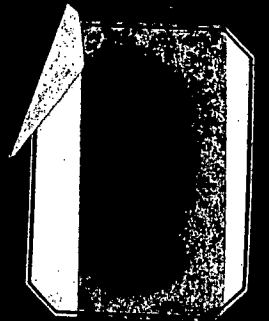


PRELIMINARY REPORT RE
CROWN ABERDEEN
GEOPHYSICAL EXPLORATION

921/70
50° 16' - 19' 3"
120° 51' 2" - 54'

yes
crown grant
has the Aberdeen
former producer
start in 1912

Vancouver, B.C. W.G. Hainsworth, P. Eng.
February, 1969 NICOLA MINING DISTRICT
50° 120' S.W. TOEWEST RESOURCES



W. G. HAINSWORTH

CONSULTING GEOLOGIST

1826

April 3, 1969

The President & Directors
Torwest Resources (1962) Ltd.
702-850 West Hastings Street
Vancouver 1, B.C.

PART 1

Gentlemen:

This letter report is to advise you with respect to work being carried on at your Aberdeen-Crown property, Nicola Mining District, British Columbia.

Claims

The following 43 claims and crown grant constitute your Aberdeen-Crown group:

<u>Claim #</u>	<u>Record #</u>	<u>Expiry Date</u>
Crown #1-8 incl.	36827 to 36834 incl.	May 10, 1969
Crown #9-32 incl.	36495 to 36518 incl.	May 10, 1969
#33-36 incl.	36614 to 36617 incl.	April 10, 1969
#37-40 incl.	39604 to 39607 incl.	February 11, 1970
#1-3 Fr.	39608 to 39610 incl.	February 11, 1970
Lot 960	(Aberdeen C.G.)	

Location

The claim group is located 10 miles north west of Merritt, B.C., within 4 miles of the Craigmont Mine.

Lot 960, the Aberdeen Crown Grant, is bisected by Brom Creek which parallels the north east boundary of the group.

Several gravel roads traverse the claims, branching off from the main Merritt-Craigmont highway.

Past Work

Sporadic underground operations had been carried out at the Aberdeen property up to 1929. A shaft was carried down to 200 feet and 4 levels were put out at 50 foot vertical intervals. Government reports state some 1400 tons of approximately 7% copper with some silver values were mined and shipped from the property. The fourth level showed a possible bottoming of this secondary copper ore body.

W. G. HAINSWORTH

CONSULTING GEOLOGIST

.2.

In 1959, Torwest Resources acquired the property at which time they dewatered the shaft and did underground sampling. In addition, a self-potential survey was conducted over a limited part of the claim followed by a small diamond drilling campaign. The property has lain idle until this year.

Present Work

In January 1969, Torwest prepared a program for this property which entailed a winter program of line cutting and geophysical surveys, and a summer program consisting of a geological survey followed by diamond drilling. Underground operations are held in obedience and are dependent on surface results.

On December 2, 1968, the line cutting was initiated followed shortly by an electromagnetic survey employing a Ronka EM 16 and a magnetometer survey using a Sharpe Fluxgate MF-1 instrument. The following statistics testify to the thoroughness of the project:

Starting Date:	December 2, 1968
Finishing Date:	February 15, 1969
No. of Men Employed:	8
Base Line Footage:	12,000 feet
Picket Line Footage:	180,400 feet
Total Footage:	192,400 feet or 36.44 miles
E.M. & Mag. Reading Interval:	100 feet
Total No. of E.M. Readings:	1,804
Total No. of Mag. Readings:	1,804

Completed magnetometer and electromagnetic maps are included with this report. The interpretation of these geophysical maps is presently being done by Geo-X Surveys Ltd., of Vancouver. Enclosed is a copy of a letter from Mr. D. Cochroane with respect to the analysis. When the final interpretation is received it will become part of this report.

It should be added that the Company is negotiating with this same organization, Geo-X, to have a close spacing (500' interval) air-borne magnetic survey run over all the Aberdeen-Crown claims. This survey will likely be undertaken in May 1969.

Appendix A gives a break-down of costs involved in operations on this property.

W. G. HAINSWORTH

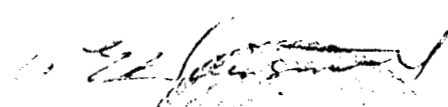
CONSULTING GEOLOGIST

.3.

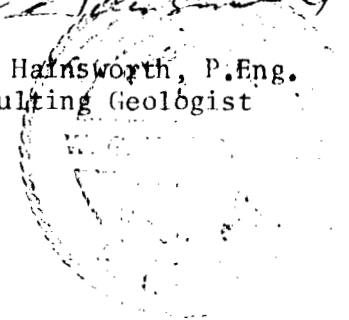
Conclusions

Although the analysis of the geophysical surveys has not been received as yet, the author's opinion is that several interesting geophysical structures are evident on the property. Geological interpretation of these structures will be required prior to any diamond drilling. Snow conditions at the present time will delay this survey until well into May.

