

REPORT ON THE  
AIRBORNE GEOPHYSICAL SURVEY

NAT 1-40, NIT 1-40 (LESS #36) LX 1-20 MINERAL CLAIMS

VANCOUVER ISLAND AREA, B. C.

ALBERNI MINING DIVISION

Airborne Geophysical Survey, Mag. EM.

NAT 1-40, NIT 1-35 & 37-40, LX 1-20  
Vancouver Island Area, B.C.  
Alberni Mining Division                  92C15E  
124°43'W by 48°55'N

Harvey H. Cohen, P.Eng.

Spacemaster Minerals Ltd.

April 20 - July 18, 1969

SPACEMASTER MINERALS LTD.

VICTORIA, B. C.



**2019**

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VANCOUVER ISLAND AREA, B. C.  
ALBERNI MINING DIVISION

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INTRODUCTION

LOCATION AND ACCESS:

The Spacemaster Minerals Ltd. property consisting of 99 contiguous mineral claims, the NAT 1-40, NIT 1-40 (LESS #36), LX 1-20, are situated at the headwaters of the Little Nitimat River approximately 37 miles southwest of the city of Nanaimo, B. C. on Vancouver Island in the Alberni Mining Division.

The mineral claims cover an area of heavy timber typical of the coast area on steep slopes which rise to 3000 feet in the immediate area. The valley bottom, the Nitimat River is at 500 feet above sea level.

The area is cut by numerous creeks, and

logging in the area has succeeded in providing access from logging camps and settlements.

The Little Nitimat River flows southerly to join the Nitimat approximately three miles from the conflux with Nitimat Lake.

Alberni, the nearest supply centre is 16 miles north of the property.

Geographically, the location may be described as:

Longitude:  $124^{\circ} 43' W.$

Latitude:  $48^{\circ} 55' N.$

SUMMARY OF CLAIMS

<u>NAME</u>	<u>RECORD NUMBER</u>
NAT 1	14316 E
2	14317 E
3	14318 E
4	14319 E
5	14320 E
6	14321 E
7	14322 E
8	14323 E
9	14324 E
10	14325 E
11	14326 E
12	14327 E
13	14328 E
14	14329 E
15	14330 E
16	14331 E
17	14332 E
18	14333 E
19	14334 E
20	14335 E
21	14336 E
22	14337 E
23	14338 E
24	14339 E
25	14340 E
26	14341 E
27	14342 E
28	14343 E
29	14344 E
30	14345 E
31	14346 E
32	14347 E
33	14348 E
34	14349 E
35	14350 E
36	14351 E
37	14352 E
38	14353 E
39	14354 E
40	14355 E

<u>NAME</u>	<u>RECORD NUMBER</u>
NIT 1	14356 E
2	14357 E
3	14358 E
4	14359 E
5	14360 E
6	14361 E
7	14362 E
8	14363 E
9	14364 E
10	14365 E
11	14366 E
12	14367 E
13	14368 E
14	14369 E
15	14370 E
16	14371 E
17	14372 E
18	14373 E
19	14374 E
20	14375 E
21	14376 E
22	14377 E
23	14378 E
24	14379 E
25	14380 E
26	14381 E
27	14382 E
28	14383 E
29	14384 E
30	14385 E
31	14386 E
32	14387 E
33	14388 E
34	14389 E
35	14390 E
37	14391 E
38	14392 E
39	14393 E
40	14394 E

<u>NAME</u>	<u>RECORD NUMBER</u>
LX 1	14154
2	14155
3	14156
4	14157
5	14158
6	14159
7	14160
8	14161
9	14162
10	14163
11	14164
12	14165
13	14166
14	14167
15	14168
16	14169
17	14170
18	14171
19	14172
20	14173

## GEOPHYSICAL INVESTIGATIONS

### MAGNETOMETER SURVEY:

The purpose of the Magnetometer Survey was to determine the existence of any magnetic anomalies on the property, and if so, what was their size, magnetic intensity, and probable cause. An anomaly would result from the presence or absence of any magnetic accessory minerals in the underlying rock formations in detectable quantity; the magnetic survey would differentiate between the volcanic, sedimentary and intrusive members and detect sulphides that are magnetic and that could possibly be associated with valuable minerals.

Using these factors as a guide, the Geophysical Survey was conducted over an area 27,500 feet by 13,000 feet in order to adequately cover the property held by the company. A total of 87 line miles were recorded in this survey.

