

HELICOPTER MAGNETIC AND ELECTROMAGNETIC SURVEY

ON THE

VANHALL AND SHANNON CLAIMS

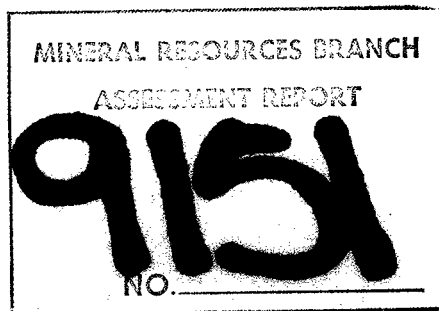
ALBERNIE MINING DIVISION

NTS 92 E/16, 92 F/13

49° 56 N 126° 00 W

FOR OWNER-OPERATOR

EASTERN LEASEHOLDS INC.



March 20, 1981
Vancouver, British Columbia

Apex Airborne Surveys Ltd.
Ronald F. Shel Drake, B.Sc.

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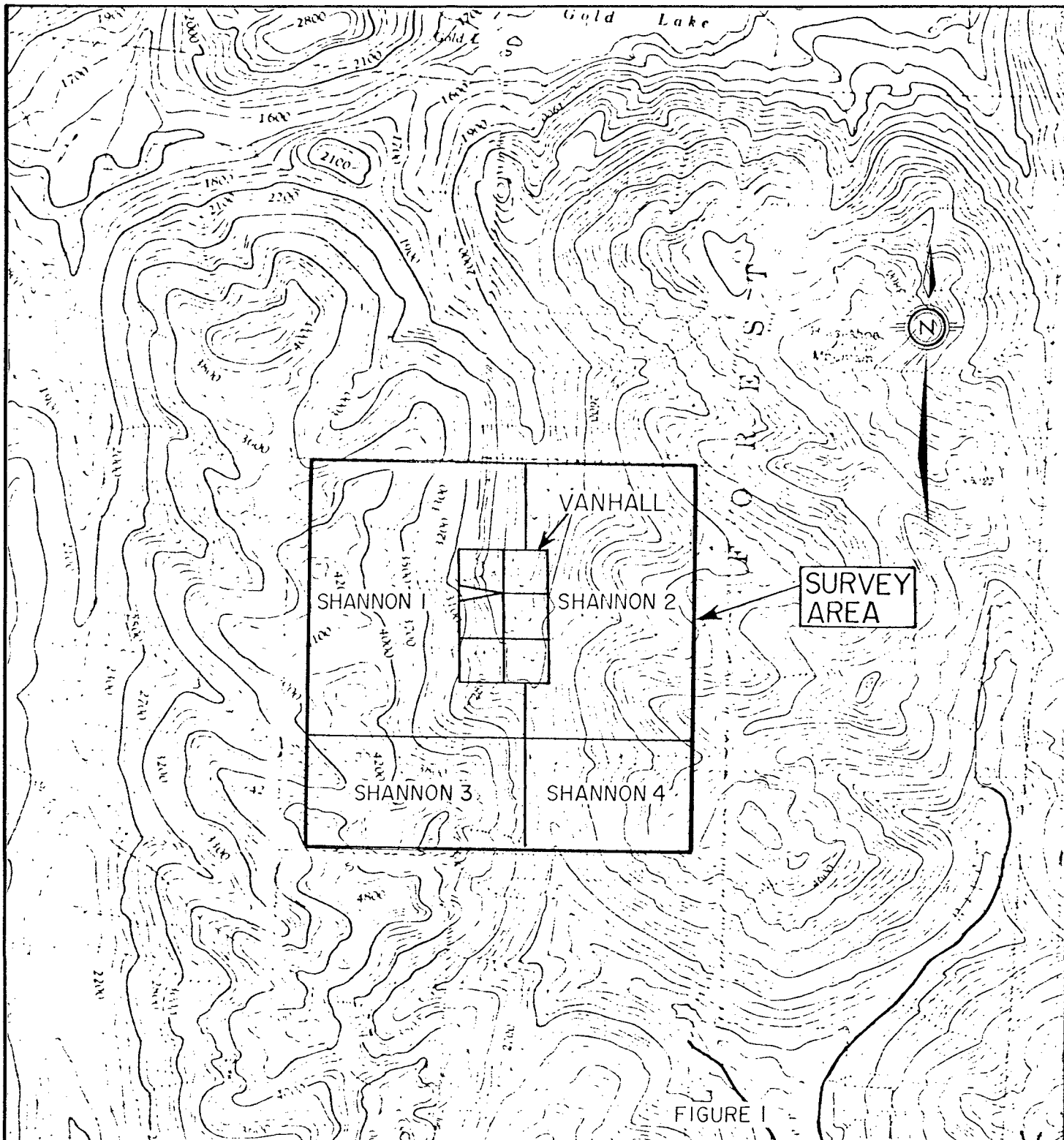
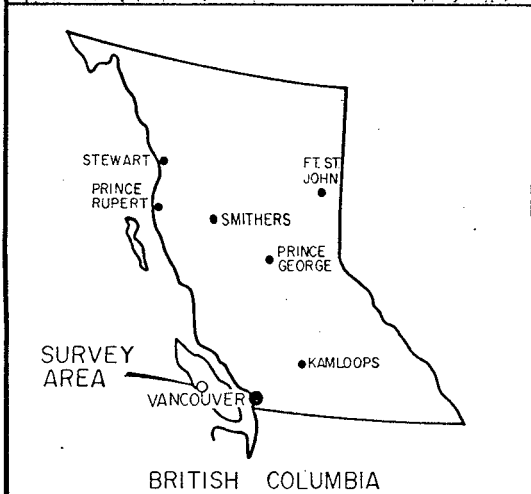


FIGURE I



CLAIMS AND SURVEY LOCATION MAP

THE VANHALL & SHANNON CLAIMS

ALBERNI MINING DIVISION

BRITISH COLUMBIA

N.T.S. 92E/16, 92F/13

Data taken from a report by A.F. Roberts P. Eng. dated June 16, 1960/Aug. 7, 1980

EASTERN LEASEHOLDS INC.

APEX AIRBORNE
SURVEYS LTD.

DATE:

SCALE 1" = 7/4 mile

1. SUMMARY

The helicopter borne electromagnetic and magnetic surveys have recorded no striking anomalies directly indicative of mineralization, however, one area has been identified from the magnetic data where further investigation is recommended.

2. INTRODUCTION

This report describes the results of a combined helicopter borne electromagnetic and magnetic survey flown March 17, 1981, over the Vanhall and Shannon Claims owned by Eastern Leaseholds Inc. of Vancouver, B. C.

The survey is comprised of 22 traverses totalling 88 km. The survey area was located in rugged terrain ranging in elevation from about 850 meters to 1,220 meters.

The purpose of the survey was to locate massive sulphide targets in an effort to identify the source of the reported geochemical anomalies*, and to pursue the possibility of a low-grade, large tonnage ore body in the area.

Aircraft positioning was controlled from a 1:10,000 scale photo mosaic map. A mean terrain clearance of 40 - 55 meters (for the E.M. - 33 sensor) was maintained where possible.

The Geonics 33-1 Electromagnetometer is a solid state system especially designed for helicopter transport.

* Roberts, A.F.

"Geochemical Report on the Vanhall Claims"
Albernie Mining Division, June 16, 1980.

It consists of two coaxial coils, one serving as a transmitter and the other as a receiver, which are mounted 6 meters apart, in a rigid "bird" with their axes horizontal and in the direction of flight. The bird is towed 30 meters below the helicopter by means of a suitable cable which also carries the electrical signals and power to and from the bird.

The system operates at 918 hertz. Changes in the alternating magnetic field at the receiver coil, caused by eddy currents in the subsurface rock, are recorded. These changes are expressed in ratios of the normal undistorted primary field. They are so small as to be expressed in parts per million or p.p.m.

The magnetometer used on this survey was a Geometrics 803. It is a total field nuclear precession instrument which measures the magnetic field strength with a sensitivity of one gamma. The sensor is toroidal and is positioned half way between the helicopter and the E.M. 33-1 bird.

Appendix I gives details of the geophysical equipment used for this survey. Appendix II describes the flight tape and flight path recovery process.

LOCATION AND ACCESS

The Vanhall and Shannon claims are located about 17 kms North of Gold River, British Columbia. The area is serviced by paved roads to Gold River. Access to the claims can be made by helicopter based at Gold River, or by logging roads to the south end of the property.

CLAIMS

<u>CLAIM</u>	<u>RECORD NUMBER</u>	<u>EXPIRY DATE</u>
Vanhall 1 - 16	11252 - 11257 incl.	July, 1980
Shannon 1 - 4	805 - 808 incl.	April, 1981

GEOLOGY

"The geology of the region consists of volcanics of the Karmutsen Formation, Upper Triassic. This formation apparently underlies the major portion of the claims, with little distortion. An outcrop of quartz diorite or granodiorite is located on the eastern boundary of the claims.

There are several diorite dikes located along Vanstone Creek, some showing shearing up to 2 cm in width, with gouge on the walls. The volcanics within the claim vary in composition from basalt to dacite and are usually porphoritic. Alteration consists of silicification and chloritization, with some epidote along Vanstone and the subsidiary creeks.

The contact with the Island Intrusions is reported to be about two miles to the southwest of the claims.

The rocks of the area are intensely fractured with some coarse brecciation."*

* part of the "Report on the Vanhall Claims" by A.F. Roberts. Feb. 4, 1980.

3. DATA PRESENTATION

PLATE I at a scale of 1:10,000 shows the contours of TOTAL MAGNETIC FIELD uncorrected for regional variation.

PLATE II is the FLIGHT LINE AND INTERPRETATION OVERLAY at a scale of 1:10,000.

The inflight profiles are included with this report and are included as Appendix IV.

4. GEOPHYSICAL RESPONSES

Both magnetic and electromagnetic maps can be interpreted to reveal areas underlain by different rock types and lineaments which could indicate contact or fault zones. Magnetic maps can reveal the location of orebodies which contain higher percentages of magnetite or pyrrhotite than the surrounding rocks.

Conductivity thickness is the "parameter-pair" measured with the electromagnetometer. Materials which conduct electronically, metallic sulphides and graphite, have higher conductivity-thickness values than electrolytic conductors such as clays (in overburden) and ion rich rivers or lakes, however there is considerable overlap.

In general, the electromagnetic responses encountered by an electromagnetic survey are of four main types.

1. Bedrock conductors: including formational graphitic responses and massive sulphides targets.
2. Surficial conductors: overburden and lake responses.

3. A combination of 1 and 2: when a conductive material overlays a bedrock conductor the response due to the bedrock layer is superimposed on the response of the overburden or lake response. Depending upon the conductivity contrasts, and the thickness of the overburden, some bedrock conductors can be recognized through the surficial layer.

4. "Negative" magnetic effects: when conductors are also magnetic the electromagnetic responses can become distorted. The distortion tends to decrease the inphase response, often reversing the sign of the E.M. anomaly. Apparent depths and conductivity-thickness products, in this case, are generally not representative.

5. DISCUSSIONS OF RESULTS

Although the electromagnetic survey recorded no anomalies typical of massive sulphide concentrations, the magnetic data indicate an area where investigation is warranted. (Pyritic sulphides have been mapped on the property; however, they are either electrically discontinuous or not in concentrations large enough to be detected with the E.M. - 33 electromagnetometer.)

In general the magnetic data indicate that the survey block is underlain with rocks of irregular magnetic susceptibility. In an environment such as this, where there is an apparent composite of acidic to basic volcanic rocks recognition of geologic features tends to be somewhat subjective.

Nonetheless, there is a magnetic feature that for the reasons listed below warrants investigation. The feature has been labelled "LINEAMENT" on the FLIGHT LINE AND INTERPRETATION OVERLAY.

This anomaly is noteworthy for the following reasons:

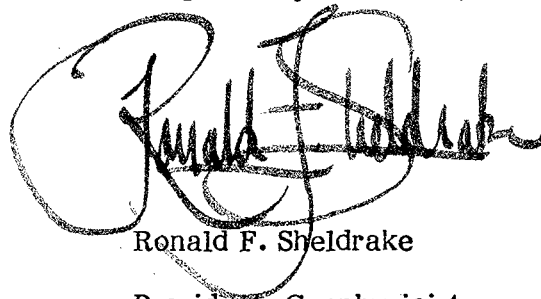
- 1) It shows uniformity over a strike of a kilometer or more.
- 2) It is contiguous and subparallel to an apparent structural weakness along Vanstone Creek.
- 3) It is coincident, in part, with a strong molybdenum geochemistry anomaly.

The magnetic feature may represent a zone of increased magnetite or pyrrhotite in a fault zone where the rocks have been enriched by the nearby intrusive rocks.

6. CONCLUSIONS AND RECOMMENDATIONS

The survey was successful in identifying a magnetic response that may be a pointer to sulphide mineralization. It is recommended that the anomaly be tested with five traverses using both inground magnetic and induced polarization equipment. A drill hole should be identifiable from that data.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Ronald F. Sheldrake". The signature is written in a cursive style with a large, looping initial "R".

Ronald F. Sheldrake

President, Geophysicist

BIBLIOGRAPHY

- Roberts, A.F., "Report on the Vanhall Claims"
Albernie Mining Division, Feb. 4, 1980
- Roberts, A.F., "Geochemical Report on the Vanhall Claims"
Albernie Mining Division, June 16, 1980

APPENDIX I

INSTRUMENTATION

Electromagnetic Instrument

Type: Helicopter mounted in-phase - quadrature instrument
manufactured by Geonics Limited, Toronto, Ontario.

Coils: The transmitting and receiving coils are co-axial 6 meters
apart in a towed bird 30 meters below the helicopter. The
coil axis is in the direction of travel.

Frequency: 918 Hz

Noise Level: Approximately 1/4 ppm (0.6 second time constant).

Magnetometer

Type: Proton precession model G803 manufactured by
Geometrics Corporation, Toronto.

Cycling Time: 1.0 second.

Sensing Head
Design: 5 inch diameter Toroid.

APPENDIX I (Continued)

Ancillary Equipment:

UDAS Digital Acquisition System with
recorder.

Geocam 35 mm Flight Path Camera
Bonzer Radio Altimeter

Geometrics G806 Magnetic Base Station
and recorder.

Helicopter:

Gazelle Helicopter supplied by Highwood Airservices
Ltd., Calgary, Alberta.

APPENDIX II

THE "ANALOGUE" CHART AND FLIGHT PATH RECOVERY

The flight tape is a roll of chart paper which moves through the digital printer at a speed of 5.48 cm per minute.

The digital printer chart facilitates the use of a full alpha-numeric system. All "header" sensitivity and fiducial information is printed automatically.

The chart is 520 dots wide as follows:

DOTS:

0 - 100	magnetometer fine - 2 gammas per dot.
100 - 180	magnetometer coarse - 25 gammas per dot.
180 - 320	quadrature 0.6 sec T.C. 1/4 ppm per dot.
320 - 460	in phase 0.6 sec T.C. 1/4 ppm per dot.
460 - 470	powerline monitor
460 - 470	spherics monitor
480 - 520	altimeter 10 feet per dot (0 - 400 feet)

The helicopter flight path is recovered from 35 mm film, which is exposed at 2.0 second intervals during the flight traverses. After processing and anotating, recognizable fiducials are pin-pointed on the photomosaic map.