Respectfully submitted,



W.G. Hainsworth, P.Eng.
Consulting Geologist



Vancouver, B.C.
April 3, 1969

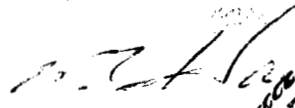
Department of	
Mines and Petroleum Resources	
ASSESSMENT REPORT	
NO. 1828	MAP

W. G. HAINSWORTH

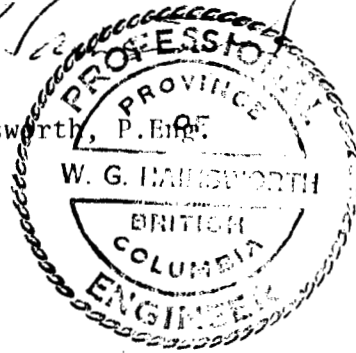
CONSULTING GEOLOGIST

AFFIDAVIT

This is to certify that all work on the Crown -
Aberdeen group of claims (CROWN 1-40 inclusive, 1 Fr - 3 Fr
inclusive and Lot 960) were carried out under the jurisdiction
and guidance of the writer, a qualified Professional Engineer of
the Association of Professional Engineers of British Columbia.



W.G. Hainsworth, P.Eng.



APPENDIX A

<u>NAME & ADDRESS</u>	<u>RATE</u>	<u>TYPE OF WORK</u>	<u>FROM TO</u>	<u>TOTAL HOURS</u>	<u>WAGES</u>
W.G. HAINSWORTH 702-850 W. Hastings, Vancouver 1, B.C.	1,500.00	Consultant & Supervision	Dec. - Feb.	2 months	1,800.00 (chg 60%)
M. MATHIEU Box 1101, Merritt, B.C.	900.00	Superintendent & Instrument Man	"	"	1,800.00
B. PETRIE Box 1023, Merritt, B.C.	600.00	Instrument Man	"	"	1,200.00
T. QUINN Merritt, B.C.	2.50/hr.	Line Cutting	"	31 hrs.	77.50
P. MORGAN "	"	" "	"	79 hrs.	197.50
L. SPAHAM "	"	" "	"	148 hrs.	370.00
R. CRESSY "	"	" "	"	80 hrs.	200.00
W. CRESSY "	"	" "	"	96 hrs.	240.00
E. YURKOWSKI "	"	" "	"	80 hrs.	200.00
J. HANSEN "	"	" "	"	88 hrs.	120.00
F. KLAGES JR. "	"	" "	"	24 hrs.	60.00

ADDITIONAL EXPENSES

Rental - Skidoo (invoice attached)	25.00	
Truck " "	60.00	
Tractor " " snow plowing	256.00	
Tractor " " " "	162.00	
Flagging Tape " "	35.44	
Chains " "	10.08	
Axes " "	22.99	
Snowshoes " "	42.00	613.51

ESTIMATED EXPENSE

Interpretation of EM Data 550.00

Total \$ 7,428.51

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 11
day of April 1969, A.D.



Jan Lunn
A Commissioner for taking Affidavits within British Columbia
A Notary Public in and for the Province of British Columbia

SUB-MINING RECORDER



GEO-X SURVEYS LTD. 627 HORNBY STREET, VANCOUVER 1, B. C. ~~XXXXXX~~

685-0312

April 9th, 1969

Mr. W. G. Hainsworth,
Torwest Resources Ltd.,
850 West Hastings Street,
Vancouver, B.C.

Dear Mr. Hainsworth:

Re: your inquiry into the status of the data processing and interpretation EM and Mag work at Aberdeen Mine.

The magnetic and electromagnetic information supplied to us in March, 1969 on the Crown claims and Aberdeen Lease is still being processed. I am expecting completion of final drafting late this week and completion of the interpretation and report sometime next week.

Yours truly,

GEO-X SURVEYS LTD.

D. R. Cochrane, P.Eng.

DRC/m

CORRELATION / INTERPRETATION
of the
Electromagnetic (Ronka EM 16) and Magnetometer (Sharpe MF-1)
Surveys on the
Crown Group / Aberdeen Mine Area
Nicola M.D.
British Columbia
On Behalf Of
TORWEST RESOURCES (1962) LTD.

Report by
D. R. Cochrane, P.Eng.
April 21/'69



604-685-4296
TELEX 04-50404

GEO-X SURVEYS LTD. 627 HORNBY STREET, VANCOUVER 1, B. C.

INTRODUCTION:

1826 PART 2

The writer was retained in March 1969, by Mr. W. Hainsworth of Torwest Resources (1962) Ltd. to make a study of the electromagnetic and magnetic survey data from the "Crown Group and Aberdeen Mine Area". The purpose of the study was to convert the geophysical information into useful geological concepts and ideas which then may be used to guide future exploration. This report describes the interpretation procedures and discusses the results obtained.

PROCEDURE:

Mr. Hainsworth supplied two maps, as follows:

- a) An uncountoured plot of the magnetometer values at a scale of 1":400' with some planimetry and claims information.
- b) A plot of the Ronka EM16 data, containing both "in phase" and "quadrature" profiles at a horizontal scale of 1":400' and profile scale 1":40%.