Factors which produce variations in the magnetic field are: -

1. A concentration of magnetic minerals possibly associated with valuable minerals.

2. A variation in amount of accessory mineral magnetite in granitic, volcanic, or sedimentary bedrock.

3. A variation in amount of magnetite distributed through or connected with the overburden.

4. A variation in depth of non-magnetic overburden on caprock over bedrock having a constant vertical magnetic intensity.

5. Variation in amount of magnetic minerals in adjacent bands of volcanic and/or sedimentary rocks. These variations are not expected to be great, and they produce elongated highs and lows parallel to the strike of the formation.

6. Any combination between variations in magnetic minerals in the rock and variations in magnetic or non-magnetic overburden or caprock thickness.

It will be seen from the above factors that the geophysical survey employing a magnetometer, produces information that would assist in providing a structural picture as well as indicating and defining more favorable areas of greater geologic significance for further exploration.

Electromagnetic Survey:

The Electromagnetic Survey, conducted simultaneously with the Magnetometer Survey, measures the change in mutual impedance between a pair of coils as the impedance is affected by nearby conductors of electricity. The equipment employed transmits an electrical field through a 65 foot coil at a frequency of 1000 cycles per second. The coil is housed in a "bird" that is drawn by the aircraft, and records any fields produced by the transmitted field.

Radioactivity Survey:

The radioactivity was continuously measured employing a DR-229 Nucleometer constructed specifically for airborne work. It is a highly sensitive instrument of 24 tube construction. This survey system was employed to investigate any zones of radioactivity that may be caused by certain weathered products associated with mineralized zones.

### PROCEDURE

The Nitimat River property, consisting of 99 mineral claims were covered by 87 line miles of airway. Due to the nature of the topography, flight lines were flown at a true heading of 318°. This was done in order to best conform to the general contour of the ground and best maintain a near constant of 500 feet above the ground.

Flight lines were flown at a grid spacing of 500 feet, at a constant speed of 113.7 miles per hour, and at an elevation of 500 feet above surface.

Instrumentation was continuous, but readings were recorded by photography at preset intervals to record data at intervals of 500 feet. Flight lines, 27 in number were flown to lengths of 11,000 feet, 27,000 feet, and 16,000 feet, plus turning and reorienting distance.

The flight pattern and grid lines were plotted in advance on topographic map 92 c/15 East Half "Nitimat" on a scale  $1\frac{1}{4}$ " = 1 mile, and the flight was made during periods of extreme calm weather utilizing prominent landmarks as visual reference points for flight control.

The resulting readings and their coordinates were key punched and the data processed by a Univac 1108 computer. The enclosed maps are the results of this process.

## ANALYSIS OF RESULTS AND CONCLUSIONS

### MAGNETOMETER SURVEY

Four significant magnetic anomalies occur on the NAT and NIT Groups and two on the LX Group. They are located at

1. FL 14 N 29 2500 gamma
2. FL 29 N 26 2000 gamma
3. FL 26 N 34 2000 gamma
4. FL 26 N 45 2000 Gamma
5. FL 12 N 4 2000 gamma
6. FL 10 N 9 1700 gamma

No. 1 anomaly measures 2500 feet in length by 750 feet in width, and is due to a high magnetite content in the underlying rocks, and is indicative, by its shape, of an intrusive-volcanic contact; a condition that could produce a mass containing magnetics in a quantity greater than that normally found as accessory minerals. The magnetics could be pyrrhotite or magnetite, and these could be associated with valuable minerals. The size of the anomaly would be of economic significance.

No. 2 anomaly, at FL 29 N 26 measures 1500 feet by 1000 feet and records a magnetic intensity of 2000 gamma above background. This location is along a structural break whose surface representation is the Little Nitimat River. It is possible that the anomaly is due to a concentration of magnetics in the overburden although its circular shape would indicate a rock mass with disseminated to massive magnetite content of greater than 5%. It provides a suitable geologic ~~target~~ for further investigation.

No. 3 anomaly at FL 26 N 34 is a definite structural feature that is related to a secondary peak at FL 24 N 26. The north-south trend indicates structural break - a physical feature associated with a nearby volcanic intrusive contact.

No. 4 anomaly although only 500 feet in diameter and circular in shape, is of interest in that it follows the general trend structurally and appears as a cross break. It is centered at FL 26 N 45 and is between two distinct magnetic "lows".

On the LX mineral claims, No. 5 anomaly from FL 12 N 2 to the east reaches a 2500 gamma intensity which is the highest recorded reading during this survey. The location on the LX 18 Mineral Claim on a flat bench on the east side of

the river appears to be of geologic significance with possibilities of greater than average magnetic content.

