operator Syd & Jovan freq(hz) 30.974
 Loopno 101 Line 3500S component Hz secondary Ch 1 normalized Ch 1 reduced

APPENDIX III


APPENDIX III

IN THE MATTER OF THE B.C. MINERAL ACT
AND IN THE MATTER OF A GEOPHYSICAL PROGRAMME
CARRIED OUT ON THE LEW CLAIMS
LOCATED 35 KM S.W. OF CRANBROOK, B.C.
IN THE GOLDEN MINING DIVISION OF THE
PROVINCE OF BRITISH COLUMBIA, MORE PARTICULARLY
N.T.S. 82F/8

S T A T E M E N T

I, SYD J. VISSER, of the Municipality of Delta in the Province of British Columbia, make oath and say:-

1. THAT I am employed as a geophysicist by Cominco Ltd. and as such have a personal knowledge of the facts to which I hereinafter depose;
2. THAT annexed hereto and marked as "Exhibit A", to this statement is a true copy of expenditures incurred on geophysical survey on the VULCAN mineral claims;
3. THAT the said expenditures were incurred between August 9th and September 11th, 1984, for the purpose of mineral exploration of the above-named claims.



Syd J. Visser, B.Sc.
Geophysicist
Cominco Ltd.

"EXHIBIT A"

STATEMENT OF GEOPHYSICAL EXPENDITURES - 1984

LEW CLAIMS

(1) SALARIES

Preparation, Field Work, Mob/Demob, Interpretation, etc. 5,295.00

Geophysicists - Syd J. Visser

J. Silic

Assistants - C. Pelto


M. Poole

(2) EQUIPMENT AND TRUCK RENTAL 1,749.58

(3) EXPENSE ACCOUNTS (hotels, meals, etc) 1,554.68

Total Cost \$ 8,599.26

I certify this to be a true statement of expenditures for the geophysical survey on the LEW 1 and 2 claims in 1984.


Syd J. Visser, B.Sc.
Geophysicist
Cominco Ltd.