The magnetic map was manually countoured by Mr. J. Cerne (M.S.) at 250 gamma intervals between the values of 5000 and 6000 (relative) gammas. In addition, he pointed out some of the linear magnetic features.

The Ronka EM 16 profiles were analyzed by the author, and by Mr. R. Key. This consisted of categorizing the "in phase" changes in proportion to their amplitude of change with respect to the following:

- (i) true crossover - i.e. change from positive to negative while going in the operators "face" direction.
- (ii) reverse crossovers - the opposite of (i)
- (iii) positive rate changes i.e. changes from more negative to less negative, or more positive from less positive.
- (iv) negative rate changes, the opposite of (iii).

Procedure (iii) and (iv) above were completed by use of a set of proportional dividers so that the length of the symbols are proportional to the size of the rate change. The large changes in tilt angle response which correlate across two or more lines are designated as "conductors" and/or changes in conductivity. Since changes in the "in phase" component were particularly rapid and large on the Aberdeen area, only those changes exhibiting close to or over 20% change per 200 feet, or those which appeared particularly interesting in profile, have been processed. In addition, areas characterized by negative "in phase" response, and by positive +40% "in phase" response were outlined. No data processing was conducted on the quadrature measurement.

DISCUSSION

A. Magnetometer Survey

The arithmetic mean of a sample of 120 magnetometer readings is 5340 gammas, and standard deviation 232 gammas. The maximum recorded value was 6050 and minimum 4700. Based on these data,

anomalously low areas may be defined as areas less than 5000 gammas, and anomalously high areas in excess of 5750 (i.e. the arithmetic mean $\pm 1\frac{1}{2}$ x standard deviation, approximately). The isomagnetic trends are predominant by north and/or north-west directed. Much of the area is characterized by response between 5250 and 5500 gammas, with various disruptions, especially in north-easterly directions. Some of the largest magnetic gradients are present in and around the Aberdeen Mine area, on lot 1418, and on the Crown #24 claim.

The most persistent positive magnetic feature lies close to the southwest grid boundary and it has been designated Magnetic High #1. It is a long linear ridge trending northwest and characterized by response up to 6050 gammas. The area in excess of 5750 gammas is almost 3000 feet long and up to 500 feet wide. The area containing the maximum recorded magnetic value, located on lot 1418 has been named Magnetic High #2. A third area of high positive response is located at the extreme north end of the grid and the individual peaks have been named Magnetic High #3(a), #3(b) and #3(c). Several magnetic lows (less than 5000 gammas) are present within the grid area. The most extensive is situated near the southwest corner of the survey grid boundary. Another widespread patch is located on claims Crown #7 and #5. In the Aberdeen Mine area, a series of small negative magnetic zones are featured and these trend in a northwesterly direction.

An area of similar response is located on and around the Crown #1 fraction.

Many magnetic linears are present and these form a rather complex rectilinear pattern. One of the most complex is near the Aberdeen Zone where the main northwest magnetic linear trend has been disrupted several times by northeast trending linears. The most dominant and throughgoing magnetic linears are directed northwesterly, parallel to the Aberdeen linear. Other linears trend mainly in east-west and northeast directions.

B. Electromagnetic Survey

The Ronka EM16 results are complex. The "in phase" response varies considerably and there are areas of considerable extent containing response in excess of +40% and other areas of high negative response. Some of the changes are extremely noticeable in the Aberdeen Mine area; in the area close to Magnetic High #1; and near the Crown #1 fraction.

The "in phase" response over the survey area, may be divided into three broad divisions:

1. the eastern division, near the Aberdeen which coincides with the magnetic lows. It is characterized by rapid "in phase" changes and a relatively narrow, sinuous band of negative response.
2. the central division of positive "in phase" angles, a good proportion of which is greater than +40%. The iso-"in phase" trends are predominantly northerly in this geophysical division with some considerable northwesterly bias in certain

areas.

3. northwesterly division which exhibits characteristics of both (1) and (2) above. It is basically two subparallel and irregularly winding bands of negative "in phase" response which flank both sides of a north to north-northeast trending positive "in phase" ridge.

Within each of these major electromagnetic divisions in the survey area, are specific areas of sharp "in phase" change. The major ones have been noted on the accompanying map but in attempt to simplify the complex results, many of the one line, or minor ones have been ignored.

CORRELATION / INTERPRETATION

The isomagnetic and isoelectromagnetic maps are very similar in overall appearance. Many of the prominent magnetic features, such as abrupt changes in amplitude or direction, are mirrored by similar changes in the "in phase" pattern. The dominant trends of both are, in general the same, and many of the disruptive linears occur along the same lines.

