



GEOPHYSICAL INVESTIGATION OF THE BUM CLAIMS

Electromagnetic, Magnetometer and Gravity Surveys)



SELWYN PROJECT, EARN LAKE AREA, MAYO MINING DIVISION, Y.T.

Lat: 62° 52' N

Long: 135° 25' W

NTS: 105 L14

Field work performed within the period March 1 - April 4, 1982

Claims: BUM 1-32

May 12, 1982

Alan R. Scott

091033



This report has been examined by  
the General Recon Unit  
under Section 104 of the Yukon Quartz  
Mining Act and is allowed as  
representative work to the amount  
of \$ 12,800.

*P. Weston*

*for* Regional Manager, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

001038

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"   "   4	"       "   - Line 400 W	( "   "   )
"   "   5	"       "   - Line 1600 E	( "   "   )

## Introduction

During the period March 1 to April 4, 1982, a linecutting and geophysical survey program was completed over portions of Anaconda's Selwyn Project claims. This report is concerned with the portion of that work done on the BUM claims.

The purpose of the Geophysical work was to define the location, and further investigate electromagnetic conductors detected on an airborne survey completed in the spring of 1981 (flown by Geoterrex and previously submitted by Carlson, 1981).

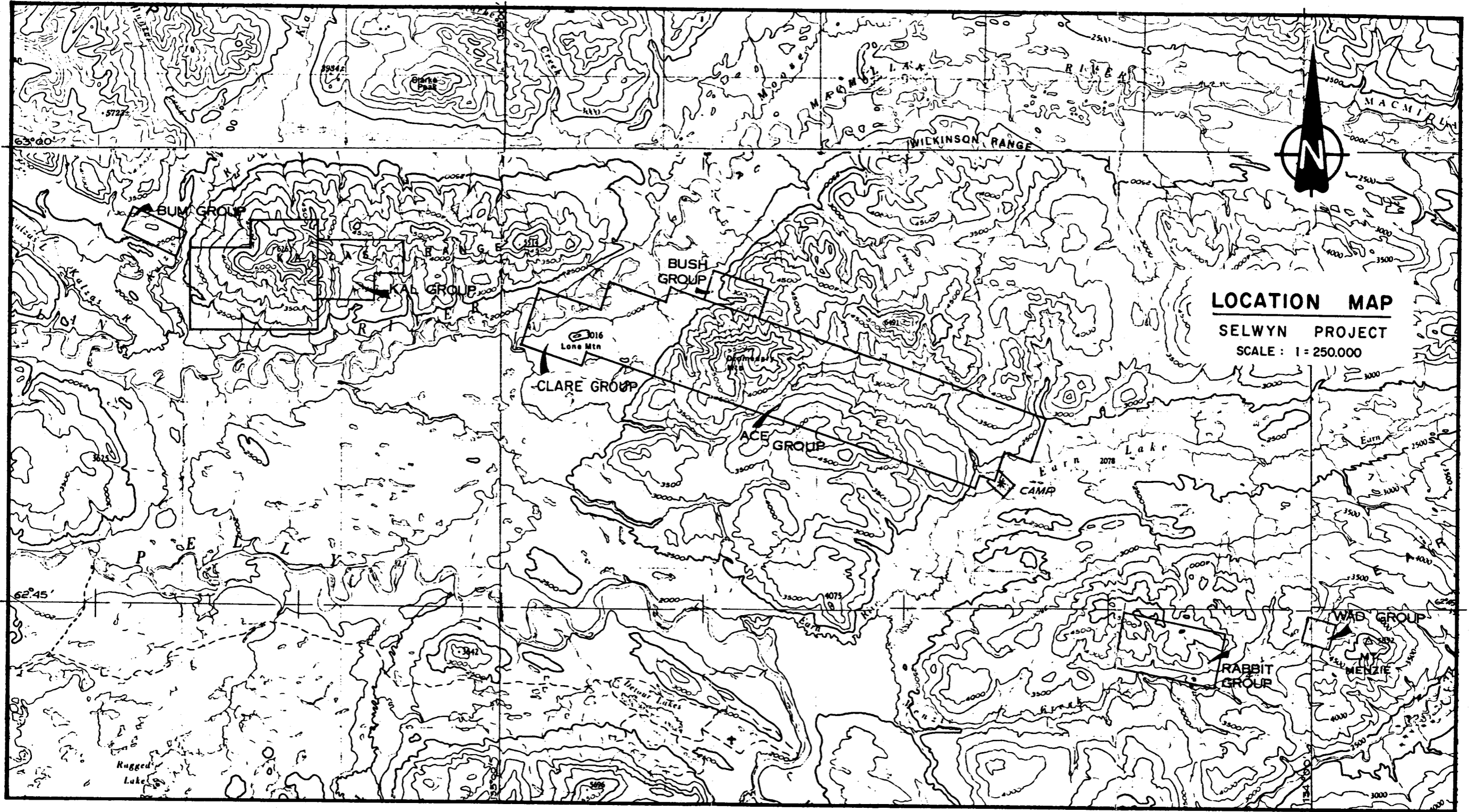
This report describes the methodology of the geophysical surveys conducted on the BUM claims, presents the data, and discusses the results.