FLIGHT LOG

Project EASTERN LEASEHOLDS

Flt. No. 1

Area Gold River

Date March 17, 1981

IN	Start FID	End FID	TIME	PRODUCTION		COMMENTS
				End FID	Start FID	
-	0	122				
CAL	123	136	11:55			- calibrate
11	137	229				- labelled CAL
12	230	310				
13	311	412				
14	413	526				
15	527	618				
16	619	706				
17	707	822				
18	823	918				
19	919	1040				
20	1041	1144				
CAL	1145	1157				- calibrate
10	1158	1259				
9	1260	1344				
8	1345	1456				
7	1457	1550				
6	1551	1640				
5	1641	1708				
4	1709	1815				
3	1816	1914				
2	1915	2037				
1	2038	2139				
TIE/1	2140	2221				
TIE/2	2222	2296				
CAL	2297	2315	13:15			- calibrate

HELICOPTER
HEIGHT

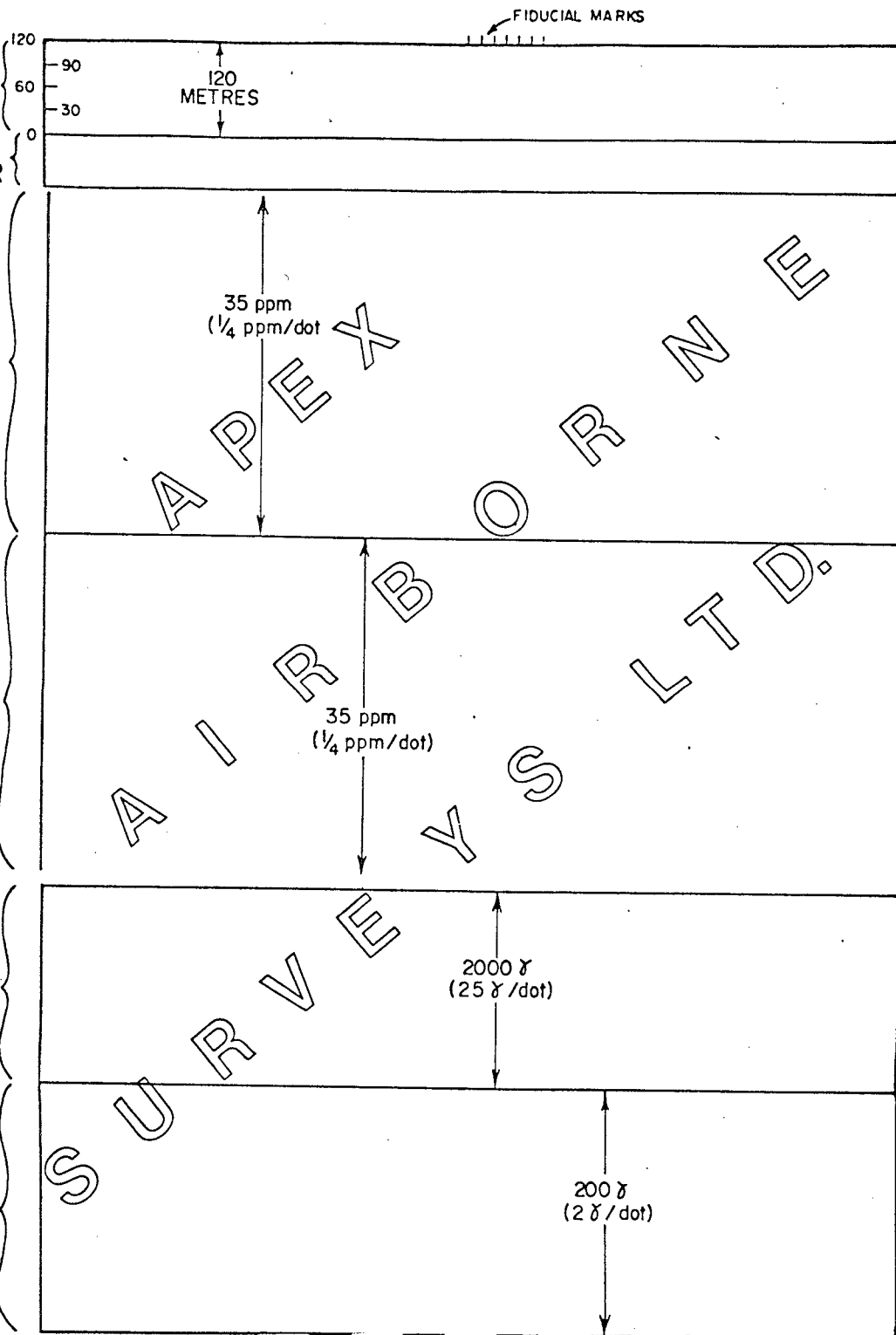
60 HRTZ AND
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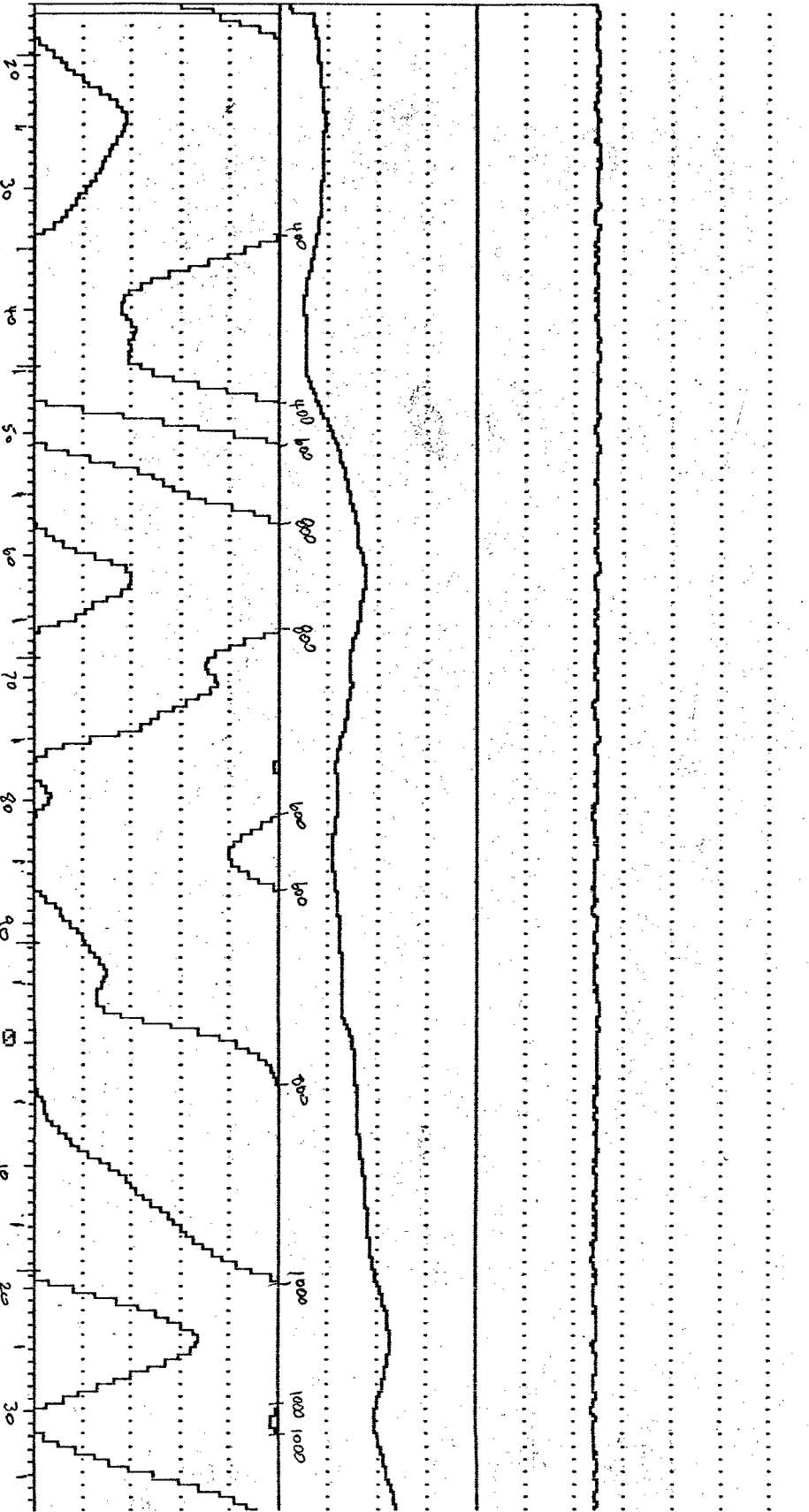
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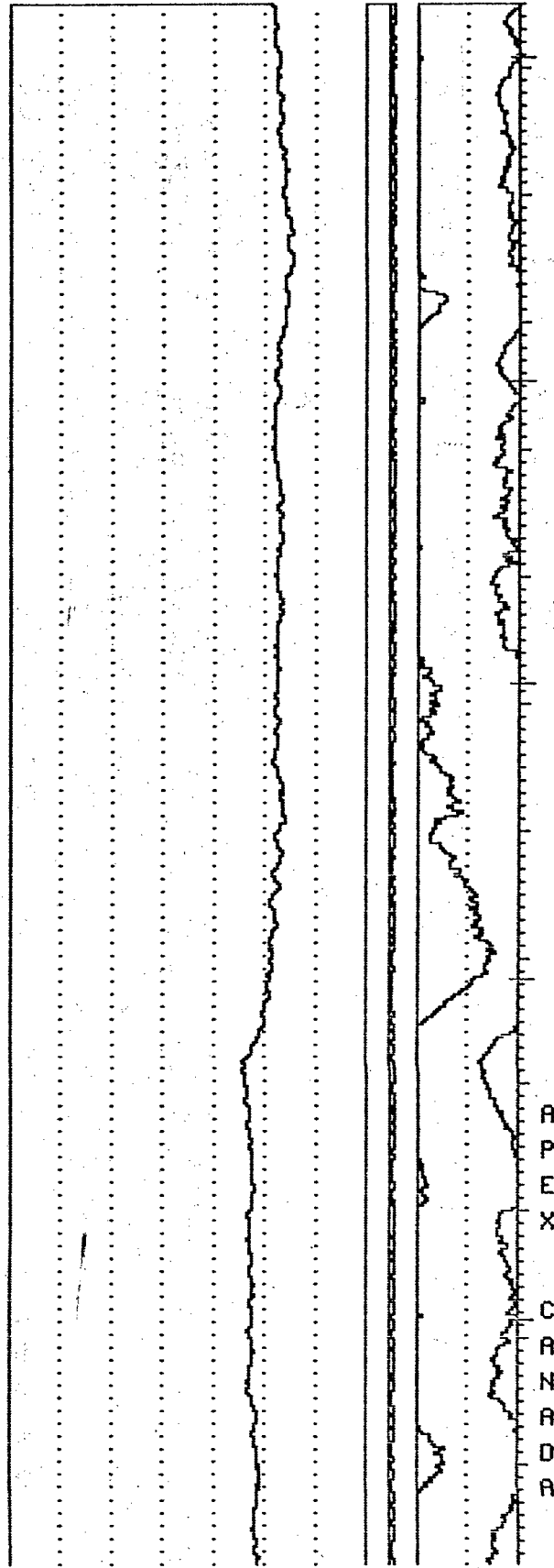


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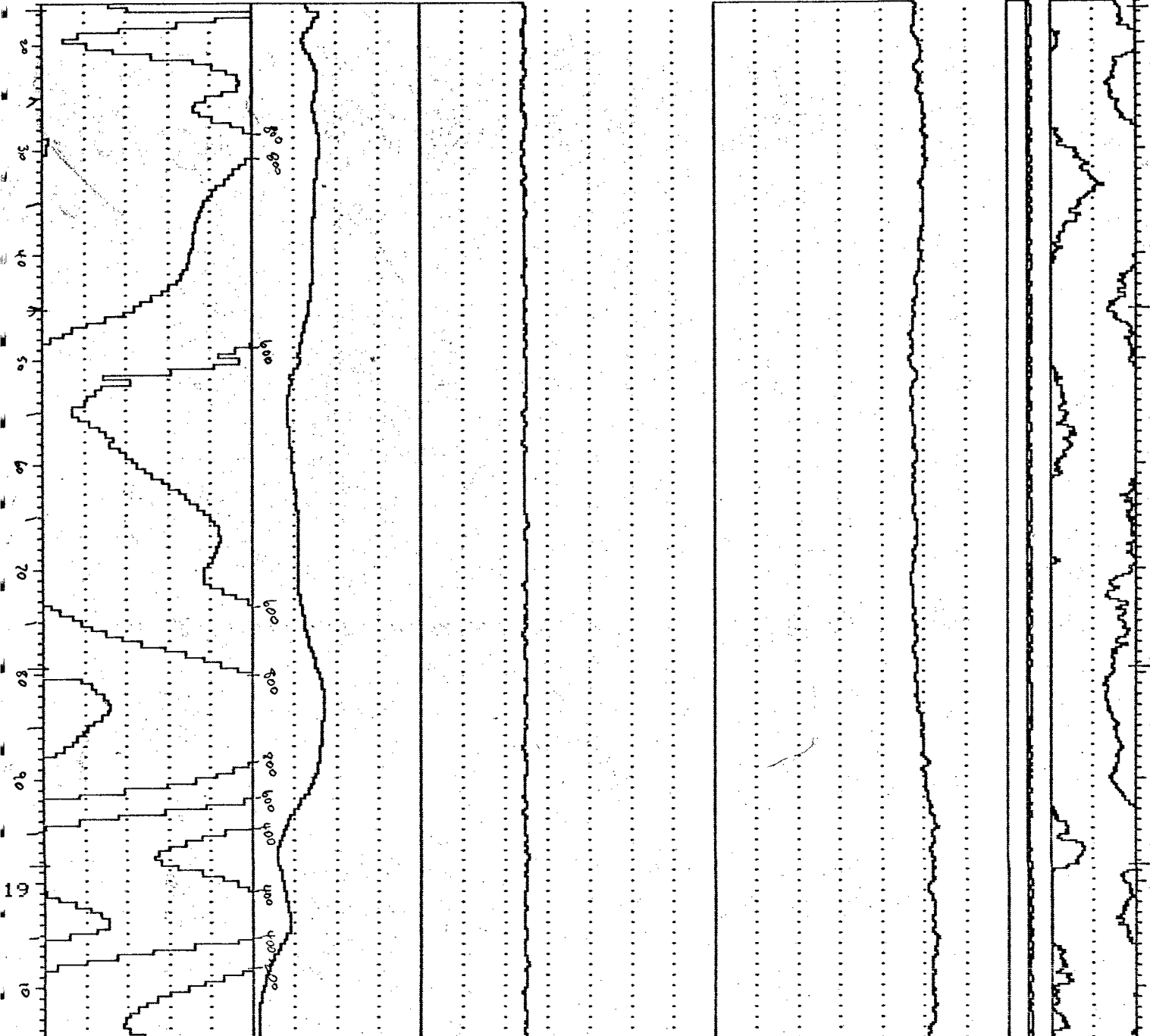