No. 6 anomaly to the north at FL 10 N 10 appears to be related to No. 5 as it is at the north extremity of the area.

## ELECTROMAGNETIC

Several small electromagnetic anomalies were located during the survey, and of significance are these that are offset from the magnetic anomalies to differentiate between magnetic and non magnetic conductors.

The anomaly at FL 28 N 44 records a plus 7 indicative of disseminated sulphides in near proximity to a magnetic mass could be (a) pyrite or chalcopyrite zoned from magnetite or pyrrhotite or (b) electrolyte filled shears in near proximity to intrusives.

The anomaly at FL 26 N 32 records a plus 8 which trends towards the massive sulphide. The magnetic response at this point, 1500 gamma would not be sufficient in itself to measure a plus 8 EM and the conductivity is due to a sulphide content other than magnetite.

Other anomalies of significance and intensity are located at

FL 25 N 50  
FL 13 N 41  
FL 23 N 23  
FL 13 N 2

and are due to conductors other than magnetics.

### RECOMMENDATIONS

Employ a bulldozer a D7 or equivalent to provide access roads to the anomalous zones outlined by this survey, and utilize this equipment to cut trenches in the overburden to expose bedrock for further geologic study. A gas operated rock drill may be used in conjunction with the bulldozer work to drill and blast cuts for geologic mapping and sampling.

Conduct a geologic reconnaissance and mapping of the area plotting the results on a scale of 1" to 500'.

Diamond drilling would follow to test at depth those zones exposed by stripping and trenching that reveal mineralization of geologic or economic significance.

A second phase of exploratory work would consist of diamond drilling any or all anomalies that expose mineralization during the initial phase of work. The program would be detailed subsequently and would be based upon results of the initial phase, and would consist chiefly of a pattern diamond drilling program.

ESTIMATE

PHASE 1:

Bulldozer work, Trenching	
access roads, stripping	8,000.00
Drilling and blasting cuts	2,000.00
Geologic mapping and	
reconnaissance	2,000.00
Transportation, camp, supplies	3,000.00
Preliminary diamond drilling	
1000 feet AX	9,000.00
Supervision and Engineering	2,000.00
Assays, testwork, misc.	2,500.00
Contingencies	4,500.00
<b>TOTAL PHASE 1</b>	<b>\$33,000.00</b>

PHASE 2

Diamond drilling 5000 feet

complete \$50,000.00

This does not include any management,  
legal, or office overhead of the company.

The time required to complete Phase 1  
is estimated to be 3 months, and Phase 2 an  
additional 3 months.

## GEOLOGY

The Spacemaster Minerals Ltd. property occupies an area west of Cowichan Lake that has long been known as a copper bearing area - particularly that area of the Little Nitimat River.

Geologically the region is underlain by limestone, volcanics, and granitic intrusions. The occurrences of chalcopyrite are more commonly associated with the limestone at or near the volcanic contact and in shear zones in the volcanics.

The NAT mineral claims cover a zone of basic volcanics which overlie the Island Intrusives. Fault structures cutting through the property are represented on surface in the immediate area by the Cowichan Lake, and Nitimat Lake. Structurally, conditions are favorable to ore deposition, and the target areas outlined by the survey hold better than average possibilities of producing occurrences of copper ore.

**WATERTON AIREX LTD.****AIRBORNE GEOPHYSICS**

VICTORIA INTERNATIONAL AIRPORT

BOX 496, SIDNEY, B.C., CANADA

PHONE 656-2194

July 25th. 1969

IN ACCOUNT WITH C. H. BETHEL  
ACTING ON BEHALF OF SPACEMASTER MINERALS LTD.

**AIRBORNE GEOPHYSICAL RECONNAISSANCE**

North of Nininat Lake Area of B. C.

Magnetometer - E. M. - Nuclear Surveys

721 Lineal miles Flown as per report  
of Harvey H. Cohen, P. Eng.

Dated July 18th. 1969

\$7,210.00

Positioning Expense

220.00

Total Cost

\$7,430.00

Paid in full by cheques

  
WATERTON AIREX LTD.

**HARVEY H. COHEN ENGINEERING LTD.**  
CONSULTING ENGINEERS

TELEPHONE: BUS. 684-6711  
RES. 266-8189

1264 WEST PENDER STREET  
VANCOUVER 1, B.C.

Aug. 1, 1969

Spacemaster Minerals Ltd.,  
4725 Treetop Heights,  
Victoria, B.C.