## Location and Access

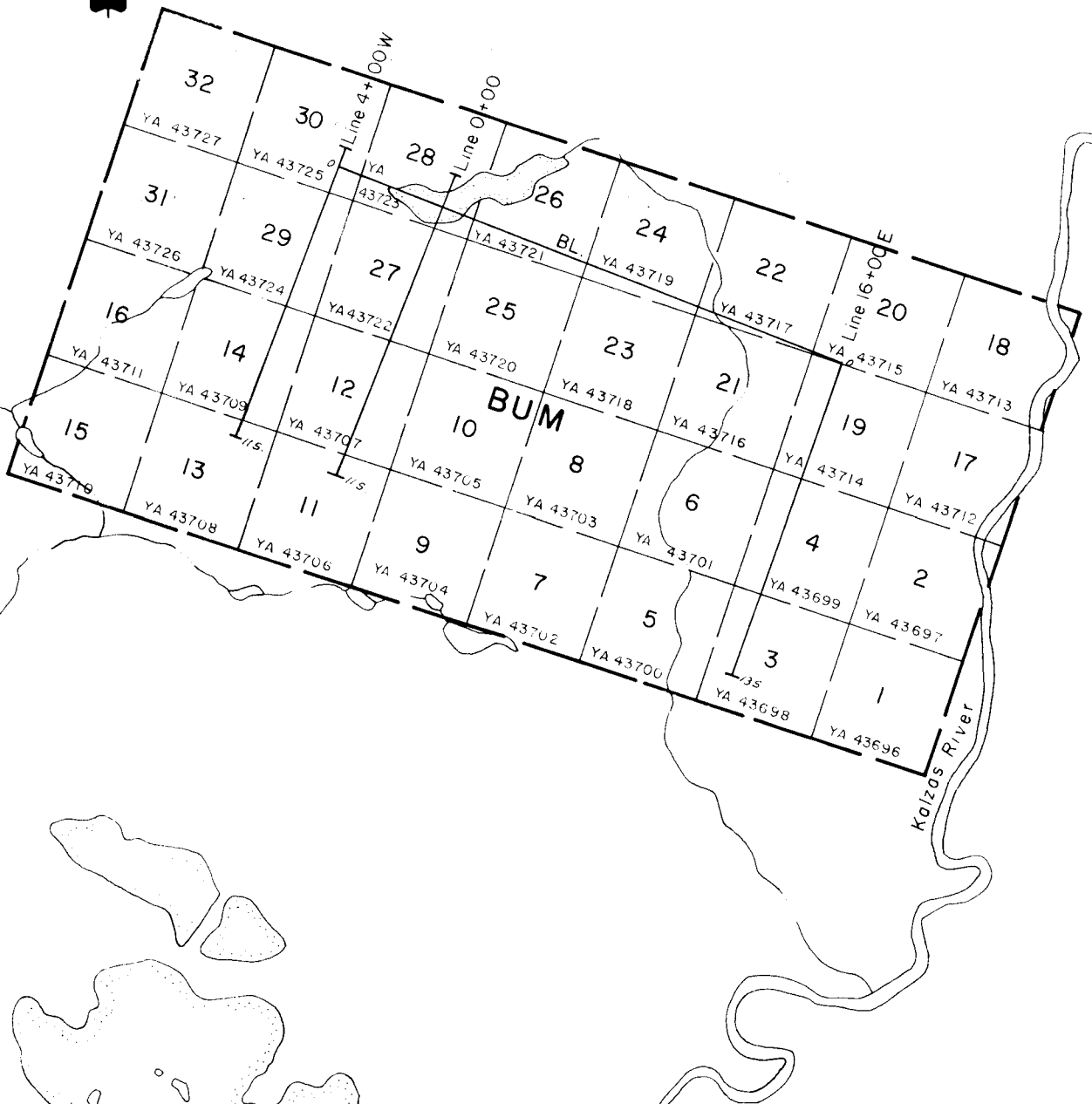
Anaconda's Selwyn Project is located about midway between the towns of Mayo and Faro, Yukon Territory (Drawing 1). This winter's work was conducted out of a central base camp located on the north shore of Earn Lake, utilizing helicopter support for local access. Access to the base camp was by fixed wing aircraft from Whitehorse.


## Ground Control

The location of the grids/traverses was chosen by reference to the helicopter EM survey flight path recovery and topographic maps. All base lines or traverses were turned off by compass, and cross lines by a nail board. Linecutting was accomplished by back sighting along pickets, and the quality of the lines is very good. Chaining of stations was by taut chain along the slope, with pickets placed at 25 meter intervals. The angle of slope was measured by inclinometer. The lines were tied in to topographic features wherever possible, for transfer to the location map (Drawing 2).



**LOCATION MAP**  
SELWYN PROJECT  
SCALE: 1 = 250,000



<b>ANACONDA</b> Canada Exploration Ltd 		
SELWYN PROJECT		
<b>BUM CLAIMS</b>		
MAYO MINING DISTRICT		
Prepared by	Drawn by	Date
	H.H.	APR. 1982
1:25,000	105 L-14	2 5

## Claims

The BUM claims are located 8 kms west of Kalzas Mountain. The NTS sheet for the area is 105 L14. Grant numbers and claim names are listed below:

YA 43696-YA 43727

BUM 1-32

## Geology

The Selwyn project area lies within the Paleozoic aged Selwyn Basin of the Yukon Territory. Units consist of chert, shale and coarser grained clastic sedimentary rocks. Minor Tertiary high level intrusives and cretaceous biotite quartz monzonites occur. The property geology has been described in more detail by Carlson (1982).

## Geophysical Surveys

### Electromagnetic Surveys - HLEM

An Apex Parametrics Max Min II electromagnetometer was used for the horizontal loop (HLEM) survey. A back up unit was also available in the event of malfunction. All survey lines were previously slope chained and inclinometer surveyed to maintain close tolerances on the coil spacing and coplanarity of the HLEM survey. Corrections were applied to the HLEM data for the normally small changes from the selected coil spacing of 100 meters for the BUM claims.

### Magnetometer Survey

A Geometrics Unimag I was used for the magnetometer survey, and a Unimag II as a base station for correction of diurnal variation. Base station readings were obtained at least hourly at the Earn Lake camp, and maximum observed drift from base reading to reading during the time of the survey, was normally less than 20 gammas.

## Gravity Survey

A SODIN CG-2 gravity meter was used for the gravity survey. This is a non thermisted meter and base station/sub base station loops at approximately hourly intervals were necessary to ensure adequate control on temperature caused meter drift. Corrections for instrument height and bouguer reduction were effected using standard published formulas (Telford, 1976).

Station elevations were established with a TOPCON EDM/WILD T-16 theodolite. Closures, where possible, indicated an elevation accuracy of  $\pm 2$  cm over 500 meters for this unit.

Overall accuracy of the bouguer gravity values, based on station repeats, is better than  $\pm .05$  milligals.

## Discussion of results

Three lines were cut, chained, and surveyed with HLEM and magnetometer on the BUM claims. Line 1600E was also gravity surveyed. The results are plotted in profile form on Drawings 3, 4, and 5.

The location of HLEM conductor and their apparent widths have been picked from the 444 Hz in phase data, and are noted on the profile as well as the topographic profile. Any quantitative interpretation of these conductors (such as dip, depth, and conductivity thickness product) should be treated with some caution due to the obvious interference between neighboring conductors.

It should be noted that if conductor locations are picked on the out of phase, somewhat different locations are often obtained. For example on line 400W, an out of phase "trough" is centered at 825 south, which is just south of a broad in phase pick, and the out of phase also suggests a conductive zone extends between the two broad in phase picks (from 550 S to 700 S). As very close control on coil separations and coplanarity was

maintained throughout the survey, these ambiguities are definitely a reflection of a complex geological environment (multiple conductors of varying conductivity) as opposed to such coil misorientations.

Magnetic anomalies have been picked at their half amplitude width. This does not imply an estimate of width for the source.

The most striking feature on line 0 (Drawing 3) is the very strong magnetic anomaly (11260 gammas peak to peak) in the vicinity of station 225 south. This magnetic anomaly is in part coincident with a broad HLEM conductor that extends from 155 to 225 south. Magnetic anomalies at 550 and 700 south are also near coincident to HLEM conductors, while the conductor at 400 S does not have an association with a magnetic anomaly.