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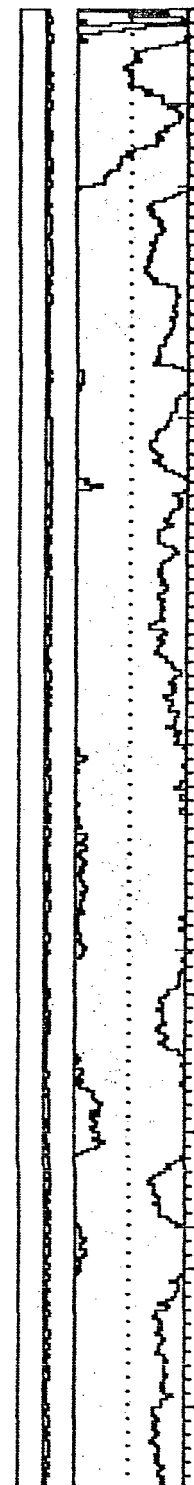
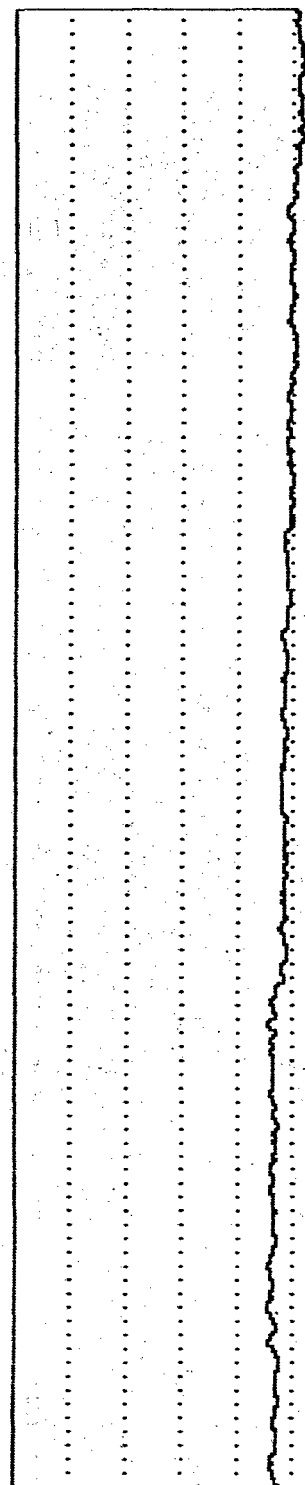
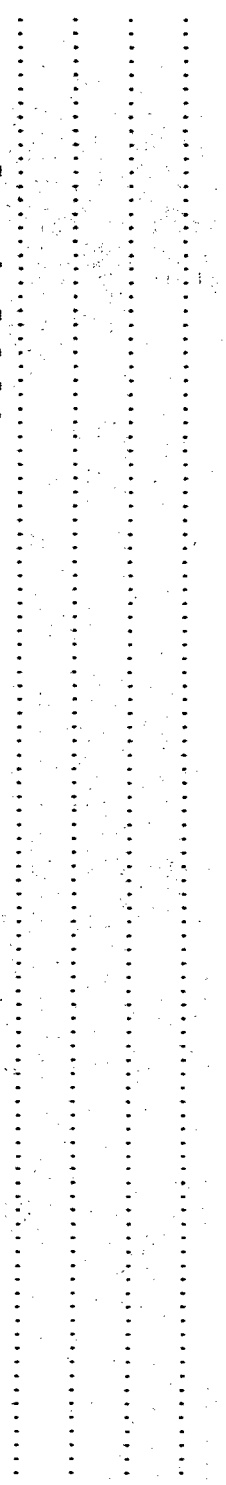
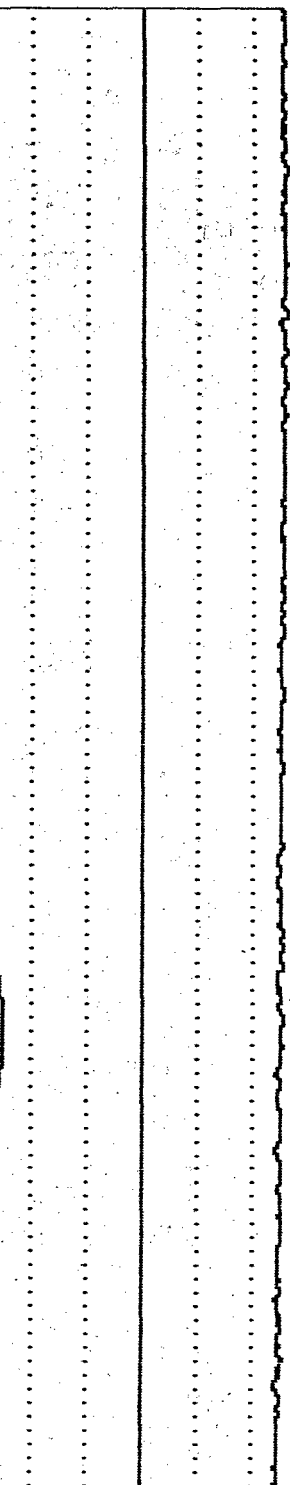
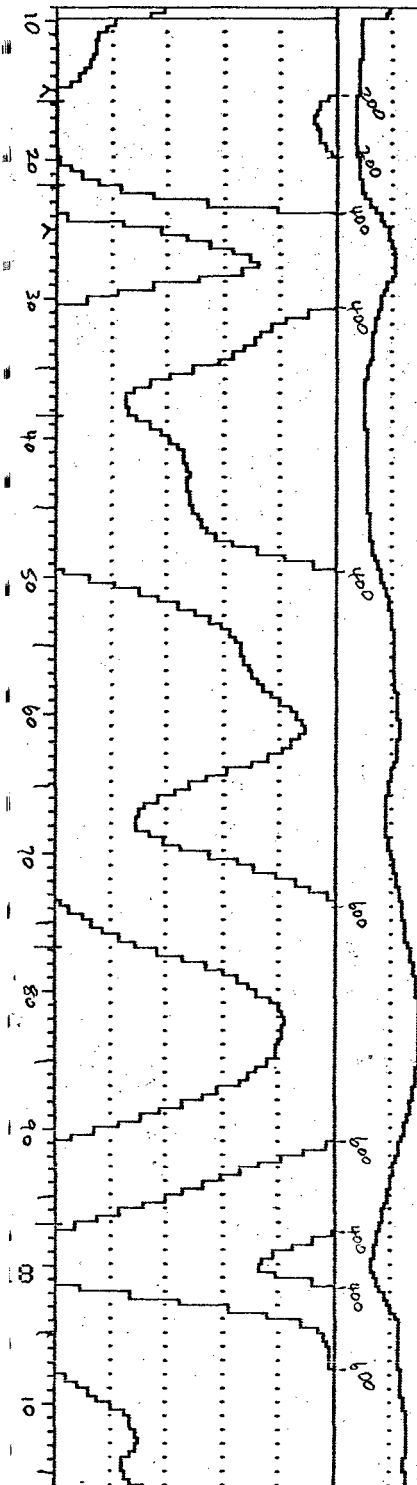
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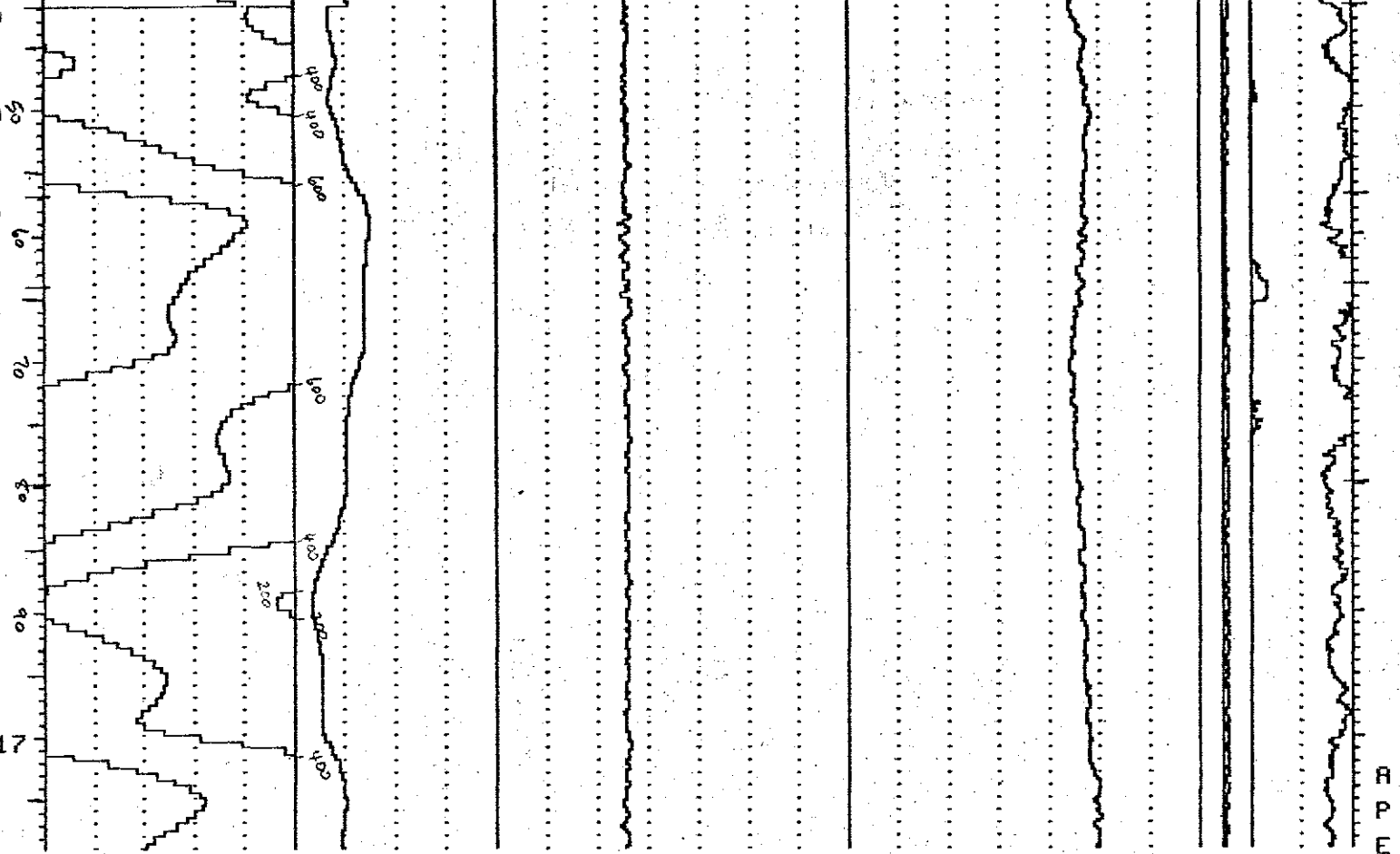
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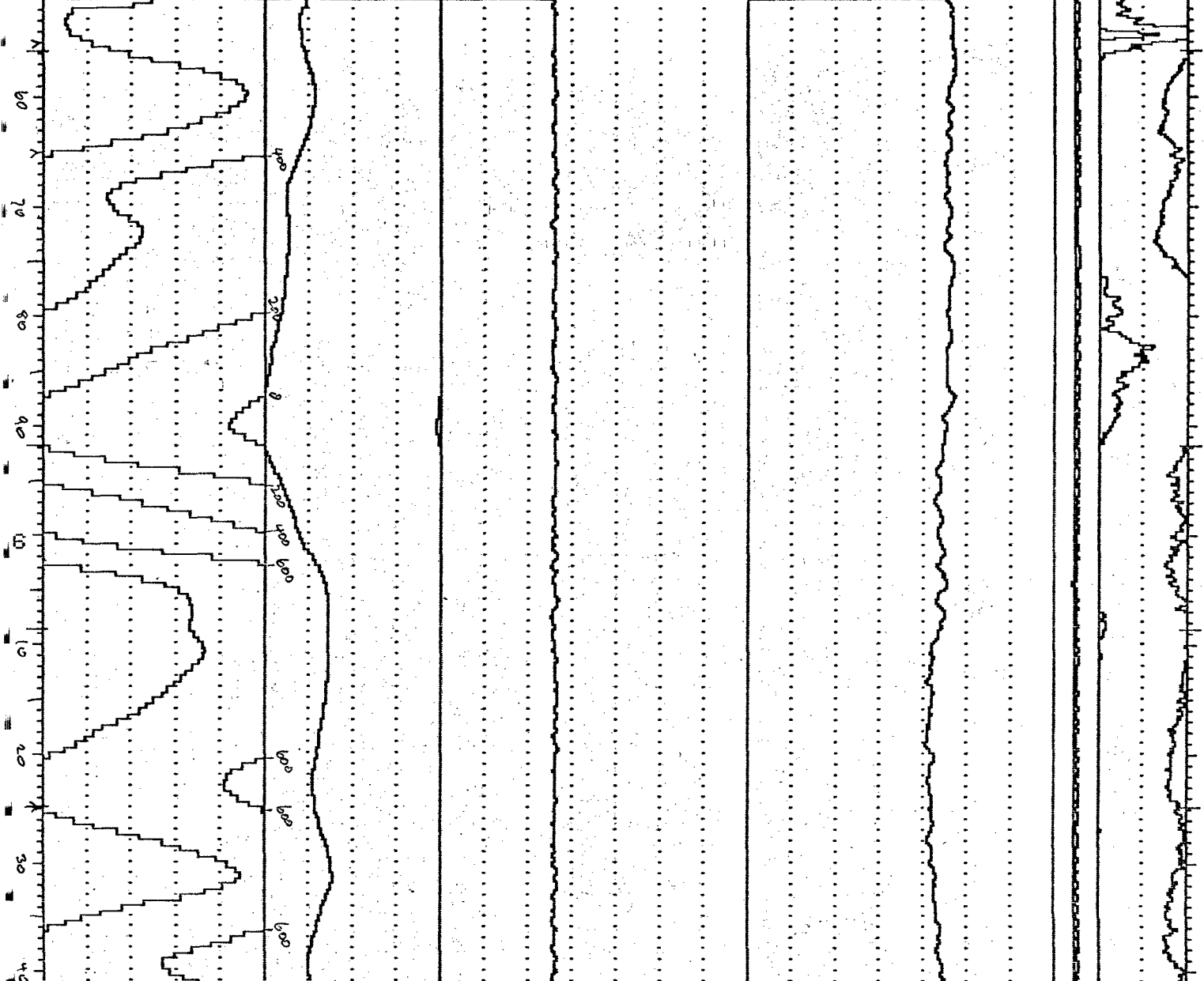
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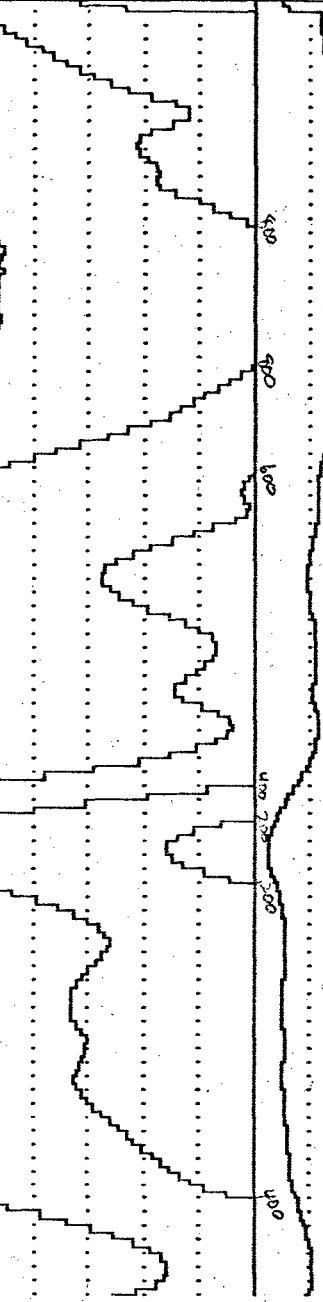
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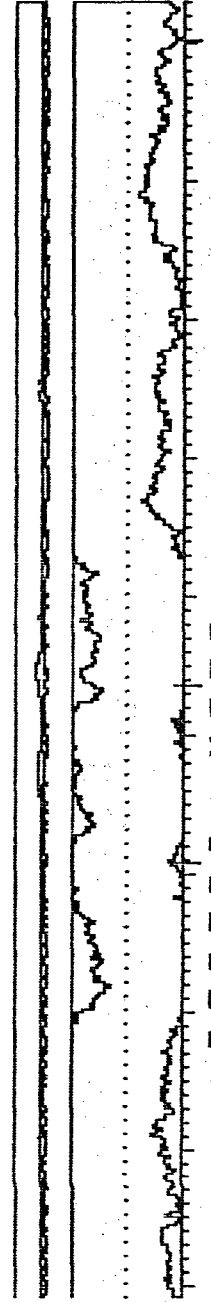
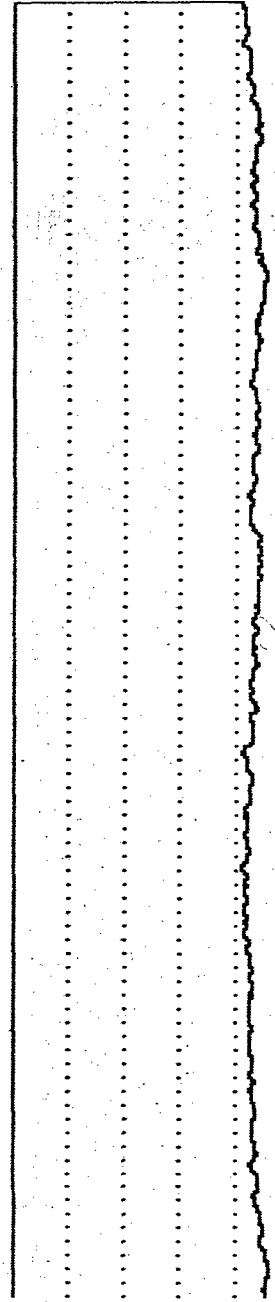