The Aberdeen Zone, the author understands, contains mineralized lenses which are intimately related to a major fault. The geophysical environment of this zone is certainly diagnostic. It is an area of low magnetic response and negative "in phase" angles. Negative "in phase" response often indicates horizontal conductivity and therefore suggests that in this area, a highly altered or weathered upper surface

is present in the fault zone. Sharp changes within the "in phase" low, and the east edge of the low, which is a true crossover zone, may indicate more conductive portions of the fault system. The actual Aberdeen vein system is located on or close to a reverse crossover, however terrain influence must be considered partially responsible, since this vein system occurs close to the valley bottom. The magnetic and electromagnetic information clearly shows that the Aberdeen Zone is a complex fault system, one that is, itself disrupted (as indicated by the geophysical data) evidently by northeast and east trending cross faults. Some of the other magnetic linears within the survey area are also believed to indicate faults. This is especially true of those with coincident magnetic lows and conductive zones.



Two areas which are characterized by geophysical response similar to the Aberdeen Zone have been designated Crown #1 and Crown #2 zones.

The Crown #1 zone is remarkably similar to the Aberdeen Zone, and thereby suggests a similar geological setting is involved. Many of the broad geological features are indicated by the accompanying map. Some of the geophysical effects, however, may require ground investigation to determine their cause. In addition to the three aforementioned zones, the author suggests investigation of positive magnetic highs and some of the areas exhibiting coincident EM and magnetic

abnormality (conductors and linear intersections for example).

The foregoing discussion was intended to provide a synoptic view of the geophysical information. If more detail is required, (and considering the quantity and complexity of the EM survey), it may be expedient to keypunch the data and proceed to quantitative methods (i.e. calculation of derivatives, use of filters, etc.).

Respectfully submitted,



D. R. Cochrane P. Eng.

APPENDIX I

PERSONNEL

Name: COCHRANE, Donald Robert

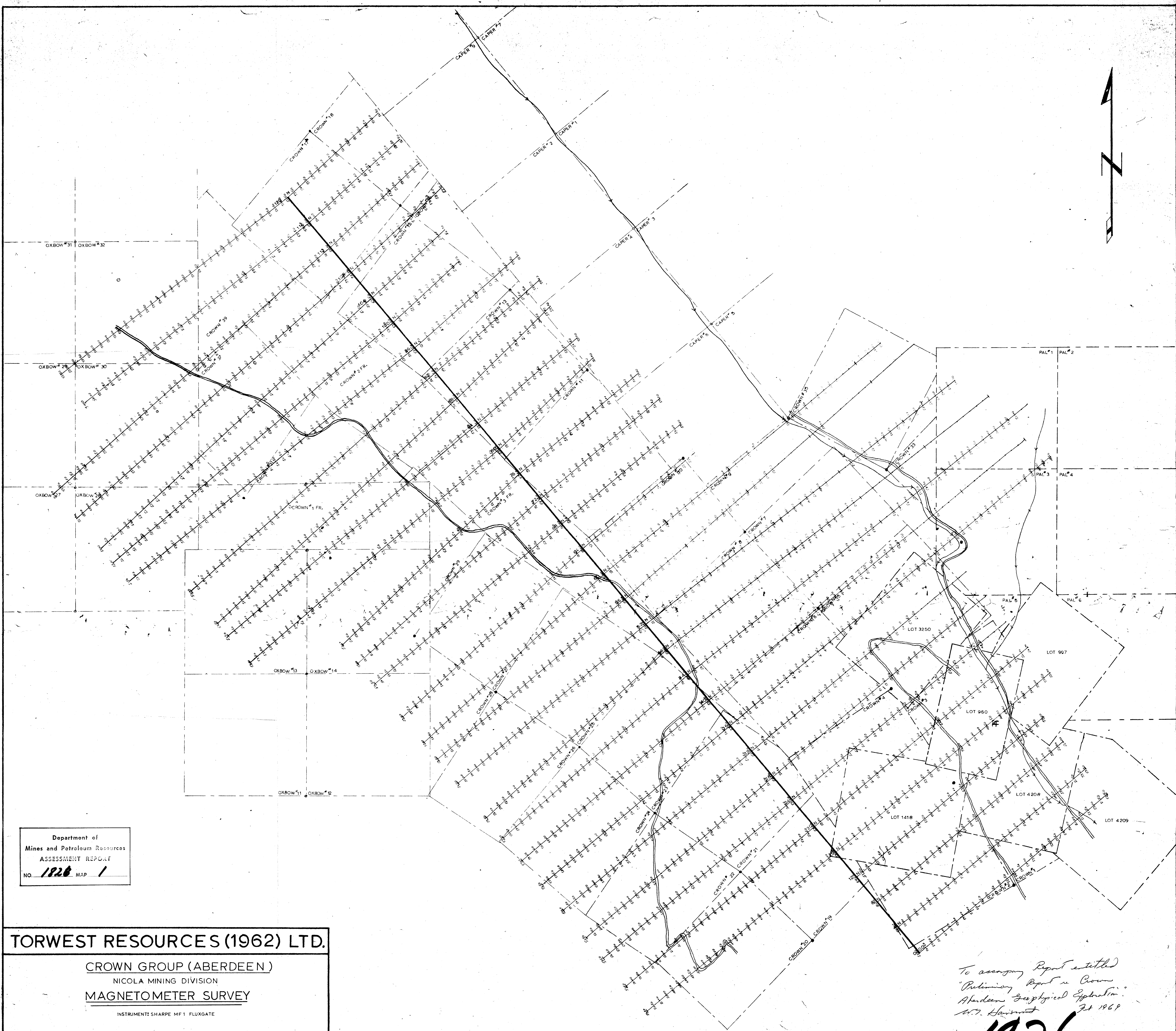
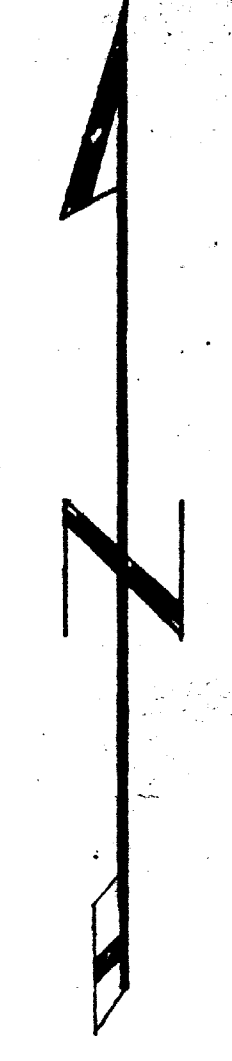
Education: B.Sc. - University of Toronto
M.Sc. (Eng.) - Queen's University