On line 400W, a coincident HLEM conductor/magnetic anomaly was detected at 175 south. A broad complex conductive zone extends from about 450 S to 850 S. Two broad in phase zones centered at 500 S and 750 S have been picked on the profiles. A magnetic anomaly centered at about 600 S lies between these in phase picks. The HLEM conductor at 955 S is in an area of flat magnetic field strength.

Line 1600 E again shows a complex zone of multiple conductors, from about 350 S to 925 S. The area between the broad in phase picks centered at about 500 S and 850 S shows one narrow in phase pick, and the out of phase response suggests poorly conductive material underlies most of that area. Magnetic anomalies at 550 S, 750 S, and 900 S all occur within this very broad conductive sequence. The magnetic anomaly centered at about 300 S is coincident with a relatively low amplitude out of phase HLEM response.

The gravity profile on line 1600 E has a gentle positive regional gradient to the south, but no residual anomalies greater than  $\pm .2$  mgals were detected.

## Conclusions

The ground geophysical work on the BUM claims confirmed the presence and defined the location of a complex sequence of EM conductors and magnetic anomalies that were originally indicated by the 1981 airborne survey. A detailed description of those responses was given in the previous section of this report.

Prospecting, geological mapping and geochemical work is required as a preliminary follow up to this geophysical work. If positive results from that work are forthcoming, detailed geophysical work (gravity, HLEM, mag) should be initiated.

Respectfully submitted



Alan Scott

Geophysicist

### Distribution:

- (2) Mining Recorder ✓
- (1) IME - Vancouver
- (1) J. Corbett, Chief Geophysicist
- (1) R. Hall, Project Geologist