APPENDIX IV

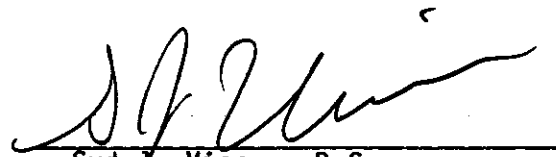
A P P E N D I X I V

C E R T I F I C A T I O N

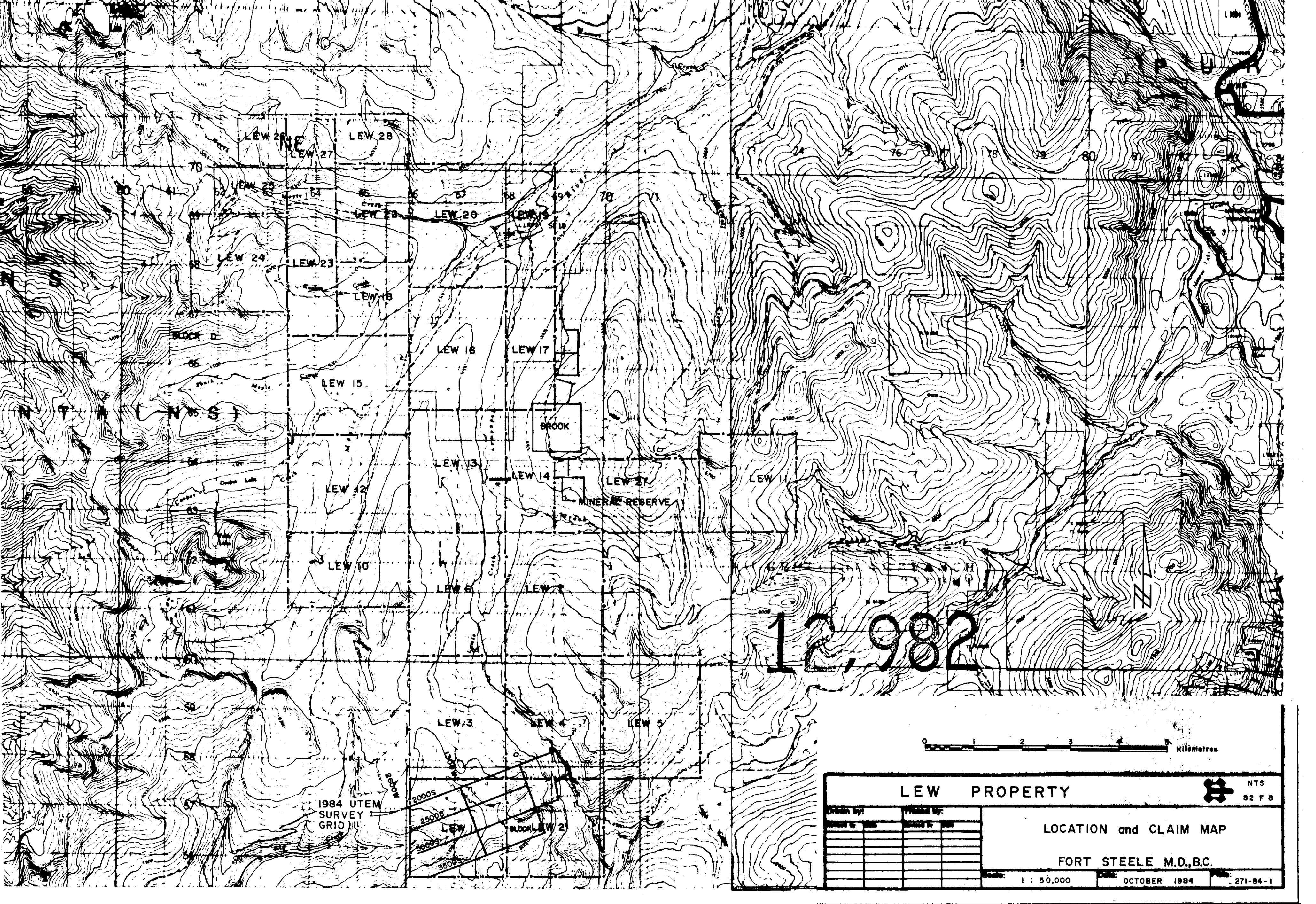
I, SYD J. VISSER, of 8081 - 112th Street in the Municipality of Delta, in the Province of British Columbia, do hereby certify that:-

1. I graduated from Haileybury School of Mines in 1971 as a Mining Technician and from the University of British Columbia in 1981 with Honours B.Sc. in Geophysics and Geology.

2. I have worked in mineral exploration since 1968.



Syd J. Visser, B.Sc.
Geophysicist
Cominco Ltd.