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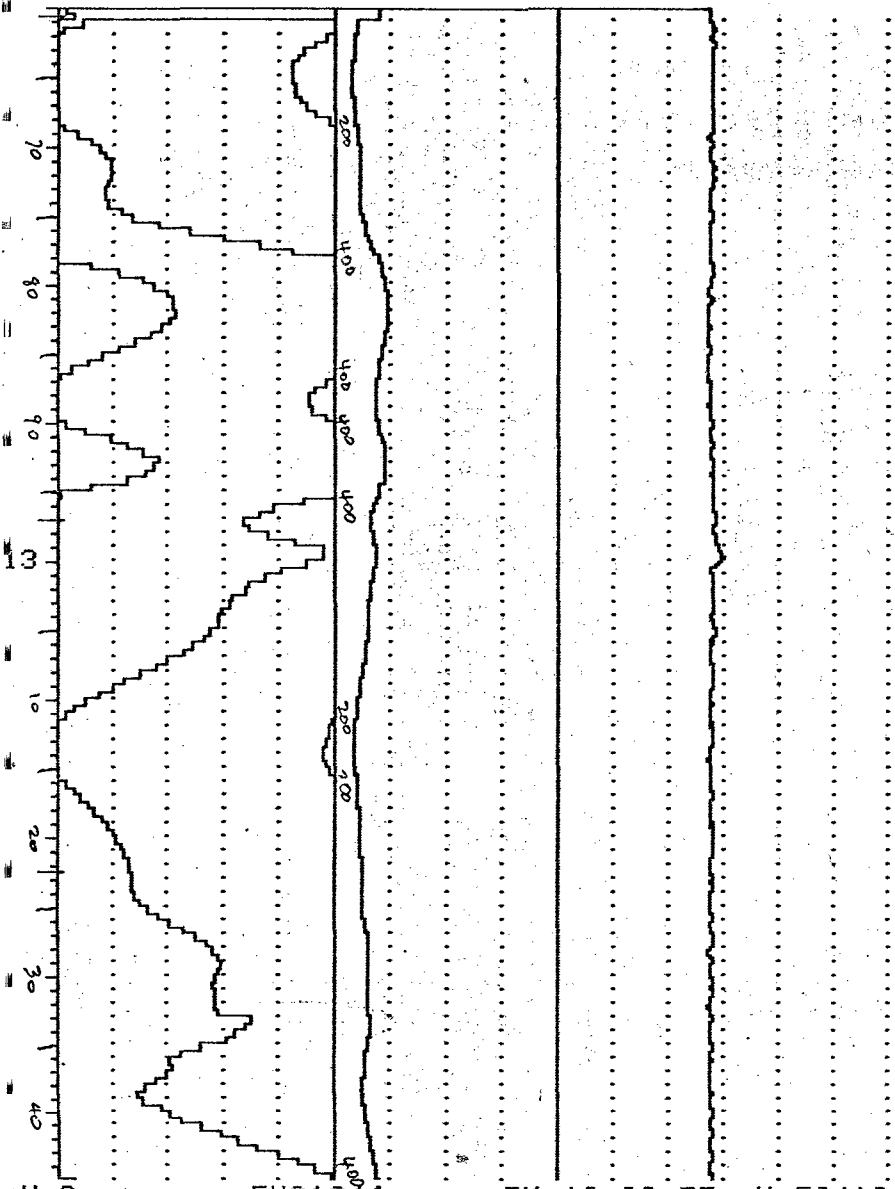
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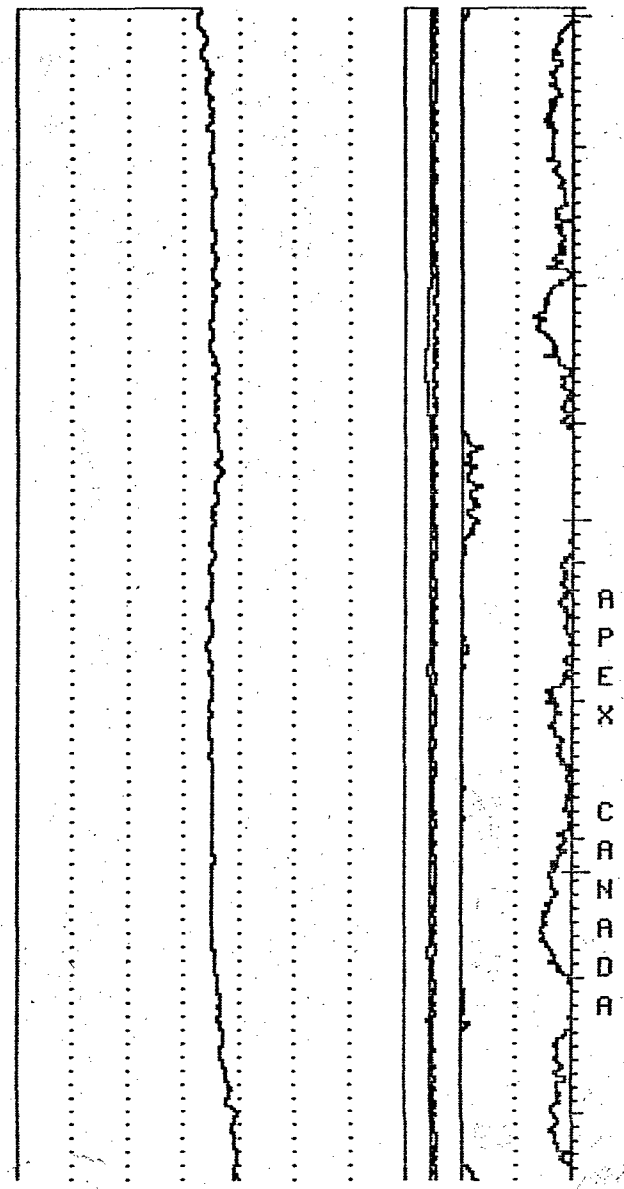


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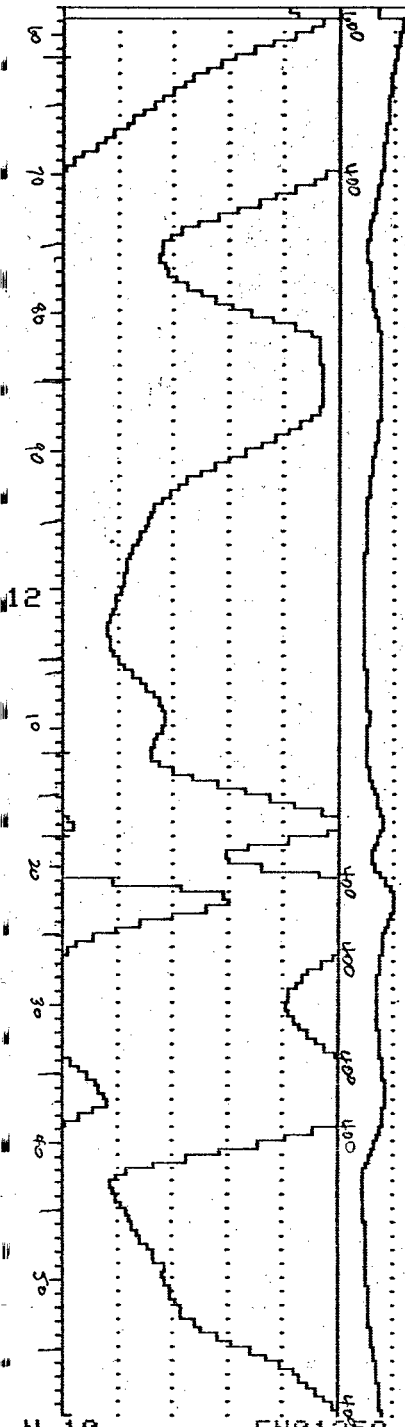
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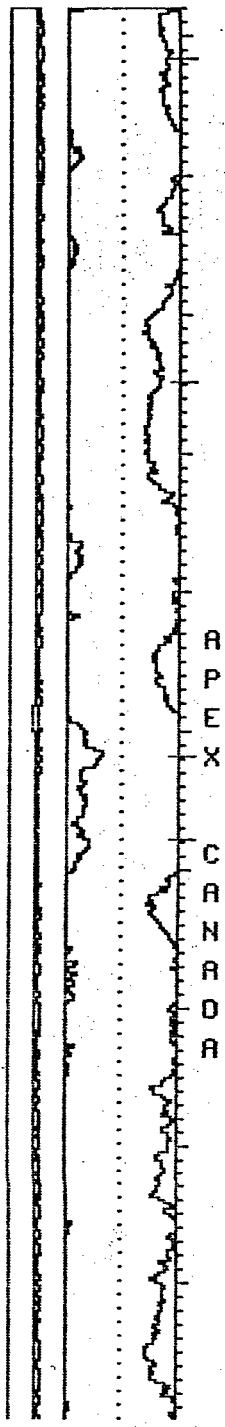
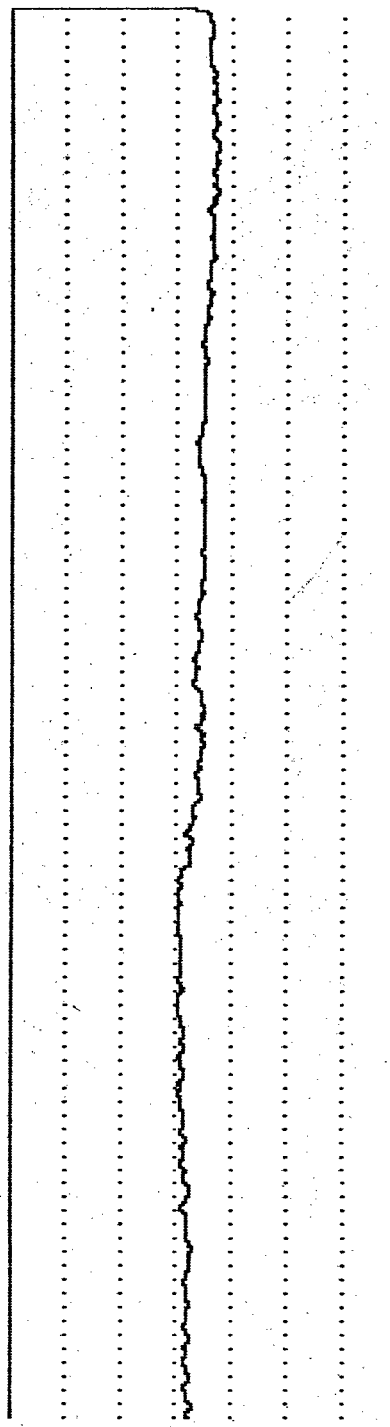
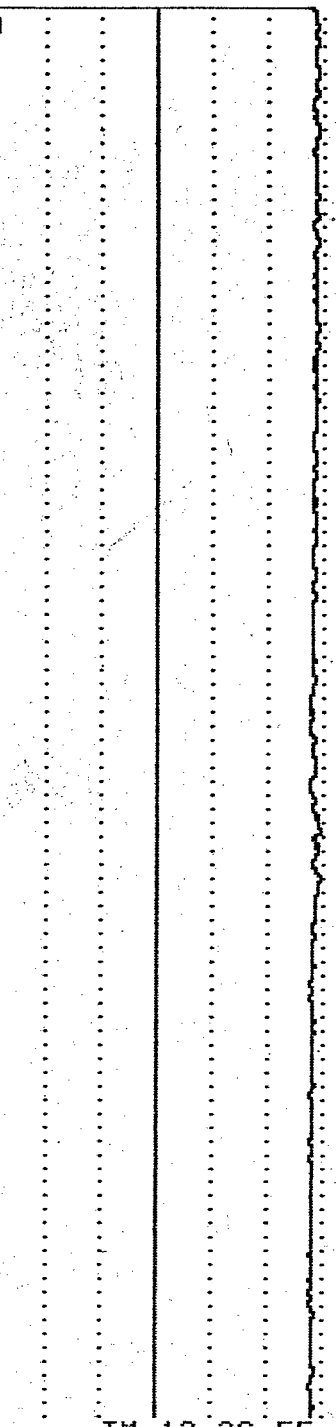