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AIRBORNE GEOPHYSICAL SURVEY  
Re: Nat 1-40, Nit 1-40 (less 36), 1x 1-20  
Mineral Claims, Alberni Mining Division,  
Vancouver Island Area, B.C.

Preparation of data, electromagnetic  
and magnetometer, application to  
computer, preparation of maps and reports

Total fees and disb. \$2600.00

*Received 8/1  
\* 2600.00  
off*

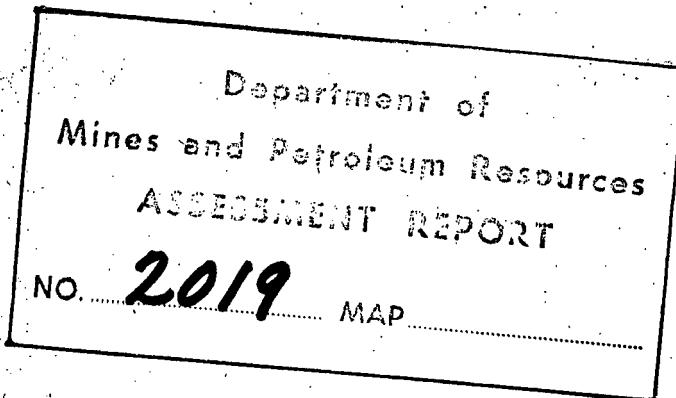
REPORT ON THE

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NAT 1-40, NIT 1-40 (LESS #36) LX 1-20 MINERAL CLAIMS

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ALBERNI MINING DIVISION

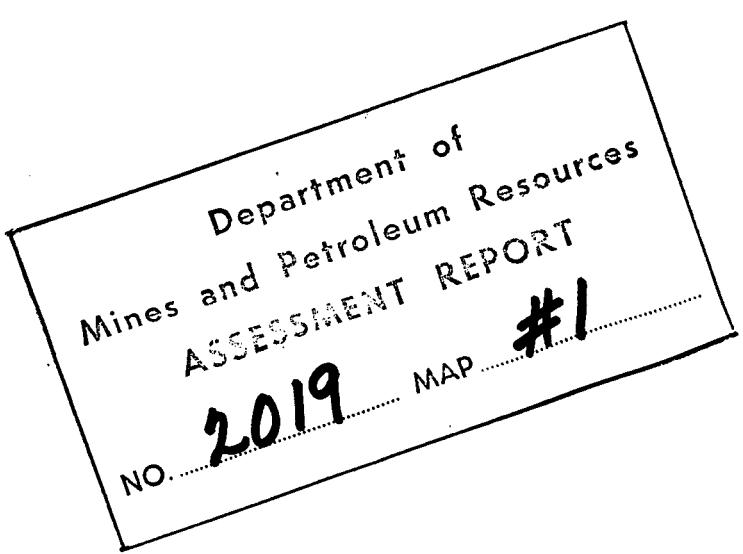


SPACEMASTER MINERALS LTD.

VICTORIA, B. C.



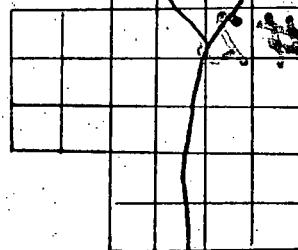
KEY MAP SHOWING LOCATION OF FRANCES LAKE AREA, VANCOUVER IS.



NAT GROUP  
1-40

17	18	35	36	15	16	33	34
16	16	33	34	13	14	31	32
31	32	75	26	11	12	29	30
29	30	23	24	9	10	27	28
21	28	21	22	7	8	25	26
19	20	7	8	5	6	23	24
13	14	3	6	3	4	21	22
11	12	5	4	1	2	19	20
9	10	1	2	37	38	39	40
37	38	39	40				

NIT GROUP  
1-40 (No #36)



NORANDA

PIC

LX GROUP  
1-20

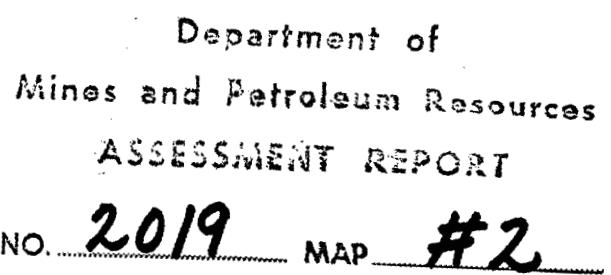
14	16	18		
13	15	17	6	5
11	10	7	4	3
12	9	8	2	1

SPACEMASTER MINERALS LTD.  
VICTORIA, B.C.