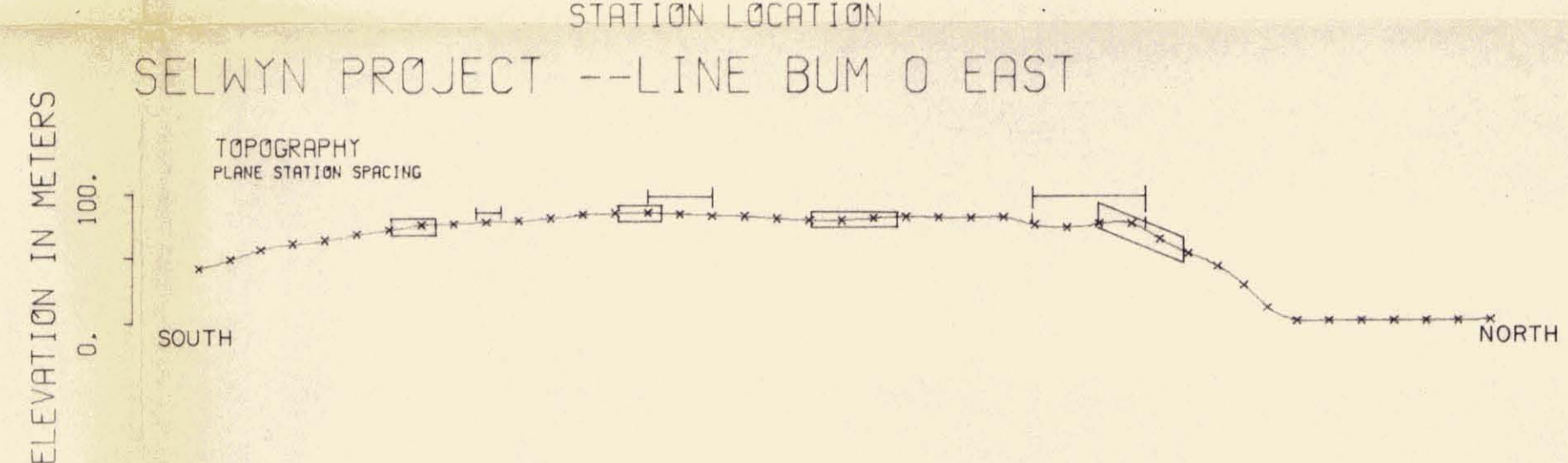
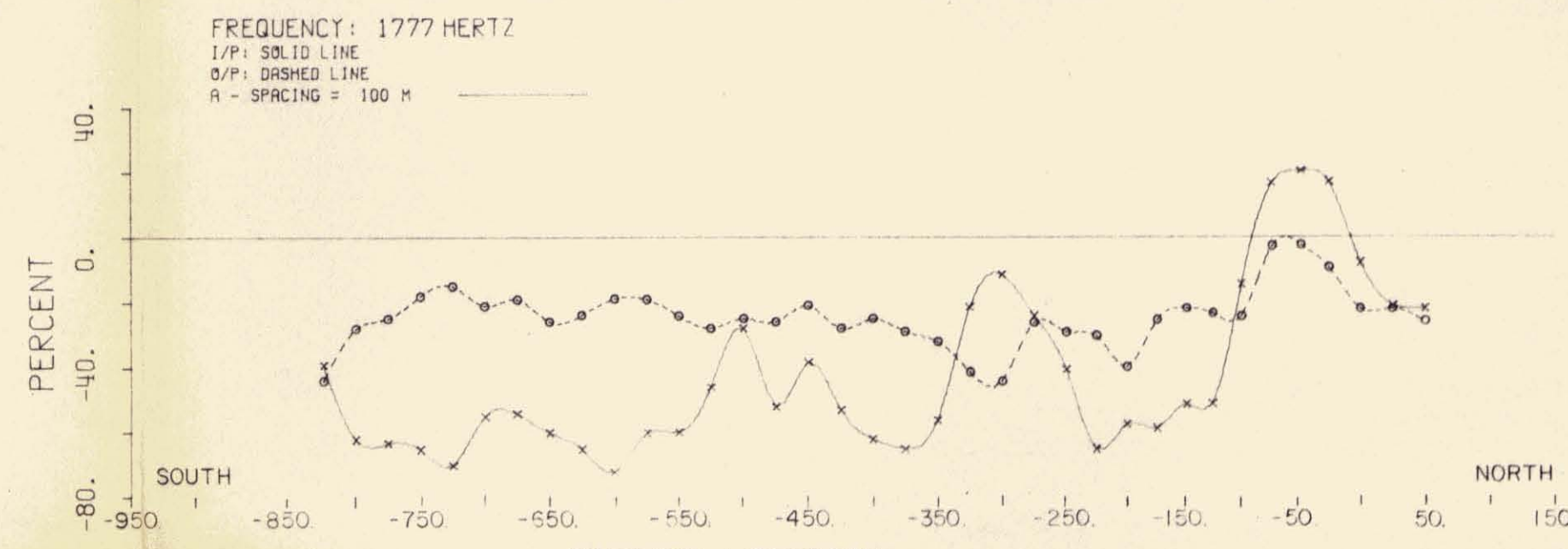
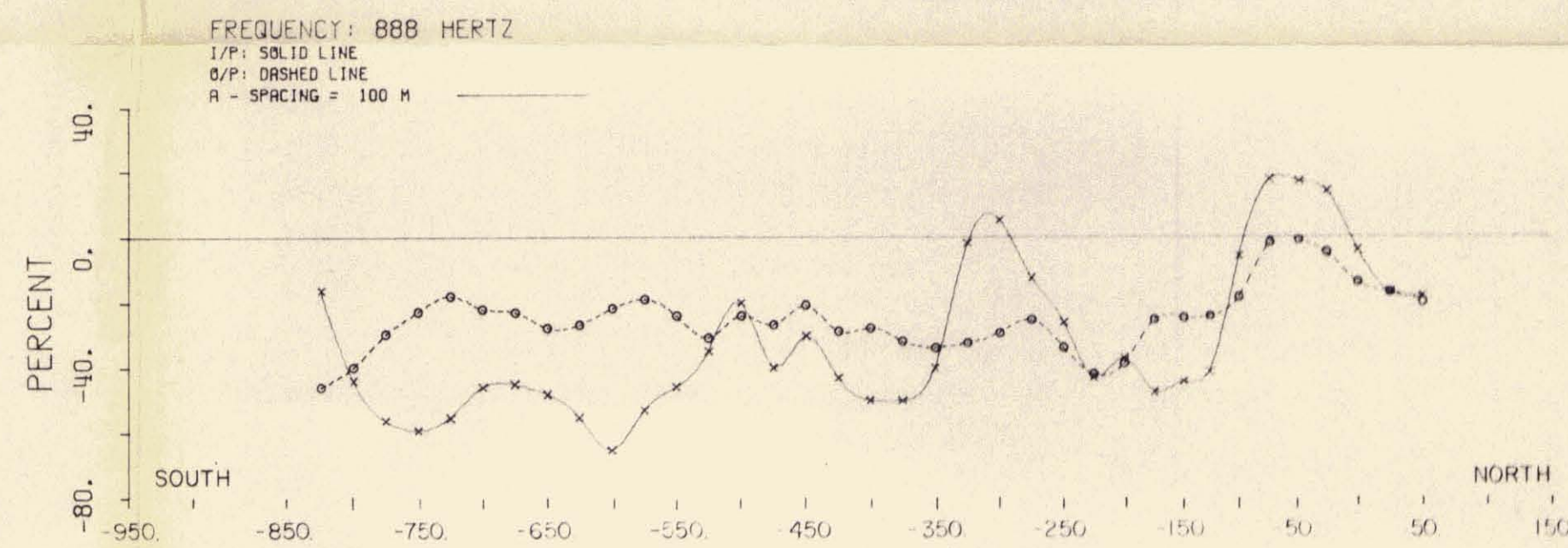
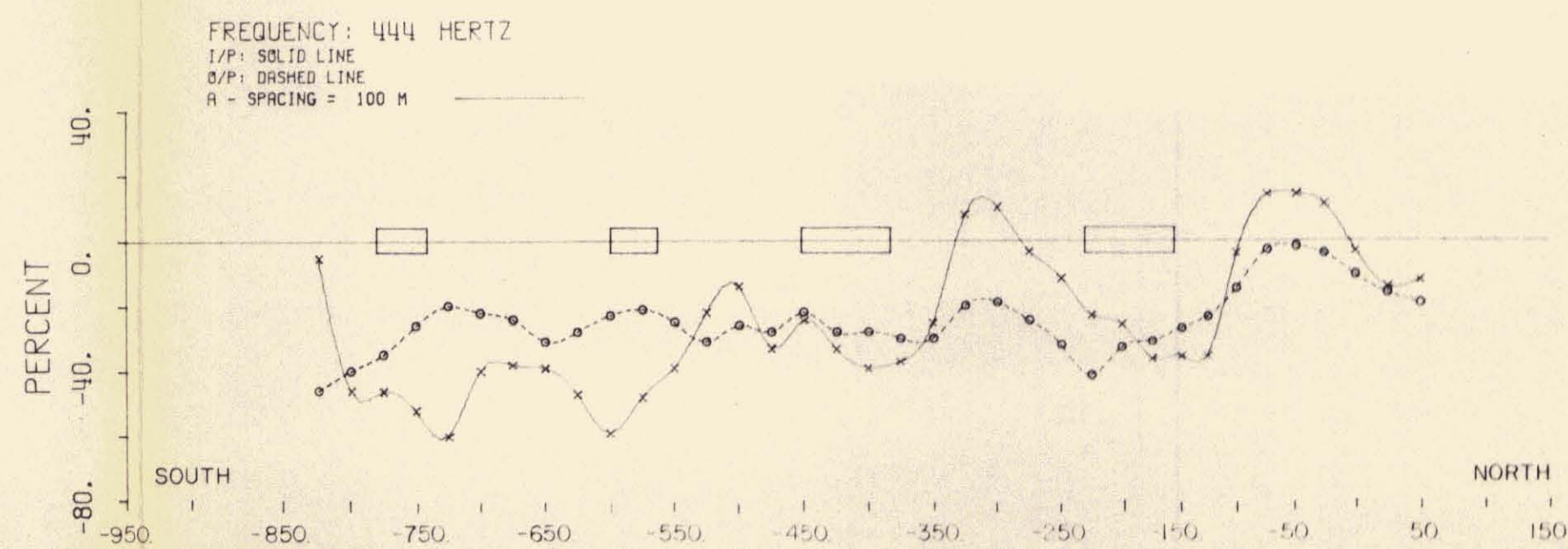
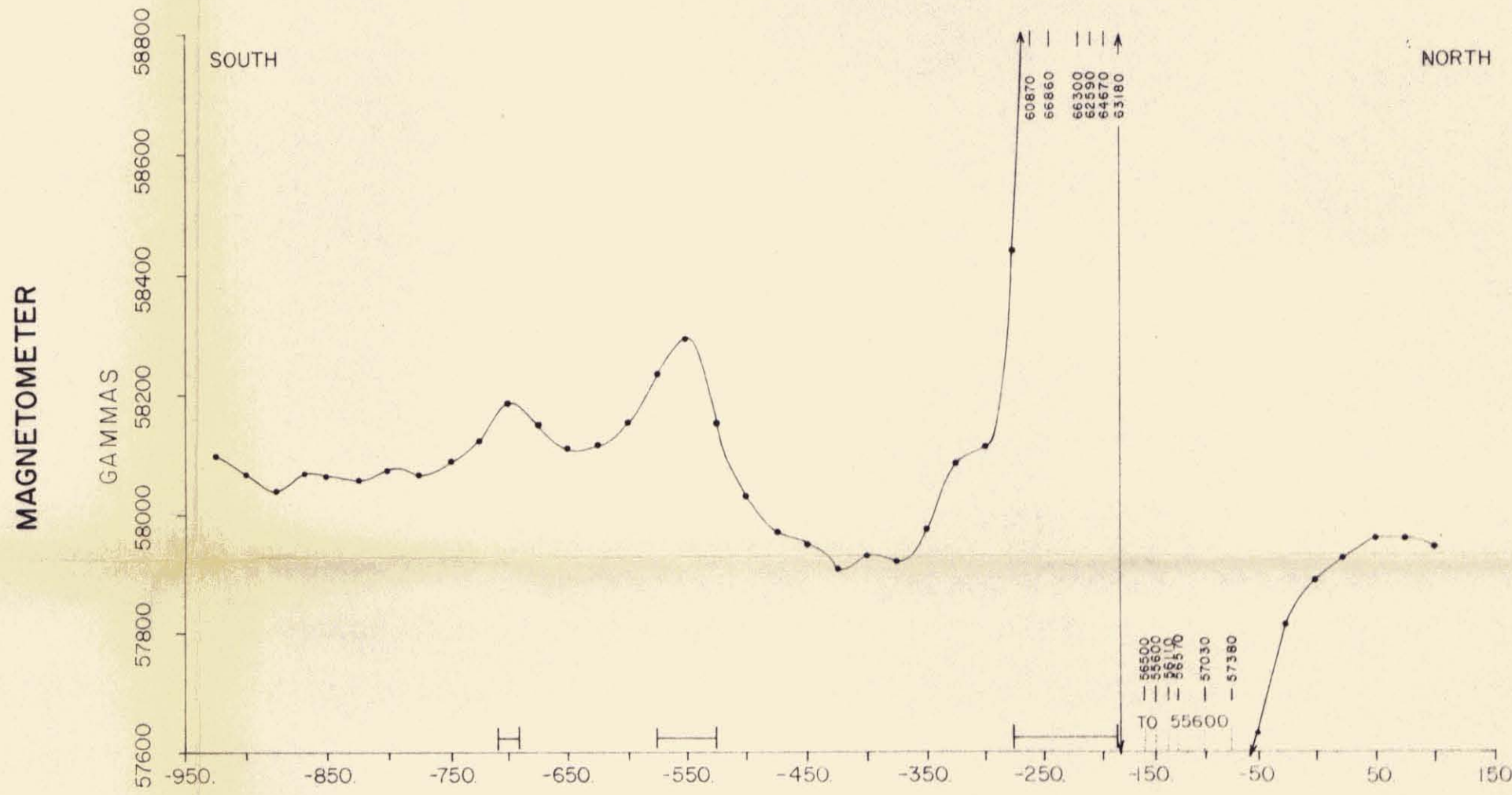
Appendix II