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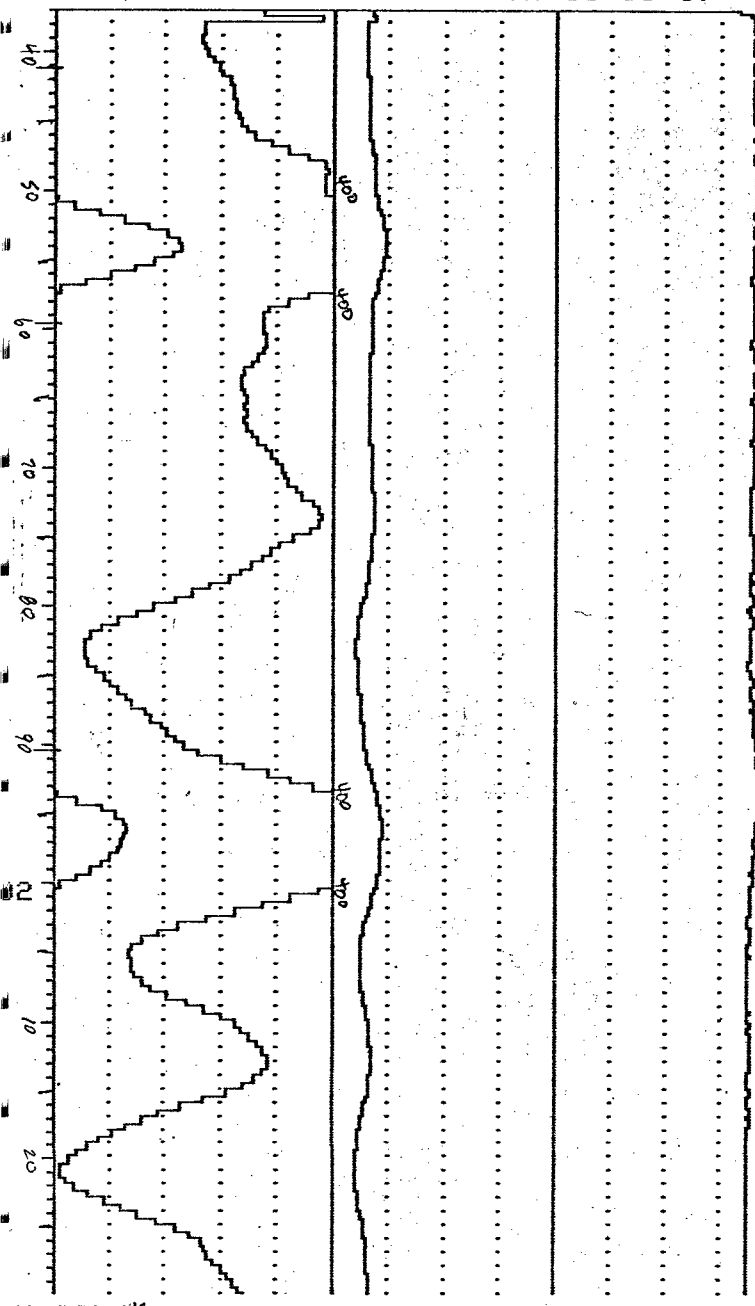


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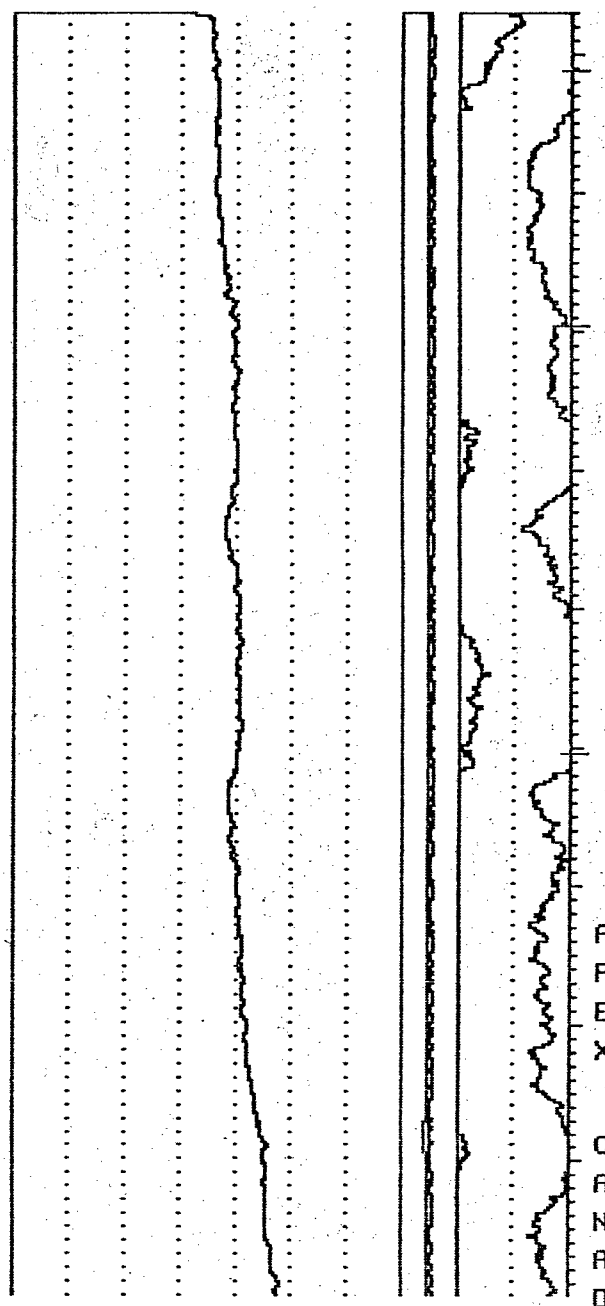


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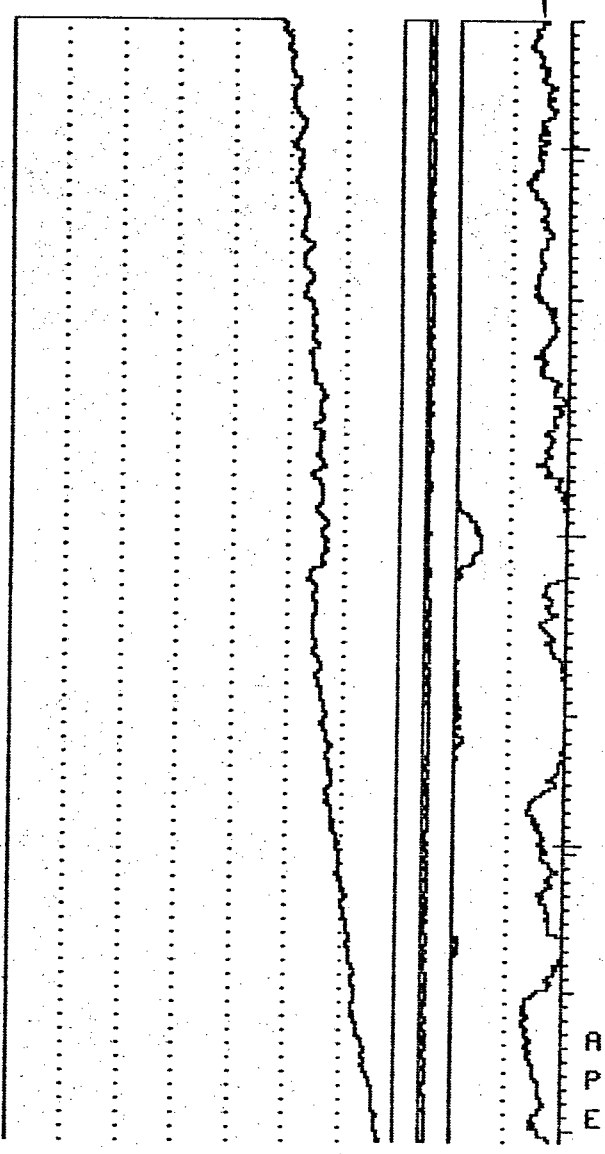
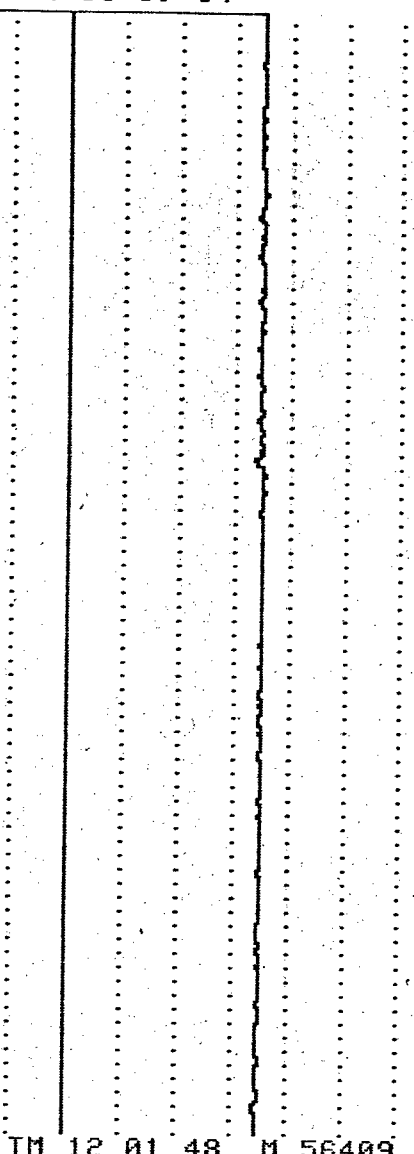
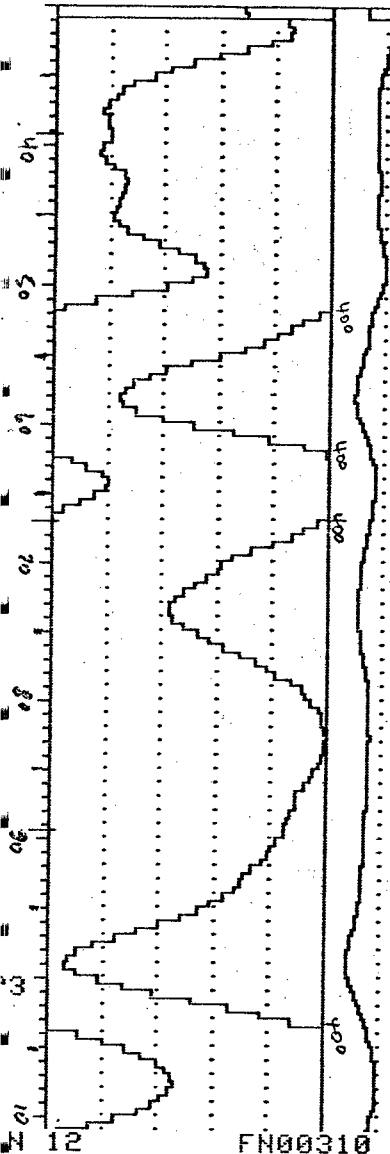
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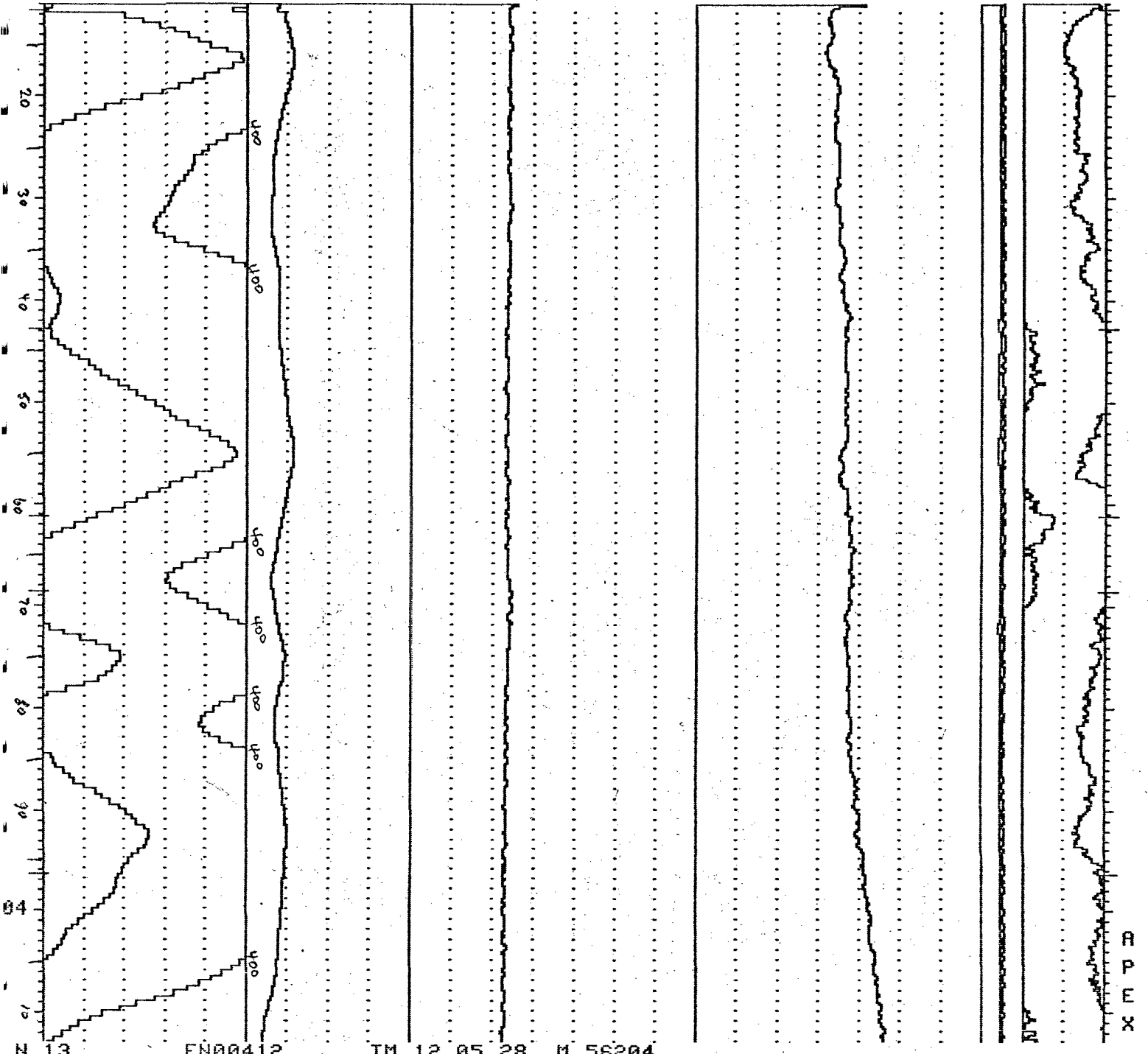
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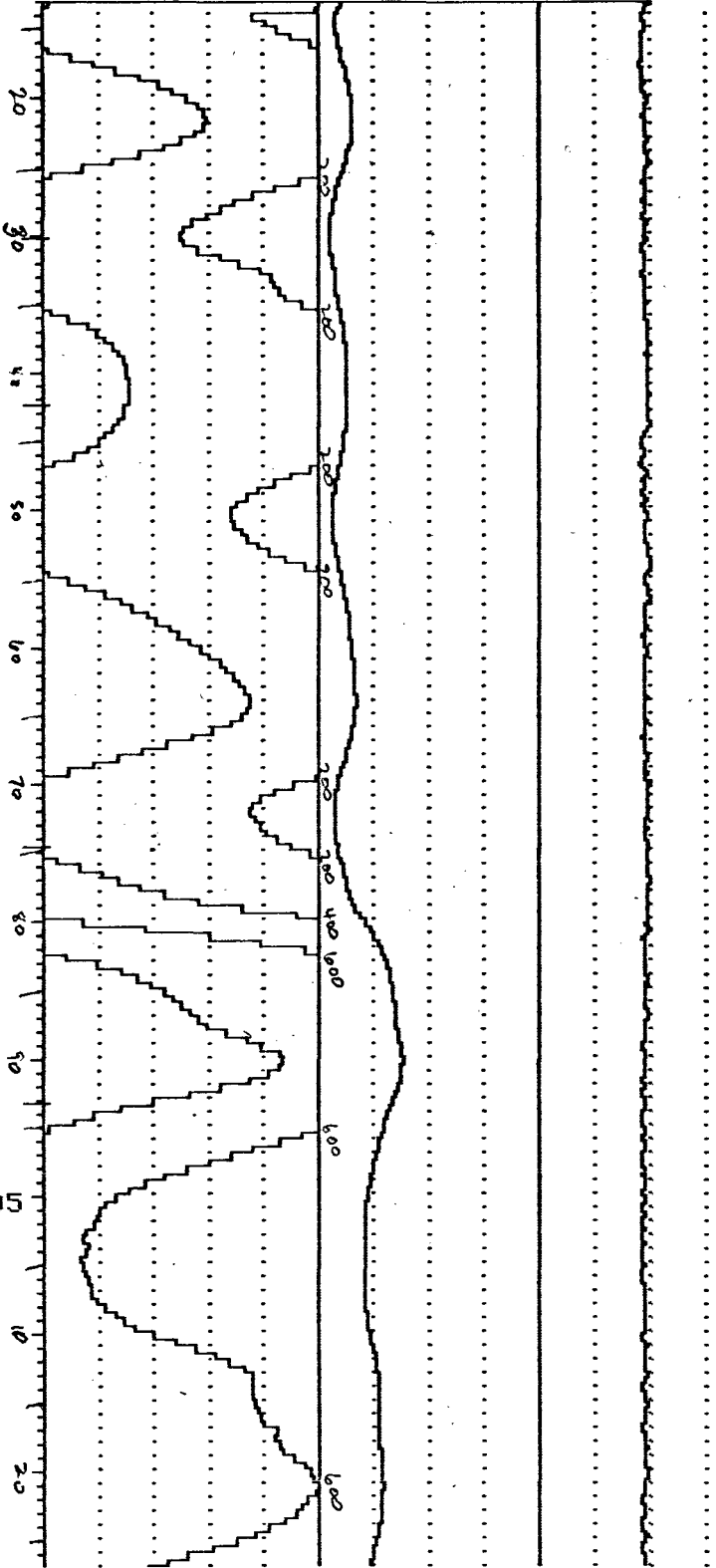
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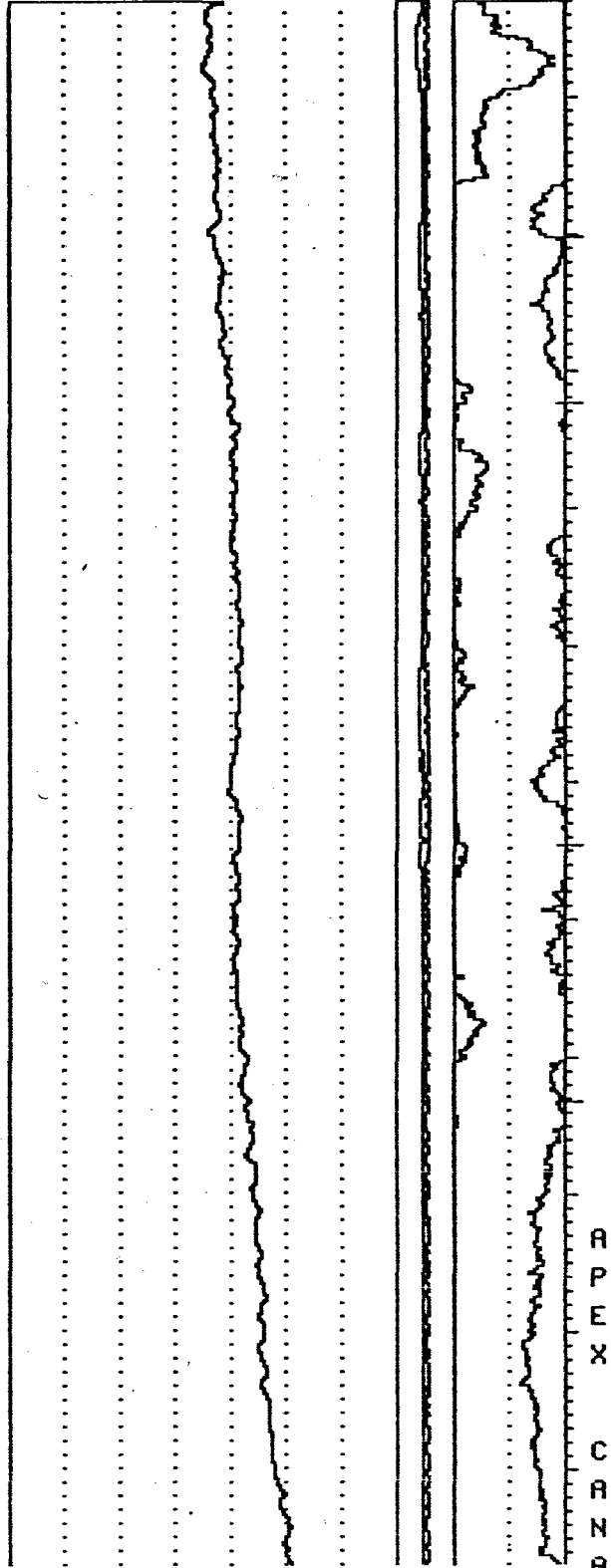