MAP SHOWING LOCATION of  
NAT, NIT, LX GROUPS M.C.'s  
VANCOUVER IS. AREA

JULY 1969

1" = 1 MILE



**HARVEY H. COHEN ENGINEERING LTD.**

CONSULTING ENGINEERS

TELEPHONE: BUS.: 684-6711  
RES.: 266-8169

1264 WEST PENDER STREET  
VANCOUVER 1, B.C.

July 18, 1969

Spacemaster Minerals Ltd.  
4725 Treetop Heights  
Victoria, British Columbia

Re: Airborne Geophysical Survey  
NAT, NIT, LX Mineral Claims  
Alberni Mining Division

Dear Sirs:

Pursuant to your request, the writer submit herewith the results and maps, covering the subject mineral claims, of the recent combined airborne geophysical survey conducted during the period April 20 to present.

Respectfully submitted,



Harvey H. Cohen, P. Engineer

rs

**HARVEY H. COHEN ENGINEERING LTD.**

CONSULTING ENGINEERS

TELEPHONE: BUS. 684-6711  
RES. 266-8169

1264 WEST PENDER STREET  
VANCOUVER 1, B.C.

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and magnetometer, application to  
computer, preparation of maps and reports

Total fees and disb. \$2600.00

*Dec 1st  
+ 2600.00  
JGD*

2019

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AIRBORNE GEOPHYSICS

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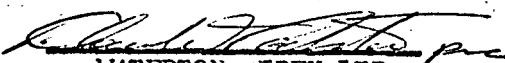
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WATERTON AIREX LTD.

HARVEY H. COHEN ENGINEERING LTD.  
CONSULTING ENGINEERS

TELEPHONE: BUS.: 684-6711  
RES.: 266-8169

1264 WEST PENDER STREET  
VANCOUVER 1, B.C.

23 September 1969

Mining Recorder,  
205 Elizabeth Street,  
Port Alberni, British Columbia.

Dear Sir:

RE: Geophysical Report Your File 8-7  
NAT 1-40, NIT 1-35, NIT 37-40  
LX 1-20: 14316-94, 14154-73

Your letter dated September 19th to Mr. C. H. Bethel has been forwarded to us for reply. Thank you for bringing to our attention the subject matter, and we submit the following:-

1. Magnetometer: Sharpe PMF3 Airborne.  
Electromagnetic: 1,000 CPS. Designed for airborne use by U.B.C. Electronics for Waterton Airex.  
Radiometer: Nucleometer - Detectron DR229 24 tube, reading in units of .001 MR/HR.
2. Radiometric results were not plotted due to the fact that spotty occurrences of minor radioactivity was considered insignificant.
3. (a) Contouring was carried out by plotting machines at Computer Sciences at Vancouver. The direction was the output of a Univac 1108 Computer based at Calgary. The line crossing is a computer error that could not be corrected readily by the staff at Computer Sciences. In fact, they are presently using this data as a test to improve the plotting sequence.

.....2

23 September 1969

Mining Recorder

Page 2.

The crossing of contours, while deemed impossible, was not considered by the writer in the interpretations, and the readings themselves, where significant, together with the remainder of the contouring provided adequate information in making an analysis of the results. The instances of crossing lines did not influence our study.