Professional Associations: Professional Engineer, registered in British Columbia, Ontario, Saskatchewan.

Member of M.C.I.M.M., M.E.I.C., M.G.A.C., M.M.A.C.

Experience: Engaged in the profession since 1962 while employed with Noranda Exploration Co. Ltd., Quebec Cartier Mines Ltd., Meridian Exploration Syndicate.

Experience in West Indies, Central and South America, U.S.A. and Canada.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **1826** MAP **1**

TORWEST RESOURCES (1962) LTD.

CROWN GROUP (ABERDEEN)
NICOLA MINING DIVISION
MAGNETOMETER SURVEY

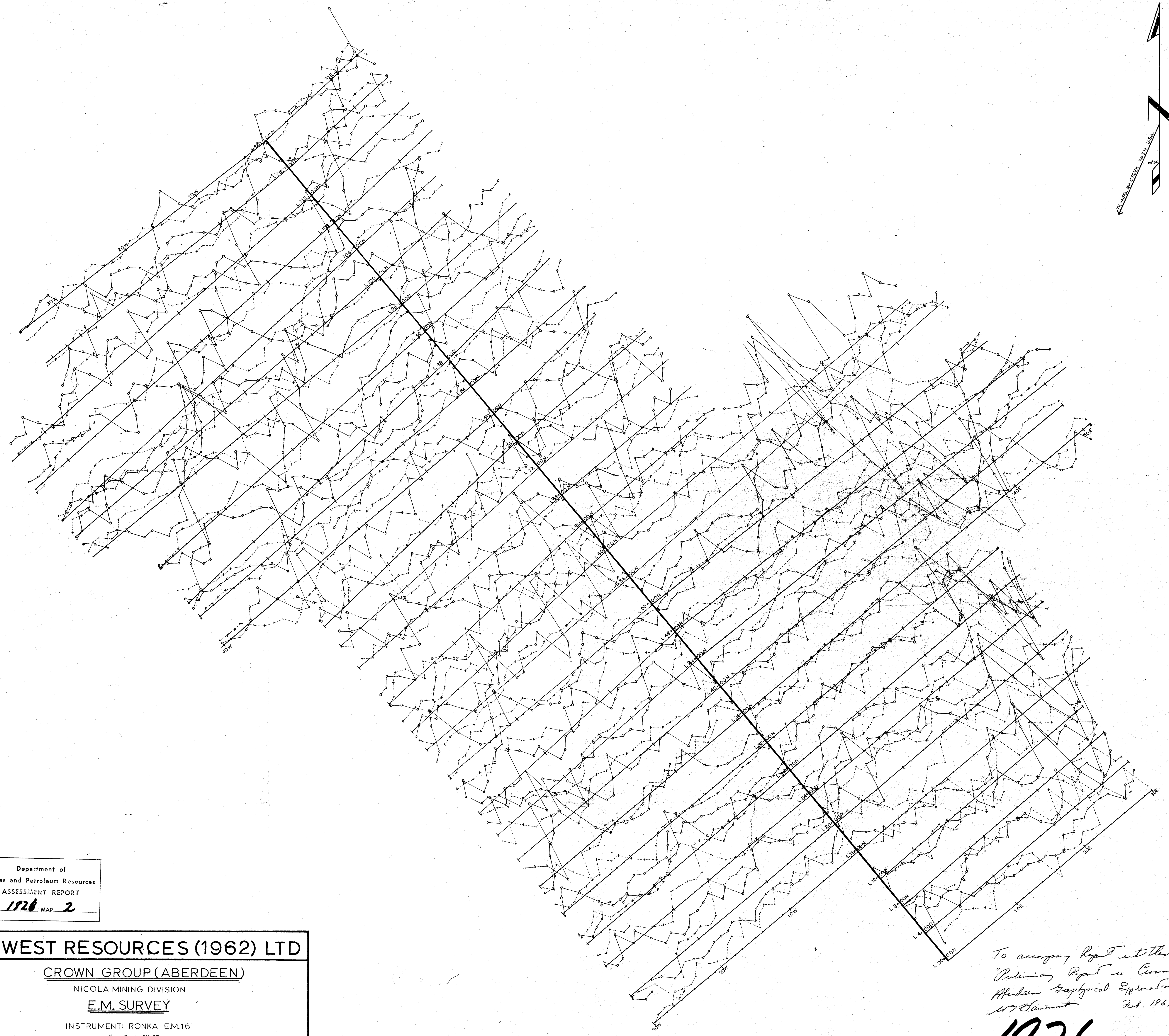
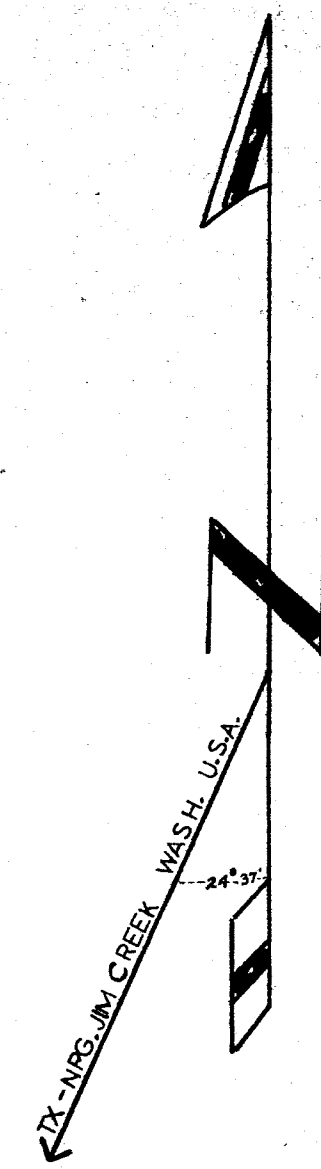
INSTRUMENTS SHARPE MF 1 FLUXGATE