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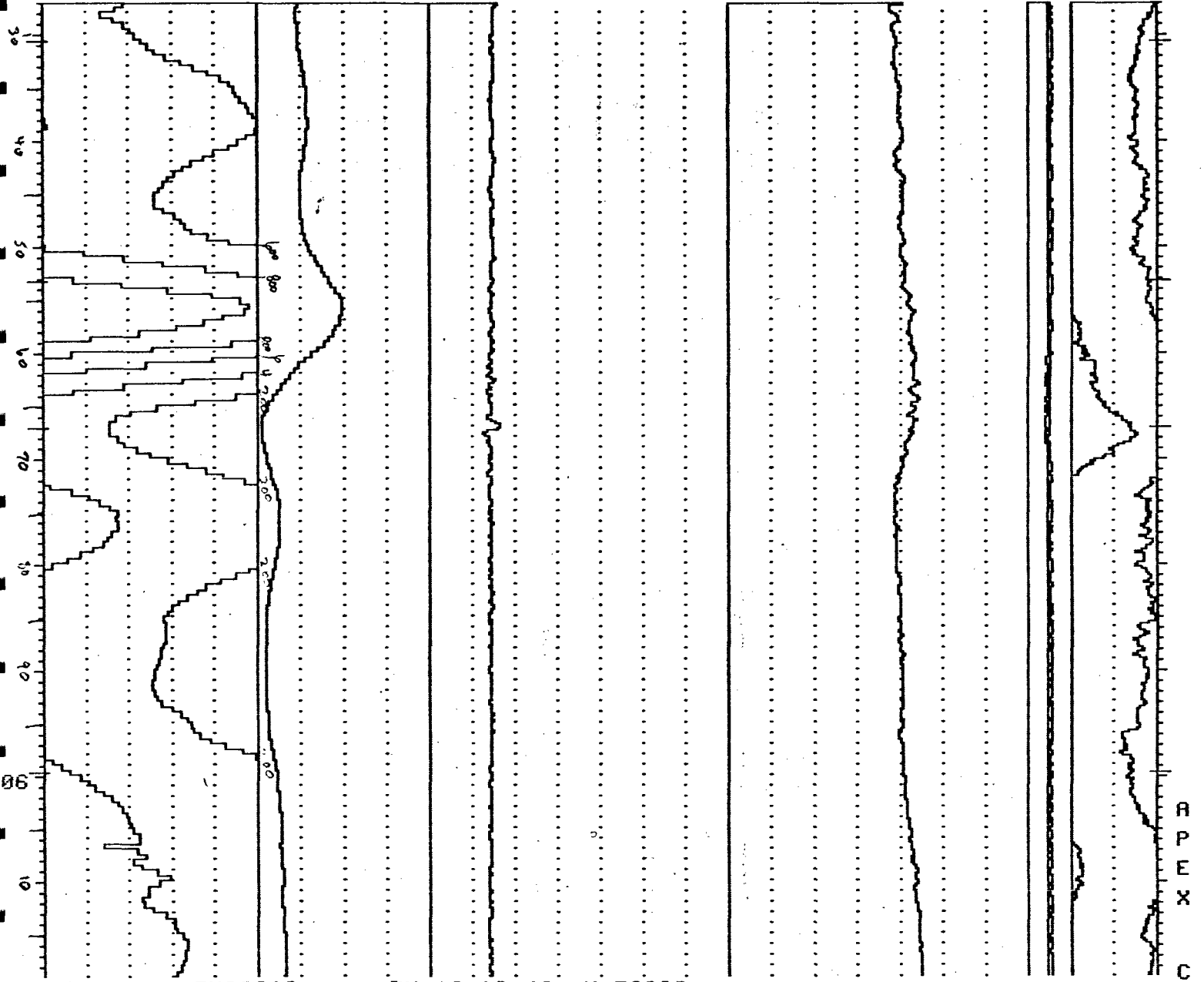


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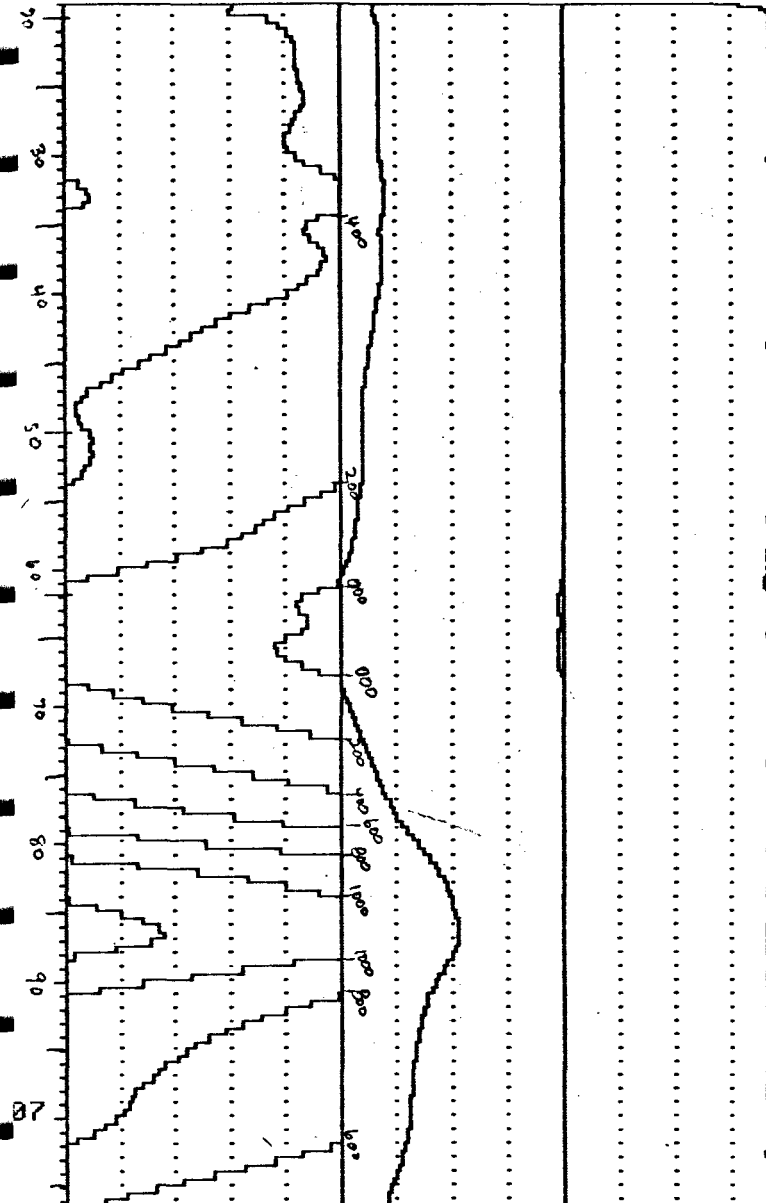
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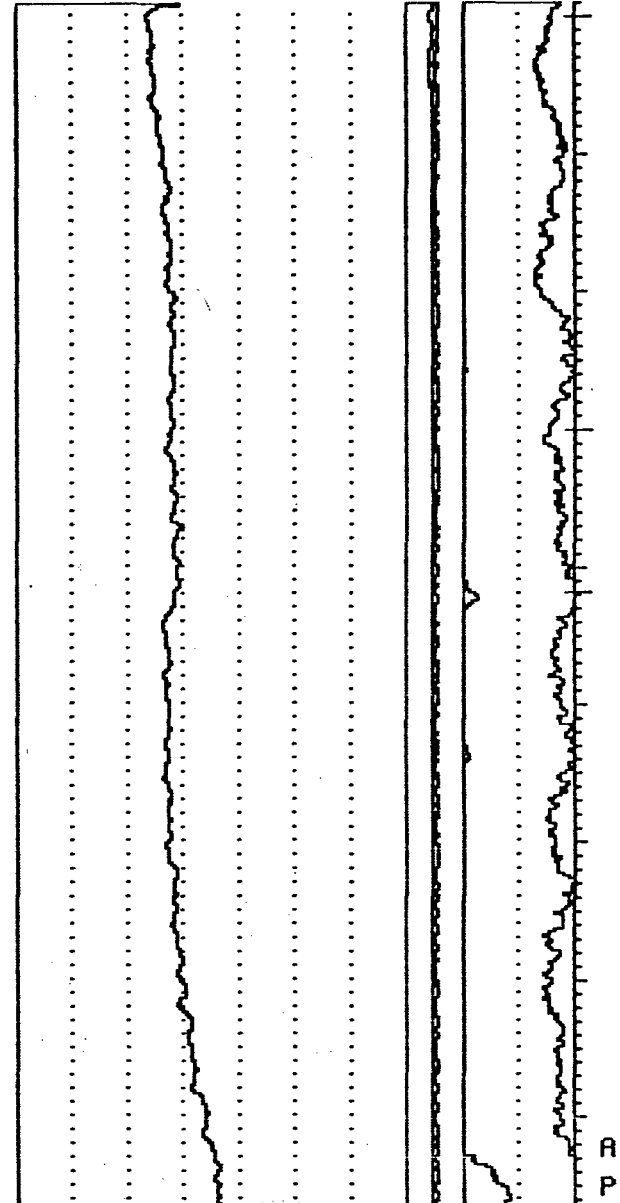


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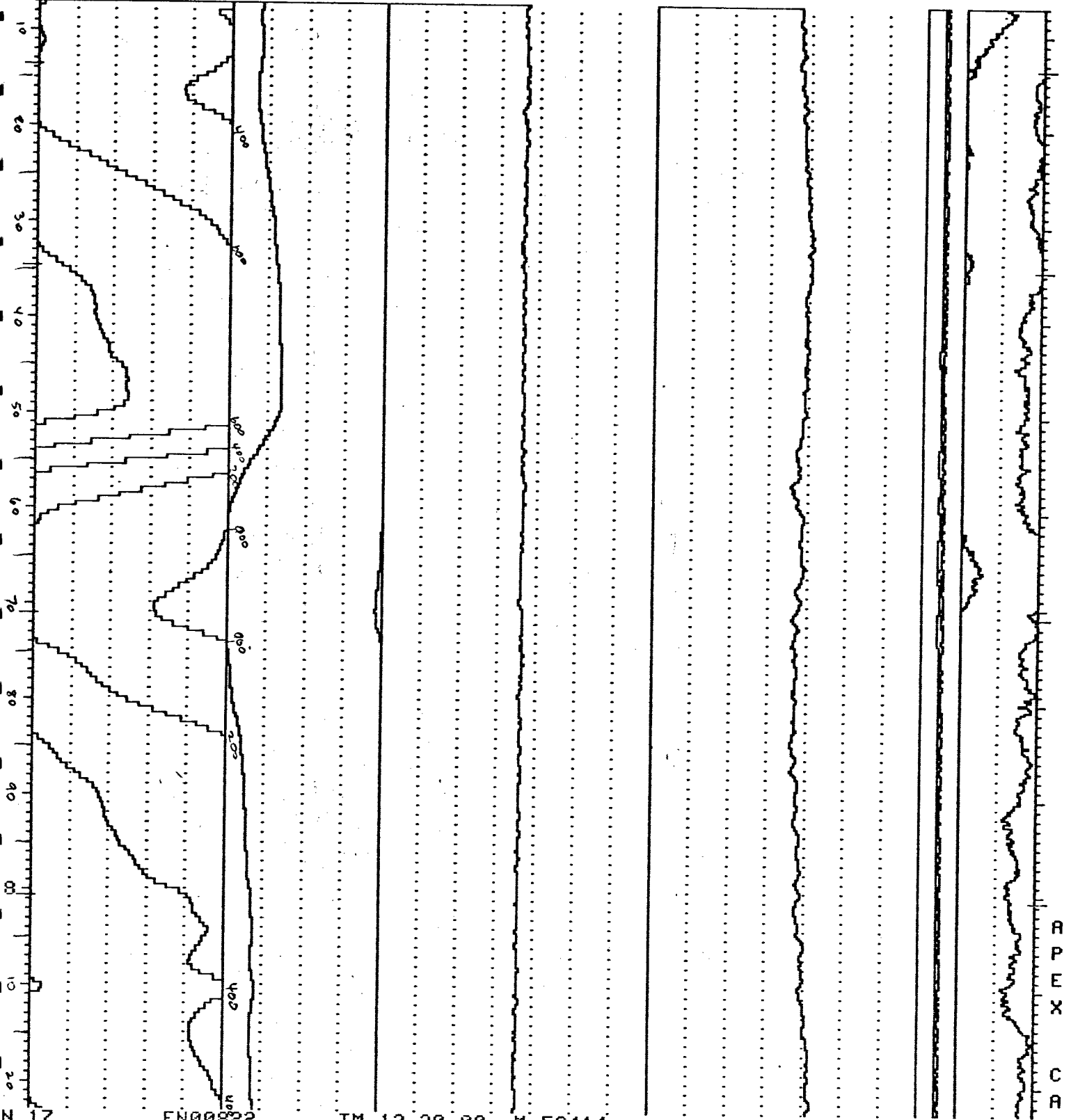