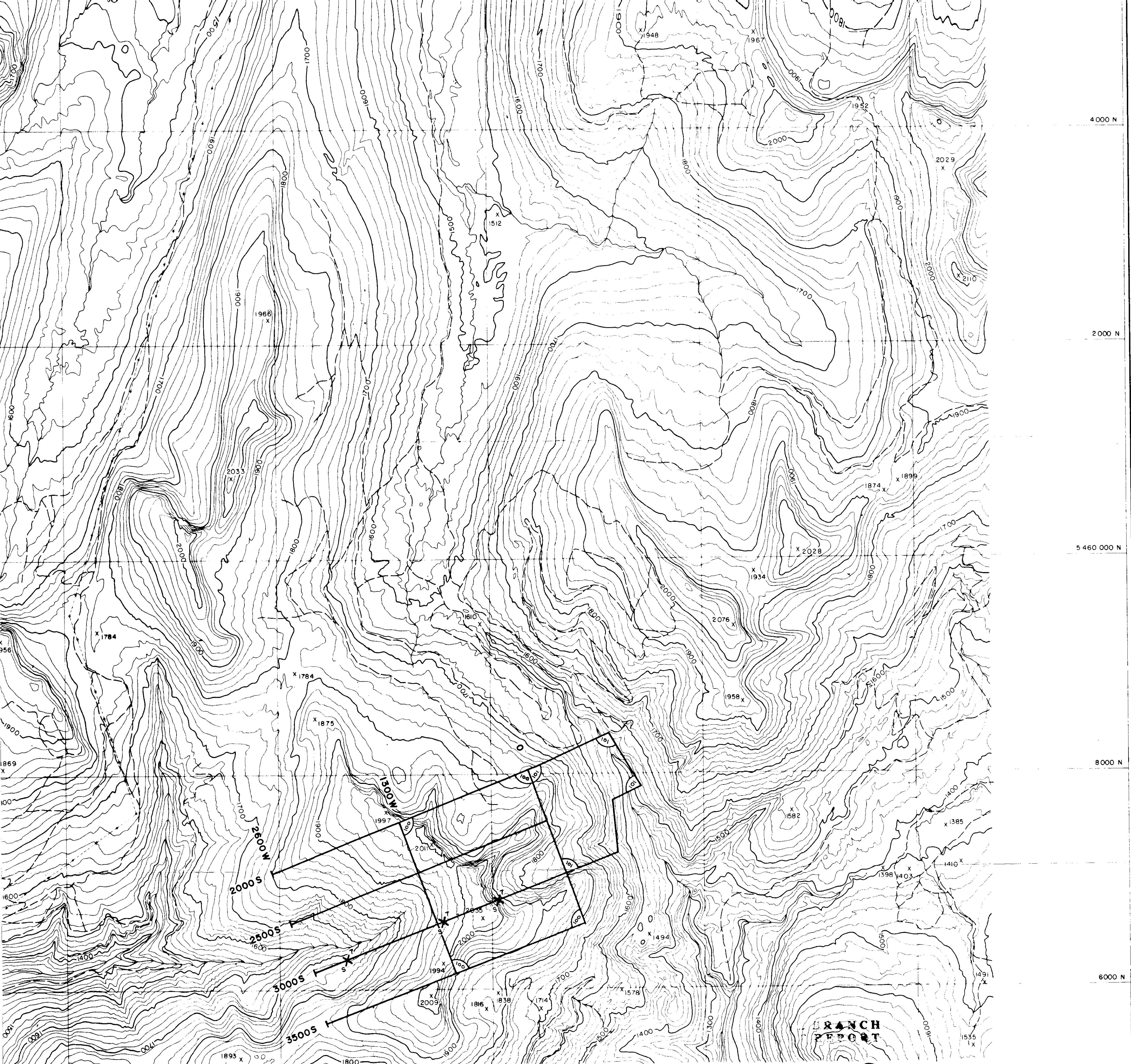


12,982

0 1 2 3 4 5 Kilometres

1984 UTM
SURVEY
GRID

| LEW PROPERTY | | | | NTS 82 F 8 |
|----------------------|--|-------------|--|---|
| Drawn by: | | Checked by: | | LOCATION and CLAIM MAP |
| Drawn by: | | Checked by: | | |
| Drawn by: | | Checked by: | | |
| Drawn by: | | Checked by: | | |
| Drawn by: | | Checked by: | | |
| FORT STEELE M.D.B.C. | | | | Scale: 1 : 50,000 Date: OCTOBER 1984 File: 271-84-1 |
| | | | | |



12,982



LEW PROPERTY



NTS
82 F 8

1984 UTEM SURVEY

FORT STEELE M.D.,B.C.

| | | |
|-------------------|--------------------|-----------------|
| Scale: 1 : 20,000 | Date: OCTOBER 1984 | Plate: 271-84-2 |
|-------------------|--------------------|-----------------|



Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute map accuracy.

Compiled from aerial photography at an approximate scale of 1:40 000 flown in 1978

DEPTH OF

ANOMALY
INDICATED BY
S(shallow), M(moderate),
D(deep).

- LATEST
ANOMALOUS
CHANNEL

—AXIS OF A
CROSSOVER ANOMALY