SCALE: 1 INCH TO 400 FEET

DATE: JAN. FEB. 1969
Maurice Matheson

*To accompany Report entitled
"Preliminary Report on Crown
Aberdeen Geophysical Exploration"
M. J. Hamilton 24 1969*

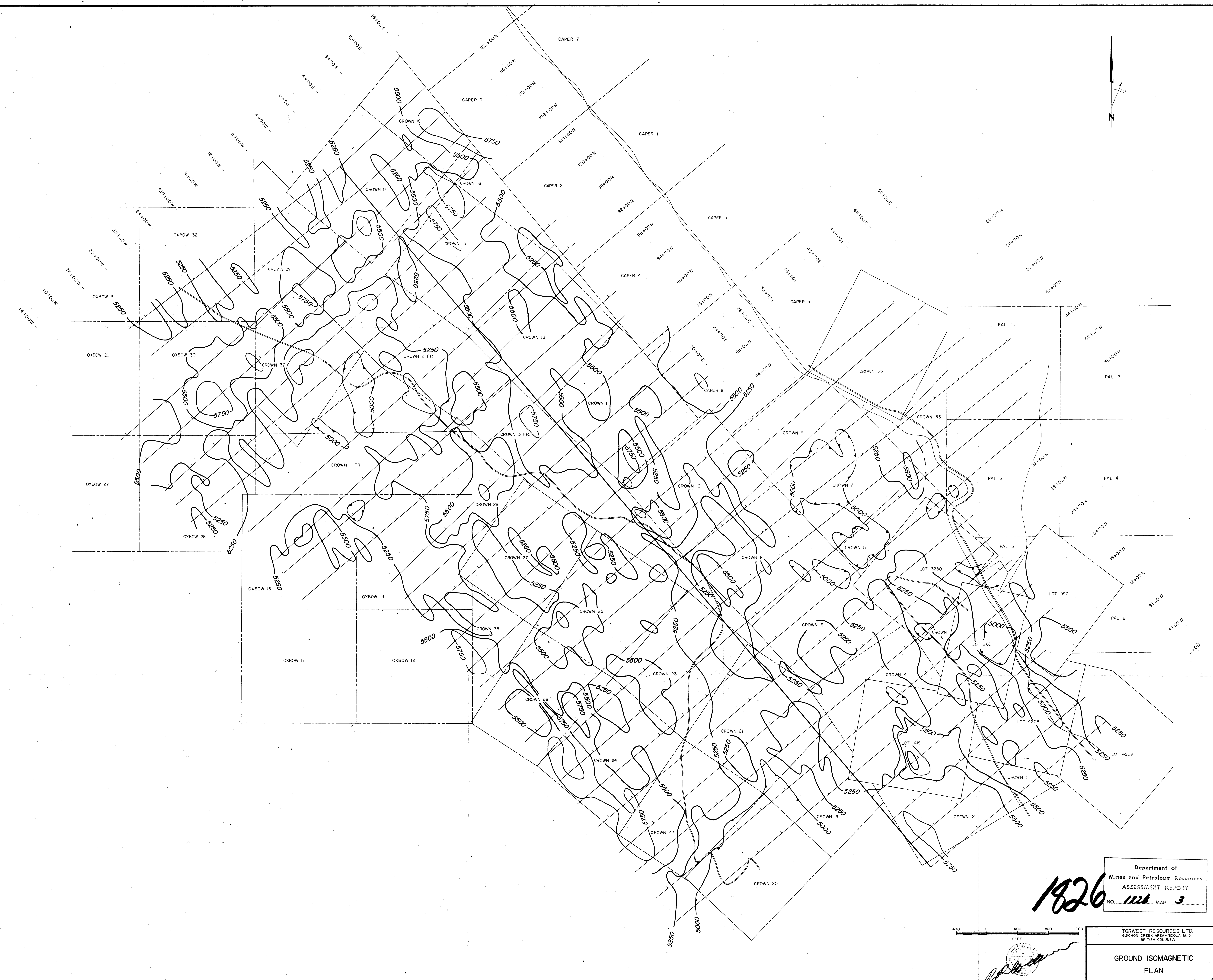
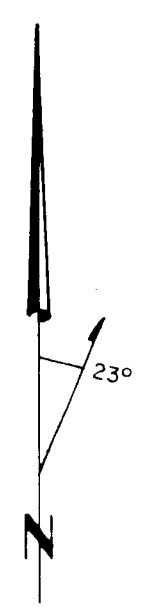
1826 *Hamilton* ①