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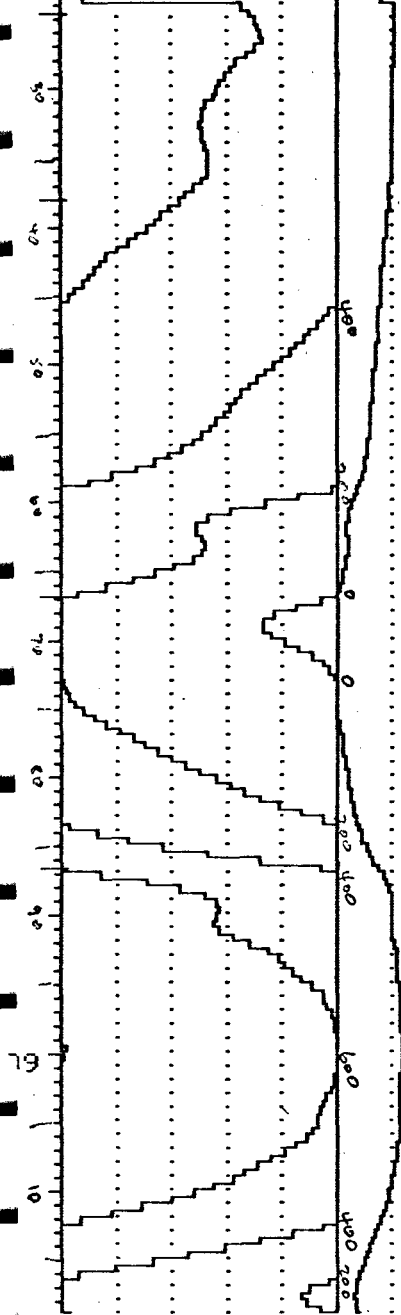
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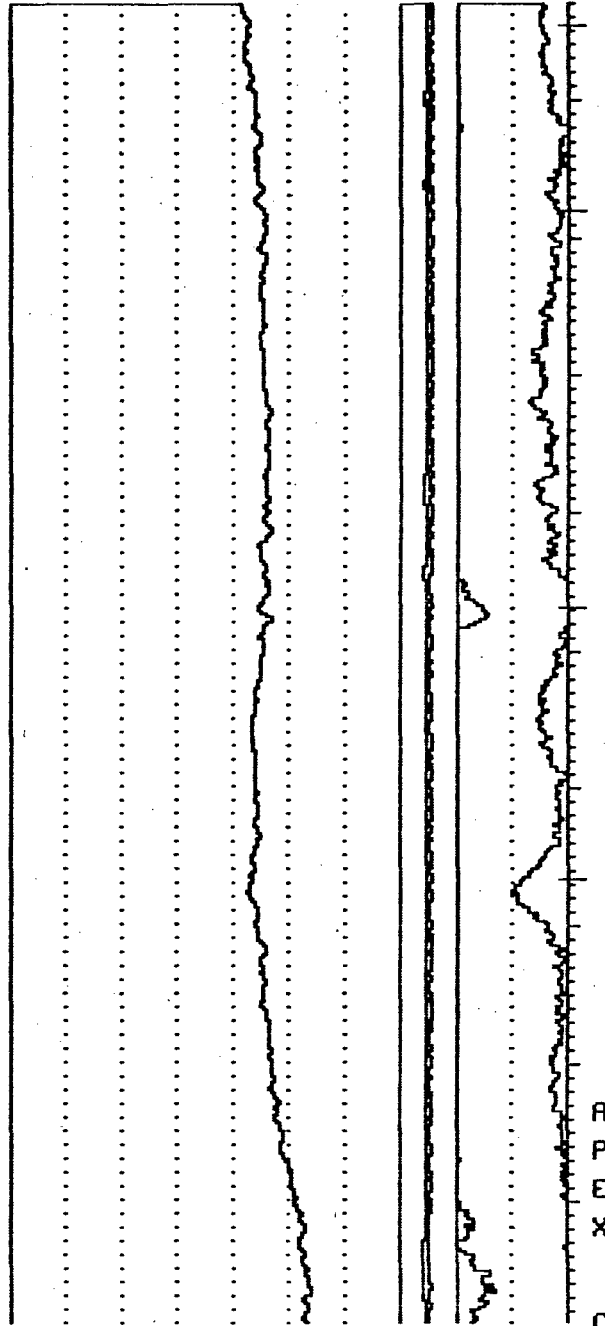
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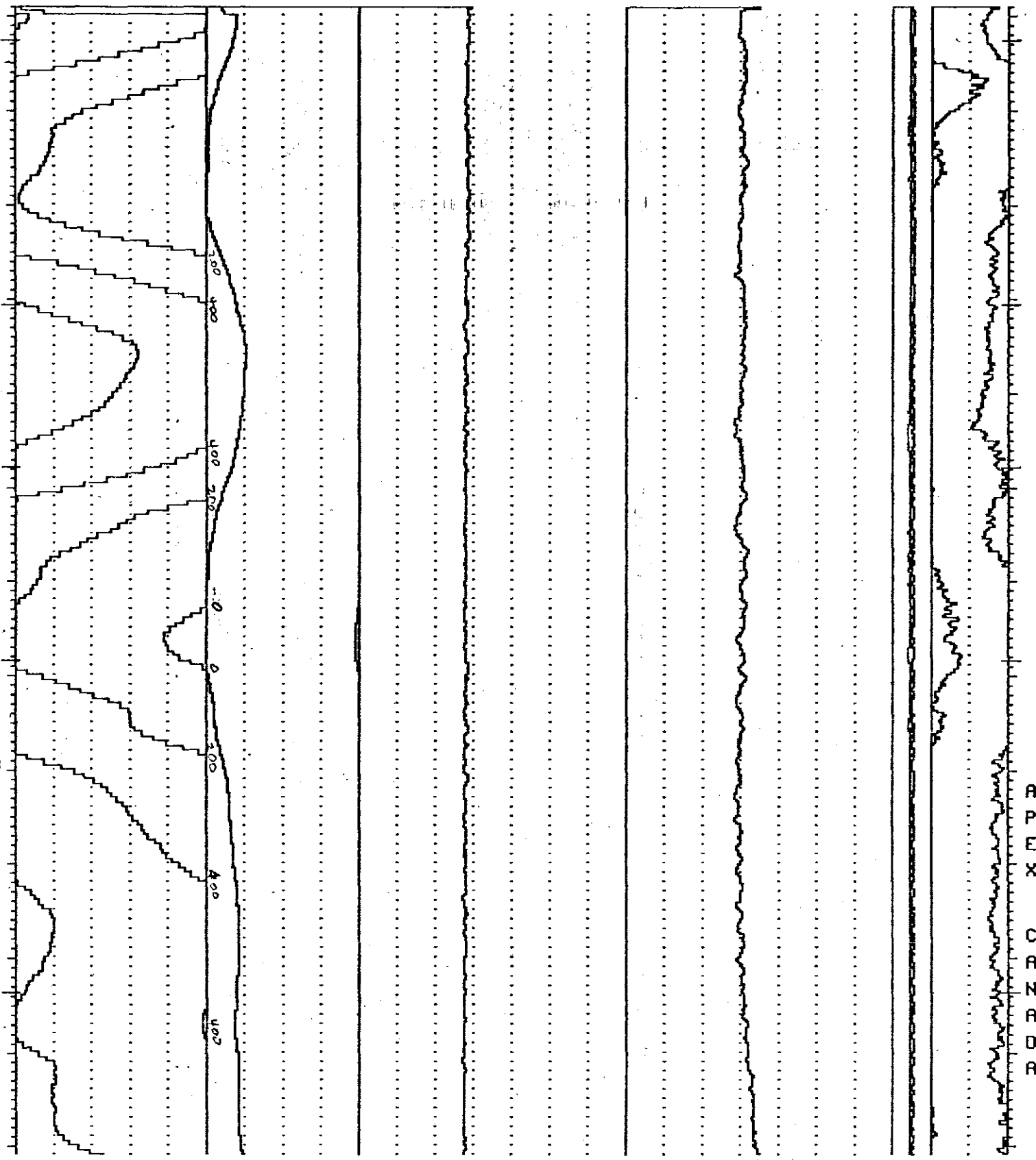


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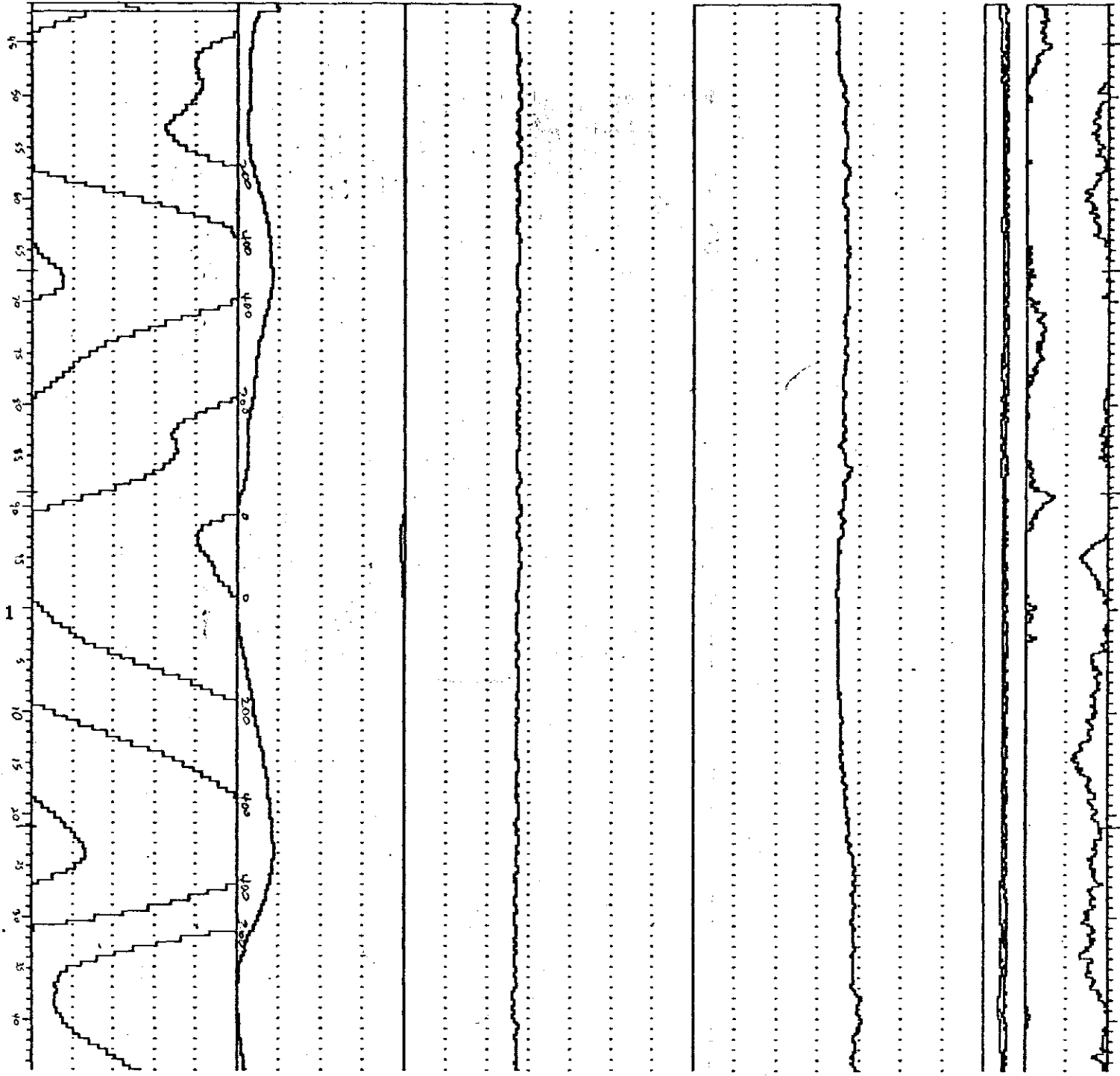
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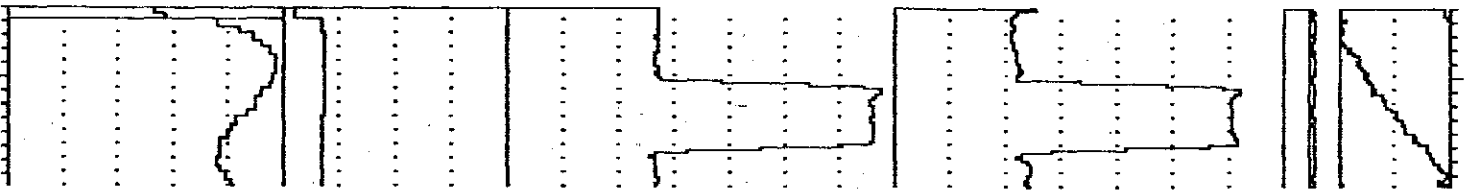
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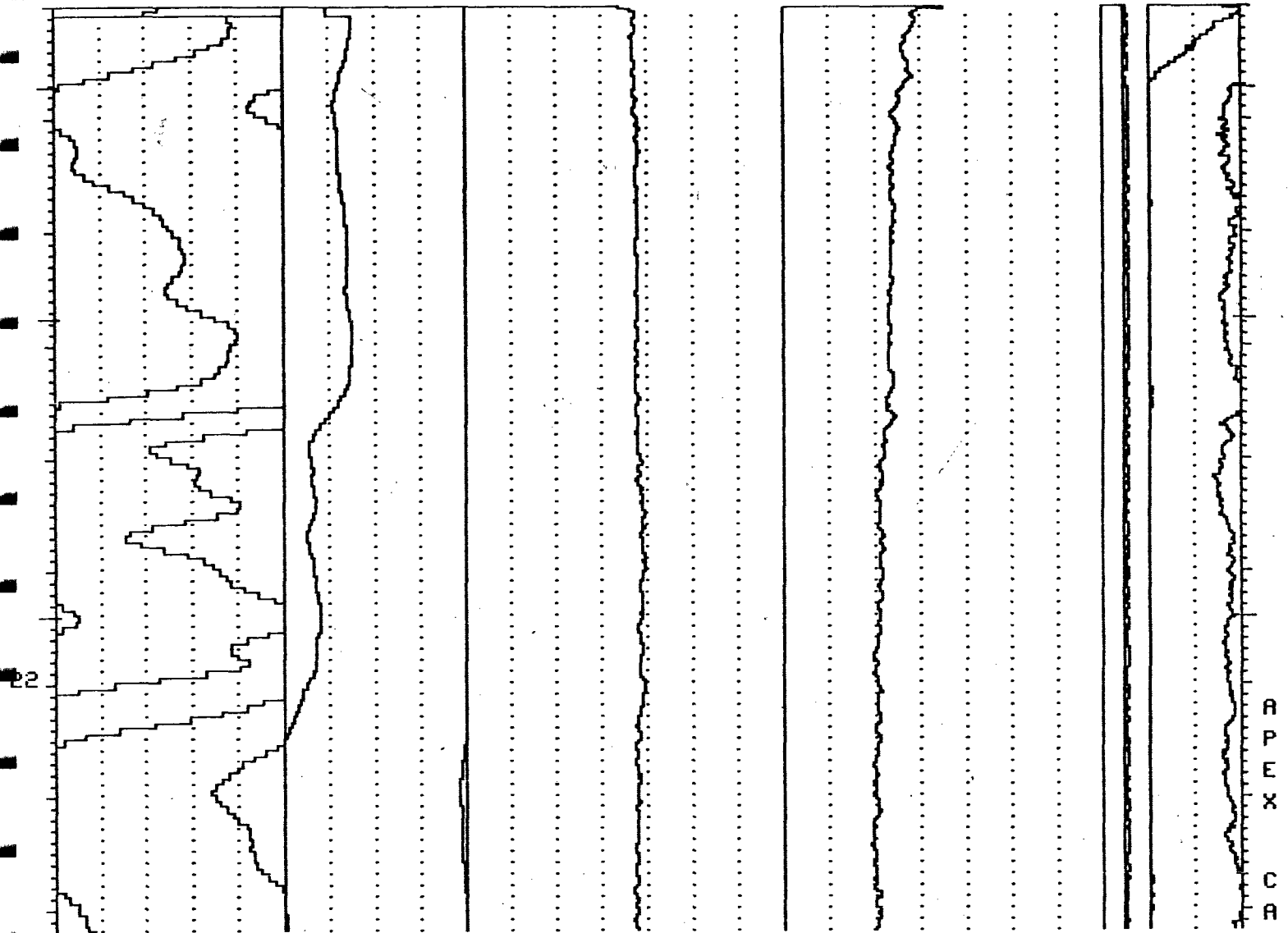
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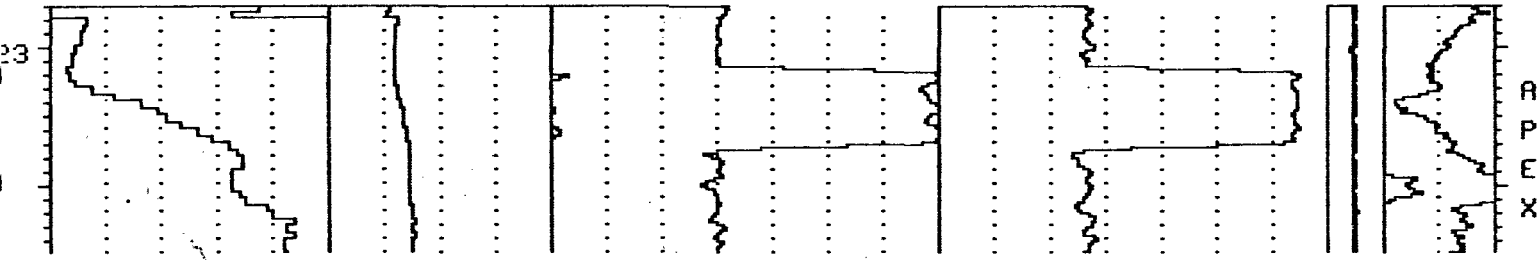