Certification

I, Alan R. Scott, of 4013 W. 14th Avenue, Vancouver, B.C., am employed as a professional geophysicist by Anaconda Canada Exploration Ltd. and have knowledge of the work performed and costs incurred per this report. I further attest that:

1. I graduated with a B.Sc. (geophysics) from the University of B.C. in 1970.
2. That I am a member of the Society of Exploration Geophysicists, and of the Association of Professional Engineers, Geologists, and Geophysicists of the Province of Saskatchewan.
3. that I have been practicing my profession for the past twelve years.

Alan R. Scott  
P. Geophysicist



LEGEND

- |— Magnetic Anomaly
- x— HLEM Conductor (I/P-444 Hz)
- HLEM Conductor (I/P-444 Hz)

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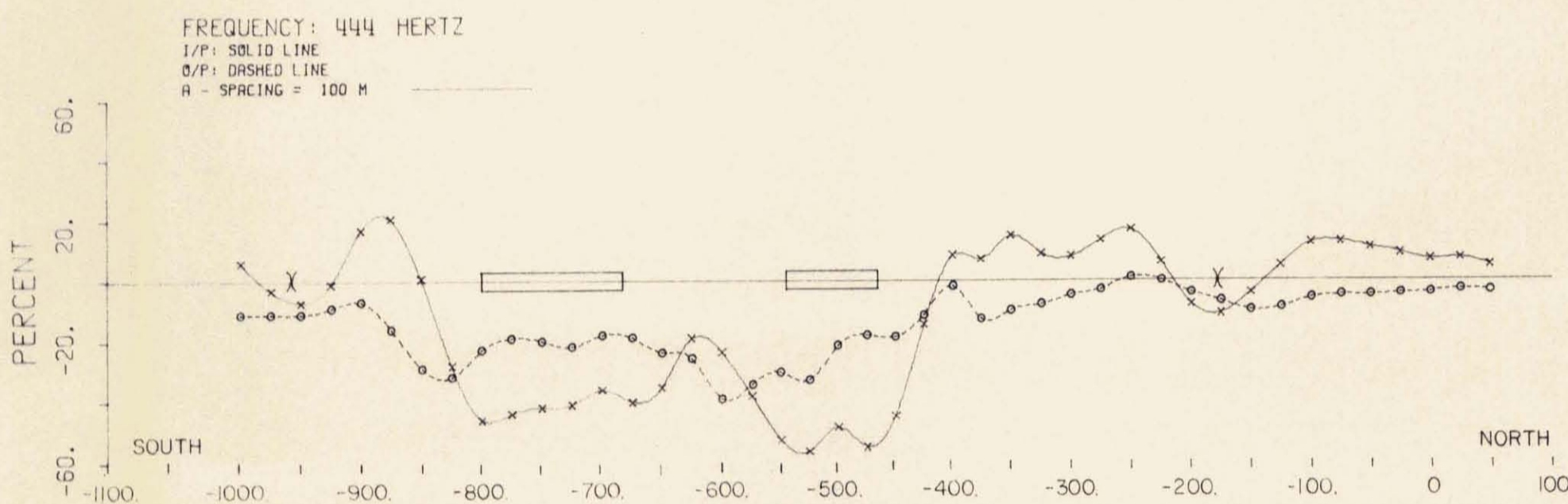
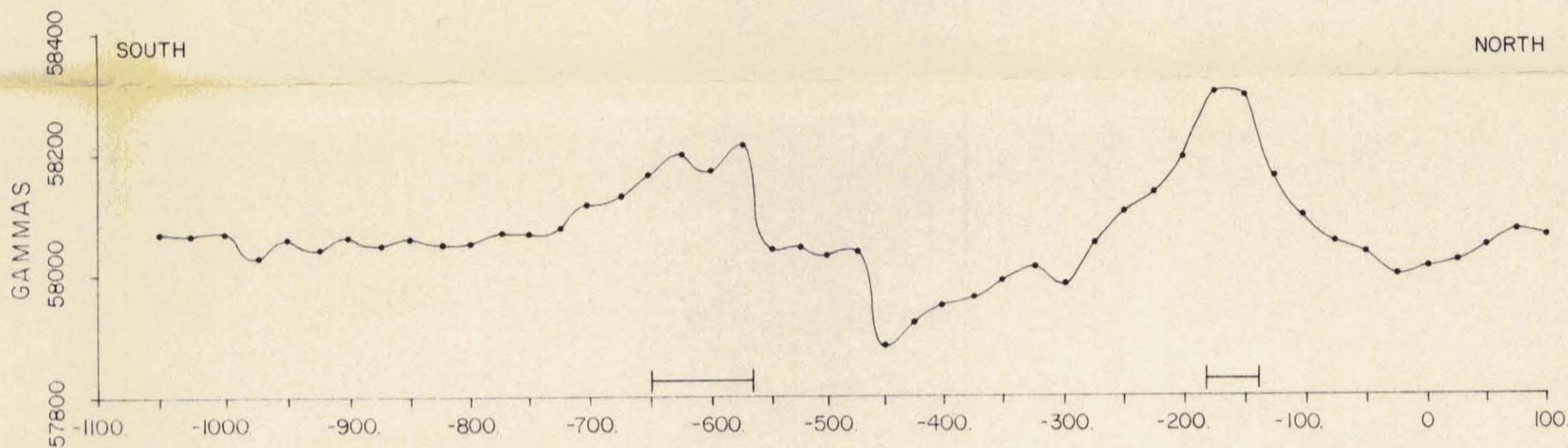
*Handwritten Signature*