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **1826** MAP **2**

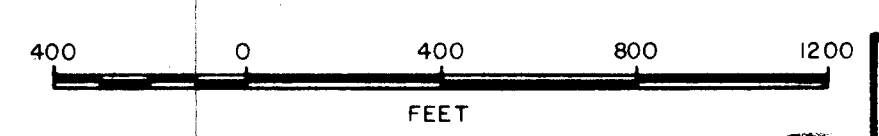
TORWEST RESOURCES (1962) LTD
CROWN GROUP (ABERDEEN)
NICOLA MINING DIVISION
E.M. SURVEY
INSTRUMENT: RONKA E.M.16
○—○ IN PHASE
x---x QUADRATURE
OPERATOR FACING WEST FOR READINGS
SCALE: GRID: 1 INCH TO 400 FEET
READINGS: 1 INCH TO 40 FT.
DATE: FEBRUARY 1969
Charles Mathies

To accompany Report entitled
"Preliminary Report on Crown
Aberdeen Geophysical Exploration"
at Hamilton Feb. 1969
1826
W. J. G. G. G.



1826

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1128 MAP 3

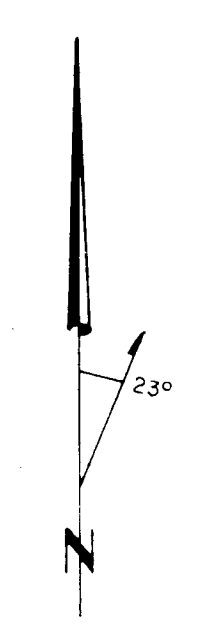
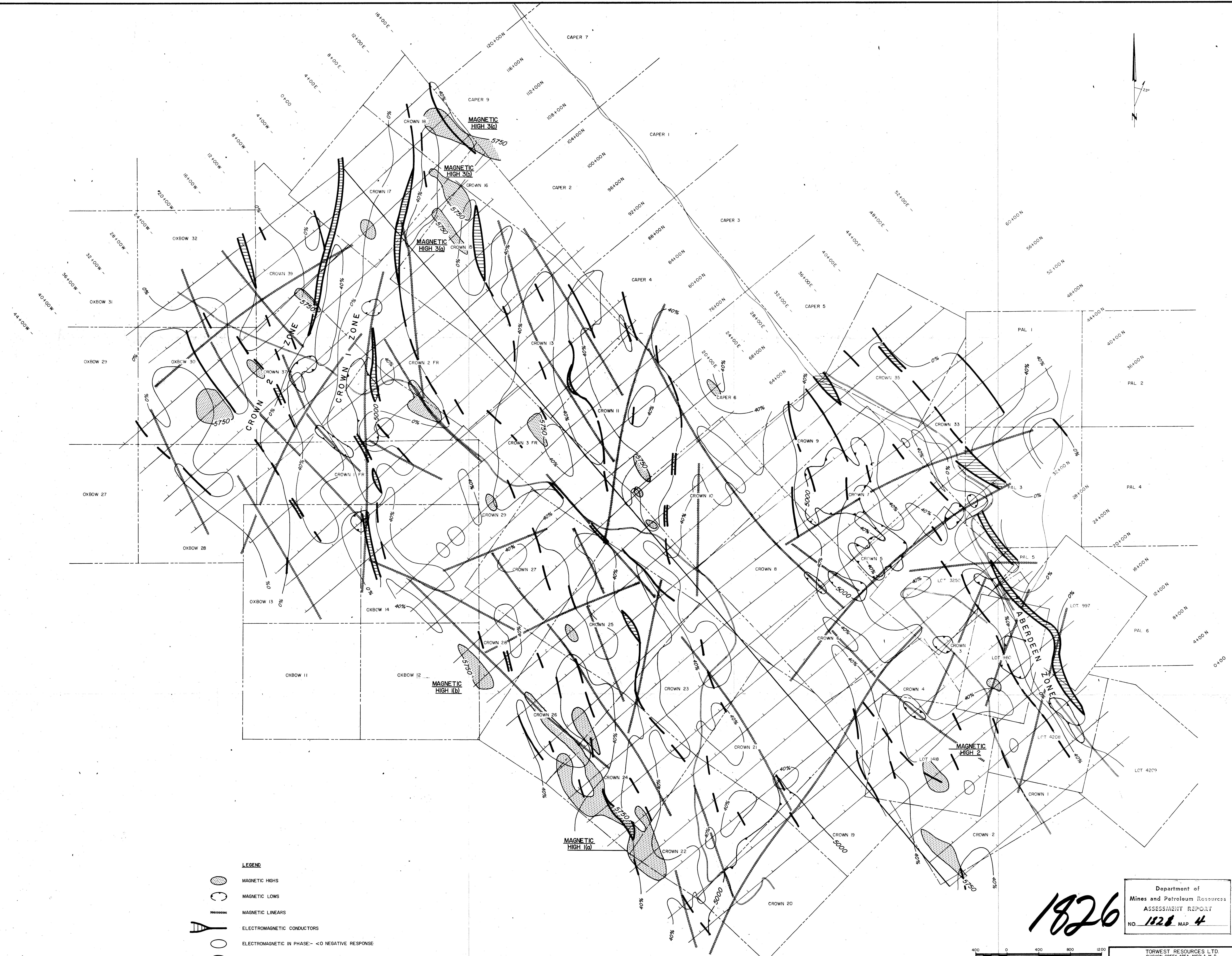