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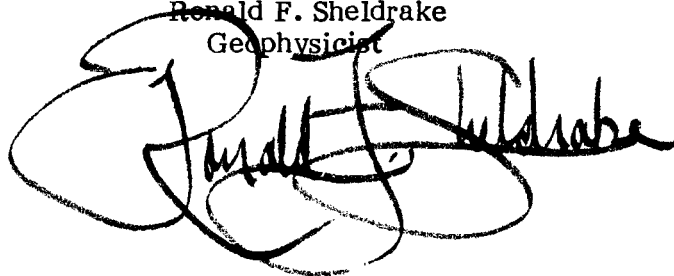


CERTIFICATION

I, RONALD F. SHELDRAKE, of the City of Vancouver, Province of British Columbia, hereby certify as follows:

1. I am President of **Apex Airborne Surveys Ltd.** a company incorporated under the laws of the Province of British Columbia.
2. The Vancouver Office of **Apex Airborne Surveys Ltd.** is located at Suite 512 -625 Howe Street, Vancouver, British Columbia.
3. I received my B.Sc., in Geophysics from the University of British Columbia in May 1974.
4. I have practised my profession since that date.
5. I did not examine the claims area, but I am not aware of any claim conflict and believe that the data presented herein is reliable.
6. I have no interest, direct or indirect, in **Eastern Leaseholds Inc.** or its affiliates, nor do I expect to receive any.
7. I consent to the use of this report in or in connection with a Prospectus or in a Statement of Material Facts.

Ronald F. Sheldrake
Geophysicist

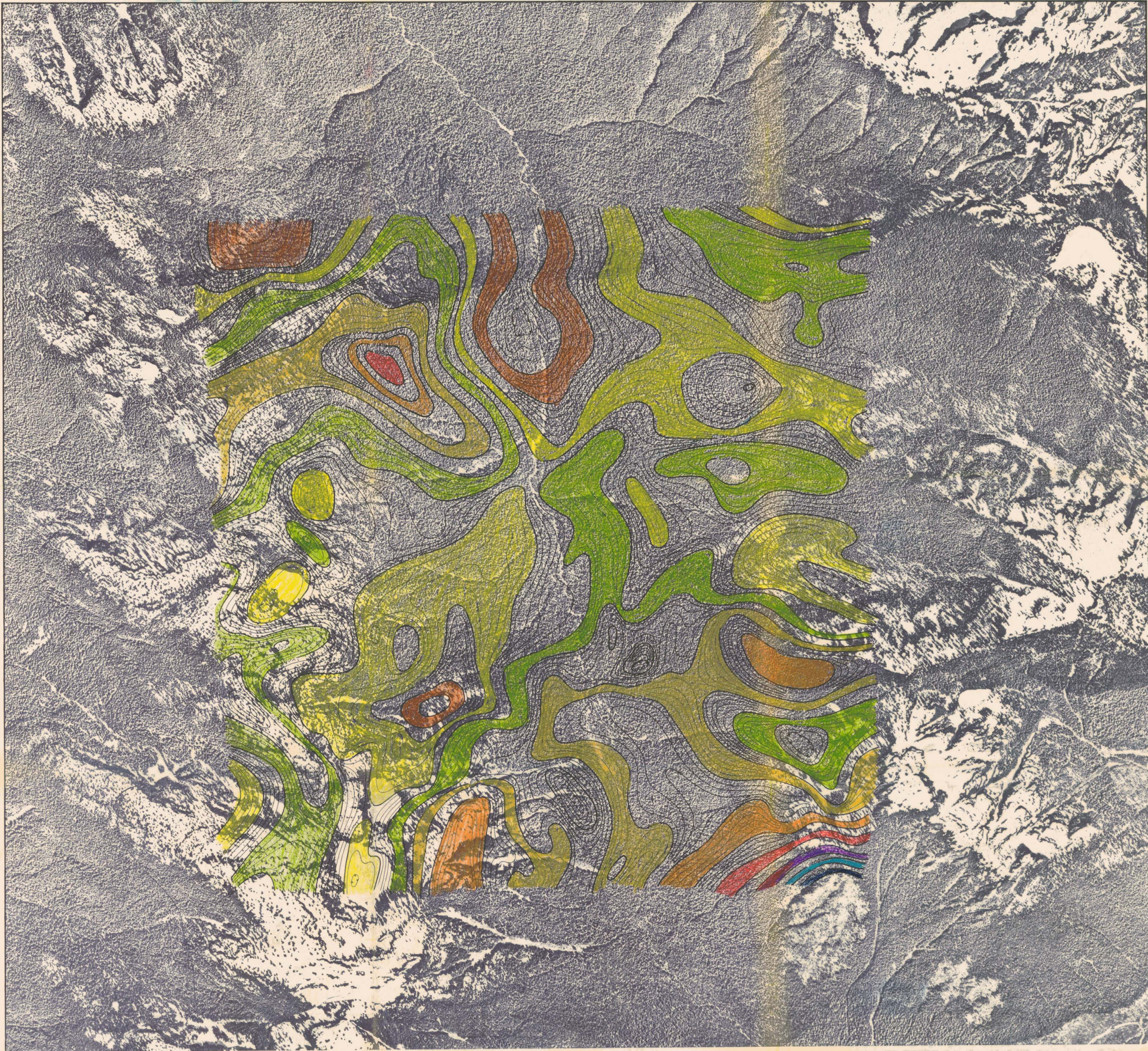
A large, stylized handwritten signature in black ink, appearing to read 'Ronald F. Sheldrake', written over the typed name and title.

March 20, 1981

March 20, 1981

STATEMENT OF COSTS

Type of Survey:	Helicopter Electromagnetic and Magnetic
Date(s) of Field work:	March 17, 1981 - 1 day
Survey Kilometers:	88 Kilometers
Cost per linear kilometer:	\$208.58
Additional Charges:	none
Total cost of Survey:	(88 km X \$208.58) = \$ 18,355



LEGEND

 100 GAMMA CONTOURS
 20 GAMMA CONTOURS
 MAGNETIC DEPRESSION

NOTES:

- VERTICAL CONTROL - RADAR ALTIMETER
(Mean sensor height 80 metres)
- HORIZONTAL CONTROL - 35mm FILM,
RECOVERY ON PHOTO MOSAICS
- REGIONAL TOTAL FIELD VALUE
56,000 GAMMAS = 0 CONTOUR
- MAGNETIC DECLINATION: 22°
- MAGNETIC INCLINATION: 72°
- CONTOURS UNCORRECTED FOR
REGIONAL GRADIENT



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NO.

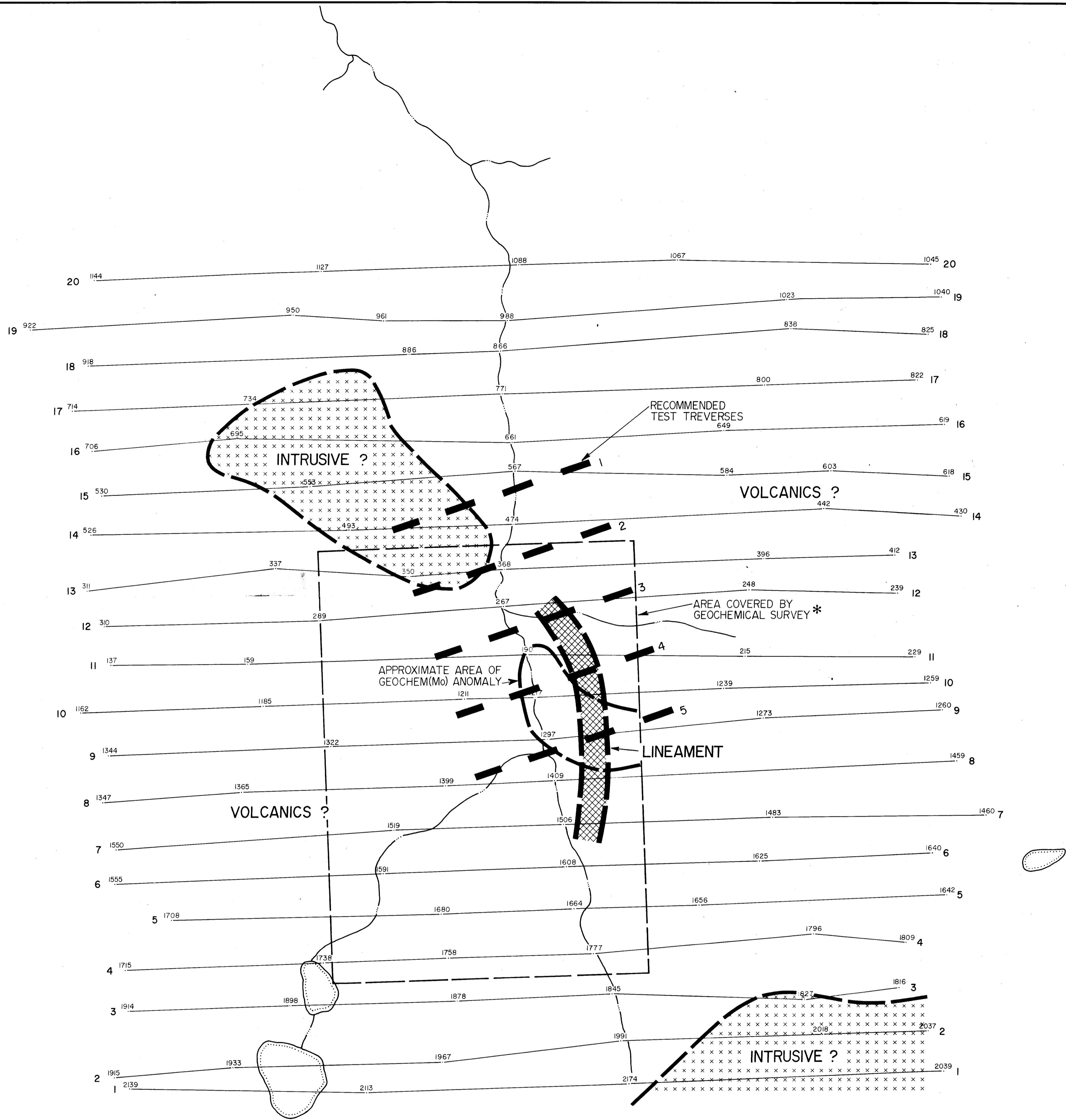
PLATE I

TOTAL FIELD MAGNETIC MAP
THE VANHALL & SHANNON CLAIMS
ALBERNI MINING DIVISION
BRITISH COLUMBIA

EASTERN LEASEHOLDS INC.

Metres 100 0 100 300 500 700 1000 Metres
Scale 1:10,000

To accompany a report by Ronald F. Sheldrake dated March 20, 1981



* REPORT BY A.F. ROBERTS P.ENG.
GEOCHEMICAL REPORT ON VANHALL CLAIMS JUNE 1980

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9151
M.C.

PLATE II

FLIGHT LINE & INTERPRETATION OVERLAY
THE VANHALL & SHANNON CLAIMS
ALBERNI MINING DIVISION
BRITISH COLUMBIA
EASTERN LEASEHOLDS INC.

Metres 100 0 100 300 500 700 1000 Metres
Scale 1:10,000

To accompany a report by Ronald F. Sheldrake dated March 23, 1981