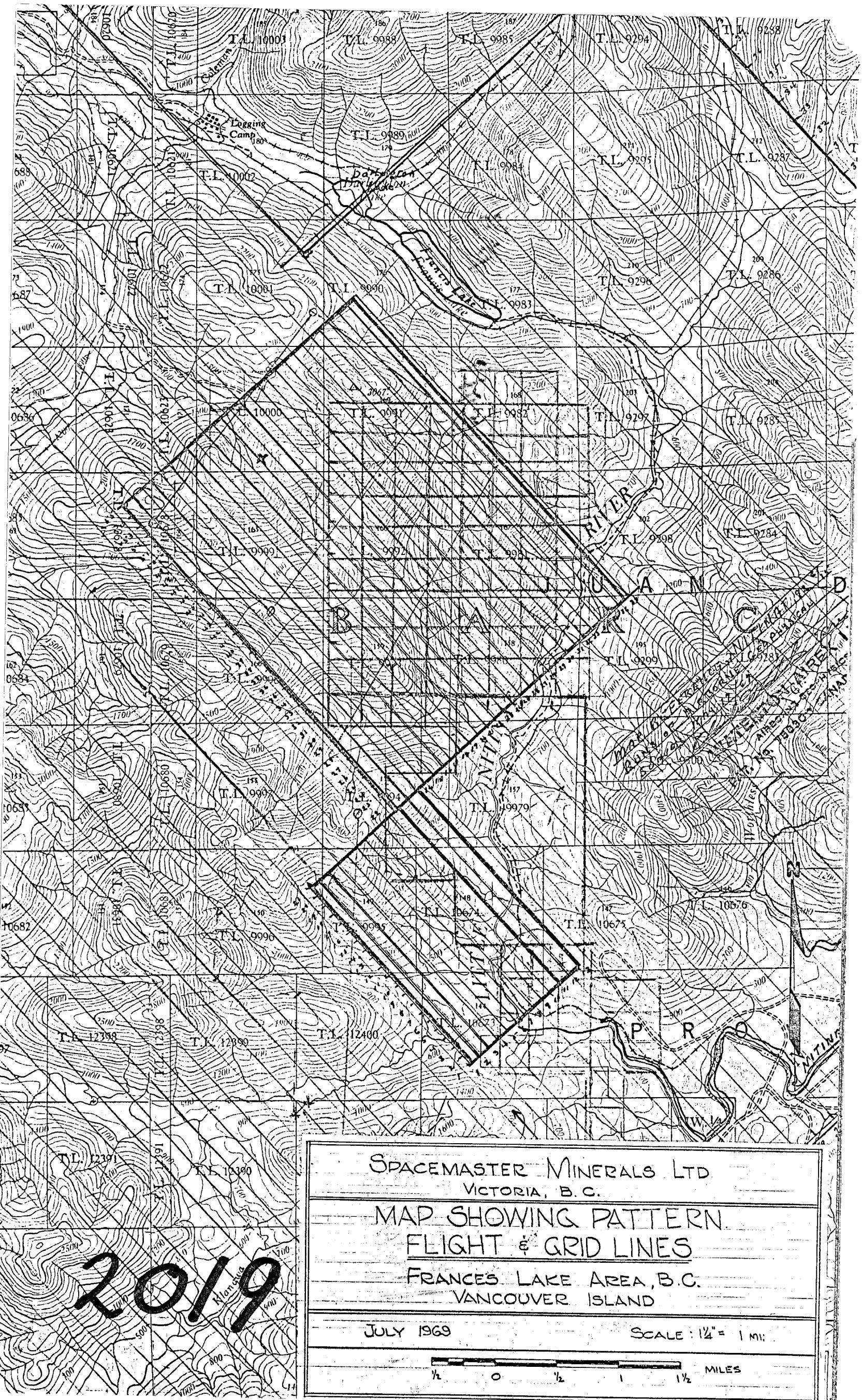
- (b) Note was made on each map "To accompany report etc."
  - (c) Subject maps are enclosed in envelopes.
4. Waterton Airex conducted a total of 721 miles of line on a reconnaissance grid. A map showing this grid is enclosed. An area was selected for subsequent detail grid of 500 ft. spacing. The report covers the results of the detail grid.
5. Work on the detail grid - subject of this report was done by the writer and staff of Computer Sciences Ltd., who in turn used computer time of the Calgary based Univac 1108. Under these circumstances it is impractical to provide the names of the operators and time except as to charges. I hope this is explanatory.
6. We have made the correction from Nitimat to read Nitinat.

Respectfully submitted,



Harvey H. Cohen, P.Eng.