TORWEST RESOURCES LTD.
GUICHON CREEK AREA - NICOLA M.D.
BRITISH COLUMBIA

GROUND ISOMAGNETIC
PLAN
(CONTOUR INTERVAL: 250 GAMMAS)

TO ACCOMPANY THE GEOPHYSICAL REPORT ON THE CORRELATION / INTERPRETATION OF THE
ELECTROMAGNETIC (ROKKA EM 18) & MAGNETOMETER (SHARPE MF-1) SURVEYS ON THE
CROWN GROUP/ARISEN MINE AREA OWNED BY TORWEST RESOURCES LTD.
BY DONALD R. COCHRANE, P. ENG. - VANCOUVER, BRITISH COLUMBIA

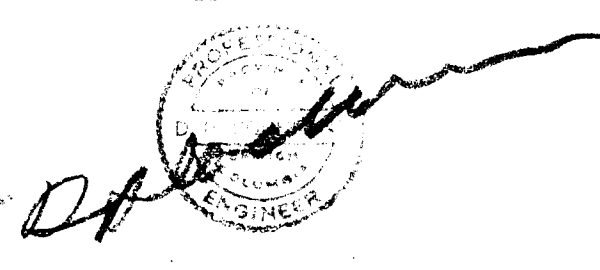
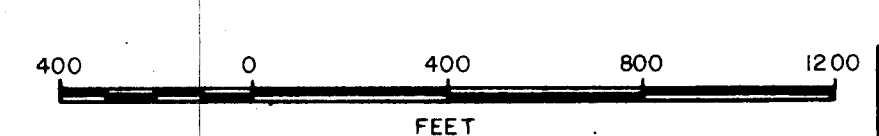
	DRAWN	D. E. Y.	JOB NO.	FIG. NO.
	DATED	APRIL 21, 1969	1083	1
	CHECKED	<i>[Signature]</i>		



- LEGEND**
- MAGNETIC HIGHS
 - MAGNETIC LOWS
 - MAGNETIC LINEARS
 - ELECTROMAGNETIC CONDUCTORS
 - ELECTROMAGNETIC IN PHASE: - <0 NEGATIVE RESPONSE
 - 0 TO 40%
 - > 40%

1826

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1826 MAP 4



TORWEST RESOURCES LTD.
QUICHON CREEK AREA - NICOLA M.D.
BRITISH COLUMBIA

GENERAL INTERPRETATION
MAP

TO ACCOMPANY THE GEOPHYSICAL REPORT ON THE CORRELATION/INTERPRETATION OF THE
ELECTROMAGNETIC (ROKKA EM 16) & MAGNETOMETER (SHARPE MF-1) SURVEYS ON THE
CROWN GROUP/ABERDEEN MINE AREA OWNED BY TORWEST RESOURCES LTD.
BY DONALD R. COCHRANE, P. ENG. -VANCOUVER, BRITISH COLUMBIA

	DRAWN	D. E. Y.	JOB NO.	FIG. NO.
	DATED	APRIL 21, 1969	1083	2
	CHECKED	<i>[Signature]</i>		