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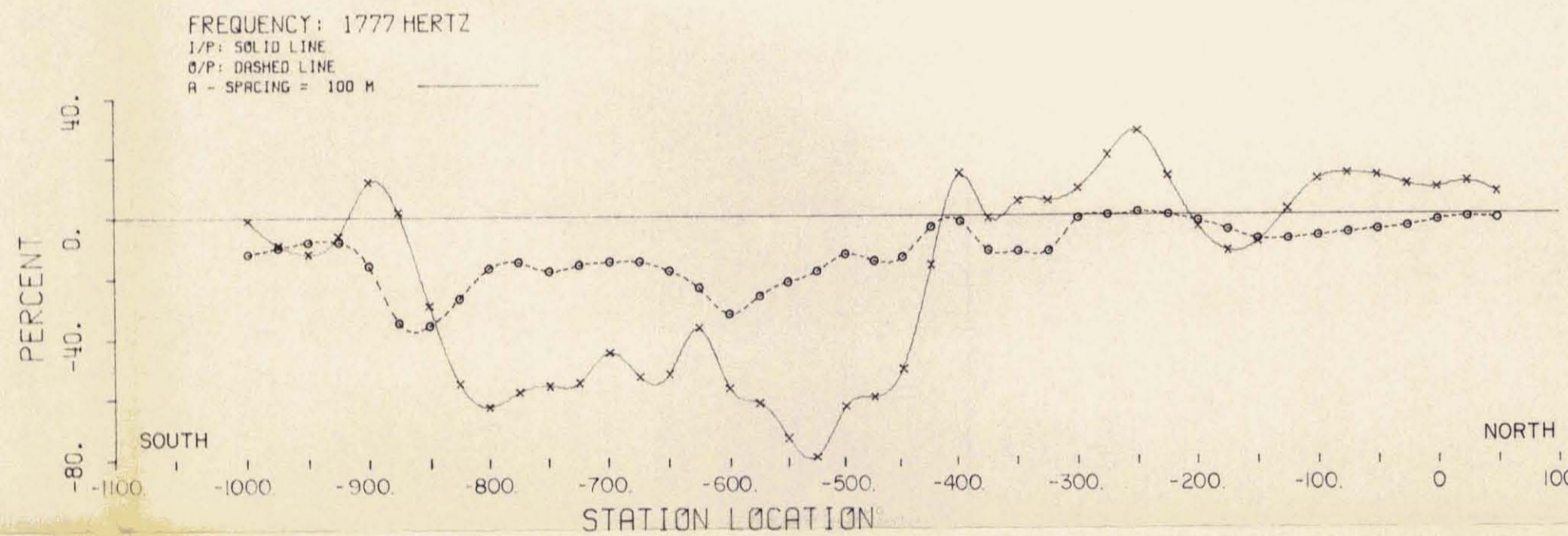
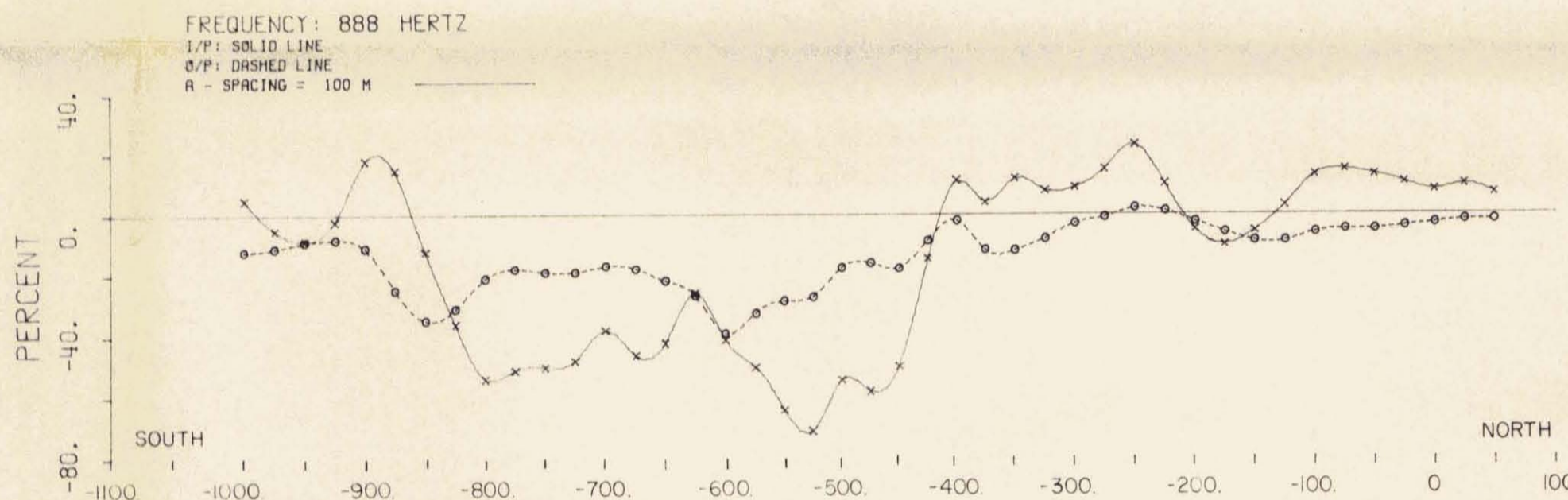
**SELWYN PROJECT**  
 GEOPHYSICAL SURVEY PROFILES  
 BUM CLAIMS  
 LINE BUM-OE

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scale: 1: 5000	n.t.s. 105 L-14	drawing no. 3 of 5