HHC/ht



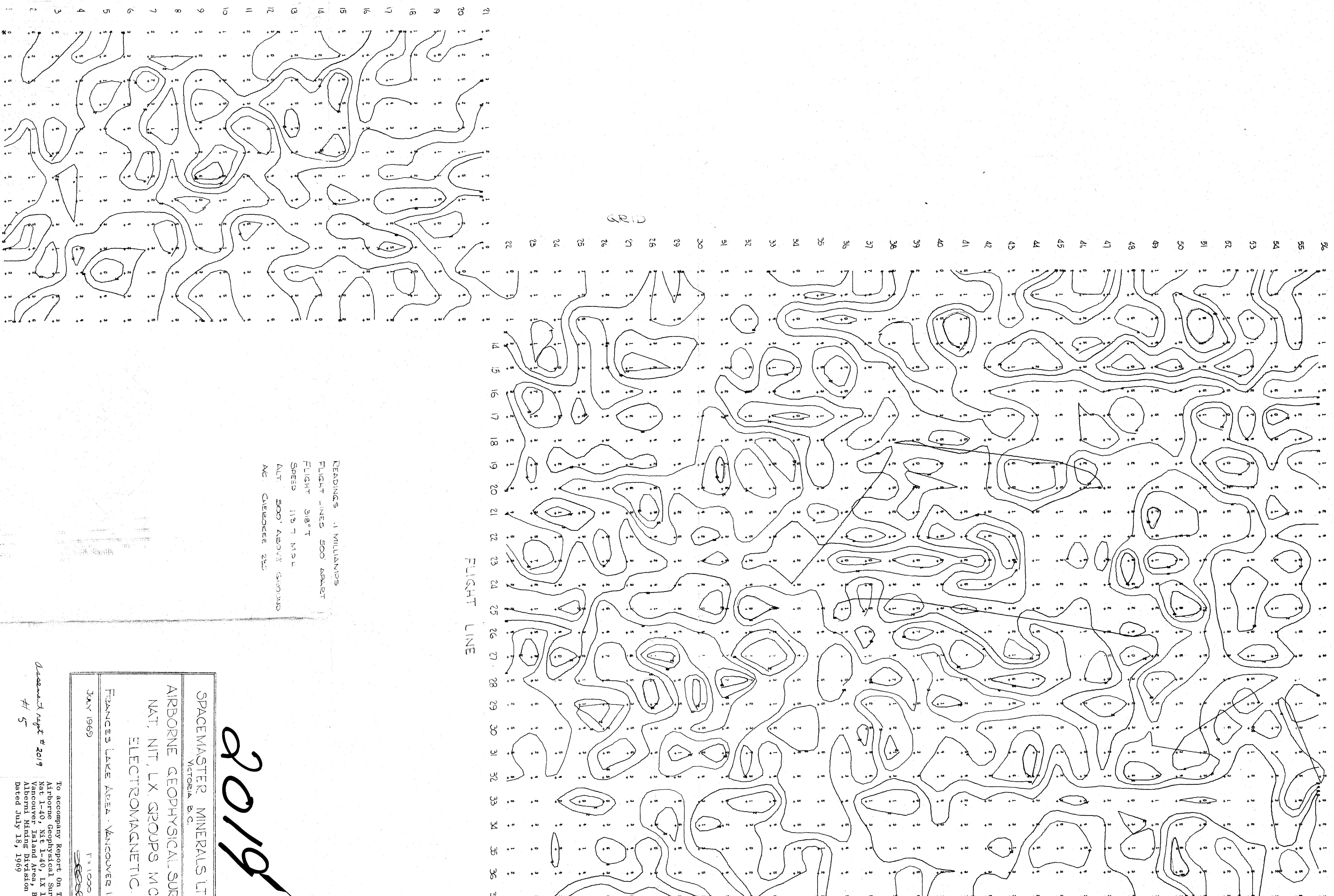


AIRBORNE GEOPHYSICAL SURVEY - ELECTROMAGNETIC

FRANCIS LAKE AREA, VANCOUVER ISLAND

MAP REF. NITINAT 82 E/15 EAST HALF 48 DEGS 55° N 124 DEGS 43° N

SCALE 1''=1000', BEARING 318 DEGREES TRUE

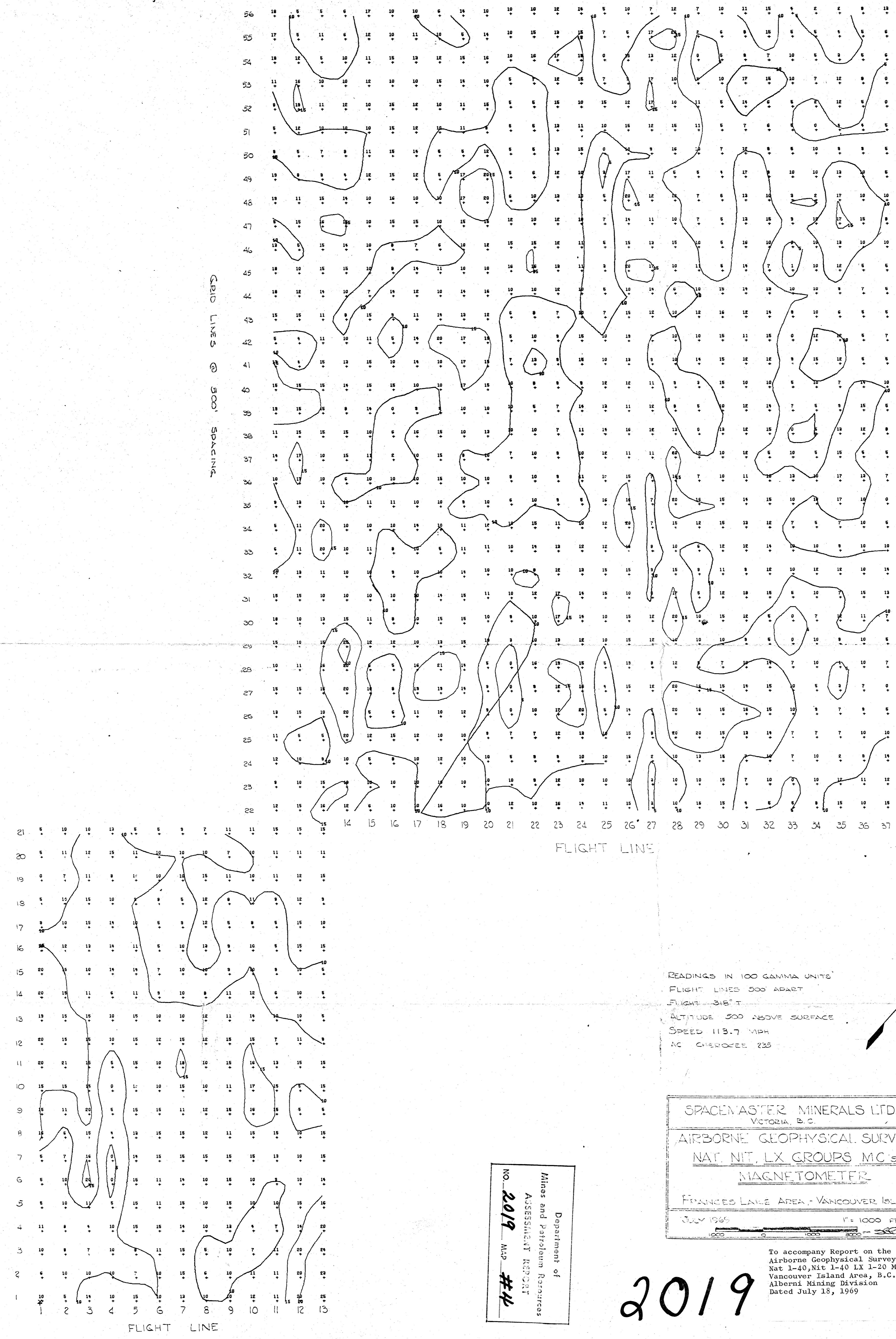


AIRBORNE GEOPHYSICAL SURVEY - MAGNETOMETER

FRANCIS LAKE AREA, VANCOUVER ISLAND

MAP REF. NADIR 12 E 71' EAST HLF 40 DESS NW' N 124 DESS 41' W

SCALE 1:100,000, PERIOD 0.8 SECONDS TIME



READINGS IN 100 GAMMA UNITS

FLIGHT LINES 500' APART

FLIGHT 348° T

ALTITUDE 500 ABOVE SURFACE

SPEED 113.7 MPH

AC CHEROKEE 235

SPACEMASTER MINERALS LTD.  
VICTORIA, B.C.

AIRBORNE GEOPHYSICAL SURVEY  
NAT 1-40, NIT 1-40 LX GROUPS MC'S  
MAGNETOMETER

FRANCIS LAKE AREA - VANCOUVER ISLAND

JULY 1969

1" = 1000 FEET

To accompany Report on the  
Airborne Geophysical Survey  
Nat 1-40, Nit 1-40 LX 1-20 M.C.'s  
Vancouver Island Area, B.C.  
Alberni Mining Division  
Dated July 18, 1969

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 11028  
MAP #44

2019



To accompany Report on the  
Alberta Geophysical Survey  
Nat 1-40, Mt 1-40, LX 1-20  
Mining Claims, Alberta M.D.  
Dated July 18, 1969

*[Handwritten signature]*

HARVEY H. COHEN, P. Eng.

2019

AEROMAGNETIC SURVEY REPORT, NORTH OF ALBERTA LURE, B.C.  
BINS 1000 FEET APART, RECORDED READINGS IN GEM PER SQ.  
GRID SCALE 1000 FEET TO 1:6,000,000

WATERTON AIREX LTD.  
ALBERTA GEOPHYSICS  
PAT. NO. 783306 CANADA (1967)

access. rept. F 2019  
Map # 7