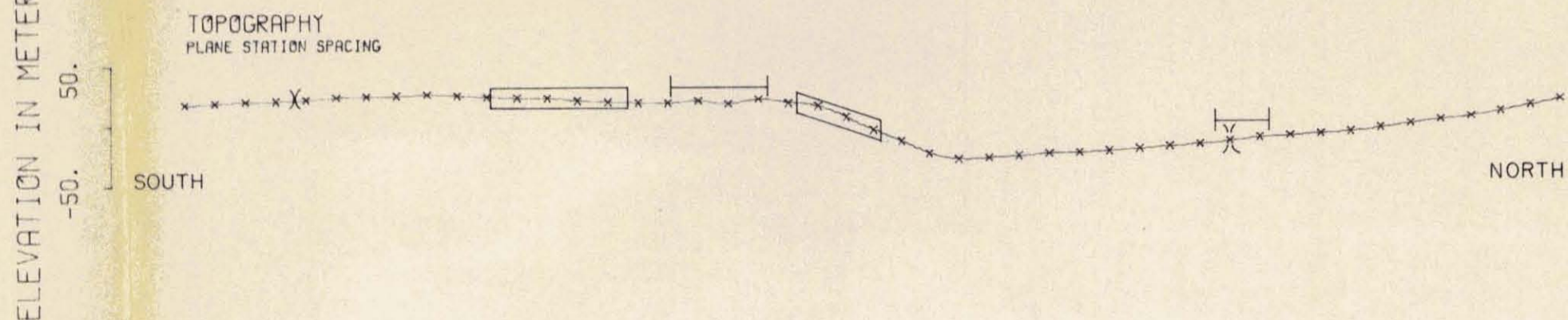
MAGNETOMETER



HORIZONTAL LOOP - EM



SELWYN PROJECT --LINE BUM 400 WEST



LEGEND

- |— Magnetic Anomaly
- x— } HLEM Conductor (I/P-444 Hz)
- } HLEM Conductor (I/P-444 Hz)

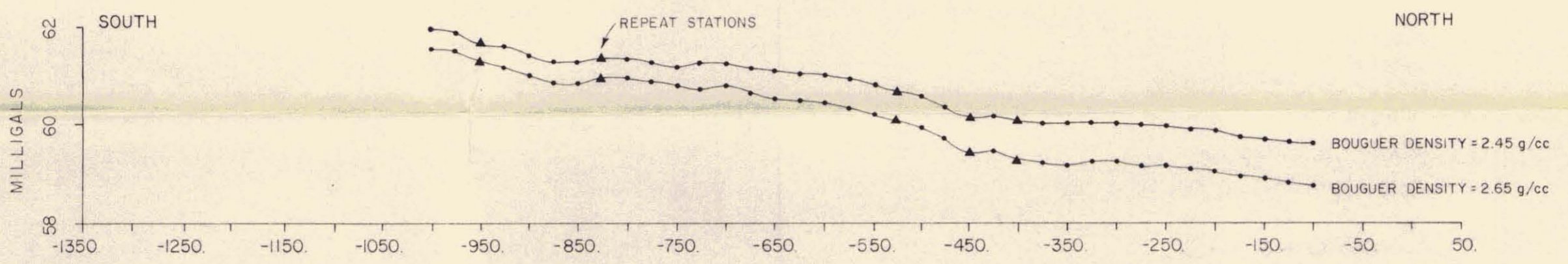
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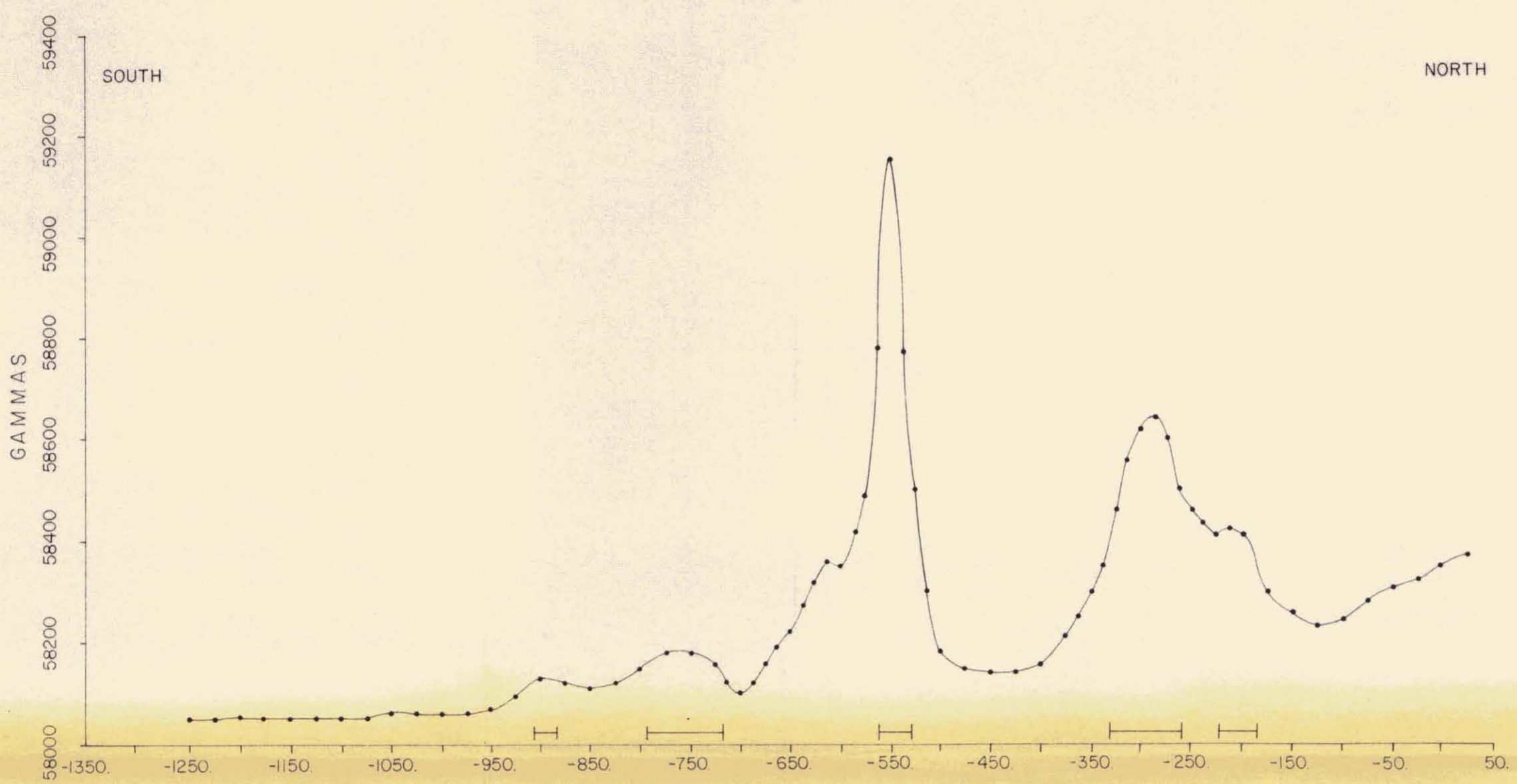
**SELWYN PROJECT**  
GEOPHYSICAL SURVEY PROFILES  
BUM CLAIMS  
LINE BUM-400W

geology by:	drawn by: H.H.	date: APR. 1982
scale: 1:5000	n.t.s. 105 L-14	drawing no. 4 of 5

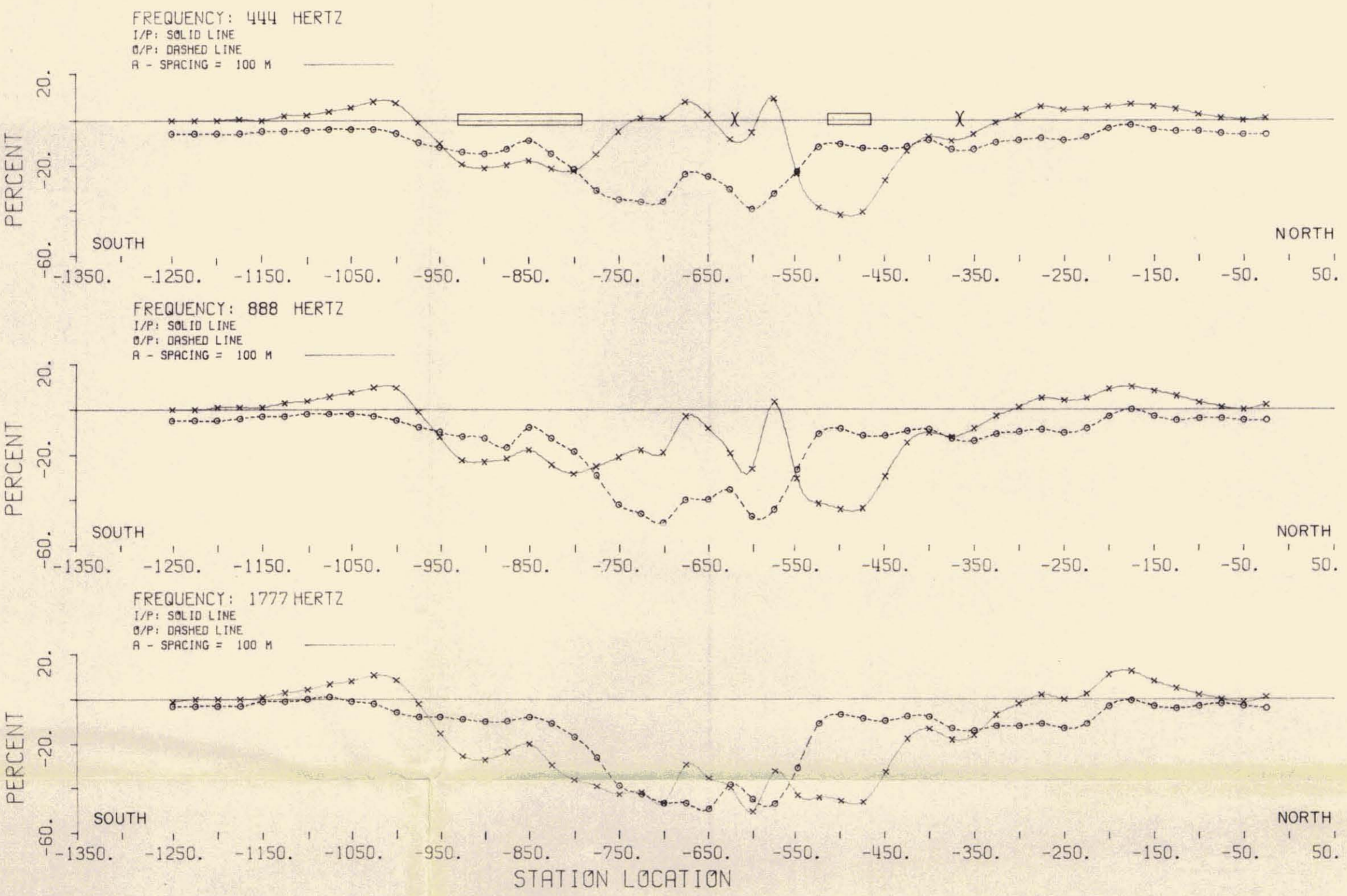
BOUGUER GRAVITY



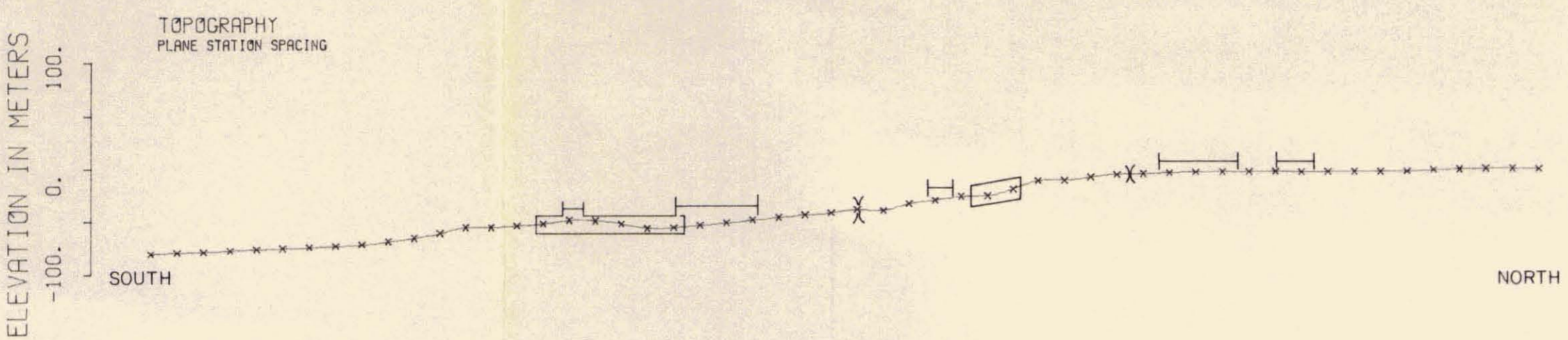
MAGNETOMETER



HORIZONTAL LOOP - EM



SELWYN PROJECT --LINE BUM 1600 EAST



LEGEND

- Magnetic Anomaly
- X } HLEM Conductor (I/P-444 Hz)
- } HLEM Conductor (I/P-444 Hz)

001033

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**SELWYN PROJECT**  
GEOPHYSICAL SURVEY PROFILES  
**BUM CLAIMS**  
**LINE BUM-1600 E**

geology by:	drawn by: H.H.	date: APR. 1982
scale: 1:5000	n.t.s. 105 L-14	drawing no. 5 of 5